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AUG 22 1996

File No. 1-5-96-F-33

Dr. Donald R. Elle, Director
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Dear Dr. Elle:

Subject: Final Programmatic Biological Opinion for Nevada Test Site Activities

The Fish and Wildlife Service (Service) has reviewed your biological assessment (BA) for programs at the Nevada Test Site (NTS) and Alternative 3 of the Draft Environmental Impact Statement (DEIS) for programmatic activities proposed to occur within the range of the desert tortoise (*Gopherus agassizii*) on the NTS within the next 10 years. Your November 8, 1995, request for formal consultation and a draft biological opinion was received on November 13, 1995. This document represents the Service's final biological opinion on the effects of implementation of proposed actions on the threatened desert tortoise.

On May 20, 1992, the Service issued a biological opinion (File No. 1-5-91-F-225) to the Department of Energy, Nevada Operations (DOE/NV) for activities planned on the NTS for fiscal years 1992 through 1995. The biological opinion concluded that the proposed activities were not likely to jeopardize the continued existence of the Mojave population of the desert tortoise; no

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The Service received additional information and documents from your office between November 13, and December 14, 1995, and determined that the information was sufficient to initiate consultation on December 14, 1995. On April 22, 1996, the Service requested a 30-day extension of the consultation period. The Service issued a draft biological opinion to the DOE/NV on May 20, 1996. DOE/NV provided comments on the draft during a meeting with Service staff in Las Vegas, Nevada on June 5, 1996. During the consultation process, it was mutually agreed that the draft biological opinion would be finalized upon release of the final EIS. On July 29, 1996, DOE/NV provided a revised Appendix A to the BA as requested by the Service. Subsequently, based on comments from DOE/NV staff that the draft EIS will not be

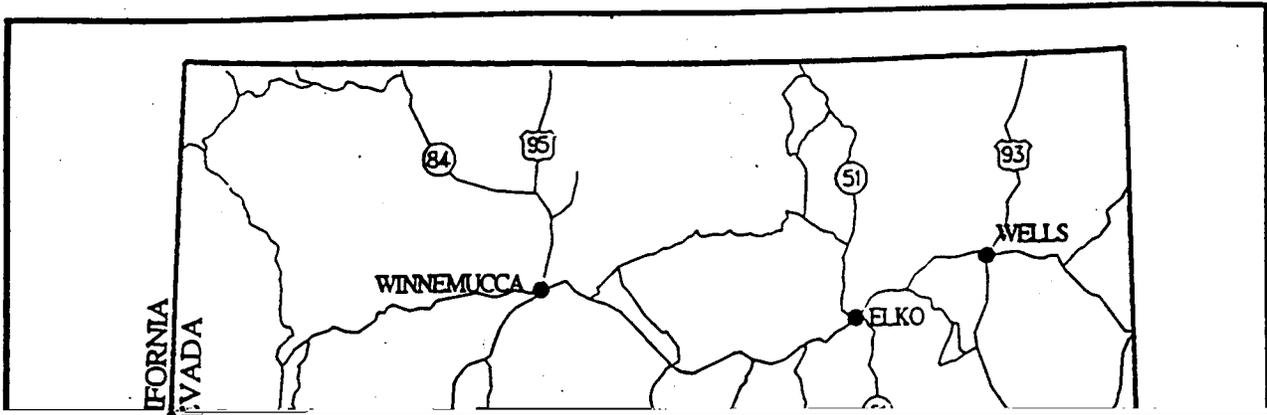
activities should a situation arise from unanticipated problems in the nuclear weapons stockpile. DOE/NV also needs to enhance its capability to perform tests and experiments to assess the condition and behavior of aging stockpiled weapons.

The NTS occupies 1,350 square miles in Nye County, approximately 65 miles northwest of Las Vegas (Figure 1) and is divided into 30 areas for administrative and management purposes (Figure 2). All land on the NTS is managed by DOE/NV, and access is strictly controlled. Between 3,000 and 4,000 people work at the NTS, with the majority residing in Mercury, Nevada.

Areas and Projects Excluded from this Biological Opinion

Three 22-acre, circular enclosures were constructed in Rock Valley during 1962-1963 in the southwestern portion of the NTS. The enclosures were used to study the effects of chronic, low-level ionizing radiation on the desert flora and fauna. At least 24 tortoises have been found in the enclosures, individually marked, and periodically measured and weighed over the decades. There are approximately 18 adult desert tortoises remaining in the enclosures, and DOE/NV intends to continue to monitor their growth and survival. Take of these tortoises will not be included in this biological opinion because: (1) The tortoises were removed from the wild by means of a long-term enclosure prior to listing of the species as threatened under the Endangered Species Act of 1973, as amended (Act), and (2) the tortoises are physically restricted to conditions which have the characteristics of captivity (i.e., no longer capable of interacting with members of their species outside the enclosure or dispersing into adjacent areas, etc.). Therefore, the Service considers these pre-Act tortoises. Progeny of these tortoises, however, are considered protected tortoises under the Act which restricts any activities involving the progeny outside normal captive husbandry practices without authorization under section 10(a)(1)(A) of the Act. Normal husbandry practices include such actions as feeding, weighing, measuring, assessing health status, and movement to provide suitable captive conditions. If the boundaries of the enclosures are removed, the desert tortoises may leave the enclosure and will be considered wild tortoises protected under the Act.

Areas 1 through 4, 7 through 10, 12, 13, 15 through 20, and 30 and portions of Areas 6, 11, 14, 25, and 29 occur outside the range of the desert tortoise, and activities proposed by DOE/NV within these areas will not be addressed in this consultation; Areas 21, 24, and 28 do not occur on NTS and likewise will not be included in this consultation. Projects proposed in the DEIS by DOE which occur on the NTS but outside the range of the desert tortoise as defined by Rautenstrauch et al. (1994) and shown in Figure 2 are not addressed in this biological opinion. Similarly, proposed programs at the Tonapah Test Range, Central Nevada Test Area, and



