



*FINAL*

***ENVIRONMENTAL ASSESSMENT  
FOR THE SALINE VALLEY RADAR FACILITY PROJECT  
SALINE VALLEY, CALIFORNIA***

*December 2003*

**AIR FORCE FLIGHT TEST CENTER  
ENVIRONMENTAL MANAGEMENT  
EDWARDS AFB CA 93524**



**FINDING OF NO SIGNIFICANT IMPACT  
FOR CONSTRUCTION OF A BEACON RADAR SYSTEM IN THE  
SALINE VALLEY, CALIFORNIA**

## **1.0 INTRODUCTION**

The environmental assessment (EA) analyzed the potential environmental impacts of a proposed beacon radar facility and an associated microwave repeater in the Saline Valley area in east central California. The proposed project consists of (1) a beacon radar with support and communications equipment, to be located at the McElvoy Canyon site and (2) a microwave repeater site on the Galena Ridge. The No Action (status quo) alternative was also addressed. The Saline Valley is located in the west-central portion of Inyo County, California, east of Owens Lake. Part of the Saline Valley lies in the western portion of Death Valley National Park. A microwave repeater will be required for any of the five beacon radar facility alternatives.

The R-2508 Complex Control Board, a tri-service board (Army, Navy, and Air Force) charged with the day-to-day management of the airspace, determined that a radar system is needed in the Saline Valley based on the analysis of near-midair collision data. This analysis revealed that this area has a history of aircraft near-midair collisions and a potential for aircraft accidents. The R-2508 Complex Control Board determined that additional radar coverage would provide ground-based air traffic controllers with accurate real-time information concerning aircraft position and altitude. In addition, the availability of radar coverage in the Saline Valley area would also provide timely aircraft position information and communications for search-and-rescue operations.

As the funding agency and proponent for the Saline Valley radar construction project, the Air Force Flight Test Center (AFFTC) is the co-lead (action) agency for the purposes of this *National Environmental Policy Act of 1969* (NEPA) analysis. As landowner of the preferred repeater site, National Park Service (NPS) is considered a co-lead for the assessment of this project. While the Air Force is constructing the project, once completed, the Federal Aviation Administration (FAA) will assume maintenance responsibilities of the facility. The Bureau of Land Management (BLM), FAA, and Timbisha Shoshone Tribe are cooperating/coordinating agencies. The FAA, BLM, and Timbisha Shoshone Tribe were also involved in subsequent phases of review and evaluation.

## **2.0 ENVIRONMENTAL EFFECTS**

The components of the natural and manmade environment analyzed for potentially significant impacts include: Land Use (including recreational and visual resources), Noise, Air Quality, Safety and Occupational Health, Hazardous and Solid Waste, Biological Resources, Cultural Resources, Geology and Soils, Socioeconomics, and Environmental Justice. No potentially significant impacts were identified at any of these sites under the alternatives considered.

The preferred site (beacon radar in McElvoy Canyon, on BLM land with a repeater site on Galena Ridge, on NPS land) would provide the best technical solution for radar coverage in the Saline Valley. Potential radar sites at other locations were functional but had measurably less

coverage. All radar sites considered would require a repeater to provide the required "line-of-sight" necessary for communications with the existing FAA system. Due to the land use limitations (primarily Federal lands designated as Wilderness Areas), all of the repeater sites identified that were technically feasible were located on NPS land.

The EA documents the analysis of the activities associated with the location and construction of a beacon radar system in the Saline Valley and supports a finding of No Significant Impact for all of the alternatives considered. The most common impacts identified were to Land Use (Visual Resources) and a temporary, minor ground disturbance impact associated with construction activities. The visual impacts will be mitigated through site location and the use of techniques to minimize visual contrast (color, line and texture) with the desert environment. The construction activities will be of a short term nature, limited to a relatively small area of approximately one acre, and will conform to the surrounding habitat.

### 3.0 FINDINGS

A Finding of No Significant Impact (FONSI) for the alternatives considered has been determined. No potentially significant issues have been identified at any of the five alternative beacon radar sites or any of the three repeater sites considered for the proposed project. A careful review of the environmental issues that have been brought forward to date has not identified any potentially significant issues. Therefore, an Environmental Impact Statement will not be prepared. Other agencies involved in decision making with respect to this action may be making independent "Findings" separate from this FONSI. Background information that supports the research and development of this FONSI and the EA is on file at Edwards AFB and can be obtained by contacting the following:

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## EXECUTIVE SUMMARY

This environmental assessment (EA) analyzes the potential environmental impacts of a proposed beacon radar facility and an associated microwave repeater in the Saline Valley area in southern California. The proposed project, consisting of five potential alternative beacon radar sites and three repeater site options, are considered in this EA. The final system is expected to consist of a single radar beacon site with associated communications equipment and a single microwave repeater site. The No Action (status quo) alternative is also addressed. The Saline Valley is located in the west-central portion of Inyo County, California, east of Owens Lake. Part of the Saline Valley lies in the western portion of Death Valley National Park. A microwave repeater will be required for any of the five beacon radar facility alternatives.

As the funding agency and proponent for the construction of this project, the Air Force Flight Test Center (AFFTC) is the co-lead (action) agency for the purposes of this *National Environmental Policy Act of 1969* (NEPA) analysis. As landowner of the preferred repeater site, National Park Service (NPS) is considered a co-lead for the assessment of this project. While the Air Force is constructing the project, once completed, the Federal Aviation Administration (FAA) will assume maintenance responsibilities of the facility. The Bureau of Land Management (BLM), FAA, and Timbisha Shoshone Tribe are cooperating/coordinating agencies. The FAA, BLM, and Timbisha Shoshone Tribe will also be involved in subsequent phases of review and evaluation, along with a number of other public trustee agencies and private organizations.

The R-2508 Complex Control Board, a tri-service board (Army, Navy, and Air Force) charged with the day-to-day management of the airspace, determined that radar is needed in the Saline Valley based on the analysis of near-midair collision data. This analysis revealed that this area has a history of aircraft near-midair collisions and a potential for aircraft accidents. The R-2508 Complex Control Board also determined that additional radar coverage would provide ground-based air traffic controllers with accurate real-time information concerning aircraft position and altitude. Finally, the availability of radar coverage in the Saline Valley area would also provide timely aircraft position information and communications for search-and-rescue operations.

In the last 20 years, there have been five recorded incidences of military aircraft crashes and there have been numerous reports (from the DOD flight safety offices) of near-midair collisions; however, some incidences are not officially collected and recorded. Lack of radar was considered a contributing factor in these five crash incidents. The Saline Valley is considered to be one of the most hazardous areas for flight operations in the R-2508 Complex.

There are no current or known near-future programs planned for the R-2508 Complex that would increase DOD aircraft operations above historic levels in the Saline Valley area. The R-2508 Complex predominantly supports the DOD's research, development, testing, and evaluation of military aircraft. The installation of the proposed beacon radar facility meets an existing need for radar coverage within the Saline Valley for control of both civilian use and military operations. Although this radar would support military missions and improve their flying safety, the proposed beacon radar facility would also support other government and civilian aviation operations. Communications capability will include provisions to support both DOD and NPS requirements.

### Beacon Radar Alternatives

*Alternative A (Central Saline)*—This site is located north of the Salt Lake on NPS land and is immediately adjacent to designated NPS wilderness. No significant environmental issues were identified. Of the five alternatives considered, this alternative has the least impact on visual and recreational resources because it is largely shielded from key observation points by existing vegetation. In addition, it has reduced visibility because of its distance from key observation points along Saline Valley Road and the Warm Spring area. However, there are additional construction costs and difficulties associated with this site. Also, while this is the technically preferred alternative for radar (95%) and communication coverage, it would require a Department of Transportation (DOT) 4(f) finding. This finding would require a determination that there are no other feasible and prudent alternatives. A 4(f) finding is required for this alternative because of its location on NPS land. A 4(f) finding is not in itself a significant issue. These types of findings are routinely done throughout the United States when required due to a lack of feasible and prudent options. Section 4(f) restricts the FAA from using public park or recreation lands unless there is no feasible and prudent alternative. Because the site for Alternative A lies within Death Valley National Park and reasonable alternative sites appear to be available, the Air Force has not designated Alternative A as its preferred alternative.

*Alternative B (McElvoy Canyon)*—This site is located on BLM land immediately west of Saline Valley Road, on an alluvial fan at the mouth of the McElvoy Canyon. No significant environmental issues were identified. Alternative B has been identified as the preferred alternative. This alternative has a moderate impact on visual and recreational resources because of its proximity to the Saline Valley Road, a key observation point. Visual and recreational resource impacts would be reduced through design that incorporates colors and textures compatible with the desert environment. This site has the best radar (85%) and communication coverage of all the BLM alternatives.

*Alternative C (Grey Eagle Mine)*—This site is located on BLM land west of Saline Valley Road. The existing Grey Eagle Mine is located southwest of the site. No significant environmental issues were identified. This alternative has a moderate impact on visual and recreational resources because of its distance from the Saline Valley Road, a key observation point. Visual and recreational resource impacts would be further reduced through design that incorporates colors and textures compatible with the desert environment. This site has adequate radar (80%) and communication coverage.

*Alternative D (Keyes Canyon)*—This site is located on BLM land west of Saline Valley Road and east of Pat Keyes Canyon, approximately one-quarter mile northeast of Badwater Springs. No significant environmental issues were identified. This alternative has a minor impact on visual and recreational resources because of its proximity to the Saline Valley Road, a key observation point. Visual and recreational resource impacts would be reduced through design that incorporates colors and textures compatible with the desert environment. This site has adequate radar (80%) and communication coverage.

*Alternative E (Keyes Canyon North)*—This site is located on BLM land west of Saline Valley Road and east of Pat Keyes Canyon, approximately one mile north of Badwater Springs. No significant environmental issues were identified. This alternative has a moderate impact on visual and recreational resources because of its distance from the Saline Valley Road, a key observation point. Visual and recreational resource impacts would be further reduced through design that incorporates colors and textures compatible with the desert environment. This site has adequate radar (80%) and communication coverage.

*Alternative F (No Action Alternative)*—Generally, for construction projects, the environmentally preferred alternative is no action. This typically means the alternative that causes the least damage to the biological and physical environment. However, this alternative does not address the existing life-threatening hazards with respect to ground and air traffic safety.

### **Microwave Repeater Site Options**

All viable microwave repeater sites are located on nonwilderness NPS lands adjacent to existing roads.

*Lead Canyon South*—This site is on NPS land and is immediately adjacent to Saline Valley Road and designated BLM wilderness. No access route is required to the repeater site. The repeater tower is expected to be from 20 to 40 feet in height, with a 6- by 6- by 6-foot triangular concrete pad. This site has a moderate impact on visual and recreational resources because of its distance from the Saline Valley Road (within 50 feet of the centerline), a key observation point. Visual and recreational resource impacts would be reduced through design that incorporates colors compatible with the desert environment. This site has adequate communications with Keeler Peak, and would require a DOT 4(f) finding.

*Lead Canyon North*—This site is on NPS land and is immediately adjacent to designated NPS wilderness. No access route is required to the repeater site. The repeater tower is expected to be from 20 to 40 feet in height, with a 6- by 6- by 6-foot triangular concrete pad. This site has a moderate impact on visual and recreational resources because of its distance from the Saline Valley Road (within 50 feet of the center line), a key observation point. Visual and recreational resource impacts would be reduced through design that incorporates colors compatible with the desert environment. This site has adequate communications with Keeler Peak, but would require a DOT 4(f) finding.

*Galena Ridge*—This site is located on nonwilderness NPS land within the cherry-stemmed area adjacent to a mining road leading to the Santa Rosa Mine and immediately bordering designated NPS wilderness. This site is the preferred microwave repeater alternative. The repeater site is at the end of a rough, four-wheel-drive access road, and the approximately 20-foot tower, with a 6- by 6- by 6-foot triangular concrete pad, would not be visible from the

majority of Saline Valley. Minor site development work would be required for the construction of the tower. The proposed site is located in a heavily disturbed mining area and would require minimal vegetation removal. The access road will not require improvements. Long-term semiannual maintenance for the repeater would be required. This site has a minor impact on visual and recreational resources because of its distance from Saline Valley and any other key observation points. The minor visual and recreational resource impacts would be further reduced through design that incorporates colors compatible with the desert environment. This site has the best communications with Keeler Peak. This site would require a DOT 4(f) finding.

### **Conclusion**

No potentially significant issues have been identified at any of the five alternative beacon radar sites or any of the three repeater sites considered for the proposed project. A careful review of the environmental issues that have been brought forward to date has not identified any potentially significant issues.

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Summary Comparison Table						
Beacon Radar Alternatives						
Attributes	Alternative A <i>Central Saline</i>	Alternative B <i>McElvoy Canyon</i>	Alternative C <i>Grey Eagle Mine</i>	Alternative D <i>Keyes Canyon</i>	Alternative E <i>Keyes Canyon North</i>	Alternative F <i>No Action Alternative</i>
Land Use	Moderate	None	None	None	None	None
Visual/Recreational Resources	Minor	Moderate	Moderate	Minor	Moderate	None
Geology and Soils	Minimal	Minimal	Minimal	Minimal	Minimal	None
Water and Hydrology	None	None	None	None	None	None
Air Quality	Minimal	Minimal	Minimal	Minimal	Minimal	None
Biological Resources	Moderate	Minor	Minor	Minimal	Minor	None
Noise	Minimal	Minimal	Minimal	Minimal	Minimal	None
Cultural Resources	None	None	None	None	None	None
Traffic	Minimal	Minimal	Minimal	Minimal	Minimal	None
Repeater Site Options						
Attributes	Galena Ridge Repeater Site (NPS)	Lead Canyon South Repeater Site (NPS)	Lead Canyon North Repeater Site (NPS)			
Land Use	Minimal	Moderate	Moderate			
Visual/Recreational Resources	Minor	Moderate	Moderate			
Geology and Soils	Minimal	Minimal	Minimal			
Water and Hydrology	None	None	None			
Air Quality	None	None	None			
Biological Resources	Minimal	Minimal	Minimal			
Noise	None	None	None			
Cultural Resources	None	None	None			
Traffic	Minimal	Minimal	Minimal			

Notes: Rating scale is used within the attribute table only.

- Minimal Impacts that are not expected to be measurable or are measurable but are too small to cause any change in the environment.
- Minor Potentially adverse impacts that are measurable, but are within the capacity of the impacted system to absorb the change or the impacts can be easily mitigated with little effort and resources so that they are not significant.
- Moderate Potentially adverse impacts that are measurable, but do not violate any laws or regulations and are within the capacity of the impacted system to absorb the change or the impacts, can be mitigated with effort and resources so that they are not significant.
- Major Potentially adverse impacts that individually or cumulatively could be significant.
- None No impacts expected.

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**LIST OF ABBREVIATIONS AND ACRONYMS**

412 TW/LGQ	Quality Assurance Inspection Branch
ACEC	Area of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
ADCA	Animal Damage Control Act
AFJMAN	Air Force Joint Manual
AFFTC	Air Force Flight Test Center
AFOSH	Air Force Occupational Safety and Health
AFPD	Air Force Policy Directive
AGL	above ground level
AIRFA	American Indian Religious Freedom Act
AMSL	above mean sea level
APE	Area of Potential Effect
ARPA	Archaeological Resources Protection Act
ASR	airport surveillance radar
ATC	authority to construct
AWAC	airborne warning and control system
BACT	best available control technology
BASH	Bird Aircraft Strike Hazard
BEPA	Bald Eagle Protection Act
BHPO	Base Historic Preservation Officer
BLM	Bureau of Land Management
BMP	Best Management Practice
BP	before present
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
Cal-OSHA	California Occupational Safety and Health Administration
CAR	Combat Arms Range
CARB	California Air Resources Board
CCR	California Code of Regulations
CDCA	California Desert Conservation Area
CDFG	California Department of Fish and Game
CESA	California Endangered Species Act
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CNPS	California Native Plant Society
CO	carbon monoxide
CRWQCB	California Regional Water Quality Control Board
CWA	Clean Water Act
dB	decibel
dba	decibel, A-weighted
DNL	day-night average sound level
DOD	Department of Defense
DOT	Department of Transportation
DRU	Direct Reporting Unit
DVNP	Death Valley National Park
E	east
EA	Environmental Assessment
EIR	economic impact region
EIS	Environmental Impact Statement

**LIST OF ABBREVIATIONS AND ACRONYMS (Continued)**

EMR	electromagnetic radiation
EO	Executive Order
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Act
FFCA	Federal Facility Compliance Act
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FOA	Field Operating Agencies
FOD	foreign object damage
FONSI	Finding of No Significant Impact
FS	Forest Service
ft	feet
FWCA	Fish and Wildlife Coordination Act
GBUAPCD	Great Basin Unified Air Pollution Control District
GIS	Geographic Information System
GPS	global positioning system
HAP	Hazardous Air Pollutant
HDGT	heavy-duty gasoline truck
HDDT	heavy-duty diesel truck
HDSC	Hazardous Materials Distribution Support Centers
HMTA	Hazardous Materials Transportation Act
HWMP	Hazardous Waste Management Plan
IAW	in accordance with
ICAO	International Civil Aviation Organization
INRMP	Integrated Natural Resources Management Plan
IPM	Integrated Pest Management
IRP	Installation Restoration Program
KCAPCD	Kern County Air Pollution Control District
kW	kilowatt
lb	pound
LDGV	light-duty gasoline vehicle
LDGT	light-duty gasoline truck
LDDT	light-duty diesel truck
Leq	equivalent continuous sound level
MACT	maximum achievable control technology
MBTA	Migratory Bird Treaty Act
MDAQMD	Mojave Desert Air Quality Management District
MFH	Military Family Housing
Misc.	miscellaneous
MOA	military operations area
MOU	Memorandum of Understanding
MSL	mean sea level
MWR	Morale, Welfare, and Recreation
N/A	not applicable
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NASA	National Aeronautics and Space Administration
NAWS	Naval Air Weapons Station
NEPA	National Environmental Policy Act

*FINAL*

**LIST OF ABBREVIATIONS AND ACRONYMS (Concluded)**

NESHAP	National Emission Standard for Hazardous Air Pollutants
NGR	National Guard Regulation
NHPA	National Historic Preservation Act
NO <sub>x</sub>	oxides of nitrogen
NPS	National Park Service
NRCS	Natural Resource Conservation Service
O <sub>3</sub>	ozone
ORV	off-road vehicle
OSHA	Occupational Safety and Health Administration
PIRA	Precision Impact Range Area
PL	Public Law
PM10	particulate matter equal to or less than 10 microns
PTO	permit to construct
R	range
RCRA	Resource Conservation and Recovery Act
ROG	reactive organic gases
RFR	radio frequency radiation
S	section
SB	Senate Bill
SCS	Soil Conservation Service
SEA	Significant Ecological Area
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SMARA	Surface Mining and Reclamation Act
SO <sub>x</sub>	sulfur oxides
SPRP	Spill Prevention and Response Plan
T	township
TIM	Technical Information Memorandum
TSCA	Toxic Spills Control Act
UCR-EIC	University of California, Riverside-Eastern Information Center
U.S.	United States
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USC	United States Code
USDA	United States Department of Agriculture
U.S. EPA	United State Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UXO	unexploded ordnance
VOC	volatile organic compounds
%	percent

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## **1.0 INTRODUCTION**

### **1.1 Background**

The Department of Defense (DOD) has a requirement to safely provide readiness training for military pilots and a safe environment for test and evaluation of aircraft. In the R-2508 Complex this activity uses airspace that is accessible to both military and civil aviation. It has been identified that improved Command and Control Systems (a radar system and associated communications equipment) are needed in the Saline Valley area of the R-2508 Complex to support this mission. This project would provide an added layer of safety to DOD aircrews, other government, and civilian pilots operating in that area. This document describes in detail the options considered, rationale for need, and the process that was followed to select a site and examine impacts on the environment.

The *1994 Desert Protection Act* (16 United States Code [USC] 410aaa) revised the land use in this area by extending the boundaries of the Death Valley National Park. However, the Act maintained the military's use of the airspace as they had under previous rules.

The R-2508 Complex of airspace set aside for military use was first established in the late 1960s, and is jointly managed as a combination of restricted areas, military operations areas, and air traffic control (ATC) assigned airspace. The R-2508 Complex, in its entirety, covers approximately 21,000 square miles. The individual restricted areas that comprise the R-2508 Complex are used by the Air Force, Army, and Navy. These special-purpose restricted areas are separated by airspace through which civilian and other government aircraft are permitted to operate (USAF 1999). In the late seventies the R-2508 Complex radar and communications infrastructure was enhanced by adding six gap filler radar systems and associated communications in remote desert areas. The existing radar installed in the Panamint Valley near Ballarat is typical of the R-2508 Complex radar installations. The installation of a beacon radar in the Saline Valley is a continuation of the DOD's effort to upgrade the R-2508 Complex equipment infrastructure to enhance flying safety for all users in the affected area. The system is expected to be a component of the larger National Airspace System (NAS).

The Saline Valley is remote, and its geomorphology is characterized by varied topography typical of the basin and range physiographic province that comprises this portion of California and neighboring Nevada. The physiography and remoteness of the area contribute to the large expanses that lack the comprehensive radar coverage required to meet the demands for civilian and military flights. Because of the mountainous terrain, general aviation traffic is funneled into areas located adjacent to airspace also used by high-performance military aircraft. These physiographic constraints, coupled with the lack of adequate surveillance facilities within the R-2508 Complex, create conditions for potential aircraft collisions and difficulty locating downed aircraft. The extensive improvements in radar and communications were implemented within the R-2508 Complex during the 1970s to enable aircraft to have real-time data regarding the location of other aircraft operations within the area. The Saline Valley is one of the few remaining areas where comprehensive radar coverage is lacking. The addition of a beacon radar system in the Saline Valley would complement and enhance the existing R-2508 radar mosaic by providing radar coverage and communications in areas presently lacking these capabilities (USAF 1999).

### **1.2 Lead and Cooperating Agencies**

As the funding agency and proponent of the project, the Air Force Flight Test Center (AFFTC) is a co-lead (action) agency for the purposes of this *National Environmental Policy Act of 1969 (NEPA)* analysis. As landowner of the preferred repeater site, National Park Service (NPS) is considered a co-lead for the assessment of this project. The Bureau of Land Management (BLM), Federal Aviation Administration (FAA), and Timbisha Shoshone Tribe are cooperating/coordinating agencies. The FAA, BLM, and Timbisha Shoshone Tribe will also be involved in subsequent phases of review and evaluation, along with a number of other public trustee agencies and private organizations.

### **1.3 Purpose and Need for the Proposed Project**

#### **1.3.1 Purpose for the Proposed Action**

This environmental assessment (EA) analyzes the potential environmental impacts of a proposed beacon radar facility and an associated microwave repeater in southern California in the Saline Valley. This EA considers five potential alternative beacon radar sites and the No Action Alternative. A microwave repeater will be required for

any of the beacon radar facility alternative, and three alternative repeater sites are examined. The Air Force proposes to install the Saline Valley Beacon Radar Facility in order to substantially improve ground and flight safety. The Saline Valley is located in the west-central portion of Inyo County, California, east of Owens Lake and in the western portion of Death Valley National Park (DVNP).

While existing policies and aircraft operational procedures have been implemented to minimize the risks of highly dynamic tactical and flight test aircraft operations, radar coverage would provide the next major step in improving flight safety. Once constructed, the proposed beacon radar facility will be maintained and operated by the FAA for both civilian and military aircraft operations. The proposed action is not intended to increase the capacity of the airspace to support flight operations but is rather intended to enable air traffic controllers to handle existing flight operations more safely. If the military proposes increased usage above historic levels, additional NEPA analysis would be required and the public would have an opportunity to review and comment on the usage levels at that time.

The objectives of the AFFTC, with respect to this project, include the following:

- Provide information for air traffic control separation and flight advisories to enable individual military and civilian aircraft to maintain a higher level of flying safety, especially in areas where low-level training routes converge to take tactical advantage of ground terrain;
- Provide communications between aircraft flying at low altitude and control agencies during aircraft emergencies for improved response time and precise location of a potential aircraft accident site;
- Provide enhanced command and control during search-and-rescue operations for downed aircrew, support any such emergency recovery action, and support wildfire suppression efforts in the Saline Valley area;
- Provide radar coverage down to 500 feet aboveground level (AGL) over at least 80% of the Saline Valley and 200 feet AGL at the pass (referred to as the “Gap”) that separates the Hunter Mountain Ridge and the Nelson Range; and
- Provide radar coverage, to the extent possible, in the north end of the Saline Valley that is currently shadowed by terrain.

### 1.3.2 Need for the Proposed Action

The R-2508 Complex Control Board, a tri-service board (Army, Navy, and Air Force) charged with the day-to-day management of the airspace, determined that radar is needed in the Saline Valley based on an analysis of aircraft crash and near-midair collision historical data. A summary of such documented incidents is summarized in Table 1-1. This analysis revealed a continuing history of aircraft near-midair collisions during low-level flight, especially in the area of the Gap.

<b>Date</b>	<b>Aircraft Type</b>	<b>Incident</b>	<b>Location</b>
1982	A-7 (Corsair II)	Crash	Near gap between Saline and Panamint Valley
1983	A-7 (Corsair II)	Crash	North of gap between Saline and Panamint Valley
1985	B-1 (Bomber) F-18 (Tomcat)	Near-midair collision	Near gap between Saline and Panamint Valley
1987	A-4 (Skyhawk)	Crash	West side of Saline Valley
1989	A-7 (Corsair II)	Crash	In Saline Valley floor
1997	F-18 (Hornet) NPS helicopter	Near-midair collision	Saline Valley
1999	AV-8 (Harrier)	Fatal crash	In Saline Valley floor
2001	Unidentified	Near-midair collision (No communications)	Near gap between Saline and Panamint Valley

Note: There have been numerous other reports (from the DOD flight safety offices) of near-midair collision incidents, however, they are not officially collected and recorded.

The flight route through the Saline and Panamint Valleys is a critical part of the integrated low-altitude flight test and training capability of the whole R-2508 complex. It is the only remaining terrain in the northeast portion of the R-2508 Complex that permits tactically realistic low-level training and flight test not overly constrained by some other ground use. This portion of the Complex not only contains unique terrain characteristics not found elsewhere in the area but also is a link in the complete low-level route environment available for low-level training and flight test.

Of particular concern for midair collision potential is the area of the Gap, described in Section 1.3.1, that is a transition route between these valleys. Flying through the area of the Gap allows aircrews to optimize the tactic of radar avoidance using natural terrain-masking techniques by avoiding flight at high points of the ridgeline. Aircraft converge in the Gap because they must fly in a tactically realistic manner to achieve the goals of training and flight testing of various navigation systems employing the important tactic of terrain masking in crossing a ridgeline in this area. The traffic conflicts that occur on a regular basis do so because of the current lack of radar coverage.

The R-2508 Complex Control Board also determined that additional radar coverage would provide ground-based air traffic controllers with accurate, real-time information concerning aircraft position and altitude when aircraft at low altitude experience an emergency which results in loss of the aircraft. In the past, lack of the ability to track aircraft on radar and communicate with them has not only delayed awareness of the accident but made location during search and rescue difficult and time consuming increasing the risk of loss of life for downed aircrew.

Finally, the Board determined availability of radar coverage in the Saline Valley area would provide critical command and control capabilities for any contingency requiring search and rescue operations. This capability would support any such activity whether it resulted from a military aircraft accident, a civilian aircraft emergency, or persons lost or disabled throughout the Saline Valley area. With continued use of the Saline Valley for recreation in the expanded areas of Death Valley National Park such a capability will become even more in demand in the future.

Although this radar would primarily support military missions and improve their flying safety, the proposed beacon radar facility would also support other government and civilian aviation operations. In a letter to the AFFTC Commander dated December 8, 1997, the Superintendent of the Death Valley National Park identified the critical need for improved flight safety in and around the Saline Valley. He identified and recommended "increased/improved radar coverage of Panamint Valley and Saline Valley" as his number one priority.

There are no current or known near-future programs planned for the R-2508 Complex that would increase DOD aircraft operations above historic levels in the Saline Valley area. While China Lake Naval Air Weapons Station (NAWS) is in the process of publishing a document, *Environmental Impact Statement for Proposed Military Operational Increases and Implementation of Associated Comprehensive Land Use and Integrated Natural Resources Management Plans*, the proposed changes in flight operations are focused on Armitage Airfield and the north and south weapons ranges within the restricted areas R-2505 and R-2524 managed by China Lake NAWS (NAWS and BLM 2002). Any change in the intensity of flight operations within the Saline Valley as a result of increased test and training activity under the China Lake NAWS proposal would be within historic fluctuations of activity levels in the Saline Valley.

The R-2508 Complex predominantly supports the DOD's research, development, testing, and evaluation of military aircraft. In addition, the R-2508 Complex supports readiness training, NASA programs, and the research and development of commercial aircraft. The installation of the proposed beacon radar facility meets an existing need for radar coverage within the Saline Valley for control of both civilian and military operations.

#### **1.4 Project Location**

The Saline Valley, located in Inyo County, California, is bordered on the north by the Saline Range, on the west by the Inyo Mountains, on the east by the Last Chance Range, and on the south by the Nelson Range. The Nelson Range separates the Saline Valley from the Panamint Valley, located further south. The Inyo Mountains separate the Saline Valley from the Owens Valley, located to the east. Vehicular access to the Saline Valley is limited to Saline Valley Road, which traverses the entire Saline Valley in a north-to-south orientation (Hunt 1975).

The location of the Saline Valley, in a regional context, is presented in Figure 1-1. The location of the R-2508 Complex is presented in Figure 1-2. The locations of the five alternative beacon radar sites and the microwave repeater sites are indicated in Figure 1-3. More detailed maps indicating the locations of the individual beacon radar sites and the microwave repeater sites are presented in Section 2, Figures 2-3, 2-5, 2-7, 2-9, 2-11, 2-13, 2-15, and 2-17.

The eastern two-thirds of the Saline Valley was incorporated into the Death Valley National Park in 1994 (the Park boundaries generally correspond to Saline Valley Road). However, the *1994 Desert Protection Act* that expanded the Park includes specific language to allow continuation of low-level military overflights, continuation of existing policies applicable to Special Use Airspace or flight training units, and the designation of new units of special airspace or new flight training routes in the expanded units of National Parks or National Wilderness created under the Act (U.S. Senate Bill [SB] 21). The proposed beacon radar sites are located in the Saline Valley in a nonwilderness corridor near Saline Valley Road. One microwave repeater site is located near Galena Peak, south of the Saline Valley in the Nelson Range. The other two sites are next to Saline Valley Road near Lead Canyon. All the repeater sites are in nonwilderness corridors along existing unpaved roads. The majority of the surrounding Saline Valley and the nearby mountains is located in wilderness or other protected areas under the jurisdiction of BLM or NPS.

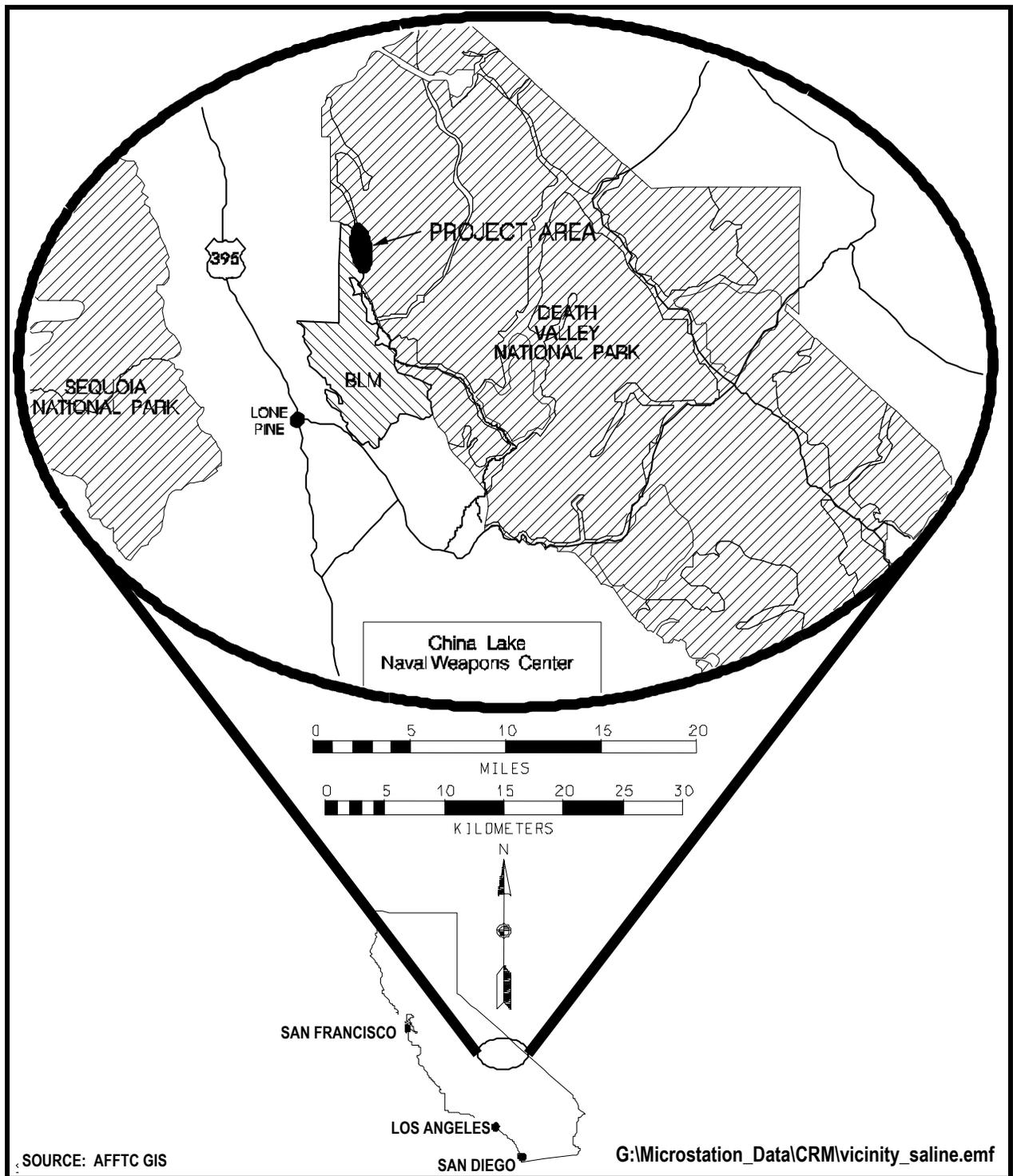
## 1.5 Issues and Concerns

### 1.5.1 Issues and Concerns Studied in Detail

This section discusses the environmental issues evaluated in this EA as well as the environmental issues initially evaluated but subsequently eliminated from further study. The issues studied in detail include the following:

- *Land Use/Socioeconomics*—Potential impact on the continued use of public, private, native, and recreational lands in the Saline Valley; and the safety-related enhancements to existing aircraft operations following installation of the proposed beacon radar.
- *Geology and Soils*—Seismic-related risk and soil erosion impacts associated with project implementation.
- *Water and Hydrology*—Impacts of the proposed project’s construction and subsequent operation on local hydrology (both surface water and groundwater) and potential for flooding.
- *Air Quality*—Proposed project’s short-term (construction-related) and long-term (operational) air quality impacts and the proposed action’s conformity to the *Federal Clean Air Act* (CAA).
- *Biological Resources*—Nature and extent of biological resources within and around the alternative sites, and the proposed project’s impacts on these resources.
- *Noise*—Potential noise impacts associated with the proposed project’s construction and subsequent operation.
- *Cultural Resources*—Potential to impact cultural resources during construction, and potential long-term impacts upon American Indian resources and/or values.
- *Traffic*—Potential traffic and infrastructure impacts associated with the project.
- *Aesthetics*—Proposed project’s potential impact on scenic values.

During the initial planning phases of the proposed action, the R-2508 Complex Engineering Office conducted a site suitability assessment (discussed in Section 2.4) that identified those locations where the impacts would be limited. This EA further analyzed the impacts of the proposed action on those alternative sites that were ultimately considered for further evaluation. The analysis determined that any of the proposed radar beacon sites would meet the mission objectives.



**Figure 1-1  
General Vicinity Map**

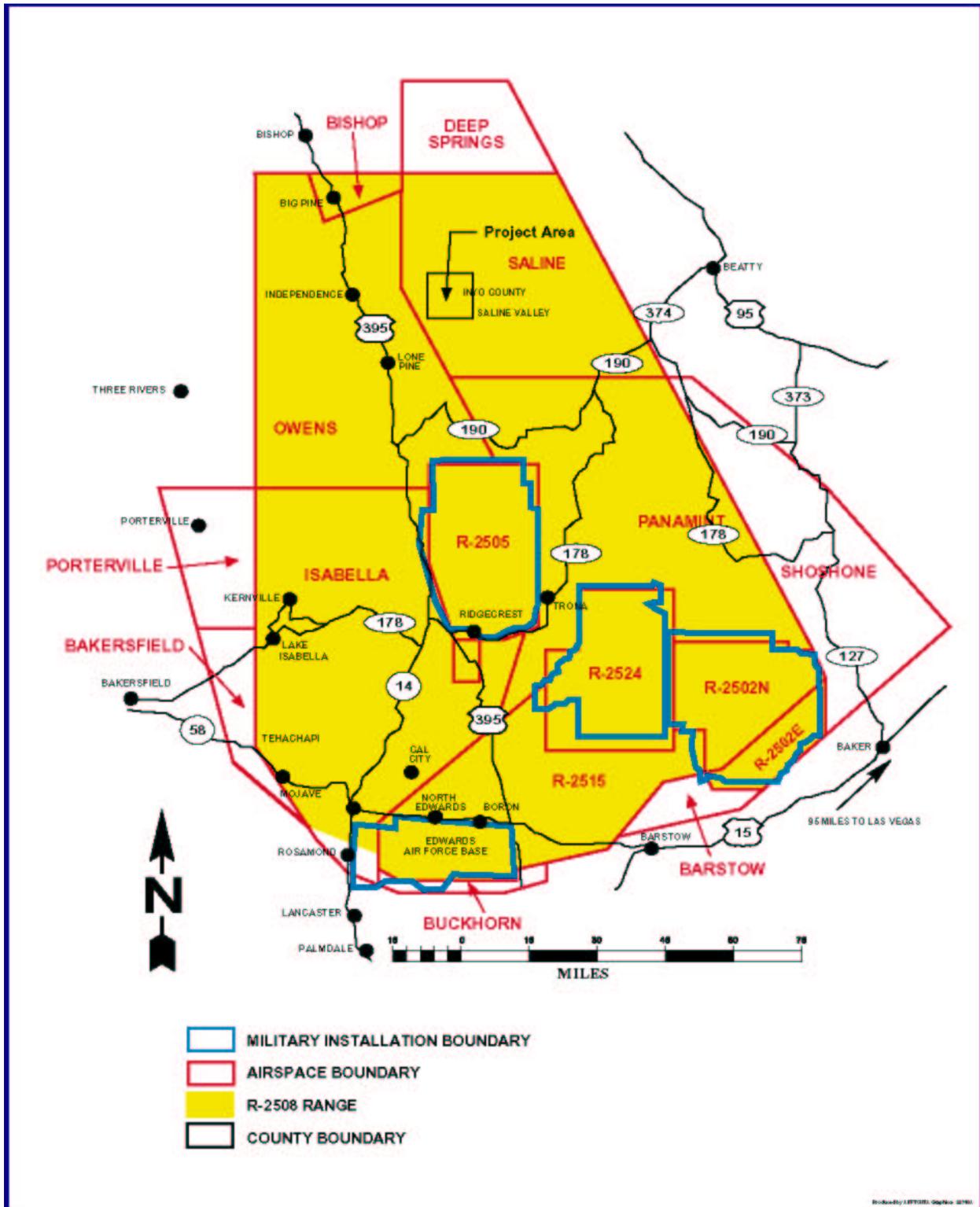
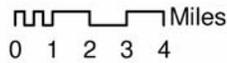
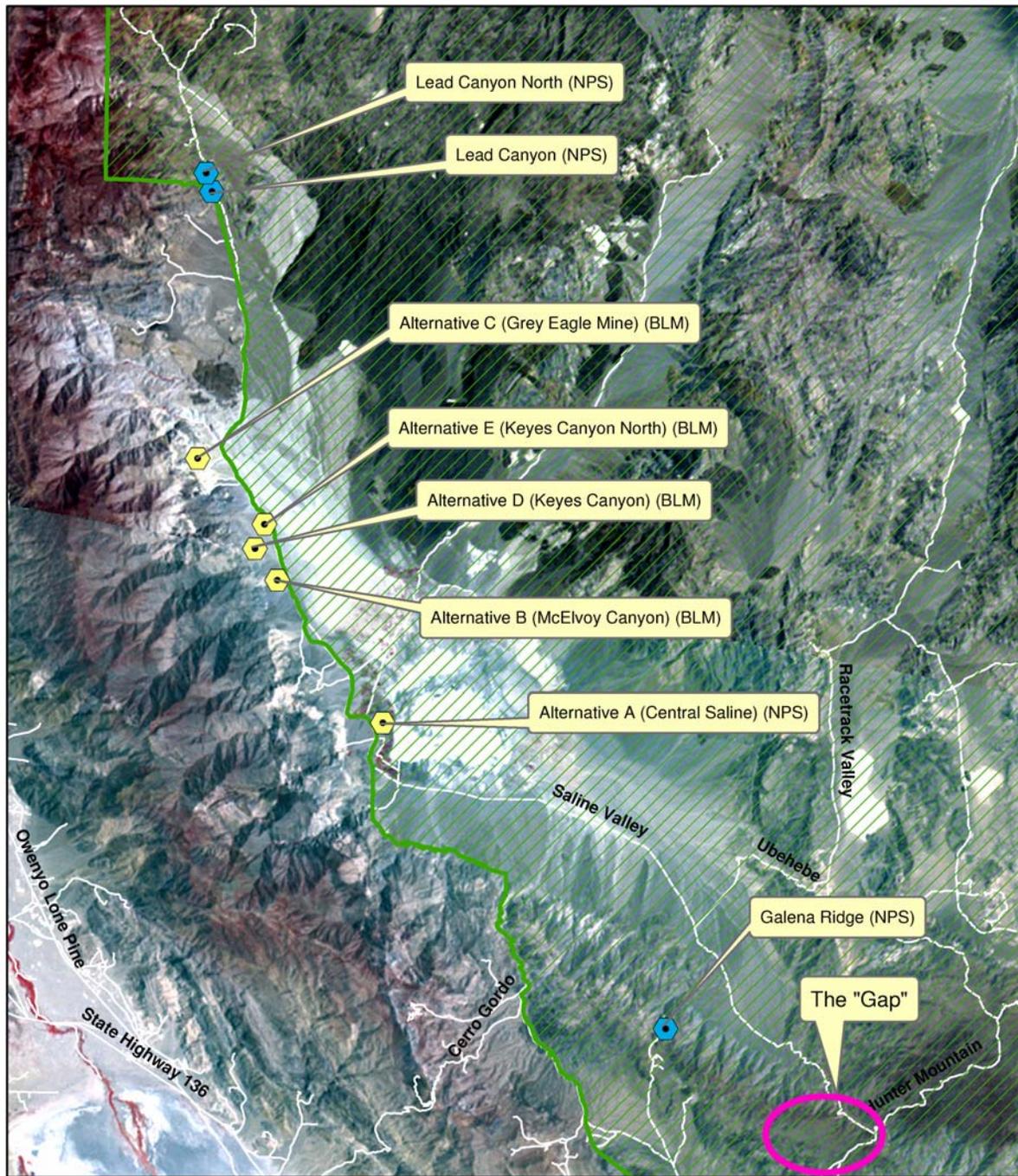


Figure 1-2  
Location of R-2508 Complex



- Legend**
- Site Type**
-  Radar
  -  Repeater
  -  Death Valley National Park

**Figure 1-3**  
**Location of Beacon Radar and Repeater Sites**

### 1.5.2 Issues and Concerns Eliminated from Detailed Study

The preliminary environmental analysis determined that the proposed project would *not* affect a number of issues. The issues that would not be adversely impacted by the proposed project include the following:

- *Growth-Inducing Effects*—The proposed beacon radar and microwave repeater facilities would not result in the addition of infrastructure (i.e., roads and utilities) or land use changes that would support additional population growth of any type such as commercial, residential, or industrial. There are no residential uses on or within the vicinity of the alternative sites considered in this analysis.
- *Infrastructure/Energy Resources*—The source of power for the project is proposed to consist of solar-powered generating equipment with a propane-powered generator that will provide back-up power. No utility lines would be extended into the Saline Valley, and, as a result, there would be no environmental impacts related to the extension of power lines.
- *Public/Emergency Services*—The facility would be unmanned (except for infrequent visits for equipment calibration and routine maintenance), and no demands on emergency services are anticipated. Security measures would be incorporated into the project’s design as a means to discourage intrusion and vandalism.
- *Occupational Safety and Health*—No potential occupational safety and health risks to the public associated with the facility’s long-term operation are anticipated because relatively low power would be generated by the proposed beacon radar facility. Low levels of nonionizing electromagnetic radiation (EMR) would be generated from radio frequency emitters, radar equipment, or radio communication equipment associated with the operation of the beacon radar (estimated to be an average of less than 1 watt with a 100-watt peak), communications or microwave repeater facilities. Unlike primary radar that routinely transmits over a million watts, beacon radar is considered a very low power system. The EMR emissions from this equipment are regulated in accordance with (IAW) Air Force Occupational Safety and Health (AFOSH) Standard 48-9, *Radio Frequency Radiation (RFR) Safety Program* and are estimated to be similar to a citizen band radio. Minimal short-term risks are associated with the installation of the beacon radar and microwave equipment. As with any construction project in the desert portions of southern California, personnel working outdoors may experience heat stress or hypothermia from exposure, or venomous snake or insect bites. First aid equipment, and personnel trained in first aid, will be onsite at all times.
- *Hazardous Materials and Waste*—The beacon radar facility would generate minimal quantities of routine hazardous wastes. The types of hazardous materials likely to be used during construction include acids, corrosives, caustics, glycols, compressed gases, paints and paint thinners, solvents, sealants, adhesives, cements, caulking, fire retardant, and hot asphalt (140°F or greater). Facility maintenance also requires the use of heating fuels, paints, aerosols, and fluorescent light bulbs, all of which are classified as hazardous materials. These materials would be handled and disposed of in a manner conforming to applicable regulations.
- *Environmental Justice*—Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires Federal agencies to identify and address disproportionately high adverse effects of its activities on minority and low-income populations. There are no known minority or low-income populations in the project area.

## 1.6 Regulatory Requirements, Permits, and Approvals

### 1.6.1 Regulatory Requirements

This EA was prepared pursuant to the *National Environmental Policy Act (NEPA) of 1969*. According to *NEPA*, an EA must be prepared for all projects undertaken by Federal agencies, unless they are categorically exempt or have been sufficiently analyzed by an earlier environmental document (Title 40, Code of Federal Regulations [CFR], Part 1501.3). This EA provides the basis for a finding by the Lead Agency that either (1) an Environmental Impact Statement (EIS) is required to address the project and its impacts, or (2) a Finding of No Significant Impact (FONSI) is warranted and no EIS is required. This document is intended to fulfill the requirements for compliance with 40 CFR 1500–1508 and Air Force Instruction (AFI) 32-7061, *The Environmental Impact Analysis Process*. This document has also been prepared to comply with relevant sections of FAA Order 1050.1D, *Policies and*

*Procedures for Considering Environmental Impacts*; NPS NEPA Director's Order 12, *Conservation Planning and Environmental Analysis and Decision-Making*; and BLM H-1790-1 – *National Environmental Policy Act Handbook*.

A FONSI is deemed appropriate in cases where either there are no significant adverse impacts associated with implementing the project, or the EA provides mitigation measures that avoid or reduce adverse impacts to levels considered not to be significant. In cases where sufficient mitigation of significant impacts cannot be identified without further assessment and/or when extensive public review is warranted due to the controversy or complexity of the project, an EIS may be warranted. The decision to prepare an EIS or a FONSI is based on criteria presented in the Council on Environmental Quality (CEQ) *Regulations for Implementing NEPA* (40 CFR 1502.4) and Department of Interior and the USAF guidelines for NEPA.

The specific requirements for all transportation-related projects that may be located on National Park Service land are found in the *Department of Transportation Act of 1966*. These requirements are listed in the following paragraph.

- *Department of Transportation Act of 1966*, now 49 USC 303—Section 4(f) of this Act establishes the policy of the United States Government that special effort be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites. The Secretary of Transportation may approve a transportation program or project requiring the use of publicly-owned land of a public park area, wildlife and waterfowl refuge, or land of an historic site of national, state, or local significance (as determined by the Federal, State, or local officials having jurisdiction of the park, recreation area, refuge, or site) only if:
  - There are no feasible and prudent alternatives to using that land, and
  - The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife, and waterfowl refuge, or historic site resulting from the use.

If the proposed radar site is on NPS managed land (Alternative A), or one of the NPS microwave sites is determined to be the only feasible and prudent alternative, a Section 4(f) determination would be addressed and made available for public review. This analysis would be done in close coordination with the NPS and FAA.

### 1.6.2 Permits and Approvals

The FAA (Western-Pacific Region and FAA Headquarters) will be coordinating closely with the Air Force on this project since they would be involved in the acquisition or leasing of the land required to accommodate the proposed project. The proposed project may require permits and/or other entitlements from the BLM, the NPS, and the Great Basin Unified Air Pollution Control District (GBUAPCD), depending on the site ultimately selected. Approval of the environmental documents, public notification and review, and other land use and development permits must be completed prior to the initiation of any activities. Approvals must be in place before construction begins. Environmental permitting requirements for all work would be coordinated through the AFFTC. However, as permitting requirements change, other permits may be required. The following permits are or may be required.

- *Land Use*—Use permits are required for those sites under the jurisdiction of the appropriate land management agency. The FAA makes the initial Section 4(f) determination and seeks the appropriate land management agency concurrence. The appropriate land management agency would need to make a “Determination of Nonimpairment” if the selected alternative is located within their jurisdiction.
- *Air Quality*—An air quality equipment operations permit for the propane-powered back-up generator is not required from the GBUAPCD in Inyo County for the size propane generator being proposed.
- *Construction*—A permit from the applicable trustee agency may be required for the installation of building support foundations and pylons. In addition, building, grading, and other permits would be required to facilitate the preparation of the development sites and to accommodate the installation of the proposed beacon radar and microwave repeater facilities.

