DOE/NV EA-1300

The Nevada Test Site Development Corporation's Desert Rock Sky Park at the Nevada Test Site

Environmental Assessment

March 2000

United States Department of Energy
Nevada Operations Office
Las Vegas, Nevada

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List of Acronyms

ACEC	Area of Critical Environmental Concern
AEA	Atomic Energy Act
AFB	Air Force Base
APE	Area of Potential Effect
AR	Air Refueling Anchor/Tracks
ASU	Airspace for Special Use
ATCAA	Air Traffic Control Assigned Airspace
BLM	Bureau of Land Management
BLS	Bureau of Labor Statistics
BN	Bechtel Nevada
CAA	Clean Air Act
CAIRS	Computerized Accident, Illness Reporting System
CFR	Code of Federal Regulations
CRO	Community Reuse Organization
cm	Centimeters
CGTO	Consolidated Group of Tribes and Organizations
dB	Decibels
dBA	A-weighted decibels
DoD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOE/NV	U.S. Department of Energy, Nevada Operations Office
DOI	U.S. Department of Interior
DOT	U.S. Department of Transportation
DRA	Desert Rock Airport
DRSP	Desert Rock Sky Park
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMS	Energy Management System
EPA	U.S. Environmental Protection Agency
^{o}F	Degrees Fahrenheit
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
FONSI	Finding of No Significant Impact
ft	Foot
FY	Fiscal Year
HAPs	Hazardous Air Pollutants
HAZMAT	Hazardous Materials
HVAC	Heating Ventilating Air Conditioning
IFR	Instrument Flight Rules
JTO	Joint Test Operations
kg	Kilograms
km	Kilometers
kv	Kilovolt
LATN	Low Altitude Tactical Navigation
lb	Pound
L_{dn}	Day/Night Noise Level
L_{eq}	Hourly Average Noise Level
LLW	Low-Level Radioactive Waste
$L_{max\text{-}fast}$	Maximum Instantaneous Noise Level
LOS	Level of Service
LWC	Lost WorkDay Cases
mgd	Million Gallons per Day
MOA	Military Operations Areas
MOU	Memoranda of Understanding
MTR	Military Training Routes
mph	Miles per Hour
MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NAC	Nevada Administrative Code
NAFR	Nellis Air Force Range
NATCF	Nellis Air Tactical Control Facility
NDEP	Nevada Division of Environmental Protection
NEPA	National Environmental Policy Act
NNHP	Nevada National Heritage Program
NOAA/ARL/	National Oceanic and Atmospheric Administration/Air Resource Laboratory/Special Operations and Research Division
NPDES	National Pollutant Discharge Elimination System
NPS	National Parks Service
NRC	Nuclear Regulatory Commission
NRCS	National Resource Conservation Service

NRHP	National Register of Historic Place
NTS	Nevada Test Site
NTSEIS	Nevada Test Site Environmental Impact Statement
NTSDC	NTS Development Corporation
OCRWM	Office of Civilian Radioactive Waste Management
OMC	Office of Motor Carriers
PSD	Prevention of Significant Deterioration
RCA	Rapid Cultural Assessment
RCRA	Resource Conservation and Recovery Act
RMP	Resource Management Plan
ROA	Remotely Operated Aircraft Program
SUA	Special Use Airspace
SUD	Site Use Development
TRC	Total Recordable Cases
ROD	Record of Decision
SOC	Site Operations Center
SHPO	State Historical Preservation Officer
Service	U.S. Fish and Wildlife Service
TTR	Tonopah Test Range
UBC	Uniform Building Code
USAF	United States Air Force
v/d	Vehicles per Day
VOCs	Volatile Organic Compounds
YMSCO	Yucca Mountain Site Characterization Office

1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

The U.S. Department of Energy, Nevada Operations Office (DOE/NV) proposes to issue a General Use Permit to the Nevada Test Site Development Corporation (NTSDC) to develop and lease an industrial park in a portion of Area 22 of Nevada Test Site (NTS). This Environmental Assessment (EA) identifies and discusses the potential environmental impacts associated with the proposed action.

1.1 INTRODUCTION

This section provides background information about the purpose and need for DOE/NV's proposed action and the proposal by NTSDC to develop an industrial park at the NTS.

1.1.1 Background

As the Federal agency charged with operating and managing the NTS, DOE/NV recently prepared a *Final Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada* (NTS EIS). The Record of Decision (ROD) for that environmental impact statement stated: "This decision will result in the continuation of the multipurpose, multi-program use of the Nevada Test Site, under which DOE will pursue a further diversification of interagency, private industry, and public-education uses while meeting its Defense Program, Waste Management, and Environmental Restoration mission requirements."

1.1.2 Purpose and Need

Section 3161 of the National Defense Authorization Act for fiscal year 1993 encouraged DOE to minimize the social and economic impacts on workers and communities affected by downsizing of defense-related facilities. One of the methods DOE uses to implement this Congressional direction is to establish local Community Reuse Organizations (CROs) to assist economic development efforts at these types of facilities.

The CRO for the NTS is the NTSDC. Among other things, Section 3161 authorized DOE to initiate private sector economic development at DOE sites and facilities. The ROD indicates that as part of its decision, DOE would continue to support ongoing program operations and pursue diversification of use to include non-defense and private use. The proposed Desert Rock Sky Park (DRSP) would be a private sector enterprise located on the NTS. The DOE/NV would issue a General Use Permit to the NTSDC, which in turn would execute agreements with potential tenants of DRSP, subject to DOE/NV approval.

1.2 REGULATORY REQUIREMENTS

This section briefly describes the major laws, regulations, executive orders, and DOE Orders that may apply to the proposed action and alternatives.

National Environmental Policy Act of 1969 (NEPA). NEPA established the policy of promoting awareness of the consequences of major federal activities on the quality of the human

environment, and consideration of the environmental impacts during the planning and decision-making stages of a project. The proposed action triggers the requirements of NEPA.

Atomic Energy Act of 1954 (AEA). The AEA ensures proper management, production, possession, and use of radioactive materials. Commercial entities engaged in certain radiological operations may be required to comply with the Nuclear Regulatory Commission's (NRC) implementing regulations for applicable sections of this act.

Hazardous and Radioactive Materials Transportation Regulations of the Department of Transportation (DOT). U.S. DOT Regulations at Title 49 Parts 100 through 178 of the Code of Federal Regulations (CFR) contain requirements for the identification of material as hazardous or radioactive. The DOT regulations govern the hazard communication (labeling and placarding) and transport requirements (shipping papers or manifests). DOT regulations at 49 CFR 397 provides guidance to motor carriers for route selection.

U.S. Nuclear Regulatory Commission Regulations. The NRC Regulations at 10 CFR 30 through 31 require that manufacturers of various radioactive products obtain either General or Specific Licenses from the NRC or the appropriate agreement state. Nevada is an agreement state and all such licenses are issued through the Nevada State Health Division.

Resource Conservation and Recovery Act, as amended (RCRA). This Act, and its implementing regulations at 40 CFR 260 through 273, provide the regulatory framework for "cradle-to-grave" control of hazardous wastes by imposing strict management requirements on generators, transporters, and owners and operators of hazardous waste treatment, storage and disposal facilities. Prospective DRSP tenants might generate, treat, or store hazardous wastes as part of their operations, and would be required to comply with the State of Nevada authorized RCRA program.

Clean Air Act of 1970, as amended. The Clean Air Act (CAA), as amended, is intended to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population. Provisions of the CAA are codified in regulations that trigger permitting requirements and require compliance with National Ambient Air Quality Standards (NAAQS).

Clean Water Act (Federal Water Pollution Control Act, as amended). The Clean Water Act was enacted to "restore and maintain the chemical, physical, and biological integrity of the Nation's water." In addition to setting water quality standards for the Nation's waterways, the act provides authority for the Environmental Protection Agency (EPA) to implement the National Pollutant Discharge Elimination System (NPDES) permit program. Industrial discharges and storm water discharges from industrial sites are permitted through the NPDES, which is implemented by the EPA Region IX.

National Historic Preservation Act of 1966, as amended. This act requires federal agencies to take into account the effects of their activities on historic properties included in or eligible for inclusion in the National Register of Historic Places (NRHP) and consult with the State Historic Preservation Office (SHPO) concerning those effects.

Endangered Species Act of 1973. This Act, as amended, is intended to prevent the further decline of endangered and threatened species, and to restore these species and their habitat.

American Indian Religious Freedom Act of 1978. This act states that it is the policy of the United States Government to protect and preserve for Native Americans their inherent right to believe, express, and exercise their traditional ceremonies and rites.

Noise Control Act of 1972. The Noise Control Act, as amended, directs all federal agencies to carry out, "to the fullest extent within their authority," programs within their jurisdictions in a manner that furthers a national policy of promoting an environment free from noise that jeopardizes health and welfare.

Federal Land Policy and Management Act of 1976. This Act governs the use of federal lands that may be overseen by various agencies, and establishes procedures for obtaining land withdrawals and rights-of-way.

Executive Order 11988 (Flood Plain Management). This Order requires federal agencies to establish procedures to ensure that the potential effects of flood hazards and flood plain management are considered for actions undertaken in a flood plain.

Executive Order 12898 (Environmental Justice). This Order directs federal agencies to achieve Environmental Justice by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the U.S.

DOE Order 1230.2, American Indian Tribal Government Policy. This Order establishes responsibilities and transmits the Department of Energy's American Indian Policy.

1.3 ORGANIZATION OF THIS ENVIRONMENTAL ASSESSMENT

This EA is organized as follows:

- Chapter 1 discusses the purpose and need for the proposed action;
- Chapter 2 describes the proposed action and the alternatives analyzed in this EA;
- Chapter 3 provides an overview of the existing environmental conditions of the potentially affected environments;
- Chapter 4 addresses the potential impacts of implementing the alternatives described in Chapter 2, when compared to the existing conditions presented in Chapter 3;
- Chapter 5 discusses the potential cumulative impacts associated with the implementation of the alternatives described in Chapter 2;
- Chapter 6 describes the potential mitigation measures that will be considered; and
- Chapters 7, 8, 9, and 10 present the list of agencies and persons consulted, EA prepares and contributors, a glossary of terms used, and references cited, respectively.
- Appendix A presents radiological information of proposed business to be located at DRSP.
- Appendix B presents the public comments and response document for the proposed action.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

This section describes the proposed action, the no-action alternative under which the DRSP would not be permitted, and other alternatives that were identified during scoping but eliminated from further analysis.

2.1 PROPOSED ACTION

The DOE/NV proposes to issue a General Use Permit to the NTSDC to develop, operate, and maintain a commercial/industrial park at the NTS. The purpose of the development would be to support the Technology Diversification mission of DOE/NV under Section 3161 by providing land and infrastructure for private enterprise, commercial and industrial operations that are compatible with and/or directly support other DOE/NV missions and programs. DRSP would be located in Area 22 of the NTS, between Mercury Camp and U.S. Highway 95 and east of Desert Rock Airport (DRA). The specific enterprises that would establish operations at DRSP are unknown at this time but would be required to meet the parameters defined through the NEPA process as documented by this EA. The resource parameters (employees, transportation, water use, generation of waste etc.,) are defined in Table 2-1, and were estimated based on surveys of representative enterprises proposed to be located at DRSP. Additionally, specific information of the proposed radiological source manufacturing is included in Appendix A of this document.

2.2 ALTERNATIVE 1 – PERMIT AN INDUSTRIAL PARK IN NTS AREA 22 NEAR DESERT ROCK AIRPORT

The primary action alternative describes the development, construction, and operation of a 512-acre industrial park, that would be known as DRSP, in Area 22 of the NTS. Under the proposed action alternative, the DRSP would achieve build out of all phases over a five-year period, as described below. Consequence analysis would include effects of infrastructure improvements necessary to support full build out of the 512-acre (approximately 227 acres of industrial park and the remaining would be a buffer zone) DRSP.

Proposed businesses include carbon regeneration and manufacturing, manufacturing of low-level sources for medical and other purposes, radiological and other environmental characterization and calibration services, construction staging (lay-down) and associated materials preparation (welding, shipping receiving, etc.). Minimal additional infrastructure support would be required to support the initial businesses (electrical/water, etc); construction of support facilities (fencing, Butler-type buildings, and similar features).

While each industrial venture would stand on its own, the DRSP would invite businesses necessary to support the aerospace enterprises such as Kistler and VentureStar®. For example, hydrogen and oxygen production facilities to separate gases used as space transport fuels, might be located at DRSP. Siting of such businesses would likely require additional infrastructure support including power and water.

Table 2-1. DRSP Summary of Business Requirements and Work Force

Business Types	Workers	Mgmt & Scientific	Office	Craft	Visitors (mail/del.)	Truck shipments /day	Aircraft landings	Water Use (potable)	Water Use (process)	Total Water Use	Noise Levels	Process Chemicals
		% staff	% staff	% staff				Gal/day		Gal/day		
Aerospace	2	0.3	1.3	0.4	0.2	-	-	160	-	160	90db@ 50 ft for 10 sec.	
Storage[1]	4	0.675	2.93	0.9	0.45	5	2	360	-	360	-	
Waste Management	3	0.45	1.95	0.6	0.3	-	-	240	-	240	-	
Activated Carbon & Methybromide	30	5.25	22.75	7	3.5	7	12	2,800	3,600	6,400	< 90db	1,000 lbs of propane AST
Textile Production	10	1.5	6.5	2	1	-	4	800	-	800	-	-
Liquid Hydrogen Production	10	1.5	6.5	2	1	6	-	800	24,480	25,280	<90db	-
Liquid Oxygen Production	7	1.05	4.55	1.4	0.7	5	-	560	17,136	17,136	<90db	66 ton/day natural gas
CFC Recycling	4	0.6	2.6	0.8	0.4	3	4	320	-	320	<90db	-
Radiological Calibration	15	2.25	9.75	3	1.5	-	1	1,200	-	1,200	-	CFC,HCFC, HFC stored and processed
Satellite Assembly	670	112.5	487.5	150	75	65	100	53,600	-	53,600	-	-
Training	10	1.5	6.5	2	50	-	4	4,800	-	4,800	-	Hypergolics
Sounding Rocket Assembly	135	27.75	120.25	37	18.5	-	40	10,800	1,000	11,800	-	-
Tire Recycling	50	7.75	32.5	10	5	5	1	4,000	-	4,000	-	-
Electronic Recycling	50	5	-	45	-	4	-	4,000	-	4,000	-	-
											-	-
Total	1,000	168	706	262	158	100	168	84,440	46,216	130,096	N/A	N/A

1 Storage area for construction materials.

Table 2-1(cont.). DRSP Summary of Business Requirements and Work Force

Business	Admin. Office Space Ft^2	Ware-house ft^2	Total Building Space ft^2	Acreage of Land	Power (KWh/Yr)	Management Scientific dollars (annually)	Office Technical Procurement (annually)	Crafts (annually)
Aerospace	-	3,000	3,000	5	101,370	$60,000	$156,000	$40,000
Storage[1]	-	-	-	6	-	$135,000	$351,000	$90,000
Equipment decon & Waste Treatment	1,000	15,000	16,000	3	540,640	$90,000	$234,000	$60,000
Activated Carbon & Methybromide	5,000	-	5,000	12	168,950	$1,050,000	$2,730,000	$700,000
Textile Production	7,500	7,500	15,000	1	508,850	$300,000	$780,000	$200,000
Liquid Hydrogen Production	-	-	-	3	5,760,000	$300,000	$780,000	$200,000
Liquid Oxygen Production	-	-	-	3	4,032,000	$210,000	$546,000	$140,000
CFC Recycling	1,000	10,000	11,000	3	120,000	$120,000	$312,000	$80,000
Radiological Calibration	7,500	7,500	15,000	3	508,850	$450,000	$1,170,000	$300,000
Satellite Assembly	200,000	200,000	400,000	80	13,516,000	$22,500,000	$58,500,000	$15,000,000
Training	50,400	-	50,400	6	1,703,016	$300,000	$78,000	$200,000
Sounding Rocket Assembly	20,000	28,000	48,000	5	1,621,920	$5,500,000	$14,430,000	$3,700,000
Tire Recycling	1,000	9,000	10,000	40	31,025,000	$1,500,000	$3,900,000	$1,000,000
Electronic Recycling	-	50,000	50,000	50	-	$1,000,000	-	$4,500,000
	-							
Total	293,400	330,000	623,400	220	59,606,596	$33,515,000	$83,967,000	$26,210,000

The final DRSP development would occur as support to NTS-based industries such as electronic equipment assembly, satellite final assembly, space transportation engine refurbishing, source manufacturing, and waste treatment. Additionally, an area adjacent to the DRA may be proposed as an aircraft storage area. Further infrastructure support would consist of sewage system improvements and additional support buildings. This alternative would include the evaluation of the environmental consequences resulting from infrastructure improvements.

2.3 ALTERNATIVE 2 - NO ACTION

The "No Action" alternative identifies and describes impacts that would be expected to occur at the NTS if the proposed DRSP does not go forward. Since the proposed action is NTS-specific, the "No Action" alternative would be limited to addressing impacts of no action (no economic diversification activities) at the NTS.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS

This section briefly describes alternatives introduced during agency and public scoping that were not carried forward for consideration and analysis in the EA. The reason for elimination of any alternative is briefly stated.

- Permit an Industrial Park at Lathrop Wells, Amargosa Valley, or other locations in Nevada.

During the public scoping period, comments were received suggesting that DOE/NV consider alternative locations off of the NTS. The DOE/NV is not authorized to issue permits outside the boundaries of the NTS. Such permits must be obtained from the U.S. Bureau of Land Management (BLM), or appropriate land management agency.

- Permit an Industrial Park at NTS locations other than the site evaluated in this EA.

The DOE/NV considered several alternative locations on the NTS before selecting the lands near DRA. Other NTS locations were eliminated for one or more of the following reasons: consistency with current land use designations at the NTS; national security, ease of access and egress for the industries considered; availability of infrastructure, and potential future changes to land status that could result from pending federal actions.

- Permit individual facilities at various locations at the NTS on a case-by-case basis.

Because of the nature of NTS activities and operations, this approach would be difficult to implement, would likely impinge on mission-related activities, and would result in siting delays to the businesses that DOE is mandated to assist. Additionally, the industries proposed for inclusion in the industrial park would benefit from co-location in an industrial park setting. Since it is within the DOE/NV's mission to encourage the development of businesses through CROs, the most expedient approach for meeting this objective is to aggregate the private sector businesses in an area that minimizes the effects on mission.

2.5 COMPARISON OF ENVIRONMENTAL IMPACTS BY ALTERNATIVE

This section provides a summary discussion and comparison of the impacts resulting from the proposed action and no action alternatives.

2.5.1 Alternative 1/Proposed Action – Permit an Industrial Sky Park In Area 22

As shown in Table 2-1, implementation of the proposed action is not expected to produce any serious adverse impacts that cannot be mitigated. Use of air space by DRSP tenants would be incidental to business activities and would be closely coordinated with DOE/NV Site Operations Division personnel to ensure that no conflict with mission-related air space use would result. Potential impacts to the desert tortoise and its habitat would be mitigated through pre-activity surveys, and the payment of mitigation fees, where appropriate. Potential impacts to cultural and/or historical resources would be mitigated by performing a pedestrian survey in the area of potential effect. Specific mitigation measures would depend upon survey findings. Finally, implementation of the proposed action would be expected to produce a beneficial socioeconomic effect in Nye County, the local jurisdiction most affected by the action proposal.

2.5.2 Alternative 2 – No Action

As shown in Table 2-2, implementation of the No Action Alternative would not be expected to have an effect on most baseline conditions. Socioeconomic conditions in Nye would continue to decline as a result of lost economic opportunity.