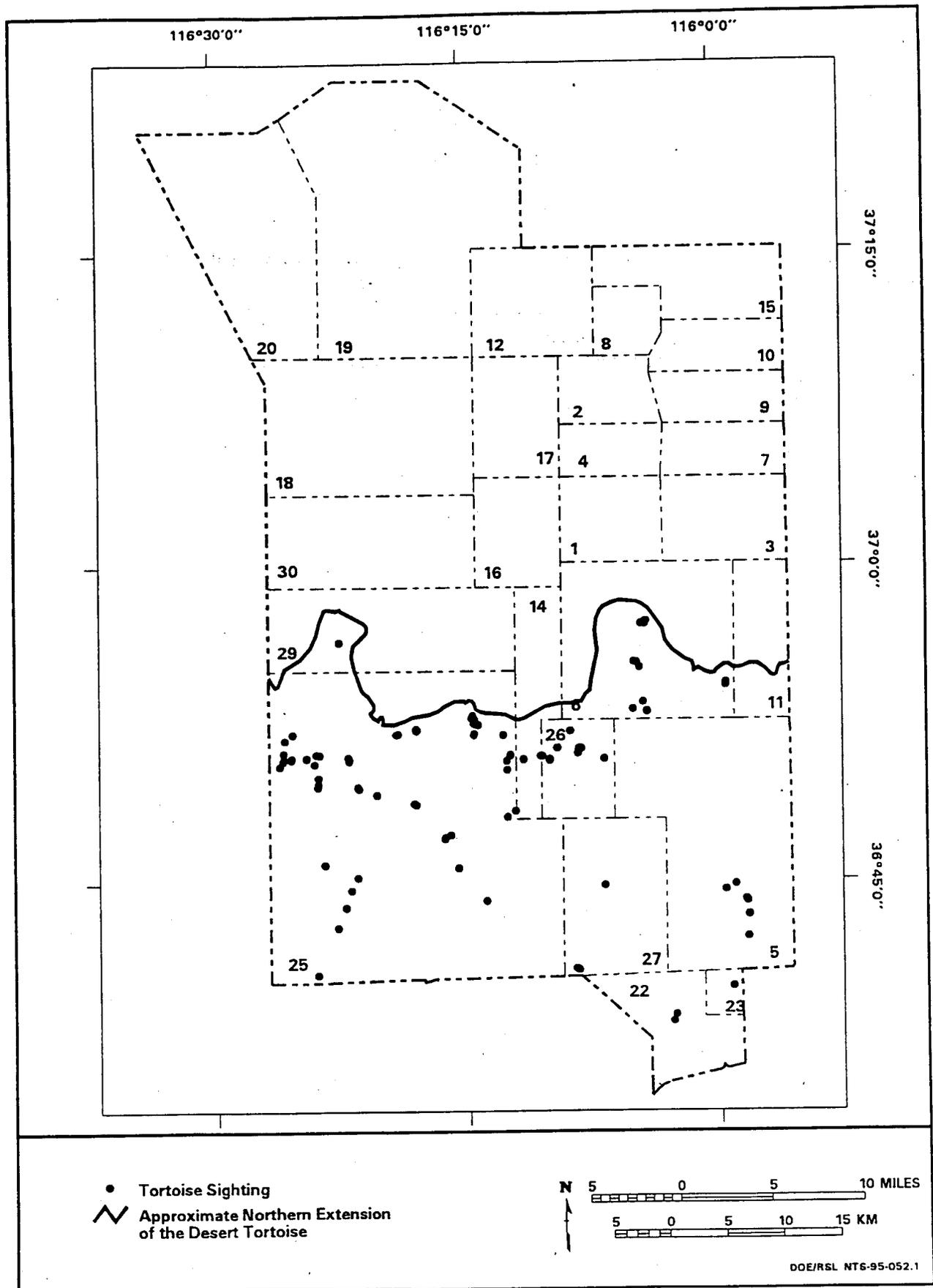


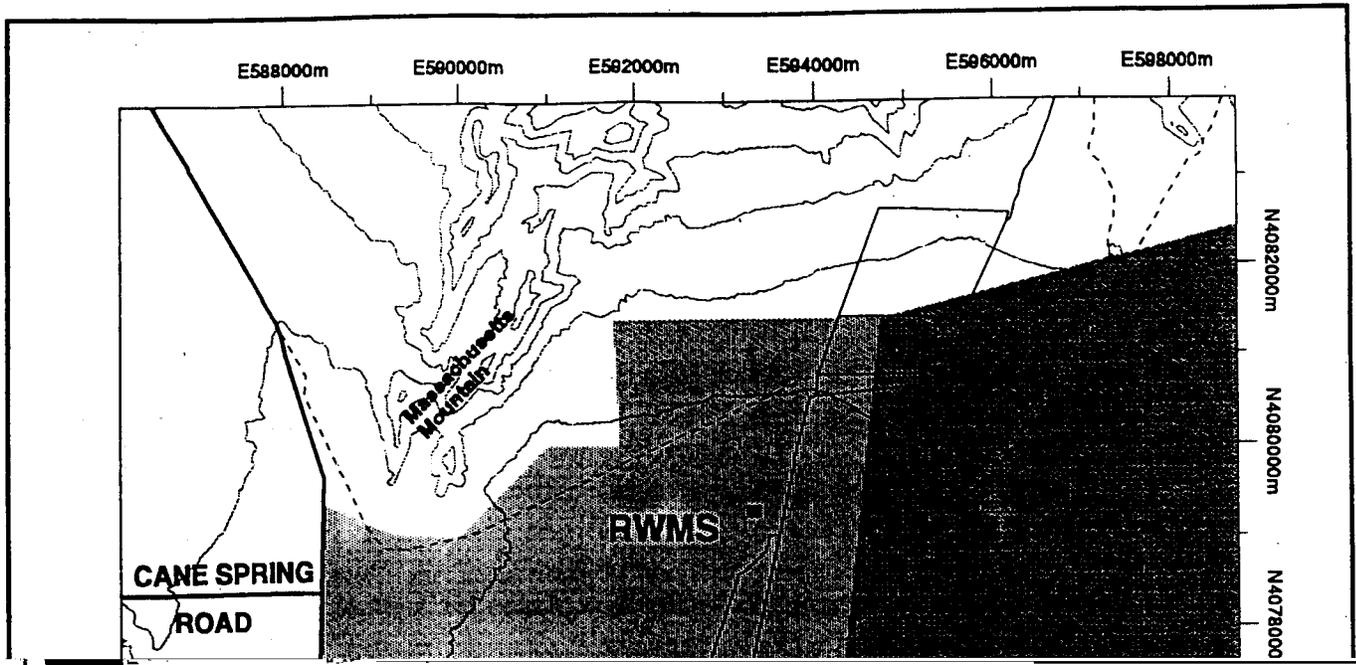
Figure 2. Administrative areas and range of the desert tortoise on the Nevada Test Site.

Project Shoal Area are not included in this biological opinion. The Next Generation Radiographic Facility and Next Generation Magnetic Flux Compression Facility are not included in this consultation. These facilities are conceptual at this time and may not be located within desert tortoise habitat. Furthermore, effects on desert tortoise as a result of DOE's Yucca Mountain Site Characterization Project and development of Solar Enterprise Projects proposed for Eldorado Valley, Dry Lake Valley, and Coyote Springs shall be covered under separate consultations and likewise will not be included in this biological opinion.

On March 1, 1996, the Service received DOE's request to exclude specified areas in Frenchman Flat (Area 5 of the NTS) from this programmatic consultation (Figure 3). DOE/NV determined that activities within this area is not likely to adversely affect the desert tortoise. This area occurs around the Spill Test Facility and Area 5 Radioactive Waste Management Site. Survey data for this area indicate: (1) Tortoises are absent and not expected to occur, and (2) the substrate is poor for plant growth with vegetation very sparse which is not likely capable of supporting tortoises. The Service concurs with DOE/NV's determination that this specified area is not suitable habitat for desert tortoise and excludes DOE/NV activities proposed for this area from this programmatic consultation.

Informal consultation under section 7 of the Act has been completed for the following projects on the NTS and are excluded from this consultation because they were found not to have adverse impacts on desert tortoise:

- Construction of Area 23 Fire Training Facility (File No. 1-5-93-I-360).
- Routine Maintenance Operations at the Radioactive Waste Management Site in Area 5 (File No. 1-5-94-F-230).
- Closure and Removal of Underground Storage Tanks at Various Locations on the NTS (File No. 1-5-94-I-248).
- Implementation of Phases I, II, and III of Project CALIOPE (File Nos. 1-5-94-I-255, 1-5-95-I-174, and 1-5-96-I-006).
- Closure of the Area 27 Explosive Ordnance Facility (File No. 1-5-94-I-259).
- Construction of the Nevada Support Facility in North Las Vegas (File No. 1-5-94-I-264).



- Operation of the Area 5 Gravel Pit (File No. 1-5-94-I-278) Clean-up Operations at the Building 650 Leachfield in Area 23 (File No. 1-5-94-I-279).
- Construction of Four Sewage Lagoons and Associated Pipelines in Area 5 (File No. 1-5-94-I-325).
- Installation of a Waterline to the Radioactive Waste Management Site (RWMS) in Area 5 (File No. 1-5-95-I-41).
- Repair and Upgrade of Road 5-07 in Area 5 (File No. 1-5-95-I-100).
- Western Area Power Substation Easement and Upgrade (File Nos. 1-5-94-I-318 and 1-5-95-I-209).
- Extension of Cane Springs Road (File No. 1-5-96-I-034).

NTS Programs

This biological opinion will focus on DOE/NV programs and their potential effect on the desert tortoise. DOE/NV conducts activities at the NTS that are organized into five major programs: Defense; Waste Management; Environmental Restoration; Nondefense Research and Development; and Work for Others. Infrastructure and support facilities at the NTS are also described. Activities within these programs are proposed to occur at the NTS over the term of this biological opinion (10 years) as described below and in greater detail in the DEIS for the NTS (DOE 1996a), BA (DOE 1995a), and implementation plan (DOE 1995b).

Defense Program

The primary mission of the Defense Program is stockpile stewardship, which includes maintenance of readiness to conduct underground nuclear tests, if directed. Defense experiments provide information to support a variety of national security programs. On August 11, 1995, President Clinton announced his decision to seek a zero-yield Comprehensive Test Ban Treaty which would ban any nuclear test explosion or any other nuclear explosion. The current primary mission of the Defense Program at the NTS is to help ensure the safety and reliability of the nation's nuclear weapons stockpile.

The stockpile stewardship program includes maintaining the readiness and capability to conduct underground nuclear weapons tests and conducting such tests if directed by the President or Congress. The President, through an end of the moratorium or through a specific clause of a test ban treaty, may direct DOE to conduct one or more nuclear-yield tests. Other aspects of stockpile stewardship include conventional high-explosive tests, dynamic experiments, destruction of damaged nuclear weapons, and hydrodynamic testing. High-explosive nuclear experiments are key activities associated with hydrodynamic and dynamic testing which investigate the early phase of nuclear weapons performance within test facilities and in underground situations. Advanced nuclear weapons simulators consist of technology used within the proposed Advanced Hydrodynamic Test Facility and High-Explosive Pulsed-Powered Facility. These simulators are used to acquire data critical to evaluating the safety and reliability of the stockpiled nuclear weapons in the absence of underground testing.

Since 1963, the United States has conducted all of its nuclear weapons tests underground in accordance with the terms of the Limited Test Ban Treaty. As part of DOE/NV's nuclear test readiness, one or more underground nuclear tests may be conducted if directed by the President. In order to ensure that complete containment of all nuclear weapons tests is achieved, nuclear test devices are emplaced at the bottom of a vertically drilled hole or horizontally mined tunnel. Emplacement of a test device is not accomplished until approved by the Containment Evaluation Panel.

The National Ignition Facility (NIF) is proposed for construction on a 45-acre undisturbed site in Area 22, southwest of Mercury. Experiments at the NIF would duplicate conditions in the center of the sun, which would promote and expedite advancements in astrophysics, plasma physics, and other basic sciences. Other activities at the facility may include large-scale precision optics, rapid crystal growth technology, advanced X-ray lithography for integrated circuit manufacturing, advanced health care technologies, new material development, and various scientific and analytical instrumentation. Five new buildings would be constructed and an underground water pipeline would likely be built to supply the facility. Design and construction of a storm drain system would depend on the specific layout of the facility and its proximity to existing roads and structures. Sanitary wastewater would be treated using a sewage lagoon system dedicated to the facility.