- *Hydrological Resources*—A water quality certification/waiver from the appropriate California Regional Water Quality Control Board (CRWQCB), in compliance with Section 401 of the Federal *Clean Water Act* (CWA) (16 USC 1251 et. seq.), may be required. However, because the area is located in an enclosed basin that does not cross a State line, there is no CWA jurisdiction or permits required and this Act does not apply to the proposed project.

### 1.7 Related Environmental Documents and Governing Land Use Plans

A number of related environmental documents have been prepared and approved that address activities related to the proposed beacon radar facility. These documents contain information referred to and or used in the preparation of this EA. These documents include the following:

- *Environmental Impact Statement and California Desert Conservation Area Plan Amendments for the Northern and Eastern Mojave Planning Area* (BLM 2002).
- *Timbisha Shoshone Homeland Final Legislative Environmental Impact Statement* (NPS 2001b).
- *Timbisha Shoshone Homeland Act* (Public Law [PL] 106-423 [November 2000], 16 USC 410aaa-75).
- *Death Valley National Park Revised Final Environmental Impact Statement and General Management Plan* (NPS 2001a).
- *California Desert Conservation Area Management Plan, as amended 1980* (BLM 1999).
- *Inyo County General Plan* (February 2001).

A number of other references were consulted during the preparation of this EA. These sources are listed in Section 8.0.

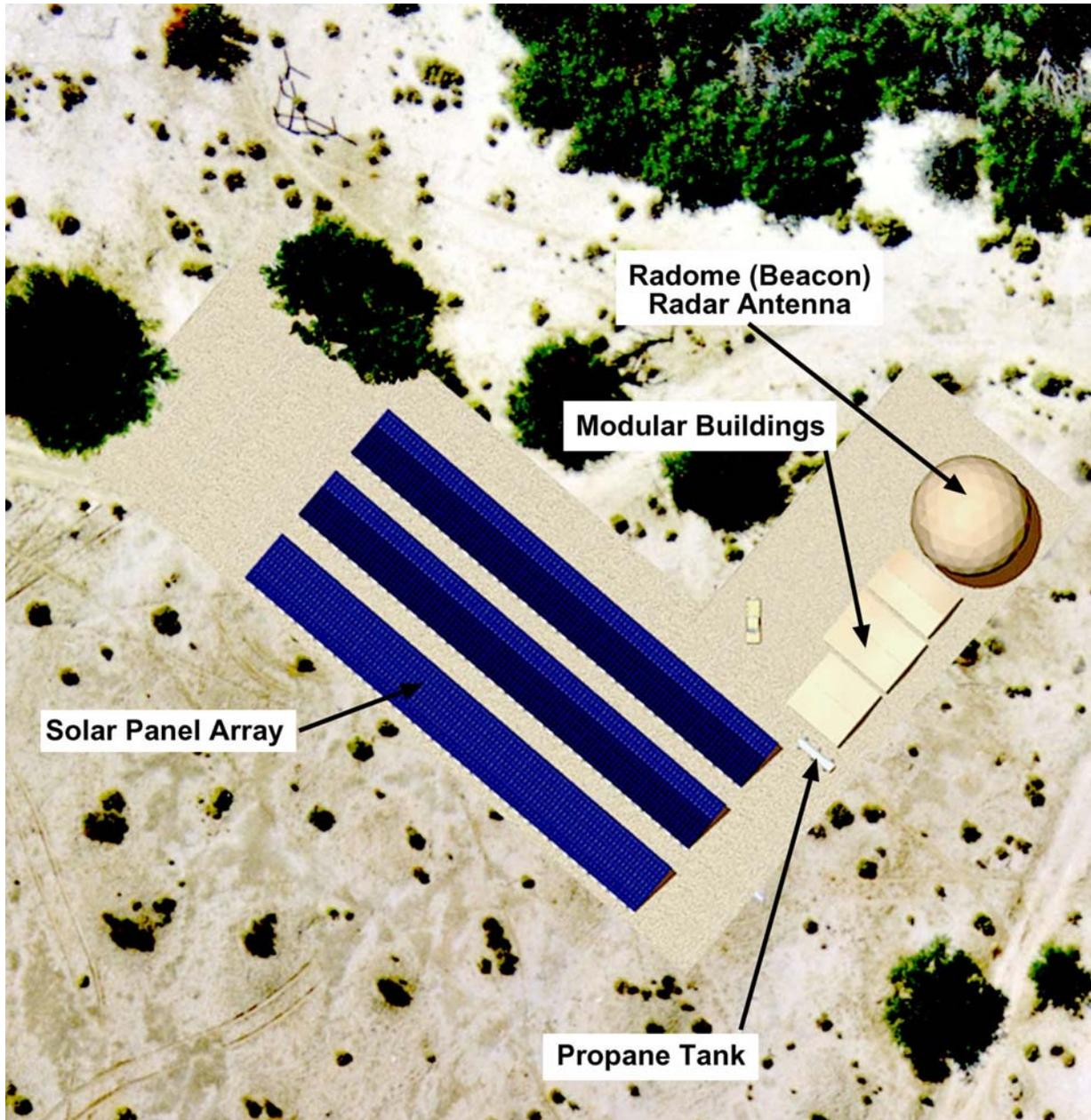
## 2.0 DESCRIPTION OF PROPOSED ACTION

### 2.1 Project Characteristics

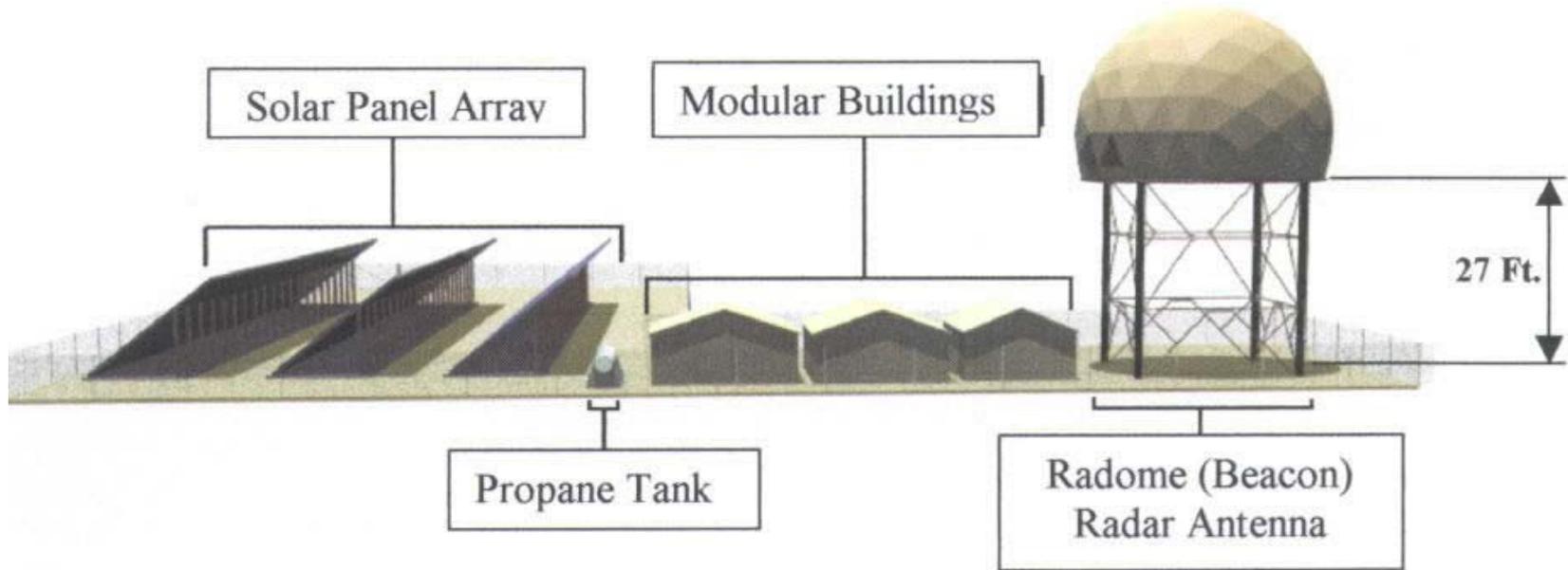
#### 2.1.1 Beacon Radar Facility Characteristics

This section describes the improvements associated with installation of the proposed beacon radar facility. With the exception of the No Action alternative (Alternative F), all of the activities and or improvements described in this section would be required for the site alternatives (Alternatives A through E) considered in this EA. The primary elements of the beacon radar facility include the following:

- The 35,000-square foot (or smaller, if feasible) site would undergo finished grading, and a gravel surface treatment is proposed. An additional 16,000 square feet is expected to be required for the staging of construction equipment. Concrete footings, slabs, and or pylons for the aboveground improvements would be poured and finished. Preliminary analysis indicates that an area of up to 9,000 square feet would be required to accommodate the solar panels. Conceptual site plans for the beacon radar are presented in Figures 2-1 and 2-2.
- Under the proposed design, the site footprint (35,000 square feet) would include three buildings, radar antenna tower, communications antenna tower, propane tank, and the 9,000-square foot solar panel field. Structures will be designed to meet the requirements of Seismic Zone 4.
- A 16- by 24-foot modular, prefabricated metal structure housing the radar, communications, and microwave components would be installed at the site (Figure 2-1). Communications equipment will include provisions to support both DOD and NPS requirements. A portable chemical toilet facility, attached to this building, would be required.
- A second, 180-square foot modular building would be needed for the planned 75-kilowatt (kW) propane-powered standby power plant generator.
- A third modular building with an estimated floor area of 500 square foot would be required to house the storage batteries and solar control equipment.
- An electric transformer would be needed on a pad located within the site. All power connections onsite would be placed underground. No offsite utilities, extensions, or connections are required.
- A 1,000-gallon aboveground propane fuel tank with service line connections to the auxiliary generators would be required.
- The beacon radar antenna tower (Figures 2-1 and 2-2), with a footprint of 24 feet on a side, would be assembled onsite near the electronics building. The antenna tower would have a maximum height of 50 feet to the top of the antenna or radome. Obstruction clearance lighting for the antenna tower would not be required.
- A pole-mounted communication antenna tower of approximately 10 feet high would be required.
- An 8-foot chain-link perimeter fence with intrusion monitors is proposed. Security monitors connected to a monitoring station may also be provided. Facility exterior lighting would consist of motion-activated lighting for security or required lighting during maintenance activities. The security system would be designed to correspond to a “three-level disturbance,” virtually eliminating false alarms caused by windblown objects and small animals.
- The 9,000-square foot nonreflective matte-black solar collector array is proposed to be located on site. A typical set of collector modules would be oriented in an east-west row approximately 130 feet long, 15 feet wide (horizontal), and tilted 36 degrees from the horizon, facing south with a maximum height of 15 feet. The collector rows would be located approximately 12 feet apart to prevent the creation of shadows on the adjacent collectors (Figures 2-1 and 2-2).
- Conventional air conditioning units would provide building cooling.
- The proposed structures and other improvements must be elevated, leveled, and graded in a manner that permits stormwater runoff to be conveyed offsite. A buffer area, sloped away from the site, would be



**Figure 2-1  
Conceptual Site Plan – Beacon Radar**



**Figure 2-2**  
**Conceptual Elevation – Beacon Radar**

required. Pylons (the concrete structure supporting the radar tower and solar array) and foundations would be used to elevate the proposed improvements.

- The site's soils must undergo a limited level of compaction to permit the installation of improvements, footings for the antenna tower, parking area, and the driveway. Compaction and import of fill material would be minimized by the use of antenna pylons. For a typical site, approximately 80 cubic yards of earth would be removed as part of the excavation required for the foundations and support pylons. This material would be spread over the site. In addition, approximately 330 cubic yards of aggregate would be needed to cover and elevate the site. Limited quantities of earth/aggregate may be required for the access routes.
- Limited, remote automatic weather equipment, which would measure wind, rainfall, barometric pressure, and temperature, would be included.
- Automated fire suppression systems would be installed where appropriate.
- The topography in the buffer area may require limited modification to facilitate drainage away from the site.
- The proposed facility, while unmanned, would be operational during daylight hours.
- The site characteristics discussed in this section may be configured to lessen potential impacts.

Access from some sites (Alternatives A, C, and D) to the main Saline Valley Road would be over existing unimproved routes. Sites without existing access roads would require minimal grading at contour to provide access for construction and maintenance. The access roadway must have sufficient width to accommodate construction and transport equipment. Access to Alternatives B and E would require an access route from Saline Valley Road across a narrow strip of NPS-managed land. The aggregate needed for site improvements would be taken from agency-approved borrow sources in the Saline Valley.

The final system is expected to consist of a single radar beacon site with associated communications equipment and a single microwave repeater site. Communications equipment will include provisions to support both DOD and NPS requirements. Explanatory plaques, similar to those that explain roadside historical sites, will be installed near the gate entrance to the beacon and repeater facilities. Information on the plaques will include the purpose of the facilities. Key elements of the proposed microwave repeater for either Galena Ridge or Lead Canyon are discussed in Section 2.3.4.

### **2.1.2 Microwave Repeater Characteristics**

The microwave repeater facility would consist of one 20- to 40-foot-high, steel tower with a triangular base (approximately 6 feet on one side) to support the microwave antennas, electronics equipment, storage battery, and one 10-square foot solar panel. The repeater would be situated within a 12- by 12-foot plot. An 8-foot-high perimeter fence with an entry gate would surround the tower. Security lighting would be designed so that it is activated only after a multilevel disturbance has occurred, eliminating nuisance alarms. The tower, fences, and equipment shelter would use color and texture schemes designed to blend into the local surroundings.

The microwave repeater would communicate with a microwave terminal located at an existing FAA communications site on Keeler Peak. The Keeler Peak site would need to be upgraded to include an additional microwave antenna dish, 6 feet in diameter, on an existing tower and microwave radio equipment. No facility expansion is planned.

## **2.2 Criteria Considered**

### **2.2.1 Operational Criteria**

All five beacon radar facility alternatives (Alternatives A through E) meet the applicable air traffic control (civilian and military) operational criteria that are similar to other R-2508 Complex radar systems. A number of candidate beacon radar sites considered early in the project's planning phase were eliminated from further consideration because they failed to meet the key operational requirements in the following list.

- The beacon radar facility must provide a direct “line-of-sight” for the radar coverage over 80% of the Saline Valley at altitudes of 500 feet AGL. The minimum coverage is consistent with the measured coverage of similar R-2508 Complex radar systems sited in other desert valleys.
- The beacon radar facility must provide radar coverage in the Gap area (the Gap separates the Hunter Mountain Ridge and the Nelson Range located in the southeastern portion of the Saline Valley) at altitudes of 200 feet AGL. The Gap historically is a high-risk area for near-midair collisions.
- All five beacon radar alternatives would require the use of a microwave repeater to maintain a direct line-of-sight for data transmission between the FAA complex located on Keeler Peak and the proposed beacon radar facility located on the Saline Valley floor. Keeler Peak is the only developed peak in the vicinity that has line-of-sight capabilities to the Saline Valley.
- The beacon radar site must be able to communicate with FAA’s Keeler Peak microwave communication facility with not more than one repeater station.

### 2.2.2 Selection Criteria

The selection criteria were based on avoidance of impacts to regulatory requirements, visual and recreational resources, biological resources, air resources, solid and hazardous materials and waste, physical resources, and socioeconomic resources.

#### 2.2.2.1 Regulatory Requirements

Any aspect of the proposed action that would threaten to violate Federal, State, or local law or requirements imposed for the protection of the environment.

#### 2.2.2.2 Visual and Recreational Resources

Any aspect of the proposed action that would:

- Significantly distract from the visual and recreational quality of the scenery.
- Significantly distract from the overall recreational experience.
- Result in the installation of new equipment inside the Park.
- Duplicate existing radar and communications capabilities.
- Conflict with the basic elements of form, line, color, and texture.

#### 2.2.2.3 Biological Resources

Any aspect of the proposed action that would:

- Substantially conflict with special natural communities by reducing a wildlife population below self-sustaining levels.
- Cause direct or indirect impacts on individuals or populations of wildlife species listed or proposed for listing as threatened or endangered under Federal or State Endangered Species Act.

#### 2.2.2.4 Air Resources

Any aspect of the proposed action that would:

- Violate any ambient air quality standard or contribute substantially to an existing or projected air quality violation, or exposure.
- Expose sensitive receptors to substantial pollution concentrations.
- Conflict with the *Federal Clean Air Act* (CAA), as amended, or other Federal, State, or local air quality plans or requirements.
- Conflict with the California State Implementation Plan.

### 2.2.2.5 Solid and Hazardous Materials and Wastes

Any aspect of the proposed action that would substantially:

- Increase the use of hazardous materials above local or regional historic levels.
- Increase the use, production, disposal of solid and hazardous wastes, or hazardous materials that pose a hazard to people, wildlife, or plant populations in the area affected.
- Increase the generation of hazardous substances that will require disposal at local or regional facilities.

### 2.2.2.6. Physical Resources

Any aspect of the proposed action that would substantially:

- Degrade a unique geologic feature.
- Decrease soil permeability; increase surface water runoff, and wind or water-induced soil erosion above historic levels.
- Cause an increase in landscape instability or landslides through topographical or slope alterations.
- Increase public exposure to danger from seismic activity.
- Create noise levels incompatible with existing or proposed land use.

### 2.2.2.7 Socioeconomic Resources

Any aspect of the proposed action that would substantially:

- Create a need for additions to law enforcement, fire protection, and medical emergency medical services, staff, or equipment to maintain acceptable service rates.
- Require additional capacity or resources to provide services or utilities to the proposed project.
- Generate traffic that would require expansion of existing roadways.

## 2.3 Alternatives Selection Process

The initial review of the Saline Valley area was a two-step process that considered a total of 22 candidate sites identified for the proposed beacon radar facility. Five of these sites emerged as being the most suitable candidates as a result of field site surveys and computer modeling of radar coverage. The five alternative beacon radar sites are Alternative A (the Central Saline site), Alternative B (the McElvoy Canyon site) Alternative C (the Grey Eagle Mine site), Alternative D (the Keyes Canyon site), and Alternative E (the Keyes Canyon North site). The names of the five sites reflect significant geographical features located in the vicinity of each site. All of the beacon radar alternative sites are located within nonwilderness areas. Prior to the selection of the five beacon radar alternatives that were evaluated in this EA, seven other high-elevation sites located along the south and west rim of the Saline Valley, within nonwilderness areas, were eliminated from further consideration because of unacceptable radar coverage.

Beacon radar at any of the five alternative sites would require the use of a microwave repeater to provide data transmission between the beacon radar alternative site ultimately selected and the Keeler Peak FAA complex. Keeler Peak is an existing FAA communications complex that would require only a minor upgrading of communications equipment to support the Saline Valley radar and communication requirements. Impacts associated with the installation of the microwave repeater were considered for each of the five beacon radar alternatives. The proposed repeater sites are also located outside of designated wilderness areas. The two northern repeater sites, located approximately one mile south southeast of the Waucoba Mine, are in nonwilderness areas immediately adjacent to Saline Valley Road. The Galena Ridge repeater site is in Death Valley National Park, surrounded by the Nelson Range Wilderness but sited on nonwilderness lands in the cherry-stemmed road area.

### 2.3.1 Operational Alternatives Initially Considered but Eliminated

A number of operational alternatives, other than providing radar in the Saline Valley area, were evaluated for the proposed project. One alternative was to revise DOD operational procedures to change the Saline Valley flight area from “shared use” to “exclusive use,” where one aircraft mission (with supporting aircraft) is permitted to operate at a time, instead of the existing shared-use environment that allows multiple aircraft to operate simultaneously. A second alternative initially considered would have required that the control agency segregate flights by time and altitude, a procedure used before radar was available across the country. Implementation of either of these alternatives would severely reduce the number of civilian and DOD missions within the Saline Valley airspace. It would further restrict both military research and development, and readiness training operations in the R-2508 Complex. In addition, other entities that manage land under the airspace have a requirement for unrestricted access to carry out their responsibilities for surveillance, rescue, and fire suppression operations. Such access would be limited under these alternatives.

Other alternatives, such as the use of tactical military systems, unmanned air vehicles designed for aircraft command and control, or high frequency airborne radar, were considered and dismissed. An FAA-certified Air Traffic Control (ATC) beacon radar was selected because it meets all International Civil Aviation Organization (ICAO) and FAA standards (FAA Order 1010.51A and ICAO Annex 10) for ATC services. Also, alternatives such as using military continuous airborne radar surveillance (AWACS) would not be feasible since these aircraft would not be available to meet the time requirements of the project and could not be FAA-certified. The use of aircraft global position system (GPS) oriented satellite systems was not pursued because the FAA has not implemented the ground-based components of a GPS-based Air Traffic Control System. As of this writing, aircraft are not required to have the airborne portion of the system installed.

An alternative that was initially considered involved the use of a mobile radar beacon system to avoid the need for the installation of the more permanent structures anticipated under the proposed action. However, since continuous radar coverage over the Saline Valley is required during daylight hours throughout the year, a mobile radar installation would become, in effect, a permanent installation. The major components required for a permanent facility are also needed for a mobile unit. To meet FAA certification standards, the antenna tower and structure must be rigid, ruling out a portable tactical beacon radar antenna. There is also the concern that from a long-term maintenance standpoint, the limited space available in a mobile beacon radar system would not be acceptable to FAA. The installation of a mobile unit to support a specific mission was determined to not be feasible because of the remoteness of the Saline Valley area and the attendant travel distance, time required for installation, and high probability of induced failures caused by transport over unimproved routes.

Adding beacon radar in the Saline Valley is the least intrusive alternative that would provide the required levels of flight safety without impacting the capability of DOD and civilian organizations to operate in the R-2508 Complex. Furthermore, the ability to conduct timely search and rescue operations is influenced by the availability of radar data that provides precise aircraft positions. In 1999, a Marine Corps jet aircraft crashed in the Saline Valley area. Because of the lack of radar data, the search area initially included most of the Saline Valley, resulting in time delays to locate the downed airman. With radar coverage, the search could have been pinpointed to a football-field-sized area, expediting aircrew member rescue. Safety is the number one priority in the R-2508 Complex, and the installation of a beacon radar system would greatly increase aircraft rescue and recovery operations in the Saline Valley area.

### 2.3.2 Higher Elevation Alternatives Initially Considered but Eliminated

R-2508 Complex engineers investigated seven sites, located in the mountains along the western and southern rims of the Saline Valley, as potential sites for the proposed beacon radar facility. The preliminary evaluation included a computerized analysis of potential radar coverage associated with the seven site alternatives, followed by onsite visits. All seven sites were eliminated from further consideration based on site visits and more detailed study because they had limited radar coverage.

Of the seven sites, a site near Galena Peak had the best radar coverage. However, computer modeling for this site indicated as little as 50% coverage over the Saline Valley floor. The estimated percentage reduction in coverage is based on software models and is considered optimistic compared to expected results. This limited radar coverage

is primarily due to shadowing from intermediate ridges that block radar signals from the western portion of the Saline Valley. The site near Galena Peak does not provide low-level radar coverage over the gap that separates the Panamint and Saline Valleys because of high terrain to the south and southeast.

### 2.3.3 Saline Valley Floor Alternative Beacon Radar Sites Initially Considered but Eliminated

To identify the most suitable locations for the proposed beacon radar facility within the Saline Valley floor, the entire Saline Valley was mapped using Geographic Information System (GIS) techniques. The Inyo Mountains to the west, the Saline Range to the north, the Last Chance Range to the east, and the Panamint Valley to the south generally bound the survey area. A variety of environmental variables, or attributes, were analyzed. These attributes were considered and may limit the feasibility of locating the beacon radar facility within a particular site.

This site suitability analysis considered the following attributes:

- *Floodplains and Wetlands*—These areas corresponded to those locations within and around the Salt Lake. The Salt Lake itself is a semipermanent body of water identified as a development constraint. In addition, those areas around the Salt Lake that may be subject to periodic inundation and flooding were noted. There are no jurisdictional wetlands. None of the sites are located in a floodplain (Appendix A).
- *Intermittent Streams/Hydrology*—The Saline Valley serves as a drainage basin for the surrounding Nelson Range, Inyo Mountains, Saline Range, and the Last Chance Range. Numerous intermittent streams and channels were identified as development constraints because of their potential for flooding. All of the candidate beacon radar and repeater sites are located outside of the existing intermittent streams delineated by the United States Geological Survey (AFFTC/EM 2002a).
- *Other Hydrologic Features*—The springs and wells found within the Saline Valley were also identified as part of the land use suitability analysis. While these features may not necessarily represent a constraint to site development, they are important considerations because of their potential sensitivity (in regard to cultural resources, wildlife, and aesthetics). The beacon radar Alternatives A, D, and E are located near springs or wells.
- *Vegetation Areas*—The Saline Valley floor itself largely consists of a large playa and areas with extensive alluvial scatter associated with the erosion of the surrounding mountains. The dominant vegetation community within the Saline Valley is creosote bush scrub. However, there are concentrations of vegetation, including hydrophytic plant species in areas located in the vicinity of the Salt Lake.
- *Physiographic Constraints*—The Saline Valley is typical of the Basin and Range Physiographic Province. This consists of Horst and Graben features reflecting seismic faulting with uplifts and depressions. The variables considered in the land use suitability analysis included topography, faults, bajadas, alluvial fans, and dune features.
- *Cultural/Man-Made Features*—Man-made features were considered, such as the Salt Lake Tramway, other cultural resources, and a number of mines located on the west-facing slope of the Nelson Range, and the east-facing slope of the Inyo Mountains. Portions of the larger planning area were considered for inclusion into the Timbisha Shoshone Homeland, and efforts were made to avoid those locales that are being considered for inclusion into the Homeland. One of the preliminary sites was eliminated on this basis. Finally, the unimproved routes located in the Saline Valley that would facilitate site access were also identified.
- *Recreation Resources* – This attribute considers the type of recreation use compatible with NPS and BLM guidelines for the proposed project area.
- *Visual Resources*—This attribute considers a site’s visibility to the public from the Saline Valley Road.
- *Radar Coverage*—This attribute considers a site’s ability to meet the requisite ATC and mission control criteria for radar coverage within the Saline Valley area.
- *Solar*—This attribute considers a site’s exposure to the sun throughout the year. This is an important factor when considering the facility’s use of solar energy as the primary power source for the facility.
- *Construction/Access*—This attribute considers site accessibility with two- or four-wheel drive vehicles, specifically for long-term maintenance activities.

This site suitability analysis considered a total of 22 sites concentrated within nine areas. These concentrations were referred to as Clusters A through I. Each cluster held one to five sites. Four key attributes were considered in the suitability analysis of the 22 sites: radar coverage, visibility from Saline Valley Road, solar exposure characteristics, and construction/access. The four key attributes are summarized in Table 2-1.

Five candidate beacon radar sites were selected for more detailed evaluation. These correspond to the five “action” alternatives analyzed in this EA. These are listed as Grey Eagle Mine Alternative; Keyes Canyon Alternative, McElvoy Canyon Alternative; Keyes Canyon North Alternative, and Central Saline Alternative.

## 2.4 Overview of Beacon Radar Facility Alternatives

This section describes project alternatives pursuant to NEPA requirements. Five sites emerged as the best candidates for the proposed beacon radar facility. The five beacon radar sites and three microwave repeater locations ultimately selected for consideration are the focus of this EA. Each beacon radar alternative would require the installation of one repeater. Photo simulations of a beacon radar facility or microwave repeater at the proposed sites are presented in Figures 2-4, 2-6, 2-8, 2-10, 2-12, 2-14, and 2-16. Figure 2-18 is a photograph of a mock-up temporarily constructed on the Galena Ridge site.

All of the alternative beacon radar sites under BLM management are subject to the *California Desert Conservation Area (CDCA) Management Plan*. This Plan provides for the classification of lands based on the sensitivity of resources and kinds of uses. Each classification describes a different type or level of use that is permitted. This proposed action will occur in an area designated as Class “L” (Limited Use) under the CDCA Plan. A Class “L” designation in the CDCA Plan mandates that the land affected by the proposed action be managed in a way to protect “sensitive, natural, scenic, ecological, and cultural resource values.” The management of these lands is to provide for low-intensity, carefully controlled multiple use of the resources, while ensuring that sensitive values are not significantly diminished.

Several of the proposed sites are located near or immediately adjacent to wilderness areas established by the California Desert Protection Act established by Congress in July 1994. According to this act, viewshed is not a strong enough issue to place any visual buffer zones around wilderness areas, let alone nonwilderness NPS areas. The following is the statement regarding buffer zones around wilderness.

BUFFER ZONES, Section 105. The Congress does not intend for the designation of wilderness areas in section 102 of this Act to lead to the creation of protective perimeters or buffer zones around any such wilderness area. The fact that nonwilderness activities or uses can be seen or heard from areas within a wilderness shall not, of itself, preclude such activities or uses up to the boundary of the wilderness area.

The following list presents the alternatives being considered.

- *Alternative A (Central Saline)*—The beacon radar site is located north of the Salt Lake, 1.3 miles east of Saline Valley Road.
- *Alternative B (McElvoy Canyon)*—The site is located immediately west of Saline Valley Road, on an alluvial fan at the mouth of the McElvoy Canyon.
- *Alternative C (Grey Eagle Mine)*—This site is located west of Saline Valley Road. The existing Grey Eagle Mine is located southwest of the site.
- *Alternative D (Keyes Canyon)*—This site is located west of Saline Valley Road and east of Pat Keyes Canyon, approximately one-quarter mile northeast of Badwater Springs.
- *Alternative E (Keyes Canyon North)*—This site is located west of Saline Valley Road and east of Pat Keyes Canyon, approximately 0.8 mile north of Badwater Springs.
- *Alternative F (No Action Alternative)*—Generally, for construction projects, the environmentally preferred alternative is no action. “This means the alternative that causes the least damage to the biological and physical environment” (NPS Director’s Order No. 12, 2001).

Table 2-1. Beacon Radar Site Suitability Matrix					
Cluster/Site	Radar Coverage	Construction/Access	Solar Exposure	Visibility from Road	Overview of Constraints
<b>Cluster A – Willow Creek Camp Site Cluster</b>					
Site A-1	Moderate	Moderate	Poor	Poor	Shading of solar panels
Site A-2	Moderate	Moderate	Poor	Poor	Shading of solar panels
Site A-3	Moderate	Good	Moderate	Moderate	Grey Eagle Mine Alternative Radar Coverage – 80%; Solar Loss – 7.84%
<b>Cluster B – Pat Keyes Canyon Cluster</b>					
Site B-1	Moderate	Good	Moderate	Moderate	Keyes Canyon Alternative Radar Coverage – 80%; Solar Loss – 5.45%
Site B-2	Moderate	Moderate	Moderate	Poor	McElvoy Canyon Alternative Radar Coverage – 85%; Solar Loss – 4.95%
Site B-3	Moderate	Moderate	Moderate	Poor	Keyes Canyon North Alternative Radar Coverage – 80%; Solar Loss – 5.08%
<b>Cluster C – Beveridge Canyon Site Cluster</b>					
Site C-1	Good	Moderate	Moderate	Moderate	Limited access
Site C-2	Good	Moderate	Moderate	Moderate	Limited access
<b>Cluster D – Central Saline Valley Cluster</b>					
Site D-1	Good	Poor	Good	Moderate	
Site D-2	Good	Poor	Good	Good	Central Saline Alternative Radar Coverage – 95%; Solar Loss 2.30%
Site D-3	Good	Poor	Good	Moderate	
<b>Cluster E – Salt Lake Cluster</b>					
Site E-1	Good	Moderate	Good	Poor	
Site E-2	Good	Good	Good	Poor	
Site E-3	Good	Moderate	Good	Poor	
<b>Cluster F – Waucoba Wash Site Cluster</b>					
Site F-1	Good	Moderate	Good	Good	
Sites F2 – F4	Good	Poor	Good	Good	Access constraints
<b>Cluster G – Palm Spring Site Cluster</b>					
Site G-1	Moderate	Good	Good	Good	Limited radar coverage
<b>Cluster H – East Saline Valley Road Cluster</b>					
Site H-1	Poor	Poor	Good	Good	Site does not meet ATC radar coverage criteria
Site H-2	Poor	Poor	Good	Good	Site does not meet ATC radar coverage criteria
<b>Cluster I – Lippencott Mine Cluster</b>					
Site I-1	Poor	Poor	Good	Good	Site does not meet ATC radar coverage criteria

- Notes: 1. Rankings for **Radar Coverage** include the following: **Good**: >85%, **Moderate**: >75% though <85%, and **Poor**: <75%.
2. Rankings for **Construction/Access** include the following: **Good**: within 1/16 mile of an access road and stable surface (sandy) and subsurface (liquefaction) soil conditions. Low potential for flooding. **Moderate**: 1/16 to 0.5 mile from an access road and stable surface and subsurface soil conditions. Moderate potential for flooding. **Poor**: more than 0.5 mile from an access road and potential for unstable surface and subsurface soil. Highest potential for flooding.
3. Rankings for **Solar Exposure** loss include the following: **Good**: <5%, **Moderate**: >5% though <10%, and **Poor**: >10%.
4. Rankings for **Visibility from Road** include the following: **Good**: the site is generally concealed from the view of the public along the Saline Valley Road; **Moderate**: the site exhibits limited visibility from the Saline Valley Road; and **Poor**: the site is highly visible from the Saline Valley Road.

#### 2.4.1 Alternative A (Central Saline)

This site is located north of the Salt Lake near the center of the Saline Valley. The site is approximately 1.25 miles east of Saline Valley Road, and is south of, and adjacent to, an unimproved dirt route. The Central Saline site is approximately 500 feet south of an artesian well, with associated stands of tamarisk, mesquite, and cottonwood trees. The site is disturbed (fences, roadways, and refuse heaps) and is generally devoid of vegetation. The elevation is 1,118 feet above mean sea level (AMSL) and its geographic coordinates are latitude 36° 44.508' N, longitude 117° 49.392' W. The site offers the most potential for solar exposure. This site is located in a nonwilderness area within the boundaries of the Death Valley National Park. A wilderness and concealment area is located immediately north of the site, though it is separated from the site by a fence. No activities related to the project would extend or encroach into this wilderness area. The site location is presented in Figure 2-3. A photo simulation of a beacon radar facility is presented in Figure 2-4.

#### 2.4.2 Alternative B (McElvoy Canyon)

This site is located at the base of an alluvial fan situated along the east-facing slope of the Inyo Mountain range, approximately 600 west of Saline Valley Road. An unimproved dirt route would need to be provided to access the Saline Valley Road. Major topographic features in the vicinity include McElvoy Canyon, located approximately 0.5 mile to the west of the site. The elevation is 1,315 feet AMSL, and its geographic coordinates are latitude 36° 46 32.9' N, longitude 117° 53 03.8' W. The site location, in close proximity to the Inyo Mountain Range, would reduce solar exposure times, especially during winter months. This site is located on land under the jurisdiction of the BLM and is on nonwilderness lands. The site location is presented in Figure 2-5. A photo simulation of a beacon radar facility is presented in Figure 2-6.

#### 2.4.3 Alternative C (Grey Eagle Mine)

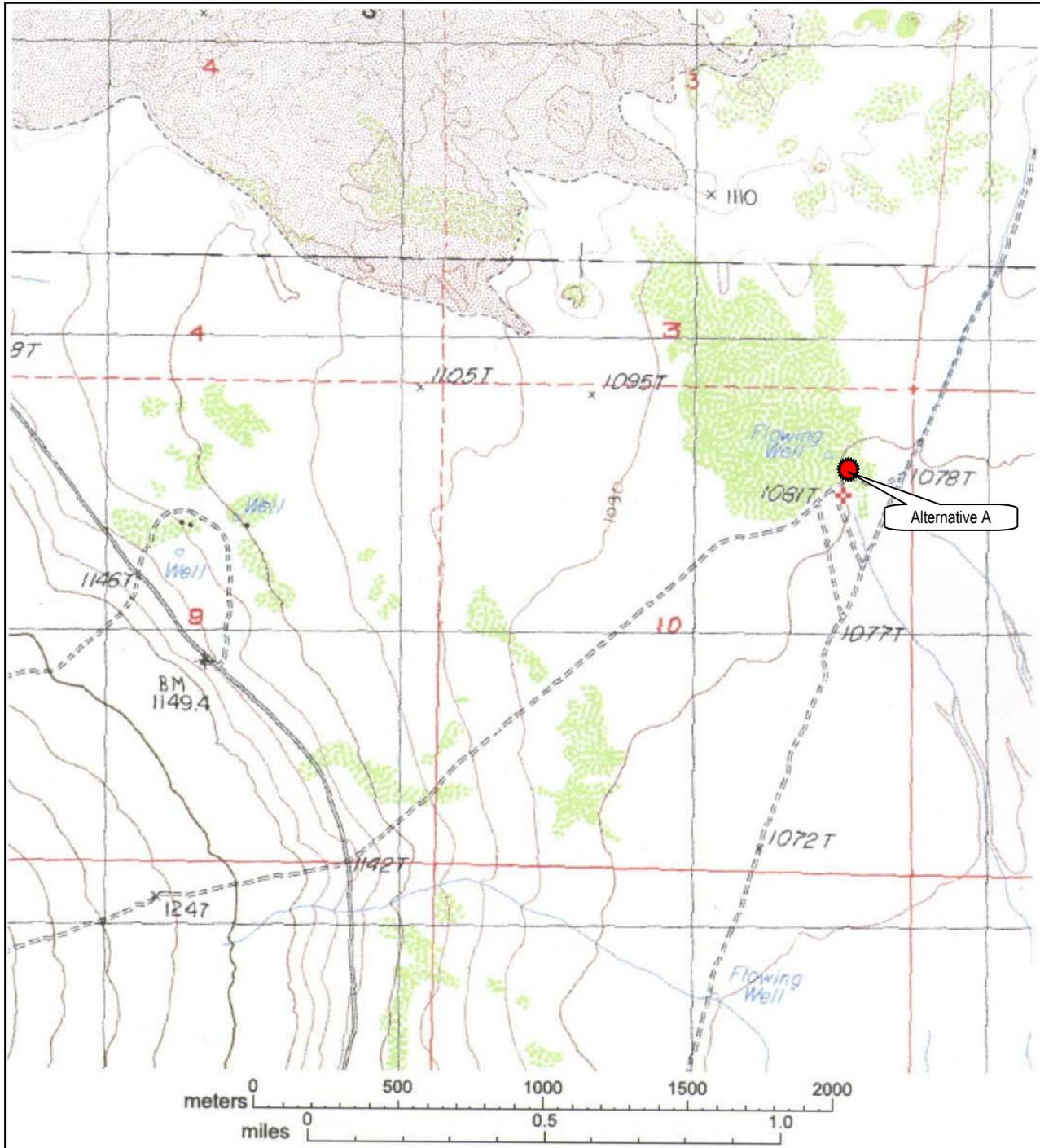
This site is located at the base of an alluvial fan situated along the east-facing slope of the Inyo Mountain range. The site is approximately 0.4 mile west of Saline Valley Road. Access is possible via an unimproved dirt road located south of, and adjacent to, the site. Major topographic features in the vicinity include Cougar Canyon, approximately 0.8 mile to the north. The site, in close proximity to the Inyo Mountain Range, would also reduce solar exposure times, especially during winter months. The site is relatively undisturbed. Grey Eagle Mine is visible from the site to the southwest. This site is located on land under the jurisdiction of the BLM and is on nonwilderness lands. The elevation is 2,217 feet AMSL, and its geographic coordinates are latitude 36° 49.986' N, longitude 117° 55.368' W. The site location is presented in Figure 2-7. A photo simulation of a beacon radar facility is presented in Figure 2-8.

#### 2.4.4 Alternative D (Keyes Canyon)

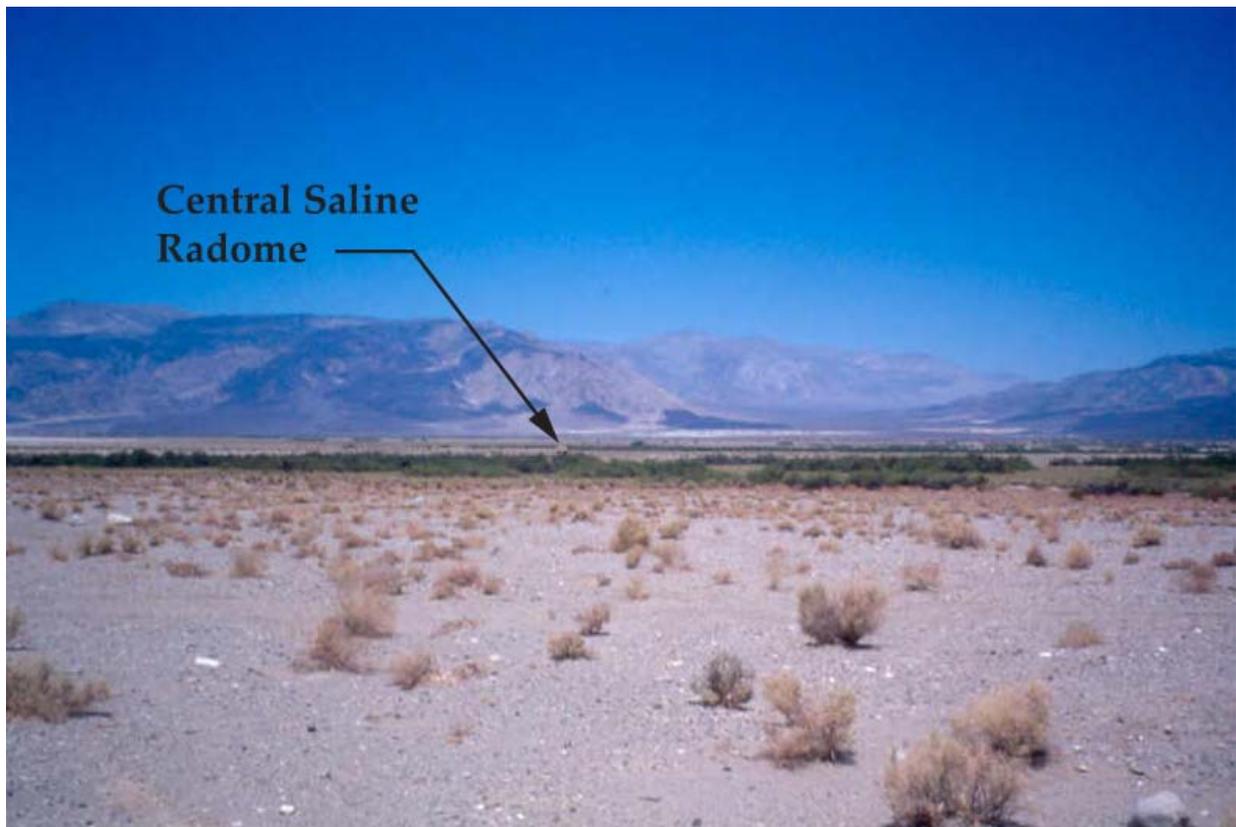
This site is located at the base of an alluvial fan situated along the east-facing slope of the Inyo Mountain range. The site is west of Saline Valley Road, though access would be possible via an unimproved dirt route that connects to Saline Valley Road. The site is north of the end of the unimproved route leading to Badwater Springs. Major topographic features in the area include Pat Keyes Canyon and Badwater Springs, both located to the west. The site is approximately 0.7 mile west of the Saline Valley Road. The elevation is 1,541 feet AMSL, and its geographic coordinates are latitude 36°47.424' N, longitude 117° 53.808' W. The location, in close proximity to the Inyo Mountain Range, would reduce solar exposure times, especially during winter months. The site is in a relatively undisturbed area. This site is located on land under the jurisdiction of the BLM in nonwilderness lands. The site location is presented in Figure 2-9. A photo simulation of a beacon radar facility is presented in Figure 2-10.

#### 2.4.5 Alternative E (Keyes Canyon North)

This alternative is similar to Alternative D. It was considered because of improved solar exposure over Alternative D, and a better line-of-sight to one of the microwave repeater locations. Site elevation is 1,605 feet AMSL, and its geographic coordinates are latitude 36°48 03.5' N, longitude 117° 53 30' W. Location is approximately one mile north of Badwater Springs, 750 feet west of the Saline Valley Road. No access route exists for this site. This site is located on land under the jurisdiction of the BLM in nonwilderness lands. The site location is presented in Figure 2-11. A photo simulation of a beacon radar facility is presented in Figure 2-12.

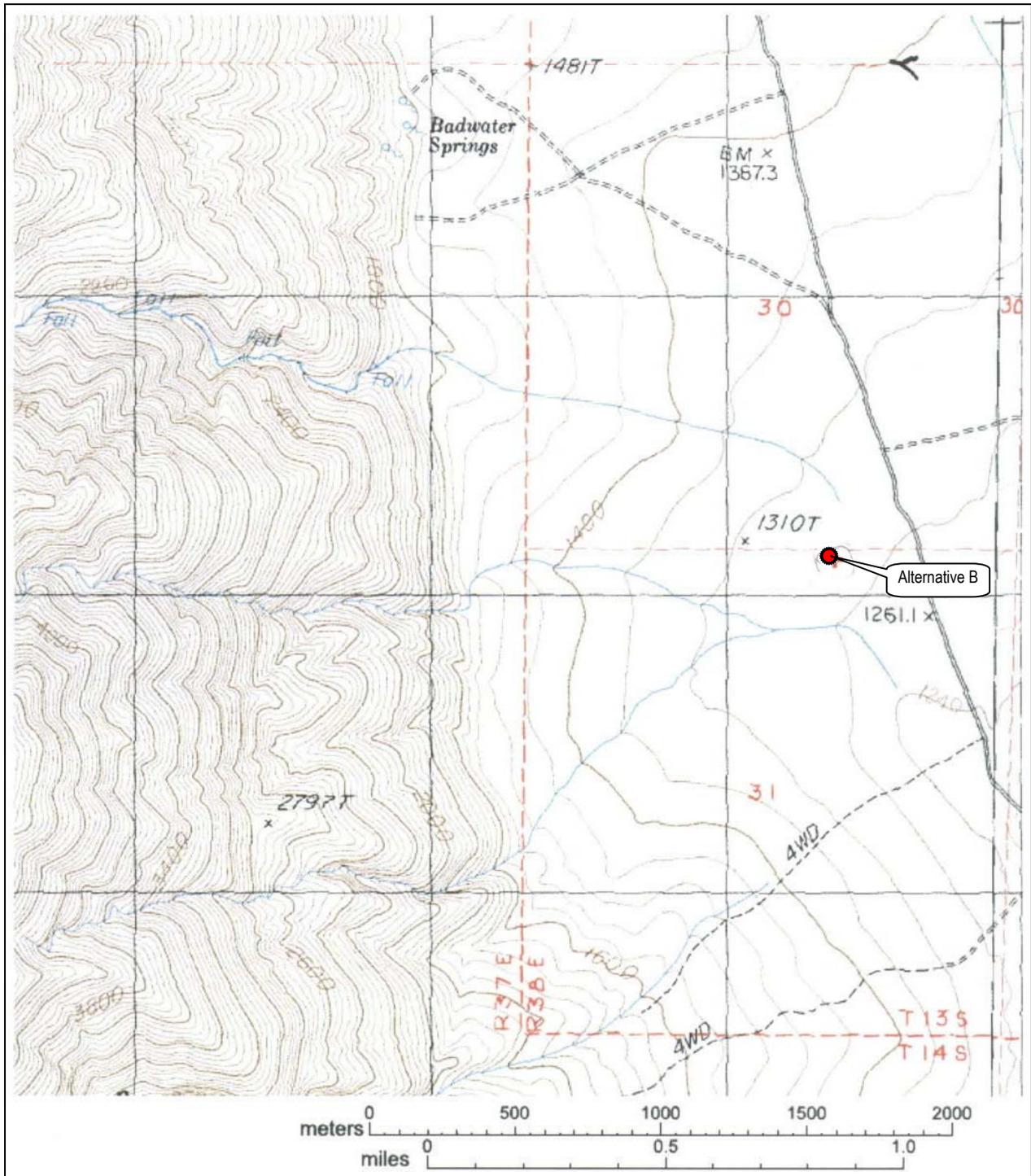


**Figure 2-3  
Alternative A (Central Saline) Beacon Radar Site Location Map**



View of Alternative A, Central Saline, looking east from Saline Valley Road.

**Figure 2-4**  
**Photo Simulation of a Beacon Radar Facility at Alternative A (Central Saline)**

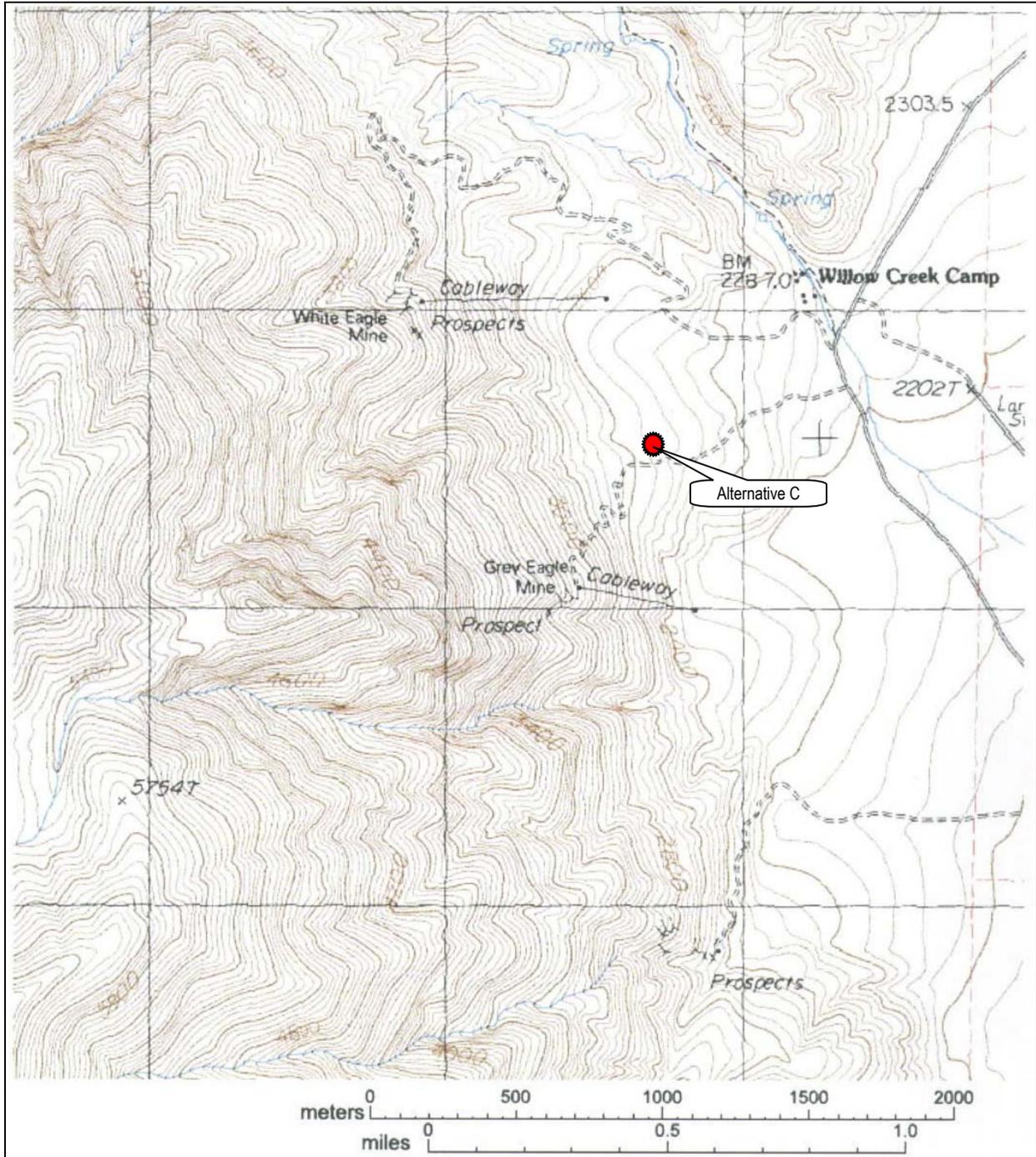


**Figure 2-5**  
**Alternative B (McElvoy Canyon) Beacon Radar Site Location Map**



View of Alternative B, McElvoy Canyon, looking west from Saline Valley Road.