Table 2-2. Comparison of Environmental Consequences of the Proposed Action and No Action Alternatives

Alternative 1/Proposed Action	Alternative 2/No Action
Land use, Utilities, and Infrastructure	
No adverse impacts; proposed land use is consistent with current plans, for NTS and surrounding area. Necessary minor infrastructure improvements would not significantly impact local environment.	No Change from Baseline Conditions
Air Space	
No adverse impact; air space use by DRSP would be coordinated with DOE/NV.	No Change from Baseline Conditions
Visual Resources	
No adverse impact; scenic quality is Class C and manmade modifications are currently visible.	No Change from Baseline Conditions
Transportation	
No adverse impacts; no change in current Levels of Service; incremental increase in traffic accidents and fatalities are 70% of historic baseline levels.	No Change from Baseline Conditions
Noise	
No adverse impact; nearest public receptors are transitory and sound not expected to propagate off-site at audible levels.	No Change from Baseline Conditions
Air Quality	
No adverse impacts; no standards exceeded.	No Change from Baseline Conditions
Water Resources	
No adverse impact; local and regional perennial yields are adequate to meet peak demands. Peak demand of proposed action is far less than historic peak demands for NTS.	No Change from Baseline Conditions
Occupational Health and Safety	
No adverse impacts; expected accident rates and Latent Cancer Fatalities are low compared to industry averages.	No Change from Baseline Conditions
Biological Resources	
Potential adverse impact results from habitat disturbance; mitigated through pre-activity surveys and/or payment of fees.	No Change from Baseline Conditions
Cultural Resources	
Potential adverse impact results from ground disturbing activity; mitigated through survey and data recovery activities.	No Change from Baseline Conditions
Geology and Soils	
No adverse impacts; soils testing and drainage control would be performed on case-by-case basis.	No Change from Baseline Conditions
Socioeconomics	
Beneficial impact; proposed action could result in up to 1,000 new jobs with an estimated total direct payroll of $75 million/year.	Adverse impact; Nye County economy continues to decline as a result of lost economic opportunity
Environmental Justice	
No unmitigable adverse impacts expected to occur; thus, no disproportionate impact to minority or low income populations.	Adverse impact; one low-income census tract in Nye county would continue to be impacted by the loss of socioeconomic opportunities.

3.0 AFFECTED ENVIRONMENT

This chapter describes the existing environmental conditions in the area of the proposed DRSP. As proposed, the DRSP would be located primarily within the boundaries of Area 22 of the NTS, in Nye County, Nevada (Figure 3-1). The affected environment is described substantially with the framework of the NTS, and then in the context of the DRSP site. The information serves as a baseline from which to identify and evaluate potential environmental changes resulting from the proposed alternatives.

The environment affected by the proposed DRSP was previously described in several published documents. The NTS EIS established an environmental baseline for the NTS that includes the area of the proposed DRSP. The NTS RMP (DOE, 1998a), provides a framework of resource management goals and policies for activities conducted at the NTS. The reader is referred to these documents for more detailed discussions of the NTS and regional environment.

A detailed description of the environment at the DRSP site also was prepared for the DRSP Master Plan (NTSDC, 1998). This plan provides a framework for a broader scope of potential projects, programs and activities proposed at or near the DRSP, including DOE, the U.S. Department of Defense (DoD), and commercial activities. The DRSP, as proposed in this EA, consists of 512 acres that would be specifically permitted for commercial businesses.

The environmental resources discussed in this chapter include land use, geology and soils, water resources, biology, air quality, noise, and visual and cultural resources. Where applicable, this chapter also describes existing resource elements including airspace, site-support activities, transportation, socioeconomics, occupational and public health and safety.

3.1 LAND USE

This section describes the existing land use at and in the vicinity of the proposed DRSP. The location of the proposed DRSP is near the southern boundary of the NTS, in Area 22 near the existing DRA, approximately three miles north of U.S. Highway 95, in Nye County, Nevada (Figure 3-2).

3.1.1 NTS Land Use

The NTS comprises approximately 1,350 square miles. A unique national resource, the NTS is an outdoor laboratory and experimental center and one of largest restricted areas in the United States. The site is remote and is surrounded by thousands of additional acres of land withdrawn from the public domain for use as a protected wildlife range and for a military range. The NTS was originally established as the Atomic Energy Commission's (a predecessor of the DOE) on-continent nuclear proving ground.

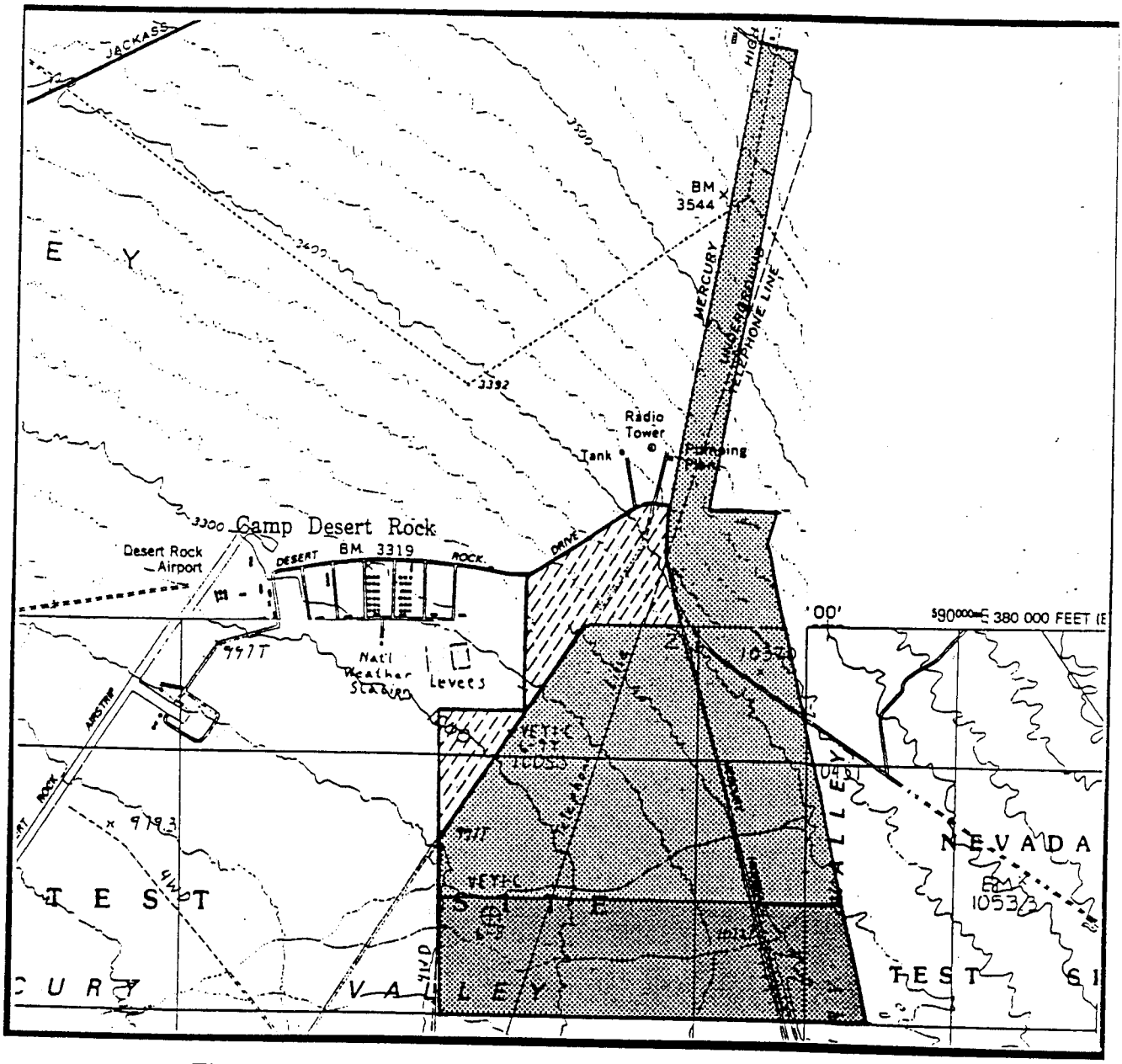

Figure 3-1. Location Map of the Proposed Desert Rock Sky Park

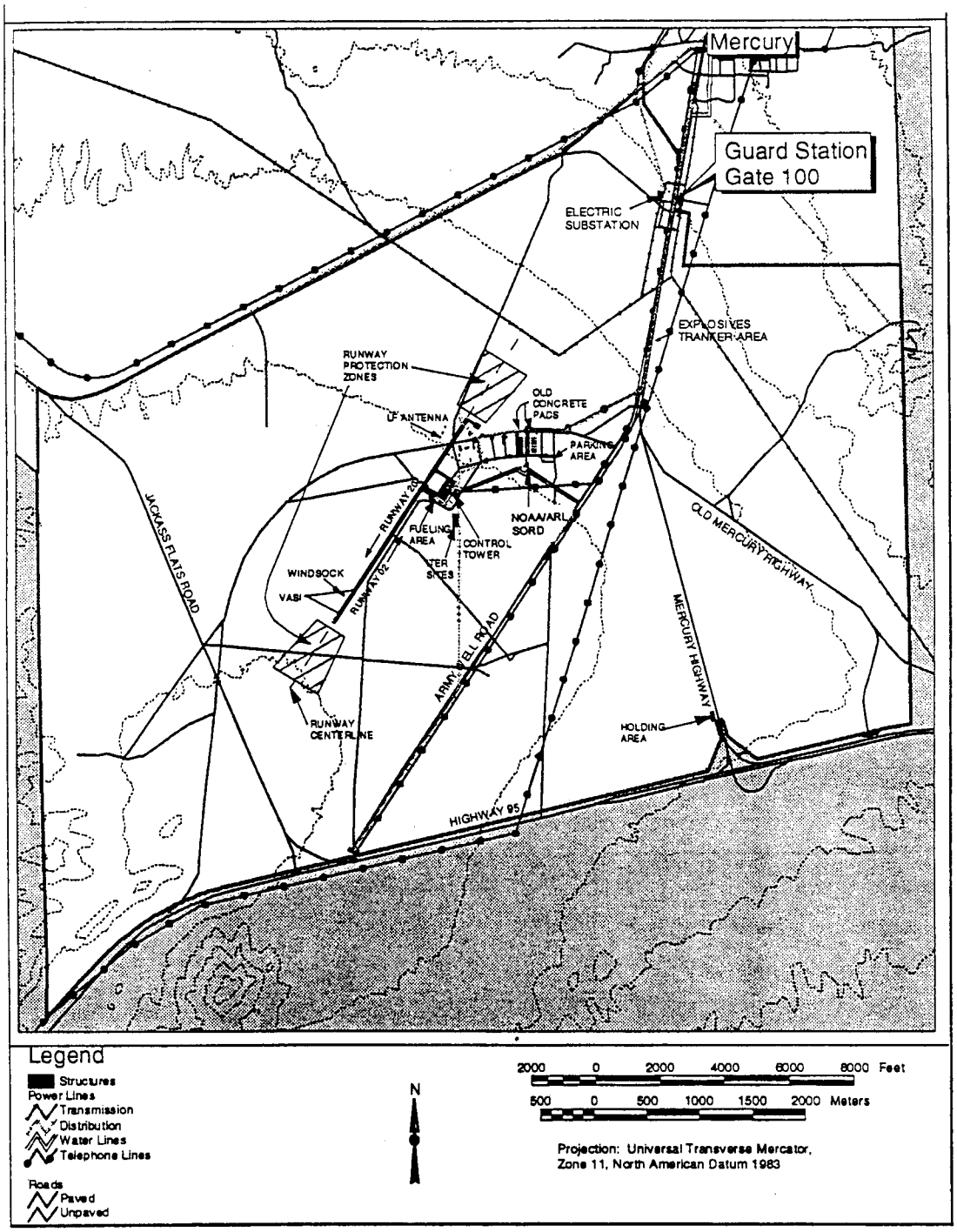

Figure 3-2. Map of General Vicinity

Area 22 of the NTS is located between U.S. Highway 95 and the main security gate of the NTS and is comprised of 11,000 acres. This area serves as a buffer between publicly accessible areas and the secure programs of the NTS. The DRA, the Mercury Highway, Jackass Flats Road, and a National Oceanic and Atmospheric Administration Air Resource Laboratory Special Operations and Research Division (NOAA/ARL/SORD) weather solar radiation measurement station are the only structures in this area.

The government town of Mercury is located five miles from U.S. Highway 95 in the northeast part of Mercury Valley at the base of the Mercury Ridge and Red Mountain (refer back to Figure 3-1). Mercury is the nearest town to the proposed DRSP site, and would provide most support services. There are no private lands within Mercury Valley.

Mercury is the main base for the NTS and has many of the services found in a small town, including:

- Housing,
- Medical services,
- Fire protection,
- Law enforcement and security,
- Machine shops,
- Heavy equipment storage and maintenance,
- Vehicle services,
- Cafeteria,
- Dormitories, and
- Recreational facilities.

The area surrounding and including Mercury Valley is characterized as rural. The Yucca Mountain Site Characterization zone is located about 40 miles northwest of the DRSP site.

3.1.2 Off-Site Land Use

Off-site lands are administered by various government entities (Figure 3-3). The Nellis Air Force Range (NAFR) is located adjacent to the NTS on the north, west, and east. Withdrawn from public access for use by the USAF, the closest portion of the NAFR is approximately five miles northeast of the proposed DRSP.

To the south of the NTS are the Nevada Science and Technology Corridor (NSTC). This corridor (Figure 3-4) extends through southern Nevada along U.S. Highway 95 from Indian Springs to Pahrump and, the community of Tonopah in the north, passing through the communities of Amargosa Valley, Beatty, and Goldfield. Historically, the region supported the national defense through experimental research and testing activities. However, a 1992 moratorium on nuclear testing and DoD reductions resulted in workforce cutbacks that deeply

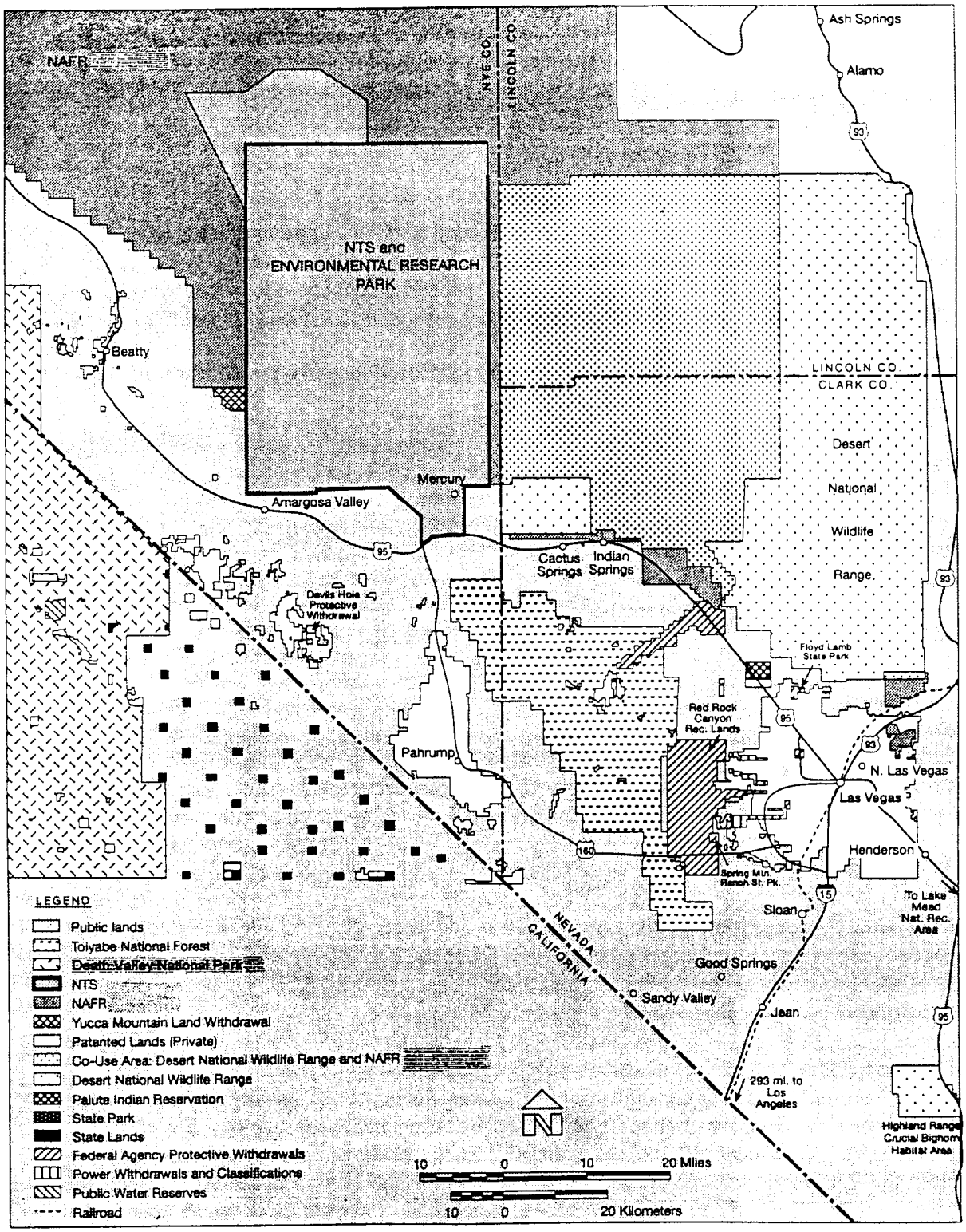

Figure 3-3. Off-Site Land Use/Ownership and Major Roads

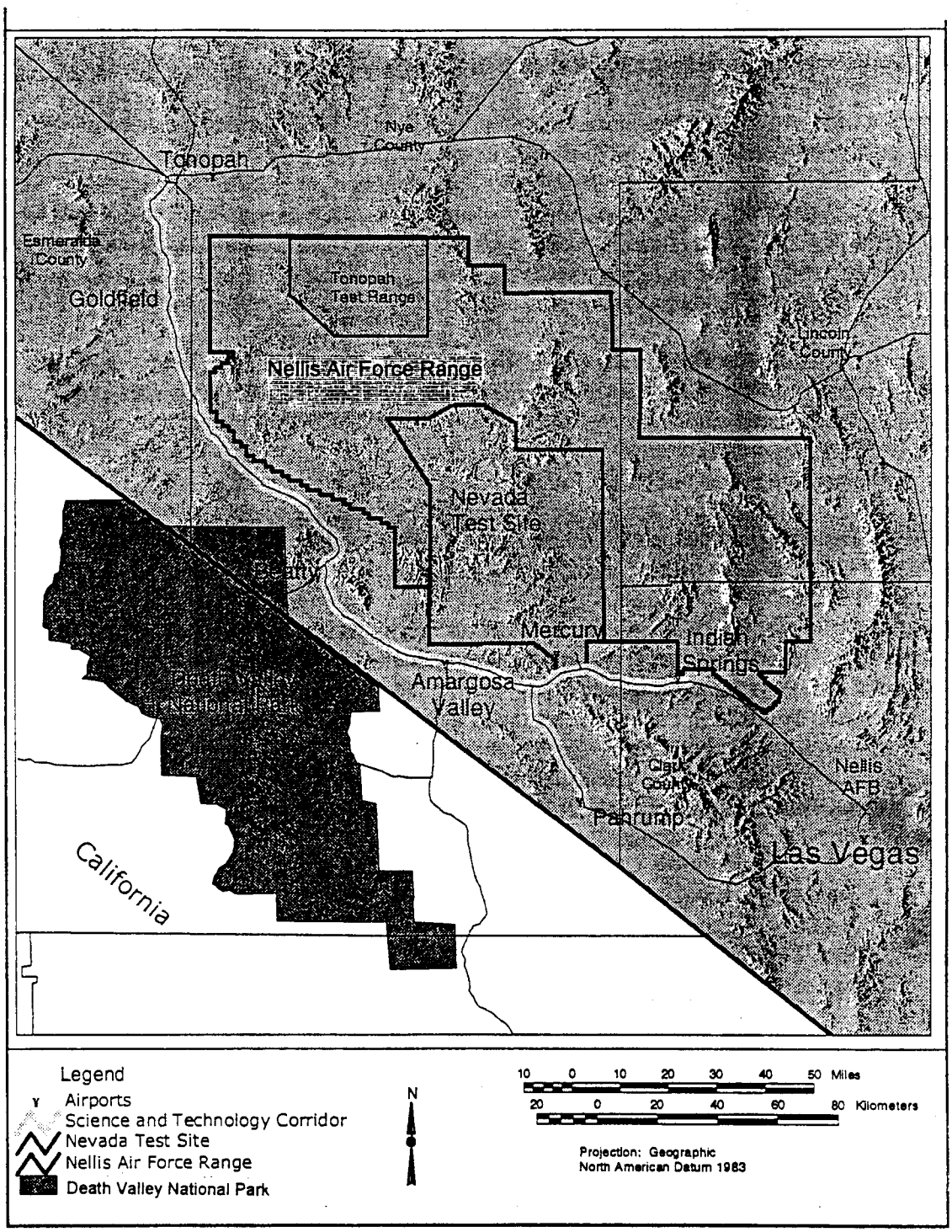

Figure 3-4. Nevada Science and Technology Corridor

affected the economy of southern Nevada. The purpose of the NTSDC is to facilitate marketing and orderly economic development within the corridor, and to serve as a means of obtaining necessary funds while producing a coherent vision for the future.