Stockpile management includes the hands-on, day-to-day functions and operations involved in maintaining the enduring nuclear weapons stockpile. Stockpile management is currently being conducted at the Pantex Plant in Amarillo, Texas. Because of the limited space available at the Pantex Plant for the staging of retired weapons as they await disassembly, the DOE could potentially store nuclear weapons in six earth-covered storage magazines in Area 27 of

the NTS. Pantex stockpile management operations could be transferred to the NTS. Relocation of Pantex operations to the NTS would require the construction of approximately 327,000 square feet (7.5 acres) of new facilities centered around the Device Assembly Facility in Area 6.

A Device Assembly Facility (DAF) is a multi-structure facility where numerous activities are performed. These activities include: Assembly, disassembly or modification, staging, and component testing, maintenance, repair, retrofit, and surveillance of nuclear devices. This facility is covered with a minimum of 5 feet of compacted earth with one exterior wall and occupies approximately 100,000 square feet on 29 acres. Bunkers, mechanical and electrical support areas, and administrative offices are located at the DAF. The Area 27 complex has been the primary facility for assembly of nuclear devices and an alternate assembly facility for the DAF.

Nuclear Emergency Response comprises a number of separate, but related, emergency response operations located mostly offsite. These operations are directed at providing support services for various accidents, emergencies, and radiological incidents. Key elements of the Nuclear Emergency Response component include:

- *A Nuclear Emergency Search Team* is prepared to provide technical assistance upon request.
- The *Federal Radiological Monitoring and Assessment Center* is responsible for acquiring, processing, and providing assessment of radiological data in the field.
- The *Aerial Measuring System* conducts aerial surveys, provides remote sensing, and provides emergency response capabilities involving radiation, radioactive materials, or other hazardous materials.
- An *Accident Response Group* focuses on accidents involving nuclear weapons of the United States.
- The *Radiological Assistance Program* provides assistance and cleanup for accidents involving radioactive material that may pose a threat to public health and safety.
- The *Internal Emergency Management Program* provides response to onsite emergencies such as fire, bombs or bomb threats, earthquakes, aircraft accidents, and power outages.

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The tritium supply and recycling component maintains stockpiled nuclear weapons by providing a supply of tritium. DOE currently recycles tritium at the Savannah River Plant in South Carolina and will likely continue to do so. However, the NTS may be considered as a candidate for similar types of facilities in the future. An Accelerator Tritium Production Facility may be included in this component which may consist of a linear accelerator, beam transport and switchyard, target chamber facility, secondary cooling system, electric substation, auxiliary power system, operations facility, maintenance facility, waste treatment facility, and administration facility. A Tritium Recovery and Recycling Facility may be housed in two major process buildings and several support facilities for processing and recycling tritium.

Waste Management Program

... operations began at the NTS in 1961 with the establishment of the

mobile-home-type trailer for offices and monitoring equipment, control features, access, fencing, and storm water protection. The facility may be expanded to handle up to 4 million gallons of waste per year. A hydrocarbon landfill is located near the southern edge of Area 6. The landfill is used for the sole purpose of discarding hydrocarbon-burdened soil, septic sludge, and debris. The minimum remaining capacity of the disposal site is approximately 1,483,216 million cubic feet. Approximately 540,000 cubic feet of soil, sludge, and debris have been disposed of in the landfill.

A sanitary landfill will be constructed in Area 5 to serve the needs of the expanded Defense and Environmental Restoration Program activities. This landfill will receive construction and sanitary waste, and will have an approximate capacity of 15 million cubic feet. The landfill is proposed to be located within an existing borrow pit and occupy approximately 15 acres of previously disturbed habitat.

Environmental Restoration Program

All industrial waste to be remediated occurs within disturbed areas and no desert tortoise habitat will be disturbed. Examples include, but are not limited to, above-ground and underground storage tanks, sewage lagoons, leachfields, and sanitary landfills. All remediation activities will be restricted to disturbed areas that have been denuded of vegetation, graded, compacted, or paved. Non-eroding surfaces in developed industrial settings will be accomplished by grading, gravel armoring, or paving. Industrial sites may be remediated by conducting a clean closure or by being closed in place. The types of wastes that may be present at industrial sites are low-level radioactive wastes, transuranic wastes, hazardous wastes, and mixed wastes.

At clean closure sites, contaminants will be collected and shipped to permitted treatment, storage, or disposal facilities. Digging, ground planing, drilling, and other similar activities will be used to recover most of the contaminants and leave residuals at acceptable, pre-determined levels. Removal of underground tanks and contaminated soils may create open excavations for a period of time until all wastes are covered. Mixed and transuranic wastes will be removed to the RWMS in Area 5. Bulk low-level radioactive waste will be disposed of at the RWMS in Area 3. Neither RWMS involves desert tortoise habitat. Hazardous wastes, batteries, and lead items will be shipped to approved disposal and recycling facilities off the NTS.

In some cases, it is not feasible or safe to remove contaminants from a site. In other cases, it is more efficient to immobilize the contaminants in place (closure-in-place). Drilling, excavating, grading, and other similar activities may occur during a closure-in-place. All waste landfills will probably utilize closures-in-place. Contaminants will be contained or immobilized at the site, and monitoring equipment may be installed to monitor the containment. Slurry wells, which are

constructed wells drilled near the site for injecting materials that inhibit the movement of contaminants, and/or impermeable liners may be used to restrict the movement of wastes. Sites may be capped or plugged in place, with materials such as gravel or concrete. Soil-moisture monitoring tubes may be inserted around the area to detect the potential movement of waterborne contaminants over time. Sites may also be vitrified (made "glass-like," especially through heat fusion) to immobilize contaminants.

The goal of the Environmental Restoration Program is to identify contaminated areas and clean up those areas, as appropriate to ensure that risks to the environment and human health and safety are either eliminated or reduced to protective levels. Protective levels are determined through site conditions, risk assessments, and consultation with State and Federal agencies. Habitat restoration activities include chemical, fabric, or rock armoring; seeding; transplanting native vegetation; contouring; uncompacting soils; treating or spreading topsoil; and planting. Prior to the early 1980s, the major focus of environmental restoration was the decontamination of testing areas for future use and the identification of contaminated areas that required restricted access. Beginning in the 1980s, environmental restoration at NTS increased substantially to comply with national environmental statutes. Activities include: Characterization, remediation, removal of underground storage tanks and PCBs, and closure of hazardous waste disposal trenches.

Specific environmental restoration projects proposed by the DOE to occur within the range of the desert tortoise on the NTS under the Environmental Restoration Program are:

- (1) Underground Test Area Corrective Action Unit;
- (2) Soils Media Corrective Action Unit;

The UTACAU project is anticipated to continue on a long-term basis and generate approximately 48,000 cubic feet of low-level waste. This waste would be disposed of on the NTS at one of the RWMSs.

2. Soils Media Corrective Action Unit (SMCAU)

The SMCAU project provides for cleanup of approximately 3,257 acres of plutonium-contaminated soils on the NTS and offsite locations. These contaminated areas occur in the northern half of the NTS with the exception of two sites in northeastern Area 5. These sites in Area 5 are contaminated as a result of the GMX and Smallboy events which occurred within the portion of Frenchman Flat which was excluded from consultation (DOE 1996b). The SMCAU is not expected to result in disturbance of desert tortoise habitat or impact tortoises on the NTS.

3. Industrial Sites Corrective Action Unit

In October of 1992, DOE/NV implemented a project to inventory existing and potential environmental restoration sites on the NTS. Environmental restoration sites include such waste types as inactive and abandoned drums, batteries, lead materials, tanks, sumps, sewage lagoons, leachfields, muck piles, waste dumps, spills, mud pits, landfills, injection wells, disposal trenches, hazardous waste accumulation sites, and ponds. In conjunction with environmental restoration sites inventory field efforts, the DOE/NV also conducts debris removal activities at selected sites. Debris materials include sanitary, construction, and recyclable waste, such as cabling, lumber, and steel pipes.

Restoration of contaminated waste sites includes: Characterization, remediation, and closure of radiation-contaminated sites, landfills, sewage lagoons decontamination pads and areas, waste dumps and trenches, spill sites, chemical storage areas, disposal craters, burn pits, explosion pits, wastewater pits and ponds, conditional release storage yards, material dumps, and unknown materials. Steam cleaning effluent ponds and the Decontamination Pond Facility were used for disposal of untreated liquid effluent. These ponds are scheduled for closure which will involve removal of waste-impacted soil.

4. Decontamination and Decommissioning

This component provides surveillance, maintenance, assessment and characterization, ~~environmental review, engineering design, decontamination and decommissioning operations~~

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eight facilities for demolition to ground level after verification that radioactivity levels are below the action level. Contaminated soils will be remediated under Environmental Restoration Program activities.