**Figure 2-6**  
**Photo Simulation of a Beacon Radar Facility at Alternative B (McElvoy Canyon)**

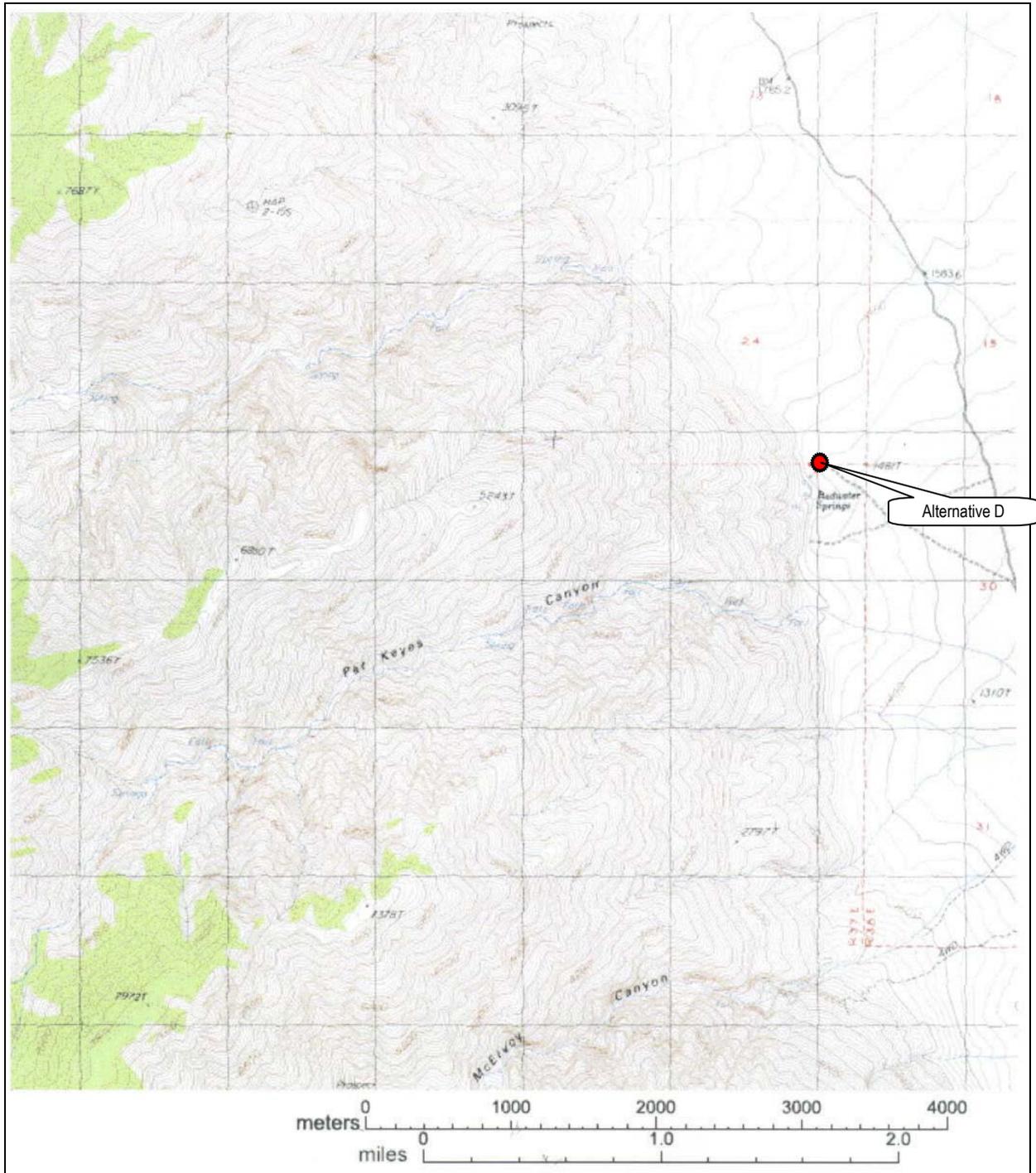


**Figure 2-7**  
**Alternative C (Grey Eagle Mine) Beacon Radar Site Location Map**



View of Alternative C, Grey Eagle Mine, looking west from Saline Valley Road.

**Figure 2-8**  
**Photo Simulation of a Beacon Radar Facility at Alternative C (Grey Eagle Mine)**

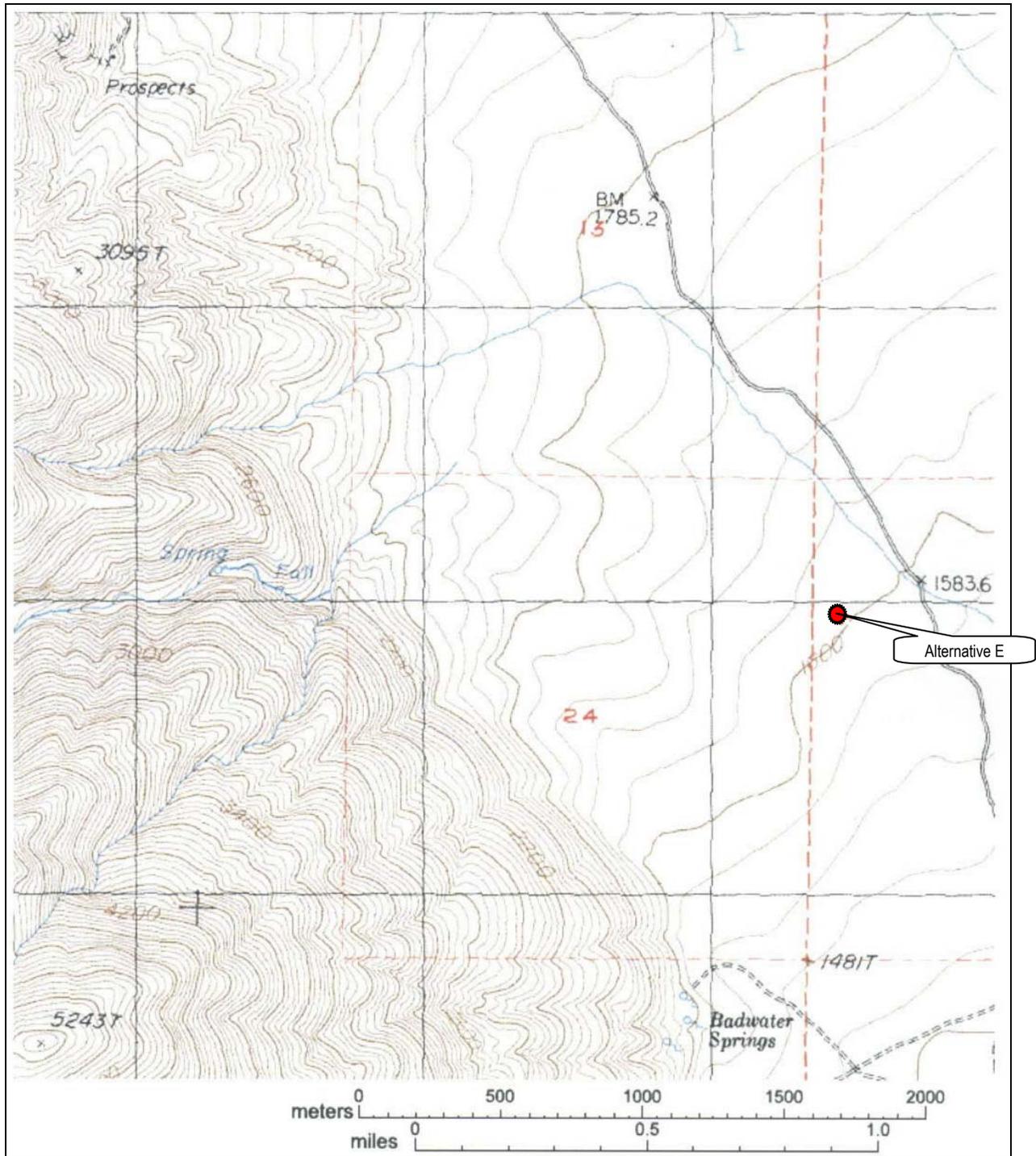


**Figure 2-9  
Alternative D (Keyes Canyon) Beacon Radar Site Location Map**



View of Alternative D, Keyes Canyon, looking west from Saline Valley Road.

**Figure 2-10**  
**Photo Simulation of a Beacon Radar Facility at Alternative D (Keyes Canyon)**



**Figure 2-11  
Alternative E (Keyes Canyon North) Beacon Radar Site Location Map**



View of Alternative E, Keyes Canyon North, looking west from Saline Valley Road.

**Figure 2-12**  
**Photo Simulation of a Beacon Radar Facility at Alternative E (Keyes Canyon North)**

#### 2.4.6 Alternative F (No Action Alternative)

This alternative assumes that the proposed project would not be implemented and, as a result, no radar coverage in the Saline Valley portion of the R-2508 Complex would be provided. No beacon radar facility and microwave repeater would be installed, and flight operations would continue as is. Existing ATC operations would continue in their current state and the status quo would be maintained.

#### 2.4.7 Overview of Microwave Repeater

##### 2.4.7.1 Site Selection Process

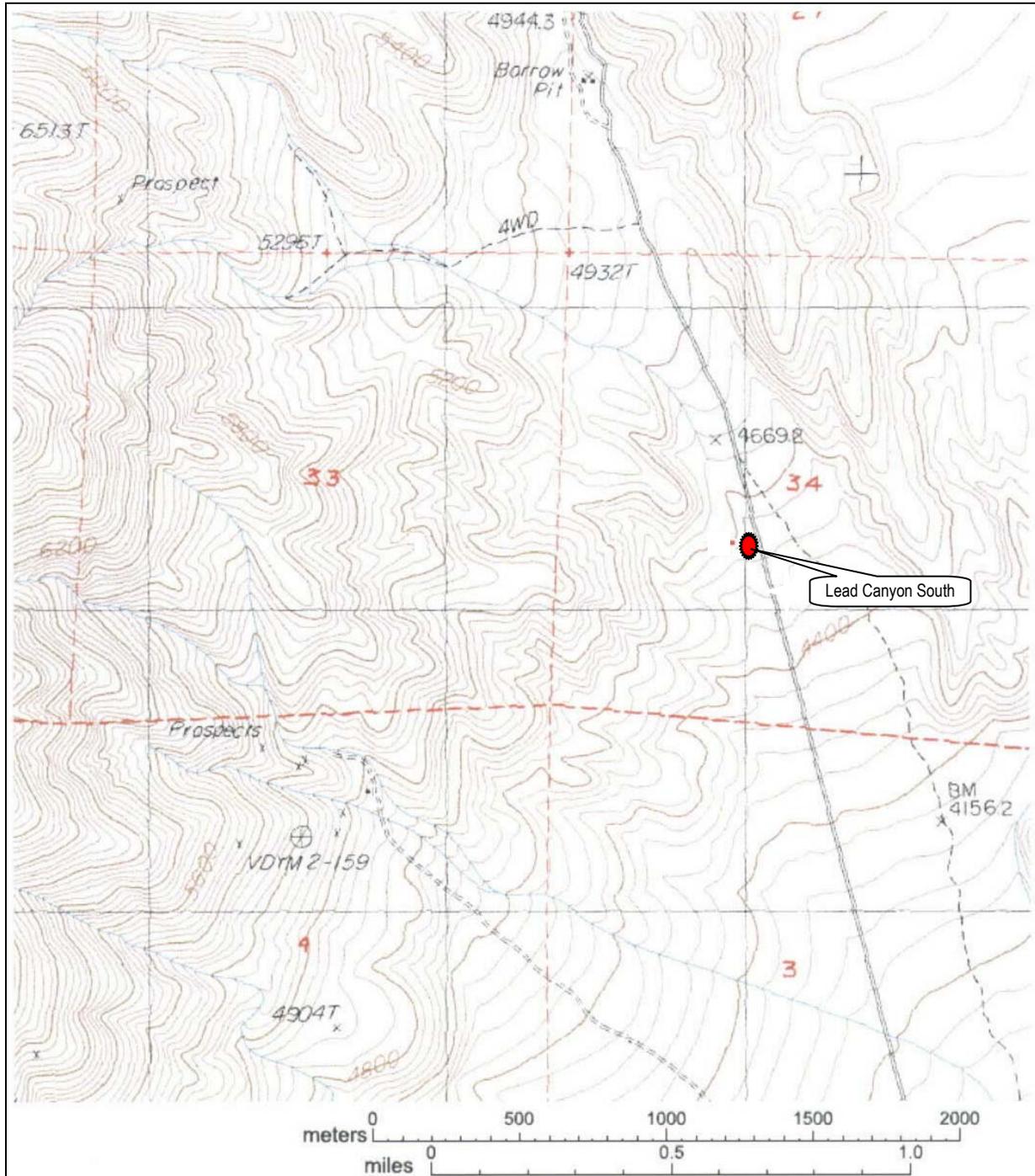
The following criteria were used in the site selection process for three microwave repeater alternatives.

- The site must have a clear line-of-transmission to two or more of the proposed beacon radar sites and the FAA communications complex on Keeler Peak in the Inyo Range;
- The site must have an established access route that avoids designated wilderness areas to eliminate potential impacts on sensitive and protected areas;
- The site must have a suitable site area to develop with minimal grading and site preparation required; and
- The site's elevation must be sufficient to allow for the elimination of air conditioning to cool equipment.

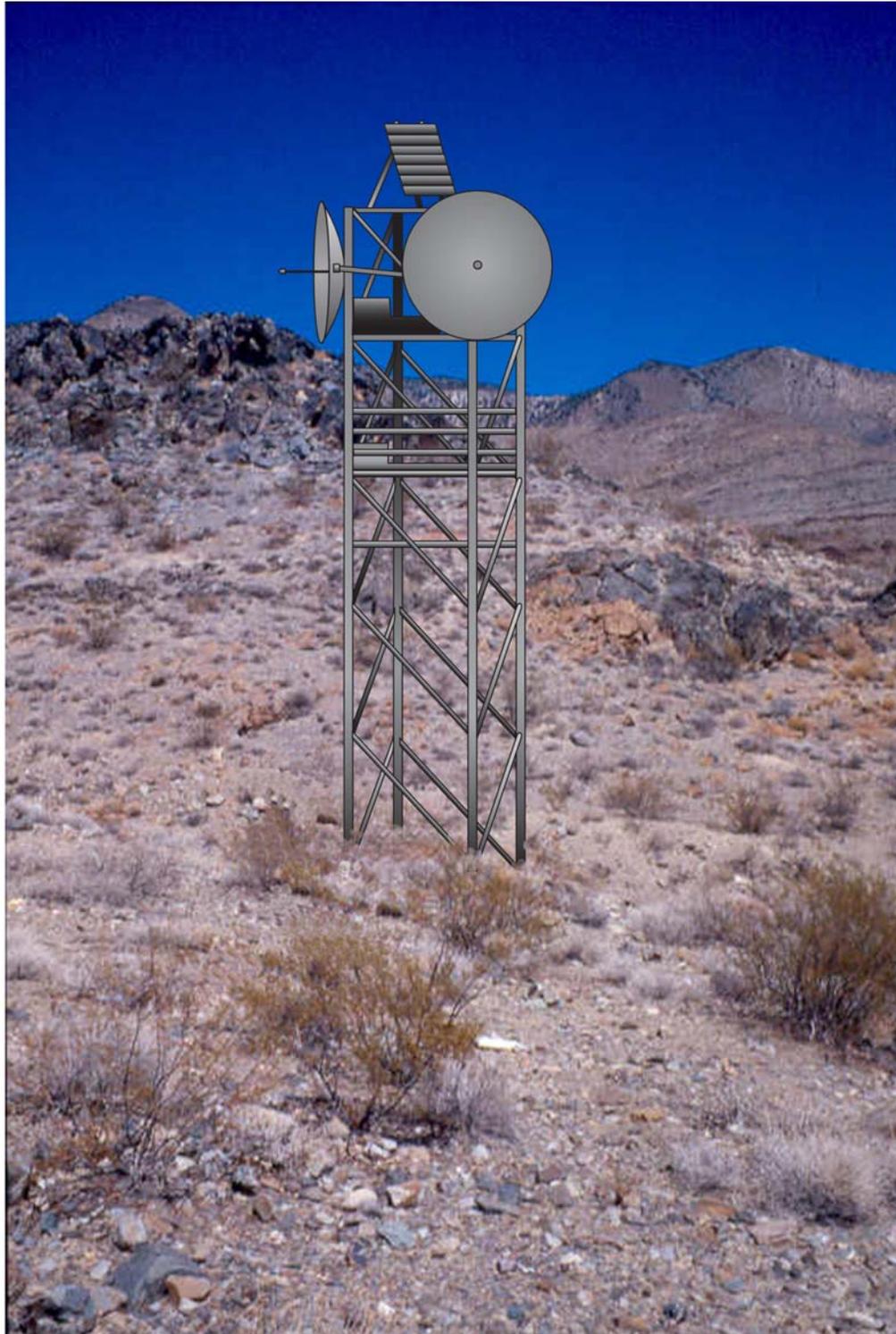
Several other repeater sites that were initially suitable from a line-of-sight screening standpoint were ultimately rejected because they failed to meet all of the criteria. Avoiding the use of air conditioning for equipment and battery cooling significantly reduces the facility size and complexity. An air-conditioned facility would require a much larger footprint (for the standby power plant propane generator), a much larger solar-panel array, and a modular building to house the electronics equipment, generator, and batteries. All of the equipment needed to support a non-air-conditioned microwave repeater, including a single small solar panel, could be tower- or structure-mounted, reducing the environmental impact. The three sites that met most of the criteria were selected for further computerized screening analysis. These included:

- Two sites, less than one-half mile apart, along the northern portion of the Saline Valley Road, north of Lead Canyon; and
- One site on a mining, cherry-stemmed road in the Nelson Range, located approximately 1.5 miles northwest of Galena Ridge, identified as the Galena Ridge Site.

The major advantage of these sites is the relatively cooler temperatures associated with the higher elevation that permits the electronics and electrical equipment to be operated without supplemental cooling. This significantly reduces the size and complexity of the development site, overall equipment and installation cost, and maintenance visits. The environmental settings of the Galena Ridge and Lead Canyon repeater sites are presented in Figure 1-3. The site locations and photo simulations of the repeaters are presented in Figures 2-13 through 2-17. Figure 2-18 is a photograph of a mock-up repeater temporarily constructed on the Galena Ridge site.

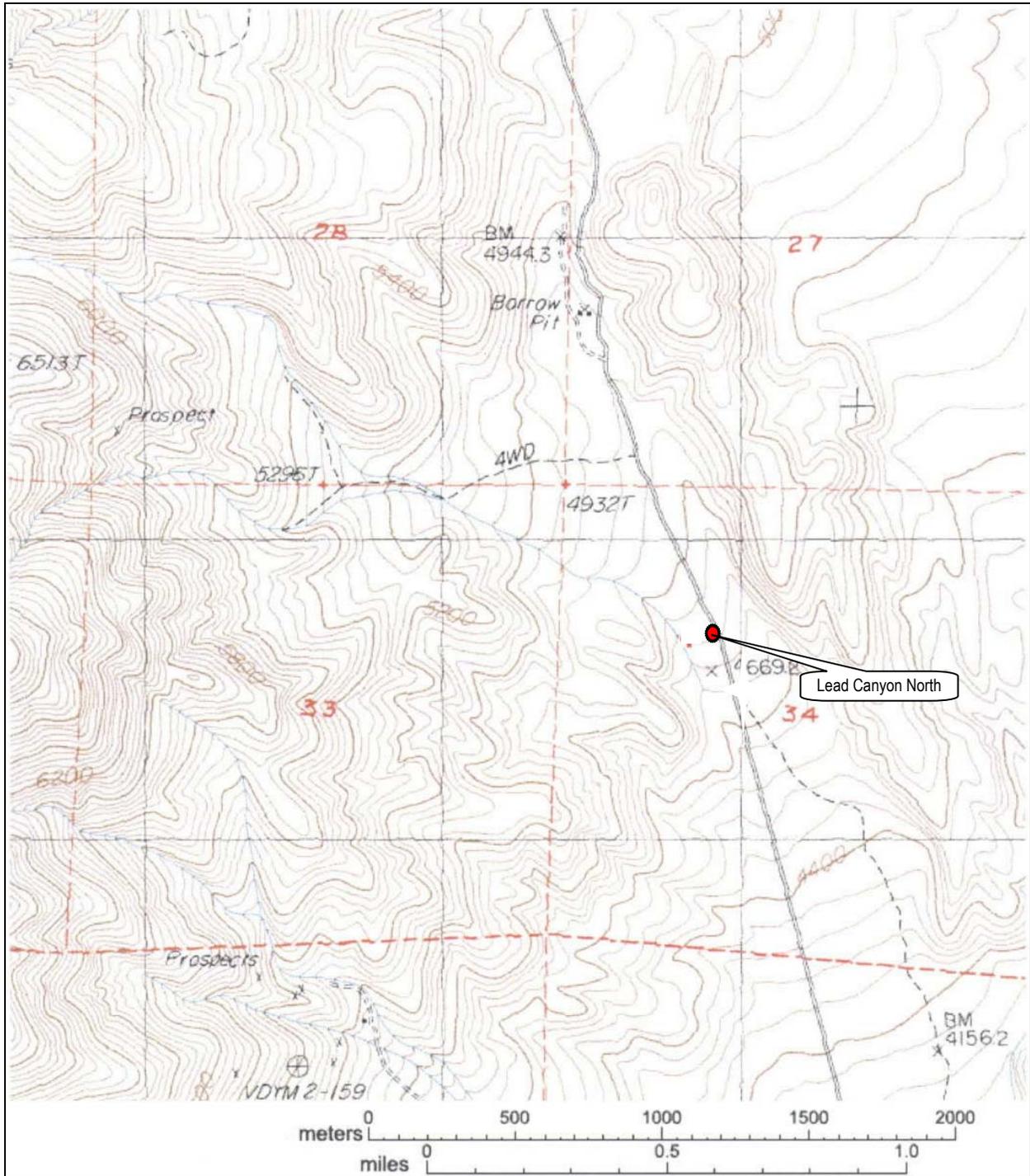


**Figure 2-13**  
**Lead Canyon South Beacon Radar Site Location Map**



View of Lead Canyon South Repeater Site looking west from Saline Valley Road.

**Figure 2-14**  
**Photo Simulation of a Microwave Repeater at Lead Canyon South Site**

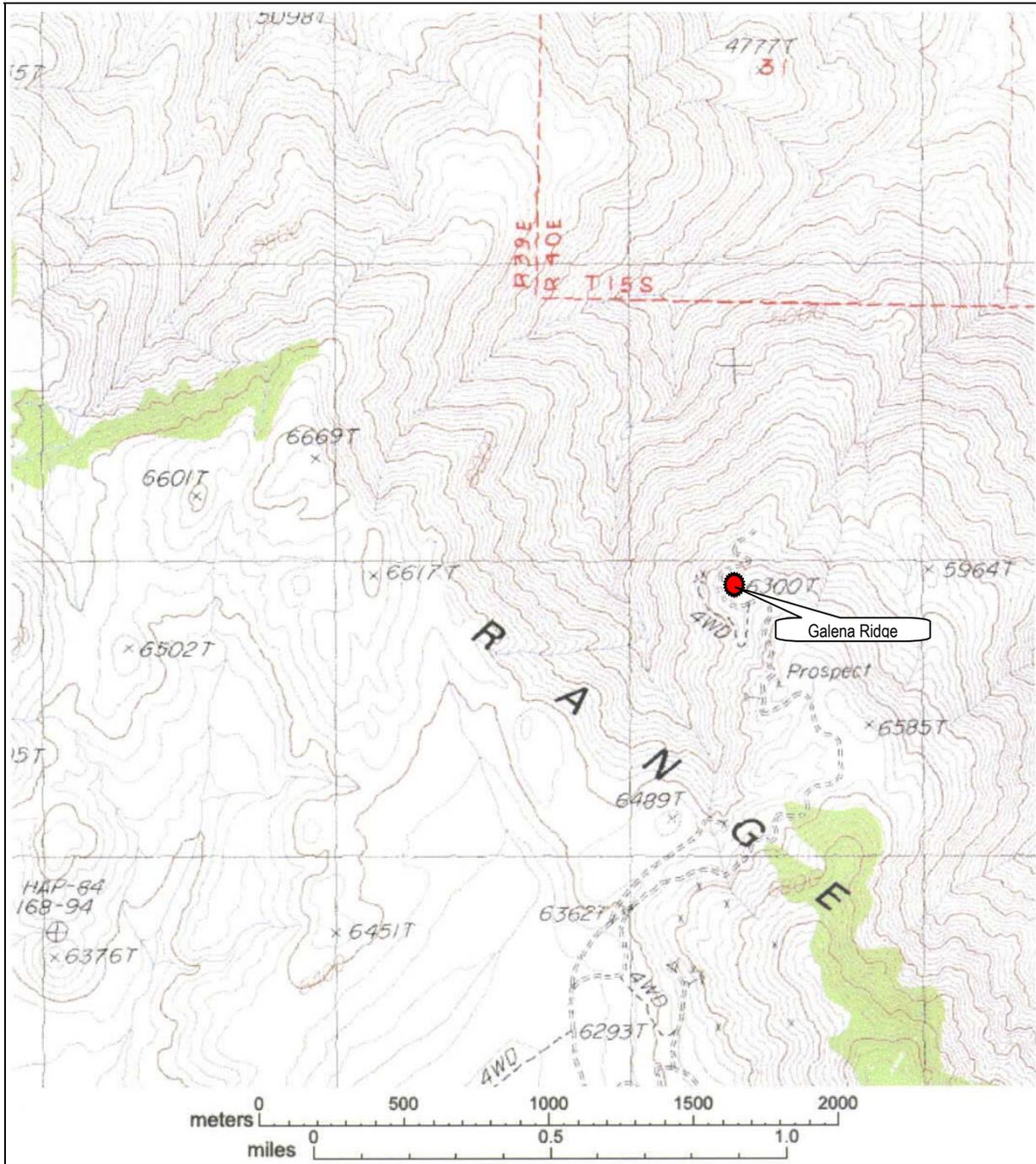


**Figure 2-15**  
**Lead Canyon North Microwave Repeater Site Location Map**



View of Lead Canyon North Repeater Site looking west from Saline Valley Road.

**Figure 2-16**  
**Photo Simulation of a Microwave Repeater at Lead Canyon North Site**



**Figure 2-17**  
**Galena Ridge Microwave Repeater Site Location Map**



View of the repeater mock-up from a point on the Galena Peak mining road approximately 525 feet from the site.

**Figure 2-18**  
**Photograph of a Mock-Up Microwave Repeater Located on Galena Ridge**

### **3.0 AFFECTED ENVIRONMENT**

#### **3.1 Affected Environment**

This section of the EA establishes the baseline for the decision-maker and the public to compare the effects of the action alternatives for the proposed beacon radar facility and the microwave repeater. The following environmental attributes comprise the existing environment analyzed in this EA: land use and visual and recreational resources, geology and soils, water and hydrology, air quality, biological resources, noise, cultural resources, and traffic and infrastructure. The environmental setting relative to these issues is described in Sections 3.2 through 3.9.

The Saline Valley is situated in the west-central portion of Inyo County, California, east of the Owens Valley and west of Death Valley. Major topographic features found within the vicinity of the Saline Valley include the Inyo Mountain range to the west, the Nelson Range to the south, the Last Chance Range to the east, and the Saline Range to the north. The Inyo Mountains separate the Saline Valley from the Owens Valley. The Sierra Nevada Mountains are located further west, and to the west of the Owens Valley (AFFTC 2002a).

##### **3.1.1 Access to Saline Valley**

Regional access to the Saline Valley is provided by Big Pine Road (State Route 168) to the north and the Darwin-Olancho Road (State Route 190) to the south. Both of these paved roadways connect with U. S. Highway 395 and serve as the primary means of access to Death Valley National Park from the west. Saline Valley Road, a gravel roadway maintained by Inyo County, serves as the primary means of access into and out of the Saline Valley. This roadway traverses the Saline Valley in a north-south orientation, connecting with the paved highways to the north and south. Numerous smaller unimproved routes, in varying condition, traverse the Saline Valley, though all of these roadways ultimately connect with Saline Valley Road. Traffic volumes along this road are relatively low. During weekday visits to the Saline Valley by the project team involved in the preparation of this EA, the number of other vehicles observed on the road ranged from one to three over the entire 8-hour duration of each site visit.

##### **3.1.2 Regional Setting**

Inyo County, California, which includes the Saline Valley, is sparsely settled, with the majority of the county's population residing in communities located within the Owens Valley. The major population centers include the communities of Lone Pine, Bishop, and Independence. These communities are located more than 15 miles to the west of Saline Valley, within the Owens Valley. The current population of Inyo County is estimated by the State of California Department of Finance to be 18,240 (AFFTC 2002a).

There are few permanent residents within the Saline Valley, though there are seasonal increases in the number of temporary residents. Settlements within the Saline Valley are limited to mining camps (generally located along the east-facing slope of the Inyo Mountains and west-facing slope of the Last Chance Range), campgrounds at Palm Spring and Lower Warm Spring (located in the northeast corner of the Saline Valley), and scattered individual dwellings located in the vicinity of the Salt Lake. No structures are located within approximately one-half mile of the proposed sites. Improvements in the general area are limited to Willow Creek Camp and Grey Eagle Mine and the vicinity of the Salt Lake.

The majority of recreational use is in the Palm Spring/Warm Spring area. This area includes two unimproved airstrips, unimproved campsites, restroom facilities, and outdoor semi-enclosed spa areas. The visitor population at the Palm Spring/Warm Spring varies considerably, depending on the time of the year.

The majority of the Saline Valley was incorporated into Death Valley National Park in 1994 (the Park's western boundaries generally correspond to Saline Valley Road, with the Park area located east of the road). The expansion of the Park was a direct outgrowth of the Desert Protection Act, which elevated the status of Death Valley "National Monument" to "National Park" and significantly expanded the boundaries of the Park. The Act, which expanded the Park boundaries, also protected the airspace designation and DOD airspace use (16 USC 410aaa-82). The majority of the land located to the west of Saline Valley Road remains under the jurisdiction of the BLM Field Office, Ridgecrest, California. Scattered parcels located in the vicinity of the Salt Lake are under private ownership, Indian-owned lands, or State-controlled land (AFFTC 2002a). Wilderness areas include NPS wilderness land within the

boundaries of Death Valley National Park and wilderness areas under BLM jurisdiction within the Inyo Mountains Wilderness Area.

### 3.2 Land Use/Socioeconomic Setting

Land uses within the Saline Valley include activities associated with mining, recreation, and minimal residential use. A number of entities govern land use within the Saline Valley, including BLM lands, National Park lands, State lands, Indian lands, and privately owned lands. Saline Valley land use is largely under the jurisdiction of the NPS. However, BLM-administered public lands are also present. Four of the five alternative radar sites (Alternatives B, C, D, and E) are located within lands administered by the BLM. Radar Alternative A, the Galena Ridge and the two Lead Canyon microwave repeater sites, are located on lands administered by the NPS. Privately owned lands are under the jurisdiction of Inyo County.

#### 3.2.1 Regulatory Requirements/Guidance

##### 3.2.1.1 National Park Service Lands

Death Valley National Park was established to protect natural and cultural resources in the Mojave and Great Basin deserts of California and Nevada and to provide opportunities for public recreation within selected areas. Recreation activities within the park include camping, picnicking, hiking, and sightseeing. The majority of the park visitor activities are concentrated in areas located outside of the Saline Valley, near Furnace Creek and Stovepipe Wells. The majority of visitor use in the Saline Valley is concentrated in the Palm Spring area and in the trails located along the east-facing slopes of the Inyo Mountains.

Beacon radar alternative site, Alternative A, and all the repeater sites are located within nonwilderness areas under the jurisdiction of the NPS. Alternative A is located immediately south of a designated wilderness area. An existing fence separates Alternative A from wilderness lands located to the north. The unimproved access routes that connect Alternative A with Saline Valley Road are located outside designated wilderness areas.

The *Wilderness Act* (16 USC 1131 et seq.), enacted in 1964, established a *National Wilderness Preservation System* composed of Federally owned wilderness areas to be administered for the public's use and enjoyment. According to the *Wilderness Act*, wilderness lands are to remain in their natural condition.

The *California Desert Protection Act of 1994a* (U.S. Senate Bill [SB] 21) significantly altered the status of more than 7 million acres of desert lands within the Mojave Desert region of southern California. The *Desert Protection Act* changed the status of Death Valley National Monument to National Park. The *Desert Protection Act* enlarged the land area of Death Valley National Park so that the Park now includes approximately the eastern two-thirds of the Saline Valley. The Park's westerly boundary now generally corresponds to Saline Valley Road. Death Valley National Park now encompasses 5,000 square miles, of which approximately 4,600 square miles underlay the R-2508 Complex. The California Desert Protection Act of 1994 added 1.3 million acres to the Park, and designated 94% of the Park as wilderness. The General Management Plan for Death Valley National Park has been finalized.

Land uses within Death Valley National Park have generally been placed into one of four categories, based on existing uses and management characteristics:

- The *Natural Category*—More than 90% of the park is included in the natural category, which encompasses lands managed to protect wilderness values.
- The *Historic Category*—The historic category encompasses those lands containing resources listed on, or eligible for, the National Register of Historic Places.
- The *Park Development Category*—The park development category encompasses those lands where nonhistoric park development and intensive use has substantially altered the natural environment. The Central Saline beacon radar alternative site and microwave repeater sites fall into this category.
- The *Park Management Category*—This category provides and maintains development that serves the needs of NPS management and large numbers of visitors.

The NPS has proposed guidelines for the developed portions of the Park to establish visual consistency and themes. The primary objective the NPS seeks to accomplish through the development and subsequent implementation of these guidelines is to create visual harmony between the built environment and the natural environment. For example, because of the increasing use of cellular communication equipment, more antennas and relay equipment are being installed throughout the area, and there is pressure to install such equipment in the more remote portions of the Saline Valley. The overall management goal of each NPS unit would be to protect and maintain the visual quality of the landscape and the built environment. As a result, the NPS intends to implement the following objectives for communications equipment proposals, which may also be applicable to the proposed beacon radar facility:

- All aboveground communication equipment should not significantly distract from the visual quality of the scenery.
- Each new proposal for radio or cellular antennas or towers must demonstrate that the equipment would provide a critical service for visitors and NPS staff and not be duplicative.
- Installation of new equipment outside the park, on existing communication towers, or at defined sites should be considered before the construction of new sites is considered.
- New locations would be reviewed through the environmental assessment process, which must consider impacts on the visual quality of the scenery.

Portions of the Saline Valley previously located within BLM lands were designated as an *Area of Critical Environmental Concern* (ACEC). The BLM ACEC land use designations identified areas where special management attention is needed to protect important historic, cultural, and scenic values; to protect fish and wildlife resources or other natural systems and processes; or to protect people from natural hazards. The Saline Valley ACEC included an area with dune, mesquite, and marsh habitat located in the vicinity of the Salt Lake. The area also contains both prehistoric and historic cultural resources, including a village site with rock art and a turn-of-the-century borax operation. In 1986, the original boundary of the Saline Valley ACEC was modified to include additional land to the south, including the ruins of the salt tram. The Saline Valley ACEC was discontinued, since these areas are now included within the National Park boundaries, and falls under NPS management guidelines.

### **3.2.1.2 Bureau of Land Management Resource Areas**

None of the four radar site alternatives are located within the designated BLM Inyo Mountains Wilderness Area. The westerly portions of the Saline Valley, generally located west of Saline Valley Road, are within the jurisdictional boundaries of the BLM, Ridgecrest Field Office. Portions of the lands within the planning area subject to BLM jurisdiction are generally located west of Saline Valley Road. Designated BLM wilderness areas are located further west along the toe of the Inyo Mountains. These wilderness areas include Federal lands that have been so designated by Congress as part of the National Wilderness Preservation System. The Inyo Mountain Wilderness has a total land area of approximately 300 square miles, including portions of the Saline Valley (Bureau of Land Management 2001).

The majority of those BLM-managed lands located within the CDCA have been designated as one of four possible land use classifications, referred to as “multiple-use classes.” This classification system recognizes the sensitivity of those resources found within a particular geographic area. Four of the alternative beacon radar sites (Alternatives B, C, D, and E) are subject to the CDCA requirements. These alternative sites are located in areas designated as Class L or limited use. The management of lands included in this classification provides for low-intensity, carefully controlled multiple use of the resources, while ensuring that sensitive values are not significantly diminished. The BLM, Ridgecrest Field Office has determined that this proposal is consistent with the guidelines of the CDCA Plan and in conformance with the existing multiple-use class designation (BLM 2001a).

The proposed action will occur in areas designated as Class L (Limited Used) under the CDCA Plan. A Class L designation in the CDCA Plan mandates that the land affected by the proposed action be managed in a way to protect “sensitive, natural, scenic, ecological, and cultural resource values.” The management of these lands is to provide for “low-intensity, carefully controlled multiple use of the resources, while ensuring that sensitive values are

not significantly diminished.” Pre-existing rights to the Grey Eagle Mine pertaining to access will be addressed if the Grey Eagle Site (Alternative C) is selected.

### 3.2.1.3 Lands Administered By Other Agencies

A number of other agencies have jurisdiction over lands found within the vicinity of the Salt Lake. A substantial amount of land located north and west of the Salt Lake is under private ownership. In addition, public agencies with land holdings in this area include the Bureau of Indian Affairs, the State of California, and lands reserved by the Federal Government for water conservation. One of the routes that provide access to the Alternative A site crosses Indian land holdings. The northern route, which does not cross Indian lands, would be used for access to the Alternative A site.

### 3.2.2 Existing Land Use

The nature and extent of land uses within and in the immediate vicinity of the five beacon radar alternative sites are described in the following list:

- *Alternative A (Central Saline)*—This site is located adjacent to two unimproved routes and has undergone extensive disturbance. The site is located approximately 1.25 miles east of Saline Valley Road. A fence and cattle guard located north of the site separate the site from a man-made artesian well and mesquite grove. During numerous field visits evidence of both human and feral burro activities was apparent (tracks, rubbish, and scat). The site is separated from the wilderness area by a fence. No residential structures are located within one mile of the site.
- *Alternative B (McElvoy Canyon)*—This site is located on relatively undisturbed and undeveloped land, approximately 600 feet west of the Saline Valley Road. No structures are located within 1 mile of the site.
- *Alternative C (Grey Eagle Mine)*—This site is located on relatively undisturbed and undeveloped land, approximately 0.4 miles west of Saline Valley Road. The site shares an unimproved access route with Grey Eagle Mine, which is located approximately 0.3 mile to the southwest. The access route is located south of and adjacent to the site. The Willow Creek Camp (an active, occupied mining camp) is located approximately 1 mile north of the site.
- *Alternative D (Keyes Canyon)*—This site is located approximately 0.7 mile west of Saline Valley Road. The site is located within a turnaround area east of Badwater Springs. The area around Keyes Canyon exhibited considerable disturbance during field visits, with evidence of transient habitation.
- *Alternative E (Keyes Canyon North)*—This site is located on relatively undisturbed and undeveloped land, approximately 750 feet west of the Saline Valley Road. No structures are located within 1 mile of the site.

Except for Central Saline (Alternative A), the beacon radar facilities are a minimum of 1/8 mile from wilderness boundaries. All of the proposed beacon radar facility alternatives would require the use of a microwave repeater to transmit data between the beacon radar sites and the existing FAA communications facility located on Keeler Peak. The Galena Ridge repeater site is located within a mining road cherry-stemmed area (surrounded by wilderness) approximately 1.5 miles northwest of Galena Ridge. A rough, four-wheel-drive mining road provides access to this site. The site is presently disturbed and is not within a designated NPS wilderness area. The two Lead Canyon sites are located alongside the Saline Valley Road on nonwilderness land, managed by the NPS.

### 3.2.3 Visual and Recreational Resource Characteristics

For most visitors, views of the Saline Valley are experienced from Saline Valley Road. Views from the road are dominated by views of Saline Valley Basin. Views within the Saline Valley are dominated by expanses of the Saline Valley basin, with the surrounding mountain ranges serving as a visual backdrop. Overall, the Valley has a high intact natural appearance. However, there are localized areas of disturbance related to past and ongoing mining activity. Typically, the sky provides a crystal blue dome overhead. From most vantage points, the dominant man-made features are Saline Valley Road, campsite improvements at Warm Spring, as well as scattered improvements associated with ongoing or past mining activities. Localized sources of night lighting in the Saline Valley are associated with scattered campsites, with the most pronounced source being located in the vicinity of the Warm

Spring and Palm Spring. The limited recreational activities include hiking, camping, sightseeing, motor-vehicle touring, warm springs use, and nature study.

### 3.3 Geologic Setting

Geologic resources consist of naturally formed minerals, rocks, and unconsolidated sediments. Soil consists of the uppermost layers of surficial geologic deposits, and is developed by the weathering of those deposits. Concerns associated with the geologic setting within the proposed project area, which could either affect, or be affected by, a proposed alternative, include topography, material site use, site disturbance, and seismicity. The Saline Valley's geomorphology generally reflects the Basin-and-Range physiography associated with the region's faults and the mass wasting that has occurred in relatively recent geological times. This section provides an overview of the Saline Valley's geomorphology and seismic characteristics.

#### 3.3.1 Regulatory Requirements/Guidance

The two regulatory requirements potentially applicable to the proposed project include the *Alquist-Priolo Earthquake Fault Zoning Act* and the *Surface Mining and Reclamation Act (SMARA)*. The *Alquist-Priolo Act* (California Public Resources Code, Division 2, Chapter 7.5, Section 2621 et seq.) provides for the adoption and administration of special regulations that would be implemented by local jurisdictions in relation to specific active earthquake faults. This Act provides policies and criteria related to the location of improvements and structures for human occupancy across the trace of active faults. The three beacon radar alternative sites located along the alluvial fan of the east slope of the Inyo Mountains (Alternatives B through D) are situated in relatively close proximity to the Hunter Mountain fault. This fault, however, has not been assigned an Alquist-Priolo Special Studies Zone designation. Since, however, the beacon radar and microwave repeater facilities would be unmanned, it has been determined that this Act would not apply.

The *SMARA* (California Public Resources Code, Division 2, Chapter 9, Section 2710 et seq.) has two main elements. First is the requirement for review and enforcement of mandated reclamation plans for mining and mineral extraction activities. Second, in the process of classification/designation, the State Office of Mines and Geology must conduct an officially sanctioned survey of mineral resources. The results of these surveys form the basis of how these mineral resources would be classified or designated in terms of statewide importance. A Memorandum of Understanding between the State of California, the United States Department of Agriculture (USDA) Forest Service, and the U. S. Department of the Interior BLM regarding *SMARA* is contained in Title 25 Code of Federal Regulations Part 211 (25 CFR 211); 36 CFR 228 et seq.; and 43 CFR 3500, 3600, 3802, and 3809. Since no mining activities are planned for this proposed action, this Act does not apply.

#### 3.3.2 Geomorphology

The Saline Valley is a component of the larger Basin and Range geomorphic province that comprises portions of eastern California, eastern Oregon, and the majority of Nevada. The oldest rocks found in the area were formed approximately 1.8 billion years ago. The weathered sandstone and limestone rocks that comprise the Nelson Range and the Last Chance Range are much younger, approximately 500 million years in age. Approximately 3 million years ago, the various basins and ranges found within the Saline Valley and in adjacent regions began to form. Recent signs of volcanic activity are also evident in an area east of the Saline Valley at the Ubehebe Crater, located north of the Saline Valley (Hunt 1975).

A number of modifications to the landforms in the Saline Valley were made during Holocene (recent geologic) time due to the gradual warming trend. The area's topographic features have also been altered due to the extensive water and wind-borne (aeolian) erosion that has occurred over the past several thousand years. The Saline Valley is a basin into which drain numerous streams along the east flank of the Inyo Mountains, the north flank of the Nelson Range, and the west flank of the Last Chance Range. In addition, there are numerous dune features associated with the significant aeolian erosion that has occurred in the Saline Valley. A major dune field is located just north of the Salt Lake in the southwestern portion of the Saline Valley (the Saline Valley Sand Dunes).

### 3.3.2.1 Seismicity

The geology within the Saline Valley, like that of the surrounding region, is the result of uplift associated with extensive faulting that has occurred in recent geologic history. The dominant fault feature in the Saline Valley is the Hunter Mountain Fault, which is located at the toe of the Nelson Range, continuing north along the easterly face of the Inyo Mountains. The Hunter Mountain Fault extends approximately 40 kilometers and has an average slip rate of between 2 and 3 millimeters per year. The four beacon radar alternative sites located on the east-facing Inyo Mountains alluvial fans (Alternatives B through E) are located relatively close to the Hunter Mountain fault, and would be subject to intense ground shaking and possible surface rupture from an earthquake along this fault segment.

Approximately 20 scattered faults underlie the Saline Valley floor, extending in a north-south orientation. These faults, most of which are less than 5 kilometers long, are likely a component of the Hunter Mountain Fault (AFFTC 2002a). The abundant springs, artesian wells, and warm springs indicate the presence of subsurface (buried) faults within the Saline Valley floor. The Alternative A site is located relatively close to these buried faults.

## 3.4 Water and Hydrology Setting

This section discusses major drainage features in the Saline Valley and the potential for flooding. The sources of water in the planning area include groundwater, artesian wells, and surface water that collects within the Salt Lake, which is actually a playa. The Death Valley region has an average annual rainfall of less than 2 inches. The Saline Valley has an average annual temperature of 76.5 degrees, ranging from 20 to 130 degrees, and an average evaporation rate of 150 inches within the playa areas. Therefore, the Saline Valley has an average annual water deficit greater than 145 inches.

### 3.4.1 Regulatory Requirements/Guidance

The regulation potentially applicable to water and hydrology in the Valley is the *Clean Water Act* (CWA) (33 USC 1251 et seq.). The CWA, as amended, is designed to restore and maintain the chemical, physical, and biological integrity of surface waters. As such, the CWA establishes effluent standards on an industry-wide basis to address potential water pollution through a permitting system designed to control, and eventually eliminate, water pollution. The *National Pollutant Discharge Elimination System* (NPDES) is the principal Federal program used to control all source discharges of pollution into surface waters. Because the area is located in an enclosed basin that does not cross a State line, there is no CWA jurisdiction or permits required and this Act does not apply to the proposed project.

### 3.4.2 Surface Hydrology and Flooding

Numerous springs are located along the alluvial fans on both the Nelson and Last Chance Ranges and within the Saline Valley floor. These springs and their locations may be attributed to the local faults. In addition, geothermal (warm) springs are found in the northeasterly portion of Saline Valley. The Saline Valley and the surrounding mountain ranges exhibit four types of springs: higher-elevation springs (generally low-volume discharge springs whose flow rates fluctuate during periods of prolonged drought); mid-elevation springs (generally high-volume constant discharge springs supported by regional groundwater flow systems); low-elevation springs (generally supplied by secondary water from the first two types of springs that has infiltrated the coarse alluvial fan materials and flowed down to the contact of the alluvial fans with the fine-grained playa sediments); and mid-valley springs (generally nonplaya springs resulting from geologic barriers, such as faults, that restrict groundwater movement).

The majority of the water currently supplied to the Saline Valley, except for occasional rainfall, is derived from snowmelt and the mid-elevation springs that are dependent on regional groundwater flows. Since the areas surrounding the Saline Valley also have low annual rates of rainfall, those areas with substantial rates of groundwater recharge are found at significant distances, predominantly in the central highlands of the Great Basin of central and eastern Nevada. The proposed project will be designed to minimize the effects of flash floods through the siting, grading, and diversion structures.

The major surface water feature located in the Saline Valley is the Salt Lake, located in the southwest portion of the Saline Valley. Intermittent streams drain into the floor of the Saline Valley and, ultimately, the Salt Lake. These

streams exhibit a classical dendritic drainage pattern flowing into the Saline Valley floor from the surrounding mountains towards the Salt Lake. These streams drain the east- and north-facing slopes of the Nelson Range, the east-facing slopes of the Inyo Mountains, and the west-facing slopes of the Last Chance Range.

The Saline Valley has not been mapped by the Federal Emergency Management Agency (FEMA) to ascertain the presence of 100- and 500-year flood zones. For this reason, a study was performed to determine the local floodplain delineation (Appendix A). All five beacon radar alternative sites, and the microwave repeater sites, are located above the floodplain elevation.

### 3.4.3 Groundwater Resources

Groundwater is found within the Saline Valley at varying depth and quality, with the local groundwater basins being recharged through surface and subsurface infiltration. Groundwater is the area's principal source for desert springs, seeps, and streams. The small springs and seeps found within the Saline Valley offer isolated and limited water for plants, wildlife, and domestic use. Some springs produce potable water, but overall, water quality is poor because of the high dissolved solids concentrations. The presence of phreatophytic (deep rooted) vegetation on sites located along the Inyo Mountains' alluvial fans indicate that groundwater levels are relatively shallow in those areas surrounding the Salt Lake.