The concept of the corridor is to broaden the economic base of the region by developing a diversified development strategy and to integrate past federal facility-related economic development initiatives under a common vision. The corridor is an outgrowth from years of effort by Nye County to broaden its economic base by more substantially benefiting from hosting major federal facilities, which include the NTS and the NAFR. The corridor is adjacent to some of the nation's most technologically advanced defense facilities and is intended to be a catalyst for community action and a method to attract public and private sector jobs and investment.

Nye County, located in south-central Nevada, comprises 11,560,960 acres of land. Approximately 93 percent of the land area in the county is federally owned and managed. Federally managed areas include the NTS, the NAFR, the Toiyabe and Humboldt National Forests, the Duckwater Indian Reservation, Railroad Valley and Wayne E. Kirsch Wildlife Management Areas, a portion of Death Valley National Park, and the Ash Meadows National Wildlife Refuge. The communities within southern Nye County are widely scattered and separated by vast tracts of public lands managed by the BLM. The three nearest communities to the proposed DRSP are Amargosa Valley, Beatty, and Pahrump.

Private land use in Nye County consists of residential, commercial, and industrial uses, primarily within the boundaries of unincorporated towns, and agricultural and mining uses both within and outside the boundaries of the towns. Much of the land within communities is subject to mixed use; it is common to find residential, commercial, industrial, and even agricultural uses on adjacent or even the same properties. The use of private land in Nye County has few county level regulations, thereby offering few impediments to development for most types of residential and commercial uses. Nye County has established certain ordinances regarding the subdivision of land; and some community design standards and zoning ordinances are in the planning stages.

3.2 AIRSPACE

This section describes the existing airspace in the vicinity of the proposed DRSP. In general, the Federal Aviation Administration (FAA) manages airspace to best serve the competing needs of civil and military aviation interests. The FAA is responsible for the overall management of airspace and has established different airspace designations that are designed to protect aircraft during various flight operations, to include operating within Special Use Airspace (SUA) identified for hazardous and non-hazardous defense-related purposes. Federal Aviation Regulations (FAR) and air traffic control procedures have been established to govern how aircraft must operate within each type of designated airspace. Prior to implementing modifications in frequency and type of sorties to DRA, DOE/NV will review and where applicable follow Special Use Air Space recommendation as contained in the *"Nevada Statewide Airport System Plan"*. Any changes that would affect the civil aviation public would be disseminated for comment using existing FAA and USAF procedures regarding Federal

Regulation changes. Figure 3-5 shows the airspace designations on and in the vicinity of the DRSP site.

Due to the volume of military flight activity associated with the NTS and NAFR, various Memorandas of Understanding (MOU) have been implemented among DOE, USAF, and FAA to assist in governing the affected airspace. The airspace consists of Class A, E, G, SUA, and Airspace for Special Use (ASU). The SUA and ASU includes Joint and Non-Joint Use Restricted Areas used by DOE and DoD, Military Operations Areas (MOA), Air Traffic Control Assigned Airspace (ATCAA), Low Altitude Tactical Navigation (LATN) areas, military training routes (MTR), Air Refueling Anchor/Tracks (AR), other FAA-designated routes, and airports to include DRA.

DRA is a private-use airfield on Federal property, owned and operated by DOE in accordance with DOE Order 440.2, Title 14 CFR Aviation, and applicable DOE/NV procedures. There are no general aviation facilities or services at DRA. DRA is uncontrolled and has no FAA certified tower. There are no support structures except an inactive unmanned control tower. The airfield is inspected periodically and minimal maintenance is provided. DRA is available for use by federal organizations, national laboratories, and companies having contracts with the federal government or DOE contractors. Prior permission is required from the NTS Site Operations Center (SOC) for all flight operations.

DoD and other federal agencies frequently use DRA for training operations. It is DOE/NV policy to give these missions priority over other ground and flight activities at DRA. Typical activities include helicopter, fixed wing and remotely operated aircraft operations. DOE/NV retains the right to deny access to the airport facilities, or airspace for programmatic or national security reasons. Additionally, DOE/NV and Nellis AFB have an MOU governing the mutually agreed use of DRA for military purposes. As identified in the DRSP Master Plan, DRA must maintain the capability of landing aircraft with damaged weapons, including nuclear warheads. While the land area of the DRSP is within the boundary of the NTS, the airspace over DRA, the DRSP, and NTS Area 22 is not within R-4808 N/S or the NAFR (R-4806 W). DRA is in Class E airspace controlled by Nellis Air Force Traffic Control Facility (NATCF).

Because of airspace restrictions associated with the NTS and NAFR complex, non-participating aircraft must normally use routes of flight that remain clear of this range complex. With respect to Instrument Flight Rules (IFR) aircraft, flight is conducted along an en route highway system defined by navigational aids. In the NTS area, the Victor Airways (low altitude) and Jet Routes (high altitude) remain clear of SUA.

As indicated in the DRSP Master Plan (November 1998), the current activity level at DRA is very low. Presently or in the near future DRA has no day-to-day operations or scheduled flights. Mission activity at DRA is sporadic with surge periods of significantly increased activity. Operational deployments have ranged from as few as three to four aircraft up to as many as 18 aircraft. Deployment periods can vary from a few days to two weeks or more. Flight activity during operational activities can surge to 30-40 sorties per day, generally for very short periods.

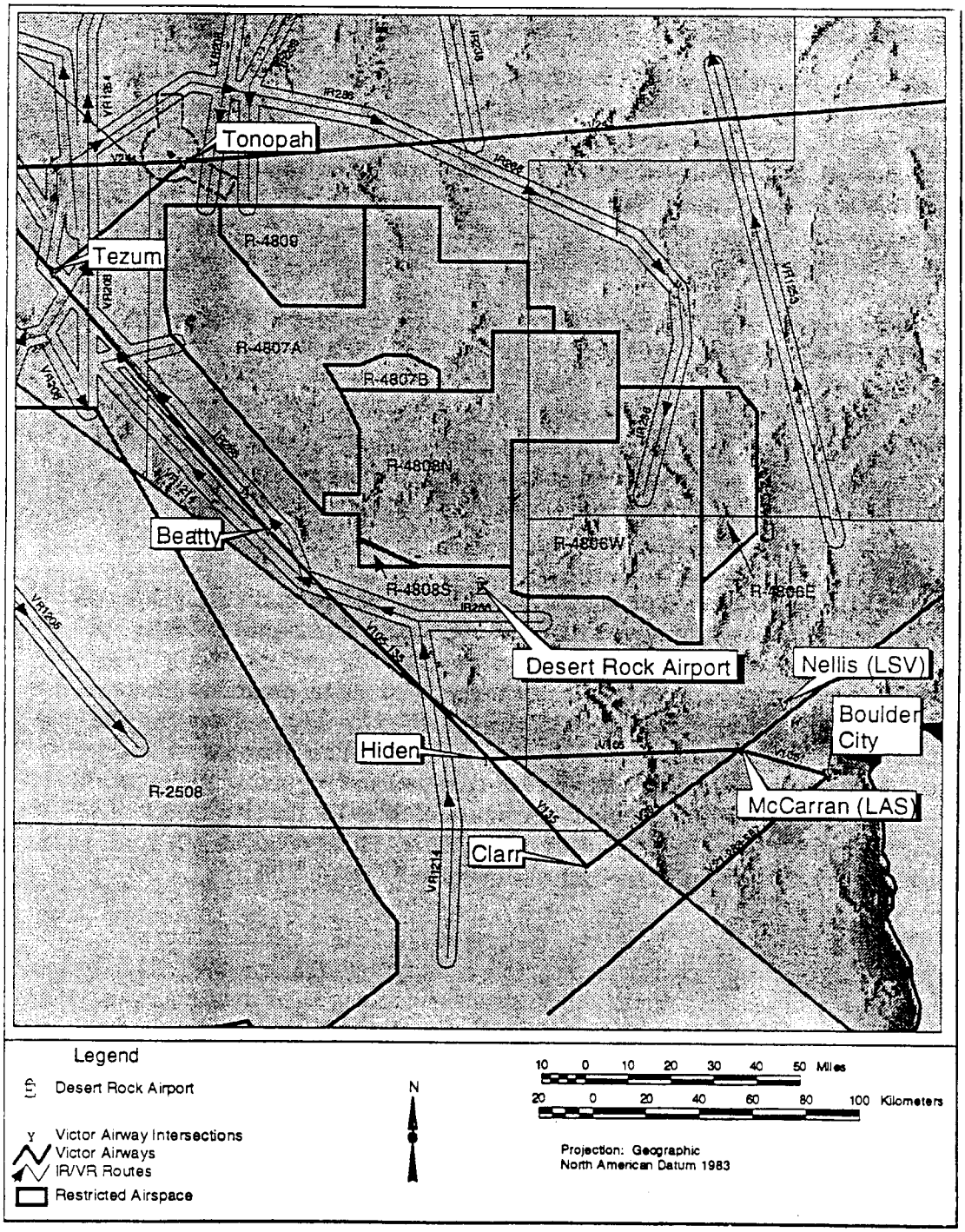

Figure 3-5. Regional Air Space

3.3 UTILITIES AND INFRASTRUCTURE

The following sections describe the existing utilities and infrastructure already in place at and in the vicinity of the proposed DRSP site (Figure 3-6).

FACILITIES—The proposed DRSP site is located east of the DRA; nearby building houses a NOAA weather station. The site is crossed by two paved access roads.

EMERGENCY SERVICES —Services available to the proposed DRSP site include law enforcement, fire protection, and health care. The service centers are located at Mercury and provide similar services across the NTS.

LAW ENFORCEMENT —Law enforcement on the NTS is provided by the Nye County Sheriff's Department through a substation located at Mercury. There is no holding facility at the NTS; most people arrested at the NTS are transported to Pahrump.

FIRE PROTECTION—The fire protection capacity of the NTS is structured to accommodate current mission requirements, with a self-contained fire-fighting department responsible for suppression and prevention. A fire department staffed with support-contractor personnel provides 24-hour fire-fighting services for the NTS. In addition, fire protection and crash rescue services are provided for two airstrips, upon request. Fire protection services for other areas in nearby Nye County (Amargosa Valley, Crystal, and Pahrump) are supported by trained volunteer forces.

EMERGENCY MEDICAL SERVICES – The closest emergency medical services to the proposed DRSP site are located in Mercury and Las Vegas. The level of medical emergency services available range from basic first aid to medical evacuation via air ambulance. Ambulances are available for emergencies that occur on the site, in nearby communities, or on nearby highways.

UTILITIES—The utilities at the NTS include water distribution, wastewater management, and electrical systems.

WATER DISTRIBUTION SYSTEMS—The DRSP potable water service would be provided through service connections to the main NTS public water system. This system covers Areas 5, 6, 22 and 23 with six active wells. The distribution system uses 4-, 6- and 8-inch underground pipelines to service the areas.

WASTEWATER MANAGEMENT SYSTEMS—Existing buildings manage wastewater effluent with a septic tank and leachfield system.

ELECTRICAL SYSTEM—The DRSP would receive electrical power from the NTS electrical system. The electric power is delivered to the NTS at the Mercury switching center in Area 23 by a primary 138-kilovolt (kV) supply line.

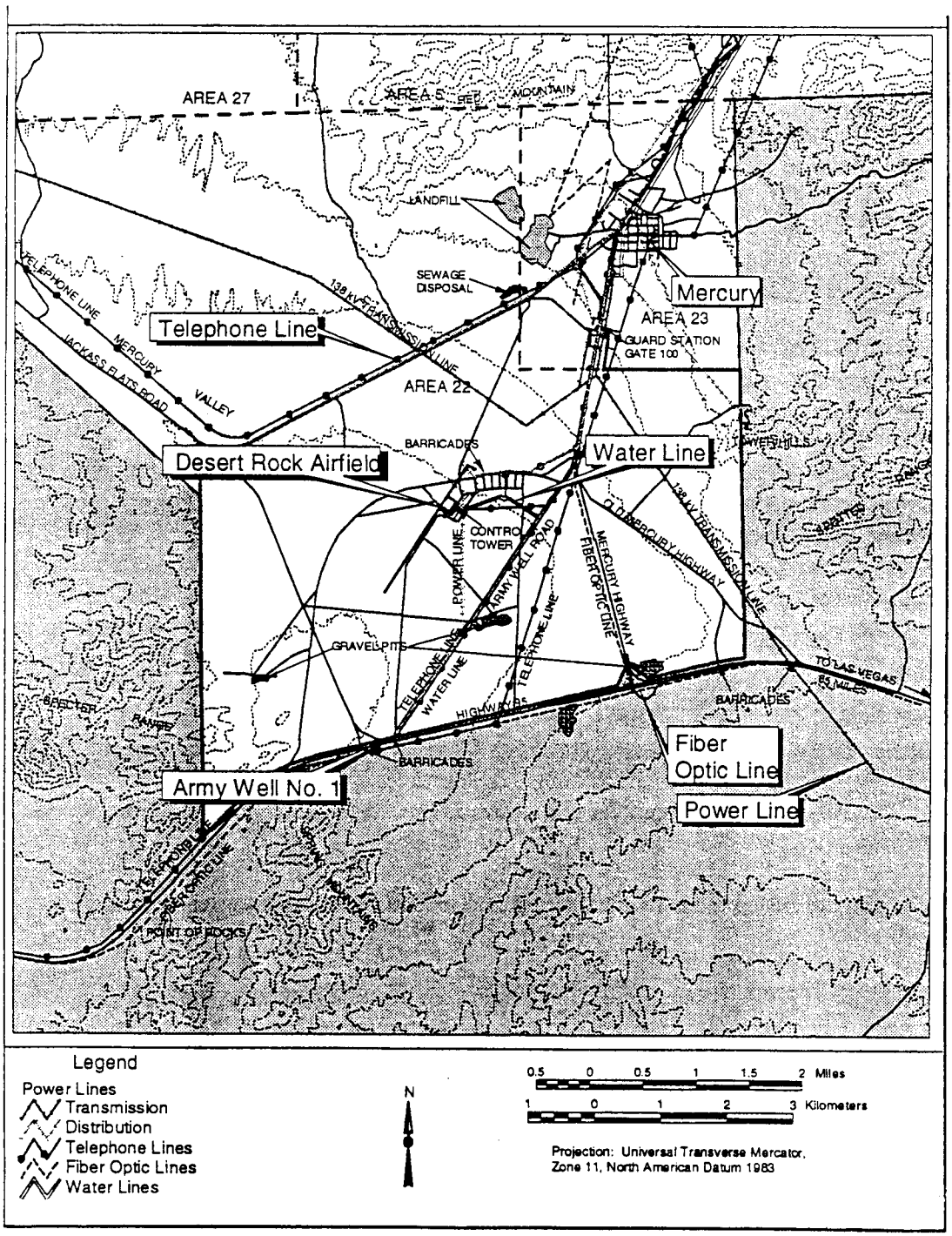

Figure 3-6. Utilities in the Vicinity of the Proposed Desert Rock Sky Park

The electrical power services are supplied by Nevada Power Company and Valley Electric Association. There is an existing utility corridor that could be used to support any extension of new utility lines from the Mercury switching centers.

COMMUNICATIONS—Existing NTS communication systems consist of telecommunications employing digital telephone switching from the existing services. Communications support also includes automated data processing equipment, automated office support systems, and information systems. Computer systems encompass general purpose, stand alone, data management, word processing, engineering, computer-aided drafting, and computer-aided manufacturing. All communications are currently provided by the DOE/NV Management and Operating Contractor.

3.4 VISUAL RESOURCES

Visual resources include the natural and man-made physical features that give a particular landscape its character and value as an environmental factor. The feature categories that form the overall impression a viewer receives of an area include landform, vegetation, water, color, adjacent scenery, scarcity, and man-made (cultural) modification (BLM, 1980). Criteria used in the analysis of visual resources for this EA include scenic quality, visual sensitivity, and distance and/or visibility zones from key public viewpoints.

There are three scenic quality classes. Class A includes areas that combine the most outstanding characteristics of each physical feature category. Class B includes areas in which there is a combination of some outstanding characteristics and some that are fairly common. Class C includes areas in which the characteristics are fairly common to the region. Visual sensitivity for this analysis was based solely on the volume of travel on public highways because these roads are the only key public viewpoints from which the DRSP site is visible. Sites that are visible from highways with 3,000 or more vehicles annual average daily traffic were assigned a medium sensitivity level. Sites that are visible from highways with annual average daily traffic below 1,000 vehicles were assigned a low sensitivity level.

The NTS is located in a transition area between the Mojave Desert and the Great Basin. Vegetation ranges from grasses and creosote bush in the lower elevations to juniper, pinyon pine, and sagebrush in elevations above 5,000 ft. The topography of the NTS consists of a series of mountain ranges arranged in a north-south orientation separated by broad valleys. The scenic quality of the NTS ranges from Class B to Class C. The areas of the NTS visible from U.S. Highway 95 are common to the region. Therefore, they are designated as Class C.

The area surrounding the NTS consists of unpopulated to sparsely populated desert and rural lands. Because the NTS is surrounded to the east, north, and west by the NAFR and to the south by lands controlled by the BLM, the only public views of the DRSP site is from U.S. Highway 95. Because the southern boundary of the NTS is surrounded by various mountain ranges including the Spector Range, Striped Hills, Red Mountain, and the Spotted Range, views from U.S. Highway 95 are limited to Mercury Valley and portions of the southwestern sector of NTS

that can be seen from Amargosa Valley. Traffic on U.S. Highway 95 at the Mercury exit is approximately 3,600 vehicles per day. Therefore, portions of the NTS visible from this area would have a medium sensitivity level.

3.5 TRANSPORTATION AND TRAFFIC

The region of influence for the transportation analysis includes principal roads leading to the NTS, with emphasis on the immediate area surrounding the proposed DRSP site.

ON-SITE TRAFFIC—The main access to the NTS is via the Mercury Highway, which originates at U.S. Highway 95, located 65 miles northwest of Las Vegas, Nevada. Five miles to the west of Mercury is another entrance, which is a turnoff to Jackass Flats Road; however, this entrance is presently barricaded. The NTS has restricted access into Area 25 from U.S. Highway 95 at Lathrop Wells Road, approximately 20 miles west of Mercury. Other existing roadways, although unpaved, could provide entrance or exit routes in case of emergency. Access to the NTS is restricted, and guard stations are located at all entrances, as well as throughout the site.

OFF-SITE TRAFFIC—A network of interstate, U.S. and state highways and city streets serve the region surrounding the NTS. The general local road network now in place in the immediate vicinity of the NTS is shown in Figure 3-3. Key roads in the immediate vicinity of the site include Interstate 15; U.S. Highways 6, 93, and 95; and Nevada State Route 375. In addition, U.S. Highways 40 and 50 provide regional access to the site from the northeast and south, respectively. Interstate 15 is the closest regional route to the site and runs north and south, connecting San Diego, California, to Salt Lake City, Utah, via Las Vegas. Interstate 15 is generally a four-lane divided highway constructed to full freeway standards with controlled access.

U.S. Highway 95 provides the only direct access to the site. Traffic consists of light- and heavy-duty trucks, cars, security vehicles, and emergency vehicles. Portions of U.S. Highway 95 are also on the closest and most direct routes to the site for hauling materials and waste. This highway is a four-lane roadway between Las Vegas and the Mercury interchange, and a two-lane rural highway beyond the Mercury interchange to the north. U.S. Highway 6 is an east-west roadway, located to the north of the NAFR, and links U.S. Highways 93 and 95. U.S. Highway 6 is also an all-weather; two-lane paved roadway that supports some NTS related traffic. Some site related traffic may also approach the region via U.S. Highway 93 and thence via U.S. Highways 6 and 95 or Interstate 15 and U.S. Highway 95.

Nevada State Route 375 provides access to the NTS via the gate 510 road located in Amargosa Valley. This route runs northwest along the northeastern boundaries of the site. This stretch of two-lane highway links U.S. Highways 6 and 93.

Background traffic on key roads in the vicinity of the NTS has experienced rapid growth in the last ten years. This growth varied widely by location. An average annual growth ranging from six- to 12- percent was experienced on Interstate 15, a two- to five-percent increase on U.S.

Highway 95, a four- to seven-percent increase on U.S. Highway 93, and less than two percent elsewhere on rural highways. While background traffic has increased in Nevada, traffic volumes at the Mercury interchange have decreased by approximately two percent per year during the last ten years because of reductions in the NTS workforce (DOE, 1996).

At the Mercury interchange (the main access to the NTS) annual average daily traffic was 3,635 and 2,175 vehicles, respectively, south and north of the interchange. West of the Mercury interchange and beyond, daily volumes decrease further to reach 1,720 vehicles north of Beatty, Nevada. There are little monthly variations in traffic volumes on this highway, although August remains the peak month with very little weekly variation. About 1,400 vehicles of all categories enter or leave the NTS via Gate 100 monthly. This number was found to be representative of the annual average daily traffic. Of all vehicles entering the NTS, 98 percent of the traffic comes from the east (Las Vegas area) and the remaining two percent from the west (Nye County) (DOE, 1996).