Nondefense Research and Development Program

The Nondefense Research and Development Program includes original research efforts by the DOE, universities, industry and other Federal agencies. Research on the safety aspects of handling, shipping, and storing hazardous fluids and liquefied gaseous fuels are conducted at the Spill Test Facility. The Solar Enterprise Zone concept was established to determine methods to create a sustaining solar manufacturing infrastructure through construction of utility-scale solar power facilities. The Spill Test Facility and Solar Enterprise Zone projects are included in

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up DOE sites. Research includes habitat reclamation, hydrogeologic systems, radionuclide transport, ecological change, waste management, monitoring processes, remediation, and characterization.

4. Conventional Weapons Demilitarizing

This component involves disposal of millions of pounds of obsolete conventional munitions in NTS tunnels under static-burning methods that scrub gaseous combustion products prior to atmospheric release. Residues would be disposed of or recycled. Existing tunnels (X or Y in Area 25) and facilities at the NTS would be used and modified to meet the objectives of this component.

5. Defense-Related Research and Development

Activities in the past have included tests and training exercises employing weaponry and a variety of electronic, imagery, and sensory technologies including infrared, lasers, and radar. It is expected that additional experiments and tests similar to those just mentioned will occur at the NTS in the future.

Infrastructure and Support Facilities at the NTS

Existing infrastructure and support facilities present at the NTS include utilities and communications, transportation, and construction, operation, and maintenance of support facilities.

Utilities and Communication

Electrical power at the NTS is transmitted through a 100-mile-long 138-kV transmission loop that supplies eight major substations and one 138-kV radial transmission line. Basic load centers for the NTS are at Mercury, Areas 2, 3, 6, 12, and 25. Six existing water wells occur within the range of the desert tortoise on the NTS and two occur just outside the northern limit of the tortoise in Area 11. Water is delivered to a large storage reservoir near Mercury by an 8-inch-diameter waterline. Water is hauled into Areas 26 and 27 by truck. Four reservoirs in Area 26 store construction water and potable water. One reservoir in Area 27 stores fire protection and potable water.

Construction of buried or overhead power lines, water lines, telephone lines, sewer lines, fiber-optic cables, and other utilities may be required. Utility installation will require travel on existing roads or construction of new roads, digging trenches, and digging holes for poles. Maintenance is conducted as needed and will be restricted to existing roads or previously disturbed areas.

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Transportation

New paved and unpaved roads will be constructed as needed by grading, hauling in fill material and gravel, construction of shoulders, application of asphalt, and installation of culverts. The source of fill material is the existing Area 5 gravel pit. Shoulders of paved roads are maintained or repaired by grading and reshaping. Ditches are maintained when required due to storm damage. On occasion, old deteriorated asphalt is ripped up and replaced with new asphalt. Unpaved roads are repaired by grading and watering. Primary paved roads in the southern part of

endangered, or candidate species. Whenever possible, DOE/NV will modify the design or location of a project when it will impact the survival of a listed, proposed or candidate species or may result in the incidental take of desert tortoises.

2. DOE/NV may voluntarily choose to search for and relocate tortoises from lands to be disturbed within very low-density desert tortoise habitat (10 per square mile or less) as identified in Figure 1 of Appendix A of the BA. However, if search and removal activities are chosen by DOE/NV, only individuals trained to handle desert tortoises in accordance with Service-approved guidelines shall be authorized to handle desert tortoises. Currently, the Service-approved handling guidelines are described in *Guidelines for Handling Desert Tortoises during Construction Projects* (Desert Tortoise Council 1994, revised 1996). In areas where desert tortoise densities are unknown or 10 per square mile or greater, surveys will be conducted in accordance with Measures 3 and 4 below. Future surveys may identify other areas on the NTS as very low-density tortoise habitat. DOE/NV may submit these survey results and maps to the Service and request that survey and relocation actions be voluntary for these additional areas as well.
3. Tortoise surveys will be conducted only at sites that have not been cleared of vegetation. The surveys will be conducted not more than one working day prior to any surface-disturbing activities. Qualified biologists shall thoroughly search the project area for tortoises using techniques providing 100-percent coverage of all areas. Project areas will be surveyed once, or twice if a tortoise is found during the first survey. All tortoise burrows, and other animal burrows that may be used by tortoises, that are found during clearance surveys will be conspicuously flagged. During surface-disturbing activities, all

consultation and the terms and conditions of this biological opinion. DOE/NV may submit the survey data forms to the Service for their concurrence that the activity will not affect tortoises. If, however, tortoise sign is found within the project area, or along the zone-of-influence transects, the mitigation actions described below will be implemented.

5. Project activities that may endanger a tortoise will cease if a tortoise is found on a project site. An on-call biologist will be contacted by radio or telephone and will respond to the sighting within 1 hour of notification. Project activities will resume after the on-call biologist removes the tortoise from danger or after the tortoise has moved to a safe area.
6. Vehicles will not be driven off existing roads in non-emergency situations unless authorized by DOE/NV. Off-road travel on the Desert National Wildlife Range (DNWR) is prohibited unless approved by the Refuge Manager. In the event non-emergency off-road travel is required, the planned route will be surveyed by qualified biologists immediately prior to its use. All burrows will be conspicuously flagged and avoided by a minimum of 30 feet.
7. All vehicles will be driven at speeds within the posted speed limits on existing roads, and will not exceed 15 miles per hour within project boundaries. Any tortoise observed in a road may be moved off the road in the direction it was going in.

10. The Environmental Restoration Division of DOE/NV has prepared a standard operating procedure for site reclamation which describes the methods of stabilizing and revegetating sites. The goal is to establish stable non-eroding surfaces. In developed industrial settings, this may be accomplished by grading, gravel armoring, or paving. Where decontamination and decommissioning actions result in clean buildings available for new uses, no additional site stabilization will be required. Closed waste sites where the wastes have not been removed will not be revegetated if that will interfere with containment or monitoring of the contaminants. Those sites which are surrounded largely by undisturbed land will be reclaimed to some degree based on the site's future uses and site characteristics. Reclamation may range from chemical, fabric, or rock armoring to seeding and/or transplanting native vegetation. Where revegetation potential is high, that will be the preferred option.
11. Prior to revegetation, a field survey will be conducted at each site and site-specific reclamation plans will be developed. These plans may include specifications for contouring, relieving soil compaction, treating and/or spreading topsoil, and planting. The type of actions recommended will depend on the severity of land disturbance and the site's size, location, and proposed future use. When possible, native perennial vegetation and annual plants, including forage species of desert tortoises on the NTS will be used.

12. As an alternative to rehabilitation and revegetation of disturbed desert tortoise habitat

forage over larger areas, increasing the likelihood of encounters with sources of injury or mortality including humans and other predators. Desert tortoises possess a combination of life history and reproductive characteristics which affect the ability of populations to survive external threats. Tortoises may require 20 years to reach sexual maturity (Turner, Medica, and Bury 1987). Further information on the range, biology, and ecology of desert tortoise can be found in Berry and Burge (1984); Burge (1978); Burge and Bradley (1976); Bury, Esque, DeFalco, and Medica (1994); Hovik and Hardenbrook (1989); Karl (1981, 1983a, 1983b); and Weinstein et al. (1987).

The range of the Mojave population of the desert tortoise includes a portion of the Mojave Desert and the Colorado Desert subdivision of the Sonoran Desert and spans portions of four States. The Mojave Desert is located in southern California, southern Nevada, northwestern Arizona, and southwestern Utah. It is bordered on the north by the Great Basin Desert, on the west by the Sierra Nevada and Tehachapi Ranges, on the south by the San Gabriel and San Bernardino Mountains and the Colorado Desert, and on the east by the Grand Wash Cliffs and Hualapai Mountains of Arizona. In Nevada, the native range of this species is generally restricted to Clark County and those portions of Nye and Lincoln Counties south of 37 degrees North latitude and below approximately 1,330 meters elevation (4,000 feet). The range of the desert tortoise on the NTS is delineated in Figure 2.

The desert tortoise is most commonly found within the desert scrub vegetation type, primarily in creosote bush scrub vegetation, but also in succulent scrub, cheesebush scrub, blackbush scrub, hopsage scrub, shadscale scrub, microphyll woodland, and Mojave saltbush-allscale scrub (Service 1994). Within these vegetation types, desert tortoises potentially can survive and reproduce where their basic habitat requirements are met. These requirements include a sufficient amount and quality of forage species; shelter sites for protection from predators and environmental extremes; suitable substrates for burrowing, nesting, and overwintering; various plants for shelter; and adequate area for movement, dispersal, and gene flow. Throughout most of the Mojave Region, tortoises occur most commonly on gently sloping terrain with soils ranging from sand to sandy-gravel and with scattered shrubs, and where there is abundant inter-shrub space for growth of herbaceous plants. Throughout their range, however, tortoises can be found in steeper, rockier areas. Soil type appears to be a major factor related to desert tortoise density with optimal soils consisting of sandy loams to light gravel-clays to heavy gravels (Clement Associates 1990). In Nevada, tortoises are considered to be active from March 1 through October 31.

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Critical Habitat and Recovery Areas

On April 2, 1990, the Service determined the Mojave population of the desert tortoise to be threatened (55 FR 12178). The Mojave population includes those animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, southwestern Utah, and in the Colorado Desert in California (a division of the Sonoran Desert). Reasons for the determination included loss of habitat from construction projects such as roads, housing and energy developments, and conversion of native habitat to agriculture. Grazing and off-road vehicles (OHV) have degraded additional habitat. Also cited as threatening the desert tortoise's continuing existence were illegal collection, upper respiratory tract disease (URTD), and predation on juvenile desert tortoises by common ravens (*Corvus corax*).