## 3.5 Air Quality Setting

Air quality in a given location is described by the concentration of various pollutants in the atmosphere. The types and amounts of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing weather conditions determine air quality. The significance of the pollutant concentration is determined by comparing it to Federal and State ambient air quality standards. These standards represent the maximum allowable atmospheric concentrations that may occur while ensuring protection of public health and welfare, with a reasonable margin of safety.

### 3.5.1 Regulatory Setting for Air Quality

The 1970 *Federal Clean Air Act (CAA)* and the 1990 *Clean Air Act Amendments (CAAA)* regulate airborne emissions from both stationary and mobile sources within the Planning Area. Air quality regulations were first promulgated with the passage of the CAA and revised with the CAAA. The Saline Valley is located within the Great Basin Valleys Air Basin. The GBUAPCD is responsible for the enforcement of the CAA's air quality standards for the Saline Valley. The GBUAPCD's jurisdiction includes both Inyo and Mono Counties (California Air Resources Board 1999).

Congress established the *Prevention of Significant Deterioration Program* (42 USC 7401, Part C) as one of the programs designed to implement the CAA. To facilitate implementation of this program, the Environmental Protection Agency (EPA) established the following classification scheme: Class 1 areas refer to those areas receiving the highest degree of protection, with only limited amounts of specific emissions (sulfur dioxide and particulate matter) allowed; Class 2 areas permit moderate increases of certain air pollutants; and Class 3 areas permit larger amounts of new emissions (Congress has yet to designate any Class 3 areas). Death Valley National Park is a designated Class 2 "floor" area, meaning that those areas within the Park boundaries may never be redesignated to Class 3 (California Air Resources Board 1999).

The CAA also provides for the creation of national ambient air quality standards for a number of criteria pollutants. The criteria pollutants include sulfur dioxide, carbon monoxide, total suspended particulates, nitrogen oxides, lead, ozone, and particulate matter less than 10 microns in diameter (PM10). The State of California Air Resources Board (CARB) is also responsible for the enforcement of State standards that are stricter than Federal standards. The State standards also govern emissions for hydrogen sulfide and particulate sulfates. As part of the CAA's implementation, nonattainment areas (National Ambient Air Quality Standard [NAAQS] Nonattainment Areas) throughout the nation have been identified. These nonattainment areas refer to those air basins that have air pollution levels exceeding Federal clean air standards. As a result, the levels of pollution must be reduced within nonattainment areas to reach compliance with the applicable standards.

Federal facilities located in a NAAQS nonattainment area are required to comply with the Federal Air Conformity rules and regulations of 40 CFR 51/93. Under the Federal Air Conformity rules, an agency that initiates a new action (such as the proposed beacon radar facility) must quantify potential air emissions from both stationary and mobile sources that are associated with the proposed project. The calculated emissions are first compared to established de minimis emission levels (based on the nonattainment status for each applicable criteria pollutant in the area of concern) to determine the relevant compliance requirements. If the calculated emissions are equal to or greater than the de minimis levels, then the requirements of the Air Conformity rules apply to the action.

### 3.5.2 Characteristics of Air Quality in the Region

The nearest EPA-designated nonattainment area for State hydrogen sulfide and particulate sulfate standards is the Searles Valley. This nonattainment area includes the Trona area, where there is a significant amount of soda ash production. The Saline Valley, however, is considered to be in attainment for these two criteria pollutants.

The Saline Valley, which is in the eastern portion of Inyo County, is a designated nonattainment area for PM10 for State standards. The eastern portion of Inyo County has not recorded PM10 emissions in excess of Federal standards (California Air Resources Board 1999). To ensure compliance with all relevant Federal and State air laws, each Air Pollution Control District enacts its own rules and regulations. Local air districts use permits such as “Authority to Construct and Permit to Operate” as one method of implementing these rules and regulations.

Visibility is another important air quality issue within the local air basin, and is the most easily affected by activities that generate dust (especially fine particulates) and sulfur dioxide. Visibility impacts occur from the long-range transport of pollutants from locales as far away as the San Joaquin Valley and the Los Angeles basin (California Air Resources Board 1999). One source of pollution in the region is the Searles Valley (Trona) complex that produces soda ash, borax, potash, and other chemicals from Searles Dry Lake. Other sources of emissions include Owens Lake, the Owens Lake Soda Ash Company, the U.S. Army National Training Center at Fort Irwin, China Lake NAWS, Briggs Mine, and Panamint Valley Limestone Quarry. Air quality monitoring stations in the region are located in Death Valley National Park and at the Briggs Mine (National Park Service 2000).

### 3.5.3 Characteristics of Air Quality in the Saline Valley

The exposed lakebeds and the playas that comprise the floor of the Saline Valley are the dominant sources of wind-blown dust. Local sources of fugitive dust in the Saline Valley also consist of particulate matter from vehicles using the unimproved routes and mining operations. Site visits into the Saline Valley confirmed the impact of fugitive dust generation from vehicles traveling on the unimproved routes in the area. Fugitive dust emissions were observed during field visits to the Saline Valley from vehicles traveling on Saline Valley Road (Appendix D).

## 3.6 Biological Resources Setting

Biological field surveys were completed for the five radar and three repeater sites. Pacific Southwest Biological Services, Inc. and JT3/CH2M HILL completed the surveys (Appendix B). The Saline Valley is dominated by playas and areas with extensive alluvial scatter associated with the mass wasting that has occurred in the area. Vegetation within the Saline Valley is generally limited to creosote and other common desert vegetation. However, there are concentrations of other types of vegetation, including hydrophytic vegetation, in the vicinity of the Salt Lake. The Galena Ridge microwave repeater site is situated in Joshua tree and Juniper association on the valley rim, while the other two repeater sites are located on the north end of the valley floor. Limestone, granitic, and other igneous rock materials characterize the geology of the microwave repeater sites. The diversity of rock materials found within the vicinity of the repeater sites is reflected in the site's floral diversity. In general, biological resources include native and introduced plants that comprise the various habitats, the animals that are found in such habitats, and natural areas that help to support plant and wildlife populations.

### 3.6.1 Regulatory Setting for Biological Resources

The *Endangered Species Act of 1973 (ESA)* (16 USC 1531–1544) provides the framework for the protection of endangered and threatened species. Federal agencies may not jeopardize the existence of listed species, thus ensuring that actions these agencies may authorize, fund, or carry out do not adversely affect the species or adversely modify designated critical habitats. The ESA prohibits the harming or killing (taking) of a listed species

without authorization. While Federal agencies must consult with the U.S. Fish and Wildlife Service (USFWS) when their activities may affect listed species, projects cannot be stopped unilaterally by the USFWS. However, for any anticipated take to be authorized, applicable measures to minimize the impacts must be followed.

The *Migratory Bird Treaty Act (MBTA) of 1918* (16 USC 703–712), as amended, provides for Federal protection of all migratory bird species, their active nests, eggs, etc. Permits are required to remove these birds from their natural roosting and nesting areas. Federal agencies must minimize any potential takings caused by their activities. Depredation permits are required from the USFWS prior to removal or disturbance of nesting birds.

The *California Endangered Species Act (CESA)* (Fish and Game Code Section 2050 et seq.) generally parallels the main provisions of the Federal ESA, and is administered by the California Department of Fish and Game (CDFG). Under the CESA, the term “endangered species” is limited to species native to California, and is defined as a species of plant, fish, or wildlife that is in serious danger of becoming extinct throughout all, or within a significant portion, of its range. The CESA establishes a petitioning process for the listing of State-threatened or -endangered species, and the CDFG is required to adopt regulations for this process. The CESA prohibits the taking of State-listed species except as otherwise provided in State law. Unlike the Federal ESA, the CESA applies prohibitions to species petitioned for State listing (i.e., State candidates).

### 3.6.2 Biological Resources – Vegetation

Vegetation within the Saline Valley area is dominated by creosote bush scrub. Creosote bush scrub occurs extensively throughout the Mojave and Sonoran (Colorado) deserts of southeastern California. Few species possess the broad ecological tolerances of creosote bush (*Larrea tridentata*). Therefore, species composition varies widely between creosote bush scrub communities, depending on local conditions. Typical associations of this community include burrobrush (*Ambrosia dumosa*), winterfat (*Krascheninnikovia lanata*), cheesebush (*Hymenoclea salsola*), and Nevada tea (*Ephedra nevadensis*). The desert saltbrush scrub communities generally occur on soils that are alkaline, have a high soluble salt content, and have an impervious claypan or caliche layer. These communities are predominant in the vicinity of the Salt Lake. Saltbrush communities are sometimes differentiated by phase: halophytic and arid phases. In addition to the previously mentioned species, desert saltbrush scrub communities within these areas are also dominated by spiny menodora (*Menodora spinescens*) and Shockley’s goldenhead (*Acamptopappus shockleyi*).

The vegetation near the Galena Ridge repeater site exhibits considerable taxonomic variation given the survey area’s relatively small size. The plant names used in this study follow classification system from the *Jepson Manual Higher Plants of California*, 1993. This variation is due to the complex geology of the area and the influence of subtle differences in elevation and slope. The survey area contains a mixture of Joshua trees (*Yucca brevifolia*) of sufficient number and density to warrant a Joshua tree woodland designation. Interspersed among the Joshua trees are pinyon pines. Understory species include rabbitbush (*Chrysothamnus viscidiflorus*) and the Great Basin sage (*Artemisia tridentata*) (Appendix B).

### 3.6.3 Biological Resources – Invertebrates

Characteristic invertebrate species in the Saline Valley region include harvester ants (*Pogonomyrmex* spp.), termites (*Isoptera*), creosote bush grasshoppers (*Boottettix argenteus*), desert clicker grasshoppers (*Ligurotettix coquilletti*), Jerusalem crickets (*Stenopelmatus fuscus*), broad-necked darkling beetles (*Coelocnemis californicus*), tiger beetles (*Cicindela* spp.), tarantula hawks (*Hemipepsis* spp.), and desert tarantulas (*Aphonopelma chalcodes*). Butterflies found in the area include Becker’s white (*Pontia beckerii*), common sulphur (*Colias philodice*), and the square-spotted blue (*Euphilotes bauri*).

### 3.6.4 Biological Resources – Vertebrates

Common reptiles found in the Saline Valley’s desert scrub habitats include desert spiny lizards (*Sceloporus magister*), side-blotched lizards (*Uta stansburiana*), western whiptails (*Cnemidophorus tigris*), desert night lizards (*Xantusia vigilis*), leopard lizards (*Gambelia wislizenii*), desert horned lizards (*Phrynosoma platyrhinus*), coachwhips (*Masticophis flagellum*), gopher snakes (*Pituophis melanoleucus*), Mojave rattlesnakes (*Crotalus scutulatus*), chuckwalla (*Sauromalus obesus*), zebra-tailed lizards (*Callisaurus draconoides*), desert iguanas

(*Diposaurus dorsalis*), and sidewinders (*Crotalus cerastes*). Other common reptiles likely to be found in the area include sagebrush lizards (*Sceloporus graciosus*), the Panamint speckled rattlesnake (*Crotalus mitchelli stephensi*), and the Great Basin rattlesnake.

The variety of desert scrub habitats in the Saline Valley area also supports a diversity of birds. Species that are widespread through all vegetation types include sage sparrows (*Amphispiza belli*), white-crowned sparrows (*Zonotrichia leucophrys*), Brewer's sparrows (*Spizella breweri*), western meadowlarks (*Sturnella neglecta*), ash-throated flycatchers (*Myiarchus cinerascens*), horned larks (*Eremophila alpestris*), and common ravens (*Corvus corax*). Also common in most areas are mourning doves (*Zenaida macroura*), California quail (*Callipepla californicus*), ladder-backed woodpeckers (*Picoides scalaris*), western kingbirds (*Tyrannus verticalis*), cactus wrens (*Campylorhynchus brunneicapillus*), and sage thrashers (*Oreoscoptes montanus*). Common raptors in the area include red-tailed hawks (*Buteo jamaicensis*), American kestrels (*Falco sparverius*), northern harriers (*Circus cyaneus*), Cooper's hawks (*Accipiter cooperii*), burrowing owls (*Athene cunicularia*), and great horned owls (*Bubo virginianus*). Other raptors include ferruginous hawks (*Buteo regalis*), turkey vultures (*Cathartes aura*), golden eagles (*Aquila chrysaetos*), prairie falcons (*Falco mexicanus*), short-eared owls (*Asio flammeus*), and long-eared owls (*A. Otus*).

Large carnivorous mammals that may be found in the desert scrub communities of the Saline Valley include coyotes (*Canis latrans*), desert kit foxes (*Vulpes macrotis*), and bobcats (*Felis rufus*). Somewhat less common carnivores include gray foxes (*Urocyon cinereoargenteus*), American badgers (*Taxidea taxus*), and mountain lions (*Felis concolor*). Abundant diurnal species include black-tailed jackrabbits (*Lepus californicus*), desert cottontails (*Sylvilagus auduboni*), antelope ground squirrels (*Ammospermophilus leucurus*), and, especially in the vicinity of developed areas, California ground squirrels (*Citellus beecheyi*). Additionally, during field surveys to the Saline Valley, feral burros were observed in those areas located north and west of the Salt Lake.

The desert scrub habitats of the Saline Valley support a diverse assemblage of nocturnal small mammals adapted to the arid conditions. Most abundant among these are Merriam kangaroo rats (*Dipodomys merriami*) and deer mice (*Peromyscus maniculatus*). Other common species include saltbrush-adapted Great Basin kangaroo rats (*Dipodomys microps*), desert kangaroo rats (*D. deserti*), Panamint kangaroo rats (*D. Panamintinus*), little pocket mice (*Perognathus longimembris*), San Joaquin pocket mice (*P. inornatus*), and carnivorous grasshopper mice (*Onychomys torridus*).

The microwave repeater site near Galena Ridge is at a much greater elevation compared to the other beacon radar site alternatives. The dominant plant community is the Joshua tree woodland interspersed with pinyon pine. Common reptile species identified, or expected to occur within the Galena Ridge Site, include the Panamint alligator lizard (*Elgaria panamintina*), sagebrush lizard (*Sceloporus graciosus*), western fence lizard (*Sceloporus graciosus*), Gilbert skink, side-blotched lizard (*Uta stansburiana*), western whiptail (*Cnemidophorus tigris*), and desert night lizard (*Xantusia vigilis*). Common avian species include the pinyon jay (*Gymnorhinus cyanocephalus*), Clark's nutcracker (*Nucifraga columbiana*), common raven, rock wren (*Salpinctus obsoletus*), chipping sparrow (*Spizella passerina*), sage sparrow, and black-throated sparrow (*Amphispiza bilineata*). Finally, mammals likely to inhabit the area include the desert wood rat (*Neotoma lepida*), Panamint chipmunk (*Eutamias panamintinus*), desert wood rat (*Neotoma lepida*), and mule deer (*Odocoileus hemionus*).

#### 3.6.4.1 Sensitive Biological Resources

Occurrences of several endemic State-listed or Federally listed or otherwise sensitive plants and animals have been reported for the region. The presence of limestone in the Inyo Mountains has resulted in certain endemic plants. The wetlands associated with springs are located at the base of the range and, together with the graben-lake-associated wetlands, result in the presence of adapted or associated plants and animals. Since all of the sites avoid these areas and/or conditions, the potential for impacting these sensitive species or their habitats is considered low for all of the candidate beacon radar and microwave repeater locations. The sensitive biological resources found in the Saline Valley are listed in Table 3-1 and Appendix B.

Table 3-1. Sensitive Biological Resources in the Saline Valley		
Common Name	Scientific Name	Findings
<b>Plants</b>		
Pygmy Poppy	<i>Canbya candida</i>	Not Federally listed, but because it is listed as rare, threatened, or endangered in California and elsewhere under the California Native Plant Society, California Environmental Quality Act (CEQA) consideration is mandatory. Sandy places, 600–1,200m – not observed. Cited at elevations
Ripley's Cymopterus	<i>Cymopterus ripely</i>	Not Federally listed, but because it is listed as rare, threatened, or endangered in California but more common elsewhere under the California Native Plant Society, CEQA consideration is mandatory. Sandy soils, 1,000–1,600m – not observed. Range is to the south, in the Coso Range.
Sand Linanthus	<i>Linanthus arenicola</i>	Federally listed as too widespread and/or not threatened, not State listed, but listed as rare, threatened, or endangered in California but more common elsewhere under the California Native Plant Society. Saline flats, gypsum, 800–1,400m - habitat not present at any candidate sites.
Sagebrush Loeflingia	<i>Loeflingia squarrosa</i> var. <i>artemisianum</i>	Federally listed as too widespread and/or not threatened, not state listed, but listed as rare threatened or endangered in California and elsewhere under the California Native Plant Society. Sand dunes and sandy flats - not observed at any candidate sites.
Inyo Rock Daisy	<i>Perityle inyoensis</i>	Federally listed as a <i>Special Concern Species</i> , not state listed, but listed as rare threatened or endangered in California and elsewhere under the California Native Plant Society. Inyo Mountains slopes, 1,200–2,500m – no canyon slope habitat present at any candidate sites.
Hanaupah Rocky Daisy	<i>Perityle villosa</i>	Federally listed as a <i>Special Concern Species</i> , not state listed, but listed as rare threatened or endangered in California and elsewhere under the California Native Plant Society. Dry rocky slopes, 1,200–2,600m – no limestone habitat present at any candidate sites.
Small-flowered Ricegrass	<i>Pipatherum micranthum</i>	Not Federally listed, but because it is listed as rare threatened or endangered in California but more common elsewhere under the California Native Plant Society, CEQA consideration is mandatory. 700–2,950m – not observed at any candidate sites.
Desert Popcorn-flower	<i>Plagiobotrys salsus</i>	Not Federally listed, but because it is listed as rare threatened or endangered in California but more common elsewhere under the California Native Plant Society, CEQA consideration is mandatory. Alkaline mud flats – not observed at site D-2, the only potential site.
<b>Invertebrates</b>		
Saline Valley Beetle	<i>Ployphylla ateronivea</i>	No habitat at any candidate sites.
<b>Amphibians and Reptiles</b>		
Inyo Mountains Slender Salamander	<i>Batachoseps campi</i>	

Source: Pacific Southwest Biological Services 2000

### 3.7 Noise Setting

Noise levels are typically measured using the decibel (dB) scale, where 0 dB represents the threshold of hearing up to levels where permanent damage can occur. Measurement scales are complicated because they must reflect sensitivity to noise at different times of the day. For example, noise levels that are not perceived to be a problem during daytime hours are often troublesome during the late evening and early morning hours, when people are sleeping and more sensitive to noise. As a result, noise scales are generally weighted to reflect increased sensitivity to noise at different hours of the day (e.g., “dBA” indicates decibels weighted on the A scale). Figure 3-1 illustrates the decibel acoustical scale and some typical noise levels associated with various activities.

The most commonly used units for measuring the level of noise include the dB and the Day-Night Average Noise Level (DNL). The DNL is based upon 24 one-hour equivalent continuous sound level (Leq) measurements. The DNL levels for the late evening and early morning hours (the period between 10:00 p.m. and 7:00 a.m.) are weighted 10 decibels to compensate for the fact that people are more sensitive to noise during the nighttime and early morning periods than at any other time.

Human sensitivity to certain types of noise over other types of noise further complicates the understanding of the effects of noise on individuals. For example, continuous sounds may not be perceived as annoying as periodic sounds that elicit a startled response. Individuals living near a freeway or busy road may adjust to the sound of continuous traffic noise over a long period of exposure. The distance of the noise source from the receptor may also influence noise levels from a specific noise source. However, a periodic siren or low-flying jet is likely to create an annoyance.

#### 3.7.1 Regulatory Setting for Noise

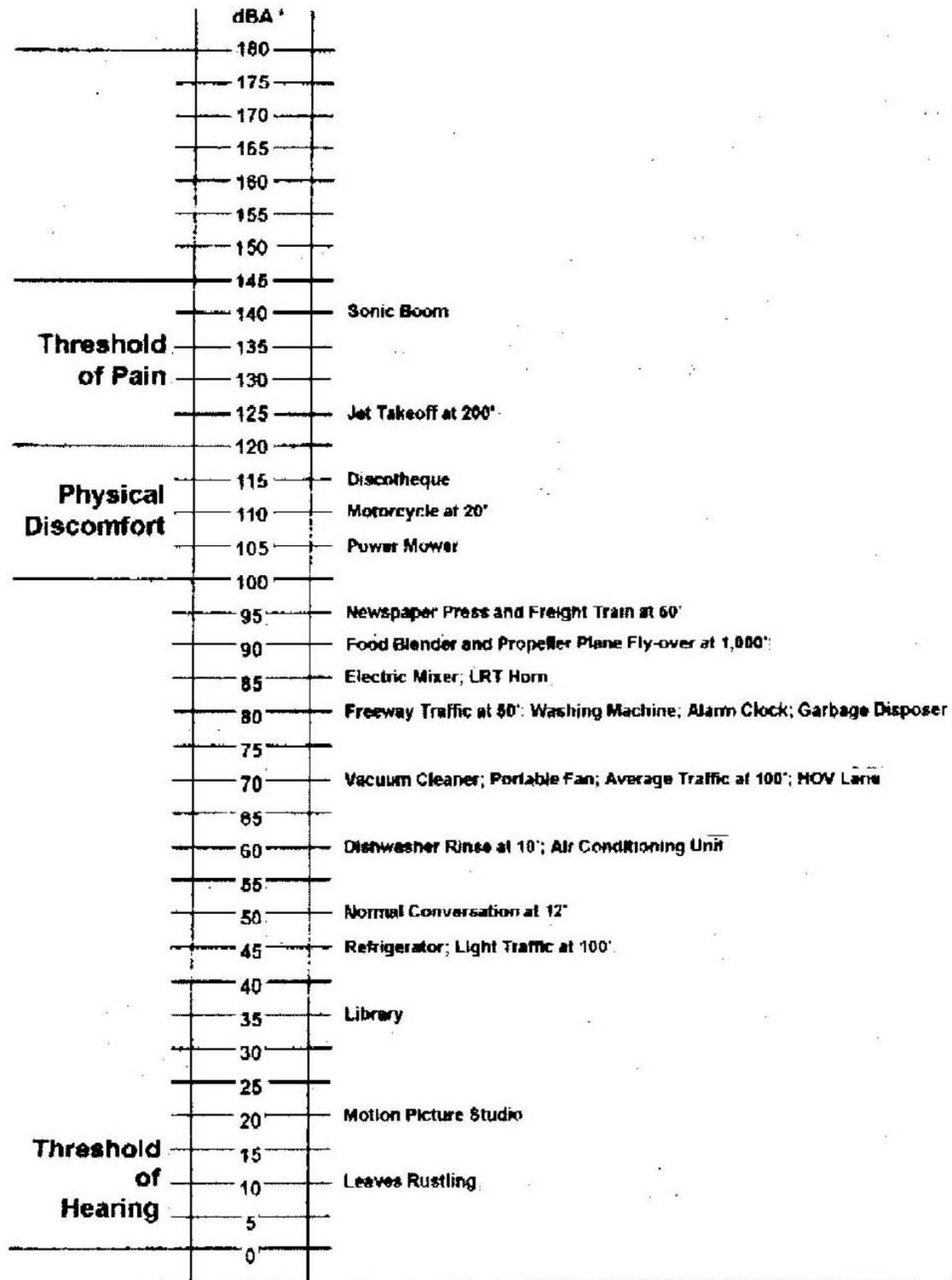
The *Federal Interagency Committee on Urban Noise* (1980) has developed land use compatibility guidelines for noise and provides recommended DNL ranges for various land use categories based on this committee’s findings. The DNL values of 65 dB and less are generally compatible with all types of land uses. Residential, public, and some types of recreational land uses (e.g., outdoor music amphitheaters, nature reserves) are generally not considered compatible with yearly DNL ranges greater than 65 dB. Commercial, industrial, and other types of recreational land uses (e.g., sports arenas, golf courses, amusement parks) are generally considered compatible with yearly DNL ranges between 70 and 75 dB, if measures are incorporated into the design and construction of structures associated with these land uses. Some transportation (e.g., railways, airports) and manufacturing land uses (e.g., mining, nonlivestock agriculture, fishing, and forestry) can tolerate yearly DNL ranges in excess of 85 dB.

#### 3.7.2 Ambient Noise Environment in the Saline Valley

Vehicle noise is generally not an issue in the Saline Valley in spite of the many and heavily used roads found elsewhere in the Death Valley National Park, including State Highways 127, 190, and 178, and NPS major paved roads. The primary vehicular access into the Saline Valley is provided by Saline Valley Road, which is an unimproved dirt road that carries limited traffic. Ambient noise levels taken near the Salt Lake area were below 35 dBA when field measurements were taken (Panacea, Inc. 1999).

During site visits, ambient noise levels were measured throughout the Saline Valley. Overall, the ambient noise environment was generally quiet, well below 45 dBA, largely due to the remoteness of the area and the lack of any significant ground-borne sources of noise. Aircraft operations in the area were a contributor to noise in the Saline Valley. The aircraft noise levels varied considerably, depending on the speed, distance, and altitude of the aircraft observed.

The Saline Valley is located in the vicinity of a number of DOD facilities, including the Fort Irwin Military Reservation, China Lake NAWS, and Nellis Air Force Base, where low-level military overflights are common. Military aircraft from these facilities and Edwards Air Force Base often use airspace in the Saline Valley, and overflights constitute a source of high-level noise incidents. The Saline Valley is located within a designated Military Operations Area (MOA) that permits high performance military aircraft to fly at low altitudes.



\*The unit of sound is the decibel (dB). The loudness of sound is typically measured using a sound meter, the A-Scale of which corresponds closely to the way the human ear perceives sound. Thus the sound level for noise evaluations is frequently expressed in dBA.

**Figure 3-1**  
**Characteristic Noise Levels**  
 Source: Environmental Protection Agency

### 3.8 Cultural Resources Setting

This section describes the existing environmental setting of the proposed locations, with respect to archaeological and historic resources. The results of cultural surveys and documentation of the American Indian consultation process are provided in Appendix C. Potentially significant sites in the Saline Valley are largely associated with transportation corridors, water sources, and mining operations that occurred during the late 19<sup>th</sup> and early 20<sup>th</sup> centuries. While the majority of the Saline Valley remains to be surveyed, the overall cultural sequence for the Saline Valley and the surrounding area is well documented (National Park Service 1977).

#### 3.8.1 Regulatory Requirements/Guidance

The *National Historic Preservation Act (NHPA) of 1966*, as amended (16 USC 470 et seq.), provides for the establishment of the National Register of Historic Places and authorized the establishment of criteria to determine the eligibility of cultural sites for listing on the National Register. Section 106 of the NHPA requires Federal agencies to evaluate the effects of their activities and programs on eligible cultural resources (which include prehistoric and historic archaeological resources, historic resources, and traditional cultural places). Section 110 of the NHPA directs Federal agencies to undertake actions necessary to minimize harm to cultural resources under their ownership or control, or affected by their activities and programs. The *Archaeological Resources Protection Act (ARPA) (16 USC 469)* was intended to address the growing concern regarding the plundering of archaeological and historic sites. The Act makes it illegal to remove any archaeological resources from Federal or Indian lands without a permit.

The *Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC 3001 et seq.)* requires Federal agencies and institutions (e.g., museums) that receive Federal funding to inventory their collections of Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony. American Indians must be given the opportunity to reclaim these items. The Act also requires consultation with American Indians regarding the avoidance of archaeological burial sites. This regulation requires halting excavation and other construction activities in the event that resources are encountered, and consultation with representatives of local American Indian groups if a burial is encountered in the course of archaeological or other excavations. The Act also makes it illegal for anyone to buy or sell American Indian human remains or sacred objects.

The *Archaeological and Historic Preservation Act of 1974* requires all agencies to report to the Secretary of the Interior if any of their projects may cause the loss of significant scientific, prehistoric, historic, or archaeological data, gives them the choice of recovering threatened data themselves or asking the Department of the Interior to do it for them; and authorizes them to transfer up to 1% of the cost of the project to the Department of the Interior to support salvage.

The *American Indian Religious Freedom Act (AIRFA) (42 USC 1996)* recognizes and protects the religious freedoms of American Indians as an integral part of their culture, tradition, and heritage. The Act preserves the right of American Indians to access sacred sites, to use and possess sacred objects, and to freely worship through ceremonial and traditional rites. AFI 32-7065, *Cultural Resources Management*, defines cultural resources as any historical, archaeological, or American Indian artifacts and properties of interest.

#### 3.8.2 Archaeological Resources in the Region

The prehistoric chronology for the Saline Valley is divided into five periods: Death Valley I or the Paleo-Indian Period (9,000 to 7,000 years before present [BP]); Death Valley II or the Desert Archaic Period (5,000 to 1,500 years BP); Death Valley III or the Early Ceramic Period (1,500 to 1,000 years BP); Death Valley IV or the Later Ceramic/Shoshonean Period (1,000 to 130 years BP); and the Ethnohistoric Period (130 years BP to present). Potential prehistoric sites in the Saline Valley and in the surrounding region include caves, rockshelters, lithic scatters, trails, temporary camps, milling stations, quarries, rock art, hunting blinds, villages, cemeteries, and rock alignments. Dwellings erected by the Shoshone in Saline Valley were photographed during historic times.

According to ethnographic information, the Saline Valley and the nearby Death Valley are located within the southern tip of the traditional Western Shoshone territory and the western margin of Owens Valley Paiute lands. The Saline Valley is also located within traditional use areas of the Panamint Shoshone, ancestors of the Timbisha Shoshone, and may also be inhabited by the Owens Valley Paiute. The Panamint Shoshone often used sites within the Saline Valley for ritual purposes, hunting, and food collecting activities. American Indian resources associated

with the Saline Valley include rockshelters, rock art sites, occupation sites, rock features, quarries with associated trails, springs, hunting blinds, ritual healing locations, and ceremonial areas.

Proximity to fresh water and food resources was the primary variable influencing American Indian site habitation. For example, a water source (springs) within or near a food source (a mesquite grove) would be an optimal location for a habitation or food collection site. An alluvial fan generally lacks resources and would not have been a primary occupation or food collecting and processing site, but may have been the location of food storage facilities or a temporary campsite, trail, burial site, or rock art site. There is a high archaeological sensitivity in those areas located near the numerous springs found in the Saline Valley floor and in the canyons of the Nelson and Last Chance Ranges.

Mapped data that indicates the American Indian territorial boundaries within California does not identify any American Indians in the vicinity of the Saline Valley, but limits the identifications to those areas west of Death Valley and western sides of the Saline Valley's bordering mountains (the Nelson Range). More recent research, however, has identified the Saline Valley area as one associated with the Panamint Shoshone during late historic times. (circa 1870s and 1880s) (Volume 11, Great Basin of the Handbook of North American Indians). It has been suggested that the populations within the Saline Valley were low and generally present during winter months. Only four village sites are known to have been present within the Saline Valley.

Within Township 14 South, Range 38 East, Section 22 northwest quarter, BLM documentation notes a cash entry for 1891 (Patent 504), suggesting the beginning of the salt-works in the area. Other entries include an Indian Allotment (80 acres; Patent 1136465) and other American Indian claims. The BLM also has jurisdiction over portions of Section 22.

Previous research for the project areas was completed at the University of California, Riverside, Eastern Information Center (UCR-EIC), the Eastern California Museum at Independence, and the regional repository for archaeological data for Inyo County. Limited archaeological resources were identified in the vicinity of the eight proposed alternative sites, with no archaeological resources found on the proposed sites.

The UCR-EIC research showed that no sites were reported for three beacon radar alternative sites (Alternatives A, C, and D). However, subsequent to the completion of this research, BLM Archaeologist Judyth Reed stated that two BLM alternative sites (Alternatives C and D) were previously surveyed and no resources were identified in either area. The Alternative A site was recently surveyed by NPS Archaeologist Timothy Canaday, which also yielded negative findings. CH2M HILL Archaeologist Barry Boyer surveyed Alternatives B and E, also yielding negative findings.

The Lead Canyon repeater sites were surveyed by CH2M HILL Archaeologist Barry Boyer and yielded negative findings. McKenna et al. (Appendix C) investigated the Galena Ridge repeater site and determined that no prehistoric or historic resources were present at the site or along the access road.

### **3.8.3 Historic Resources**

A single historically significant site located within the Saline Valley is included on the National Register of Historic Places. The Saline Valley Salt Tram was added to the Register on December 31, 1974. Remnants of this tram are visible south of the Salt Lake. Some of the mines found along the eastern face of the Nelson Range may be considered important historic resources pending future surveys.

### **3.9 Traffic Setting**

The traffic and public facilities within the Saline Valley are limited to Saline Valley Road, a county road. The Saline Valley does not contain water, sewer, and power lines found in most urban and rural areas. No permanent public service facilities (e.g., schools, police and fire services) are found in the Saline Valley. Campsite areas near the minimally developed Palm Spring and Warm Spring sites are present. Scattered dwellings around the Salt Lake and mines, and Willow Creek Camp also exist within the valley.

Regional access to the Saline Valley is provided by Big Pine Road (State Route 168) on the north and Darwin-Olancho Road (State Route 190) on the south. Both of these paved roadways connect with U.S. Highway 395 and provide the primary means of access to Death Valley National Park from the west. Saline Valley Road serves as the primary means of access into the Saline Valley. This roadway traverses the Saline Valley in a north-south orientation, connecting with the paved highways to the north and south. Numerous smaller unimproved routes, in varying condition, traverse the Saline Valley, though all of these routes ultimately connect with Saline Valley Road.

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## 4.0 ENVIRONMENTAL CONSEQUENCES

### 4.1 Approach Used in the Analysis of Impacts

This section analyzes the predicted environmental impacts associated with the Saline Valley Beacon Radar Facility Project. The analysis begins with an assessment of the five proposed beacon radar facility alternatives (Alternatives A through E) and Alternative F (the No Action alternative). In addition, this section analyzes the environmental impacts of proposed microwave repeater facilities that will be required in conjunction with the beacon radar alternatives. The environmental analysis considers the following environmental issue areas: land use and aesthetics, earth and geology, water and hydrology, air quality, biological resources, noise, cultural resources, and traffic and infrastructure. No impacts to recreational values other than visual were identified; therefore, visual and recreational impacts are addressed together.

This section is organized to facilitate comparison of impacts associated with implementation of the various action alternatives, in addition to the No Action alternative. The analysis of impacts begins with identification of the thresholds that were referred to in determining whether there is potential for significant adverse impacts. For a number of alternatives, an overview of the methodology used is also indicated. Finally, a matrix is used to compare impacts of the various alternatives and any proposed mitigation.

A matrix is provided for each issue area examined in this EA. The five beacon radar alternative site locations are first discussed, followed by a discussion of the No Action alternative and mitigation measures. Because all of the beacon radar site alternatives require the use of a microwave repeater to provide a clear line-of-transmission with the existing FAA communications facility located on Keeler Peak, the impacts related to the installation of a microwave repeater will apply to all beacon radar alternatives. The three candidate microwave repeater sites are discussed individually.

Based on this analysis, there were no significant adverse impacts identified for any of the alternatives considered.

#### 4.1.1 Land Use/Socioeconomic Impacts of the Proposed Project

The primary land use impacts associated with implementation of the action alternatives (the beacon radar and microwave repeater) are related to the introduction of structures, antenna, and ancillary improvements into areas with minimal development and with a visually intact natural character. The beacon radar antenna radome would be approximately 50 feet high. The repeater site would occupy a footprint consisting of less than 200 square feet. An important criteria used in the selection of candidate beacon radar sites was the proposed site's visibility from Saline Valley Road. All five alternative beacon radar sites are located within, or near, disturbed areas, with varying degrees of visibility and opportunities for concealment (see photo simulations presented in Section 2.0). All of the proposed sites for the microwave repeater are located within 50 feet of existing roads. Four of the five beacon radar sites would be located on BLM land designated for multipurpose use. The BLM Field Office, Ridgecrest, California, as part of the proposed project's early consultation effort, determined that all four alternatives are consistent with the multi-use designations and are in conformity with the BLM Management Plan for this area (BLM 2001a).

The land area required to accommodate the proposed beacon radar facility will be the same for all five alternatives. Less than 1 acre would be needed for the proposed beacon radar complex. Installation of the beacon radar facility would require a staging area for construction equipment and materials storage. This staging area, consisting of approximately 1/3 acre within the approximately 3-acre surveyed area for each site, would use the adjacent unimproved routes where feasible. The small footprint repeater sites are also located on nonwilderness NPS lands. The proposed microwave repeater sites are located near existing roads or in an area that has undergone disturbance.

The potential impacts of the proposed project on land use are presented in Table 4-1.

##### 4.1.1.1 Visual and Recreational Resource Impacts of the Proposed Project

The primary visual and recreational resource impacts associated with implementation of the action alternatives (the beacon radar and microwave repeater) are related to the introduction of structures, antenna, and ancillary improvements into areas with minimal development. Based on preliminary visual analysis, while certain

<b>Table 4-1. Local Land-Use Compatibility Impacts</b>		
<b>Land Use Impacts</b>	<b>Consistency with Land Use</b>	<b>Visual and Recreational Resource Impacts</b>
<b>Alternative A (Central Saline Beacon Radar Alternative)</b>		
<p>No sensitive land uses are located in the immediate area that would be impacted by short-term construction or operational noise.</p> <p>No campgrounds, hiking trails, or other recreational facilities are located within 0.5 mile of this alternative site. In addition, no such developments are being contemplated by the NPS for the alternative site at this time.</p>	<p>The alternative site, in nonwilderness area, is separated from the designated wilderness area by a fence. The unimproved access route that connects this site with Saline Valley Road is located outside designated wilderness areas.</p> <p>The proposed development site would not encroach into this wilderness area.</p> <p>DOT 4(f) requirements apply to this alternative.</p> <p>This is the technically preferred alternative; however, since there are feasible and prudent alternatives, a positive DOT 4(f) finding is not likely to be justified.</p>	<p>This site exhibits superior opportunities for concealment given its distance (1.25 miles) from Saline Valley Road and the nearby vegetation. From Saline Valley Road, views of the facility would be limited to the radome located at the top of the antenna structure. Most of the security lighting would be concealed from view.</p> <p>Lighting would be restricted to motion-activated security lighting. No aircraft safety lighting is required or would be provided on the antenna structure since the structure is 50 feet or less in height. This security design applies to all alternatives.</p>
<b>Alternative B (McElvoy Canyon Beacon Radar Alternative)</b>		
<p>Plans are to use the track made by construction vehicles (at contour, with no improvements) to access the site from the Saline Valley Road.</p>	<p>The Alternative B site, in nonwilderness area, is located west of Saline Valley Road, within the jurisdictional boundaries of the Ridgecrest BLM Field Office, in an area designated for multipurpose use. The designated BLM wilderness areas are located further west along the toe of the Inyo Mountains.</p> <p>Installation of the beacon radar within this site is consistent with long-range land use plans.</p>	<p>The beacon radar facility would be visible from Saline Valley Road on the northerly and southerly approaches. The visual and recreational resource impacts of this site are considered to be moderate compared to some of the other beacon radar facility alternatives because of its proximity to Saline Valley Road.</p>

<b>Table 4-1 (Continued). Local Land-Use Compatibility Impacts</b>		
<b>Land Use Impacts</b>	<b>Consistency with Land Use</b>	<b>Visual and Recreational Resource Impacts</b>
<b>Alternative C (Grey Eagle Mine Beacon Radar Alternative)</b>		
The selection of this alternative would not result in displacement impacts, nor would it be incompatible with the limited development in the area (Grey Eagle Mine).	This alternative site is located in nonwilderness area. The designated BLM wilderness areas are located further west along the toe of the Inyo Mountains. Installation of the beacon radar within this site is consistent with long-range land use plans.	The site’s visibility from Saline Valley Road is limited because of its distance and topography in relation to the road. However, the antenna structure and modular buildings would be visible from the route leading to Grey Eagle Mine. There are no opportunities for concealment with vegetation. Security lighting at this location, when activated, would also be visible from most areas within this portion of the Saline Valley.
<b>Alternative D (Keyes Canyon Beacon Radar Alternative)</b>		
Historic impacts include scattered debris and refuse from previous human activity and the introduction of exotic plant species. The site is located within a turn-around area for vehicles and has extensive impacts from vehicle use.	This alternative site is in nonwilderness area. The designated BLM wilderness areas are located further west along the toe of the Inyo Mountains. Selection of this site would not conflict with any existing management plan.	The facility would be visible from Saline Valley Road, though the site’s 0.7-mile distance from the roadway would lessen the degree of impact. There are no opportunities for concealment with vegetation. Security lighting at this location, when activated, would be visible from most areas within this portion of the Saline Valley.
<b>Alternative E (Keyes Canyon North Beacon Radar Alternative)</b>		
The Salt Lake, the surrounding marshlands, and the nearby mountains dominate the local views from the site looking toward the southeast. Plans are to use the tracks made by construction vehicles (at terrain contour, with no improvements) to access the site from the Saline Valley Road.	This alternative site is not located within a designated BLM wilderness area. The designated BLM wilderness areas are located further west along the toe of the Inyo Mountains. Installation of the beacon radar within this site would not conflict with any long-range management plan.	The beacon radar facility would be visible from Saline Valley Road on the northerly and southerly approaches. The visual and recreational resource impacts of this site are considered to be moderate compared to some of the other beacon radar facility alternatives, because of its proximity to Saline Valley Road. Security lighting at this location, when activated, would be visible from most areas within this portion of the Saline Valley.

<b>Table 4-1 (Concluded). Local Land-Use Compatibility Impacts</b>		
<b>Land Use Impacts</b>	<b>Consistency with Land Use</b>	<b>Visual and recreational Resource Impacts</b>
<b>Alternative F (No Action Alternative)</b>		
No impacts would result. The status quo would be maintained.	No impacts would result. The status quo would be maintained.	No impacts would result. The status quo would be maintained.
<b>Land Use Mitigation Measures (Alternatives A through E)</b>		
No mitigatable impacts were identified.	No mitigatable impacts were identified.	While not required, the modular structures, antenna, radome, solar array structure, and ancillary facilities would be painted in natural earth-tone colors as a means to reduce the facility’s visibility. Bright colors and polished metallic surfaces would be kept to the needed minimum. Security and safety lighting would be motion-activated. (No permanent exterior lighting would be installed, and obstruction clearance lighting is not required on the antenna structure.) Motion activated lighting reduces the potential for adverse impacts related to light and glare.

of the alternative sites are located closer to the primary viewing area of Saline Valley Road, others are located some distance away, further mitigating impacts to visual resources (AFFTC 2002b) (Appendix F). Recreational uses near the proposed sites along Saline Valley Road are limited, consisting primarily of vehicle-based sight-seeing (primarily from Saline Valley Road) and very occasional instances of primitive camping (typically vehicle-based camping at road-accessible spots near the Inyo Mountains). In addition, Saline Valley Road is sparsely used, particularly in the hot summer months. The project is not expected to significantly affect existing recreational activities.

After review of the agency EA draft, the potential for visual impacts were further investigated because of concerns expressed by J. T. Reynolds, Death Valley Park Superintendent, in a letter dated April 21, 2003. The potential to intrude on the views from Saline Valley Road, from the Galena Ridge area road, and from NPS wilderness areas were investigated by installations of a full-scale mock-up repeater station at the Galena Ridge site. This supplemental analysis was undertaken to provide a focused assessment of the potential visibility and visual impacts of a Galena Ridge repeater facility. Based on the analysis of the full-scale mock-up test, it was determined that the Galena Ridge repeater facility would have “virtually no detectable effects on views from Saline Valley” (AFFTC 2003) (Appendix F). By locating the repeater at a site set back slightly from the ridge crest, the repeater facility would not be visible from the portions of the Saline Valley Road in closest proximity to it. The closest valley area from which the repeater would be potentially visible would lie approximately 4.8 miles from the repeater site. From this area, the repeater would “appear as a small speck on the top of the ridge and would not be distinguishable as a man-made structure.”

#### **4.1.2 Environmental Justice**

This action has been reviewed in accordance with EO 12898. Given the lack of a permanent population in the Saline Valley, the temporary nature of the construction, and the unmanned facility, the Federal agencies with jurisdiction by law have determined that this project has no substantial, disproportionate impacts to minority and low-income populations.

#### **4.2 Geology and Soils Impacts of the Proposed Project**

The environmental effects on geology and soils of the beacon radar alternatives (Alternatives A through E) are discussed in this section. The beacon radar alternatives would involve the disturbance of 35,000 square feet for the beacon radar installation and require an additional 16,000 square feet for the staging area. The construction and operational parameters for the proposed beacon radar facility would be similar for all five beacon radar sites with regard to site preparation and grading.

The following worst-case scenario applies to a beacon radar constructed on any of the candidate sites. The actual volume of excavation and fill may vary depending on a future foundation design that is influenced by the type of soil. The footprint, facility layout, and shape are similar for each alternative. Grading and excavation would be limited to the development of a 35,000-square foot site, and the short-term (during construction) disturbance of a 16,000-square foot staging area. The fill and gravel needed to build up the site would be taken from government-approved sources. Limited import of fill/gravel is anticipated for any site (approximately 350 cubic yards). Installation of the pylons and foundations would require the excavation of up to 80 cubic yards of earth that would be spread throughout the site. Because the improvements would be mounted on pylons and foundations, the amount of grading and import required to accommodate the improvements would be limited. Mitigation has been incorporated into the design to ensure that the staging area is permitted to return to its predevelopment condition. Revegetation is not recommended by either of the land management agencies.

The potential impacts of the various alternatives on geology and soils are summarized in Table 4-2.

#### **4.3 Water and Hydrology Impacts of the Proposed Project**

The environmental effects of the individual alternatives on hydrology are discussed in this section. The construction and operational parameters of the proposed beacon radar facility would be similar for all five beacon radar alternative sites with regard to site preparation and grading. Structures will be designed to meet the requirements of Seismic Zone 4 to include provisions for secondary containment in the battery storage area. The project engineer would determine the exact elevation of the site and height of the tower during the design phases.

<b>Table 4-2. Geology and Soils Impacts</b>		
<b>Seismic Impacts</b>	<b>Soils and Mineral Resources Impacts</b>	<b>Grading and Excavation Impacts</b>
<b>Alternative A (Central Saline Beacon Radar Alternative)</b>		
Due to the small size of the proposed action, no seismic impacts are expected.	The soils of this site differ in composition to those of the other four alternatives. This area exhibits alkaline soils that would require compaction and preparation prior to site development. The onsite soils do not represent a significant constraint, given the nature of the proposed facility. No mineral extraction activities are permitted within this area and none would occur with the proposed alternative.	Limited to site development.
<b>Alternative B (McElvoy Canyon Alternative)</b>		
Due to the small size of the proposed action, no seismic impacts are expected.	While the soils on this site are suitable for development, some import would be required to raise the proposed building pad. No mineral extraction activities were found on the site, though some historic mining activities have occurred in the general area.	Limited to site development.
<b>Alternative C (Grey Eagle Mine Beacon Radar Alternative)</b>		
Due to the small size of the proposed action, no seismic impacts are expected.	This alternative site is also located west of Saline Valley Road and northeast of Grey Eagle Mine. Soils within this site were formed from the mass wasting of the nearby mountains, and consist of igneous and metamorphic rock debris. The soils that underlie the site do not appear to represent a constraint to development, pursuant to current plans. No mineral extraction activities are found onsite, though some historic mining activities have occurred in the nearby area, at the Grey Eagle Mine.	Limited to site development.

<b>Table 4-2 (Concluded). Geology and Soils Impacts</b>		
<b>Seismic Impacts</b>	<b>Soils and Mineral Resources Impacts</b>	<b>Grading and Excavation Impacts</b>
<b>Alternative D (Keyes Canyon Beacon Radar Alternative)</b>		
Due to the small size of the proposed action, no seismic impacts are expected.	Soils within this site make up the underlying alluvial fan formed from the mass wasting of the nearby mountains, and consist of igneous and metamorphic rock debris. While the soils are suitable for development, some import would be required to raise the proposed building pad.  No mineral extraction activities are found onsite. No mineral extraction activities are associated with the proposed project.	Site development and some minor excavation and improvement to the access route connecting the site to Saline Valley Road would also be required.
<b>Alternative E (Keyes Canyon North Beacon Radar Alternative)</b>		
Due to the small size of the proposed action, no seismic impacts are expected.	While the soils are suitable for development, some import would be required to raise the proposed building pad and elevate the site.  No mineral extraction activities are found onsite.	Limited to site development.
<b>Alternative F (No Action Alternative)</b>		
No impacts would result. The status quo would be maintained.	No impacts would result. The status quo would be maintained.	No impacts would result. The status quo would be maintained.
<b>Geology and Soils Mitigation Measures (Alternatives A through E)</b>		
No mitigatable impacts were identified.	No mitigatable impacts were identified.	The area used for construction equipment storage and staging, consisting of approximately 16,000 square feet for the beacon radar facility, would be permitted to return to its “predevelopment state” once construction is completed for Alternatives A and D. The construction staging area would include the adjacent roadways where possible.

For the microwave repeater sites, no supplemental cooling would be required because of their elevation. Based on an initial assessment of the site and the 2002 floodplain study (Appendix A), none of the beacon radar sites or planned access routes would be located in a floodplain. Site investigations revealed no indicators of wetland areas associated with the proposed sites or planned access routes.

The facility would require the installation of pylons and foundations to support the proposed improvements. The supporting pylons for the solar structure would extend up to 10 feet into the ground, while the antenna supports may extend up to 30 feet below the ground surface. The modular buildings and antenna would be elevated (using pylons and foundations) to avoid the potential for ponding impacts. None of the concrete pylons or foundations contains materials that would contaminate groundwater. The size of the pylons and foundations is such that there would not be any impact to groundwater flow. No groundwater extraction is associated with the proposed project's operation.

The potential impacts of the alternatives on water and hydrology are summarized in Table 4-3. Potential impacts are categorized according to the following:

- The project's potential for impacting bodies of surface water (including the Salt Lake), springs, and intermittent streams;
- Exposure of facilities to flooding or flood-related impacts; and
- The project's potential for affecting the flow or quality of groundwater.