In the region of influence, continuous traffic counts available from automatic traffic recorders show seasonal peaks in traffic demand (i.e., highest volumes occur in August and September). Daily morning and late afternoon peaks are apparent on all routes; however, the late afternoon peak is generally more intense than the morning peak. Traffic volumes on a roadway vary; that is, during any particular hour, traffic volume may be greater in one direction than in the other. In the region of influence, for example, data show as much as a 2:1 imbalance on rural routes, but almost a 1:1 split on urban routes.

The potential for congestion and other problems of a roadway segment is generally expressed in terms of Level of Service (LOS). The LOS scale ranges from A to F, with each level defined by a range of volume-to-capacity ratios. LOS A, B, and C are considered good operating conditions where minor or tolerable delays are experienced by motorists. LOS D represents below average conditions. LOS E corresponds to the maximum capacity of the roadway. LOS F represents a jammed situation. These levels are based primarily on the Highway Capacity Manual Special Report 209, which are adapted for local conditions, as summarized in the NTS EIS (DOE, 1996).

TRANSPORTATION OF MATERIALS AND WASTE—This section presents baseline information on materials and waste currently transported to and on the NTS.

Low-level waste generated during normal NTS operations is packaged and transported to one of the two active low-level waste disposal units on the NTS. Radiological materials used in daily operations are shipped to the NTS in various modes depending on its classification based on U.S. Department of Transportation shipping requirements. Also, low-level waste shipments are accepted at the NTS from pre-approved locations within the DOE Complex. If low-level waste were to be generated from activities at the DRSP it would be packaged and shipped off-site to a privately operated low-level waste disposal unit.

Presently, the NTS receives shipments of hazardous materials for a wide variety of activities. Shipments include items such as fuels, solvents, and reactive and corrosive materials. The types

of hazardous materials used by the proposed DRSP enterprises would be similar to what presently is received at the NTS but in lesser quantities.

Sanitary solid waste and wastewater are disposed on the NTS in regulatory permitted units. These wastes include such items as construction debris, refuse, cement and grout wastes, lagoon and septic tank sludge. These types of waste steam are consistent of what would be generated at DRSP. All non-hazardous waste generated at the DRSP would be disposed at the permitted facilities on the NTS.

Hazardous waste generated on the NTS is transported off-site for treatment and disposal. The types of waste generated on the NTS from activities include spent solvents, industrial adhesives, corrosives and compressed gas. These types of waste were analyzed in the NTS and are similar to what would be generated at the DRSP. The quantity of hazardous waste generated at DRSP is captured within the quantities analyzed in the NTS EIS (DOE, 1996). All hazardous waste management activities at the DRSP would be the responsibility of the individual tenants.

3.6 NOISE

The NTS EIS (DOE, 1996) describes the baseline noise conditions at the NTS. At the NTS, background noise is characterized as 30 dbA, and background noise in Mercury as 50 dbA. Major noise sources at the NTS "include equipment and machines (e.g., cooling towers, transformers, engines, pumps, boilers, steam vents, paging systems, construction and material-handling equipment, and vehicles), blasting and explosives testing, and aircraft operations."

The DRSP site is located in the general proximity of U.S. Highway 95 and the DRA. Contributing noise sources are general public traffic along U.S. Highway 95; bus, truck, and car traffic servicing the NTS through the middle of DRSP; and aircraft operations such as landing, takeoff, taxi, and warm-up. While DRA is presently in a minimal maintenance mode, it is frequently used by DoD for training operations and is used in support of DOE and DoD missions.

As with Mercury, 50 dBA weighted day-night average noise is a reasonable estimate for the proposed DRSP site in Area 22, at the present level of operations at DRA and NTS. However, the area presently sees frequent high level noises described in the EIS, such as aircraft flyover at 1,000 feet (110 dBA), diesel truck at 50 feet (90 dBA), and other characteristic noises of urban and industrial environments.

3.7 CLIMATE AND AIR QUALITY

Air quality in a given location is described as the concentration of various pollutants in the atmosphere. Air quality is determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. This section describes existing air quality conditions. Related topics discussed

include local climate, meteorology, and ambient air quality at the NTS, especially in the vicinity of Area 22, in Nye County.

CLIMATOLOGY AND METEOROLOGY—The climate at the NTS is characterized by limited precipitation, low humidity, and large diurnal temperature ranges. The lower elevations are characterized by hot summers and mild winters, which are typical of other Great Basin areas. As elevation increases, precipitation increases and temperatures decrease (DOE, 1996). The lower elevations receive approximately six inches of precipitation annually, with occasional snow accumulations lasting only a few days. Precipitation in the summer falls in isolated showers, which cause large variations among local precipitation amounts. Precipitation occurs mainly in July through October.

Temperatures at Mercury are 69 °F to 12 °F in January and 109 °F to 59 °F in July. The annual average temperature in the NTS area is 66 °F (NOAA, 1991). Monthly average temperatures range from 44 °F in January to 90 °F in July. Relative humidity readings (taken four times per day) range from 11 percent in June to 55 percent in January and December (DOE, 1996).

At Mercury, the average annual wind speed is eight miles per hour (mph), with northwesterly prevailing winds during the winter months, and southwesterly prevailing winds during the summer months. Wind speeds in excess of 60 mph, with gusts up to 107 mph, may be expected to occur once every 100 years. Additional severe weather in the region includes occasional thunderstorms, lighting, tornadoes, and sandstorms. Severe thunderstorms may produce high precipitation that continues for approximately one hour and may result in flash flooding. Few tornadoes have been observed in the region and are not considered a significant event.

AMBIENT AIR QUALITY—The NTS is located in the Nevada Intrastate Air Quality Control Region 147. The region has been designated as attainment with respect to the National Ambient Air Quality Standards (NAAQS) (40 CFR Part 81.329). The nearest non-attainment area is the Las Vegas area, located 65 miles southeast of the NTS. An area is designated by the EPA as being in attainment for a pollutant if ambient concentrations of that pollutant are below the NAAQS, and non-attainment if violations of the NAAQS occur. In areas where insufficient data are available to determine attainment status, designations are listed as unclassified. Unclassified areas are treated as attainment areas for regulatory purposes. The applicable NAAQS and Nevada State Ambient Air Quality Standards are presented in Table 3-1.

Prevention of Significant Deterioration (PSD) is a regulation incorporated in the Clean Air Act (CAA) that limits increases of pollutants in clean air areas (attainment areas) to certain increments even though ambient air quality standards are being met. The PSD Program is implemented in large part through the use of increments and area classifications. The CAA area classification scheme for PSD establishes three classes of geographic areas and applies increments of different stringency to each class. Air quality impacts, in combination with other PSD-permitted sources in the area, must not exceed the maximum allowable incremental increases presented in Table 3-2.

Table 3-1. Ambient Air Quality Standards

		Nevada Standards[A]	National Standards[B]	
Pollutant	**Average Time**	**Concentration**	**Primary[C,D]**	**Secondary[C,E]**
Ozone	1 hour	235ug/m^3 [F]	235 μg/m^3	Same as primary
Ozone lake Tahoe Basin, #90	1hour	195 μg/m^3	None	None
Carbon monoxide less than 5,000 ft above mean sea level	N/A	10,000 μg/m^3	10 μg/m^3	Same as primary
At greater than 5,000 ft above mean sea level	8 hours	6,670 μg/m^3		
Carbon monoxide at any elevation	1 hour	40,000 μg/m^3	40 μg/m^3	
Nitrogen dioxide	Annual arithmetic mean	100 μg/m^3	40 μg/m^3	Same as primary
Sulfur dioxide	Annual arithmetic mean	80 μg/m^3	80 μg/m^3	Same as primary
	24 hours	365 μg/m^3	365 μg/m^3	
	3 hours	1,300 μg/m^3	None	1,300 μg/m^3
Particulate matter as PM_{10}	Annual (geometric) arithmetic mean	50 μg/m^3	50 μg/m^3	Same as primary
	24 hours	150 μg/m^3	150 μg/m^3	150 μg/m^3
Lead (Pb)	Quarterly arithmetic mean	1.5 μg/m^3	1.5 μg/m^3	Same as primary
Visibility[G]	Observation	In sufficient amount to reduce the prevailing visibility to less than 30 mi when humidity is less than 70 percent	There is no national standard for visibility	There is no national standard visibility
Hydrogen Sulfide[H]	1 hour	112 μg/m^3	--	--

[A] These standards must not be exceeded in areas where the general public has access.
[B] These standards, other than for ozone and those based on annual averages, must not be exceeded more than once per year. The ozone standard is attained when the expected number of days per calendar year with an maximum hourly average concentration above the standard is equal to or less than one.
[C] Concentration is expressed in units in which it was adopted and is based on a reference temperature of 25° C and a reference pressure of 760 mm of mercury. All air quality measurements of air quality must be corrected to the reference temperature and pressure.
[D] National primary standards area the levels of air quality necessary, with an adequate margin of safety, to protect the public health.
[E] National secondary standards are the levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
[F] Micrograms per cubic meter
[G] For the purposes of this analysis, prevailing visibility means the greatest visibility that is attained or surpassed around at least half the horizon circle, but not necessarily in continuous sectors.
[H] The ambient air quality standard for hydrogen sulfide does not include naturally occurring background concentration.

The nearest PSD Class I areas to the NTS are the Grand Canyon National Park, 130 miles to the southeast, and the Sequoia National Park, 105 miles to the southwest. The NTS has no sources subject to PSD requirements.

Ambient air quality at the NTS is not currently monitored for criteria pollutants or Hazardous Air Pollutants (Haps), with the exception of radionuclides. Elevated levels of ozone or particulate matter may occasionally occur because of pollutants transported into the area or because of local sources of fugitive particulates. Ambient concentrations of other criteria pollutants (sulfur dioxide, nitrogen oxides, carbon monoxide, and lead) are probably low because there are no large sources of these pollutants nearby. The nearest significant source of pollutants is the Las Vegas area. The NTS is well within applicable federal and state ambient air quality standards.

The criteria air pollutants emitted at the NTS include particulate matter from construction, aggregate production, and surface disturbances, and fugitive dust from vehicles traveling on unpaved roads; various pollutants from fuel-burning equipment, incineration, and open burning; and volatile organic compounds (VOCs) from fuel storage facilities. A summary of emission estimates for sources at the NTS is presented in the NTS EIS. Emissions of HAPs from current NTS sources are below regulatory requirements.

Table 3-2 Prevention of Significant Deterioration Maximum Allowable Pollutant Concentration Increase

Pollutant	Average Time	Maximum Allowable Increment ($\mu g/m^3$)		
		Class I	Class II	Class III
Particulate matter (PM_{10})	Annual	4.0	17.0	34.0
	24 Hours	8.0	30.0	60.0
Sulfur dioxide (SO_2)	Annual	2.0	20.0	40.0
	245 hours	5.0	91.0	182.0
	3 hours	25.0	512.0	700.0
Nitrogen Oxides (NO_x)	Annual	2.5	25.0	50.0

3.8 WATER RESOURCES

SURFACE WATER RESOURCES - Streams in the region are ephemeral; there are no surface water bodies near the vicinity nor any major springs. Runoff results from precipitation during storms that occur in the winter and fall. Much of the runoff quickly infiltrates into rock fractures or into the dry soils, some runs down alluvial fans in arroyos, and occasionally some may reach the valley floor playas where it may stand for weeks as a lake.

Floods on alluvial fans and playas in the region are most likely to impact DRSP facilities or activities. The potential exists for sheet flow and channelized flow through arroyos to cause

localized flooding throughout the NTS. The proposed DRSP site is not located in an area prone to flooding (Figure 3-7).

GROUNDWATER - The proposed DRSP site is located within the Mercury Valley and most water for facility use would come from Frenchman Flat. Both basins are in the Death Valley regional groundwater flow system. The water use associated with NTS mission activities is in accordance with doctrine of federally reserved water rights.

The depth to groundwater beneath the proposed DRSP is about 870 feet below land surface. The closest public water supply system is Army Well 1 located to the southwest of the site. This well might be used to provide some limited water supplies to the DRSP but the primary sources of water are supply wells located in Frenchman Flat, Well 5B and Well 5C (DOE, 1996). The effects of past water withdrawals from these supply wells have included the lowering of water levels in the vicinity of wells and corresponding localized changes in groundwater flow directions. Estimates of the drawdown in the vicinity of NTS water supply wells have been made by the U.S. Geological Survey and significant drawdown has not been documented. In general, the effects of pumping the water supply wells is concentrated within a distance of a few thousand feet of the operating wells. Past nuclear testing activities at Frechman Flat, the resulting potential impact to groundwater from those activities, and the possible future groundwater containment strategies that might be imposed by regulators could affect the ability of the system to provide adequate water supplies.

Water from the water supply wells in both Mercury Valley and Frenchman Flat is potable. Wells 5B and 5C have historic pH values of 8.6 and 8.9, respectively, which slightly exceed the EPA secondary standards from drinking water standard for pH of 8.5 (DOE, 1996).

Because of the decline in NTS activities in the 1990s, water use at the facility has been below historic peak demands. In Water Year 1998, total withdrawals from Army Well 1 were only about 12 acre feet (3.9 million gallons), below the peak annual demand of 428 acre feet in 1992. The perennial yield of Mercury Valley is 8,000 acre-feet per year. In Water Year 1998, the total withdrawals from the water supply wells in Frenchman Flat were metered at 202 acre feet (65.8 million gallons), which is also below the peak historic demand (530 acre feet in 1962) and the perennial yield of 16,000 acre feet per year (DOE, 1996).

3.9 OCCUPATIONAL AND PUBLIC HEALTH AND SAFETY

The potential for activities at the DRSP to impact the health and safety of the general public is minimized by a combination of the remote location from heavily populated areas and the adherence to federal state and local safety and health requirements. The health and safety of the general worker and public are regulated by Occupational Safety and Health Administration (OSHA) as codified in Title 29 CFR 1910 and 1926. The state of Nevada Industrial Relations controls worker safety activities identified in Nevada Occupational Safety and Health Act as codified in Nevada Revised Statues, Chapter 618 and the Bureau of Health Protection Services for special issues such as public water systems and radiation protection.

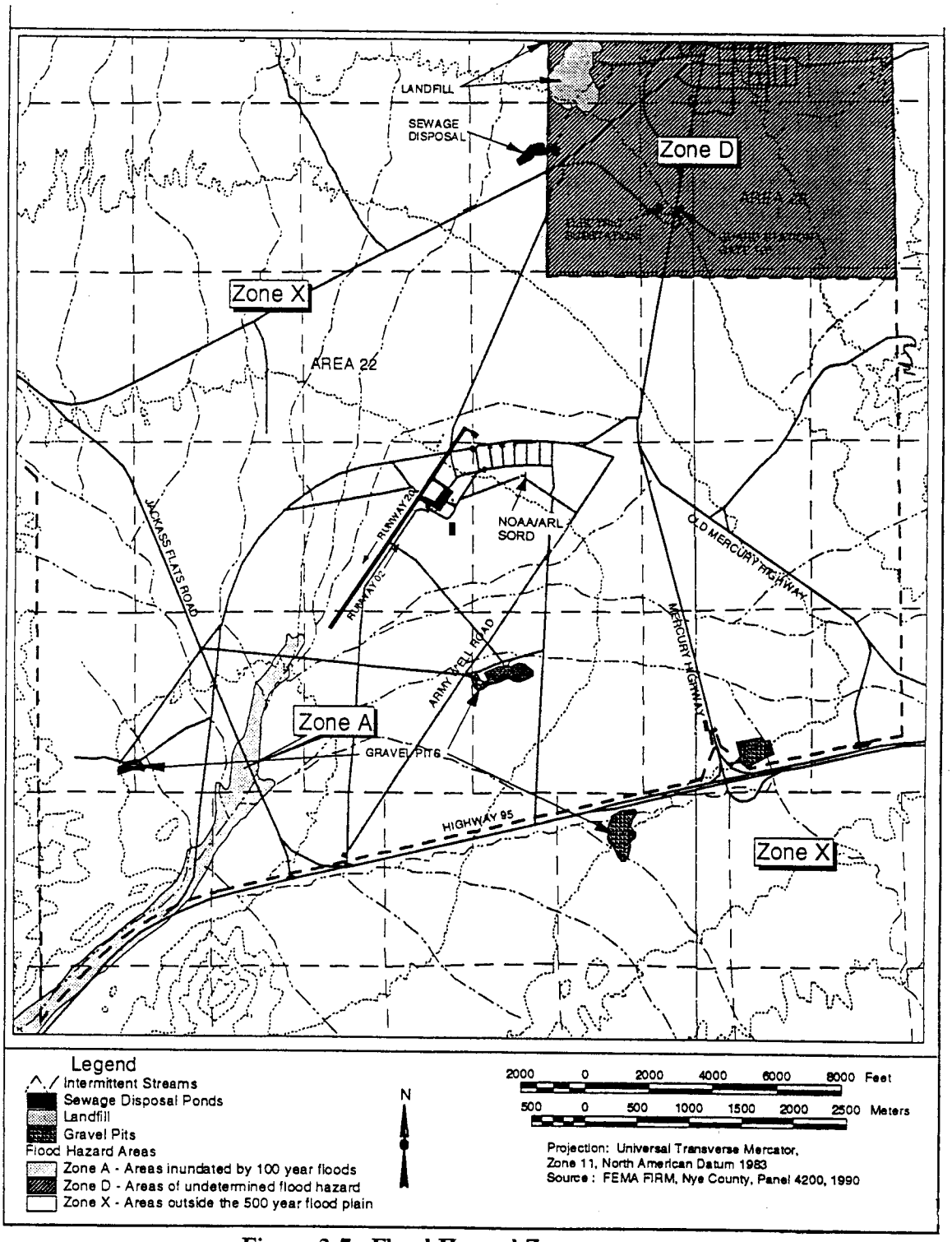

Figure 3-7. Flood Hazard Zones

Also applicable federal and state building and fire codes assist in ensuring the health and safety of the worker and public. Compliance with environmental regulation would help to ensure the proper protection of the health and safety of the public and protection of the environment. The activities at the DRSP would not be subject to DOE Orders.

DRSP site safety services would be provided by the maintenance and operations contractor and would be available to all users of the DRSP. These services include fire, occupational medicine, radiological safety, and industrial hygiene services. Some of the potential hazards to DRSP workers include industrial work-place hazards, e.g., warehousing, welding, and chemical storage. Workers are protected from hazards specific to the workplace through appropriate training, protective equipment, monitoring, and management controls. Workers are also protected by adherence to federal and state standards that limit atmospheric and drinking water concentrations of potentially hazardous chemicals. Appropriate monitoring, which reflects the frequency and amounts of chemicals utilized in facility processes, ensures that these standards are not exceeded.

The occupants of the DRSP would store and use hazardous materials in amounts greater than the threshold that requires reporting under federal regulations. These hazardous materials would be managed in accordance with all applicable regulations. At least one tenant has projected the use of radioactive materials at the DRSP. Based on the types of activities purposed by the tenant it is unlikely that the mixed waste would be generated. Application information for license and permits has been provided to the Nevada Bureau of Health Protection Services who will provide regulatory oversight and permits for such activities.

All hazardous waste generated at DRSP would be managed in accordance with applicable regulations by each DRSP tenant. Additionally, DRSP tenants would actively participate in waste minimization practices, as required. Any operations requiring environmental permits would be obtained by the owner/operator through the state of Nevada Division of Environmental Protection.

3.10 BIOLOGICAL RESOURCES

The NTS is located along the transition zone between the Mojave Desert and Great Basin. As a result, the site has a diverse and complex mosaic of plant and animal communities representative of both deserts, as well as common only in the transition zone between the deserts. This transition zone extends to the east and west far beyond the boundaries of the NTS. Thus, the range of almost all species found on the NTS also extends far beyond the site, and there are few rare or endemic species found there. A biological survey will be conducted of the project area to identify important biological resources in order to develop recommendations to minimize adverse effects.

Mojave Desert plant communities characteristic of the proposed DRSP site are found at elevations below approximately 4,000 ft on the alluvial fans and valley bottoms of Jackass Flats, Rock Valley, and Mercury Valley, and on the alluvial fans of Frenchman Flat. Creosote bush is the visually dominant shrub, and it is associated with a variety of other shrubs, depending on soil

type and elevation. Shadscale is codominant with creosote bush on most alluvial fans where desert pavement is well defined.

The only biological communities on and around the NTS that are not widespread are those associated with springs or other permanent sources of water. Most natural springs are on the mesas and mountains in the northern part of the NTS. There are no springs located near the proposed DRSP.