Environmental Baseline

Although large parts of the NTS have been affected by human activities, the majority of the site remains relatively undisturbed. Most disturbances are concentrated in the bottom of Yucca, Frenchman, and Jackass Flats and on parts of the Pahute and Rainer Mesas. Surface disturbance on the NTS is shown in Figure 4. Since the 1980s, hazardous waste generated on the NTS has been shipped offsite to commercial facilities. Receipt of transuranic waste for disposal at the NTS ceased in 1988; receipt of waste for disposal from offsite generators ceased in 1990. Transuranic waste is radioactive waste containing alpha-emitting radionuclides having an atomic number greater than 92, and half-lives greater than 20 years, in concentrations greater than 100 nanocuries per gram.

In October 1992, DOE/NV implemented the Nevada Environmental Restoration Project to conduct an inventory of the existing and potential environmental restoration sites on the NTS. Over 3,300 environmental restoration sites have been identified which will require some level of

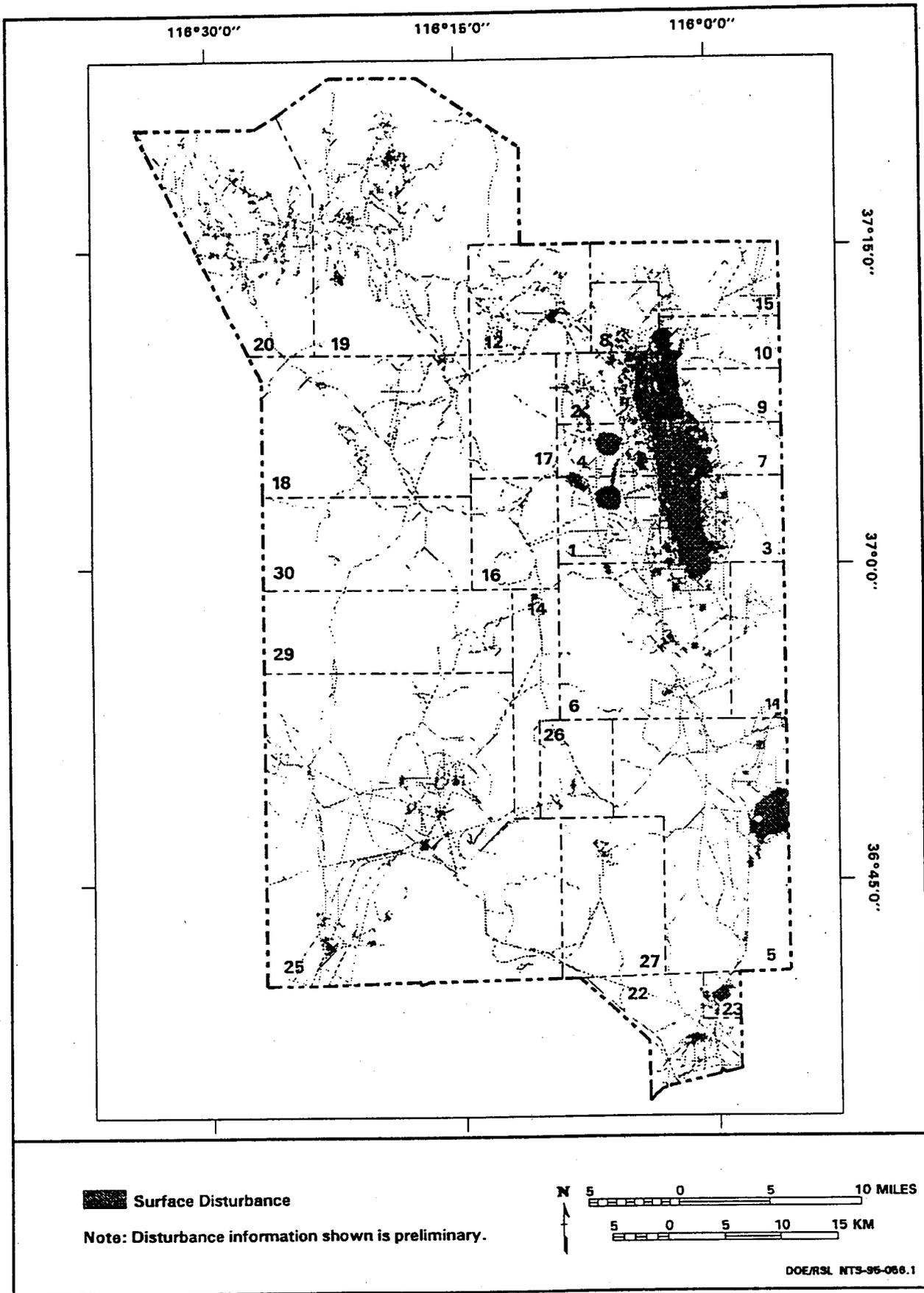


Figure 4. Surface disturbance on the Nevada Test Site.

Twenty-six experimental tests of reactors, nuclear engines, ramjets, and nuclear furnaces were conducted on the NTS between 1959 and 1973. Shallow burial of nuclear and non-nuclear wastes in cells, pits, and trenches continues to be an important waste disposal activity. Contaminated soils and equipment collected during the decontamination of atmospheric testing areas and consolidation of radioactivity contaminated structures, and other bulk wastes, were disposed in subsidence craters in Yucca Flat. In 1981, greater confinement disposal of waste was initiated at Area 5 for certain radioactive low-level wastes not suitable for shallow land disposal.

The NTS has a large infrastructure that provides site support services, which include food and housing, paint shops, vehicle maintenance facilities, machine shops, and road maintenance. There are approximately 400 miles of paved roads and 190 miles of unpaved roads on the NTS. Within the range of the desert tortoise, there are approximately 135 miles of paved roads, 100 miles of maintained unpaved roads, and 145 miles of unpaved roads used for utility maintenance. Non-emergency OHV travel is prohibited without written approval of DOE/NV. There are two sanitary landfills which occur within the range of the desert tortoise on the NTS; one is located in Area 23 near Mercury, and the other in Area 6 near the Control Point. The Area 23 landfill is surrounded by a temporary polyethylene fence. The fence is maintained at zero ground clearance, inspected on a quarterly basis, and repaired as needed. The Area 6 landfill is unfenced. Debris in these landfills is covered every 24 hours, Monday through Thursday; operations cease Friday through Sunday. New sanitary landfills may be required in the future.

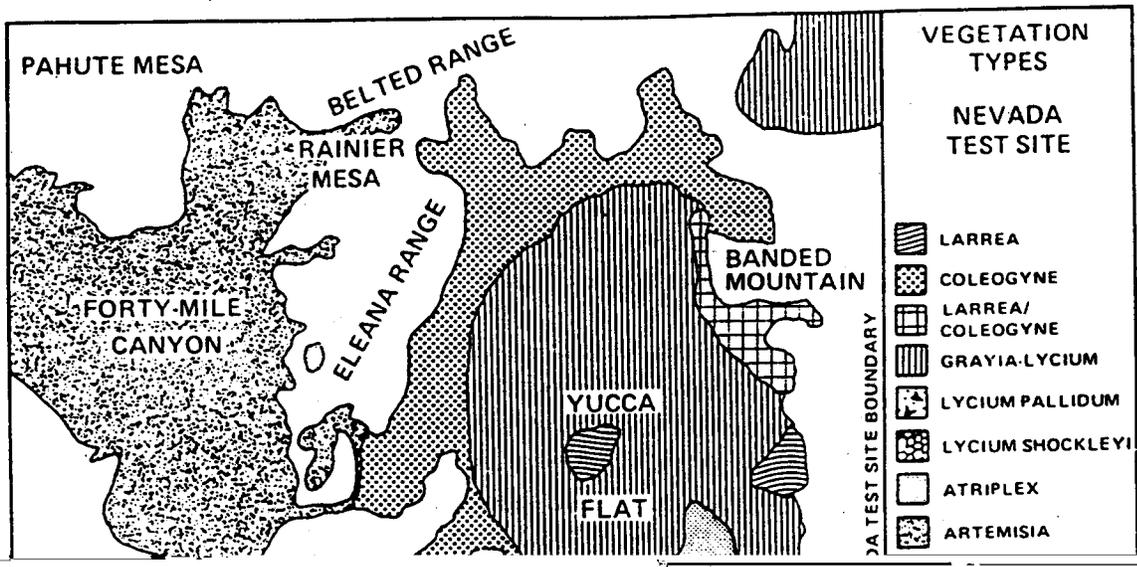
In addition to activities described in the Description of the Proposed Action, additional existing

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Coleogyne ramosissima is the dominant shrub. Exotic plants have encroached onto the NTS which may have been accelerated by DOE/NV's land disturbing activities (DOE 1996a). Vegetation associations for the NTS are identified in Figure 5.