#### 4.4 Air Quality Impacts of the Proposed Project

The NEPA requires an analysis of potential air quality impacts associated with a proposed action. In order to determine the significance of potential air quality impacts, a set of thresholds has been established for peak daily and annual average concentrations for specific criteria pollutants. These criteria pollutants include carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), particulates of PM10, and reactive organic gases (ROG). Emissions below the threshold levels are assumed to present no threat to ambient air quality. However, a proposed action that would generate emissions in excess of the threshold limits would require mitigation as a means to reduce potential emissions to levels below the thresholds considered to be significant.

The construction and operational parameters of the proposed beacon radar facility would be similar for all five sites with regard to site preparation and grading. As a result, short-term construction impacts associated with onsite preparation would be comparable for all five beacon radar facility scenarios. Offsite short-term construction emissions among the five alternatives would vary somewhat due to the nature and extent of roads providing access to the individual sites, and the offsite emissions are largely associated with fugitive dust generated during the transport of construction equipment. The relatively small size of the microwave repeater site's footprint (200 square feet) would result in negligible construction-related impacts.

The potential short-term (construction-related) fugitive dust impacts associated with the beacon radar facility's installation are summarized in Table 4-4. The calculations of short-term construction emissions assumed that up to 350 cubic yards of fill would be required to elevate the beacon radar sites. Up to approximately 90 cubic yards of concrete would be transported to the beacon radar site from the Owens Valley. The analysis summarized in Table 4-4 represents the worse case scenario due to the length and condition of the access route to Alternative A.

The proposed beacon radar facility's primary source of power would be provided by electricity generated by the solar power equipment. Propane-fueled generators would provide standby power. As a result, long-term operational on-site emissions would be limited to emissions from the propane-powered generator. While the specific power requirements are not precisely known at this time, preliminary estimates indicate that a generator with a 75-kilowatt (kW) design is appropriate. Operational emissions associated with the use of the propane back-up generator would be comparable for all five beacon radar alternatives. A review of commercial generators corresponding to these specifications was completed to determine the nature and extent of emissions. Table 4-5 summarizes projected emissions for the key criteria pollutants. As indicated in Table 4-5, these emissions would be below thresholds considered to be significant. The generator is a back-up power source, and is estimated to operate less than 120 hours per year, with peak usage occurring during the warmer summer months.

<b>Table 4-3. Water and Hydrology Impacts</b>		
<b>Surface Water Impacts</b>	<b>Flooding Impacts</b>	<b>Groundwater Impacts</b>
<b>Alternative A (Central Saline Beacon Radar Alternative)</b>		
<p>While the soils in the area exhibit alkaline characteristics, indicating the potential for periodic inundation, no hydrophytic (wetland) plant indicators are found within the site.</p> <p>A man-made well is located behind a fence and gate approximately 500 feet northeast of the site. This feature would not be impacted by the proposed facility since it is located outside of the development area. No wetlands or intermittent streams are within the site or the planned staging area.</p>	<p>This alternative site is located north of the Saline Marsh, outside of a designated flood zone area.</p> <p>The soils indicate that periodic inundation may occur during periods of intense rainfall. The proposed improvements would be elevated on pylons to avoid potential localized ponding impacts.</p> <p>The site would be prepared to facilitate drainage and prevent flooding.</p>	<p>No impacts are anticipated.</p>
<b>Alternative B (McElvoy Canyon Beacon Radar Alternative)</b>		
<p>This alternative site, west of Saline Valley Road, is situated on the alluvial fan east of McElvoy Canyon. The proposed facility would be designed to minimize impact on drainage features in the area.</p> <p>The site is located outside of any drainage or potential inundation area. No wetland areas are located within this alternative site’s boundaries or in the immediate area. The nearest spring is located 1.25 miles northwest of this site.</p>	<p>This alternative site is on an alluvial fan near the east-facing toe of the Inyo Mountain Range.</p> <p>The proposed improvements would be located on pylons or foundations elevated above the ground to provide adequate drainage.</p>	<p>No impacts are anticipated.</p>
<b>Alternative C (Grey Eagle Mine Beacon Radar Alternative)</b>		
<p>This site is approximately 0.5 mile southeast of a major drainage channel east of Saline Valley Road, but outside of any drainage or potential inundation area. No surface water bodies or other hydrologic features are located within the alternative site’s boundaries or in the immediate area.</p>	<p>This alternative site is located on a relatively undisturbed outwash alluvial fan with a braided stream channel system located on the periphery. The site’s substrate is a mixture of erosion products from the adjacent slopes of the Inyo Range, largely granitic and metamorphic quartzite material.</p> <p>The proposed improvements would be located on pylons and foundations elevated above the ground to provide adequate drainage.</p>	<p>No impacts are anticipated.</p>

<b>Table 4-3 (Concluded). Water and Hydrology Impacts</b>		
<b>Surface Water Impacts</b>	<b>Flooding Impacts</b>	<b>Groundwater Impacts</b>
<b>Alternative D (Keyes Canyon Beacon Radar Alternative)</b>		
<p>This alternative site, west of Saline Valley Road, is situated on the alluvial fan east of Pat Keyes Canyon. This site is approximately 400 feet northeast of, and downslope from, Badwater Springs. The site is located outside of any drainage or potential inundation area. No springs or wetland areas are located within this alternative site's boundaries or in the immediate area.</p>	<p>This alternative site is on an alluvial fan near the east-facing toe of the Nelson Range. The proposed improvements would be located on pylons and foundations elevated above the ground to provide adequate drainage.</p>	<p>No impacts are anticipated.</p>
<b>Alternative E (Keyes Canyon North Beacon Radar Alternative)</b>		
<p>This alternative site, west of Saline Valley Road, is situated on the alluvial fan east of Pat Keyes Canyon. This site is approximately 0.7 miles northeast of, and downslope from, Badwater Springs. Running water was observed at the spring. The proposed facility would not impact the existing springs, nor any drainage features located in the area. The site is located outside of any drainage or potential inundation area. No springs or wetland areas are located within this alternative site's boundaries or in the immediate area.</p>	<p>This alternative site is north of Central Saline on an alluvial fan near the east-facing toe of the Nelson Range. The proposed improvements would be located on pylons and foundations elevated above the ground to provide adequate drainage.</p>	<p>No impacts are anticipated.</p>
<b>Alternative F (No Action Alternative)</b>		
<p>No impacts would result. The status quo would be maintained.</p>	<p>No impacts would result. The status quo would be maintained.</p>	<p>No impacts would result. The status quo would be maintained.</p>
<b>Water and Hydrology Mitigation Measures (Alternatives A through E)</b>		
<p>Grading on all sites would be designed to avoid disruption of adjacent drainage. The gravel spread over the site would raise the level of the site approximately 6 to 12 inches.</p>	<p>Grading on all sites would be designed to direct water around the site and minimize the disruption of adjacent drainage.</p>	<p>No mitigatable impacts were identified.</p>

<b>Table 4-4. Short-Term Construction Related Emissions</b>	
Criteria Pollutant	Total Emissions (tons/year)
Nitrogen Oxide	1.0008
Volatile Organic Chemicals	0.2028
PM10 Emissions	0.4719

Note: Construction efforts are expected to extend for 3 months.

<b>Table 4-5. Long-Term Operational Air Quality Impacts Using Standby Power</b>		
Criteria Pollutant	Factor (pounds/hour)	Emissions (pounds/year) <sup>1</sup>
Nitrogen Oxide	0.017	2.04
Volatile Organic Chemicals	0.052	6.24
PM10	0.001	0.12

<sup>1</sup> Assumes 120 hours of operation per year.

Under the Federal CAA, the proposed action is within an area regulated by the GBUAPCD classified as a serious nonattainment area for particulate matter less than or equal to PM10. As such, the *de minimis* level set for PM10 emissions is up to 70 tons per year per action. It has been determined (using the AFFTC CAA analysis program) that the relevant air emissions for this action are approximately 0.5 ton of PM10. The worst-case direct and indirect emissions from the Saline Valley Radar Facility project, when totaled, are less than the *de minimis* amounts specified in 40 CFR 51.853/93.153 (b)(1); therefore, a conformity determination is not required.

Potential air quality impacts associated with the alternatives are outlined in Table 4-6. The issues, relative to air quality analyzed, include the following:

- Short-term air quality impacts associated with site preparation and construction activities;
- Long-term air quality impacts associated with the facility's operations;
- The project's conformity to the applicable air quality management plan; and,
- The project's Federal facility conformity requirement.

#### **4.5 Biological Resources Impacts of the Proposed Project**

The assessment of impacts on biological resources associated with the implementation of a proposed action uses a sensitivity rating developed by Federal resource agencies. Plant communities with the highest sensitivity include those protected by Federal law. The most represented plant community located in the vicinity of the beacon radar sites is the creosote bush scrub. Creosote bush scrub is recognized as the preferred habitat for the Federally listed desert tortoise. The Saline Valley is not in the known historic range of the desert tortoise. Site surveys of the beacon radar alternatives and the microwave repeater sites were undertaken to ascertain the presence or absence of listed species, and none were found (Appendix B). Because of the small extent and location of the proposed sites, no impacts to wild horses, burrows, or big-horn sheep are expected.

The proposed beacon radar facilities would occupy sites consisting of approximately 35,000 square feet of land area, surrounded by a 10-foot wide cleared area, and an additional 16,000 square feet for construction staging activities. The construction staging area would be allowed to naturally re-vegetate according to discussions with the BLM and NPS. The potential disturbed area for the proposed microwave repeater sites would be limited to approximately 200 square feet. Table 4-7 summarizes the potential impacts of the alternatives on biological resources. The analysis considers the following issues:

- The project's potential for impacting plant and animal life or habitats within the affected area;
- The project's potential for impacting threatened and endangered species; and
- The proposed action's conformity with resource plans.

<b>Table 4-6. Air Quality Impacts</b>		
<b>Short-Term (Construction) Emissions Impacts</b>	<b>Long-Term Emissions Impacts</b>	<b>Air Conformity</b>
<b>Alternatives A through E</b>		
The proposed project would result in short-term emissions related to site preparation (grading, excavation, and construction), equipment emissions, and emissions associated with workers traveling to and from the construction site. The level of impact associated with all five beacon radar sites is comparable. The major impact is related to fugitive dust (PM10) emissions (Table 4-4).	One source of long-term emissions includes the infrequent use of the propane-powered back-up generators. Another source would include limited mobile emissions from vehicles and the dust associated with traveling on unimproved routes. These visits would occur between 6 and 12 times per year.	This project alternative does not exceed the conformity criteria established by the Clean Air Act. The proposed project would be in conformity with the State Implementation Plan (SIP).
<b>Alternative F (No Action Alternative)</b>		
No impacts would result. The status quo would be maintained.	No impacts would result. The status quo would be maintained.	No impacts would result. The status quo would be maintained.
<b>Air Quality Mitigation Measures (A through E)</b>		
<b>Short-Term (Construction) Emissions Impacts</b>	<b>Long-Term Emissions Impacts</b>	<b>Air Conformity</b>
Contractors would be required to adhere to the protocols of the local air pollution control district (the Great Basins Valley Air Pollution Control District) regarding construction equipment emissions and the control of fugitive dust, including PM10. The aggregate used in the site's development must be taken from sources located within the Saline Valley as a means to reduce fugitive dust emissions.	The proposed power-generating equipment (used for back-up power) would be required to employ the applicable best available control technology (BACT) related to the installation and use of the back-up generator. Based upon the propane generator size, a Great Basin Unified Air Pollution Control District permit is not required.	Not applicable.

<b>Table 4-7. Biological Resources Impacts</b>		
<b>Biotic Impacts</b>	<b>Impacts on Threatened and Endangered Species</b>	<b>Conformity With Resource Plans</b>
<b>Alternative A (Central Saline Beacon Radar Alternative)</b>		
<p>This site is located on the edge of the dry lake, just outside the zone of <i>Allenrolfea</i> and <i>Pluchea</i>, both of which are wetland indicators.</p> <p>Onsite vegetation is an alkaline-adapted all-scale species. Nearby, but not affected by the proposed facility, is a mesquite woodland and small area of standing water and aquatic vegetation associated with a man-made artesian well. Several large specimens of western cottonwood occur in the immediate vicinity of the well.</p> <p>Portions of the staging area would be located within an existing unimproved route that has undergone disturbance.</p> <p>The proposed facility may provide roosting and nesting sites for migratory bird species above those provided by the adjacent mesquite woodlands and cottonwoods. Nesting activities may impact radar operations. Problem nests may require removal.</p>	<p>This site has undergone previous disturbance and is located immediately south of an area containing a man-made artesian well.</p> <p>The site and the construction staging area would not encroach into this potentially sensitive area.</p> <p>No impacts are anticipated. There were no threatened or endangered species found at this site.</p>	<p>No encroachment into this wilderness and the protected habitats contained within would result from this alternative.</p> <p>Tops of cottonwood trees extending into the radar signal may have to be trimmed and will not impact the view from the Saline Valley Road due to their location. This would be accomplished in compliance with Wilderness Act provisions.</p>
<b>Alternative B (McElvoy Canyon Beacon Radar Alternative)</b>		
<p>This site and the proposed access route are relatively undisturbed. Vegetation is creosote bush scrub.</p> <p>Because there is no existing route from Saline Valley Road, a 500-foot access route that follows the contour of the topography would be utilized for construction and maintenance activities.</p> <p>The proposed facility may provide additional roosting and nesting sites for migratory bird species. Nesting activities may impact radar operations. Problem nests may require removal.</p>	<p>No impacts are anticipated. There were no threatened or endangered species found at this site.</p>	<p>The affected area is not located within protected wilderness areas.</p>

<b>Table 4-7 (Continued). Biological Resources Impacts</b>		
<b>Biotic Impacts</b>	<b>Impacts on Threatened and Endangered Species</b>	<b>Conformity With Resource Plans</b>
<b>Alternative C (Grey Eagle Mine Beacon Radar Alternative)</b>		
<p>This alternative site is located near a route that serves as access to the nearby Grey Eagle Mine. The site is on a relatively undisturbed outwash alluvial fan with a braided stream channel system on the periphery. The site has a well-developed cryptogammic soil crust of lichens and cyanophytic algae. However, evidence of burro grazing appeared throughout the site.</p> <p>Portions of the staging area would be located within an existing unimproved route that has undergone disturbance.</p> <p>The proposed facility may provide additional roosting and nesting sites for migratory bird species. Nesting activities may impact radar operations. Problem nests may require removal.</p>	<p>No impacts are anticipated. There were no threatened or endangered species found at this site.</p>	<p>The affected area is not located within protected wilderness areas.</p>
<b>Alternative D (Keyes Canyon Beacon Radar Alternative)</b>		
<p>This site is heavily disturbed and the soils are compacted from long-term use as a vehicle turn-around area, with no actual plant growth onsite. Adjacent vegetation is creosote bush scrub.</p> <p>The proposed facility may provide roosting and nesting sites for migratory bird species above those provided by the nearby spring located west of the site. Nesting activities may impact radar operations. Problem nests may require removal.</p> <p>Because of the presence of the spring, burro activity was readily evident at this site. No biotic impacts would result from implementation of this alternative because of the nature of the site's disturbance.</p>	<p>No impacts are anticipated. There were no threatened or endangered species found at this site.</p>	<p>The affected area is not located within protected wilderness areas.</p>

<b>Table 4-7 (Concluded). Biological Resources Impacts</b>		
<b>Biotic Impacts</b>	<b>Impacts on Threatened and Endangered Species</b>	<b>Conformity With Resource Plans</b>
<b>Alternative E (Keyes Canyon North Beacon Radar Alternative)</b>		
<p>This site and the proposed access route are relatively undisturbed. Vegetation is creosote bush scrub.</p> <p>Because there is no existing route from Saline Valley Road, a 750-foot access route that follows the contour of the topography would be utilized for construction and maintenance activities.</p> <p>The proposed facility may provide roosting and nesting sites for migratory bird species above those provided by the nearby spring located south of the site. Nesting activities may impact radar operations. Problem nests may require removal.</p>	<p>No impacts are anticipated. There were no threatened or endangered species found at this site.</p>	<p>The affected area is not located within protected wilderness areas.</p>
<b>Alternative F (No Action Alternative)</b>		
<p>No impacts would result. The status quo would be maintained.</p>	<p>No impacts would result. The status quo would be maintained.</p>	<p>No impacts would result. The status quo would be maintained.</p>
<b>Biological Resources Mitigation Measures (Alternatives A through E)</b>		
<p>Imported fill materials for the NPS sites would be approved by the Park Botanist for invasive species protection.</p> <p>Removal of active nests would only be accomplished with a depredation permit from the U. S. Fish and Wildlife Service. During construction, the Air Force will be responsible for obtaining a depredation permit, if needed. The FAA will be responsible for obtaining annual depredation permits for long-term maintenance of the facility.</p> <p>Passive, nonlethal preventive measures may be used to discourage nesting and roosting.</p> <p>To the maximum extent possible, existing access routes and disturbed areas will be used for equipment staging.</p>	<p>No mitigatable impacts were identified.</p>	<p>No mitigatable impacts were identified.</p>

#### 4.6 Noise Impacts of the Proposed Project

Potential noise impacts are identical for all alternatives, therefore, a generic table has been developed, Table 4-8. The issues analyzed include the following:

- The proposed project's potential for creating short-term (construction-related) noise impacts;
- The project's potential for generating long-term construction noise impacts associated with the facility's operation; and
- The proposed project's potential for impacting sensitive receptors.

#### 4.7 Cultural Resources Impacts of the Proposed Project

The five beacon radar alternatives would involve limited grading and excavation. Two of the five beacon radar site alternatives exhibited considerable disturbance associated with the routes and other activities in the immediate area. One of the microwave repeater sites has also undergone considerable disturbance. No archaeological or historic resources have been identified within the potentially affected areas. American Indian consultations have been initiated and no issues have been raised (Appendix E).

Field surveys were conducted of the access routes and the development sites to assess the impacts on cultural resources. The survey included approximately a 3-acre plot around each location and a strip along each access route (Appendix B).

Table 4-9 summarizes potential impacts associated with the proposed beacon radar alternatives. The analysis considered the following issues:

- Potential impacts upon archaeological resources;
- Potential impacts upon historic resources; and
- Potential impacts upon American Indian values.

#### 4.8 Traffic Impacts of the Proposed Project

Environmental effects of construction and maintenance traffic on the individual alternatives are discussed in this section. Access was a primary consideration in the identification of potential candidate sites for the beacon radar alternatives. All of the beacon radar alternatives are located near the Saline Valley Road or an unimproved route.

The distance to the sites located in the Saline Valley is nearly identical (approximately 2 hours of travel time each way) from the nearest construction support center (Bishop, California). Because the sites have identical development requirements, the actual trip generation for the five beacon radar alternatives would be the same. Construction-related travel is associated with the transport of equipment, modular buildings, and workers. Once operational, trips to the facility would be limited to routine maintenance and refueling of the propane fuel storage tank. Preliminary discussion with local contractors indicated that once construction starts, they would maintain a presence on site until their phase of construction is completed.

They indicated that no more than one round-trip per day would be made out of the Saline Valley for parts and supplies. Long-term maintenance and refueling activities would average approximately one to two trips per month.

Inyo County maintains the Saline Valley Road. Access would generally be available year-round, though temporary closures following snowstorms and washouts may occur. There are no expected operational constraints caused from access limitations. Table 4-10 summarizes the impacts of the various alternatives based on:

- Impact related to site access;
- Short-term traffic impacts; and
- Long-term traffic impacts.

Table 4-11 presents a summary comparison of the six alternatives, using eight attributes analyzed in the EA.

<b>Table 4-8. Noise Impacts</b>		
<b>Short-Term (Construction-Related) Noise Impacts</b>	<b>Long-Term Noise Impacts</b>	<b>Impacts on Sensitive Receptors</b>
<b>Alternative A through E</b>		
<p>Sources of noise would be largely associated with construction equipment used during site preparation and modular building erection.</p> <p>Equipment use would be limited to approximately 3 months and relatively small-scale in nature. Heavy equipment (e.g., wheeled graders) may generate noise levels up to 90 to 110 decibels (dBA) 50 feet from the source.</p>	<p>Operational noise would include both mobile and stationary sources. Mobile noise sources would be limited to occasional visits to the facility by maintenance personnel, and propane fuel deliveries. Vehicles associated with these activities would consist of common commercial and personal types of vehicles, and would not involve any significant levels of noise.</p> <p>Operational stationary noise is related to the occasional use of the propane-powered generator used for emergency back-up power, and building air conditioning units. The generator and air conditioning units' noise levels would be less than 45 dBA at 50 feet from the noise sources.</p>	<p>There are no sensitive noise receptors within 0.5 mile of any of the sites.</p>
<b>Alternative F (No Action Alternative)</b>		
<p>No impacts would result. The status quo would be maintained.</p>	<p>No impacts would result. The status quo would be maintained.</p>	<p>No impacts would result. The status quo would be maintained.</p>
<b>Noise Mitigation Measures (Alternatives A through E)</b>		
<p>No mitigation is planned for construction-related noise impacts.</p>	<p>The generator would be enclosed, thus reducing the effects of potential noise.</p>	<p>No mitigatable impacts were identified.</p>

<b>Table 4-9. Cultural Resources Impacts</b>		
<b>Impacts on Archaeological Resources</b>	<b>Impacts on Historic Resources</b>	<b>Impacts on American Indian Values</b>
<b>Alternative A (Central Saline Beacon Radar Alternative)</b>		
According to archival research, no archaeological sites are recorded within the property or in the adjacent areas. No surface artifacts were found either on the site or along the access route during field surveys conducted by National Park Service (NPS) and U.S. Air Force contract archaeologists.	This site is located adjacent to two unimproved routes. Fences and a cattle guard (to protect the nearby man-made artesian well from the feral burro population) are found nearby.  The proposed project site does not contain any existing historic structures.	No adverse impacts on American Indian values have been identified.
<b>Alternative B (McElvoy Canyon Radar Beacon Alternative)</b>		
According to archival research, no archaeological sites are recorded within the property or less than 0.25 mile from the project location. No surface artifacts were found during the field survey conducted by a U.S. Air Force contract archaeologist.	No historic resources were identified during the records search or field survey.	No adverse impacts on American Indian values have been identified.
<b>Alternative C (Grey Eagle Mine Beacon Radar Alternative)</b>		
According to archival research, no archaeological sites are recorded within the property or in the adjacent areas. No surface artifacts were found during a field survey conducted by a U.S. Air Force contract archaeologist.	The proposed project site is located within a largely undeveloped area containing no existing structures. No man-made features, other than the access route, are located in the Area of Potential Effect (APE). The site is relatively undisturbed.	No adverse impacts on American Indian values have been identified.
<b>Alternative D (Keyes Canyon Beacon Radar Alternative)</b>		
According to archival research, no archaeological sites are recorded within the property or in the adjacent areas. The site has been disturbed from utilization of the existing unimproved access route. No surface artifacts were found during a field survey conducted by a U.S. Air Force contract archaeologist.	A survey was undertaken to assess the site's significance. The site included remnants of relatively modern shelter structures and was littered with refuse.	No adverse impacts on American Indian values have been identified.

<b>Table 4-9 (Concluded). Cultural Resources Impacts</b>		
<b>Impacts on Archaeological Resources</b>	<b>Impacts on Historic Resources</b>	<b>Impacts on American Indian Values</b>
<b>Alternative E (Keyes Canyon North Beacon Radar Alternatives)</b>		
According to archival research, no archaeological sites are recorded within the property or in the vicinity. No surface artifacts were found during the field survey conducted by a U.S. Air Force contract archaeologist.	No historic resources were identified during the records search or field survey.	No adverse impacts on American Indian values have been identified.
<b>Alternative F (No Action Alternative)</b>		
No impacts would result. The status quo would be maintained.	No impacts would result. The status quo would be maintained.	No impacts would result. The status quo would be maintained.
<b>Cultural Resources Mitigation Measures (Alternatives A through E)</b>		
If archaeological artifacts are discovered in the APE during the course of excavation and grading, these activities will be halted and a qualified agency archaeologist will be consulted to determine the appropriate action.	If historic artifacts are discovered during the course of excavation and grading, activities will be halted and a qualified agency expert will be consulted to determine the appropriate action.	A Timbisha Shoshone archaeological monitor will be notified and invited to be present during all construction activities on Timbisha Homeland areas.

<b>Table 4-10. Traffic Impacts</b>		
<b>Impacts Related to Site Access</b>	<b>Short-Term Traffic Impacts</b>	<b>Long-Term Traffic Impacts</b>
<b>Alternatives A through E</b>		
<p>Development of a radar site anywhere in the Saline Valley will result in near identical impacts. Maintenance site visits and material deliveries are identical.</p> <p>All traffic would use the Saline Valley Road and an unimproved route to access the site. There are no planned improvements to the Saline Valley Road required for the project.</p> <p>Access to each alternative would be over an unimproved route. Portions of the route would require minimal development to accommodate trucks and other construction-related equipment.</p>	<p>Construction equipment (i.e., graders, front-end loaders), concrete delivery trucks, and personnel vehicles for construction crews would be required for each alternative.</p> <p>Because of the minimal number of vehicles and trips needed for construction-related activities, no traffic conflicts are anticipated.</p>	<p>The proposed project would involve minimal additional long-term traffic into the Saline Valley associated with periodic maintenance. Propane fuel required for the back-up generators would be delivered approximately once every 6 months.</p> <p>There are minimal maintenance requirements because of the beacon radar technology and the facility would supply its own source of power using solar technology. Potable water would be transported to the site and portable toilets would be installed.</p>
<b>Alternative F (No Action Alternative)</b>		
No impacts would result. The status quo would be maintained.	No impacts would result. The status quo would be maintained.	No impacts would result. The status quo would be maintained.
<b>Traffic Mitigation Measures (Alternatives A through E)</b>		
Existing routes will be used to the maximum extent. New required access routes will follow the topography with minimal developments (i.e., filling in ruts, moving large rocks or other obstructing debris).	No mitigatable impacts were identified.	No septic tank systems would be used. No utility extensions would be required to provide service.

**Table 4-11. Comparison of Alternatives**

<b>Environmental Impacts</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>	<b>Alternative E</b>	<b>Alternative F</b>
Land Use	Moderate	None	None	None	None	None
Visual/Recreational Resources	Minor	Moderate	Minor	Moderate	Moderate	None
Geology and Soils	Minimal	Minimal	Minimal	Minimal	Minimal	None
Water and Hydrology	None	None	None	None	None	None
Air Quality	Minimal	Minimal	Minimal	Minimal	Minimal	None
Biological Resources	Moderate	Minor	Minor	Minimal	Minor	None
Noise	Minimal	Minimal	Minimal	Minimal	Minimal	None
Cultural Resources	None	None	None	None	None	None
Traffic	Minimal	Minimal	Minimal	Minimal	Minimal	None

Note: Rating scale is used within the attribute table only. Rating scale for Alternatives A through F is based upon the following system.

- Minimal Impacts that are not expected to be measurable or that are measurable but are too small to cause any change in the environment.
- Minor Potentially adverse impacts that are measurable, but are within the capacity of the impacted system to absorb the change or the impacts can be easily mitigated with little effort and resources so that they are not significant as defined by 40 CFR 1500–1508.
- Moderate Potentially adverse impacts that are measurable, but do not violate any laws or regulations and are within the capacity of the impacted system to absorb the change or the impacts can be mitigated with effort and resources so that they are not significant as defined by 40 CFR 1500–1508.
- Major Potentially adverse impacts that individually or cumulatively could be significant as defined by 40 CFR 1500–1508.
- None No impacts expected.

#### 4.9 Microwave Repeater Impacts

The Galena Ridge Repeater Site antenna tower would be located on nonwilderness land near a cherry-stemmed mining road leading to the Santa Rosa Mine. The repeater site is at the end of a rough, four-wheel-drive access road, and the 20- to 40-foot tower would not be visible from Saline Valley. Development at this site would have a minor impact on visual resources because of its distance from Saline Valley and any other key observation points and because the site is located in a heavily disturbed mining area. Visual resource impacts would be reduced through design that incorporates colors compatible with the desert environment. Minor site development work would be required for the construction of the tower. The proposed site would require minimal vegetation removal. The access road will not require improvements. Long-term semiannual maintenance for the repeater would be required.

The Lead Canyon North Repeater Site antenna tower would be located on nonwilderness land within 50 feet of the centerline of the Saline Valley Road. No access route is required to the repeater site. The 20- to 40-foot tower would be visible from the Saline Valley Road. Minor site development work would be required for the construction of the tower. No improvements to the Saline Valley Road would be required. The proposed site is located in a relatively undisturbed area and would require minimal vegetation removal. Long-term semiannual maintenance for the repeater would be required.

The Lead Canyon South Repeater Site antenna tower would be located on nonwilderness land within 50 feet of the centerline of the Saline Valley Road. No access route is required to the repeater site. The 20- to 40-foot tower would be visible from the Saline Valley Road. Minor site development work would be required for the construction of the tower. No improvements to the Saline Valley Road would be required. The proposed site is located in a relatively undisturbed area and would require minimal vegetation removal. Long-term semiannual maintenance for the repeater would be required.

Table 4-12 presents a summary comparison of the three repeater site alternatives.

<b>Table 4-12 Summary Comparison of the Three Repeater Sites<sup>1</sup></b>			
<b>Environmental Impacts</b>	<b>Galena Ridge Repeater Site (NPS)<sup>2,3</sup></b>	<b>Lead Canyon South Repeater Site (NPS)</b>	<b>Lead Canyon North Repeater Site (NPS)<sup>2</sup></b>
Land Use	Minimal	Moderate	Moderate
Visual/Recreational Resources	Minor	Moderate	Moderate
Geology and Soils	Minimal	Minimal	Minimal
Water and Hydrology	None	None	None
Air Quality	None	None	None
Biological Resources	Minimal	Minimal	Minimal
Noise	None	None	None
Cultural Resources	None	None	None
Traffic	Minimal	Minimal	Minimal

<sup>1</sup>For all repeater sites considered, visual and recreational resource impacts would be reduced through design that incorporates colors compatible with the desert environment.

<sup>2</sup>Based on comments from the public and agency review, the NPS sites would not be selected unless there is no reasonable and feasible alternative.

<sup>3</sup>The Galena Ridge site has been identified for possible inclusion into the Timbisha Shoshone Homeland.

Note: Rating scale is used within the attribute table only. Rating scale for the three repeater sites is based upon the following system.

- Minimal Impacts that are not expected to be measurable or that are measurable but are too small to cause any change in the environment.
- Minor Potentially adverse impacts that are measurable, but are within the capacity of the impacted system to absorb the change or the impacts can be easily mitigated with little effort and resources so that they are not significant as defined by CEQ<sup>3</sup>.
- Moderate Potentially adverse impacts that are measurable, but do not violate any laws or regulations and are within the capacity of the impacted system to absorb the change or the impacts can be mitigated with effort and resources so that they are not significant as defined by 40 CFR 1500–1508.
- Major Potentially adverse impacts that individually or cumulatively could be significant as defined by 40 CFR 1500–1508.
- None No impacts expected.

## 5.0 CUMULATIVE IMPACTS

### 5.1 Introduction to Cumulative Impacts

Although the impacts of an individual project may be insignificant, the purpose of this assessment is to consider whether a proposed action, if carried out simultaneously with other approved or proposed projects in the immediate area, would have an adverse cumulative effect. In general, effects of a particular action or group of actions typically meet all of the following criteria to be considered a cumulative impact. The potential effects of an action or project typically:

- Occur in a similar locale or region;
- Are not localized (i.e., can contribute to effects of an action in a different location);
- Have a measurable impact on a particular resource; and
- Are long-term in nature (short-term construction impacts would dissipate over time and cease to contribute to cumulative impacts).

Section 5.2 outlines the proposed actions within the proposed project area that may represent a cumulative impact.

### 5.2 Cumulative Projects

The FAA and DOD have plans to upgrade the existing six R-2508 Airport Surveillance Radar (ASR)-8 with updated systems. This is an approved and funded project that is planned to occur over the next three to eight years. This project is independent of the Saline Valley project. The proposed project consists of a radar facility and a repeater site. Approximately one acre would be needed for both facilities. The facility is unmanned and no utilities are required.

China Lake NAWS is in the process of publishing a document, *Environmental Impact Statement for Proposed Military Operational Increases and Implementation of Associated Comprehensive Land Use and Integrated Natural Resources Management Plans*. The preferred alternative is the Moderate Expansion Alternative and proposes a 25% increase in type and tempo of some test and evaluation operations and training activities. The proposed changes in flight operations are focused on Armitage Airfield and the north and south weapons ranges in restricted areas R-2505 and R-2524 with flight activity in the Saline Valley remaining at historic levels. No cumulative impacts will result from the combination of these two proposed actions.

Government and commercial communications facilities that serve the region are sited on surrounding peaks. These types of facilities have a history of growth. No additional communication or radar facility projects for the Saline Valley have been identified.

### 5.3 Potential Cumulative Impacts

Based on the considerations outlined in this section, the proposed project would not be likely to result in significant cumulative impacts. While not required, implementation of the mitigation measures identified in this document, as well as adherence to the best management practices, would reduce any potential cumulative impacts. Key considerations related to the identification of cumulative effects include the following:

- The majority of the physical environmental impacts associated with the proposed project's implementation are not cumulative because they are short-term (construction-related). These short-term impacts include noise and air quality impacts from construction equipment and would cease once construction is completed. Long-term physical environmental impacts include those to visual and recreational resources. Best management practices will be applied in designing the facility to blend into the background to reduce visual and recreational resource impacts as much as feasible.
- The operational impacts related to noise, traffic, and air quality would be comparable to those that exist, since the proposed facility would be unmanned. Vehicle trips into the Saline Valley would be limited to infrequent maintenance activities.
- It is not anticipated that the proposed project would result in the take of any threatened or endangered species.

- Analysis determined that no cultural resources have been identified or found on any of the proposed sites. Nevertheless, best management practices would be used to mitigate any potential impacts to cultural resources encountered during construction.
- The proposed beacon radar facility would not impact low-income and/or minority populations. There are no permanent residences at or near any of the beacon radar and microwave repeater sites.
- Consultation with the Timbisha Shoshone Tribe is ongoing. The Timbisha Shoshone Tribe is a cooperating agency on the EA for this project. No issues have been identified.
- Plot size and solar design will not support additional systems of a substantial nature, thereby limiting future operational activities.

## 6.0 OTHER NEPA CONSIDERATIONS

### 6.1 Irreversible or Irretrievable Commitment of Resources

Resources that are irreversibly or irretrievably committed to a project or action include those that are typically used on a long-term or permanent basis. However, some resources used on a short-term basis that cannot be recovered are also considered to be irretrievable. Resources are also considered irretrievable when they are used for one project and thus become unavailable for other uses. An impact that falls under the category of the irreversible or irretrievable commitment of resources involves the destruction of natural resources that could limit the range of potential uses of that resource. Potential resources that would be irretrievably committed to the proposed project include the following:

- Implementation of the proposed project would involve the commitment of nonrenewable resources such as water, energy, sand and gravel, and metals. Use of these resources would represent a minimal increase in the regional consumption of these commodities.
- The proposed project would result in the installation of a beacon radar and associated microwave repeater that, combined, would occupy approximately 1.0 acre of land area. These facilities would represent a long-term commitment in terms of operation and maintenance that would continue over the life of the project. However, the facilities would be modular in nature and installed on pylons. As a result, they may be removed in the future and the land restored to a natural state.

### 6.2 Growth-Inducing Impacts

Growth-inducing impacts are generally associated with the provision of urban services (e.g., utilities, improved routes, and expanded public services) to an undeveloped or rural area. Rather, the proposed beacon radar facility is in response to safety concerns regarding the lack of available radar coverage within the Saline Valley portion of the R-2508 Complex. Any increase in DOD usage above historic levels would require additional NEPA analysis that would include an opportunity for public review and comment. The proposed project is not considered to be growth inducing based on the factors presented in Table 6-1.

### 6.3 Conclusions

Overall, no potentially significant issues have been identified at any of the five alternative beacon radar sites or any of the three repeater sites considered for the proposed project. A careful review of the environmental issues that have been brought forward to date has not identified any potentially significant issues. This EA concludes that the implementation of the proposed action will not have a significant impact on the existing natural or human environment.

#### 6.3.1 Beacon Radar Alternatives

*Alternative A (Central Saline)*—No significant environmental issues were identified. Alternative A is located on NPS land and is immediately adjacent to designated NPS wilderness. Of the five alternatives considered, this alternative has the least impact on visual and recreational resources because it is largely shielded from key observation points by existing vegetation. In addition, it has reduced visibility because of its distance from key observation points along Saline Valley Road and the Warm Spring area. However, there are additional construction costs and difficulties associated with this site. Also, while this is the technically preferred alternative for radar (95%) and communication coverage, it would require a DOT 4(f) finding. This finding would require a determination that there are no other feasible and prudent alternatives. A 4(f) finding is required for this alternative because of its location on NPS land. A 4(f) finding is not in itself a significant issue. These types of findings are routinely done throughout the United States when required due to a lack of feasible and prudent options.

*Alternative B (McElvoy Canyon)*—No significant environmental issues were identified. Alternative B is located on BLM land and has been identified as the preferred alternative. This alternative has a moderate impact on visual and recreational resources because of its proximity to the Saline Valley Road, a key observation point. Visual and recreational resource impacts would be reduced through design that incorporates colors and textures compatible with the desert environment. This site has the best radar (85%) and communication coverage of all the BLM alternatives.

<b>Table 6-1. Potential Growth-Inducing Impacts</b>		
<b>Factors Contributing to Growth Inducement</b>	<b>Project's Potential Contribution</b>	<b>Basis for Determination</b>
New development in an area presently undeveloped and economic factors that may influence development.	No potential for growth inducement in the vicinity of the project site.	The proposed unmanned beacon radar facility is not likely to increase commerce within Saline Valley.
Extension of roadways and other transportation facilities.	No potential for growth-inducing impacts anticipated.	Based on site visits, Saline Valley Road is adequate to support the construction project. No major road improvements are planned; minor improvements off Saline Valley Road may be needed to provide access.
Extension of infrastructure and other improvements.	No potential for growth-inducing impacts anticipated.	Utilities would not be required to accommodate the proposed beacon radar facility because it would be self-contained.
Major offsite public projects (e.g., treatment plants).	No potential for growth-inducing impacts anticipated.	The proposed unmanned, self-contained beacon radar facility does not require offsite project support.
Removal of housing requiring replacement of housing elsewhere.	No potential for growth-inducing impacts anticipated.	No housing is located in or near any of the alternative sites.
Additional population growth leading to increased demand for goods and services.	No potential growth-inducing impacts on the population would result.	The projected temporary (2 to 3 months) employment is not anticipated to increase the demand for goods and services in the area.
Short-term growth-inducing impacts related to the project's construction.	No potential for growth-inducing impacts anticipated.	Short-term construction employment is not anticipated to result in growth-inducing impacts.

*Alternative C (Grey Eagle Mine)*—No significant environmental issues were identified. Alternative C is located on BLM land. This alternative has a moderate impact on visual and recreational resources because of its distance from the Saline Valley Road, a key observation point. Visual and recreational resource impacts would be further reduced through design that incorporates colors and textures compatible with the desert environment. This site has adequate radar (80%) and communication coverage.

*Alternative D (Keyes Canyon)*—No significant environmental issues were identified. Alternative D is located on BLM land. This alternative has a minor impact on visual and recreational resources because of its proximity to the Saline Valley Road, a key observation point. Visual and recreational resource impacts would be reduced through design that incorporates colors and textures compatible with the desert environment. This site has adequate radar (80%) and communication coverage.

*Alternative E (Keyes Canyon North)*—No significant environmental issues were identified. Alternative E is located on BLM land. This alternative has a moderate impact on visual and recreational resources because of its distance from the Saline Valley Road, a key observation point. Visual and recreational resource impacts would be further reduced through design that incorporates colors and textures compatible with the desert environment. This site has adequate radar (80%) and communication coverage.

*Alternative F (No Action Alternative)*—Generally, for construction projects, the environmentally preferred alternative is no action. This typically means the alternative that causes the least damage to the biological and physical environment. However, this alternative has major negative impacts with respect to air traffic safety.

### 6.3.2 Microwave Repeater Site Options

*Lead Canyon South*—This site is on NPS land and is immediately adjacent to designated BLM wilderness. This is the preferred location for the microwave repeater. The repeater tower is expected to be from 20 to 40 feet in height, with a 6- by 6- by 6-foot triangular concrete pad. This site has a moderate impact on visual and recreational resources because of its distance from the Saline Valley Road (within 50 feet of the centerline), a key observation point. Visual and recreational resource impacts would be reduced through design that incorporates colors compatible with the desert environment. This site has adequate communications with Keeler Peak. This site would require a DOT 4(f) finding.

*Lead Canyon North*—This site is on NPS land and is immediately adjacent to designated NPS wilderness. The repeater tower is expected to be from 20 to 40 feet in height, with a 6- by 6- by 6-foot triangular concrete pad. This site has a moderate impact on visual and recreational resources because of its distance from the Saline Valley Road (within 50 feet of the centerline), a key observation point. Visual and recreational resource impacts would be reduced through design that incorporates colors compatible with the desert environment. This site has adequate communications with Keeler Peak. The site would require a DOT 4(f) finding.

*Galena Ridge*—This site is on NPS land and is immediately adjacent to designated NPS wilderness. The repeater tower is expected to be from 20 to 40 feet in height, with a 6- by 6- by 6-foot triangular concrete pad. This site has a minor impact on visual and recreational resources because of its distance from Saline Valley and any other key observation points. Visual and recreational resource impacts would be reduced through design that incorporates colors compatible with the desert environment and placement (AFFTC 2003) (Appendix F). This site has the best communications with Keeler Peak. The site would require a DOT 4(f) finding.

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**APPENDIX A  
FLOODPLAIN ANALYSIS AND DETERMINATION**

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**Floodplain Delineation for  
Saline Valley Radar and Repeater Sites**

**Desert Research Institute**

**Division of Hydrologic Sciences  
Las Vegas and Reno, Nevada**

**Julianne Miller  
Hydrologic Research Associate**

**and**

**Dr. Richard French  
Research Professor**

**December 2002**

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**Executive Summary**

Edwards Air Force Base (EAFB) is preparing an environmental assessment of the effects of proposed radar and repeater sites in Saline Valley, California. Executive Order 11988, *Floodplains Management*, requires Federal agencies to provide leadership and take action to reduce the risk of flood loss; minimize the effects of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values of floodplains in acquiring, managing, and disposing of Federal lands. Delineation of floodplains, in accordance with FEMA guidelines and requirements, will assist the Air Force Flight Test Center (AFFTC) in developing project alternatives that avoid siting facilities in the 100-year floodplain.

Preliminary flood hazard identification and delineations were performed for the proposed five radar sites and three repeater sites located within Saline Valley. Of the proposed five beacon radar sites (Central Saline, Grey Eagle Mine, Keyes Canyon, Keyes Canyon North, and McElvoy Canyon), only the Keyes Canyon site was located within an 100-year floodplain. None of the three proposed microwave repeater sites (Galena Peak, Lead Canyon North, and Lead Canyon South) were located within an 100-year floodplain; however, both Lead Canyon sites were adjacent to channels that were delineated as 100-year floodplains.

Based upon the geomorphic information observed in the field and the hydrologic and hydraulic information determined in the calculations and modeling of flood hazards, the proposed sites are prioritized as suitable in the following order (most to least):

**Beacon Radar Sites**

McElvoy Canyon  
Keyes Canyon North  
Grey Eagle Mine  
Central Saline  
Keyes Canyon

**Microwave Repeater Sites**

Galena Peak  
Lead Canyon North  
Lead Canyon South

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**APPENDIX B  
BIOLOGICAL RESOURCES SURVEYS**

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## **Biological Assessment of Four Proposed Sites for the Saline Valley Radar Facility Project**

Mr. Mark Bratton, Biologist, JT3/CH2M HILL

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**Abstract:** The Air Force Flight Test Center at Edwards Air Force Base, California, in cooperation with the Federal Aviation Administration (FAA) and the R-2508 Complex Control Board, is proposing to install an FAA certified air traffic control beacon radar facility and microwave repeater in Saline Valley, California. The project has been proposed in response to safety concerns regarding the lack of comprehensive radar coverage and air traffic control for civilian, military, and other governmental flights in the Saline Valley. To support this effort, biological assessments were conducted at four proposed installation sites. All four sites would utilize Waucoba Saline Valley Road as their main access route. As a result of proximity to the existing road, the two northern sites (known as Lead Canyon North and Lead Canyon South) would require only minimal additional road development for accessibility. The remaining two sites (Keyes Canyon North and McElvoy Canyon) are farther from the existing road and would require more extensive road development. In addition, the Keyes Canyon North and McElvoy Canyon sites are located in flood-prone areas that may necessitate additional modification to insure stability during periods of heavy precipitation. No sensitive plants or animals were observed or are expected to occur at any of the proposed project sites.

---

### ***Introduction***

The Air Force Flight Test Center at Edwards Air Force Base, California, in cooperation with the Federal Aviation Administration (FAA) and the R-2508 Complex Control Board, is proposing to install an FAA certified air traffic control beacon radar facility and microwave repeater in Saline Valley, California. The project has been proposed in response to safety concerns regarding the lack of comprehensive radar coverage and air traffic control for civilian, military, and other governmental flights in the Saline Valley.

Project activities would include improved vehicle and equipment access to the sites, site preparation, the installation of two beacon radar facilities and one repeater structure, and continued access to each site for facility maintenance.

### ***Methods***

Biological resource surveys were conducted at each proposed location on 19 June 2002, by JT3/CH2M HILL Biologist Mark Bratton. Full coverage surveys were conducted on each of the proposed sites, and access routes, and included a 100-foot buffer zone around the site boundary.

Five photographs were taken of each site using a Sony Mavica MVC FD 73 digital camera. Each photograph was taken from the center of the site, with one facing due north, east, south, and west; and one showing the center of the site (Appendix 1).

The vegetation community was classified by the dominant shrub species according to the California Department of Fish and Game descriptions of terrestrial natural communities by Holland (1986) with plant nomenclature following Munz (1974).

Biological resource information for Inyo County was derived from the California Department of Fish and Game Natural Diversity Database and a review of previous biological assessments from the surrounding area (Estiri 2001).

### ***Results***

The four sites were surveyed between 9 a.m. and 2 p.m. on 19 June 2002. Weather conditions consisted of sunny skies with no cloud cover, and an ambient air temperature ranging from 64 degrees Fahrenheit (°F) (17.7 degrees Celsius [°C]) to 98 °F (36.6 °C). All sites are located in creosote bush (*Larrea tridentata*) scrub habitat with minor variations

in plant associations and topography. Recorded plant species are based on observations made during summer conditions after annual growth had ceased.

No sensitive plants or animals were observed, or are expected to occur, at any of the proposed project sites. Sensitive plant and animal species known to inhabit the Saline Valley region and associated habitat are listed in Table 1. Several threatened, endangered, and nonlisted bird species may utilize the area for stopovers during their migrations. Other animals that may utilize these areas include, but are not limited to: black-tailed jackrabbit (*Lepus californicus*), burro (*Equus asinus*), coyote (*Canis latrans*), deer mouse (*Peromyscus maniculatus*), desert horned lizard (*Phrynosoma platyrhinos*), desert kangaroo rat (*Dipodomys deserti*), desert kit fox (*Vulpes macrotis*), desert tarantula (*Aphonopelma chalcodes*), desert wood rat (*Neotoma lepida*), leopard lizard (*Gambelia wislizenii*), side-blotched lizard (*Uta stansburiana*), sidewinder rattlesnake (*Crotalus cerastes*), western whiptail lizard (*Cnemidophorus tigris*), and zebra-tailed lizard (*Callisaurus draconoides*).

The Lead Canyon North site is located in a creosote bush scrub community and was interspersed with burro bush (*Ambrosia dumosa*), Mojave fishhook (*Sclerocactus polyancistrus*), and desert trumpet (*Eriogonum inflatum*). Desiccated plant remains indicated several annual plant species had grown within the project site. Due to the survey period and deteriorated condition, annual plant species identification was not possible.

The Lead Canyon South site is located in a creosote bush community and was interspersed with burro bush, Mojave fishhook, saltbush (*Atriplex sp.*), desert trumpet, and the remains of several annual plant species. A small rock outcrop and a wash, running northeast to southwest, were located west of the project site.

The Keyes Canyon North site is located in a creosote bush community interspersed with burro bush, desert trumpet, and the remains of several annual species. The only evidence of animal occurrence at this site was feral burro scat. The general topography of the area indicates that flooding may be a potential concern, especially during a 100 or 1,000-year flood event. Notable features include desert pavement and several small washes traversing the proposed access route to the site. Access to this site may require the installation of culverts within the washes.

The McElvoy Canyon site is located in a creosote bush scrub community and did not include any other plant species. The only evidence of animal occurrence was feral burro scat. The site is located within an alluvial fan with sheet flow from northeast to southwest. The area is highly likely to flood during large precipitation events.



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**SALINE VALLEY RADAR FACILITY: FOUR ALTERNATIVE SITES  
DEATH VALLEY NATIONAL PARK/INYO NATIONAL FOREST  
INYO COUNTY, CALIFORNIA**

## **BIOLOGICAL RECONNAISSANCE**

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**SALINE VALLEY RADAR FACILITY: FOUR ALTERNATIVE SITES  
DEATH VALLEY NATIONAL PARK/INYO NATIONAL FOREST  
INYO COUNTY, CALIFORNIA**

**BIOLOGICAL RECONNAISSANCE**

**2 May 2000**

**INTRODUCTION**

The selection process for a remote radar site in the Saline Valley of trans-Sierran California focused down to four sites on the western side of that grabben valley on the east side of the Inyo Range. The sites, A-3, B-1 C-2 and D-2, were selected based on position, visibility and access criteria by a prior screening exercise. This report of the site reconnaissance is to ascertain the presence of potential for presence of sensitive biological resources and what impact, if any, the proposed facility might have on the observed or suspected biological resources.

The proposed facility is a self-contained, remotely controlled radar system allowing the monitoring of air traffic in the otherwise radar-invisible, remote desert valley. The facility would be powered by a solar array, so positioning relative to the seasonal sunset shadow of *the Inyo* Range was a major consideration. Impacts from any necessary access roads were also a consideration, so most sites were chosen with such access presently in place.

**METHODOLOGY**

A review of the literature and electronic resource information was made for sensitive biological resources reported from *the* region. The site inspection was made on 31 March 2000 by R. Mitchel Beauchamp, Senior Biologist, of Pacific Southwest Biological Services, Inc., in company with Panacea Inc., senior environmental staff members. Also present were, FAA maintenance personnel from Ridgecrest and Air Force civilian staff from Edwards Air Force Base. Members of the Renewable Energy Group of Golden, Colorado were present to assess the parameters for the solar array at each of the four candidate sites. Dana York, National *Park Service* Botanist, was also present at each for an independent site assessment.