FAUNA—About 280 vertebrate species have been observed on the NTS, including 54 species of mammals, 190 species of birds, 33 species of reptiles, and two species of introduced fishes (DOE, 1996).

Predators and scavengers in the region include coyotes, bobcats, common ravens, red-tailed hawks, loggerhead shrikes, speckled rattlesnakes, and gopher snakes.

Many animal species on the NTS are common only in the Mojave Desert habitats to the south or the Great Basin Desert habitats to the north. Typical Mojave Desert species found on the NTS include kit fox, Merriam's kangaroo rat, desert tortoise, chuckwalla, western shovelnose snake, and sidewinder snake.

Some animal species on the NTS are typically found only in restricted habitats. Desert kangaroo rats are associated with loose, sandy soils at lower elevations. Dark kangaroo mice are restricted to fine, gravel-like soils at higher elevations. Chuckwallas occur primarily in rocky outcrops. Desert night lizards are usually found in stands of yuccas. Wild horses are found only on the northern portion of the NTS and are not found in the vicinity of the proposed DRSP.

ENDANGERED AND THREATENED SPECIES— The peregrine falcon is the only federally endangered species that has been reported on the NTS. It is a rare migrant and has been sighted only once.

The only federally listed threatened species found on the NTS is the Mojave Desert population of the desert tortoise. Desert tortoises are found throughout the southern half of the NTS, including the project area, as shown in Figure 3-8. The abundance of tortoises on the NTS is low to very low relative to other areas within the range of this species. DOE/NV received a Final Programmatic Biological Opinion for tortoise protection on the NTS from the Service in August 1996. The Opinion is valid for 10 years. Since the project is located within the range of the tortoise on the NTS, the project will be conducted in accordance with the terms and conditions of the Opinion.

CANDIDATE SPECIES—There are no candidate species in the project vicinity.

OTHER SPECIES OF CONCERN—Species of concern are species formerly listed by the U.S. Fish and Wildlife Service (Service) as Category 2 species. The Service remains concerned about these species, but further biological research and field studies are needed to resolve the

conservation of these species. Populations of 12 plant species of concern are distributed throughout the NTS; none are known to be found in the project vicinity. Ten animal species of concern occur on the NTS with the burrowing owl known to occur within the project area. Further biological research and field studies are needed to resolve the conservation status of these species.

3.11 CULTURAL RESOURCES

Over 1,700 archaeological sites have been identified on the NTS EIS and specific studies have identified the resources of Mercury Valley where the DRSP site is located. Twenty-one archeological reconnaissance surveys have been conducted on the NTS in Mercury Valley. Only four sites have been recorded as a result of these surveys. Of these, three are classified as localities, and one, Camp Desert Rock, as a historic site. None of the localities are considered eligible for listing on the NRHP; such a determination has not yet been made for the former Camp Desert Rock. None of these localities are on the proposed DSRP site. A cultural resource survey of the project area and Area of Potential Effect (APE) and Section 106 consultation with the Nevada SHPO will be completed before any ground disturbing activities.

3.12 AMERICAN INDIAN RESOURCES

The DOE/NV consults with 16 American Indian tribes and three official Indian organizations representing three ethnic groups (Western Shoshones, Southern Paiutes, Owens Valley Paiutes) from Arizona, California, Nevada, and Utah. These tribes and organizations have cultural or historic ties to the NTS and DOE/NV and provide insight regarding the effects of site activities on American Indian resources at the NTS. These tribes and organizations are collectively known as the Consolidated Group of Tribes and Organizations (CGTO).

In *Appendix G of the Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada* (DOE, 1996). CGTO representatives made the following statements about the American Indian resources in the Mercury Valley where the project is located: “The CGTO knows that the Mercury Valley area contains a wide range of important cultural resources, including plants, animals, and archeological sites. This knowledge comes from frequent visits by CGTO members to this area. Observed plants in this valley include Indian rice grass, Prince’s Plume, yucca, and sacred datura. These plants represent sources of food, fiber, and medicine. Some important animal resources are rabbit, turtle, coyote, and chuckwalla. These and other Indian cultural resources found in the Mercury Valley were and continue to be critical in the lives and culture of Indian peoples. No systematic American Indian studies have been conducted in Mercury Valley; therefore, at this time, it is not possible to completely assess the cultural significance of this area.” A Rapid Cultural Assessment (RCA) of the project area might be conducted to identify important American Indian resources.

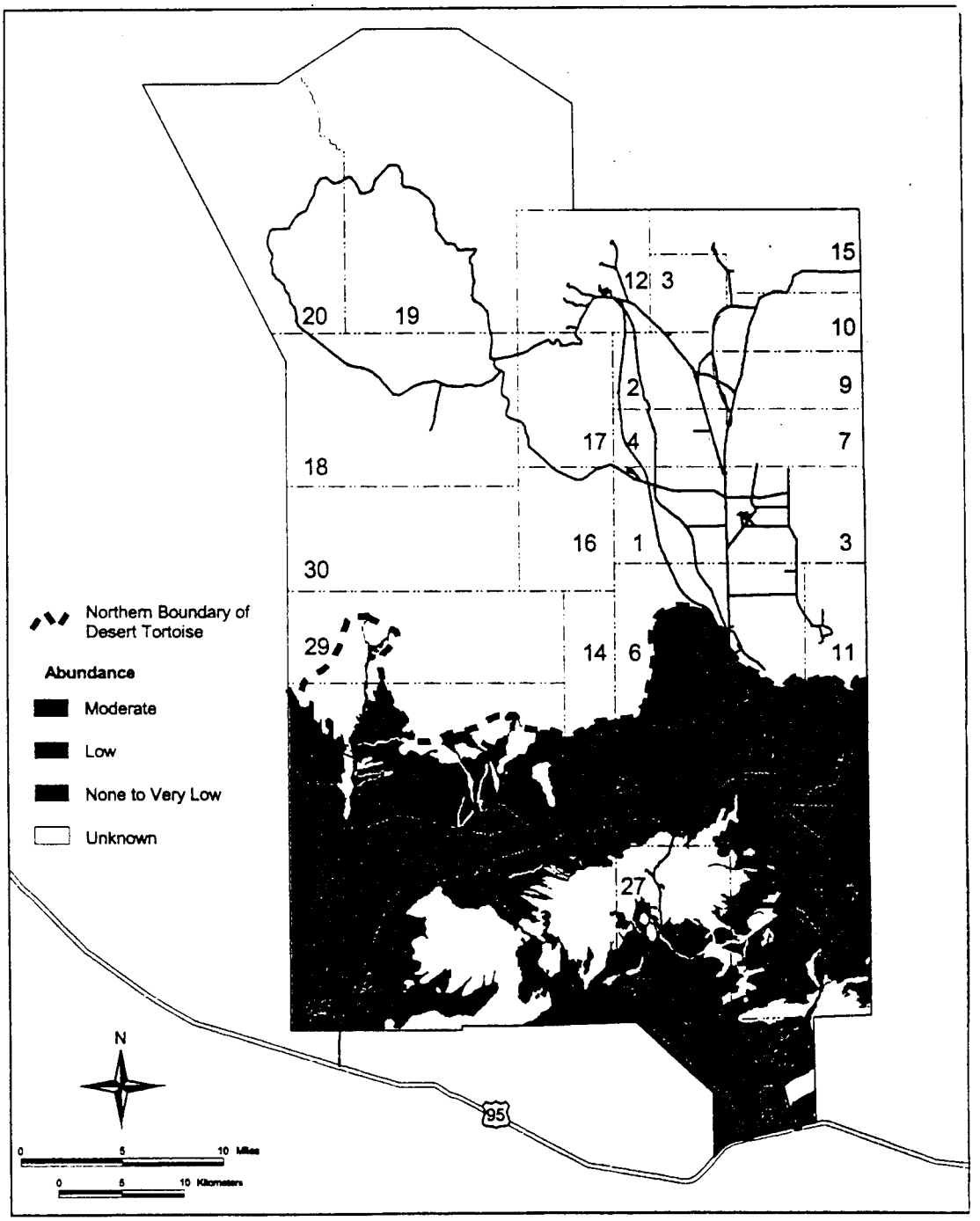

Figure 3-8. Map of Desert Tortoise Habitat

3.13 GEOLOGY AND SOILS

Soils and geology of the NTS and surrounding region are addressed extensively in the NTS EIS. In particular, the EIS addressed radiological sources in soils, subsurface radiologic sources, geologic hazards, volcanism, geotechnical hazards, geologic resources, economic minerals, hydrocarbon resources, and geothermal resources. Much of the emphasis in the EIS was focused on the nuclear testing areas – areas that are 10 to 30 miles north of the proposed DRSP. This section of the DRSP EA summarizes the soils and geology section of the EIS for those areas at the southern portion of the NTS.

Mercury Valley is located in the southern part of the Great Basin, the northern-most subprovince of the Basin and Range Physiographic Province. This region generally consists of north-south mountain ranges, rising upward several thousand feet. The ranges were formed by faulting and are separated by alluvial basins. The Great Basin subprovince is an internally draining basin; i.e., precipitation that falls over the basin has no outlet to the Pacific Ocean (DOE, 1996).

The valley floor areas (which include the DRSP site) consist of alluvial deposits surrounded by more steeply sloping alluvial aprons derived from erosion of the mountains surrounding the valley. Generally, the grading of the sediments becomes increasingly finer with distance from the source area and with decreasing elevation. The alluvium consists of combinations of sand and gravel, with varying amounts of silt, and clay. Paleozoic sedimentary rocks, predominantly carbonate rocks, and Cenozoic volcanic rocks outcrop in the surrounding uplands. Soil loss through wind and water erosion is a normal occurrence throughout the area. Erosion varies based on soil texture and slope.

There are no identified soil or subsurface radiological sources from past nuclear testing in the vicinity of the DRSP. The nearest identified soil or subsurface radiological source is located approximately six miles to the north near Gate 200.

Mercury Valley is located near the boundary between Seismic Zones 2B and 3 as identified in the Uniform Building Code (UBC) of 1994. Seismic Zone 2B is defined as an area with moderate damage potential, and Seismic Zone 3 is defined as an area with major damage potential. Current design practices require facilities to be built to Seismic Zone 4 standards, due to the possibility of seismic damage from detonations on the NTS.

The Rock Valley Fault, located west of Mercury Valley, may be currently active. Small earthquakes occurred near the Rock Valley Fault zone, although no surface displacement was associated with either of these events. A fault west of Mercury Valley, near Little Skull Mountain, was the site of a 5.6 magnitude earthquake in 1992. This may have occurred as a result of the magnitude 7.5 earthquake near Landers, California, which took place less than 24 hours earlier. The Little Skull Mountain earthquake caused significant damage to facilities built prior to the more stringent building codes presently required on the NTS (DOE, 1996).

Several faults that displace late Cenozoic surficial deposits have been mapped in the area northwest of the site. Based upon preliminary unpublished estimates, it appears that a potential controlling event may be a 6.75 magnitude earthquake on the Paintbrush Canyon fault. The closest part of the fault is mapped approximately eight miles northwest of the Mercury Valley. Based upon published correlation factors, a 6.5 magnitude event at a distance of 10 miles would result in an estimated site acceleration of 0.25g. Therefore, areas in Mercury Valley, at approximately the same distance, would exhibit similar site accelerations (DOE, 1996).

Other geologic hazards include volcanism, soil instability, slope instability, ground instability, and flooding. Volcanic activity is not considered likely. With respect to soil stability, site-specific evaluation for expandable clay and other soil mechanics would be necessary for specific activities because soils in the region have not been mapped extensively. The proposed DRSP site is on the gradual slopes of Mercury Valley and is removed from those areas of the NTS noted as a potential concern for soil stability.

Mercury Valley is identified as a low petroleum potential area. There are no identified geothermal resources in the Mercury Valley, nor are there any mining districts (DOE, 1996).

3.14 SOCIOECONOMICS

The socioeconomic region of influence (the area potentially affected by the proposed DRSP) is Nye County. The socioeconomic trends, and the influence and relationship of NTS programs and activities in Nye County, was extensively examined in the NTS EIS. The NTS EIS included analysis of economic activity, population, housing, public finance, public services, public education, police protection, fire protection, and health care. This section of the EA summarizes the EIS baseline, updating information where appropriate.

In 1998, NTS employment accounted for 4,000 of 600,000 jobs or about 0.7% of total employment in the region with most workers residing in Clark, rather than Nye County. Nye County's economy is based primarily on mining, military and other government activities, agriculture, construction, and portions of the retail trade and service sectors. The service sector is the largest employment element in Nye County; in 1990, it employed almost 3,000 residents, or 35 percent of total resident employment. This sector includes jobs at NTS and the TTR, tourist-oriented jobs, service establishments and professional services (e.g., doctors, accountants, etc.) for residents of the county. Other important sectors to the regional economy include mining, construction, retail trade, government employment (includes federal, state, and local sectors), and farming and agriculture. In 1990, mining accounted for 18 percent of total employment in Nye County. However, since the mid-1990s, the mining industry is on a decline, as has affected employment and population of Tonopah and other areas. Construction accounted for over 900 jobs (11 percent), retail trade accounted for about 750 jobs (nine percent), government employment accounted for about 630 jobs (eight percent), and farming and agriculture accounted for about 245 employees (three percent).

Table 3-3. Nye County, Summary of Economic Indicators

				Average Annual Percent Change	
	1980	1990	1997	1980-1990	1990-1997
Population	9,048	17,781	27,610	9.7%	7.8%
Total Jobs	7,860	12,889	14,070	6.4%	1.3%
Civilian Labor Force	2,580	9,100	14,650	25.3%	5.8%
Unemployment Rate	5.0%	3.5%	4.9%	N/A	N/A
Earnings Per Job	$34,041	$31,415	$ 35,590	-.8%	1.9%
Per Capita Income	$17,991	$16,268	$20,402	-1.0%	3.6%

1997 data source: Nevada State Demographer and Regional and Government Information Sharing Project, Oregon State University.

Nye County's economy has recently experienced influences, which have substantially impacted the region. Employment at the NTS and TTR has decreased well below historic levels. Because of the County's proximity to Death Valley and Las Vegas and routes to Death Valley, tourist and recreation related jobs and revenues have increased. Urbanization is also occurring, particularly in Pahrump Valley. Pahrump's economy was based on agriculture until the 1970s; however, recent growth and development has occurred and agriculture is in the decline.

3.15 ENVIRONMENTAL JUSTICE

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of federal programs, policies, and activities on minority populations and low-income populations.

This section presents a summary of the demographic analysis prepared to analyze the potential impacts to low-income and minority populations potentially affected by proposed DRSP. Demographic analysis is the first step in determining disproportionately high and adverse human health or environmental effects to low-income and minority populations. This analysis sets the stage for the impact analysis presented in Chapter 4. Demographic analysis includes defining the region of influence, census block groups, low-income populations, minority communities, and the thresholds for calculating a low-income or minority community census block group. All activities described in this EA are located in Nye County. The region of influence for the Environmental Justice analysis is limited to Nye County for this EA.

The U.S. Bureau of the Census identifies four racial classifications, including (1) white; (2) black; (3) American Indian, Eskimo, or Aleut; and (4) Asian or Pacific Islander. Hispanic is not considered a race by the U.S. Bureau of the Census; it is considered an origin. To determine the number of minorities for each census block group for the purpose of analysis, the white race category less whites of Hispanic origin were subtracted from the total census block group population (U.S. Bureau of the Census, 1994).

A minority population is one which the percent of the total population comprised of a racial or ethnic minority is meaningfully greater than the percent of the total population. For this analysis, a minority is 10% points higher than the percentage of such group in the total population (CEQ1995). The state of Nevada has a minority population of 21 % (U.S. Bureau of Census 1991).

For this EA, the environmental justice analysis focuses on the potential for the development of an industrial sky park, located in Area 22 of the NTS, to have disproportionately high and adverse impact on the population in census tracks in the region of influence having a minority population of 31% or greater. Nye County is divided into 25 census block groups. One of these census block groups has low-income communities above the threshold level percentage, and none has minority communities.

Nevada has a low-income population of 10%. Using the approach described, a low-income population is one in which 20% or more of the people in a census block group live in poverty (OMB, 1999). The second phase of the environmental justice analysis is the potential for the proposed action to have a disproportionately high adverse impact on the population in a census block group having a low income population of 20% or higher.

4.0 ENVIRONMENTAL CONSEQUENCES

This section identifies the direct and indirect environmental consequences of the alternatives considered by DOE/NV. The level of each analysis for each resource area is based upon the potential magnitude of the environmental effect. Resource areas included in the analyses are:

- Land Use, Air Space, and Infrastructure
- Visual Resources
- Transportation
- Noise
- Air Quality
- Water Resources
- Occupational Health and Safety
- Biological Resources
- Cultural Resources
- Geology and Soils
- Socioeconomics
- Environmental Justice

4.1 PROPOSED ACTION

The proposed action is for DOE/NV to issue a general use permit to the NTSDC to develop, operate and maintain a commercial/industrial park at the NTS. The specific enterprises that would establish operations at DRSP are not known at this time but are expected to fall within the bounds of the analysis defined in this EA. Potential enterprises whose environmental parameters are outside the bounds of this analysis would be subject to additional NEPA review.

4.2 ALTERNATIVE 1 - PERMIT AN INDUSTRIAL PARK IN NTS AREA 22 NEAR DESERT ROCK AIRPORT

This section describes the environmental consequences expected to occur if the proposed action were to be implemented.

4.2.1 Land Use

The proposed land use would permit the development of approximately 512 acres of land located in Area 22 at the NTS as a light to medium industrial park. The proposed land use is consistent with DOE/NV's currently designated land use for Area 22 and the surrounding area. This area is identified as "private/commercial development zone" in Section 10.3.1 of the NTS RMP (DOE, 1998a). Land use would include the construction or placement of structures, and extension and improvement of utilities and infrastructure. The proposed use is also consistent with current land uses outside of the NTS boundary. Land outside the NTS to the south, the southeast, and the southwest, is primarily public land, with some privately held lands to the west at the Lathrop

Wells intersection. Some of these public lands, which are within the Nye County-designated Science and Technology Corridor, are currently being considered for development as a science and technology center, an industrial park, and other local government, commercial, and private endeavors. No impacts to onsite or surrounding land uses have been identified as a result of the proposed action.

Of the total 512 acres, approximately 227 acres of land would be disturbed by facility construction or placement activities, including disturbances associated with infrastructure and utility improvements such as power line extension, waterline construction, and sewage and wastewater facilities construction. The 512 acres proposed for use by the industrial park, including the total disturbed area of 227 acres, are far less than 2,402 acres of disturbance resulting from similar programs previously evaluated in the NTS EIS.

4.2.2 Air Space

The NTS RMP (DOE, 1998a) establishes an airspace resource management goal to manage NTS airspace to enhance national security, public safety, and operational safety in the conduct of missions on the NTS. DRA is inherently part of that resource management goal. The purpose of managing the NTS airspace is to ensure mission accomplishment while considering possible limited accommodation of airspace use by others. Increases in air traffic (takeoffs and landings) at DRA could affect ability to achieve the RMP goal and defense-related mission requirements of DRA.

Aviation businesses requiring frequent and recurring flight activity at DRA would likely not be compatible with the DOE policy of priority to defense-related missions and would generally not be candidates for DRSP occupancy. Therefore, this assessment is focused on the impacts of the business operations and presence in the DRSP and any associated DRA activity.

Under the proposed action alternative, the airspace that would be most directly affected is at the DRA and the surrounding civil airspace. It is not anticipated that the airspace of the NTS (R-4808 N/S) would be used or affected by activities within at the DRSP. The impact of increased activity at DRA is expected to be slight since airport activities are only of a support nature, providing limited employee transportation and/or air-delivered supplies, materials, and finished products. However, even these limited flights could affect the ability to conduct defense-related missions if the volume of activities were to become large.

Preliminary data and programmatic assessment of activity levels for representative DRSP customer candidates estimates approximately 160 flights per month. This very generalized estimate accounts for certain business types, particularly aerospace or space-related (assuming the potential use of NTS as a space launch facility) that could generate significantly larger numbers of support flights than the typical DRSP businesses. Generally, small businesses find commercial ground transportation is more economical. Furthermore, the flight numbers are mature business numbers based on a period of growth in DRSP activity. Initial flight activity at DRA associated with DRSP would likely be minimal.