Soils on the NTS may be characterized by coarse texture, low organic matter content, a low



VEGETATION TYPES

NEVADA TEST SITE

-  LARREA
-  COLEOGYNE
-  LARREA/COLEOGYNE
-  GRAYIA-LYCIUM
-  LYCIUM PALLIDUM
-  LYCIUM SHOCKLEYI
-  ATRIPLEX
-  ARTEMISIA

DA TEST SITE BOUNDARY

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Major Activities Authorized Under Sections 7 and 10(a) of the Act in Nevada within the Northeastern Mojave RU

On April 27, 1990, the Service issued a 2-year section 10(a)(1)(A) permit (PRT-747182) to The Nature Conservancy, Nevada Division of Wildlife (NDOW), and the Bureau, which authorized collection of 871 desert tortoises for scientific research from 12 specified properties proposed for development. On October 17, 1991, the Service issued an amendment to the permit authorizing collection of an additional 156 tortoises from the original properties in addition to other lands in the Las Vegas Valley; extending the term of the permit to December 31, 1993; and including various additional research activities involving desert tortoise. As of December 31, 1993, a total of 961 desert tortoises had been collected from specified properties within the valley, since issuance of the permit. Of these, 31 were collected and released in association with construction of the Desert Tortoise Conservation Center, and 33 were obtained through incidental take provisions of section 7 of the Act (NDOW 1994). There was an average density of 80 desert tortoises per square mile on 7,075 acres of the specified properties (Hardenbrook and Tomlinson 1991).

On May 23, 1991, the Service issued a biological opinion on the issuance of incidental take permit PRT-756260 (File No. 1-5-91-FW-40). The Service concluded that incidental take of 3,710 desert tortoises on up to 22,352 acres of habitat within the Las Vegas Valley and Boulder City in Clark County, Nevada, was not likely to jeopardize the continued existence of

On March 5, 1993, the Service issued a biological opinion to the Bureau for the Apex Project, transferring approximately 21,000 acres of Bureau land to private ownership. Approximately 2,000 acres of the Apex land have been authorized for use by Kerr-McGee for a chemical processing plant; 187 acres for the Georgia Pacific Co-Generation Plant; 2,185 acres for Silver State Disposal's regional landfill (File No. 1-5-93-F-173); of which 1,465 is desert tortoise habitat, and 230 acres for two waste facilities and utility routes.

On July 29, 1994, the Service issued a non-jeopardy intra-Service biological opinion on the issuance of an amendment to incidental take permit PRT-756260 (File No. 1-5-94-FW-237) to extend the expiration date of the existing permit by 1 year (to July 31, 1995) and include an additional disturbance of 8,000 acres of desert tortoise habitat within the existing permit area. The amendment did not authorize an increase in the number of desert tortoises allowed to be taken under the existing permit. Additional measures to minimize and mitigate the effects of the amendment were also identified. Approximately 1,300 desert tortoises were taken under the authority of PRT-756260, as amended. In addition, during the short-term HCP, as amended, approximately 541,000 acres of desert tortoise habitat have been conserved in Piute and Eldorado Valleys within Clark County and lands administered by the Bureau and National Park Service.

On July 11, 1995, the Service issued an incidental take permit (PRT-801045) to Clark County, Nevada, including cities within the county and the Nevada Department of Transportation (NDOT), under the authority of section 10(a)(1)(B) of the Act. The permit area (Clark County) mostly occurs within the Northeastern Mojave RU, but also includes a portion of the Eastern Mojave RU. The permit became effective August 1, 1995, and allows the "incidental take" of

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those effects which will occur through development within the permit area and aid in meeting recovery goals necessary to delist tortoise populations in recovery areas recommended in Clark County.

On April 11, 1996, the Service issued a programmatic biological opinion (File No. 1-5-96-F-23R) to the Bureau's Las Vegas District for implementation of their MFP and Stateline Resource Management Plan within the Las Vegas Valley. Consultation was reinitiated on the 1991 biological opinion to increase the programmatic area from 42,240 acres to 125,000 acres of Bureau lands to meet the needs of development in the Las Vegas Valley and to implement Bureau land use plans. As a result of urban expansion, most Bureau lands within the Las Vegas Valley are highly fragmented and impacted by human activities, particularly a 4,000-acre "exclusionary" zone. The Bureau delineated an exclusionary zone within the programmatic boundary which does not contain suitable desert tortoise habitat. Except for lands within the exclusionary zone, the

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predation in undisturbed, healthy ecosystems is generally not an issue of concern. However, predation rates may be altered when natural habitats are disturbed or modified. Construction of artificial raven perch and nest sites (e.g., power transmission lines) may increase raven predation of desert tortoises. Roads may provide linear open areas that make tortoises more visible to avian predators. Common raven populations in the California deserts have increased ten-fold from 1968 to 1992 in response to expanding human use of the desert (Boarman and Berry 1995). Because ravens make frequent use of food, water, and nest site subsidies provided by humans, their population increases can be tied to this increase in food and water sources such as landfills and septic ponds (Boarman 1992; Service 1994). Ravens may be attracted to landfills or project sites within the programmatic area if trash is accessible by scavengers (Berry 1985; Bureau 1990). Considering that ravens were very scarce in this area prior to 1940, it is assumed that the current level of raven predation on juvenile desert tortoises is an unnatural occurrence (Bureau 1990).
Implementation of a litter-control program and the practice of staving on established roads as

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Additional harassment may occur from increased levels of human activity, noise, and ground vibrations produced by vehicles and heavy equipment (Bondello 1976; Bondello et al. 1979) and capture of tortoises by residents or project proponent workers for use as pets. Ground vibrations can cause desert tortoises to emerge from their burrows; slapping the ground several times within a few feet of a desert tortoise burrow entrance will often cause a desert tortoise to emerge (Phil Medica, National Biological Service, pers. comm.). Tortoises may be incidently taken during project activities which may, under circumstances described in the *Description of the Proposed Action*, be captured and relocated from project areas. Tortoises may be killed or injured from falling into open trenches or other excavations. Tortoises may drown in unfenced

Mitigation proposed by

- (3) The desert tortoise is a wide-ranging species occurring over a large area. The degree of threats to the species vary in different parts of the Mojave Desert, requiring implementation of management actions tailored to the needs of specific areas (Service 1994). The loss of habitat associated with the proposed action translates to approximately 1 percent of the total habitat on the NTS. With proper management and conservation, important desert tortoise populations both inside and outside designated recovery areas, will remain viable; and
- (4) The NTS occurs within the Northeastern RU in Nye County, Nevada. Activities on the NTS should not result in a substantial loss of the tortoises within this RU. The potential effects on desert tortoises as a result of implementation of the proposed programs by DOE/NV as described in the *Description of the Proposed Action* represent a small impact to the Mojave population of the desert tortoise when total desert tortoise population numbers and geographical extent are considered.

Cumulative Effects

Cumulative effects are those effects of future non-Federal (State, local government, or private) activities that are reasonably certain to occur in the programmatic area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

The NTS occurs on public land in Nye County. Any actions on these lands will be subject to consultation under section 7 of the Act.

Conclusion

After reviewing the current status of the desert tortoise, the environmental baseline for the NTS (programmatic area), the effects of the proposed action and the cumulative effects, it is the Service's biological opinion that DOE/NV's implementation of programs as described in the RA

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Incidental Take

Sections 4(d) and 9 of the Act, as amended, prohibit take (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering (50 CFR § 17.3). "Harass" is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering (50 CFR § 17.3). It includes actions prohibited by Sections 7(a)(1) and 7(a)(2) of the

1. Three (3) desert tortoises may be accidentally injured or killed per year as a result of DOE/NV project-related activities on the NTS.
2. Ten (10) desert tortoises may be taken per year through capture and displacement from project sites on the NTS. In addition, all tortoises found in imminent danger on NTS roads may be captured and moved to safety.
3. An unknown number of desert tortoises may be taken in the form of injury or mortality on paved roads on the NTS by vehicles other than those in use during a project.
4. An unknown number of desert tortoises may be taken in the form of indirect mortality or injury through predation by ravens drawn to project sites.
5. An unknown number of desert tortoise eggs may be destroyed during construction activities.
6. An unknown number of desert tortoises may be taken indirectly in the form of harm or harassment through increased noise associated with operation of heavy equipment.
7. A total of 3,015 acres of desert tortoise habitat may be disturbed during project construction.

Effect of Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

Reasonable and Prudent Measures

The Service believes that the following reasonable and prudent measures are necessary and appropriate to minimize take:

1. Measures shall be taken to minimize take of desert tortoises due to project-related activities and operation of heavy equipment.
2. Measures shall be taken to minimize entrapment of desert tortoises in open trenches or water impoundments.

3. Measures shall be taken to minimize predation on tortoises by ravens drawn to project areas.
4. Measures shall be taken to minimize destruction of desert tortoise habitat, such as soil compaction, erosion, or crushed vegetation, due to project-related activities.
5. Measures shall be taken to ensure compliance with the reasonable and prudent measures, terms and conditions, reporting requirements, and reinitiation requirements contained in this biological opinion.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the DOE/NV must comply with the following terms and conditions, which implement the reasonable and prudent measures described above.