**CONCLUSION**

The relative sensitivities of the four sites are, from least sensitive to most sensitive: B-1, C-2, A-3, D-2. The sensitivity relates to the quality of the vegetation at each. Sites B-1 and C-2 are disturbed areas, the first due to prior mining activity and the *latter from* parking in association with the adjacent spring area. Site A-3 has road access but the vegetation is undisturbed. The Creosotebush Scrub, however, is a common representative of Sonoran Desert habitat. Site D-2 is on the edge of sensitive desert playa habitat and adjacent to a desert oasis, although the artesian well was artificially developed. Access to the site will be through typical Creosotebush Scrub and the actual antenna site is a saline area of only Saltbush and Rabbitbush. The area is heavily impacted by visitors to the oasis.

## Table of Observed Plant Taxa

Taxon	Candidate Sites			
	A-3	B-1	C-2	D-2
<i>Ambrosia dumosa</i>	X			
<i>Atriplex canescens</i>			X	
<i>Atriplex hymenelyptra</i>	X			
<i>Atriplex polycarpa</i>			X	X
<i>Chorizanthe rigida</i>	X	X		
<i>Chrysothamnus nauseosus</i>				X
<i>Cryptantha barbiger</i>	X	X		
<i>Echinocactus polycephalus</i>	X			
<i>Ericgonum inflatum</i>	X			
<i>Erioneuron pulchellum</i>	X			
<i>Larrea divaricata</i>	X	X	X	
<i>Opuntia basilaris</i>	X			
<i>Pectocarya setosa</i>	X			
<i>Plagiobotrys arizonicus</i>			X	
<i>Plantago patagonica</i>	X			
<i>Pluchea sericea</i>				X
<i>Prosopis glandulosa</i> var. <i>torreyana</i>				X
<i>Psoralea arborescens</i> <i>minutifolia</i>	X	X		
<i>Tidestromia oblongifolia</i>	X			

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**BIOLOGICAL ASSESSMENT  
OF ELECTRONICS INSTALLATION SITES  
NORTHERN MOJAVE DESERT**

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R. Mitchel Beauchamp, M. Sc., President

# **BIOLOGICAL ASSESSMENT OF ELECTRONICS INSTALLATION SITES NORTHERN MOJAVE DESERT**

20 September 2001

## **Introduction**

Two candidate sites for the installation of electronics facilities to aid in the navigation and monitoring of military aircraft were field surveyed for biotic resources by the biological staff of Pacific Southwest Biological Services. The surveys were made at the request of and under contract with Panacea, Inc.

## **Methodology**

The survey of biotic resources of these four sites was made on 7 July 2001 by R. Mitchel Beauchamp, M. Sc. and Biologist Hector N. Loubet. Each site was surveyed on foot and the individual survey areas involved was about an acre about the mapped location. Access to each site was by way of existing roads or trails. Lists of plants and animals observed were compiled and the vegetation characterized by observation of the principal components, largely shrubs.

## **Assessment Of Potential Impacts**

The upper, Southern Nelson Range site has been disturbed by prior clearing, apparently in association with mineral prospecting. The lower, Northern Nelson Range site has not been disturbed to any significant degree. Construction of electronic facilities at these sites will require access road improvement. This activity will probably have more impact than that facility itself.

Pacific Southwest Biological Services, Inc.

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**APPENDIX C  
CULTURAL RESOURCES INVESTIGATION**

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***PHASE I CULTURAL RESOURCES INVENTORY OF THE  
SALINE VALLEY RADAR FACILITY PROJECT, SALINE  
VALLEY, INYO COUNTY, CALIFORNIA***



***March 2003***



## MANAGEMENT SUMMARY

This study was conducted in support of Section 106 of the National Historic Preservation Act of 1966, as amended, and Air Force Instruction 32-7065, *Cultural Resources Management*. This report presents the results of a Phase I cultural resources inventory conducted in June 2002 for the proposed installation of one radar and one repeater site in Saline Valley, Inyo County, California. This project involves the test boring; ground leveling; trenching; transporting of materials across the desert from Saline Valley Road to the project location; pouring concrete foundations, footings, pylons, and walkways; covering leveled ground with gravel; and installing underground electrical, piping, and grounding; prefabricated metal buildings; an antenna tower with antenna; a solar array; and fencing with lighting. The total area of potential effect (APE) for all four proposed locations is 2.7 hectares (6.6 acres). These include potential radar sites at Keyes Canyon North (Bureau of Land Management [BLM]) and McElvoy Canyon (BLM), as well as potential repeater sites at Lead Canyon North (National Park Service [NPS]) and Lead Canyon South (BLM). Three previously investigated alternative radar sites (McKenna et al. 2002) and one alternative repeater site (McKenna et al. 2001) that are potential project locations are not covered in this study. The radar sites are Grey Eagle Mine, Keyes Canyon, and Central Saline; and the repeater site is Galena Peak.

The literature search identified no previously recorded archaeological sites within the APE. The field survey also noted no archaeological findings present within the APE. As long as project activities, including the movement and staging of vehicles, are restricted to the APE shown in this report, there will be no effect on archaeological resources.

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A CULTURAL RESOURCES INVESTIGATION  
OF THE PROPOSED GALENA PEAK FACILITY  
IN THE SALINE VALLEY  
AREA OF DEATH VALLEY,  
INYO COUNTY, CALIFORNIA

by,

Jeanette A. McKenna, Principal McKenna et al., Whittier CA

## INTRODUCTION

Cultural Resources investigations for the proposed beacon radar and repeater site alternative locations in the Saline Valley area of Death Valley were initiated by McKenna et al. at the request of Panacea, Inc. of La Mirada, California (McKenna 2000). This particular project involves the installation of a repeater facility on Galena Peak and involves lands under the jurisdiction of the Bureau of Land Management (BLM), Ridgecrest, Inyo County office.

## CONCLUSIONS AND RECOMMENDATIONS

As a result of the recent investigations, McKenna et al. has determined that no significant cultural resources are located at the site of the Galena Peak repeater site alternative. No evidence of prehistoric or historic resources was identified. A dirt access road leads to an area near this site - actually leading to an abandoned mine shaft identified on the USGS map as a "prospect". The road continues around the knob of Galena Peak, but does not directly impact the proposed site. Access to the site will result in an increase in the activity on this road and will likely require some level of improvement to the road. The road has not been identified as an historic alignment and, therefore, alterations to the road will not constitute an adverse impact. The prospect, itself, will not be impacted by the project.

Bill Helmer, a local Native American, is concerned that the Galena Peak location may have religious or sacred meaning for Native Americans associated with the Death Valley/Saline Valley area (the Panamint Shoshone). He requested that he be permitted to re-visit the site should it be chosen as one of the alternative facility locations - whether physical resources are identified or not.

At this time, there is no specific data to associated Galena Peak with any religious or sacred site and no physical evidence to associated the location with prehistoric use. Therefore, there will be no identifiable impacts to any potentially significant prehistoric resources.

A single prospect is located on Galena Peak, but will be avoided. The proposed project will not involve property associated with this prospect and it is considered to be outside the Area of Potential Effects (APE). This prospect has not been identified as an historic resource and evidence indicates it is of modern origin. Therefore, the proposed project - through avoidance and a lack of historic association - will not adversely impact this resource.

Overall, no potentially significant resources have been identified at the Galena Peak alternative site and, therefore, there will be no adverse impacts and no further studies are warranted at this time. In the future, however, should the Galena Peak site be chosen as an alternative facility site, McKenna et al. recommends that the area be monitored by a qualified archaeologist and Native American Observer to insure religious or sacred resources are not adversely impacted by the proposed project.

# McKenna et al.

History/Archaeology/Architecture/Paleontology

**Jeanette A. McKenna, M.A.**  
**Owner and Principal Investigator**  
**Reg. Professional Archaeologist**

McKenna et al. completed a standard archaeological records check through the University of California Riverside, Eastern Information Center, Riverside, California. This research was conducted as an in-house search completed by David Brunzell, Archaeological Field Director for McKenna et al. All report files, site files, historic maps, National, State, and local listings for historic properties were researched.

In addition, Jeanette A. McKenna, Owner and Principal Investigator for McKenna et al. and holder of a state wide Bureau of Land Management Cultural Resources Permit, met with the BLM Archaeologist, Judith Reed, in Ridgecrest, to review data on file with that office and to discuss the nature and project needs with respect to fieldwork and adequate coverage. Results of all research are presented in this report.

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Jeanette A. McKenna, Principal, McKenna et al.

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**APPENDIX D  
AIR QUALITY MODELING STUDY**

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**DIRECT AIR QUALITY EMISSIONS**

MOBILE SOURCES

Equipment or Vehicle Type	Rate of Emissions	Number of Equipment/Vehicles	Number of Miles	Number of Days	Number of Hours	NO <sub>x</sub> Emission Factor	VOC Emission Factor	PM10 Emission Factor	Total NO <sub>x</sub> Emissions	Total VOC Emissions	Total PM10 Emissions
LDGV	lb/mile	0	0	0	N/A	0.007	0.021	0.0003	0.0000	0.0000	0.0000
LDGT	lb/mile	2	1,690	12	N/A	0.003	0.007	0.0002	0.0025	0.0059	0.0002
LDDT	lb/mile	2	1,690	12	N/A	0.004	0.002	0.001	0.0034	0.0017	0.0008
HDGT	lb/mile	6	5,069	12	N/A	0.010	0.006	0.0003	0.0253	0.0152	0.0008
HDDT	lb/mile	6	5,040	24	N/A	0.045	0.014	0.006	0.1134	0.0353	0.0151
Track Tractor	lb/hour	0	N/A	0	0	1.26	0.121	0.112	0.0000	0.0000	0.0000
Wheeled Tractor	lb/hour	0	N/A	0	0	1.269	0.188	0.136	0.0000	0.0000	0.0000
Track Loader	lb/hour	0	N/A	0	0	0.827	0.098	0.058	0.0000	0.0000	0.0000
Wheeled Loader	lb/hour	0	N/A	0	0	1.89	0.25	0.172	0.0000	0.0000	0.0000
Misc. Wheeled	lb/hour	2	N/A	4	64	1.691	0.152	0.139	0.0541	0.0049	0.0044
Gas Forklift	lb/hour	0	N/A	0	0	0.412	0.560	11.7	0.0000	0.0000	0.0000
Diesel Forklift	lb/hour	0	N/A	0	0	1.691	0.152	0.139	0.0000	0.0000	0.0000
Shipping Truck	lb/hour	2	N/A	2	20	1.691	0.152	0.139	0.0169	0.0015	0.0014
Roller	lb/hour	0	N/A	0	0	1.691	0.2	0.139	0.0000	0.0000	0.0000
Backhoe Loader	lb/hour	1	N/A	12	60	1.89	0.25	0.172	0.0567	0.0075	0.0052
Excavator	lb/hour	0	N/A	0	0	1.691	0.152	0.139	0.0000	0.0000	0.0000
Bulldozer (tracked)	lb/hour	1	N/A	12	60	24.5	2.9	12.9	0.7350	0.0870	0.3870
Haul/Concrete Truck	lb/hour	2	N/A	12	120	4.166	0.192	0.256	0.2500	0.0115	0.0154
Haul/Concrete Truck	lb/hour	3	N/A	12	144	4.166	0.192	0.256	0.3000	0.0138	0.0184
Water Truck	lb/hour	2	N/A	12	120	4.166	0.192	0.256	0.2500	0.0115	0.0154
Soil Compactor	lb/hour	1	N/A	12	60	1.691	0.2	0.139	0.0507	0.0046	0.0042
Motor Grader	lb/hour	2	N/A	12	120	0.713	0.04	0.061	0.0428	0.0024	0.0037
Frontend Loader	lb/hour	0	N/A	0	0	1.89	0.25	0.172	0.0000	0.0000	0.0000
<b>TOTAL:</b>									1.9008	0.2028	0.4719

STATIONARY SOURCES

Equipment or Vehicle Type	Rate of Emissions	Number of Equipment/Vehicles	Number of Miles	Number of Days	Number of Hours	NO <sub>x</sub> Emission Factor	VOC Emission Factor	PM10 Emission Factor	Total NO <sub>x</sub> Emissions	Total VOC Emissions	Total PM10 Emissions
Gas Engine	lb/hour	0	N/A	N/A	0	0.017	0.052	0.001	0.0000	0.0000	0.0000
Diesel Engine	lb/hour	0	N/A	N/A	0	2.010	0.160	0.143	0.0000	0.0000	0.0000
Natural Gas Engine	lb/hour	0	N/A	N/A	0	0.017	0.052	0.001	0.0000	0.0000	0.0000
Gasoline Welder	lb/hour	0	N/A	N/A	0	0.017	0.052	0.001	0.0000	0.0000	0.0000
Diesel Welder	lb/hour	0	N/A	N/A	0	0.017	0.052	0.001	0.0000	0.0000	0.0000
<b>TOTAL:</b>									0.0000	0.0000	0.0000

Notes:

LDGV = light-duty gasoline vehicle    HDGT = heavy-duty gasoline truck    VOC = volatile organic compounds    lb = pound  
 LDGT = light-duty gasoline truck    HDDT = heavy-duty diesel truck    PM 10 = particulate matter equal to or below 10 microns

*FINAL*

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*FINAL*

**APPENDIX E  
AMERICAN INDIAN CONSULTATION**

*FINAL*

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## **American Indian Consultation**

Letters from the Acting Director of Environmental Management, Edwards Air Force Base, were sent to local American Indians with whom the proposed Radar Facility Project in the Saline Valley may be of interest. A photocopy of each letter is presented, as well as a General Vicinity Map, Project Location Maps from Waucoba Canyon and Pat Keyes Canyon, and an Air Force Flight Test Center Environmental Management Fact Sheet, September 13, 2002, which was sent with each letter.

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SEP 23 2002



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS AIR FORCE FLIGHT TEST CENTER (AFMC)  
EDWARDS AIR FORCE BASE, CALIFORNIA

Antelope Valley Indian Community Coleville Paiutes  
Andrea Erickson, Chairperson  
P.O. Box 47  
Coleville, California 96107

Dear Ms. Erickson,

The United States Air Force, in concurrence with the Federal Aviation Agency, proposes to install one radar and one repeater site in Saline Valley, Inyo County, California. This project involves a total of 6.6 acres of land in two locations in the valley, one in the north end of the valley and one in the middle of the valley, west of Waucoba/Saline Valley Road. We are enclosing maps of the valley depicting the project locations in order to identify and contact appropriate people who may be interested in commenting and providing information on any possible affects to sacred sites.

The proposed undertaking is located in the Mount Diablo Base Meridian. The project area is depicted on the Waucoba Canyon, California 7.5', 1994 USGS Quadrangle: T.11S., R.37E., Section 34 and the Pat Keyes Canyon, California 7.5', Provisional Edition 1987 USGS Quadrangle: T.13S., R.38E, Sections 19, 30, and 31 (see maps). Two alternatives for a repeater location are situated in the northwest end of Saline Valley and two alternatives for a radar location are situated in the west central area of Saline Valley.

Your prompt response regarding this matter would be appreciated. If you have questions about anything related to this project, please call Richard Norwood, Base Historic Preservation Officer, at (661) 277-7077.

Sincerely,

A handwritten signature in cursive script that reads "Robert Wood".

Robert Wood  
Acting Director, Environmental Management  
5 East Popson Avenue  
Edwards Air Force Base, California 93524



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS AIR FORCE FLIGHT TEST CENTER (AFMC)  
EDWARDS AIR FORCE BASE, CALIFORNIA

SEP 23 2002

Antelope Valley Paiute Tribe  
Bill Lovett, Chairperson  
Camp Antelope #11  
Coleville, California 96107

Dear Mr. Lovett,

The United States Air Force, in concurrence with the Federal Aviation Agency, proposes to install one radar and one repeater site in Saline Valley, Inyo County, California. This project involves a total of 6.6 acres of land in two locations in the valley, one in the north end of the valley and one in the middle of the valley, west of Waucoba/Saline Valley Road. We are enclosing maps of the valley depicting the project locations in order to identify and contact appropriate people who may be interested in commenting and providing information on any possible affects to sacred sites.

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Sincerely,

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Robert Wood  
Acting Director, Environmental Management  
5 East Popson Avenue  
Edwards Air Force Base, California 93524



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS AIR FORCE FLIGHT TEST CENTER (AFMC)  
EDWARDS AIR FORCE BASE, CALIFORNIA

SEP 23 2002

Big Pine Band of Owens Valley  
Jessica Bacoach, Chairperson  
P.O. Box 700  
Big Pine, California 93513

Dear Ms. Bacoach,

The United States Air Force, in concurrence with the Federal Aviation Agency, proposes to install one radar and one repeater site in Saline Valley, Inyo County, California. This project involves a total of 6.6 acres of land in two locations in the valley, one in the north end of the valley and one in the middle of the valley, west of Waucoba/Saline Valley Road. We are enclosing maps of the valley depicting the project locations in order to identify and contact appropriate people who may be interested in commenting and providing information on any possible affects to sacred sites.

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Your prompt response regarding this matter would be appreciated. If you have questions about anything related to this project, please call Richard Norwood, Base Historic Preservation Officer, at (661) 277-7077.

Sincerely,

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Robert Wood  
Acting Director, Environmental Management  
5 East Popson Avenue  
Edwards Air Force Base, California 93524



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS AIR FORCE FLIGHT TEST CENTER (AFMC)  
EDWARDS AIR FORCE BASE, CALIFORNIA

SEP 23 2002

Bishop Reservation  
Monty Benogochia  
50 Tu Su Lane  
Bishop, California 93515

Dear Mr. Benogochia,

The United States Air Force, in concurrence with the Federal Aviation Agency, proposes to install one radar and one repeater site in Saline Valley, Inyo County, California. This project involves a total of 6.6 acres of land in two locations in the valley, one in the north end of the valley and one in the middle of the valley, west of Waucoba/Saline Valley Road. We are enclosing maps of the valley depicting the project locations in order to identify and contact appropriate people who may be interested in commenting and providing information on any possible affects to sacred sites.

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Your prompt response regarding this matter would be appreciated. If you have questions about anything related to this project, please call Richard Norwood, Base Historic Preservation Officer, at (661) 277-7077.

Sincerely,

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Robert Wood  
Acting Director, Environmental Management  
5 East Popson Avenue  
Edwards Air Force Base, California 93524



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS AIR FORCE FLIGHT TEST CENTER (AFMC)  
EDWARDS AIR FORCE BASE, CALIFORNIA

SEP 23 2002

Bishop Reservation  
Gerald Kane  
50 Tu Su Lane  
Bishop, California 93515

Dear Mr. Kane,

The United States Air Force, in concurrence with the Federal Aviation Agency, proposes to install one radar and one repeater site in Saline Valley, Inyo County, California. This project involves a total of 6.6 acres of land in two locations in the valley, one in the north end of the valley and one in the middle of the valley, west of Waucoba/Saline Valley Road. We are enclosing maps of the valley depicting the project locations in order to identify and contact appropriate people who may be interested in commenting and providing information on any possible affects to sacred sites.

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Your prompt response regarding this matter would be appreciated. If you have questions about anything related to this project, please call Richard Norwood, Base Historic Preservation Officer, at (661) 277-7077.

Sincerely,

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Robert Wood  
Acting Director, Environmental Management  
5 East Popson Avenue  
Edwards Air Force Base, California 93524



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS AIR FORCE FLIGHT TEST CENTER (AFMC)  
EDWARDS AIR FORCE BASE, CALIFORNIA

SEP 23 2002

Bishop Reservation  
Alan Spoonhunter  
50 Tu Su Lane  
Bishop, California 93515

Dear Mr. Spoonhunter,

The United States Air Force, in concurrence with the Federal Aviation Agency, proposes to install one radar and one repeater site in Saline Valley, Inyo County, California. This project involves a total of 6.6 acres of land in two locations in the valley, one in the north end of the valley and one in the middle of the valley, west of Waucoba/Saline Valley Road. We are enclosing maps of the valley depicting the project locations in order to identify and contact appropriate people who may be interested in commenting and providing information on any possible affects to sacred sites.

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Sincerely,

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Robert Wood  
Acting Director, Environmental Management  
5 East Popson Avenue  
Edwards Air Force Base, California 93524



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS AIR FORCE FLIGHT TEST CENTER (AFMC)  
EDWARDS AIR FORCE BASE, CALIFORNIA

SEP 23 2002

Fort Independence Community of Paiute  
Richard Wilder, Chairperson  
P.O. Box 67  
Independence, California 93526

Dear Mr. Wilder,

The United States Air Force, in concurrence with the Federal Aviation Agency, proposes to install one radar and one repeater site in Saline Valley, Inyo County, California. This project involves a total of 6.6 acres of land in two locations in the valley, one in the north end of the valley and one in the middle of the valley, west of Waucoba/Saline Valley Road. We are enclosing maps of the valley depicting the project locations in order to identify and contact appropriate people who may be interested in commenting and providing information on any possible affects to sacred sites.

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Your prompt response regarding this matter would be appreciated. If you have questions about anything related to this project, please call Richard Norwood, Base Historic Preservation Officer, at (661) 277-7077.

Sincerely,

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Robert Wood  
Acting Director, Environmental Management  
5 East Popson Avenue  
Edwards Air Force Base, California 93524



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS AIR FORCE FLIGHT TEST CENTER (AFMC)  
EDWARDS AIR FORCE BASE, CALIFORNIA

SEP 23 2002

Mr. Robert L. Gomez, Jr.  
2619 Driller Avenue  
Bakersfield, California 93306

Dear Mr. Gomez,

The United States Air Force, in concurrence with the Federal Aviation Agency, proposes to install one radar and one repeater site in Saline Valley, Inyo County, California. This project involves a total of 6.6 acres of land in two locations in the valley, one in the north end of the valley and one in the middle of the valley, west of Waucoba/Saline Valley Road. We are enclosing maps of the valley depicting the project locations in order to identify and contact appropriate people who may be interested in commenting and providing information on any possible affects to sacred sites.

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Your prompt response regarding this matter would be appreciated. If you have questions about anything related to this project, please call Richard Norwood, Base Historic Preservation Officer, at (661) 277-7077.

Sincerely,

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Robert Wood  
Acting Director, Environmental Management  
5 East Popson Avenue  
Edwards Air Force Base, California 93524



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS AIR FORCE FLIGHT TEST CENTER (AFMC)  
EDWARDS AIR FORCE BASE, CALIFORNIA

SEP 23 2002

Kern Valley Indian Community  
Ron Wermuth, Chairperson  
P.O. Box 168  
Kernville, California 93238

Dear Mr. Wermuth,

The United States Air Force, in concurrence with the Federal Aviation Agency, proposes to install one radar and one repeater site in Saline Valley, Inyo County, California. This project involves a total of 6.6 acres of land in two locations in the valley, one in the north end of the valley and one in the middle of the valley, west of Waucoba/Saline Valley Road. We are enclosing maps of the valley depicting the project locations in order to identify and contact appropriate people who may be interested in commenting and providing information on any possible affects to sacred sites.

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Your prompt response regarding this matter would be appreciated. If you have questions about anything related to this project, please call Richard Norwood, Base Historic Preservation Officer, at (661) 277-7077.

Sincerely,

A handwritten signature in cursive script that reads "Robert Wood".

Robert Wood  
Acting Director, Environmental Management  
5 East Popson Avenue  
Edwards Air Force Base, California 93524



SEP 23 2002

DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS AIR FORCE FLIGHT TEST CENTER (AFMC)  
EDWARDS AIR FORCE BASE, CALIFORNIA

Kern Valley Indian Council  
Robert Robinson  
P.O. Box 401  
Weldon, California 93283

Dear Mr. Robinson,

The United States Air Force, in concurrence with the Federal Aviation Agency, proposes to install one radar and one repeater site in Saline Valley, Inyo County, California. This project involves a total of 6.6 acres of land in two locations in the valley, one in the north end of the valley and one in the middle of the valley, west of Waucoba/Saline Valley Road. We are enclosing maps of the valley depicting the project locations in order to identify and contact appropriate people who may be interested in commenting and providing information on any possible affects to sacred sites.

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Your prompt response regarding this matter would be appreciated. If you have questions about anything related to this project, please call Richard Norwood, Base Historic Preservation Officer, at (661) 277-7077.

Sincerely,

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Robert Wood  
Acting Director, Environmental Management  
5 East Popson Avenue  
Edwards Air Force Base, California 93524



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS AIR FORCE FLIGHT TEST CENTER (AFMC)  
EDWARDS AIR FORCE BASE, CALIFORNIA

SEP 23 2002

Koso Native Graves Protection Committee  
Frank Diaz de Leon  
P.O. Box 1117  
Lone Pine, California 93545

Dear Mr. Diaz de Leon,

The United States Air Force, in concurrence with the Federal Aviation Agency, proposes to install one radar and one repeater site in Saline Valley, Inyo County, California. This project involves a total of 6.6 acres of land in two locations in the valley, one in the north end of the valley and one in the middle of the valley, west of Waucoba/Saline Valley Road. We are enclosing maps of the valley depicting the project locations in order to identify and contact appropriate people who may be interested in commenting and providing information on any possible affects to sacred sites.

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Your prompt response regarding this matter would be appreciated. If you have questions about anything related to this project, please call Richard Norwood, Base Historic Preservation Officer, at (661) 277-7077.

Sincerely,

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Robert Wood  
Acting Director, Environmental Management  
5 East Popson Avenue  
Edwards Air Force Base, California 93524



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS AIR FORCE FLIGHT TEST CENTER (AFMC)  
EDWARDS AIR FORCE BASE, CALIFORNIA

SEP 23 2002

Native American Heritage Commission  
915 Capitol Mall, Room #364  
Sacramento, California 95814

Attention: Mr. Rob Wood,

The United States Air Force, in concurrence with the Federal Aviation Administration, proposes to install one radar and one repeater site in Saline Valley, Inyo County, California. This project involves a total of 6.6 acres of land in two locations in the valley, one in the north end of the valley and one in the middle of the valley, west of Waucoba/Saline Valley Road. We are enclosing maps of the valley depicting the project locations and requesting a sacred lands files search in order to identify and contact appropriate people who may be interested in commenting and providing information on any possible affects to sacred sites.

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Sincerely,

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Robert Wood  
Acting Director, Environmental Management  
5 East Popson Avenue  
Edwards Air Force Base, California 93524



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS AIR FORCE FLIGHT TEST CENTER (AFMC)  
EDWARDS AIR FORCE BASE, CALIFORNIA

SEP 23 2002

Owens Valley Paiute Shoshone Cultural Center  
Pat Howard, Co-Chairman  
P.O. Box 1281  
Bishop, California 93515

Dear Mr. Howard,

The United States Air Force, in concurrence with the Federal Aviation Agency, proposes to install one radar and one repeater site in Saline Valley, Inyo County, California. This project involves a total of 6.6 acres of land in two locations in the valley, one in the north end of the valley and one in the middle of the valley, west of Waucoba/Saline Valley Road. We are enclosing maps of the valley depicting the project locations in order to identify and contact appropriate people who may be interested in commenting and providing information on any possible affects to sacred sites.

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Sincerely,

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Robert Wood  
Acting Director, Environmental Management  
5 East Popson Avenue  
Edwards Air Force Base, California 93524



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS AIR FORCE FLIGHT TEST CENTER (AFMC)  
EDWARDS AIR FORCE BASE, CALIFORNIA

SEP 23 2002

Paiute-Shoshone/Lone Pine Community  
Rachel Joseph, Chairperson  
P.O. Box 747  
Lone Pine, California 93545

Dear Ms. Joseph,

The United States Air Force, in concurrence with the Federal Aviation Agency, proposes to install one radar and one repeater site in Saline Valley, Inyo County, California. This project involves a total of 6.6 acres of land in two locations in the valley, one in the north end of the valley and one in the middle of the valley, west of Waucoba/Saline Valley Road. We are enclosing maps of the valley depicting the project locations in order to identify and contact appropriate people who may be interested in commenting and providing information on any possible affects to sacred sites.

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Sincerely,

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Robert Wood  
Acting Director, Environmental Management  
5 East Popson Avenue  
Edwards Air Force Base, California 93524



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS AIR FORCE FLIGHT TEST CENTER (AFMC)  
EDWARDS AIR FORCE BASE, CALIFORNIA

SEP 23 2002

Timba-Sha Band of Shoshone Indians  
Pauline Esteves, Chairperson  
P.O. Box 206  
Death Valley, California 92328

Dear Ms. Esteves,

The United States Air Force, in concurrence with the Federal Aviation Agency, proposes to install one radar and one repeater site in Saline Valley, Inyo County, California. This project involves a total of 6.6 acres of land in two locations in the valley, one in the north end of the valley and one in the middle of the valley, west of Waucoba/Saline Valley Road. We are enclosing maps of the valley depicting the project locations in order to identify and contact appropriate people who may be interested in commenting and providing information on any possible affects to sacred sites.

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Your prompt response regarding this matter would be appreciated. If you have questions about anything related to this project, please call Richard Norwood, Base Historic Preservation Officer, at (661) 277-7077.

Sincerely,

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Robert Wood  
Acting Director, Environmental Management  
5 East Popson Avenue  
Edwards Air Force Base, California 93524



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS AIR FORCE FLIGHT TEST CENTER (AFMC)  
EDWARDS AIR FORCE BASE, CALIFORNIA

SEP 23 2002

Timbisha Shoshone Tribe  
Bill Helmer, Tribal Historic Preservation Officer  
P.O. Box 206  
Death Valley, California 92328-0206

Dear Mr. Helmer,

The United States Air Force, in concurrence with the Federal Aviation Agency, proposes to install one radar and one repeater site in Saline Valley, Inyo County, California. This project involves a total of 6.6 acres of land in two locations in the valley, one in the north end of the valley and one in the middle of the valley, west of Waucoba/Saline Valley Road. We are enclosing maps of the valley depicting the project locations in order to identify and contact appropriate people who may be interested in commenting and providing information on any possible affects to sacred sites.

The proposed undertaking is located in the Mount Diablo Base Meridian. The project area is depicted on the Waucoba Canyon, California 7.5', 1994 USGS Quadrangle: T.11S., R.37E., Section 34 and the Pat Keyes Canyon, California 7.5', Provisional Edition 1987 USGS Quadrangle: T.13S., R.38E, Sections 19, 30, and 31 (see maps). Two alternatives for a repeater location are situated in the northwest end of Saline Valley and two alternatives for a radar location are situated in the west central area of Saline Valley.

Your prompt response regarding this matter would be appreciated. If you have questions about anything related to this project, please call Richard Norwood, Base Historic Preservation Officer, at (661) 277-7077.

Sincerely,

A handwritten signature in cursive script that reads "Robert Wood".

Robert Wood  
Acting Director, Environmental Management  
5 East Popson Avenue  
Edwards Air Force Base, California 93524



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS AIR FORCE FLIGHT TEST CENTER (AFMC)  
EDWARDS AIR FORCE BASE, CALIFORNIA

SEP 23 2002

Mr. Harold Williams  
1110 Elm Street  
Tehachapi, California 93561

Dear Mr. Williams,

The United States Air Force, in concurrence with the Federal Aviation Agency, proposes to install one radar and one repeater site in Saline Valley, Inyo County, California. This project involves a total of 6.6 acres of land in two locations in the valley, one in the north end of the valley and one in the middle of the valley, west of Waucoba/Saline Valley Road. We are enclosing maps of the valley depicting the project locations in order to identify and contact appropriate people who may be interested in commenting and providing information on any possible affects to sacred sites.

The proposed undertaking is located in the Mount Diablo Base Meridian. The project area is depicted on the Waucoba Canyon, California 7.5', 1994 USGS Quadrangle: T.11S., R.37E., Section 34 and the Pat Keyes Canyon, California 7.5', Provisional Edition 1987 USGS Quadrangle: T.13S., R.38E, Sections 19, 30, and 31 (see maps). Two alternatives for a repeater location are situated in the northwest end of Saline Valley and two alternatives for a radar location are situated in the west central area of Saline Valley.

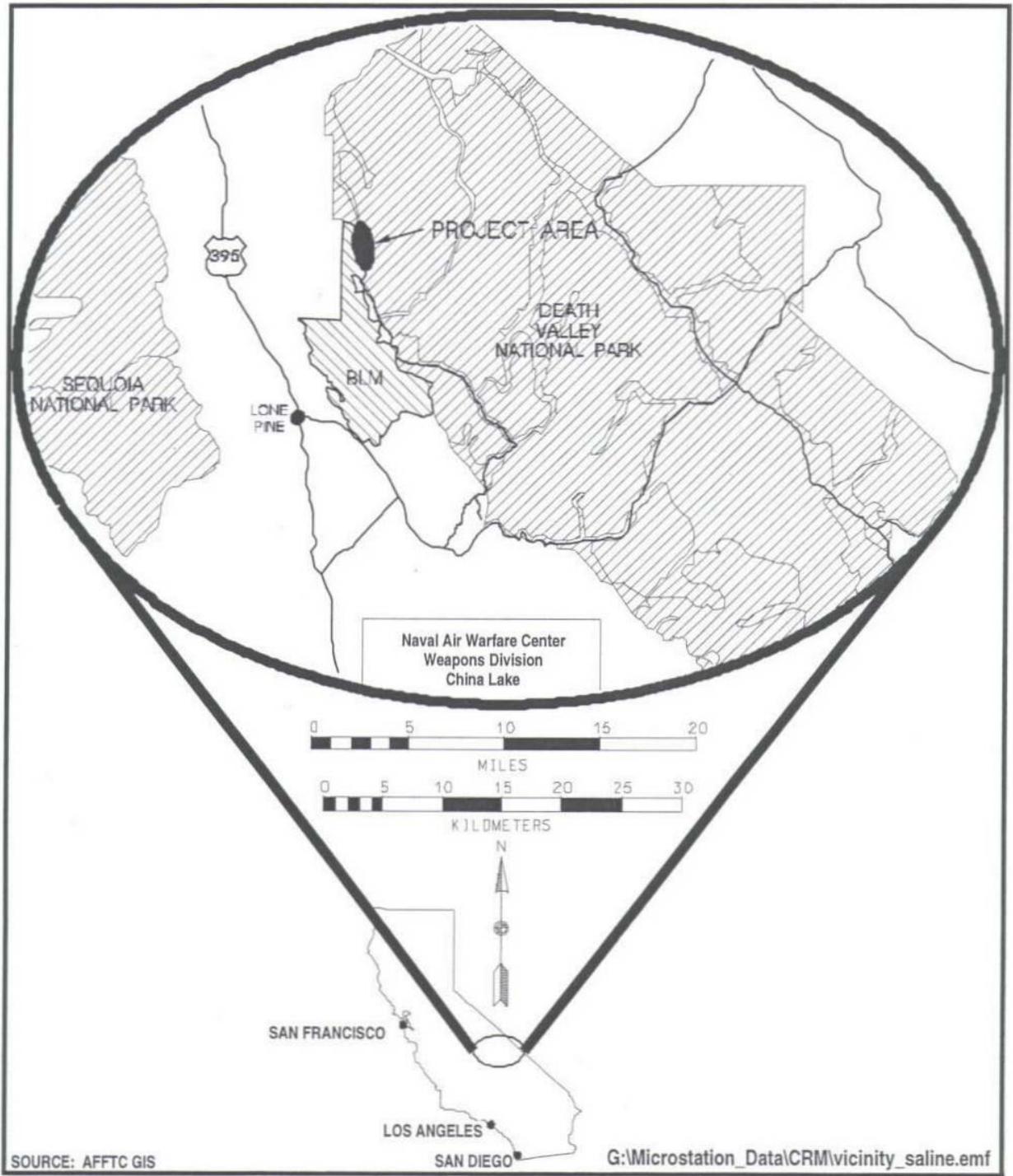
Your prompt response regarding this matter would be appreciated. If you have questions about anything related to this project, please call Richard Norwood, Base Historic Preservation Officer, at (661) 277-7077.

Sincerely,

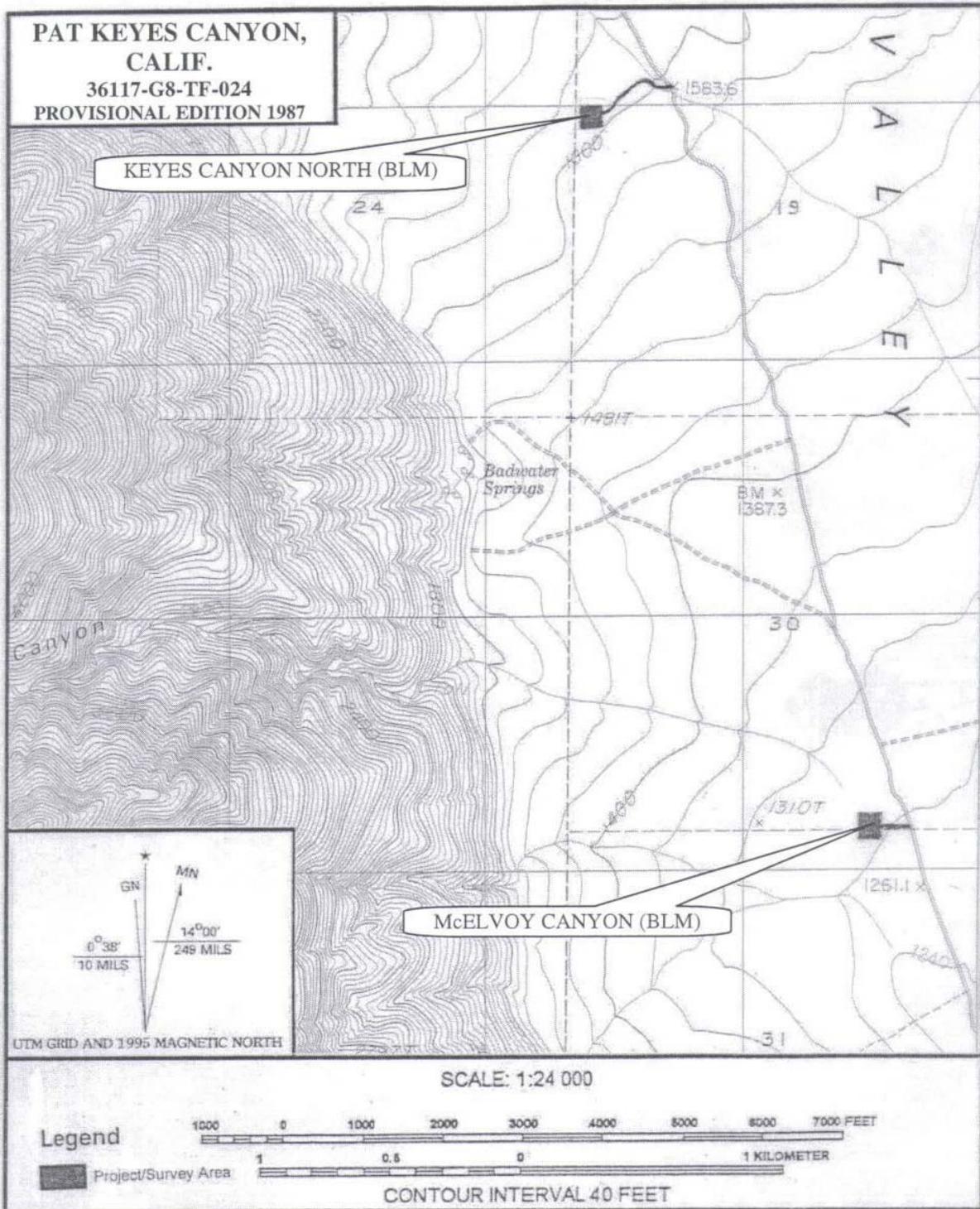
A handwritten signature in cursive script, reading "Robert Wood", is positioned above the typed name.

Robert Wood  
Acting Director, Environmental Management  
5 East Popson Avenue  
Edwards Air Force Base, California 93524

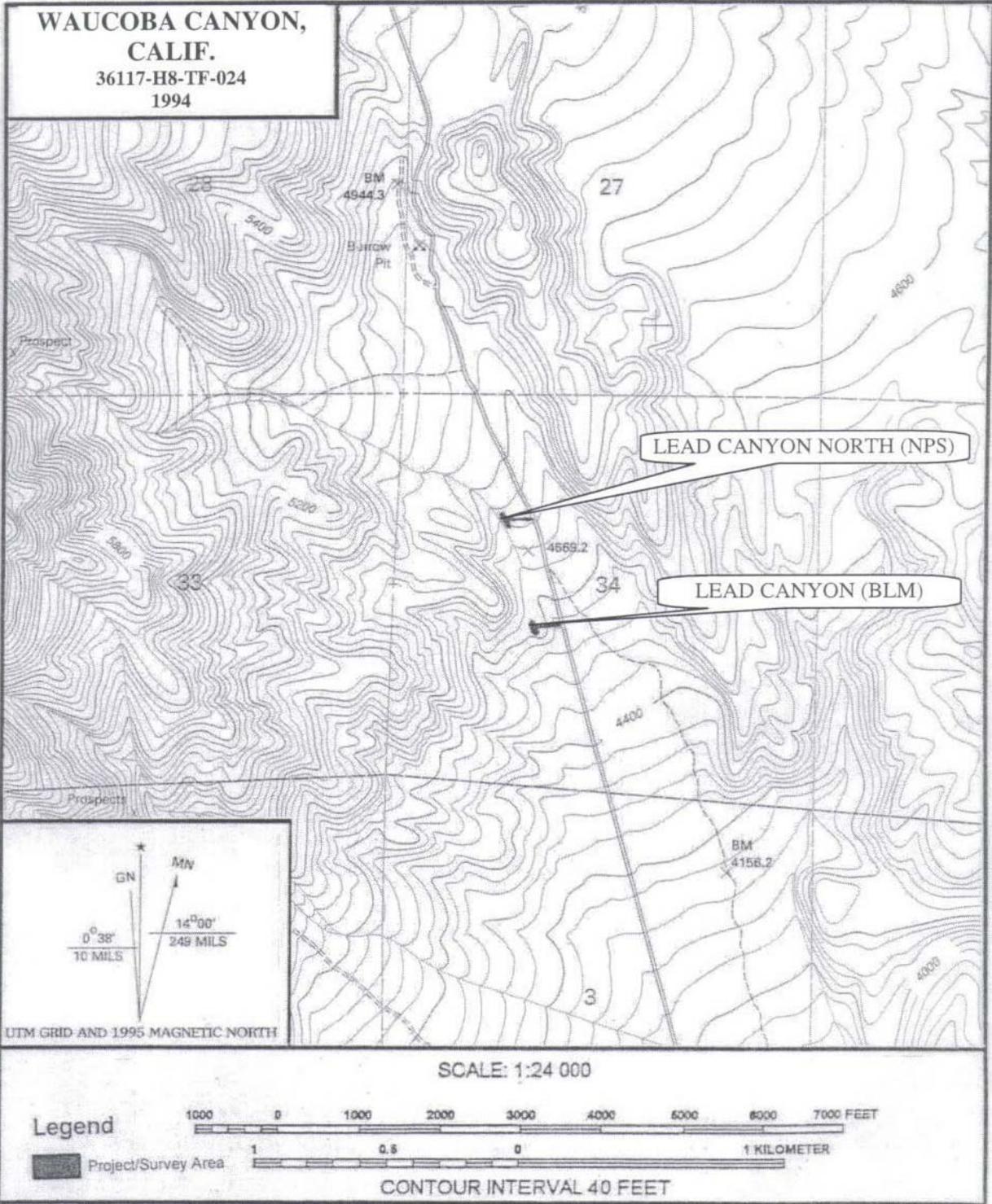
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General Vicinity Map



Project Location Map

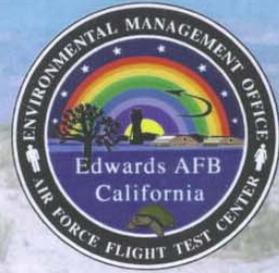


Project Location Map

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# Fact Sheet

August 13, 2002



## Air Force Proposes Radar System for Saline Valley

The Air Force Flight Test Center at Edwards Air Force Base (AFB) is proposing to construct a beacon radar system and an associated microwave repeater facility on non-wilderness lands within the Saline Valley. Once built, the facility will become part of the Federal Aviation Administration radar network. The Saline Valley is located in Inyo County, Calif.

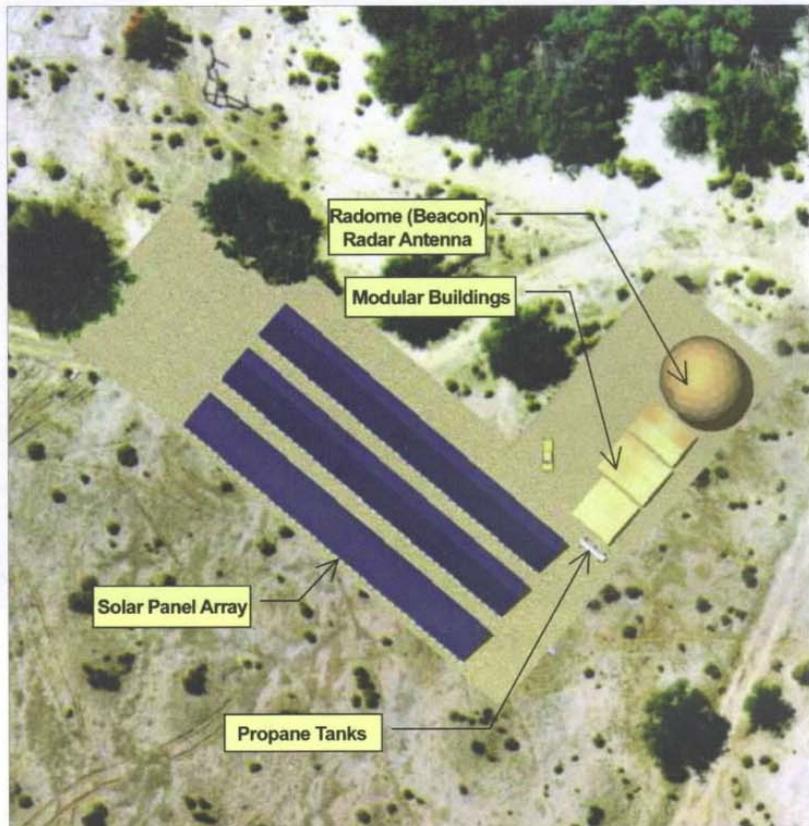
### Purpose and Need

The purpose of the proposed project is to provide air traffic controllers and pilots with real time flight data within the Saline Valley area and other information that would assist in aircraft identification and search and rescue operations.

The Saline Valley's geography and remoteness create a blank area in local radar beneath 8000 feet above ground level. Military and civilian aircraft often fly below this altitude in the area. The area has a history of aircraft near collisions and an ongoing potential for collisions in the future.

### Location and Scope of the Project

The proposed beacon radar and microwave repeater site



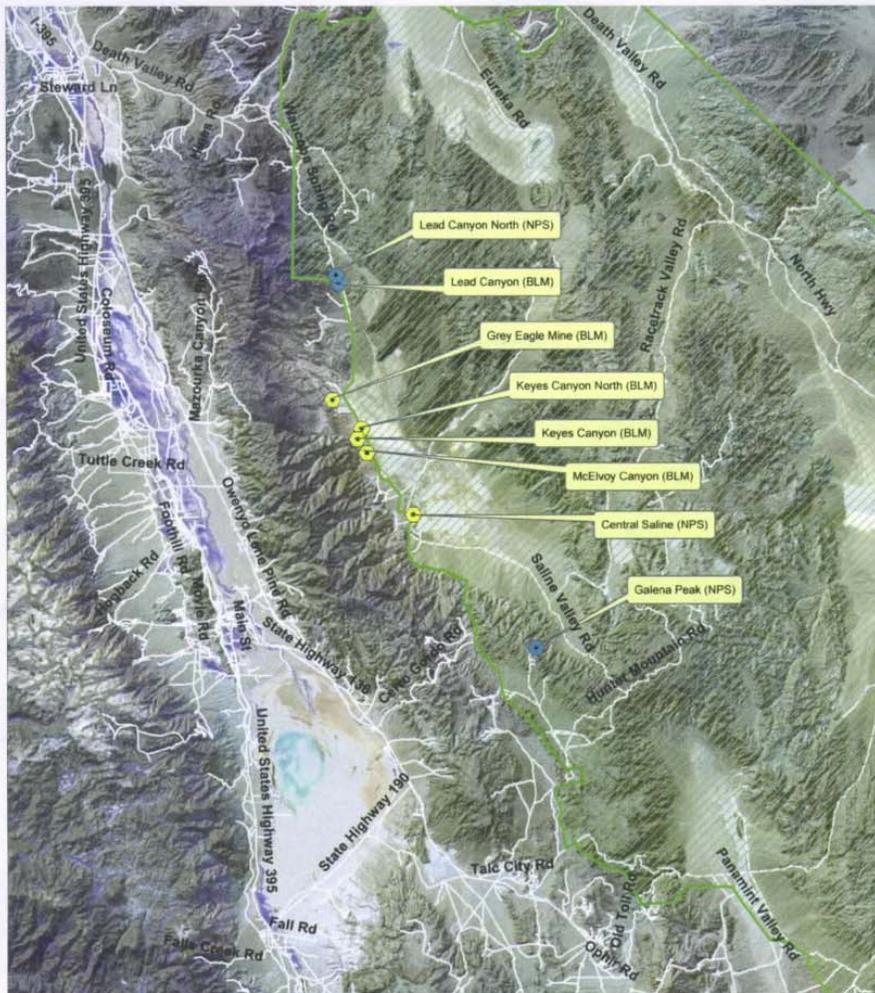
Conceptual Site Plan

would be located within or near the Saline Valley. The Saline Valley is located to the east of Owens Valley and west of Death Valley. The majority of the Saline Valley lies within Death Valley National Park. There are several locations

under consideration for the proposed action: four radar dome sites and three repeater sites.

### Description of Proposed Action

The proposed beacon radar facility will consist of several



**Legend**  
 Death Valley National Park  
**Site Type**  
 Radar Alternatives  
 Repeater Alternatives

**Candidate Site Locations**



removable, modular structures, the radome radar antenna (less than 50 feet tall), and solar panel arrays within a 35,000-square-foot site. The total footprint of the project is less than 1 acre.

The proposal also includes construction of a microwave repeater. This repeater is required to provide continuous communication with an existing Federal Aviation Administration communications complex on Keeler Peak.

**Public Concerns and Issues**

Public concerns or issues are being sought. A response to public input will be incorporated into the Environmental Assessment (EA) being prepared for the project.