The NTS EIS (DOE, 1996) estimated under various alternatives that DOE and military operations (including DRA activities) might increase approximately two percent per year. Given current levels of NTS site-wide flight activity (approximately 50,000 sorties), a two percent annual increase would increase monthly activity by approximately 90 sorties. Additional assumptions were that no commercial air passenger, general aviation, or air cargo activities would occur within the NTS airspace. The estimated DRSP business activity levels at DRA equate to less than eight flights per day and are consistent with the EIS assumptions. Although a very low number, it is additive to the NTS EIS estimates, and could create operational conflicts at DRA. Thus, DRSP flight activities would need to be coordinated with DOE/NV to avoid potential conflict.

4.2.3 Infrastructure and Utilities

As identified in Chapter 3 the existing infrastructure would be able to support initial activities with minor upgrades to the infrastructure as drops from utility lines and water mains. The proposed action would require improvements to the existing infrastructure to support commercial and private enterprise at the DRSP. Examples of the types of facilities that may be constructed include administrative buildings, warehouses, and construction lay-down yards. Additionally, access roads to individual businesses would be graded and surfaced. The total estimated square feet of new facilities is not known at this time but is likely to range from an initial few tens of thousands of square feet to hundreds of thousands of square feet over the build out period.

The electrical services would require improvement to support the power demand of commercial industries proposed at the DRSP at full build-out. The existing power line corridor has been evaluated including a NEPA categorical exclusion, and found to be suitable for such upgrades.

Individual wastewater systems (septic tank and leach field) would provide adequate disposal capacity during build-up of DRSP. At full build-out the businesses envisioned at the DRSP would require a facultative wastewater treatment system that would treat both sanitary and industrial wastewater. DRSP would permit the treatment unit through state of Nevada Division of Environmental Protection (NDEP), Bureau of Water Pollution Control.

The existing NTS water distribution system would be extended and operated, as needed by individual enterprises. In order to protect the main water distribution system, all buildings connected to the system will have appropriate backflow prevention devices installed and periodically checked. Water rights for the private enterprises would be obtained from the State Engineer (refer to section 3.8 and 4.8) by DOE/NV on behalf of NTS DC and the tenants of DRSP as the need arises. These activities would cause no major adverse effects to the surrounding environment.

4.2.4 Visual Resources

The DRSP would disturb approximately 227 acres during the construction of the facilities that would support commercial enterprise activities. This disturbed area would have a buffer zone surrounding the area of approximately 285 acres. The proposed activities would be visible from U.S. Highway 95. The scenic quality is classified as Class C. The landscape character of the area is common to the region, and there is a minor amount of existing manmade modification in the highway view shed. These activities would not result in a notable change to the view shed.

4.2.5 Transportation and Traffic

The level of transportation at the proposed DRSP includes employee trips and supply deliveries. The analysis is conservative and examines the effects of the maximum trips at full build-out of the DRSP. A trip is defined as one way trip (i.e. one round trip to work is counted as two trips). Furthermore, the analysis assumes that all employees use personally owned vehicles. The analysis does not account for car-pooling, any type of reliance on the existing NTS bus service, or a DRSP business transportation service. These assumptions provide a highly conservative estimate of transportation related impacts.

On-Site Traffic and Transportation —The NTS EIS (DOE, 1996) reported that for 1995 the DOE operated a fleet of 2,342 government-owned vehicles at the NTS. The total mileage for the fleet reported for 1994 was 1.6×10^7 miles. Currently the DOE/NTS fleet of vehicles that carry passengers consists of 922 vehicles. For 1998, the average miles per year per vehicle were 10,000 miles (Riggs, 1999). It is then expected that the current fleet would amass approximately 9.22×10^6 miles for 1999. The on-site traffic generated from the proposed DRSP activities would be well within the scope of the NTS EIS (DOE, 1996). Additionally, this traffic would be localized within Areas 22 and 23 of the NTS.

Off-Site Traffic and Transportation —The proposed DRSP is 67 miles from Las Vegas. The site is about two miles north of the Mercury exit and would be accessible from the maintained two-lane Mercury access highway. Traffic destined for the DRSP would be co-mingled with the routine U.S. Highway 95 traffic to the Mercury exit and from that point with routine NTS traffic. The NTS EIS described the routine US Highway 95 traffic flow at 3,635 vehicles per day (v/d) (annual daily average) south of the Mercury interchange and 2,175 v/d north of the Mercury interchange. The daily average number of vehicles travelling to Mercury has dropped by nearly half since the beginning of the decade (Table 4-1).

It is anticipated that 1,000 employees would be employed at the DRSP at full build-out in 2005. It is estimated that these employees would complete about 2,600 daily trips. It is also estimated that about 100 tractor/trailer trips would also be completed daily. These tractor/trailer trips include hazardous materials and waste cargo. DSRP-related traffic would add 2,700 trips/day.

Table 4-1. Annual Average Daily Traffic Near the Mercury Valley, 1990-1998

Location	1990	1995	1996	1998
Between Mercury Highway Interchange and Gate 100 [1]	1,575	1,220	860	850
US, 95 Interchange Southbound Off-Ramp	160	110	100	85
US 95, Interchange Southbound On-Ramp	630	530	350	410
US 95, Interchange Northbound Off-Ramp	635	500	310	315
US 95, Interchange Northbound On-Ramp	165	105	90	100
US 95, Near Clark County line [1]	3,650	3,335	3,250	3,480
US 95, 3.8 miles north of Mercury Interchange [1]	2,680	3,405	2,780	2,940

[1] Traffic Count is for both directions
Source: State of Nevada, Department of Transportation, 1996 and 1999

Thus, 2,700 trips/day x 255 days/yr x 67 miles/trip = 4.6 x 10^7 miles/yr added to the background mileage on US Highway 95. South of Mercury, the 1998 background annual mileage is 3,480 trips/day x 365 days/year x 65 miles/trip = 8.3 x 10^7 miles/yr. The additional traffic would bring the total annual miles to 1.3 x 10^8 miles. The estimated DRSP miles are about one-half of the present background miles. However, the totals are about 70% percent of those in 1990. The potential impact of the additional mileage is shown in Table 4-2. The projected fatalities and disabling injuries would be incremental to the current traffic experience, but about the same as that at the beginning of the decade.

Table 4-2. Projected Impact from Traffic Accidents

Location or Highway segment	A Total miles[1]	Impact by Indicator Rate (Death of Disabling Injuries per 100 million miles)[2]			
		B National Fatality Rate (1.71)	C National Disabling Injury Rate (92.0)	D NV State Fatality 1997 Rate (2.98)	E US 95 (LV to Mercury) Fatality Rate (3.5)
Mercury Highway Segment	0.01	0.02	0.90	0.30	0.04
Mercury Highway Segment +DRSP	0.05	0.09	4.6	0.15	0.18
US 95 Mercury interchange to and from Las Vegas	0.82	1.42	75.0	2.4	2.9
US 95 Mercury Interchange to and from Las Vegas +DRSP	1.30	2.22	120.0	3.9	4.6
US 95 Mercury to Las Vegas Segment In 1990	0.90	1.54	83.0	2.7	3.2

[1] Total miles expressed as a fraction of 100 miles
[2] Impact is calculated by multiplying the various highway segments in fractions of 100 million miles by the indicated rates, e.g. column A X B or A X C, etc.

TRANSPORTATION OF MATERIALS AND WASTE—The considerations for this analysis includes transportation activities such as hazardous materials shipments including on/off site

shipments of radioactive materials and low level waste and off-site hazardous waste shipments. The quantity of hazardous and low level waste that would be generated by the proposed DRSP would be minimal. This quantity is well within the scope of the NTS EIS (DOE 1996) and other DOE/NV NEPA documents and scientific studies for transportation activities at the NTS.

The tenants of the DRSP will require hazardous materials including radioactive materials to supply various processes. Examples of these materials are listed in Table 4-3 with a brief description of their primary hazardous characteristics.

The Hazardous Materials Table of DOT Title 49, Chapter 1, part 172.101 designates what type of materials qualifies as hazardous materials for the purpose of transportation. For each listed material, the Table identifies the hazard class or specifies that the material is forbidden in transportation, and gives the proper shipping name. In addition, the Table specifies or references requirements pertaining to labeling, packaging, and quantity limits.

Because the majority of chemicals identified to date for use at the DRSP are not carcinogenic, (although some of the chemicals are identified as strong irritants, poison, asphyxents, flammable and explosive), the primary risk from transportation would be from accidents that would release these materials to the public and environment. Potentially, the only carcinogenic material identified for use at DRSP is small quantities of radioactive material that pose a risk less than 10^{-6} to the public and worker. The proposed tenant would mainly use radioactive materials in the manufacturing of reference sources and instrument calibration.

The expected tenant plans to ship quantities that are nominally license exempt as defined in 10 CFR 30.18 and the materials identified in 10 CFR 30.70 Schedule B. The radioactive materials received will be in normal form and generally license, while those shipped out will be in special form requiring encapsulation of the radioactive material. This means that those materials arriving have a concentration in the microcurie range not to exceed and those being shipped out would have radioactive concentration greater but would not exceed 15 millicuries as identified in permit application (Appendix A).

Based on the concentration of radioactive materials in the permit application the U.S. Department of Transportation regulations, 49 CFR 173.421 specifies the requirements for expected packages limited quantities of Class 7 (radioactive) materials as follows:

(a) A class 7 (radioactive) materials whose activity per package does not exceed the limits specified in 49 CFR 173.425 and is packaging are excepted from the specification packaging, marking, labeling and, if not a hazardous substance or hazardous waste, the shipping paper and verification requirements of this subchapter and requirements of this subpart if:
    (1) Each package meets the general design requirements of 49 CFR 173. 410;
    (2) The radiation level at any point of the external surface of the package does not exceed 0.005 mSv/hour.

The U.S. Dept. of Transportation, Federal Highway Administration reports annually on the Crash Profile of Large Trucks. Their latest report for 1997, by the Analysis Division, Office of Motor Carriers (OMC), September 1998 is summarized below:

The most reliable database tracking the release of hazardous materials is the University of Michigan, Transportation Research Institute. They report trucking crashes involving hazardous materials. Using a five-year average (1992-1996), 201 trucks per year were involved in fatal crashes. An average of 30 percent of these crashes released hazardous materials cargo resulting from the crash (60 accidents). The OMC data base (Motor Carrier Management Information System-MCMIS) reports an estimated 45 fatal crashes in 1997 that released hazardous materials cargo, and 670 non-fatal crashes releasing hazardous materials cargo. The most frequent hazardous materials released nation wide was Class 9; 31 percent of fatal crashes released Class 9 hazardous materials, and 38 percent of non-fatal crashes released class 9 hazardous materials (i.e., liquid and solid hazardous materials, substances that do not present a transportation hazard but are hazardous to the environment, i.e., polychlorinated biphenyls, etc.). The second most frequent type of hazardous materials released was Class 3 (flammable liquid): 29 percent of fatal crashes released Class 3 hazardous materials, and 26 percent of non-fatal crashes released Class 3 hazardous materials.

During 1997, the OMC/MCMIS recorded 4,871 fatal crashes involving large trucks (i.e., Gross Vehicle Weight greater than 10,000 pounds). 27 of these fatal crashes occurred in Nevada. The OMC/MCMIS reported an estimated 439,000 crashes not involving fatalities. Four percent (195 accidents) of the fatal crashes involved trucks carrying hazardous materials and about two percent (8,780 accidents) of the non-fatal crashes involved trucks carrying hazardous materials.

The National Statistics can be used to calculate the probability of an accident occurring that would release hazardous materials in a crash. This value is determined using the data in Tables 3 and 9 from the OMC September 1998 report for tractor/trailer related accidents in 1996 (most recent data). This data suggests that the probability of a truck crashing that would releases hazardous materials is 3.9×10^{-9} per mile (fatal plus non-fatal crashes). Given that 100 trucks per day make the round trip from DRSP 255 days per year traveling 67 miles, the total annual miles for DRSP truck traffic would 3.4×10^{-6} miles. Multiplying this annual truck traffic by the probability of a crash releasing hazardous materials of 3.9×10^{-9} yields a annul probability of 0.013 truck crashes releasing hazardous materials per year or about 1:100. This compare to an individual risk (based on driving or traveling in a car 15,000 miles per year) of being in an automobile accident 8:100, being in an accident with a disabling injury 1:100 or being in an accident with a fatality of 1:5,000. (Data from the National Safety Council's "Accident Facts", 1998).

The US Department of Transportation summarizes the impact of the release of hazardous materials as a result of crashes in the following quote:
"In total, hazardous materials are a minor element in truck crashes for two reasons:
First, only a small percentage of trucks involved in crashes carry hazardous materials.

Table 4.3. Proposed Hazardous Materials to be Transported to the DRSP[1]

Hazardous Material	Description	Transportation Class	Principal Hazard	Carcinogen [2]
Halogenated Hydrocarbons	Noncombustible Liquid; Clear Corrosive Liquid	6.1; 8.0	Via Inhalation, eyes, skin; Internal Organ damage	No
Metal Hydrides	Metal; Gray Powder	4.3	Flammable, Inhalation, Irritant	No
Cyanide Compounds	Poison Gas	6.1	Inhalation, Irritant	No
Fluorides	Corrosives Non-flammable Gaseous	8.0,2.2	Inhalation Irritant	No
Methyl Bromide	Gaseous Fumigant Poison	2.3	Inhalation	No (suspected animal carcinogen)
Propane	Gas or Liquid	2.1	Flammable	No
Hydrazine	Liquid	6.1;8	Inhalation Corrosive	Suspect
Liquid Hydrogen	Liquid/Gas	2.1	Flammable; Inhalation	No
Liquid Oxygen	Liquid/Non-flammable gas	2.2	Inhalation	No
Fluorocarbons	Liquid	3.0	Flammable; Inhalation	No
Radioactive Materials	License exempt Quantities[3] (Sb-125,Cs-137, Sr-90, etc.)	7	Exposure to radioactivity	Yes, however the small quantities pose a risk<10^{-6}

[1] Data from product MSDS data sheets and DOT Table of Hazardous Materials and Special Provisions, 172.101.
[2] Data from product MSDS data sheets and DOT Table of Hazardous Materials and Special Provisions, 172.101
[3] Refer to Appendix A of this document for a complete listing of radionuclides that potentially could be used at the DRSP

Second, the hazardous materials carried usually stays in the cargo compartment. Only 45 trucks released hazardous materials in fatal crashes reported to the MCMIS Crash File in 1997.

Of the more than 93,000 trucks involved in non-fatal crashes in the MCMIS database, there were hazardous materials releases in only 670 cases. Therefore, hazardous materials releases rarely play a role in deaths or injuries. The Research and Special Programs Administration reported an average of only 11 deaths a year attributable to exposure to hazardous materials in highway crashes over the past ten years. Since Research and Special Programs Administration data come only from interstate carriers, total fatalities are understated, perhaps by a multiple of three. In any event, total fatalities related to exposure to hazardous materials in highway crashes would be a small percent of the 5,355 total fatalities in large truck crashes in 1997.”

The additional accumulated miles as a result of DRSP is five times larger than the current traffic levels on the Mercury Highway but does not reach the peak traffic experienced at the NTS during peak testing activities during the early 1990s. U.S. Highway 95 would experience an increase in traffic of approximately 60 percent. As indicated, the potential increase in traffic does not reach peak traffic that was experienced historically, and it does not take into account any participation of car pooling activities by the DRSP employees. Additionally, the type and quantities of hazardous materials and wastes that would be transported are similar in nature but lower volume to what presently is being transported or what has been analyzed in recent documents supporting activities on the NTS (DOE, 1997a and 1997b).

4.2.6 Noise

Noise that would be generated at the DRSP from activities including construction and eventually operational activities would not propagate off site at audible levels. This is due to the remote location of the DRSP and NTS and control of adjacent lands by BLM. The nearest public access is a four-lane highway approximately 1.25 miles from the closest point of the DRSP. Public presence along the highway is transitory. The nearest sensitive receptors to the DRSP site boundary are at Cactus Springs, a distance greater than ten miles.

Anticipated noise sources at the DRSP would include operations of heavy equipment for construction of various tenant facilities, traffic (both employee/visitor and freight), Heating Ventilation and Air Conditioning (HVAC) equipment typical of warehouse and office building and operations of heavy equipment for loading and unloading operations. Certain businesses would produce noise at higher levels, such as turbines associated with generations/co-generation; pumps motors and compressed air systems associated with cryogenic plants; and small explosions or controlled burns associated with stationary testing of propellants. These noises may be of a level 90 dBA or higher near the equipment or activity, and worker hearing protection may be required. A noise level of 90 dBA at 50 ft decreases to 50dBA at one mile and to 44dBA at two miles (DOE, 1996). Therefore, noise associated with DRSP at the nearest publicly accessible area, U.S. Highway 95 would be consistent with or less than traffic noise on the public highway. Air access to DRSP via DRA may increase the frequency of noise associated with aircraft takeoff and landing.

4.2.7 Air Quality

The impacts to air quality resulting from the DRSP are summarized in this section. The region of influence for this air quality analysis is Nye County, Nevada. The emissions from stationary, mobile, and fugitive PM_{10} sources would occur within and outside of the DRSP. These emissions would be dispersed over the 11,000 acres of Area 22 of the NTS. At the boundaries of the NTS, ambient pollutant concentrations would be well below the ambient air quality standards. Since no substantial increases in air pollution emissions are expected from activities at the DRSP and the NTS by 2005, Nye County would continue its present attainment designation for all criteria pollutants.

Mobile source emissions in Nye County (on-site and off-site) are presented in Table 4-3.

Table 4-4. Summary of DRSP and NTS Construction emissions and mobile source emissions, tons per year

Action	Construction	Mobile Sources					
		On Site			Off Site		
					Nye County		
	Fugitive PM_{10}[1]	CO[2]	VOC[3]	NO_x[4]	CO	VOC	NO_x
DRSP	179.2	58.9	21.7	22.3	1.16	0.36	1.02
No Action[5]	603.2	371.10	50.42	66.09	115.50	17.46	40.81

[1]PM Particulate matter with a diameter equal to or less than 10 micrometers.
[2]Carbon monoxide
[3]Volatile organic compounds
[4]Nitrogen oxides
[5]Data obtained from alternative 3 in the NTS EIS 1996 for all programs.

These emissions would be dispersed over a wide area and would not increase ambient pollutant concentrations in Nye County above ambient standards. Therefore, Nye County would continue to maintain its attainment designation for all criteria pollutants. Emissions from the DRSP and mobile source emissions for related activities would be less than was previously evaluated in the NTS EIS (DOE, 1996) for similar programs under both Alternative 1 and the no action alternative of this proposed action.

4.2.8 Water Resources

Water requirements for the proposed action would be serviced by existing water supply wells, treatment facilities, and storage and distribution systems. The DOE will file applications for permits to appropriate groundwater with the Nevada Division of Water Resources on behalf of the NTS Development Corporation and the DRSP tenants as the for water arises. Water would be provided by wells located in southern Frenchman Flat with supplemental water from Army Well 1 located in southern Mercury Valley. The total demand for water for the proposed industrial park is estimated to about 146 acre-feet per year but may vary depending upon the types of tenants and the timing of development. During build-out, the quantity of water used for construction and dust control is expected to be small, a few tens of acre-feet in any given year. Following construction, water use would likely be seasonal with peak demands of about one million gallons per day expected to occur during the summer months.

The impacts of water withdrawals from the supply wells in Frenchman Flat and Mercury Valley were evaluated in the NTS EIS (DOE, 1996). The impacts include a localized lowering of water levels in the vicinity of the supply wells. The level of impact was not considered a significant

impact. The additional demand for water for the proposed action would result in a corresponding increase in the overall water use at the NTS. However, water use at the NTS has fallen to less than one-fifth of historic peak use and the 146 acre feet per year associated with the industrial park would raise the total demand to less than one-third of the historic peak. No significant adverse impacts have been identified as a result of previous groundwater withdrawals at the NTS, even at peak historic rates.

4.2.9 Occupational and Public Health and Safety

Workers are generally more at risk from physical hazards that are routinely in the work place than they are from exposure to radiological and chemical substances. The average employee is also subject to accidents that may occur during the course of performing routine activities at work and can result in bodily injury. Examples of the types of work expected at the DRSP consist of warehousing activities, (i.e., fork life operation), maintenance, welding, and handling of hazardous materials.

The projected impact of the estimated 1,000 workers at the DRSP is based on the experience observed at the NTS and reported in the NTS EIS (DOE, 1996) and in other related documents and data systems, such as DOE/CAIRS (Computerized Accident, Illness Reporting System). The NTS EIS (DOE, 1996) evaluated a number of scenarios of exposure to radiation and chemicals for the NTS workforce. Values for Alternative 1 (Continued Operations) projected over 10 years of exposure to the entire worker population is estimated to be about 0.12 for a single latent cancer fatality from radiation and 4.1×10^{-6} for a single cancer to occur from exposure to hazardous chemicals. The probability that an accidental release of a hazardous chemical over the 10 years evaluated in the NTS EIS (DOE, 1996) resulting in single cancer in the off-site population is estimated to be approximately 2.3×10^{-4}. Based on the types of businesses expected to be located at the DRSP at full build-out the amount of hazardous materials used would minimal and would be within the bounds of the NTS EIS (DOE, 1996) analysis.