1. To implement Reasonable and Prudent Measure Number 1, DOE/NV shall fully implement the following mitigation measures:
 - a. All proposed land-disturbing activities on NTS will be reviewed to ensure compliance with the Act and DOE environmental policies. As part of this review, preactivity surveys will be conducted at proposed project sites to determine the presence of threatened, endangered, or candidate species. Whenever possible, DOE/NV will modify the design or location of a project when it will impact the survival of a listed, proposed or candidate species or may result in the incidental take of desert tortoises.
 - b. DOE/NV may voluntarily choose to search for and relocate tortoises from lands to be disturbed within very low-density desert tortoise habitat (10 per square mile or less) as identified in Figure 1 of Appendix A of this biological opinion. If search and removal activities are chosen by DOE/NV only individuals trained to handle desert tortoises in accordance with Service-approved guidelines shall be authorized to handle desert tortoises. Currently, the Service-approved handling guidelines are described in *Guidelines for Handling Desert Tortoises during Construction Projects* (Desert Tortoise Council 1994, revised 1996).

- c. In areas where desert tortoise densities are unknown or 10 per square mile or greater, surveys will be conducted in accordance with Terms and Conditions 1.d. and 1.f. below. Future surveys may identify other areas on the NTS as very low-density tortoise habitat. DOE/NV may submit these survey results and maps to the Service and request that survey and relocation actions be voluntary for these additional areas as well.
- d. Tortoise surveys will be conducted only at sites that have not been cleared of vegetation. The surveys will be conducted not more than 1 working day prior to any surface-disturbing activities. Qualified biologists shall thoroughly search the project area for tortoises using techniques providing 100-percent coverage of all areas. Based on low-density tortoise habitat and documented tortoise surveys on the NTS with negative results, project areas will be surveyed once, or twice if a tortoise is found during the first survey. All tortoise burrows, and other animal burrows that may be used by tortoises, that are found during clearance surveys will be conspicuously flagged and avoided by construction activities.
- e. During surface-disturbing activities, all burrows will be avoided by at least 30 feet. If a burrow cannot be avoided, it will be inspected to determine the presence of tortoise or tortoise nests using a fiber-optic scope if necessary. If unoccupied, the burrow will be collapsed to prevent tortoise entry. All unavoidable burrows containing tortoise eggs or tortoises will be excavated by hand to remove the tortoise and/or eggs. Tortoise eggs and tortoises in harm's way will be removed and relocated by qualified biologists and handled according to desert tortoise handling procedures approved by the Service (Desert Tortoise Council 1994, revised 1996).
- f. If removed from a burrow, the tortoise will be placed in the shade of a shrub or in an existing, similar, unoccupied tortoise burrow that is approximately the same size, depth, and orientation as the original burrow. Desert tortoises moved in the winter (i.e., November 1 through February 28/ 29), or those in hibernation regardless of date, must be placed into an adequate burrow. In either case, if an adequate burrow is not available, one will be constructed utilizing the protocol for burrow construction in section B.5.f of the Service-approved guidelines (Desert Tortoise Council 1994, revised 1996).

- g. If no desert tortoise sign is observed during the 100-percent coverage surveys, zone-of-influence surveys will be conducted for projects within the geographic range of the desert tortoise except in areas of very low desert tortoise density as described in Term and Condition 1.b. If evidence of tortoises is not found within the project boundary or along the zone-of-influence transects, then DOE/NV may determine that the project will not negatively influence the species. DOE/NV may submit the survey data forms to the Service for their concurrence that the proposed activity is not likely to adversely affect desert tortoise. Therefore, the proposed action will be exempt from the terms and conditions of this biological opinion and no incidental take will be authorized.

If, however, tortoise sign is found within the project area, or along the zone-of-influence transects, DOE/NV shall fully implement the terms and conditions of this biological opinion.

- h. Project activities that may endanger a tortoise will cease if a tortoise is found on a project site. An on-call tortoise biologist will be contacted by radio or telephone and will respond to the sighting within 1 hour of notification. Project activities will resume after the on-call biologist removes the tortoise from danger or after the tortoise has moved to a safe area.
- i. Except in areas of very low desert tortoise density, a tortoise biologist or environmental monitor (in place of a desert tortoise biologist) will be onsite during all phases of project construction to ensure construction activities are in compliance with this biological opinion and that desert tortoises are not inadvertently harmed.

The environmental monitor may be the project foreman or supervisor who will be responsible for: (1) Enforcing the litter-control program; (2) ensuring that tortoise-proof fences are maintained; (3) ensuring that desert tortoise habitat disturbance is restricted to construction zones; (4) ensuring that all equipment and materials are stored within the boundaries of the construction zone or within the boundaries of previously disturbed areas; (5) ensuring that all vehicles associated with construction activities are using existing graded or paved roads or within the proposed construction zones; (6) ensuring open trenches or other excavations are inspected prior to the onset and close of daily construction activities; and

- (7) ensuring that speed limits are observed. An environmental monitor is not authorized to handle tortoises, which is the responsibility of a qualified desert tortoise biologist.
- j. Vehicles will not be driven off existing roads in non-emergency situations unless authorized by DOE/NV. Off-road travel on the DNWR is prohibited unless approved by the Refuge Manager. In the event non-emergency off-road travel is required, the planned route will be surveyed by qualified biologists immediately prior to its use. All burrows will be conspicuously flagged and avoided by a minimum of 30 feet.
- k. All vehicles will be driven at speeds within the posted speed limits on existing roads, and will not exceed 15 miles per hour within project boundaries.
- l. All DOE/NV and contractor personnel working on the NTS in tortoise habitat will complete the DOE/NV Desert Tortoise Conservation Education Program. The program will provide information relative to the occurrence of the desert tortoise on the NTS, the threatened status of the species, the definition of "take," the potential for impacts to the tortoise, the potential penalties for taking a threatened species, and the procedures for protecting tortoises.

The education program shall instruct attendees that the definition of "take" includes capture. Therefore, any unauthorized person who picks up a desert tortoise or restricts the animals ability to move freely, could be found guilty of illegal "take." The same applies for any individual if the authorized level of incidental take has been reached or exceeded.

- m. In accordance with *Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise* (Service 1992), a qualified desert tortoise biologist should: (1) Possess a bachelor's or graduate degree in biology, ecology, wildlife biology, herpetology, or related fields; (2) demonstrate a minimum of 60 days prior field experience using accepted resource agency techniques to survey for desert tortoises; and (3) have the ability to recognize and accurately identify all types of desert tortoise sign. The Service does not endorse any individual or company with respect to their abilities to conduct satisfactory surveys.
2. To implement Reasonable and Prudent Measure Number 2, the DOE/NV shall fully implement the following measure:
- a. Within occupied desert tortoise habitat during March 1 and October 31, all trenches and other excavations with side slopes steeper than 1-foot rise to 3-foot length shall be immediately backfilled prior to being left unattended, or:
(1) Fenced with tortoise-proof fencing; (2) covered with tortoise-proof fencing; (3) covered with plywood or similar material; or (4) constructed with escape ramps at each end of the trench and every 1,000 feet, at a minimum. All coverings and fences shall have zero ground clearance. If alternative 4 is selected, the trench or other excavation will be inspected once every 2 weeks during the tortoise active period (March 1 through October 31).
 - b. An open trench or other excavation described in 2.a. shall be inspected for entrapped animals immediately prior to backfilling.
 - c. If at any time a tortoise is discovered within a trench, all activity associated with that trench shall cease until a qualified biologist has removed the tortoise in accordance with Service-approved guidelines (Desert Tortoise Council 1994, revised 1996).
 - d. All new water impoundments constructed within occupied desert tortoise habitat which have steep side slopes or rubber linings, shall be fenced with tortoise-proof fencing. Likewise, if a tortoise drowns in any water impoundment on the NTS, tortoise-proof fencing shall be installed around the impoundment.

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3. To implement Reasonable and Prudent Measure Number 3, the DOE/NV shall fully implement the following measure:

- b. As an alternative to 4.a. above, DOE/NV shall pay a mitigation fee of \$550.00 for each acre of surface disturbance. This rate will be indexed for inflation based on the Bureau of Labor Statistics Consumer Price Index beginning January 1, 1997. DOE/NV deposited \$81,000.00 into the Desert Tortoise Habitat Conservation Fund 236-8290 administered by Clark County, to mitigate for the loss of desert tortoise habitat under their previous biological opinion (File No. 1-5-91-F-225). Of that, approximately \$16,000.00 has been used for habitat mitigation, leaving a balance of \$65,000.00 to be used for mitigation for the loss of desert tortoise habitat from programs and activities described in this biological opinion. If additional funds are required as a result of surface-disturbance associated with this biological opinion, the mitigation fee shall be paid directly to the Desert Tortoise Habitat Conservation Fund, number 730-9999, administered by Clark County. The administrator (i.e., Clark County) serves as the banker of these funds and receives no benefit from administering these funds.

Payment shall be by certified check or money order payable to Clark County and delivered to:

Clark County
Department of Administrative Services
500 South Grand Central Parkway
Post Office Box 551712
Las Vegas, Nevada 89155-1712

The payment shall be accompanied by a cover letter from the payee that identifies the following information:

- (1) The project name, biological opinion number, DOE/NV case number, and payee's name, address, and phone number.
 - (2) The amount of payment enclosed and the number of the check or money order.
5. To implement Reasonable and Prudent Measure Number 5, the DOE/NV shall fully implement the following measures:
- a. Prior to handling any desert tortoise, carcass, or egg, appropriate State permits will be acquired from the NDOW.