The document is part of the Environmental Impact Analysis Process which identifies potential environmental impacts

on the physical, natural, and human environment associated with the implementation of this proposal. The resulting analysis and documentation is intended to comply with the provisions of the 1969 National Environmental Policy Act.

When completed, copies of the draft EA will be available upon request, at local libraries and the Edwards AFB web site.

Public comments and concerns may be presented at any of the three public workshops being held this week or in writing to:

**Air Force Flight Test Center  
 Environmental Management  
 Attn: Gary Hatch Environmental Public Affairs  
 5 E. Popson Ave.  
 Edwards AFB, CA 93524  
 e-mail – gary.hatch@edwards.af.mil  
 fax (661) 277-6145.**

**NATIVE AMERICAN HERITAGE COMMISSION**

915 CAPITOL MALL, ROOM 364  
SACRAMENTO, CA 95814  
(916) 653-4082  
Fax (916) 657-5390  
Web Site [www.nahc.ca.gov](http://www.nahc.ca.gov)



September 17, 2002

Robert Wood  
Department of Air Force  
5 East Popson Avenue  
Edwards Air Force Base, CA 93524

RE: Proposed radar and repair site, west of Waucoba/Saline Valley Road, Inyo County.

Sent by Fax: 661-277-6145  
Pages Sent: 3

Dear Mr. Wood:

A record search of the sacred lands file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend other with specific knowledge. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 653-4040.

Sincerely,

A handwritten signature in black ink that reads "Rob Wood".

Rob Wood  
Environmental Specialist III

**NATIVE AMERICAN CONTACTS**  
**Inyo County**  
**September 17, 2002**

Antelope Valley Indian Community Coleville Paiutes  
Andrea Erickson, Chairperson  
PO Box 47 Washoe / Paiute  
Coleville, CA 96107  
(530) 495-2434  
(530) 495-1885 FAX

Bishop Reservation  
Alan Spoonhunter, Environmental Manager/Planner  
50 Tu Su Lane Paiute - Arapaho  
Bishop, CA 93515  
(760) 873-3076

Kawaiisu Tribe  
David Laughinghorse Robinson  
PO Box 20849 Kawaiisu  
Bakerfield, CA 93390  
(661) 664-3098 - work  
(661) 664-7747 - home

Kern Valley Indian Council  
Robert Robinson, Chairperson  
P.O. 401 Tubatulabal  
Weldon, CA 93283 Kawaiisu  
(760) 873-7493 Koso  
Yokut

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regards to the cultural assessment for the proposed radar and repeater site, west of Waucoba/Saline Valley Road, Inyo County.

**NATIVE AMERICAN CONTACTS**  
**Inyo County**  
**September 17, 2002**

Big Pine Band of Owens Valley  
 Jessica Bacoach, Chairperson  
 P. O. Box 700  
 Big Pine, CA 93513  
 (760) 938-2003  
 (760) 938-2942-FAX

Owens Valley Paiute

Timba-Sha Band of Shoshone Indians  
 Pauline Esteves, Chairperson  
 P.O. Box 206  
 Death Valley, CA 92328  
 (760) 786-2374  
 (760) 786-2376 Fax

Western Shoshone

Bishop Reservation  
 Monty Bengochia, Chairperson  
 50 Tu Su Lane  
 Bishop, CA 93515  
 (760) 873-3584  
 Fax: (760) 873-4143

Paiute - Shoshone

Owens Valley Paiute Shoshone Cultural Ctr.  
 Pat Howard, Co-Chairman  
 P.O. Box 1281  
 Bishop, CA 93515  
 (619) 873-4478

Paiute

Fort Independence Community of Paiute  
 Richard Wilder, Chairperson  
 P.O. Box 67  
 Independence, CA 93526  
 (760) 878-2126  
 Fax: (760) 878-2311

Paiute

Antelope Valley Paiute Tribe  
 Bill Lovett, Chairperson  
 Camp Antelope #11  
 Coleville, CA 96107  
 (530) 495-2801

Paiute

Paiute-Shoshone /Lone Pine Community  
 Rachel Joseph, Chairperson  
 Box 747  
 Lone Pine, CA 93545  
 (760) 876-1034  
 (760) 876-8302 Fax  
 lppsr@qnet.com E-mail

Paiute  
 Shoshone

Kern Valley Indian Council  
 Ron Wermuth  
 P.O. Box 168  
 Kernville, CA 93238  
 (760) 376-4240 - Home  
 (916) 802-4720- Cell Work  
 (916) 717-1176 - Cell  
 (916) 445-7243 -Office  
 Email: rwormuth@water.ca.gov

Tubatulabal  
 Kawaiisu  
 Koso  
 Yokut

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regards to the cultural assessment for the proposed radar and repeater site, west of Waucoba/Saline Valley Road, Inyo County.

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**APPENDIX F  
VISUAL RESOURCES IMPACT ANALYSES**

***FINAL***

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**AGENCY COORDINATING  
FINAL**



**VISUAL RESOURCE ASSESSMENT  
FOR THE SALINE VALLEY RADAR FACILITY PROJECT  
SALINE VALLEY, CALIFORNIA**

**October 2002**

**AIR FORCE FLIGHT TEST CENTER  
ENVIRONMENTAL MANAGEMENT  
EDWARDS AFB CA 93524**



## **Section – INTRODUCTION**

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## Introduction

This Visual Resource Assessment has been prepared to address visual impacts associated with the proposed location of one Beacon Radar facility and one associated Microwave Repeater in Saline Valley, California.

## Overview of the Project Setting

All lands within the study area lie within Saline Valley and are owned either by the National Park Service (NPS) or by the Bureau of Land Management (BLM). Most of the land in Saline Valley falls within the boundaries of Death Valley National Park.

The Saline Valley is remote, and its visual appearance is chiefly characterized by the varied topography typical of the basin and range physiographic province that comprises this portion of California and neighboring Nevada. Typical of arid regions, vegetation is sparse, and the dominant visual elements are a rocky desert floor surrounded by towering mountains under a crystal blue sky.

Pedestrian and vehicular traffic in Saline Valley is very sparse, particularly during the hot summer months. During cooler seasons, vehicular traffic increases, but even at peak times is estimated at on average less than one vehicle passing a particular point every five minutes. On the east side of the valley, the Saline Valley Warm Springs camp is active, but is located approximately 6 1/2 miles away from the closest alternative radar site, Keyes Canyon North.

Eight proposed build sites have been identified and evaluated, along with a “no-build” alternative. Three of the proposed build sites are located on NPS land, while the remaining five proposed build sites are located on BLM land. Of the eight “build” sites, five are candidate sites for the Beacon Radar facility, while three are candidate sites for the associated Microwave Repeater facility.

**Exhibit 1: Site Analysis Map** indicates the location of the eight proposed build sites. The proposed build sites are all located along the western edge of Saline Valley, which generally forms the extreme northwestern edge of Death Valley National Park. All eight proposed build sites are in proximity to Saline Valley Road, and Saline Valley Road is the primary point of view for all eight sites. The Study Area of this Visual Assessment, therefore, is comprised of the Saline Valley Road viewshed.

According to BLM map “BLM Special Edition 1999, Surface Management Status, Desert Access Guide, California Desert District, Saline Valley,” the vast majority of land within the study area has been designated as wilderness by Congress. There are, however, “pockets” and “fingers” of non-wilderness land throughout the study area. All of the alternative sites are located in these “pockets” and “fingers”. None of the proposed build sites are located within a designated wilderness area.

## Visual Appearance of the Proposed Project

The Saline Valley Radar Facility Project proposes to construct one Beacon Radar facility and one Microwave Repeater. Prototypes for these facilities are shown in **Exhibit 2: Conceptual Elevation – Beacon Radar**, **Exhibit 3: Conceptual Site Plan – Beacon Radar** and **Exhibit 4: Photograph of Repeater Alternative**.

The Radar Facility Project will be powered by solar technology and will not require power lines from remote locations.

## Visual Resource Analysis Methodology

The Visual Resource Assessment evaluation criteria for the eight potential build sites and a “no-build” alternative comes from the following sources:

- Death Valley National Park Management Plan
- California Desert Conservation Area Plan

- BLM Visual Resource Management Program – Manual H-8410-1 – Visual Resource Inventory

The following describes visual resource policies and criteria from each of these documents as applicable to a Visual Resource Assessment:

The **Death Valley National Park Management Plan** guides the use of land within Death Valley National Park (DNVP). The “Viewsheds” section of the DNVP Management Plan refers to the use of antennas and relay equipment within the park by stating that the overall goal “will be to protect and maintain the visual quality of the landscape and the built environment”. The Management Plan goes on to state that the “Park will implement the following objectives for communications equipment proposals:

- All above-ground communication equipment should not significantly distract from the visual quality of the scenery. (“Visual Quality of Scenery” in Visual Resource Assessment section evaluation).
- Each new proposal for radio or cellular antennas or towers must demonstrate that the equipment will provide a critical service for visitors and NPS staff and is not duplicative. (“Critical Service” in Visual Resource Assessment section evaluation).
- The installation of new equipment outside the Park or on existing communication towers or at defined sites should be considered before the construction of new sites in Park is considered. (“Sites Outside the Park” in Visual Resource Assessment section evaluation).
- New locations will be reviewed through the environmental assessment process, which must consider impacts on the visual quality of the scenery”.

The **California Desert Conservation Area Plan** (CDCAP) guides the use of BLM land in the subject area. The CDCAP defines a series of Multiple Use Classes for all BLM lands and identifies allowable uses in each class. BLM lands in the subject area fall within BLM Multiple Use Class L (Limited Use). Regarding “Communication Sites”, the CDCAP Multiple Use Class L states “New communication sites may be allowed in designated areas” and requires an Environmental Assessment. (“Designated Areas” in Visual Resource Assessment section evaluation).

In addition, the BLM Field Office, Ridgecrest, California, as part of the proposed project’s early consultation effort, determined that all four Beacon Radar alternative sites located on BLM land are consistent with the multi-use designations and are in conformity with the BLM Management Plan for this area.

The **BLM Visual Resource Management** (VRM) program has established a system of Visual Resource Classes ranging from Class I to Class IV. National wilderness areas are assigned to Class I, which has a primary objective “to preserve the existing character of the landscape”. While none of the alternative sites are located directly within wilderness areas, they are all in relatively close proximity to wilderness area boundaries.

Given this close proximity to Class I areas, this Visual Assessment has assumed that all eight of the alternative sites are located on VRM Class II lands. BLM Manual H-8410-1 – Visual Resource Inventory identifies the objective for Class II lands as follows:

- Class II Objective: The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape. (“Low Level of Change”, “Not Attract Attention of Casual Observer” and “Repeat Basic Elements” in Visual Resource Assessment section evaluation).

## **Visual Resource Assessment Overview**

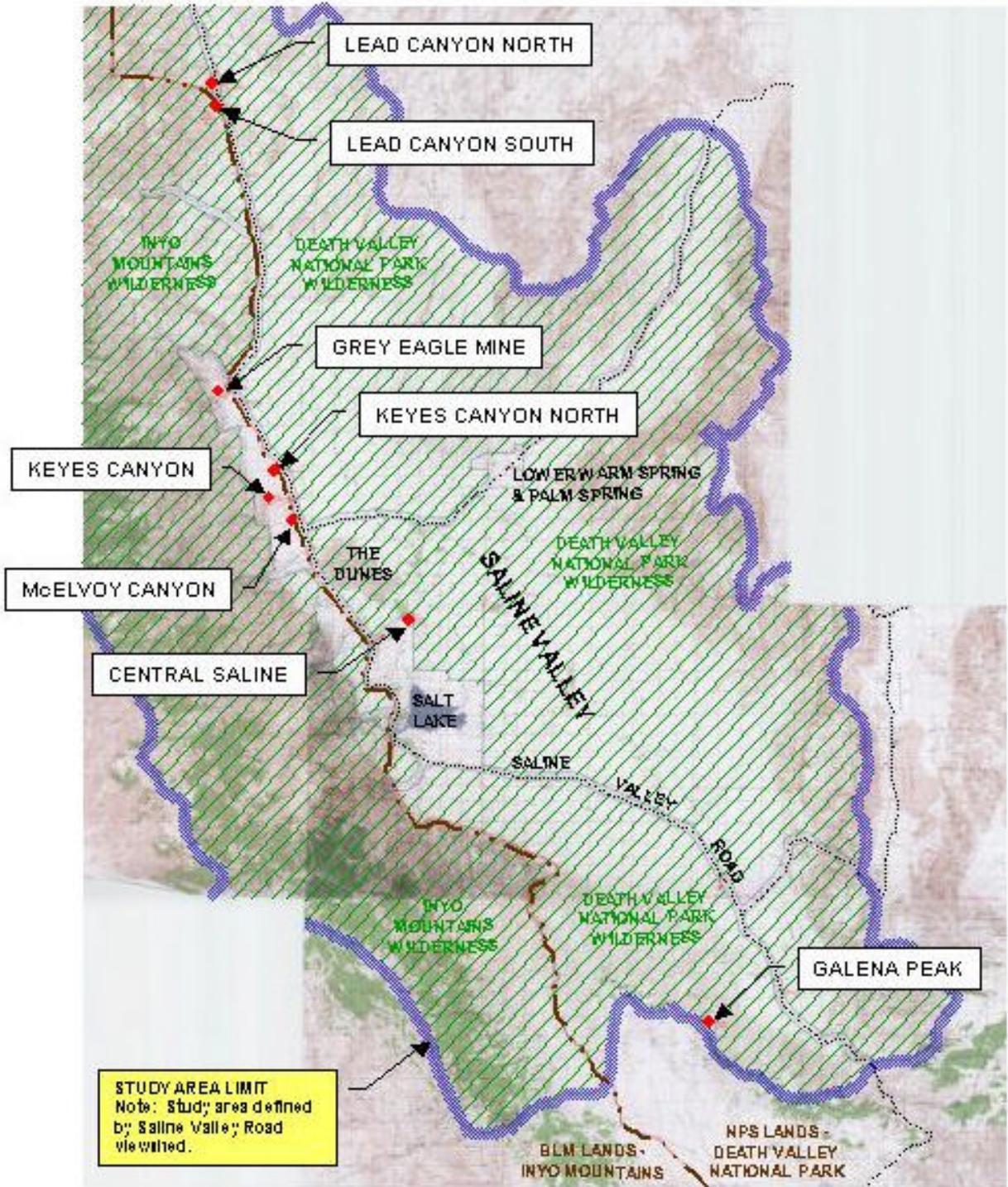
The next section, Visual Resource Assessment, contains the following for each of the proposed build sites:

- Existing conditions related to assessing visual characteristics.

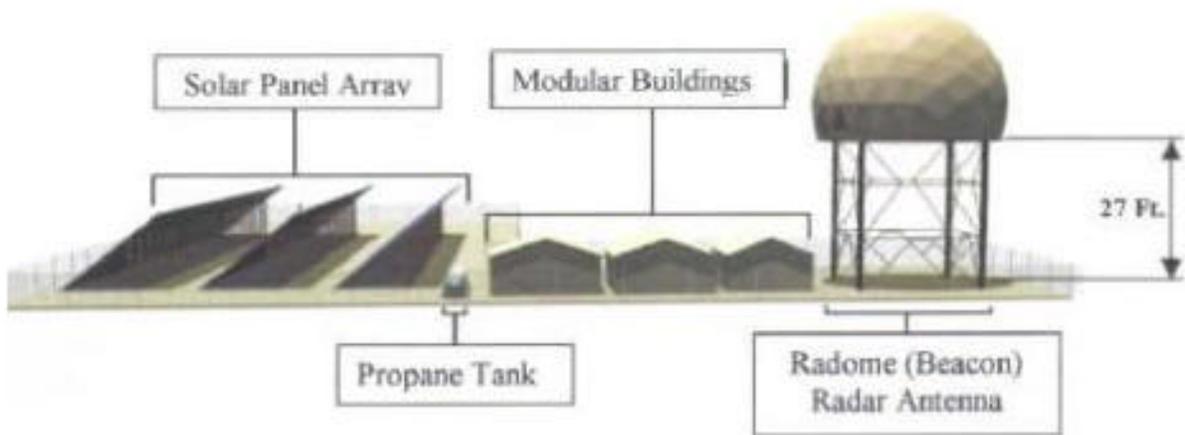
- Evaluation against the DVNP, CDCAP and VRM criteria defined above.
- Recommended colors, textures and finishes for proposed facilities.

In addition, a photo montage is provided for each proposed build site to graphically illustrate proposed visual character. The objective of each photo montage is to provide a reasonably accurate graphic representation of proposed actions consistent with expectations of an Environmental Assessment level of study.

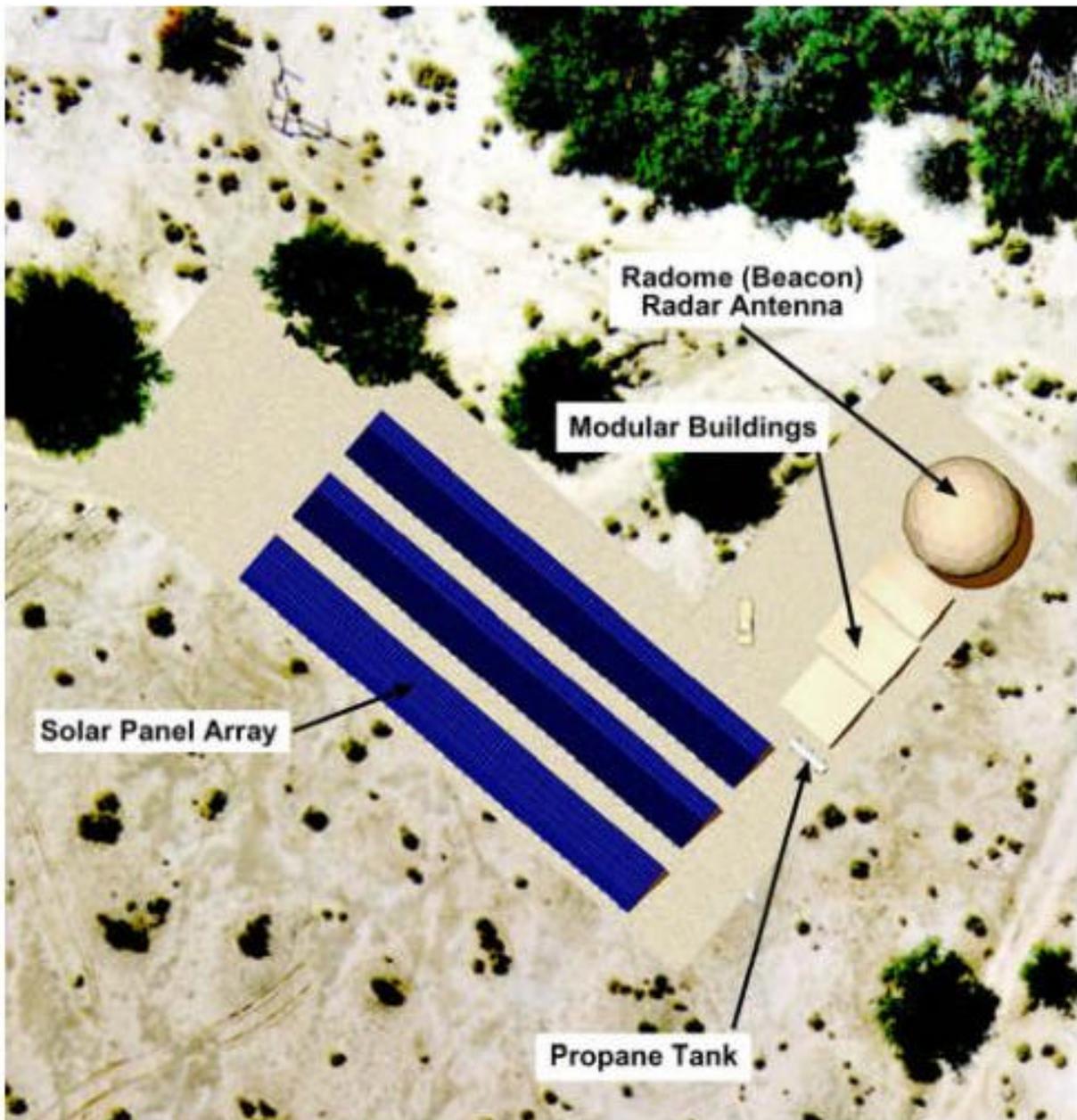
The proposed build sites were located in the field using a handheld GPS unit. Site photographs were taken from points of view on Saline Valley Road proximate to each alternative site. Graphic representations of the proposed Beacon Radar and Microwave Repeater facilities were then inserted to the site photographs as shown in the photo montage to illustrate general visual character.



**Exhibit 1 – Site Analysis Map**



**Exhibit 2** – Conceptual Elevation – Beacon Radar



**Exhibit 3 – Conceptual Site Plan – Beacon Radar**



**Exhibit 4** – Photograph of Typical Repeater

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## **Section - VISUAL RESOURCE ASSESSMENT**

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## **Beacon Radar Alternative A (Central Saline) - NPS**

### **Existing Conditions**

- Location: Central location along west valley edge (See Exhibit 1 – Site Analysis Map).
- Land Ownership: National Park Service
- Distance to Designated Wilderness: Immediately adjacent.
- Distance from Saline Valley Road: Approximately 1.25 miles east of Saline Valley Road.
- Setting: Flat mid-valley floor, green mesquite edge of dunes transitioning to arid desert vegetation.
- Potential for Visual Absorption: Good, due to distance from road and variety of existing colors and textures.

### **Evaluation - Death Valley National Park Management Plan:**

- Visual Quality of Scenery: Beacon Radar Alternative A (Central Saline) - NPS be selected to match the existing setting. Coupled with distance from Saline Valley Road and the Salt Lake and screening effects of existing vegetation on views from Saline Valley Road and The Dunes, the proposed Beacon Radar facility will not significantly detract from the visual quality of the scenery.
- Critical Service: By providing greater safety for aircraft in the area, the proposed facility provides a critical service for NPS visitors and staff, making use of transponder equipped aircraft.
- Sites Outside the Park: Five of the eight proposed “build” sites are not located within DVNP; however, Alternative A is located in DVNP. Moderate impact.

### **Evaluation - California Desert Conservation Area Plan:**

- Designated Areas: All eight proposed “build” sites have been carefully located in “pockets” and “fingers” of non-wilderness land. Minor impact to priority wilderness areas.

### **Evaluation - BLM Visual Resource Management program:**

- Low Level of Change: Colors, reflectivity and textures of materials will be selected to match the existing setting. Coupled with distance from Saline Valley Road and the Salt Lake and screening effects of existing vegetation on views from Saline Valley Road and The Dunes, the proposed Beacon Radar facility will present a low level of change to the characteristic landscape.
- Not Attract Attention of Casual Observer: The concept of selecting materials compatible with the setting coupled with distance and screening factors will minimize visibility to the casual observer.
- Repeat Basic Elements: The dome shape and angularity of building and solar panel array repeat dominant forms and lines in the surrounding mountains and desert. Color, texture and reflectivity of materials have been selected to repeat the natural surroundings. Minor impact due distance from road.

### **Recommended Colors, Textures & Finishes**

- Color: Green/brown camouflage pattern to match mesquite/vegetation color and texture as viewed from road.
- Texture: Medium texture to match view from road.
- Finishes: Flat, non-reflective, non-glare.

See *Exhibit 5: Photo Montage – Beacon Radar Alternative A (Central Saline) – NPS*.



**Exhibit 5**  
Site Photo/Photo Montage– Beacon Radar Alternative A  
(Central Saline) – NPS  
View from Saline Valley Road

## **Beacon Radar Alternative B (McElvoy Canyon) - BLM**

### **Existing Conditions**

- Location: North-central location along west portion of valley (See Exhibit 1 – Site Analysis Map).
- Land Ownership: Bureau of Land Management
- Distance to Designated Wilderness: Approximately 3,300 feet.
- Distance from Saline Valley Road: Approximately 500 feet west of Saline Valley Road.
- Setting: Flat valley floor, arid desert vegetation, mountainous backdrop.
- Potential for Visual Absorption: Poor, due to proximity to road and fine-textured setting.

### **Evaluation - Death Valley National Park Management Plan:**

- Visual Quality of Scenery: Colors, reflectivity and textures of materials will be selected to match the existing setting. The proposed Beacon Radar facility will have only a moderate impact on the visual quality of the scenery.
- Critical Service: By providing greater safety for aircraft in the area, the proposed facility provides a critical service for NPS visitors and staff, making use of transponder equipped aircraft.
- Sites Outside the Park: Five of the eight proposed “build” sites are not located within DVNP. Alternative B is not located in DVNP. Minor impact.

### **Evaluation - California Desert Conservation Area Plan:**

- Designated Areas: All eight proposed “build” sites have been carefully located in “pockets” and “fingers” of non-wilderness land. Minor impact to priority wilderness areas.

### **Evaluation - BLM Visual Resource Management program:**

- Low Level of Change: Colors, reflectivity and textures of materials will be selected to match the existing setting. The proposed Beacon Radar facility will present a moderate level of change to the characteristic landscape.
- Not Attract Attention of Casual Observer: The concept of selecting materials compatible with the setting will provide a moderate visibility to the casual observer.
- Repeat Basic Elements: The dome shape and angularity of building and solar panel array repeat dominant forms and lines in the surrounding mountains and desert. Color, texture and reflectivity of materials have been selected to repeat the natural surroundings. Moderate impact due to proximity to road.

### **Recommended Colors, Textures & Finishes**

- Color: Brown/tan camouflage pattern to match mountains color and texture as viewed from road.
- Texture: Medium-to-coarse texture to match view from road.
- Finishes: Flat, non-reflective, non-glare.

See *Exhibit 6: Photo Montage – Beacon Radar Alternative B (McElvoy Canyon) – BLM*.



**Exhibit 6**  
Site Photo/Photo Montage – Beacon Radar Alternative B  
(McElvoy Canyon) – BLM  
View from Saline Valley Road

## **Beacon Radar Alternative C (Grey Eagle Mine) - BLM**

### **Existing Conditions**

- Location: North-central location along west valley edge (See Exhibit 1 – Site Analysis Map).
- Land Ownership: Bureau of Land Management
- Distance to Designated Wilderness: Approximately 2,000 feet.
- Distance from Saline Valley Road: Approximately 0.4 miles west of Saline Valley Road.
- Setting: Edge of valley at base of mountains, slightly rolling topography, arid desert vegetation.
- Potential for Visual Absorption: Fair, due to distance from road.

### **Evaluation - Death Valley National Park Management Plan:**

- Visual Quality of Scenery: Colors, reflectivity and textures of materials will be selected to match the existing setting. Due to the distance from Saline Valley Road, the proposed Beacon Radar facility will not significantly distract from the visual quality of the scenery.
- Critical Service: By providing greater safety for aircraft in the area, the proposed facility provides a critical service for NPS visitors and staff, making use of transponder equipped aircraft.
- Sites Outside the Park: Five of the proposed alternative “build” sites are not located within DVNP. Alternative C is not located in DVNP. Minor impact.

### **Evaluation - California Desert Conservation Area Plan:**

- Designated Areas: All eight proposed “build” sites have been carefully located in “pockets” and “fingers” of non-wilderness land. Minor impact to priority wilderness areas.

### **Evaluation - BLM Visual Resource Management program:**

- Low Level of Change: Colors, reflectivity and textures of materials will be selected to match the existing setting. Due to the distance from Saline Valley Road, the proposed Beacon Radar facility will present a low level of change to the characteristic landscape.
- Not Attract Attention of Casual Observer: The concept of selecting materials compatible with the setting will provide a minor visibility to the casual observer.
- Repeat Basic Elements: The dome shape and angularity of building and solar panel array repeat dominant forms and lines in the surrounding mountains and desert. Color, texture and reflectivity of materials have been selected to repeat the natural surroundings. Minor impact due distance from road.

### **Recommended Colors, Textures & Finishes**

- Color: Brown/tan camouflage pattern to match valley floor color and texture as viewed from road.
- Texture: Fine-to-medium texture to match view from road.
- Finishes: Flat, non-reflective, non-glare.

See *Exhibit 7: Photo Montage – Beacon Radar Alternative C (Grey Eagle Mine) – BLM*.



**Exhibit 7**  
Site Photo/Photo Montage – Beacon Radar Alternative C  
(Grey Eagle Mine) – BLM  
View from Saline Valley Road

## **Beacon Radar Alternative D (Keyes Canyon) - BLM**

### **Existing Conditions**

- Location: North-central location along west valley edge (See Exhibit 1 – Site Analysis Map).
- Land Ownership: Bureau of Land Management
- Distance to Designated Wilderness: Approximately 2,000 feet.
- Distance from Saline Valley Road: Approximately 0.7 miles west of Saline Valley Road.
- Setting: Near edge of valley and base of mountains, slightly rolling topography, arid desert vegetation.
- Potential for Visual Absorption: Good, due to distance from road and variety of existing textures.

### **Evaluation - Death Valley National Park Management Plan:**

- Visual Quality of Scenery: Colors, reflectivity and textures of materials will be selected to match the existing setting. Due to the distance from Saline Valley Road, the proposed Beacon Radar facility will not significantly distract from the visual quality of the scenery.
- Critical Service: By providing greater safety for aircraft in the area, the proposed facility provides a critical service for NPS visitors and staff, making use of transponder equipped aircraft.
- Sites Outside the Park: Five of the eight proposed “build” sites are not located within DVNP. Alternative D is not located in DVNP. Minor impact.

### **Evaluation - California Desert Conservation Area Plan:**

- Designated Areas: All eight proposed “build” sites have been carefully located in “pockets” and “fingers” of non-wilderness land. Minor impact to priority wilderness areas.

### **Evaluation - BLM Visual Resource Management program:**

- Low Level of Change: Colors, reflectivity and textures of materials will be selected to match the existing setting. Due to the distance from Saline Valley Road, the proposed Beacon Radar facility will present a low level of change to the characteristic landscape.
- Not Attract Attention of Casual Observer: The concept of selecting materials compatible with the setting will provide a minor visibility to the casual observer.
- Repeat Basic Elements: The dome shape and angularity of building and solar panel array repeat dominant forms and lines in the surrounding mountains and desert. Color, texture and reflectivity of materials have been selected to repeat the natural surroundings. Minor impact due distance from road.

### **Recommended Colors, Textures & Finishes**

- Color: Brown/tan camouflage pattern to match mountains color and texture as viewed from road.
- Texture: Medium-to-coarse texture to match view from road.
- Finishes: Flat, non-reflective, non-glare.

See *Exhibit 8: Photo Montage – Beacon Radar Alternative D (Keyes Canyon) – BLM*.



**Exhibit 8**  
Site Photo/Photo Montage – Beacon Radar Alternative D  
(Keyes Canyon) – BLM  
View from Saline Valley Road

## **Beacon Radar Alternative E (Keyes Canyon North) - BLM**

### **Existing Conditions**

- Location: North-central location along west valley edge (See Exhibit 1 – Site Analysis Map).
- Land Ownership: Bureau of Land Management
- Distance to Designated Wilderness: Approximately 5,000 feet.
- Distance from Saline Valley Road: Approximately 750 feet west of Saline Valley Road.
- Setting: Flat mid-valley floor, rocky landscape, arid desert vegetation, mountainous backdrop.
- Potential for Visual Absorption: Fair. Closeness to road is negative, coarse textures offer opportunity.

### **Evaluation - Death Valley National Park Management Plan:**

- Visual Quality of Scenery: Colors, reflectivity and textures of materials will be selected to match the existing setting. The proposed Beacon Radar facility will have only a moderate impact on the visual quality of the scenery.
- Critical Service: By providing greater safety for aircraft in the area, the proposed facility provides a critical service for NPS visitors and staff, making use of transponder equipped aircraft.
- Sites Outside the Park: Five of the eight proposed “build” sites are not located within DVNP. Alternative E is not located in DVNP. Minor impact.

### **Evaluation - California Desert Conservation Area Plan:**

- Designated Areas: All eight proposed “build” sites have been carefully located in “pockets” and “fingers” of non-wilderness land. Minor impact to priority wilderness areas.

### **Evaluation - BLM Visual Resource Management program:**

- Low Level of Change: Colors, reflectivity and textures of materials will be selected to match the existing setting. The proposed Beacon Radar facility will present a moderate level of change to the characteristic landscape.
- Not Attract Attention of Casual Observer: The concept of selecting materials compatible with the setting will provide a moderate visibility to the casual observer.
- Repeat Basic Elements: The dome shape and angularity of building and solar panel array repeat dominant forms and lines in the surrounding mountains and desert. Color, texture and reflectivity of materials have been selected to repeat the natural surroundings. Moderate impact due closeness to road.

### **Recommended Colors, Textures & Finishes**

- Color: Brown/tan camouflage pattern to match mountains color and texture as viewed from road.
- Texture: Fine-to-medium texture to match view from road.
- Finishes: Flat, non-reflective, non-glare.

See *Exhibit 9: Photo Montage – Beacon Radar Alternative E (Keyes Canyon North) – BLM*.



**Exhibit 9**  
Site Photo/Photo Montage – Beacon Radar Alternative E  
(Keyes Canyon North) – BLM  
View from Saline Valley Road

## **Microwave Repeater Site Option – Lead Canyon South - BLM**

### **Existing Conditions**

- Location: North location along west valley edge (See Exhibit 1 – Site Analysis Map).
- Land Ownership: Bureau of Land Management
- Distance to Designated Wilderness: Immediately adjacent.
- Distance from Saline Valley Road: Approximately 50–100 feet west of the centerline of Saline Valley Road.
- Setting: Rolling, rocky northern valley plateau, arid desert vegetation.
- Potential for Visual Absorption: Fair. Closeness to road a negative, small Repeater mass offers opportunities.

### **Evaluation - Death Valley National Park Management Plan:**

- Visual Quality of Scenery: Colors, reflectivity and textures of materials will be selected to match the existing setting. The proposed Microwave Repeater facility will have only a moderate impact on the visual quality of the scenery.
- Critical Service: By providing greater safety for aircraft in the area, the proposed facility provides a critical service for NPS visitors and staff, making use of transponder equipped aircraft.
- Sites Outside the Park: Five of the eight proposed “build” sites are not located within DVNP. Lead Canyon South Option is not located in DVNP. Minor impact.

### **Evaluation - California Desert Conservation Area Plan:**

- Designated Areas: All eight proposed “build” sites have been carefully located in “pockets” and “fingers” of non-wilderness land. Minor impact to priority wilderness areas.

### **Evaluation - BLM Visual Resource Management program:**

- Low Level of Change: Colors, reflectivity and textures of materials will be selected to match the existing setting. The proposed Microwave Repeater facility will present a moderate level of change to the characteristic landscape.
- Not Attract Attention of Casual Observer: The concept of selecting materials compatible with the setting will provide a moderate visibility to the casual observer.
- Repeat Basic Elements: The angular nature of the tower structure repeats the angular forms found in the surrounding mountains and desert. In addition, the vertical lines of the tower repeat the apparent vertical line of Saline Valley Road as it vanishes into the distance. Color, texture and reflectivity of materials have been selected to repeat the natural surroundings. Moderate impact due closeness to road.

### **Recommended Colors, Textures & Finishes**

- Color: Brown/tan camouflage pattern to match mountains color and texture as viewed from road.
- Texture: Fine texture to match view from road.
- Finishes: Flat, non-reflective, non-glare.

See *Exhibit 10: Photo Montage – Microwave Repeater Site Option – Lead Canyon South – BLM.*



**Exhibit 10**  
Site Photo/Photo Montage – Microwave Repeater Site Option  
Lead Canyon South – BLM  
View from Saline Valley Road

## **Microwave Repeater Site Option – Lead Canyon North - NPS**

### **Existing Conditions**

- Location: North location along west valley edge (See Exhibit 1 – Site Analysis Map).
- Land Ownership: National Park Service
- Distance to Designated Wilderness: Immediately adjacent.
- Distance from Saline Valley Road: Approximately 25-50 feet west of the centerline of Saline Valley Road.
- Setting: Rolling, rocky northern valley plateau, arid desert vegetation.
- Potential for Visual Absorption: Fair. Closeness to road a negative, small Repeater mass offers opportunities.

### **Evaluation - Death Valley National Park Management Plan:**

- Visual Quality of Scenery: Colors, reflectivity and textures of materials will be selected to match the existing setting. The proposed Microwave Repeater facility will have only a moderate impact on the visual quality of the scenery.
- Critical Service: By providing greater safety for aircraft in the area, the proposed facility provides a critical service for NPS visitors and staff, making use of transponder equipped aircraft.
- Sites Outside the Park: Five of the eight proposed “build” sites are not located within DVNP. However, Lead Canyon North Option is located in DVNP. Moderate impact.

### **Evaluation - California Desert Conservation Area Plan:**

- Designated Areas: All eight proposed “build” sites have been carefully located in “pockets” and “fingers” of non-wilderness land. Minor impact to priority wilderness areas.

### **Evaluation - BLM Visual Resource Management program:**

- Low Level of Change: Colors, reflectivity and textures of materials will be selected to match the existing setting. The proposed Microwave Repeater facility will present a moderate level of change to the characteristic landscape.
- Not Attract Attention of Casual Observer: The concept of selecting materials compatible with the setting will provide a moderate visibility to the casual observer.
- Repeat Basic Elements: The angular nature of the tower structure repeats the angular forms found in the surrounding mountains and desert. Color, texture and reflectivity of materials have been selected to repeat the natural surroundings. Moderate impact due closeness to road.

### **Recommended Colors, Textures & Finishes**

- Color: Brown/tan camouflage pattern to match mountains color and texture as viewed from road.
- Texture: Fine texture to match view from road.
- Finishes: Flat, non-reflective, non-glare.

See *Exhibit 11: Photo Montage – Microwave Repeater Site Option – Lead Canyon North - NPS*.



**Exhibit 11**  
Site Photo/Photo Montage – Microwave Repeater Site Option  
Lead Canyon North – NPS  
View from Saline Valley Road

## **Microwave Repeater Site Option – Galena Peak - NPS**

### **Existing Conditions**

- Location: South location in hills along west valley edge (See Exhibit 1 – Site Analysis Map).
- Land Ownership: National Park Service
- Distance to Designated Wilderness: Immediately adjacent.
- Distance from Saline Valley Road: Approximately 2.15 miles west of Saline Valley Road.
- Setting: In south valley hills.
- Potential for Visual Absorption: Very good, due to distance from road, screened location and variety of existing textures.

### **Evaluation - Death Valley National Park Management Plan:**

- Visual Quality of Scenery: The location of this site up in the hills is largely concealed from view from the valley floor. Colors, reflectivity and textures of materials will be selected to match the existing setting. The proposed Microwave Repeater facility will not detract from the visual quality of the scenery.
- Critical Service: By providing greater safety for aircraft in the area, the proposed facility provides a critical service for NPS visitors and staff, making use of transponder equipped aircraft.
- Sites Outside the Park: Five of the eight proposed “build” sites are not located within DVNP. However, Galena Peak Option is located in DVNP. Moderate impact.

### **Evaluation - California Desert Conservation Area Plan:**

- Designated Areas: All eight proposed “build” sites have been carefully located in “pockets” and “fingers” of non-wilderness land. Minor impact to priority wilderness areas.

### **Evaluation - BLM Visual Resource Management program:**

- Low Level of Change: The location of this site up in the hills is largely concealed from view from the valley floor. Colors, reflectivity and textures of materials will be selected to match the existing setting. The proposed Microwave Repeater facility will present a low level of change to the characteristic landscape.
- Not Attract Attention of Casual Observer: This site has low visibility from the valley floor. Coupled with the concept of selecting materials compatible with the setting, the proposed facility will not attract the attention of the casual observer.
- Repeat Basic Elements: The angular nature of the tower structure repeats the angular forms found in the surrounding mountains and desert. Color, texture and reflectivity of materials have been selected to repeat the natural surroundings. Minor impact due distance from road.

### **Recommended Colors, Textures & Finishes**

- Color: Brown/tan camouflage pattern to match mountains color and texture as viewed from road.
- Texture: Medium texture to match view from road.
- Finishes: Flat, non-reflective, non-glare.

See *Exhibit 12: Photo Montage – Microwave Repeater Site Option – Galena Peak - NPS*.



**Exhibit 12**  
Site Photo/Photo Montage – Microwave Repeater Site Option  
Galena Peak – NPS  
View from Saline Valley Road

## **Section – CONCLUSIONS**

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## Conclusions

This section consists of an assessment of the final project impact for each proposed build site based upon the applicable Visual Assessment criteria from the *Death Valley National Park Management Plan*, the *California Desert Conservation Plan* and the BLM Visual Resources Management program.

The Visual Impacts Evaluation Summary below tabulates the conclusions of the preceding Visual Resource Assessment section. In each case, the rating shown has considered the Existing Conditions criteria shown for each alternative site, including Location, Land Ownership, Distance to Designated Wilderness, Distance from Saline Valley Road, Setting and Potential for Visual Absorption.

## Visual Impacts Evaluation Summary

Criteria	Beacon Radar Alternatives						Microwave Repeater Alternatives			
	A	B	C	D	E	F	LC South	LC North	GP	No-Build
<b>DVNP Management Plan</b>										
Visual Quality of Scenery	Minor	Moderate	Minor	Minor	Moderate	None	Moderate	Moderate	Minor	None
Critical Service	Minor	Minor	Minor	Minor	Minor	None	Minor	Minor	Minor	None
Sites Outside Park	Moderate	Minor	Minor	Minor	Minor	None	Minor	Moderate	Moderate	None
<b>CDCAP Multiple Use Class L</b>										
Designated Areas	Minor	Minor	Minor	Minor	Minor	None	Minor	Minor	Minor	None
<b>BLM Visual Resource Management</b>										
Low Level of Change	Minor	Moderate	Minor	Minor	Moderate	None	Moderate	Moderate	Minor	None
Not Attract Casual Attention	Minor	Moderate	Minor	Minor	Moderate	None	Moderate	Moderate	Minor	None
Repeat Basic Elements	Minor	Moderate	Minor	Minor	Moderate	None	Moderate	Moderate	Moderate	None
<b>Summary</b>	<b>Minor</b>	<b>Moderate</b>	<b>Minor</b>	<b>Minor</b>	<b>Moderate</b>	<b>None</b>	<b>Moderate</b>	<b>Moderate</b>	<b>Minor</b>	<b>None</b>

### Evaluation Ratings Legend

**Major:** Significant impact to visual resources.

**Moderate:** Some impact to visual resources.

**Minor:** Little impact to visual resources.

**None:** No impact to visual resources.

## Conclusions Summary

Locating the Beacon Radar facility at alternative sites A, C and D would have minor impacts on visual resources, while locating the Beacon Radar facility at alternative sites B and E would have moderate impacts.

Locating the Microwave Repeater facility at Site Option Galena Peak would have minor impacts on visual resources, while locating the Microwave Repeater facility at Site Options Lead Canyon South and Lead Canyon North would have moderate impacts.

Camouflage patterns to match colors and textures found in the existing landscape, along with flat non-reflective non-glare finishes, have been selected to repeat the natural surroundings and to minimize visual impacts.

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**DRAFT**



**VISUAL RESOURCES IMPACT ANALYSIS  
FOR THE GALENA RIDGE REPEATER FACILITY  
VISUAL RESOURCES IMPACT ANALYSIS**

**July 2003**

**AIR FORCE FLIGHT TEST CENTER  
ENVIRONMENTAL MANAGEMENT  
EDWARDS AFB CA 93524**



## Executive Summary

This supplemental environmental study was conducted as a part of the evaluation of the proposal by the Air Force Flight Test Center at Edwards Air Force Base to improve radar coverage in the Saline Valley in Inyo County, California. This project will entail construction of a beacon radar facility on Bureau of Land Management land on the floor of the valley, and of a microwave repeater at the 6,300 foot elevation level on Galena Ridge above the valley's western edge. The site proposed for the microwave repeater is located on land that falls within Death Valley National Park. The Park Superintendent has formally registered his concern that the repeater could intrude on views from areas of the park in the Saline Valley and on park roads and wilderness areas in the repeater's vicinity. This supplemental analysis was undertaken to provide a focused assessment of the repeater's potential visibility from these areas, and an identification of measures that can be undertaken to attenuate the project's visual effects.

The approach taken in conducting this analysis involved use of Geographic Information System (GIS) data and technology to create maps identifying the areas from which the project would be potentially visible, and in-field observation and photo documentation of views of a full-sized mock-up of the facility as seen from viewpoints along Saline Valley Road on the valley floor, and from areas on the top of the ridge in the vicinity of the repeater station site. Figures 1 and 2 are maps produced by the GIS analysis, and Figures 3-10 are photos documenting the field observations.

Based on the analyses documented in this report, it was found that:

- The repeater station will have virtually no detectable effects on views from Saline Valley. By moving the repeater station site to a location set back from the edge of the ridge, it was possible to eliminate views of it from the portions of Saline Valley Road in closest proximity (approximately 2.7 miles) to it. The closest valley area from which the repeater is potentially visible lies 4.8 miles from the proposed repeater site. From this area, the repeater appears as a small speck on top of the ridge (Figure 7), does not attract attention, and is not distinguishable as a man-made structure.
- The repeater will be visible in the area immediately surrounding it at the terminus of an old mining road on Galena Ridge (Figures 8, 9, and 10). However, because of the facility's small size (it is only 20 feet tall); light, lattice steel construction; and neutral color, its degree of visual impact on this area, which already has a disturbed appearance, will be minor. Because of the difficulty in accessing this area, the numbers of people who will experience this slightly altered view will be small.
- The repeater station will also be visible from a short portion of a trail that crosses over the ridge in an area about a mile to the northeast. At this distance, the repeater facility would not be visually prominent in views from the trail, and would have little discernable effect on the overall character and quality of views from the trail corridor.

The siting and design currently proposed for the repeater station incorporates a number of measures that have the effect of minimizing its visual effects. One of the outcomes of this

analysis is that the location of the facility on the ridge has been adjusted to move the site further back on the ridge, eliminating most views of the facility from valley areas in the foreground and middleground viewing areas. The lattice steel structure proposed for the facility has the advantage in both close and more distant views of appearing less massive than a steel pole tower, and of being visually absorbed into the backdrop. Under normal circumstances, the facility will not be illuminated at night - the only lights are those that would be used in an emergency situation. The neutral gray color used for the mock-up appears to be the color that will be most effective in integrating the facility into its setting. Although additional measures to camouflage the appearance of the repeater in nearby views do not appear to be feasible or appropriate, there are a number of things that can be done to either further attenuate its visual effects or make it a positive point of visual interest to visitors to the top of the ridge. These include:

- Using a dark color with low reflectivity for the fence around the facility to reduce its visual intrusiveness;
- After construction, cleaning up all construction debris and restoring all ground surfaces disturbed during construction; and
- Installing low profile and attractively designed interpretive panels around the perimeter of the facility's fence to explain to visitors what the facility is, and why it is there.

## **1.0 Background**

In October 2002, The Air Force Flight Test Center at Edwards Air Force Base prepared an Environmental Assessment (EA) evaluating the potential environmental impacts of a beacon radar facility and an associated microwave repeater proposed for development in the Saline Valley in Inyo County, California. The recommended alternative consisted of a beacon radar facility to be sited on the valley floor at a location just to the west of Saline Valley Road at the mouth of McElvoy Canyon, and a radar repeater tower to be located at the 6,300 foot elevation level on Galena Ridge above the western edge of the valley. The locations of these facilities are indicated on Figure 1. The site of the proposed beacon radar facility is located on lands administered by the U.S. Bureau of Land Management, while the site of the proposed microwave repeater station is located on land that is a part of Death Valley National Park. In a letter dated April 21, 2003, James T. Reynolds, the Superintendent of Death Valley National Park expressed his concerns that the microwave repeater station proposed for development on park lands may have the potential to intrude on views from the Saline Valley Road, from the Galena Peak area road, and from Park wilderness areas. This supplemental analysis was undertaken to provide a focused assessment of the potential visibility and visual impacts of the Galena Ridge microwave repeater facility and to identify measures that can be employed to attenuate the project's visual effects.

## **2.0 Project Description**

The microwave repeater facility proposed for the Galena Ridge site will consist of a 3-sided lattice steel tower, approximately 6 feet along each side at its base, and 20 feet in height. The tower will support two microwave dishes, a small (10 square feet) solar panel, and a small-enclosed box containing electronic equipment and a storage battery. The facility will be located on a 12- by 12-foot plot that will be surrounded by an 8-foot-high perimeter fence with an entry gate. The only lighting will be security lighting designed to be activated in the case of a multi-level disturbance.

## **3.0 Existing Conditions**

The Saline Valley is an isolated valley located to the west of Death Valley and is separated from it by the Panamint and Last Chance ranges. On the north, the valley is defined by the Saline Range, and on the west, by the high, steep-sided Inyo Mountains. The valley is approximately 24 miles long, and is about 9 miles wide at its widest point. Because vegetation is sparse, consisting for the most part of low-growing grasses and shrubs, the landscape has a stark appearance. Figures 5, 6, and 7, views from Saline Valley Road (on the valley floor toward the ridges that frame the valley on the west) provide a sense of the valley landscape's appearance. In general, the levels of landscape visual quality are high, reflecting the dramatic relief, long vistas, and generally natural appearing character. Although the valley is generally natural appearing, it is not pristine in that the network of roads and scattered vestiges of past mining activity create areas where human alterations of the landscape are evident. These alterations date from the period when the Bureau of Land Management, which permitted mining and other activities, administered the Saline Valley. It was only in 1994, under the provisions of the Desert Protection Act that Saline Valley was incorporated into Death Valley National Park.

The site proposed for the repeater station is on a small plateau at the 6,300 foot elevation level on the eastern edge of Galena Ridge in the Nelson Range, about a mile and a half north of Galena Peak. The site is at the terminus of a rough, four-wheel-drive mining road known as the Galena Peak Road that travels up the ridge from the west. Although the surrounding area is included in a designated National Park Wilderness area, the road, and a corridor extending out a short distance on each side of it are not included in the Wilderness. The repeater station would be sited in a non-wilderness “cherry stem” area at the road’s terminus. The existing visual quality of the repeater site area is mixed. Although the area provides spectacular panoramic views of the Saline Valley and distant ridges to the east, the immediate foreground of the view has a disturbed appearance because of the presence of the mining road and an area of rock piles and compacted soil at the road’s terminus. Figures 8, 9, and 10 provide a sense of this area’s appearance.