For workers engaged in activities such as construction, maintenance, excavation, etc., the 10-year evaluation period of the NTS EIS (DOE, 1996) estimated 204 occupational injuries and three fatalities. These impacts are expected as a result of performing all NTS activities. The actual experience recorded the last five years (1994-1998) as reported by the DOE/CAIRS data base indicates zero fatalities and 569 Total Recordable Cases (TRC) for contractor employees at the NTS. This is a TRC rate of 6.0 per 200,000 hours. The Lost Work-Day Cases (LWC) was 350, for a LWC rate of 3.7 per 200,000 hours. The TRC reports all cases where medical attention is sought, while the LWC indicates those cases were a days work is lost due to the injury. For comparison CAIRS analyzes the total DOE/NV experience and compares it with DOE complex wide and the private sector as reported by the Bureau of Labor Statistics (BLS). For the six year period 1993-1998 the DOE complex wide Total Injury and illness Incidence Rate Average was 3.6 cases per 200,000 hours, the DOE/NV average was 4.4 and BLS was 7.9 for the same period.

At the DRSP, for 1,000 employees, based on the actual State of Nevada and NTS experiences an estimated total injury and illness experience would be approximately 45 cases per year, with an estimated annual lost workdays of 38. This does not include traffic/transportation impacts. As noted previously, the use of hazardous and radioactive materials is expected to be minimal at the DRSP. For the radioactive materials used in a DRSP workplace, the potential for radiation exposures would be controlled in accordance of the license issued by the Nevada Bureau of Health Protection Services. Based on historical practices by the Nevada Bureau of Health Protection Services, conservative administrative controls are placed in the licenses. The prospective tenant controls workplace safety with administrative and building controls and personnel monitoring devices and procedures. Refer to Appendix A for details of administrative and building controls. To further ensure safety, the state representative performs frequent oversight visits to the licensee. The expected latent cancer induced fatalities is expected to be low (less than 1×10^{-6}). The proposed activities at the DRSP pose less risk to occupational health and safety than those from similar programs evaluated in the NTS EIS.

4.2.10 Biological Resources

The development of the DRSP would result in the disturbance of approximately 200 acres of undisturbed habitat. This loss of habitat and associated mortality of individuals, disruption of movement patterns and gene flow and other effects should not have a negative impact on the viability of most species found in this area because those species are common throughout a large region.

The desert tortoise is the only threatened or endangered species commonly found on the NTS including the DRSP. The abundance of desert tortoises is very low in the vicinity of proposed sites (DOE, 1996). However, because surveys would be conducted and tortoises are removed prior to soil-disturbing activities on the DRSP, no tortoise would be killed. However, the project would result in the loss of 200 acres of tortoise habitat. Water used for the DRSP would not be taken from the perched aquifers that supply springs on the NTS, therefore this action should have little or no impact on those springs and their associated habitat. Although the groundwater under the NTS is connected to springs in Devils Hole National Monument and Ash Meadows national Wildlife Refuge, water use at the DRSP should affect neither water quality nor quantity in these.

4.2.11 Cultural Resources

Impact to cultural resource may result from the proposed action due to ground disturbing activities in support of the construction of the DRSP. A total of 227 acres are expected to be disturbed while impacts to significant cultural resources are unlikely. Continued visitation and vehicular traffic could lead to vandalism or artifact collecting that could indirectly affect recorded archaeological sites and archaeologically sensitive areas. Camp Desert Rock, a potentially historic site, is located within the APE of the project and may be indirectly impacted by the construction of the DRSP facilities.

Although a complete archaeological survey has not been completed in the DRSP area, to date four sites have been identified and recorded in Area 22. A cultural resource survey of the project area and APE and Section 106 consultation with the SHPO will be completed before ground disturbing activities. The project will be conducted in accordance with the Nevada SHPO stipulations.

4.2.12 American Indian Resources

As no systematic surveys for American Indian resources have been conducted at the project area or vicinity, impacts are unknown at this time. Should a RCA of the project area be conducted and important American Indian resources identified, DOE/NV will consult with the CGTO to resolve those impacts.

4.2.13 Geology and Soils

The geology in the DRSP area is favorable for industrial-type development. Because of the gradually sloping terrain ground preparation would involve minimal grading and most construction would involve minimal subsurface work. The construction of utilities (sewer, roads, communication, and electrical distribution) and localized site preparation would involve excavation and some grading. Testing for expansive soils would be performed, as appropriate, depending upon the specific site and type of structure.

Of the 512 acres planned for the DRSP, about half of the surface would eventually be disturbed as the park activities achieve full build-out. Alteration of natural drainage channels could cause some change in erosion patter; evaluation of drainage issues are appropriately considered in site planning and in conjunction with design of each facility constructed.

4.2.14 Socioeconomics

The potential socioeconomic effects resulting from full build-out of the DRSP are discussed in this section. The description of socioeconomic conditions includes indicators (population, civilian labor force, employment/unemployment rate, and income) that provide a basis for comparing the conditions of the region with and without the permitted action. This analysis makes the bounding assumption that the business of the DRSP would not other wise locate in the region if the proposed action is not permitted.

At full build-out, by 2005, the DRSP is estimated to directly employ about 1,000 management, engineering, scientific technician, craft, and support personnel. This employment is considered to be linear over the five-year period, that is, 200 personnel per year. There would be additional employment for the construction of individual business facilities as well as site utilities. However, construction features of the DRSP are common with other construction activities in the region and are short-term in nature; construction services and therefore assumed to derive from the existing labor pool.

Based on demographic data presented in the NTS EIS 1996, 93 of the workforce are expected to live in Clark County and seven percent in Nye County. In addition to the 1,000 direct jobs, purchase of goods and services would be expected to generate an additional 2,000 secondary jobs. Therefore full build-out of the DRSP would result in an increase of 2,790 jobs in Clark County and 210 jobs in Nye County. It is not possible to predict how many of those would be filled by existing residents of Clark or Nye Counties. As a bounding projection, the assumption is made that all positions would be filled by new residents. Assuming 0.254 people per household (U.S. Census Bureau, 1996) the total population impact from in-migration to Clark County would be 8,370 people, or about 0.7 percent. Total population impact from in-migration to Nye County would be 533 people, or about 1.9 percent.

The estimated direct payroll of the DRSP at full build out is about $75 million. Taking the same apportionment to Clark and Nye Counties, the resultant personal income attributable to Clark County is $69.8 million. The personal income attributable to Nye County is $5.25 million.

The NTS EIS projected the impact on Public Finance and Public Services as a result of the Expanded Use alternative. The Expanded Use Alternative reflected the impact of a direct worker increase of jobs by 2005. The full build-out of the DRSP by 2005 would thus account for about 22 percent of the impacts indicated by the EIS. Impacts discussed include county revenues and expenses (Clark and Nye) school district revenues and expenses, and personnel impact to education, police and fire protection and health care.

4.2.15 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of federal programs, policies, and activities on minority populations and low-income populations. Environmental Justice analysis involves two tiers of investigation. One is the determination of significant and adverse impacts as a result of the alternative. The other is an evaluation of whether a minority or low-income population is disproportionately affected by these significant and adverse impacts. If there are no significant and adverse impacts, there would be no significant, disproportionately high and adverse impacts experienced by minority and low-income populations.

The EA analysis determined that impact to public health and safety would be small on the population as a whole for all phases of the proposed action. Thus, no subsection of the population including minority or low-income population would receive disproportionate impact.

4.3 ALTERNATIVE 2 – NO ACTION

The “No Action” alternative would identify and describe impacts that would be expected to occur at the NTS if the proposed DRSP does not go forward. Since the proposed action is NTS-specific, the “No Action” alternative would be limited to addressing impacts of no action (economic diversification) at the NTS.

4.3.1 Land Use

Under the no action alternative, use of the NTS Area 22 in the vicinity of the DRA would continue to be consistent with the NTS RMP (DOE, 1998a), and land use would be unaffected.

4.3.2 Air Space

The effects of continued activities and aircraft operations under the No Action Alternative would have no new effects on the NTS airspace. Additionally, general aviation would continue to be diverted around the NTS.

4.3.3 Infrastructure and Utilities

The infrastructure and utilities in the vicinity of the DRA would remain at current levels consistent with the NTS RMP (DOE, 1998a), and no changes to the environment would be expected.

4.3.4 Visual Resources

Visual resources would not be affected by the no action alternative. The proposed site would continue to be classified as a Class C site for visual resources. The landscape character of the area is common to the region, and there is a minor amount of existing manmade modification in the highway viewshed.

4.3.5 Transportation and Traffic

Transportation activities under the no action alternative would remain consistent with ROD supporting the findings in the NTS EIS (DOE, 1996). Additionally, DOE/NV recognizes the concerns of the community associated with transportation activities and would continue the mitigation activities outlined in Chapter 7 of the NTS EIS (DOE, 1996).

4.3.6 Noise

Activities conducted under the No Action Alternative are consistent with ROD and the activities analyzed in the NTS EIS (DOE, 1996). Consequently, there would be no impact to the surrounding environment due to the noise generated on the NTS. Furthermore, noise does not propagate off site at audible levels.

4.3.7 Air Quality

The region of influence for the no action alternative is Nye County. For the no action alternative, ambient pollutant concentration at the boundaries of the NTS would continue to be well below the ambient air quality standard and Nye County would maintain its attainment status.

4.3.8 Water Resources

Water use at the NTS has fallen to less than one-fifth of historic peak use. The no action alternative would not require the use of additional water and so no impacts would be expected.

4.3.9 Occupational and Public Health and Safety

Under the no action alternative, activities would remain at current levels, and the work environment would be unaffected.

4.3.10 Biological Resources

With activities at the NTS remaining consistent with the ROD, the impacts on biological resources would not have an adverse impact on the viability of species found in this area. DOE/NV would continue to comply with the Biological Opinion issued by the Service as well as participate actively with surveys to protect the desert tortoise habitat.

4.3.11 Cultural Resources

There would be no impact to cultural resources in the vicinity of the DRA, where activities would continue at their current levels.

4.3.12 American Indian Resources

There would be no impact to American Indian resources under this alternative.

4.3.13 Geology and Soils

There would be no new construction or site ground disturbance, thus impacts to the soils or geologic media would not be expected to occur.

4.3.14 Socioeconomics

Under the no action alternative the economy in Nye County would continue to decline resulting in a potential adverse impact to communities in the region of influence. Impacts to Clark County would be negligible because lost economic opportunity from the no action alternative is small when compared to the steady economic growth of Clark County.

4.3.15 Environmental Justice

Implementation of the no action alternative would not result in adverse environmental impacts, so no disproportionate adverse impacts would be expected to occur to minority or low income sectors of the population.

5.0 CUMULATIVE IMPACTS

In this section, the cumulative effects resulting from the proposed action and other on-going and planned DOE and non-DOE actions are identified and discussed. Recent federal NEPA documents (including US Air Force NAFR Renewal EIS, NPS Death Valley General Management Plan, and the BLM Las Vegas Resource Management Plan) and state and local planning documents (Nevada State Water Plan; Nye County Comprehensive Plan; and others, as appropriate) have been reviewed, and are briefly summarized.

5.1 DEFINITION

In accordance with the Council on Environmental Quality regulations, a cumulative impact analysis within an EA includes the anticipated impact to the environment resulting from "the incremental impact of action when added to other past, present and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR Part 1508.7)

5.2 PAST AND PRESENT ACTIONS

Past and present actions associated with activities of DOE and other public and private entities are included in the baseline conditions described in Chapter 3, Affected Environment.

5.3 CUMULATIVE IMPACT ANALYSIS

The following sections summarize the potential incremental contribution to cumulative impacts that would be expected from the implementation of the proposed action, the permitting of an industrial park in Area 22 of the NTS. Implementation of the no action alternative would not result in any contribution to cumulative impacts in the region, except where noted in the following sections.

5.3.1 Land Use

It is anticipated that the major land-use designations and land users within the region would remain unchanged through the foreseeable future. The users include federal, state and civilian. Therefore the development of DRSP is consistent with the regional development. The vast majority of the projected urban development would occur in areas adjacent to the Las Vegas urban area. Additional rapid development would be localized in southern Nye County, and use of previously restricted lands for private use would slightly decrease the cumulative land use impacts in southern Nye County. Therefore, contribution to the cumulative land use impacts from the development of DRSP would be expected to be slightly beneficial.

5.3.2 Air Space

Beyond the impact of sorties, the inherent constraints of the existing restricted air space and potentially increased activity at DRA would continue to require non-participating civil and military aircraft to be routed around the NTS. Depending on the eventual level of DRSP-related activity, this alternative could require additional coordination with civil and military activities. The NTS EIS assumed no changes to airspace structure and the current level of air traffic control and radar/radio/navigation aid services would likely be maintained or improved under normal upgrade programs.

5.3.3 Infrastructure and Utilities

The DRSP would require construction of additional infrastructure that would include buildings, water distribution and wastewater systems. The development of these facilities would cause minimal short-term effects to geology, air, and water resources. The impacts from these activities would be minor. At full build-out of the DRSP, additional power requirements might require new power lines to be constructed; the incremental impact to air quality and biological resources would be minor since the existing power corridor has been previously disturbed.

5.3.4 Visual Resources

The visual character of the region would change in selected areas especially in those undergoing urban development and near mineral extraction activities. In such areas, natural landscapes would be modified by human activities. In those areas undergoing development, it is anticipated that activities associated with the implementation of program alternatives would have only a minor effect on visual resources. In the case of DRSP, implementation would have more noticeable effect near the general location to U.S. Highway 95.

5.3.5 Transportation and Traffic

An increase of 2,600 one-way vehicle trips generated by an additional 1,000 workers employed at the DRSP at full build-out under Alternative 1 would contribute to an increase in the total annual mileage to 1.3×10^8. This increase in mileage is slightly elevated to 4.0×10^6 daily vehicle trips projected for the year 2005 by the Regional Transportation Plan (DOE, 1996). The Regional Transportation Commission of Clark County has been actively engaged in highway improvement programs to relieve traffic congestion and reduce traffic accidents in Clark County.

5.3.6 Noise

At the regional level, it is expected that ambient noise levels would increase, especially in areas undergoing urban development and those that are adjacent to industrial and mineral extraction. Noise impacts associated with activities at the DRSP would be restricted to the geographical area contained therein and would not affect persons or residents in adjacent areas or add measurably to regional noise levels.

5.3.7 Air Quality

For the DRSP, it is projected that construction activities would generate less than one ton of fugitive dust (PM_{10}) per year. This level of construction-related grading activity would extend over a period of less than two years. This quantity of fugitive dust (PM_{10}) would comprise less than one percent of the total of 177,660 tons associated with land disturbance activities throughout the region represented by the Stateline and Tonopah resource areas and the Las Vegas Valley. The air sheds within Nye County affected by DRSP activities would not increase ambient pollutant concentrations above ambient standards. Therefore, the cumulative effect of the development of DRSP on air quality would be minimal.

5.3.8 Water Resources

Groundwater withdrawals on the NTS in excess of historic pumping levels, in conjunction with existing water withdrawals, would decrease the water available for future appropriation in the Death Valley flow system. The additional water withdrawals from the DRSP are less than one-fifth the historical ground water withdrawal during underground nuclear testing. The effects of water withdrawals for DRSP would be minor and would are not expected to affect down-gradient water levels or water quality.

5.3.9 Occupational and Public Safety and Health

Based on occupational injury rates for construction and other industrial activities, DRSP actions would result in up to 45 cases per year, with an estimated total of 38 lost workdays. The DRSP activities would not affect the regional rate, and therefore would have a minor effect. DRSP activities would be conducted within the proposed project boundaries and would not affect members of the public.

5.3.10 Biological Resources

Cumulative impacts to the desert tortoise habitat would occur throughout the region, although the intensity of the impact would vary from location to location depending on the habitat. For the construction of the DRSP, approximately 512 acres has been designated and of that area, no more than 230 acres would be disturbed. Additionally, the DRSP and the NTS are surrounded by federal lands that are managed in part for wildlife, it is also unlikely that the small amount of habitat disturbed would negatively affect other biological resources. Thus, the contribution to cumulative impacts on flora and fauna associated with the development of DRSP would be expected to be minor.

Additionally, historic groundwater withdrawals (including those from Yucca Flat at rates beyond the perennial yield) have not resulted in any detectable impacts on water table levels, and thus contribution to the cumulative effects on flora and fauna associated with Devils Hole or Ash Meadows are anticipated to be undetectable.

5.3.11 Cultural Resources

The presence of cultural resources in the project area and APE will be determined by conducting a cultural resource survey before ground disturbing activities. Determinations of eligibility and project effect will be determined through Section 106 consultation with the Nevada SHPO. Adverse impacts would be mitigated in accordance with Nevada SHPO stipulations. Hence, no significant impact to cultural resources would occur.

5.3.12 American Indian Resources

Impacts to important American Indian resources in the project area would be mitigated through consultation with the CGTO and implementation of mitigation recommendations developed by the CGTO.

5.3.13 Geology and Soils

Actions related to the DRSP would add incrementally to the levels of surface disturbance within the region. A portion of these areas would be re-graded and revegetated, thus, rendering some impacts temporary. The continued restriction of the NTS to mining activities would result in the continued loss of some mineral resources and potential geothermal resources, an effect that is independent of the DRSP proposal. The use of aggregate resources for construction would result in a cumulative impact to regional aggregate mining. However, aggregate resources are more than adequate to fill projected regional needs and the impact would not be significant.

5.3.14 Socioeconomics

Socioeconomic impacts related to the DRSP would be incremental to those of the region. Most of those impacts would be through increases in the number of jobs, average wages and household earnings, and tax revenues. The impacts would occur largely in Clark County and in Nye County.

In this analysis, the cumulative socioeconomic impact is considered to be that resulting from the proposed action and NTS activities, which represents greater impact, added to the impact generated by economic activities projected in Nye County through 2005. This would generate an approximate increase in personal income of four percent.

Under the no action alternative, there is a potential for adverse cumulative impact to the economic indicator values in Nye County.

5.3.15 Environmental Justice

The analyses determined for both alternatives, there were no disproportionately high and adverse impacts experienced by minority and low-income populations in the region of influence from the development of the DRSP. Thus, there is no contribution to the cumulative impact.

6.0 MITIGATION MEASURES

This section summarizes any environmental consequences that require mitigation, and identifies specific mitigation measures as well as the range of potential mitigation measures that DOE/NV might choose to implement. Measures that must be implemented to mitigate impacts as may be required to support a Finding of No Significant Impact (FONSI) are also identified.

The following resources areas analyzed were determined to have no significant impacts for the Proposed Action or No Action alternative. Therefore no mitigation actions would be required other than those identified in Chapter 7 of the NTS EIS and Mitigation Action Plan. These resource areas are as follows:

- Land Use
- Visual Resources
- Transportation
- Noise
- Air Quality
- Occupational Health and Safety
- Geology and Soils
- Environmental Justice

6.1 AIR SPACE

Use of the air space around the DRA would be generally consistent with existing designations, but could potentially affect DOE mission-related activity. Air space impacts that would result from air traffic associated with DRSP would be easily mitigated through coordination with the DOE/NV Site Operations Division.

6.2 WATER RESOURCES

No significant impacts have been observed in the past from water use that significantly exceeded the amounts proposed in this EA and none are expected from development of the DRSP. However, water use in the southern Nevada region in general, and the Death Valley Regional Flow System in particular, is a sensitive issue with divergent viewpoints. Accordingly, DOE has instituted mitigating measures in order to ensure that impacts from water use are minimized.

The measures include:

- Selection of low-water use tenants. DRSP will attempt to attract industries that use relatively small amounts of water compared to those using significant amounts of process water.

- Use of Frenchman Flat water: Water will be supplied primarily by wells in the alluvial aquifer in Frenchman Flat. This aquifer is different from the regional aquifer supplying the sensitive ecosystems at Ash Meadows and Death Valley.

- Monitoring of water levels: Monitoring of water levels in the carbonate aquifer in Mercury Valley will continue in order to assess long-term water level trends.

- Prior agreement among federal agencies for any water appropriation permit applications: DOE will comply with the conditions of a formal agreement among the DOE, the NPS, the USFWS, and the USAF related to new water appropriation applications. This *Memorandum of Agreement Concerning Pre-Filing Notification of Proposed Water Right Application by Federal Agencies in Southern Nevada*, dated June 23, 1999, specifies that all new water appropriation permit applications be acceptable to all four parties. This measure assures that sensitive ecological resources at Devil's Hole, Ash Meadows, and Death Valley are considered and protected prior to the application to appropriate water.