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- b. DOE/NV will designate a field contact representative for each project which may also serve as the environmental monitor, if appropriate. The field representative

"1" "1" Compliance compliance with protective stipulations for the

Sick or injured desert tortoises shall be delivered to any qualified veterinarian for appropriate treatment or disposal. Dead desert tortoises suitable for preparation as museum specimens shall be frozen immediately and provided to an institution holding appropriate Federal and State permits per their instructions. Should no institutions want the desert tortoise specimens, or if it is determined that they are too damaged (crushed, spoiled, etc.) for preparation as a museum specimen, then they may be buried away from the project area or cremated, upon authorization by the Service's Division of Law Enforcement.

The DOE/NV or project proponent shall bear the cost of any required treatment of injured desert tortoises, euthanasia of sick desert tortoises, or cremation of dead desert tortoises. Should sick or injured desert tortoises be treated by a veterinarian and survive, they may be transferred as directed by the Service.

Conservation Recommendations

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. Therefore, the Service makes the following conservation recommendations:

1. DOE/NV should compile guidelines for revegetation and rehabilitation of disturbed areas that can be distributed to other agencies and the public. The success of implementation of these guidelines should be monitored and likewise distributed.
2. DOE/NV and its contractors should develop and distribute measures that individuals can take to assist in desert tortoise conservation.

In order for the Service to be kept informed of actions that either minimize or avoid adverse effects or that benefit listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

Reinitiation Requirement

This concludes formal consultation on the actions outlined in the November 8, 1995, request. As required by 50 CFR § 402.16, reinitiation of formal consultation is required if: (1) The amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that

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may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations that are causing such take must be stopped in the interim period between the initiation and completion of the new consultation if any

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APPENDIX A

VERY LOW AND LOW DESERT TORTOISE ABUNDANCE AREAS AT THE NEVADA TEST SITE (NTS)

Figure 1 shows areas within the geographic range of the desert tortoise at the NTS which support 1) a very low abundance of tortoises (0 to 10 per square mile), 2) a low abundance of tortoises (10 to 45 per square mile), and 3) an unknown abundance of tortoises. Letter codes from A to M on Figure 1 identify the general locations within these areas where field data have been collected. The data from these locations are presented in Table 1. Areas with insufficient tortoise abundance data lack a letter code and are classified as "unknown tortoise abundance" habitat.

Transect studies were conducted at the NTS at locations A through H (Figure 1) during 1981 through 1986 to assess the distribution and abundance of desert tortoises (Rautenstrauch, 1991; Rautenstrauch *et al.*, 1994). Similar transect studies have been conducted elsewhere in Nevada (Karl, 1980, 1981; Garcia, *et al.*, 1982; Schneider *et al.*, 1982). To compare results among different study areas, Karl (1980, 1981) developed five categories of relative abundance of desert tortoises based on sign counted along 1.5 mile long transects. Converted to sign/km, and using the category titles given by Schneider *et al.* (1982), these categories are as follows: none to very low (0-0.4 sign/km), low (0.4-1.5 sign/km), moderate (1.5-3 sign/km), moderately high (3-5 sign/km), and high (>5 sign/km). Table 1 presents the results of the NTS transect surveys conducted in locations A through H that can be related directly to these abundance categories.

In addition to the above mentioned transect studies, areas where tortoises were known to occur were searched in 1987 through 1990 as part of a tortoise population monitoring program for the Yucca Mountain Project (Rautenstrauch, 1991). A relatively large number of tortoises were found in three areas (Locations I, J, and K), which have been categorized for the purpose of this map as low tortoise abundance areas. Seventeen tortoises were found on the north slopes of the Mercury Mountains (Location I), eight tortoises were found in northeastern Jackass Flats (Location J), and 17 tortoises were found in northern Midway Valley (Location K is the portion of this area which falls outside the Yucca Mountain Project Area).

About 190 surveys were conducted at proposed project sites within the range of the desert tortoise at the NTS from 1976 through 1995. These include both preactivity and zone-of-influence surveys. Approximately 80 were conducted in Areas 5, 6, 11, 14, 15, and 26. Only three tortoises were found and tortoise sign was found at only 12 project sites. These survey results support the classification of the very low tortoise abundance areas shown in Figure 1. While conducting a zone-of-influence survey along eight transects totaling 51.2 km around a waterline in southern Mercury Valley, biologists found 11 burrows and 1 tortoise. The computed mean tortoise sign/km per transect was 0.24. It is likely, based on similar vegetation and soils, that all of southern Mercury Valley west of Mercury Highway supports a similar tortoise abundance which is none to very low (Location L).

Eastern Mercury Valley is occupied by the town of Mercury (Location M). Undisturbed land within Mercury is very poor habitat fragmented by paved roads, parking lots, buildings, recreational facilities, and sewage lagoons. This area will not support desert tortoises or tortoise habitat.

Table 1. Results of tortoise transect and other surveys conducted from 1981 through 1995.^a

Map Location	Area	km Walked	# Sign	\bar{x} ^b	Classification
A	Jackass Flats	166.1	29	.19	none to very low
B	Massachusetts Mountains	58.9	7	.14	none to very low
C	Cane Spring Wash	17.0	2	.11	none to very low
D	Mid Valley	22.8	0	0	none to very low
E	Frenchman Flat	113.9	15	.13	none to very low
F	CP Hills	51.2	36	.79	low
G	Rock Valley	136.9	63	.46	low
H	Mercury Valley	103.9	43	.41	none to very low ^c
I	North slopes of Mercury Mountains	N/A ^d	17 tortoises	N/A	low
J	Northeastern Jackass Flats	N/A	8 tortoises	N/A	low
K	Northern Midway Valley	N/A	17 tortoises	N/A	low
L	Southern Mercury Valley	29.0	12	.24	none to very low
M	Mercury	not surveyed	not surveyed	not surveyed	none to very low

^a Transect surveys were conducted at Locations A through H during 1981 through 1986 (Rautenstrauch, 1991),

^b Mean sign counted/km per transect for all regions except Frenchman Flat, which is mean sign for all transects combined.

^c The \bar{x} value of 0.41 was rounded to 0.40 and this area was classified as none to very low tortoise abundance.

^d N/A= not applicable, no transect lengths were recorded during searches conducted in Areas I, J, and K. These areas were designated as "low" tortoise abundant areas based on number of tortoises found (Rautenstrauch, 1991).

LITERATURE CITED

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TORTOISE PROTECTION MEASURES

Project Name: _____

NTS Area: _____

General Location: _____

Terms and Conditions of Biological Opinion which must be implemented (see back for further details):

- | | | | |
|----------------------------------------------------------------------------------------------|-------|-------|------------------|
| 1. All workers received Tortoise Protection Brochure. | Yes | No | If "No" Explain: |
| • Number of workers on project: _____ | _____ | _____ | _____ |
| 2. Clearance surveys completed not more than one working day before construction activities. | Yes | No | If "No" Explain: |
| | _____ | _____ | _____ |
| 3. Biologist or environmental monitor present during all | Yes | No | If "No" Explain: |
| | _____ | _____ | _____ |

**TERMS AND CONDITIONS OF THE NEVADA TEST SITE BIOLOGICAL OPINION
FOR DESERT TORTOISE PROTECTION**

1. All personnel who work at the NTS must receive DOE/NV's Desert Tortoise Worker Education brochure, which provides information about the occurrence of the desert tortoise at the NTS, the threatened status of the species, the definition of "take," the potential for impacts to the tortoise, and the potential penalties (up to \$25,000 in fines and six months in prison) for intentionally taking a desert tortoise.
2. For projects in tortoise habitat where tortoise abundance has been classified as low or unknown, tortoise clearance surveys shall be completed not more than one working day before any surface disturbing activity. Qualified biologists shall thoroughly search the project area for tortoises using techniques providing 100 percent coverage of all areas. Call 295-0845 or 295-0392 for assistance in determining if a survey is needed.
3. A tortoise biologist or environmental monitor (in place of a biologist) will be onsite during all phases of project construction to ensure construction activities are in compliance with the Biological Opinion, and that tortoises are not inadvertently harmed. The environmental monitor may be the project foreman or supervisor. **An environmental monitor is not authorized to handle tortoises.**
4. Desert tortoise burrows in and adjacent to the project site which can be avoided will be avoided by at least 30 feet. If a burrow cannot be avoided, it will be inspected and collapsed by a qualified biologist prior to start of construction.
5. All vehicles shall be driven at speeds within posted speed limits on existing roads and shall not exceed 15 miles per hour within project boundaries.
6. All vehicles shall be restricted to existing paved, graded, or utility access roads. Vehicles shall not be driven off existing roads in nonemergency situations unless authorized by DOE/NV. For non-emergency off-road travel, the planned route will be surveyed by a biologist immediately prior to its use.
7. DOE/NV shall implement a litter control program during construction and maintenance activities that will include the use of covered, raven proof trash receptacles and removal of edible trash from activity sites to the trash