Since the time Saline Valley was incorporated into the National Park, no significant measures have been taken to improve access into the area or to develop visitor facilities. Because of the poor accessibility and limited developed attractions and facilities, the numbers of people who visit Saline Valley are a small fraction of those who visit Death Valley itself. While Death Valley National Park as a whole attracts 800,000 to one million visitors a year, the numbers who visit Saline Valley are very small. The most important node of activity in the valley is at the hot springs located to the northeast of the Saline Valley Sand Dunes, where there are informal camping facilities. Data from the camping logs at these camp grounds indicates that these facilities attract a total of about 9,000 visitors per year, primarily in the period from November through April. The numbers of people who visit the area on Galena Ridge where the microwave repeater station is proposed is assumed to be very low, consisting primarily of drivers and passengers in four-wheel-drive vehicles that are able to travel up the rough mining road to the top of the ridge. In addition to these visitors, small numbers of hikers use a trail that crosses over the Nelson Range in the area about a mile to the northwest of the repeater station site.

#### **4.0 Analysis Procedure**

To assess the proposed repeater station’s potential effects on views from the Saline Valley and from nearby areas on Galena Ridge, an analysis was conducted that entailed use of Geographic Information System (GIS) data and technology to create maps of the area from which the project would be visible, and in-field observation and photo documentation of views of a full-sized mock up of the facility as seen from viewpoints along Saline Valley Road on the valley floor and from areas on top of the ridge in the immediate vicinity of the repeater station site.

Figures 1 and 2 are maps that were produced by the GIS analysis that depict the location of the microwave repeater facility and the areas from which there would be potential for unobstructed views of it. These maps represents the potential visibility of the repeater station at an adjusted site location that was selected during the course of the in-field observation exercise described below. The concentric circles drawn around the facility indicate zones of varying degrees of visibility based on the visibility zones the U.S. Forest Service and the Bureau of Land Management have defined in their systems for inventorying landscape resources and assessing visual impacts (US Bureau of Land Management 2002, US Forest Service 1995). The half-mile circle delineates the zone that the US Forest Service considers to be the foreground zone, the zone in which there is the potential for the maximum discernment of detail, scale, and color. The

three and five mile circles define the outer limits of the middleground zone, the zone in which detail is less visible, but in which rock outcrops, large boulders, and individual tree forms are still visible, and form, texture, and pattern remain important. The Forest Service defines the outer limit of the middleground zone as four miles, while the Bureau of Land Management considers the outer limit of the middleground zone to occur someplace in the area between three and five miles. The area beyond five miles is considered to be the background zone, the zone in which texture has disappeared and color has flattened, but at which large patterns of vegetation and rock are still discernable, and ridgelines and horizon lines are the dominant visual characteristic. The 15 mile circle represents the outer limit of the background distance zone, reflecting the assumption of the BLM visual resource management system that the background zone extends 15 miles, at most, and that beyond this distance, only landscape form or outline are visible. Figure 1 presents the potential visibility of the repeater station in the larger region. Because the ridges to the south of the site will screen views of the repeater from that direction, Figure 1 encompasses the areas to the north and east, where there is potential for unobstructed views. Figure 2 is a map that focuses in on the areas in the repeater station's foreground and middleground viewing zones, and includes the locations of the viewpoints of the photos used to support the analysis.

To prepare for the in-field observation exercise, a full-scale mock-up of the repeater station tower and dishes was created using wood and cardboard, and the entire structure was painted with gray paint to simulate the facility's likely color. The in-field observation exercise took place on Monday, June 16, 2003. On that day, one party drove to the top of Galena Ridge to place the mock-up at the simulator's proposed site and to document its visibility from nearby areas. A second party drove into the Saline Valley, and guided by the results of a GIS analysis indicating the likely visibility of the repeater station at the original location for which it had been proposed, made systematic observations of the facility as seen from viewpoints along Saline Valley Road. Figure 3 is a view of the repeater station mock-up being installed at the top of Galena Ridge. Figure 4 is a view of the team on the valley floor, which communicated with the crew at the Galena Ridge site by means of two-way radio and signal mirrors to ascertain the status of the repeater mock-up its location. The crew on the valley floor made observations and took photographs of the view toward the repeater station site from a series of viewpoints along Saline Valley Road located at distances ranging from 2.7 to 4.8 miles from the repeater station site. Those on the top of the ridge observed and took photos of the repeater station mock-up as seen from a series of locations in the nearby area.

When the mock-up of the repeater station was originally set up on the ridge top, it was placed at the edge of the ridge. Based on radioed instructions from the valley crew, the ridge crew later moved the mock-up to the west, away from the edge of the ridge, into an area where it was no longer visible from the portions of Saline Valley Road closest to the site. This adjusted location has now become the proposed location for this facility, and is the site whose potential visibility is depicted on Figures 1 and 2.

## **5.0 Results**

Figure 5 is a view toward the repeater station site from Viewpoint 1, a point along Saline Valley road located approximately 0.5 miles south of the intersection of Ubehebe Road and approximately 2.7 miles from the repeater station's location. Figure 6 is a view toward the

repeater station site from Viewpoint 2, a point along Saline Valley Road at the intersection of Ubehebe Road and 3.2 miles from the repeater's location. Both of these photographs illustrate and help to verify the analysis presented in Figures 1 and 2, which indicates that at its revised location, the repeater station will not be visible within most of the foreground and middleground zones in views from Saline Valley Road. The only exception to this generalization is that the facility will be visible from a small area of the road that lies about 1.7 miles north of the intersection of Ubehebe Road, approximately 4.8 miles from the repeater station site. Figure 7 is a view toward the repeater site from Viewpoint 3, which is located in this area. In this view, the repeater station is visible, but appears only as a small speck on the top of the distant ridge. In Figure 7, an arrow is used to direct the viewer's attention to the facility's location. When seen with the naked eye, the repeater does not attract attention, and appears to be a part of the natural landscape pattern. Even when viewed with binoculars, the facility cannot be identified as a man-made structure, and cannot be distinguished from the nearby Joshua trees.

As indicated on Figures 1 and 2, to a very large degree, the repeater station will not be visible from the surrounding ridge area. The nearby areas of visibility will consist primarily of a small zone surrounding the repeater on the plateau area where it will be located, and another zone on an area of the ridge approximately one half mile to one mile to the south, west, and northwest. Figure 8 is a view of the repeater station mockup from Viewpoint 4, the point at which the Galena Peak Road crosses over the top of the ridge and the repeater site first comes into view. This viewpoint is located approximately 525 feet from the repeater site. Figure 9 is a view of the mockup from Viewpoint 5, located on the Galena Peak Road about 328 feet from the repeater site, and Figure 10 is a view of the mockup from Viewpoint 6, located about 55 feet from the repeater site. As these photos of the mockup suggest, in these views from the immediately surrounding area, the repeater station will be clearly visible, but because of its small size, light structural members, and neutral, recessive color, will not dominate the view.

## **6.0 Findings/Recommendations**

### **6.1 Impacts**

Based on the analyses documented in this report, the following findings can be made about the aesthetic impacts likely to be associated with the microwave repeater station proposed for Galena Ridge:

The repeater station will have virtually no detectable impact on views from Saline Valley. For the most part, the repeater station will not be visible at all from the portions of the valley that fall within the facility's foreground and middleground distance zones. The only exception is an area along Saline Valley Road that lies between 4.7 and 5.0 miles from the repeater site. As documented by Figure 7, although the repeater will be visible from this area as a speck on top of the distant ridgeline, it will not be readily discernable as a built feature, and will have virtually no effect on the character and quality of the view. From areas of the valley that lie further away from the repeater site, the facility's degree of detectability will be even less, and there is unlikely to be any degree of discernable impact on the character and quality of views. The most heavily used area in the valley, the hot springs northeast of the Saline Valley Sand Dunes, lies over 16 miles from the repeater site, and from this area, because of the great distance entailed, the

repeater would not be discernable, and would have no effect on the visual experience of users in this area.

The repeater facility will have some minor but limited impacts on views at and immediately surrounding the proposed site on Galena Ridge. As suggested by Figures 8, 9, and 10, the repeater will be visible in the immediate area around the end of the Galena Peak mining road. Because of the facility's small size; light, lattice steel construction, and neutral color, its visual impact on this area will be limited. Because the area at and around the site already reflects a degree of human modification, the repeater facility will not represent an intrusion into an otherwise pristine landscape setting. Although the facility will create a small change in the visual character and quality of the area in the immediate vicinity of the site, these changes will be minor and very limited in terms of the extent of the area affected. Because of the difficulty of accessing this area, the numbers of people who will see these views will be very limited. As indicated by the visible area mapping presented on Figures 1 and 2, the repeater station will also be visible from a short portion of the trail located about a mile to the northeast. At this distance, and given the repeater facility's small size, and its lattice construction that will maximize its visual absorption into the backdrop, the repeater facility is not likely to be visually prominent in views from the trail, and would have little discernable effect on the overall character and quality of views from the trail corridor.

## **6.2 Recommendations for Mitigation**

The currently proposed siting and design of the repeater station incorporates a number of measures that have the effect of attenuating its visual effects:

- With the adjustment of the facility's precise location on the ridge, the facility's visibility from the valley has been greatly reduced, eliminating most views of the facility from valley areas in the foreground and middleground viewing zones.
- The lattice steel structure proposed for the facility has the advantage in close and more distant views of appearing less massive than a steel pole tower, and of being visually absorbed into the backdrop.
- The only lighting proposed for the facility is emergency lighting that would turn on only in the case of a multi-level disturbance. Under normal circumstances, the facility will not be illuminated at night.

The neutral gray color used for the mock-up appears to be the color that will be most effective in integrating the repeater into its setting. As review of Figures 8, 9, and 10 indicate, the gray color has a low level of visual contrast with both land and sky backdrops and is in harmony with the color of the soil in the immediately surrounding area. Although consideration has been given to use of other color schemes that might be thought to camouflage the repeater (i.e., combinations of green and tan), it was determined that given the form, small surfaces, and small scale of the facility, that these colors would be less effective than gray in integrating the repeater

into the various views in which it is seen, and in close views, could attract more attention to the repeater than use of a single neutral color<sup>1</sup>.

Additional measures to camouflage the appearance of the repeater in nearby views do not appear to be feasible or appropriate. The facility's design is already small scale and compact. Given the nature of the facility's form, efforts to disguise the repeater as a Joshua tree would be awkward-appearing and unconvincing, and would call additional attention to the facility. Planting a grove of Joshua trees around the repeater in order to screen it would not be feasible because the trees could interfere with the clear line of sight to the dishes that must be maintained, and because of the practical difficulties in irrigating and maintaining new plantings in this remote and difficult-to-access location. Any architectural treatment to the facility would have the effect of increasing its apparent bulk and degree of contrast with its backdrop.

Although there do not appear to be any feasible options for camouflage treatment of the repeater, there are a number of additional measures that will either further attenuate its visual effects or make it a positive point of visual interest for visitors to the top of the ridge:

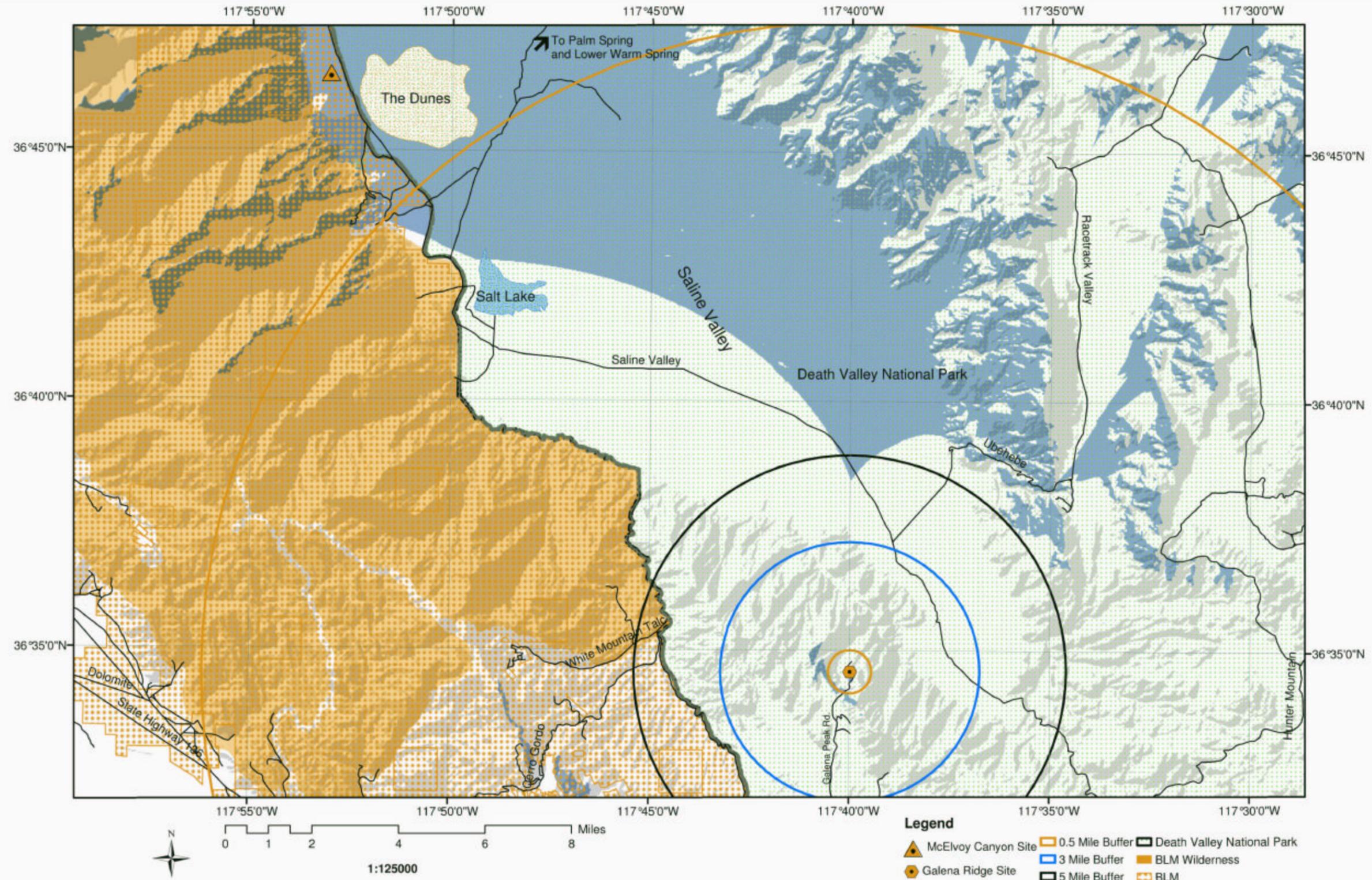
- The fence surrounding the repeater station should be painted a dark color with a low reflectivity finish to minimize its visual intrusiveness.
- After construction is complete, all construction debris should be removed from the area, and the surfaces of any areas disturbed during the construction process should be restored to their original condition.
- Low profile and attractively designed interpretive panels should be installed around the perimeter of the repeater facility's fence to explain to visitors what the facility is, and why it is there. Points that the panels could cover might include a description of the repeater station and its relationship to the beacon radar facility, the role of the radar system in improving safety for flight operations in the R-2508 complex, the history of flight operations in this area, the fact that the 1994 Desert Protection Act included provisions maintaining the military use of air space over lands in Death Valley National Park, and profiles of planes commonly seen in the area to help visitors to identify them.

## 7.0 References

- Goult, G. A. 1990. *Visual Amenity Aspects of High Voltage Transmission*. Taunton, Somerset, England: Research Studies Press, Ltd.
- United States Department of Agriculture. Forest Service. 1995. *Landscape Aesthetics; A Handbook for Scenery Management* (Agriculture Handbook Number 701). Washington, DC: US Department of Agriculture.
- United States Department of the Interior. Bureau of Land Management. 2002. *Visual Management System, Manual H-8410-1*. Available at: <http://www.blm.gov/nstc/VRM/8410.html>. Accessed September 24, 2002.

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<sup>1</sup> This determination is consistent with experience in the electric utility industry, which has found through studies and experience that neutral gray colors perform the best in visually integrating electric transmission lines into the landscape. See for example, Goult (1990) pp 110-120



**Figure 1: Potential Visibility of the Proposed Galena Ridge Repeater Station in the Surrounding Region.**

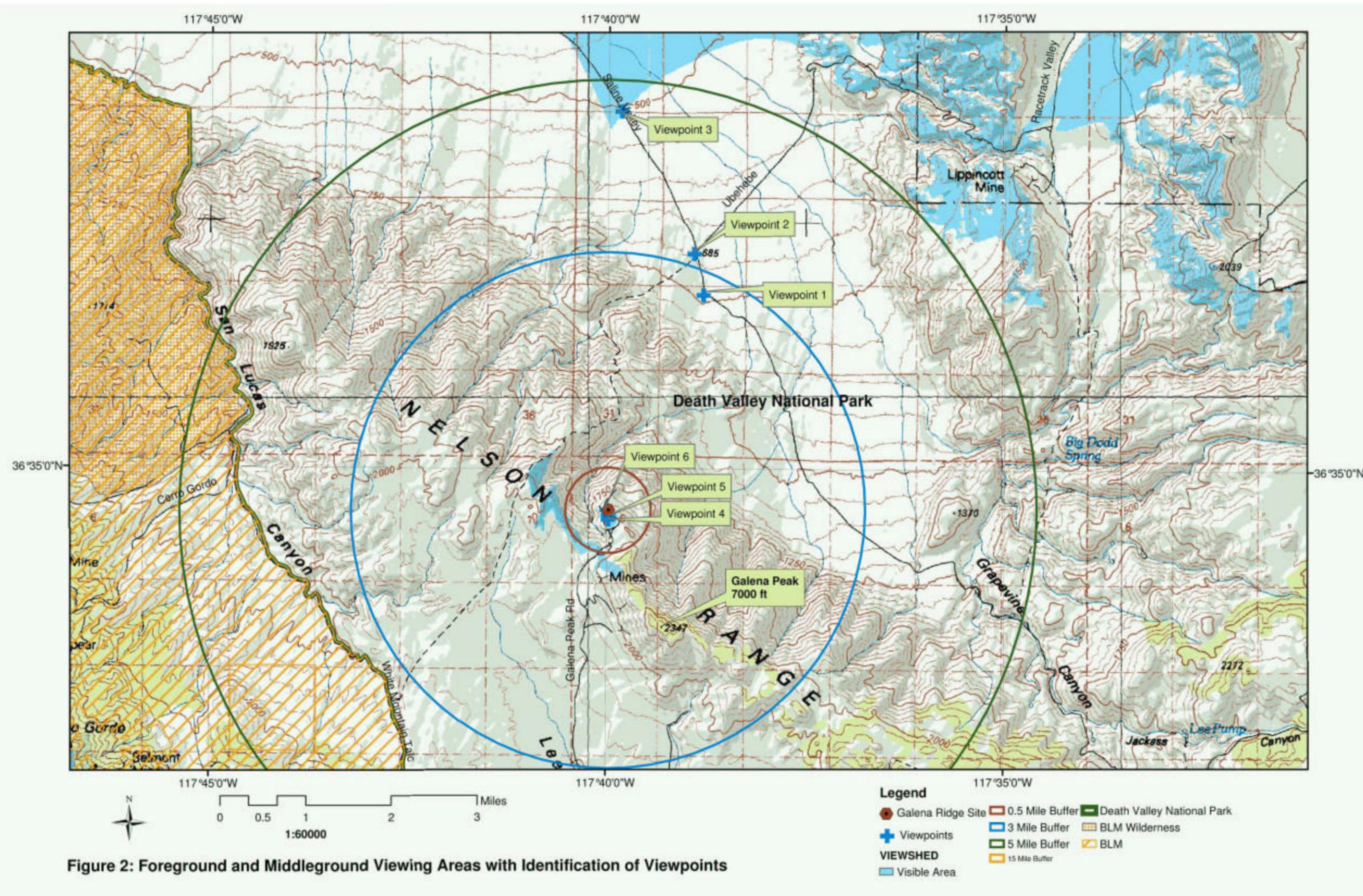




Figure 3: Installation of the repeater station mock-up at the Galena Ridge site.



Figure 4: Crew on valley floor observing placement of repeater station.



Figure 5: Viewpoint 1 - The arrow marks the general location of the repeater site, which is 2.7 miles from this viewpoint. With the location the repeater moved back from the edge of the ridge, the repeater is not visible from this area of Saline Valley Road.



Figure 6: Viewpoint 2 - The arrow marks the general location of the repeater site, which is 3.2 miles from this viewpoint. With the location of the repeater moved back from the edge of the ridge, the repeater is not visible from this area of Saline Valley Road.

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Figure 7: Viewpoint 3 - From this location, which is the point along Saline Valley Road that the repeater will be visible at closest range, (4.8 miles in the distance) the repeater station (highlighted with an arrow) will be visible as a small speck on top of the ridge.

11/02/01 01:01:03 EA\_EB:2003/01/01/Saline Valley photo page Fig 7/1/01/01.eco



Figure 8: Viewpoint 4 - View of the repeater mock-up from a point on the Galena Peak mining road approximately 525 feet from the site.



Figure 9: Viewpoint 5 - View of the repeater mock-up from a point on the Galena Peak mining road approximately 328 feet from the site.

T:\NSR\01\_01\_01\_EA\_EIR\2003\115FO\SalineValley\photos\pages\4\7811000



Figure 10: Viewpoint 6 - Very close-up range view of the repeater mock-up from a point about 50 feet to the west.

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**APPENDIX G  
PUBLIC INVOLVEMENT CHRONOLOGY**

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**SALINE VALLEY  
PUBLIC INVOLVEMENT CHRONOLOGY**

**December 1997**

Letter from Death Valley Park Superintendent requesting improved radar coverage in Saline Valley to increase public safety (Martin 1997).

**April 2001**

Briefed Inyo County Board of Supervisors on proposed project.

**October 2001**

Letter from U.S. Department of the Interior, Bureau of Land Management, to AFFTC/EMXC, requesting text changes (BLM 2001b).

**January 2002**

Preliminary agency coordination draft EA send to FAA, BLM, NPS Shoshone Tribe for comments.

**August 2002**

Held three public workshops (at Ridgecrest, Stovepipe Springs and Independence, CA) to provide early public coordination on the proposed radar design and location. Published project notice of proposed action in local newspapers. See attached project data sheets and display ads.

**September 2002**

Lead agency letter to all cooperating agencies defining roles.

**October 2002**

Posted the proposed project data sheets on the Edwards website, and made them available for downloading.

Coordinated a public involvement questionnaire sent to SPA members requesting their comments and input.

Second coordination draft sent to cooperating agencies for comments.

**July 2003**

Incorporated cooperating agency comments and sent Agency Review Draft to applicable agencies for comment. Began addressing comments from the cooperating agencies.

*FINAL*

**August 2003**

Incorporated applicable cooperating agency comments into the Public Review Draft.

**September 2003**

Distributed the Public Review Draft hardcopy and posted the electronic copy on the Edwards website, making it available for download. Comment period set for 30 days.

Began receiving comments on 20 September 2003.

**October 2003**

Received the last comment within the 30-day review period on 20 October 2003.

Responded to comments received.

**November 2003**

Included comments and responses in Appendix G and published the Final EA.

PAID AD

Paid Public Announcement

## **PUBLIC NOTICE**

### **UNITED STATES AIR FORCE**

**The Air Force Flight Test Center at Edwards Air Force Base, Calif.  
Invites the Public to Attend a Workshop on the  
Proposed Construction and Operation of a  
Beacon Radar System and Microwave Repeater Facility in the Saline Valley**

Edwards AFB officials are holding three separate workshops to identify public concerns and issues regarding the construction and operation of a beacon radar system and an associated microwave repeater facility on non-wilderness lands within the Saline Valley.

At the workshops, the Air Force will present an overview of the project and speak one-on-one with the public.

The primary purpose of the proposed project is to provide air traffic controllers and pilots with real time flight data within the Saline Valley area and other information that would assist in flight safety as well as aircraft identification and search and rescue operations. This initiative is based upon an analysis of near mid-air collision data revealing the area has a history of aircraft near collisions and a corresponding potential for mid-air collisions.

Public concerns or issues will be incorporated into the Environmental Assessment (EA) being prepared for the project. The document is part of the Environmental Impact Analysis Process which identifies potential environmental impacts on the physical, natural, and human environment associated with the implementation of this proposal. The resulting analysis and documentation is intended to comply with the provisions of the 1969 National Environmental Policy Act.

When completed, copies of the draft EA will be available at local libraries and the Edwards AFB web site for public review.

The workshops are scheduled from 6 to 8 p.m. each evening as follows:

- August 13, Ridgecrest, Kerr McGee Center, 100 W. California Avenue, Ridgecrest, Calif.
- August 14, Stovepipe Wells Village, Highway 190, Death Valley, Calif.
- August 15, Independence Legion Hall, 205 S. Edwards (Highway 395), Independence, Calif.

Public concerns and comments may also be sent to the Air Force Flight Test Center, Environmental Management, Attn: Gary Hatch, Environmental Public Affairs, 5 E. Popson Ave., Edwards AFB CA 93524-1225. For more information, call Hatch at (661) 277-1454, or e-mail to: [gary.hatch@edwards.af.mil](mailto:gary.hatch@edwards.af.mil).



**Air Force Flight Test Center Environmental Management**  
Edwards Air Force Base, CA 93524-1130

Specifications:

3 cols by 8 inches.

PAID AD

TO BE PUBLISHED IN INYO REGISTER AUGUST 13, 15, 2002

Paid Public Announcement

**PUBLIC NOTICE**  
**UNITED STATES AIR FORCE**

**The Air Force Flight Test Center at Edwards Air Force Base, Calif.  
Invites the Public to Attend a Workshop on the  
Proposed Construction and Operation of a Beacon Radar System and  
Microwave Repeater Facility in the Saline Valley**

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At the workshops, the Air Force will present an overview of the project and speak one-on-one with the public.

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**Air Force Flight Test Center Environmental Management**  
**Edwards Air Force Base, CA 93524-1130**

Specifications:  
3 cols by 8.5 inches.

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**Responses to Public Comments on the Draft Saline Valley Radar  
Environmental Assessment (EA).**

**1. E-mail comment from Ray and Debra VanDeWeerd, received 20 September 2003.**

Comment noted, thank you for your continued support of the Department of Air Force mission.

**2. E-mail comment from Charles R. Brown, received 24 September 2003.**

Thank you, for your comment and support for the Department of Air Force mission. As stated in the draft EA on pages 2-4 and 4-2, there are no plans to pave or otherwise improve the Saline Valley Road.

**3. Letter comment from Gayle J. Rosander, IGR/CEQA Coordinator for the California Department of Transportation, received 7 October 2003.**

A. We agree that this project will support both military and private aviation in the Saline Valley, and this point is noted on pages iii, 1-1, and 1-3 in the draft EA.

B. We will state the east central California location of this project in the Finding of No Significant Impact (FONSI).

C. The “unimproved airstrips” mentioned in the EA are the airstrips located near the Hot Springs. Thank you for clarifying that point.

**4. Letter comment from Jeff Ruch, Executive Director of the Public Employees for Environmental Responsibility (PEER), received on 16 October 2003.** PEER comments are limited to siting any structure on Federal lands within Death Valley National Park.

A. We understand how someone could confuse the flight safety aspect of the project as being the only requirement, but flight safety is only part of the basic need. The need to support search and recovery for military, other Federal and State agencies, and civilian accidents will also be supported by the proposed project (see pages iii, 1-2, and 1-3). Accidents, including civilian ground vehicle breakdowns, in an area as remote as the Saline Valley are potentially life threatening. Other nonconstruction alternatives were considered (mobile units, airborne radar and satellite coverage), but were eliminated because they could not be certified by the FAA and incorporated into the existing FAA system for monitoring and communicating with aircraft and ground vehicles. (See page 2-7 for a discussion of the alternatives considered but eliminated.)

B. We agree with the statements that the Air Force does not have the authority to make a decision on issues related to National Park Service (NPS) lands and the various legal aspects of developing a project on NPS lands. However, there is a legal process for agencies to follow when the only reasonable site for a project is on NPS land. The legal protection of the NPS lands is addressed by the requirement outlined in section 4(f) of the Transportation Act. This law provides the procedures and mechanism for deciding if a project will be allowed on NPS land (see page 1-9 for a more detailed discussion). There

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are many examples of transportation related projects being constructed on or through NPS lands where no reasonable alternative exists, and this action is not precedent-setting.

**5. Letter comment from Bill Helmer, received 20 October 2003.**

- A. Comments related to the visual impacts. While we understand the position taken by Mr. Helmer that an Environmental Impact Statement is required because of visual impacts, we disagree. There were two visual impact studies conducted as part of the environmental impact analysis process. Both of these studies were conducted by experienced and professionally trained visual impact specialists using standard visual impact assessment procedures, to include the use of a full-scale model. Based on data from these professional studies the visual impacts were found to be minor for the tower on NPS lands and moderate for the facility on the Bureau of Land Management (BLM) site.

The CEQ regulations (10 CFR 1508.27) states that determination of significance requires consideration of context and intensity. In considering context, the AF found that, based on the setting, the impacts are local, not regional or national. In considering intensity, the CEQ regulations provide 10 factors for analysis. The AF determination, based on the visual impact studies, found that visual impacts do not rise to the level of significant because (1) the proposed action will not have adverse effects on public health or safety (but will improve air safety), (2) the proposed action has not evoked great public controversy, (3) the impacts do not involve a high degree of uncertainty, (4) the proposed action is not precedent-setting, (5) the proposed action does not threaten cumulatively significant impacts (because there is little or no “reasonably foreseeable” development planned for Saline Valley), (6) the proposed action will not affect listed or eligible historic structures or resources or threatened or endangered species, and (7) the proposed action threatens no violation of environmental law or regulation. While there are unique geographic characteristics, the AF has chosen the beacon radar site to avoid the visual impacts to most sensitive resources (NPS land).

If there are additional data about visual impacts that have not been brought to our attention, we would reconsider this issue.

- B. Comments related to mitigation. Mitigations are listed by resource area (see following page references) and are shown and illustrated in the various figures for each alternative site. In general, mitigations include painting structures in natural earth-tone colors as a means to reduce the facility’s visibility. Bright colors and polished metallic surfaces would be kept to the needed minimum. Security and safety lighting would be motion activated. (No permanent exterior lighting would be installed.) Motion-activated lighting reduces the potential for adverse impacts related to light and glare. Lastly, all design factors have been incorporated to ensure that the facility would blend in with the surrounding area as much as possible.

Mitigation listed by resource area can be found at:

Visual and recreational, page 4-2

*FINAL*

Geology and Soils, page 4-5.  
Water and Hydrology, page 4-10  
Air Quality, page 4-12  
Biological Resources, page 4-15  
Noise, page 4-17  
Cultural, page 4-19  
Traffic, page 4-20

- C. Comments related to reference documents. Mr. Helmer objects to some comments made in the EA that specifically refers to independent studies on the history of the Timbisha in Appendix C. His objections (i.e. that he is not a Native American) were made early in the assessment process and were noted and included in the assessment process. However, correcting errors in an independent stand-alone reference document is beyond the scope of the assessment. Direct meetings with the Timbisha Shoshone Tribe were conducted, and included an Air Force-hosted site visit by the tribal elders to the various alternative sites. Only summaries of these reference documents are included in the EA. The complete documents are not made available to the public because they may contain potentially sensitive information about cultural resources, disclosure of which could facilitate looting.
- D. Comments related to section 106 consultation. The section 106 consultation requirements were in process during the development of the draft EA. The 106 requirements were met through Government-to-Government consultations that included written correspondence, face-to-face meetings with the tribal elders, an Air Force-hosted site visit by the tribal elders to the various alternative sites, public meetings where the tribal Historic Preservation Officer was in attendance, and including the tribe as a cooperating agency during the environmental impact assessment process. The State Historic Preservation Officer was also provided a copy of the draft EA for review. A section on “Native American Values” was not included as a specific section, but was considered through the 106 process and generally covered as a cultural resource. We believe that the section 106 consultation requirements have been met in both the letter and spirit of the law.

The AF finding is that no issues rise to the level of significant as define in CEQ regulations; and, therefore, preparation of an EIS is not required.

- E. Comments related to cumulative impacts. We disagree with Mr. Helmer’s comments about “Cumulative Impacts” as they relate to the CARMA project. The CARMA project is not located in the Saline Valley. The cumulative impact analysis in the CARMA EIS does not list the area in or around any of the proposed Saline Valley Radar sites in their area of influence. Following Council on Environmental Quality (CEQ) guidance on cumulative impacts, the Saline Valley EA uses the drainage basin concept for delineating the area of influence and did not include Juniper Flats, the proposed site for the CARMA project. Considering the only impacts Mr. Helmer has identified are visual in nature and the fact that the CARMA project cannot be seen from the Saline Valley, it is highly unlikely that these impacts have the potential to accumulate. Additionally, the proposed

*FINAL*

project does not have the characteristics that would typically promote other structures (see comments on growth-inducing effects).

- F. Comments related to growth-inducing effects. We disagree with Mr. Helmer's comments about "Growth Inducing Affects." Our analysis (see page 1-8) found the proposed facilities would not result in the addition of infrastructure (i.e., roads and utilities) or land use changes that would support additional population growth of any type, such as commercial, residential, or industrial.

**6. Letter from the Governor's Office of Planning and Research, State Clearinghouse.** (Reviewing State agencies: Department of Fish and Game, Office of Historic Preservation, Department of Parks and Recreation, Office of Emergency Services, California Highway Patrol, Air Resources Board, airport projects, and Regional Water Quality Control Board, Region 6.) **No comments or corrections.**

Copies of all comment letters follow.

*FINAL*

SEE COMMENT 1

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-----Original Message-----  
From: HD Ghost [mailto:hdghost@msn.com]  
Sent: Saturday, September 20, 2003 6:18 PM  
To: Hatch Gary L Civ AFFTC/PAE  
Subject: radar installation

USAF is in need of a radar tower or you wouldn't be asking for one. Please research a place and install with our blessings. If any Environmentalists object put a grenade in their shorts.

Sincerely,  
Ray & Debra VanDeWeerd  
Bishop, Cal 94514  
Green Feet rule!

*FINAL*

SEE COMMENT 2

I read in your Environmental Management report of the Saline Valley Radar Project.  
<http://www.edwards.af.mil/penvmng/aboutedwards/Conservation/saline.htm>

The past few years the Inyo Mountains and Saline Valley have become among my favorite places. I feel that it's appeal is it's remoteness. Bad roads like the Inyo Mountain Ridge and the Saline Valley road help to protect the area from human impact. I enjoy watching jet aircraft using the Saline Valley for a 'workout range' and I think the pilots enjoy the area too, because of it's remote and rugged nature.

The need for better Air Traffic control is quite understandable. I feel if a RADAR site is to be placed in the valley it should be where it is most effective. The primary alternative site on the north side of the dry lake bed would have a visual impact. But my concern is the Saline Valley road. If road improvements are made for RADAR site maintenance, more traffic will be seen and there goes the neighborhood and the wilderness.

It must seem strange for someone to be requesting 40 miles of bad road. Also, consider the condition that is occurring right now (Sept 2003). The North pass is now closed and the South Pass is nearly impassable even with a 4X4 because of late summer rain storms. Inyo County, BLM and NPS negotiate the road repair cost, but with the USAF in there, they may even want you to pave the road. In the past a Grader and Front Loader may go through there a couple times a year. I would hope RADAR Site maintenance could be done with road conditions as they normally are. That is the only way to keep the Saline Valley wilderness environment from degenerating.

I would like this to be included in the Public Comment.

Charles R Brown

DEPARTMENT OF TRANSPORTATION

District 9  
500 South Main Street  
Bishop, CA 93514  
PHONE (760) 872-0785  
FAX (760) 872-0754  
TTY (760) 872-9043

SEE COMMENT 3



Flex your power!  
Be energy efficient!

October 7, 2003

Mr. Chris Rush  
Building 2650A  
Edwards Air Force Base, California 93524

File: 09-FED  
EA  
SCH#: 2003094003

Dear Mr. Rush:

**Environmental Assessment (EA) Saline Valley Radar Facility (September 2003)**

The California Department of Transportation (Department) appreciates the opportunity to comment on the Environmental Assessment for the proposed Saline Valley Radar Facility in Inyo County.

We have the following comments concerning the proposed project:

- As a Department with a mission to improve mobility across California, we support the improved flight safety in multiple use airspace within our District that could result from this project. Since the proposed facility is within the Saline Military Operations Area (MOA), a clear statement could be made regarding joint military/civilian use. Response 3A
- The project is described as located in southern California. It would be more accurate to say it is in east central California. Response 3B
- The proposal briefly mentions two "unimproved airstrips" in the Saline Valley. There are however, several locations which have been improved for use by aircraft. The most notable being at the Hot Springs, which is unpaved, is marked, has a windsock, and receives regular maintenance by volunteers. These airstrips are used for both recreational and emergency access to the area, especially since surface roads are subject to winter or storm closures. Response 3C

Please continue to forward relevant information on this proposed project for our review and records. Contact me at (760) 872-0785 if you have any questions. We look forward to a communicative relationship in matters concerning Eastern Inyo County.

Sincerely,

GAYLE J. ROSANDER  
IGR/CEQA Coordinator

c: Dave Beahrs Grah, California Department of Transportation

SEE COMMENT 4



Public Employees for Environmental Responsibility

2001 S Street, NW • Suite 570 • Washington, D.C. 20009 • 202-265-PEER(7337) • fax: 202-265-4192  
e-mail: info@peer.org • website: http://www.peer.org

Mr. Gary Hatch  
Air Force Flight Management Test Center/Environmental Management  
5 E. Popson Avenue  
Edwards Air Force Base, CA 93524-8060

October 16, 2003

Dear Mr. Hatch:

By this letter, Public Employees for Environmental Responsibility (PEER) responds to the notice of a draft environmental assessment (EA) of a radar facility proposed by the Air Force in Saline Valley, California. PEER opposes siting any of the facilities – either the radar beacon site or the microwave repeater - on Federal lands within Death Valley National Park.

The EA is flawed because it considers no other alternative to flight safety needs than the construction of facilities. The EA does not even consider reasonable alternatives such as redirecting air traffic to flight corridors that are better monitored.

Response 4A

The Air Force possesses neither the authority nor the jurisdiction to site the proposed facilities on public lands administered by the Bureau of Land Management (BLM), or in Death Valley National Park administered by the National Park Service (NPS). As the project proponent, the Air Force must seek the approval of one or both of the Interior Department agencies. It is the NPS and/or the BLM that must make the critical decision about whether to issue the legal instrument, most likely a right-of-way, that would authorize the construction of the radar facilities.

Response 4B

The Draft EA provides no basis upon which the NPS may act to issue a right-of-way, or any other authorization to the Air Force and/or the Federal Aviation Administration to use park land for the radar facilities. PEER will confine its comments to explaining why the EA fails to provide a basis for the critical decision of authorizing the use of park lands.

As stated above, the Air Force proposal is wholly dependent upon the decision-making processes and consent of the NPS. The NPS, not the Air Force, is the Federal agency responsible for making a decision to allow use of Federal lands that may affect the quality of the human environment. The NPS may consider the Air Force request under the laws and regulations that govern the national park system. But, the NPS is bound by strict standards of preservation on ALL of Death Valley's lands, including lands in non-wilderness status. The 1916 Organic Act of the NPS demands that the NPS conserve the scenery of the parks in an unimpaired state.

Response 4B

Response 4B

Thus, the NPS is charged by law to conserve the scenery of Death Valley "unimpaired." Further, the duty imposed upon the NPS by law is affirmative and mandatory. Prior to approving the use of park land, the NPS must positively conclude that the radar facilities will not impair the scenery or other resources of Death Valley. The proposed facilities (both the radar beacon or the 40-foot microwave repeater) constitute a permanent impairment of Death Valley's scenery.

Under the 1978 Amendments to the 1970 NPS Act for Administration, activities in derogation of park conservation values require specific authority in law. A permanent radar facility in the Saline Valley fails that test. There is considerable doubt whether the existing statutory authorities governing rights-of-way on national park system lands (at 16 U.S.C. 5 and 79) even provide for the kind of facilities the Air Force seeks.

Yet, despite the above, the Air Force Draft EA finds no significant environmental issue involved with citing the facilities on NPS lands. That finding proves that the Air Force fails to recognize the special legal status that national parks possess in the United States and the protective laws that govern the parks. The Air Force is not to blame for not knowing the laws that protect the parks. However, that is also why the EA is virtually worthless.

Response 4B

Much more than section 4(f) of the 1966 Transportation Act is at stake here. The very use of land legally protected in the national park system constitutes an environmental issue of great significance.

The United States of America refrained from degrading the national park system even during World Wars I and II when there was great pressure to do so. There is no reason to start now. PEER promises to oppose the preferred action in the Draft EA.

Sincerely,



Jeff Ruch  
Executive Director

cc: James T. Reynolds, Superintendent, Death Valley National Park

SEE COMMENT 5

October 20, 2003

Air Force Flight Test Center Environmental Management  
Attn: Gary Hatch  
5 E Popson Avenue, Bldg. 2650A  
Edwards AFB CA 93524-8060

**RE: DRAFT ENVIRONMENTAL ASSESSMENT FOR THE SALINE VALLEY  
RADAR FACILITY PROJECT**

Dear Mr. Hatch:

The following comments address the Draft Environmental Assessment For The Saline Valley Radar Facility Project (September 2003).

As stated in the Timbisha Shoshone Tribe's letter of November 7, 2002 [regarding the second Administrative Draft EA for the Saline Valley Radar Facility Project], an Environmental Impact Statement (EIS) is needed for the project because the negative visual effects of a radar facility in Saline Valley will have a significant impact on the environment. The visual impacts are clearly "major," *not* "moderate." The EA does not show how the visual effects of the radar facility at any of the proposed locations can be mitigated. Although the proposed Alternative B (McElvoy Canyon) is on BLM land, the site would be literally across the road from the turn-off to Saline Valley Hot Springs, a traditional cultural place of the Timbisha Shoshone Tribe and a major destination for visitors in this region of Death Valley National Park. Because of this, Alternative B is one of the worst choices among the alternatives suggested. Significant environmental impacts require an EIS according to the National Environmental Policy Act.

Responses 5A & 5B

**P. 3-15:** The EA states:

Mapped data that indicates the American Indian territorial boundaries within California does not identify any American Indians in the vicinity of the Saline Valley, but limits the identifications to those areas west of Death Valley and western sides of the Saline Valley's bordering mountains (the Nelson Range). More recent research, however, has identified the Saline Valley area as one associated with the Panamint Shoshone during late historic times. (circa 1870s and 1880s) (Volume 11, Great Basin of the Handbook of North American Indians). It has been suggested that the populations within the Saline Valley were low and generally present during winter months. Only four village sites are known to have been present within the Saline Valley.

As stated in the Timbisha Shoshone Tribe's previous letter of 11/7/02, this paragraph is *still* inaccurate. The paragraph implies that the Timbisha (Panamint) Shoshone have only occupied the Saline Valley since the late nineteenth century. However,

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archaeological and ethnographic documentation provide evidence for an occupation span of many thousands of years of occupation in the Saline Valley by the ancestors of the Timbisha Shoshone. The statement that “only four village sites are known to have been present within the Saline Valley” does not include archaeological evidence for village sites.

Response 5C

**P. 4-16:** The EA states:

American Indian consultations have been initiated and no issues have been raised (Appendix E)...The analysis considered the following issues:

- Potential impacts upon archaeological resources;
- Potential impacts upon historic resources; and
- Potential impacts upon American Indian values.

However, as a Cooperating Agency, the Timbisha Shoshone Tribe responded to two administrative drafts of the EA on 5/14/02 and 11/7/02. *Each of the letters raised many issues in the draft EAs which had potential impacts on American Indian values.* Also, Appendix E simply shows that letters were mailed to various Indian tribes and organizations. This fact has nothing to do with proper government to government consultation. Where is the record of Section 106 consultation with the Timbisha Shoshone Tribe? The Timbisha Shoshone Tribe’s 11/7/02 letter states:

Response 5D

Regarding consultation with the Timbisha Shoshone Tribe, many issues have been identified, as stated in the Tribe’s past and current letter. Another Section, **Native American Values**, should also be added to the document. In this section, interviews with Timbisha Shoshone Elders can be documented in relation to the project. This would fulfill NEPA and Section 106 consultation requirements. The need for this section became apparent after reviewing the weaknesses of the Cultural Resources and Native American Consultation sections. The interviews can be done in a timely manner.

An analysis regarding “Potential impacts upon American Indian values” was never conducted, even though it was requested by the Timbisha Shoshone Tribe.

**Pp. 4-18 and 4-19 [Table 4-9, Cultural Resources Impacts] :**

“No adverse impacts on American Indian values have been identified” for the alternatives is inaccurate. As stated above, the Timbisha Shoshone Tribe regards all the alternatives as having a significant visual impact on the environment and the traditional cultural landscape of Saline Valley and the Saline Valley Hot Springs.

**P. 5-1:** The CARMA project proposed for the Inyo Mountains was not included as a cumulative project, even though this was requested in the Timbisha Shoshone Tribe’s letter of 11/07/02.

Response 5E

As the Timbisha Shoshone Tribe stated in its previous letter of 11/7/02:

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The impact on visual resources is a potential cumulative impact.

*Growth Inducing Affects:* The establishment of the radar facility in Saline Valley creates the infrastructure for increased flights, even though no increase in flights may be in the immediate planning stages. This is a growth-inducing effect.

Response 5F

**P. 5-2:** The EA states: "Consultation with the Timbisha Shoshone Tribe is ongoing. The Timbisha Shoshone Tribe is a cooperating agency on the EA for this project. No issues have been identified." This statement is obviously false since the Timbisha Shoshone Tribe stated many issues of concern in the letters of 5/14/02, 11/7/02, the public hearing in Independence on August 15, 2002, and at various meetings with the Air Force in Death Valley National Park.

Response 5C

**Comments on Appendix C, *A Cultural Resources Investigation of the Proposed Galena Peak Facility in the Saline Valley Area of Death Valley, Inyo County, California, by Jeanette McKenna, Principal, McKenna et al., Whittier, California:***

This report has inaccurate information, as stated in the Timbisha Shoshone Tribe's previous response's to the administrative drafts of the EA on 5/14/02 and 11/7/02, as well as at meetings with the Air Force in Death Valley National Park. The letter of 11/7/02 states:

Response 5C

The inaccuracies in McKenna et al.'s report in Appendix C have not been corrected. In the Tribe's first letter it was written:

(21) Appendices, Cultural Resources Investigation, pp. 5-6: McKenna et al. never contacted the Timbisha Shoshone Tribe for consultation, even though the Saline Valley is within the Timbisha Shoshone Homeland. The Native American Heritage Commission did not contact the Tribe and also is not a direct source for consultation. Bill Helmer initiated contact with Ms. McKenna and stated that he was the Tribal Historic Preservation Officer for the Timbisha Shoshone Tribe, and that Section 106 consultation was required. Somehow this was garbled into a call from "Bill Helmer, a local Native American." This inaccurate information needs to be revised in the draft EA... If this [McKenna's report] is to be included in the Appendix for the record, *the inaccuracies must be noted.*

In conclusion, we emphasize the necessity for an Environmental Impact Statement for the proposed radar facility. Nearly a year ago (11/7/02), the Tribe wrote to the Air Force:

As I stated at the hearing on the project in Independence on August 15, 2002, it would be advisable to prepare an Environmental Impact Statement (EIS) for this project. An Environmental Assessment should be used only for projects which clearly will not adversely impact the environment. Even with the project's new

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alternatives, adverse impacts to the land will occur. An EIS will also provide the opportunity for more public hearings. The hearings in August were poorly publicized and thus poorly attended.

In addition, Section 106 consultation for the proposed project still needs to be completed.

Response 5D

Sincerely,

*Bill Helmer*

Bill Helmer  
Tribal Historic Preservation Officer  
Timbisha Shoshone Tribe

*FINAL*



Gray Davis  
Governor

COMMENT 6  
STATE OF CALIFORNIA  
Governor's Office of Planning and Research  
State Clearinghouse



Tal Finney  
Interim Director

October 17, 2003

Chris Rush  
U.S. Air Force  
Building 2650A  
Edwards AFB, CA 93524

Subject: Environmental Assessment for the Saline Valley Radar Facility, Saline Valley, CA  
SCH#: 2003094003

Dear Chris Rush:

The State Clearinghouse submitted the above named Other Document to selected state agencies for review. The review period closed on October 16, 2003, and no state agencies submitted comments by that date. This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act.

Please call the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process. If you have a question about the above-named project, please refer to the ten-digit State Clearinghouse number when contacting this office.

Sincerely,

A handwritten signature in black ink that reads "Terry Roberts".

Terry Roberts  
Director, State Clearinghouse

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044  
(916)445-0613 FAX(916)323-3018 [www.opr.ca.gov](http://www.opr.ca.gov)

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**Document Details Report  
State Clearinghouse Data Base**

**SCH#** 2003094003  
**Project Title** Environmental Assessment for the Saline Valley Radar Facility, Saline Valley, CA  
**Lead Agency** U.S. Air Force

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**Type** Oth Other Document  
**Description** Proposed construction of a Radar Facility within Saline Valley, CA. Provide air traffic controllers and pilots with real-time flight data.

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**Lead Agency Contact**

**Name** Chris Rush  
**Agency** U.S. Air Force  
**Phone** 661-277-1425  
**email**  
**Address** Building 2650A  
**City** Edwards AFB  
**State** CA **Zip** 93524  
**Fax**

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**Project Location**

**County** Inyo  
**City**  
**Region**  
**Cross Streets** Saline Valley Road  
**Parcel No.**  
**Township** **Range** **Section** **Base**

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**Proximity to:**

**Highways**  
**Airports**  
**Railways**  
**Waterways**  
**Schools**  
**Land Use** Totally on Federal Lands, Multiple-Use Class L, Non-wilderness

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**Project Issues** Aesthetic/Visual; Air Quality; Archaeologic-Historic; Flood Plain/Flooding; Recreation/Parks; Vegetation; Landuse

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**Reviewing Agencies** Resources Agency; Department of Fish and Game, Region 6; Department of Fish and Game, Region 6 (Inyo & Mono Region); Office of Historic Preservation; Department of Parks and Recreation; Office of Emergency Services; Caltrans, Division of Aeronautics; California Highway Patrol; Caltrans, District 9; Air Resources Board, Airport Projects; Regional Water Quality Control Bd., Region 6 (Victorville); Native American Heritage Commission

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**Date Received** 09/17/2003 **Start of Review** 09/17/2003 **End of Review** 10/16/2003

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Note: Blanks in data fields result from insufficient information provided by lead agency.

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