6.3 BIOLOGICAL RESOURCES

DOE/NV has developed a RMP for the NTS (DOE, 1998a) and one of its primary goals is to protect and conserve significant biological resources. The RMP defines the ecosystem management principles that would be used to mitigate impacts related to biological resources. Some of the potential mitigation actions include but are not limited to:

- The project will be conducted in accordance with the terms and conditions of the Programmatic Biological Opinion for desert tortoise protection on the NTS.

- DOE/NV would conduct biological surveys to identify species of concern and their habitats and other important biological resources in order to develop recommendations to minimize any adverse effects.

Other measures that will be practiced at DRSP to avoid the introduction and spread of noxious weeds include the recommendations by United States Forest Service in Prevention Guide for Noxious Weeds "*Road Maintenance and Construction and Heavy Equipment Use*".

6.4 CULTURAL RESOURCES

The project area and APE are located in an area of low concentrations of prehistoric resources but adjacent to the potentially eligible historic site of Camp Desert Rock. The presence of cultural resources in the project area and APE will be determined by conducting a cultural resource survey before ground disturbing activities. Determinations of eligibility and project effect will be determined through Section 106 consultation with the Nevada SHPO. Adverse impacts would be mitigated in accordance with Nevada SHPO stipulations, which may include:

- Avoidance.
- Development and implementation of an archeological data recovery plan.
- Development of a MOA between Nevada SHPO and DOE/NV for the preparation of additional historic documentation for Camp Desert Rock.

6.5 AMERICAN INDIAN RESOURCES

Adverse impacts to important American Indian resources would be mitigated through consultation with the CGTO and implementation of mitigation recommendations developed by the CGTO.

7.0 COORDINATION AND CONSULTATION

This section identifies the agencies, local governments, Indian Tribes, and members of the public contacted during the scoping for and preparation of the EA, and implementation by DOE/NV of the NEPA process. DOE/NV identified the need to prepare this EA on April 22, 1999. Formal scoping was initiated on May 24, 1999 and closed on July 9, 1999.

7.1 INTERNAL AND FEDERAL AGENCY SCOPING AND CONSULTATION

As part of scoping for this EA, the DOE/NV conducted both internal DOE/NV scoping, and engaged in meetings and briefings with other stakeholders. Preliminary scoping was accomplished through DOE/NV Site Use and Development Board and Working Group.

A DOE/NV Internal Scoping Team was assembled to identify relevant issues and concerns that are incorporated and addressed in this EA. The members of the DOE/NV Internal Scoping Team included federal staff from DOE/NV and DOE/Yucca Mountain Site Characterization Office (YMSCO), a representative from the USAF Liaison Office, representatives from the Joint Test Organization (JTO), and a representative from DOE/NV's Management and Operations contractor Bechtel Nevada (BN). The DOE/NV Internal Scoping Team met to identify issues of concern. Those issues focused on ensuring consistency of the Action Proposal with the current NTS RMP and the NTS EIS.

In addition to internal scoping, notice was given to the members of the Five-Party Agreement at their meeting on July 22, 1999, to introduce and identify issues and concerns associated with the proposed action. The group did not identify any issues or concerns.

The National Historic Preservation Act requires federal agencies to take into account the effects of their activities on historic properties included in or eligible for inclusion in the NRHP and consult with the SHPO concerning those effects. The presence of cultural resources in the project area and APE will be determined by conducting a cultural resource survey before ground disturbing activities. Determinations of eligibility and project effect will be determined through Section 106 consultation with the Nevada SHPO. Adverse impacts would be mitigated in accordance with Nevada SHPO stipulations.

7.2 INTERACTIONS WITH THE CONSOLIDATED GROUP OF TRIBES AND ORGANIZATIONS (CGTO)

The CGTO was notified of the DOE/NV's intent to prepare this EA. Of primary concern to the CGTO was potential need to conduct a Rapid Cultural Resources Assessment in the proposed project area prior to initiating any ground disturbing activities.

7.3 STATE AND LOCAL GOVERNMENT SCOPING OPPORTUNITIES

To ensure that state and local concerns were identified early during the NEPA process, a scoping meeting was scheduled with state agency representatives through the State of Nevada Clearinghouse on May 21, 1998, at 9:30 a.m. in Carson City, at the Nye Lane Conference Room. Participants included the State Clearinghouse Coordinator and representatives from the NDEP Bureau of Federal Facilities and NDEP Office of Regulatory Assistance, and the Nevada State Health Division.

Issues identified by State of Nevada representatives at the May 21st meeting included: (1) potential water use and land use constraints related to siting the DRSP at the NTS; (2) clarification of the proposed action and its relationship to the DRSP Master Plan; (3) inclusion of a discussion of the Site Use Development (SUD) siting process and related documentation in the EA; (4) a request to identify potential impacts to commercial air traffic that might result from increased use of the Desert Rock Airstrip; (5) a request for on-going dialog with any potential DRSP tenants that might require radiological licenses; (6) a request for close coordination of the draft EA distribution; and (7) a request that a summary of the State Clearinghouse Scoping meeting be included in the draft EA. All these issues and requests have been incorporated and addressed in this draft EA. Finally, one request, that the State of Nevada be included in the on-going consultation between DOE and the U.S. Department of Interior (DOI) regarding the NTS Land Orders, is outside the scope of this NEPA review, and was not addressed in the preparation of this draft EA.

7.4 PUBLIC SCOPING

To ensure that the public and stakeholders had adequate input to the scoping process, a notice of intent to prepare the draft EA was sent to members of the public, special interest groups, and local governments and planning agencies. Written comments were invited, and were accepted through July 27, 1999. Comments received have been considered in the preparation of the draft EA.

One public scoping meeting was held in the Town of Pahrump in Nye County at the Bob Ruud Community Center on June 29, from 6:00 to 9:00 p.m. Several members of the public, as well local community and government representatives, attended the meeting. The following issues were identified for discussion and inclusion in the draft EA: (1) effects of the proposed action on local business and employment opportunities; (2) potential concerns with the transportation and disposal of wastes; and (3) clarification of the proposed action and its independence from other waste disposal initiatives. All of the issues and concerns identified at the scoping meeting have been incorporated into this EA.

8.0 LIST OF PREPARERS AND CONTRIBUTERS

This section identifies the members of the EA team and each member's affiliation, their contributions and qualifications, and years of experience working in their technical disciplines.

Church, Bruce W. – BWC Enterprise, Inc., Health Physic and Risk Assessment Consultant and Co-author; Occupational and Public Health and Safety; Traffic and Transportation; B.S. Molecular Biology, M.S. Radiological Health; 38 years.

Furlow, Robert C - DOE Nevada Operations Office, Biological and Cultural Resources Program Manager, American Indian Program Manager; B.S. Wildlife Services; 29 years.

Giampaoli, MaryEllen C. – NEPA Consultant, EA Coordinator; Principal Author except as noted; Document compilation and editing; B.S. and M.S. Geological Sciences; 15 years.

Long, Christopher – PAI Corporation, Senior Management Specialist, Co-author Airspace; B.A. Mathematics, M.S. Human Resources Management and M.A. Administrative Sciences; 30 years.

Ross, James D. – Engineer and Project Coordinator, Co-author Land Use, Soils and Geology; Socioeconomics, Utilities and Infrastructure, Noise; B.S. Electrical Engineering; 27 years.

Skougard, Michael G. – DOE Nevada Operations Office, NEPA Compliance Officer, Purpose and Need, Proposed Action, Document review and acceptance; B.S. Law Enforcement and M.S. Botany; 21 years.

Thornton, Kevin D. – DOE Nevada Operations Office, EA Document Manager; DOE/NV Internal Scoping Team Leader and DOE Project Lead; B.S. Electrical Engineering; 20 years.

9.0 GLOSSARY

Air Traffic Control Assigned Airspace. Airspace of defined vertical/lateral limits assigned by Air Traffic Control, for the purpose of providing air traffic separation between the specified activities being conducted within assigned airspace and other instrumental flight rules air traffic. Procedure governing operations within these areas shall be specified in letters of agreement between local military authorities and the air traffic control facility.

Aircraft operation. Air traffic control-related air activity that is counted as follows: (1) count on arrival as one operation; (2) count a departure as one operation; (3) count aircraft touch and go landings as two operations; (4) count an approach followed by a waveoff as two operations; (5) count aircraft that transmit the control area of jurisdiction and are provided air traffic control service as one operation (count formation flights in this category as one operation except as provided on 6; (6) count individual aircraft in a formation as one operation when that formation is operating to/from/within an airport traffic area or within special-use airspace.

Alluvial fan. A type of sediment deposit caused by flowing water.

Alluvium. Any stream-laid sediment deposit.

Alpha activity. A positively charged particle, consisting of two protons and two neutrons, that is emitted during radioactive decay form the nucleus of certain nuclides. It is the least penetrating of the three types of radiation (alpha, beta, and gamma).

Ambient air. That portion of the atmosphere, outside of buildings, to which the general public is exposed.

Ambient Air Quality Standards. Standards established on a state or federal level that define the limits for airborne concentrations of designated criteria pollutants (nitrogen dioxide, sulfur dioxide, carbon monoxide, particulate matter less than 10 microns in diameter (PM_{10}), ozone, and lead) to protect public health with an adequate margin of safety (primary standards) and to protect public welfare, including plant and animal life, visibility and materials (secondary standards). See Criteria Pollutants.

Apron. Coalescing alluvial fans.

Aquifer. A rock layer that is both saturated and permeable and is able to transmit groundwater and to yield significant quantities of groundwater to wells and springs.

Area of potential effect. In the context of Section 106 of the National Historic Preservation Act, the area in which planned development may directly or indirectly affect a cultural resource.
Arroyos. The channel of an ephermal or intermittent stream, usually with vertical banks of unconsolidated material two feet or more high.

Assessed valuation. A valuation set upon real estate or other property by a government as a basis for levying taxes. For example, in most municipal jurisdictions in Clark and Nye counties, 35 percent of the taxable value placed upon real and personal property by the chief appraiser of the appraisal district is used as the basis for levying property taxes.

Attainment area. A region that meets the National Ambient Air Quality Standards for a criteria pollutant under the Clean Air Act.

Average daily traffic. For a one-year period, the total volume passing a point or segment of a highway facility in both directions, divided by the number of days in the year.

Baseline. The initial environmental conditions against which the environmental consequences of various alternatives are evaluated.

Candidate species. Species for which the Service has sufficient information on their biological status and threats to propose them as endangered or threatened.

Capacity (traffic). The maximum rate of flow at which vehicles can be reasonably expected to traverse a point or uniform segment of a line or roadway during a specified time period under prevailing roadway, traffic, and control conditions.

Carbon monoxide. A colorless, odorless, poisonous gas produced by incomplete fossil-fuel combustion. One of the six pollutants for which there is a national ambient air quality standard.

Census blocks. Cluster of blocks within the same census tract. Census blocks do not cross county or census tract boundaries and generally contain between 250 and 550 housing units.

Class I, II and III areas. Under the Clean Air Act, clean air areas are divided into three classes. Very little pollution increase is allowed on Class I areas, some increase in Class II areas, and more in Class III areas. National parks and wilderness areas receive mandatory Class I protection. All other areas start out as Class II. States can reclassify Class II areas up or down, subject to federal requirements.

Coefficient. A numerical factor of an elementary algebraic term, a “4” in the term “4x.”

Corridor. A strip of land of various widths on both sides of a particular linear facility, such as a highway, rail line, or utility line.

Criteria pollutants. The Clean Air Act required the U.S. Environmental Protection Agency to set air quality standards for common and widespread pollutants after preparing criteria documents summarizing scientific knowledge on their health effects. Today there are standards for six criteria pollutants: sulfur dioxide, carbon monoxide, particulate matter less than 10 microns in diameter (PM_{10}), nitrogen dioxide, ozone and lead.

Day-night average sound level. A-weighted sound-pressure levels averaged over a 24-hour period with 10 dBA added for events occurring between 10 p.m. and 7 a.m.

Decibel (dB). A standard unit for measuring sound-pressure levels based on a reference sound pressure of 0.0002 dynes per square centimeter. This is the smallest sound a human can hear.

Decibel, a-weighted (dBA). Adjusted unit of sound measurement that corresponds to the relative sensitivity of the human eat at specified frequency levels. This represents the loudness as perceived by humans.

Direct impact. Effects resulting solely from the proposed action.

Direct effects. Beneficial or adverse impacts that are caused by a action and occur at the same time and place.

Drawdown. A lowering of the water table of an aquifer caused by pumping of groundwater from wells.

Endangered Species. A species of possible management concern due to their restricted distribution or the potential for habitat disturbance.

Effluent. A gas or fluid discharged into the environment.

Environmental Impact Statement. A detailed written statement that helps public officials make decisions that are based on understanding of environmental consequences and to take actions that protect, restore, and enhance the environment.

Ephermeral. Lasting only a brief period of time.

Fiscal year. A 12-month period of time to which the annual budget applies and at the end of which its financial position and the result of its operations are determined. Clark County, the city of Las Vegas, the city of North Las Vegas, Nye County, the towns of Tonopah and Pahrump, and the Clark County School District and Nye County School District fiscal years run from July 1 through the following June 30. Federal fiscal years are from October 1 through the following September 30.

Fugitive dust. Particulate matter composed of soil. Fugitive dust may include emissions from haul roads, wind erosion of exposed soil surfaces, and other activities in which soil is either removed or redistributed**.**

Fugitive emissions. Emissions released directly into the atmosphere that could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening.

g. (Gal) Unit of acceleration of gravity, 1cm/sec^2.

General aviation. All aircraft that are not commercial or military aircraft.

Geologic. Any natural process acting as a dynamic physical force on the earth; i.e. faulting, erosion, and mountain-building resulting in rock formation.

Geologic media. Refers to the characteristics of the rock or soil type at a specific site.

Groundwater. Subsurface water within the zone of saturation.

Groundwater recharge. Water that infiltrates the land surface and is not lost to evaporation or consumed by plants can percolate downward and replenish the groundwater aquifers. This deep percolation is called recharge. Much of the recharge at the NTS is from mountainous areas as much as 30 miles away.

Hazardous waste. Wastes that are designated as hazardous by the Environmental Protection Agency (EPA) or State of Nevada regulations. Hazardous waste, defined under the Resource Conservation and Recovery Act, is waste from production or operation activities that pose a potential hazard to human health or the environment when improperly treated, stored, or disposed. Hazardous wastes that appear on special EPA lists or possess at least one of the four following characteristics: (1) ignitability, (2) corrosivity, (3) reactivity, and (4) toxicity.

Human environment. The natural and physical environment and the relationship and the relationship of people with the environment.

Hydrology. A science dealing with the properties, distribution, and circulation of water on and below the earth's surface and in the atmosphere.

Infiltration. Water that falls on the land surface that does not runoff but percolates onto the ground. Some of this water evaporates, some is used by plants, and some percolates downward to the groundwater.

Infrastructure. Utilities and other physical support systems needed to operate a laboratory or test facility. Included are electric distribution systems, water supply systems, sewage disposal systems, roads, and so on.

Level of service (public services). A measure describing the amount of public services (e.g., fire protection and law enforcement services) available to community residents, generally expressed as the number of personnel providing the services per 1,000 population.

Level of service (traffic). A qualitative measure describing operational conditions within a traffic stream and how they are perceived by motorists and/or passengers.

Military training route. A route developed for the high-speed (greater than 250 knots) low-altitude training of tactical aircrews. Instruments flight rules military training routes are mutually developed by the General Aviation Administration and the U.S. Department of Defense (DoD). Visual flight rules military training routes are developed by DoD. Military training routes are published on aeronautical charts. Each military training rough has its own unique number consisting of either three or four digits. Three digits indicate that at least one segment of the route is 1,500 feet above ground level, and four digits indicate that the entire route is at or below 1,500 feet above ground level. The number is preceded by either IR or VR, specifying instrument flight rules or visual flight rules, respectively. Since routes are one way, the same route flown the opposite direction would have a separate, distinct number.

Mitigation. Actions and decisions that (1) avoid impacts altogether by not taking a certain action or parts of an action, (2) minimize impacts by impacts by limiting the degree or magnitude of an action, (3) rectify the impact by repairing, rehabilitation, or restoring the affected environment, (4) reduce or eliminate the impact over time by preservation and maintenance operation during the life of the action, or (5) compensate or an impact by replacing or providing substitute resources or environments.

National Ambient Air Quality Standards. Section 109 of the Clean Air Act requires the Environmental Protection Agency to set nationwide standards, the National Ambient Air Quality Standards, for widespread air pollutants. Currently, six pollutants are regulated: sulfur dioxide, carbon monoxide, particulate matter less then 100 microns in diameter (PM_{10}), nitrogen dioxide, ozone, and lead.

Nitrogen dioxide. Gas formed primarily from atmospheric nitrogen and oxygen when combustion takes place at high temperature. Nitrogen dioxide emissions contribute to acid deposition and formation of atmospheric ozone. See Criteria Pollutants.

Nitrogen oxides. Gases formed primarily by fuel combustion, which contribute to the formation of acid rain. Hydrocarbons and nitrogen oxides combine in the presence of sunlight to form ozone, a major constituent of smog.

Noise. Any sound that is undesirable because it interferes with speech and hearing or is intense enough to damage hearing.

Nonattainment area. An area that has been designated by the U.S. Environmental Protection Agency or the appropriate site air quality agency as exceeding one or more national or state Ambient Air Quality Standards.

Ozone (ground level). A major ingredient of smog. Ozone is produced from reactions of hydrocarbons and nitrogen oxides in the presence of sunlight.

Particulate. Fine liquid or solid particles such as dust, smoke, mist, fumes, or smog, found in air or emissions.

Peak hour (traffic). The hour of highest traffic volume on a given section of roadway.

Playa. A dry, vegetation-free, flat area at the lowest point of an undrained basin.

Porosity. The percentage of the volume of rock that is occupied by pore spaces.

Primary roads. A consolidated system of connected main roads important to regional, statewide, and interstate travel. They consist of rural arterial routes and their extensions into and through urban areas of 5,000 or more population.

Record of decision (ROD). A public document that explains which cleanup alternative would be selected for the area of concern.

Restricted area (airspace). Airspace designated under Federal Acquisition Requirements Part 73 within which the flight of aircraft, while not wholly prohibited, is subject to restriction. Restricted areas are designated when determined necessary to confine or segregate activities considered to be hazardous to nonparticipating aircraft.

Runoff. The discharge of water through surface streams.

Scope. The range of actions, alternatives, and impacts to be considered in an environmental impact statement.

Significant. The common meaning of significant is; "having or likely of have considerable influence or effect." As it pertains to the National Environmental Policy Act, "significant" requires that both context and intensity be considered in evaluating impacts (40 CFR Part 1508). Context could include surrounding circumstances such as society as a whole, the affected region, the affected interests and the locality. Intensity refers to the severity of the impact, and requires that several factors be evaluated. These factors may include the degree to which public health and safety are affected, unique characteristics of the geographic area, and others.

Species of Concern. Species of possible management concern due to their restricted distribution or the presence of habitat disturbance.

Stakeholder(s). Interested and/or affected people or groups.

Subsurface. A zone below the surface of the Earth whose geologic features are principally layers of rock that have been that have been tilted or faulted and are interpreted on the basis of drill hole records and geophysical (seismic or vibration) evidence. Generally, it is all rock and solid materials lying beneath the earth's surface.

Sulfur Dioxide. A toxic gas that is produced when fossil fuels are burned. Sulfur dioxide is the main pollutant involved in the formation of acid rain. The major source of sulfur dioxide on the United States is coal-burning electric utilities.

Tectonic. Of, pertaining to ,or designating the rock structure and external forms resulting from the deformation of the earth's crust. As applied to earthquakes, it is used to describe shocks not due to volcanic action or to collapse of caverns or landslides.

Threatened species. A species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Transmissivity. The rate at which water is passed thorough a unit width of rock under a unit hydraulic gradient.

Unsaturated Zone. The subsurface zone between the land surface and the top of the groundwater. The unsaturated zone at the NTS is thick, ranging from 525 feet to almost 3,000 feet in some areas.

Use tax. A tax incurred in those instances when articles purchased in and area where no sales tax is levied are brought back for use in an area where the sales tax is imposed.

Volume (traffic). The total number of vehicles that pass over a given point or section of roadway during a given time interval. Volumes may be expressed in terms of annual, daily, hourly, or sub-hourly periods.

Watershed. The land area that drains into a stream or river.

10.0 REFERENCES

Regulations, Orders, and Laws

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