United States Department of the Interior

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December 20, 2007
File Nos. 84320-2008-F-0066,
84320-2008-I-0075 & 1-5-94-F-28R

Memorandum

To: Field Manager, Ely Field Office, Bureau of Land Management, Ely, Nevada

From: Field Supervisor, Nevada Fish and Wildlife Office, Reno, Nevada

Subject: Biological Opinion for the Southwest Intertie Project (SWIP) Within the Range of the Desert Tortoise in Clark and Lincoln Counties, Nevada

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the Bureau of Land Management's (BLM) proposal with supporting documents to issue a Notice to Proceed for the subject project and its possible effects on the desert tortoise (*Gopherus agassizii*) (Mojave population). The Mojave desert tortoise population is listed as threatened under the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 *et seq*.). The right-of-way grant would allow construction, operation, and maintenance of an overhead 500-kilovolt (kV) transmission line from the existing Harry Allen substation north to the northern extent of desert tortoise habitat in Lincoln County, Nevada. The project will continue north to the proposed White Pine Energy Station. In addition, BLM requested our concurrence that the subject project *may affect but is not likely to adversely affect* the endangered southwestern willow flycatcher (*Empidonax traillii extimus*) and the bald eagle (*Haliaeetus leucocephalus*).

This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR 402.02. Instead, we have relied upon the statutory provisions of the Act to complete the following analysis with respect to critical habitat.

The bald eagle was delisted from the Act, effective August 8, 2007 (72 FR 37345). The effect of this rule removes the bald eagle in the lower 48 States from the Federal List of Endangered and Threatened Wildlife, and also removes the special rule for the bald eagle at 50 CFR 17.41(a). The prohibitions and conservation measures provided by the Act, particularly sections 7, 9, and 10 no longer apply to this species. Federal agencies will no longer be required to consult with the Service under section 7 of the Act in the event that activities they authorize, fund, or carry out may affect the bald eagle. Critical habitat was not designated for the bald eagle, so the delisting will not affect critical habitat provisions of the Act. The provisions of the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act (including prohibitions on the

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taking of bald eagles) will remain in place. The rule will not affect the bald eagle's status as a threatened or endangered species under State laws or suspend any other legal protections provided by State law. Thus, Service concurrence or non-concurrence that the proposed action *may affect but is not likely to adversely affect* the bald eagle no longer applies under section 7 consultation procedures.

The informal consultation for the southwestern willow flycatcher and biological opinion for the desert tortoise are issued in accordance with section 7 of the Act and based on information provided in BLM's memorandum to the Service with attached final biological assessment (EPG 2007) received on October 12, 2007; additional information received on October 31, 2007, by conference call; correspondence dated November 1 and 28, 2007, and December 4, 2007; E-mail correspondence between the Service and BLM and its contractors; and our files. A complete administrative record of this consultation is on file in the Service's Nevada Fish and Wildlife Office in Las Vegas, Nevada.

Informal Consultation (File No. 84320-2008-I-0075)

This informal consultation addresses proposed project activities and their possible impacts to the southwestern willow flycatcher. Currently, there are no known potential nesting locations within the project area. The closest known breeding location for southwestern willow flycatchers is approximately 3 miles north and west of the project centerline at Lower Pahranagat Lake in Lincoln County. The project will cross the Pahranagat Wash approximately 1 mile downstream of Maynard Lake in an area that does not contain suitable habitat for the flycatcher. Other suitable habitat exists along the Virgin River, Meadow Valley Wash, Muddy River, Las Vegas Wash, and the Colorado River. The Virgin River is located approximately 25 miles southeast of the project; the Muddy River is located on the east side of Arrow Canyon Range approximately 12 miles from the project area; Meadow Valley Wash is approximately 6 miles east of the project area; and Las Vegas Wash flows southeasterly through Las Vegas Valley, approximately 18 miles south/southwest of the project area. BLM concludes that construction, operation, and maintenance of the proposed transmission line would have little to no effect on southwestern willow flycatcher breeding habitat.

In consideration of the proposed action and anticipated potential effects, BLM determined that the proposed project *may affect, but is not likely to adversely affect* the southwestern willow flycatcher. The Service concurs with this determination.

<u>Consultation History</u>

The Service previously issued two biological opinions for the proposed project. On May 12, 1993, the first biological opinion was issued for the project (File No. 1-5-93-F-91). The project proposed in 1993 consisted of a 500-kV transmission line from a new, to be constructed substation at the southern terminus of the project in Dry Lake Valley in Clark County, north to the northern extent of tortoise habitat in Lincoln County. Modifications from the 1993 project in

tortoise habitat include: a 3.8-mile extension of the transmission line to connect to the existing Harry Allen Substation; elimination of the Dry Lake 500kV Substation; and relocation of a portion of the right-of-way in Coyote Spring Valley from the east to west side of US Highway 93 (US 93). Construction methods remain relatively unchanged from the 1993 proposal except the modification to use H-frames with perching deterrents within desert tortoise critical habitat to minimize the potential impacts of ravens on the tortoise.

On November 5, 1993, BLM requested reinitiation of consultation for the SWIP project in response to designation of desert tortoise critical habitat which became effective February 8, 1994. A portion of the proposed project (approximately 53 miles) would occur within the newly designated Mormon Mesa Critical Habitat Unit. On March 23, 1994, the Service issued a biological opinion (File No. 1-5-94-F-28R) to BLM for the SWIP project which included an analysis of potential effects to both the desert tortoise and its designated critical habitat. This biological opinion was amended as requested by BLM on December 8, 1994, to allow fees to be paid prior to issuance of the Notice to Proceed rather than the right-of-way grant.

On July 24, 2007, BLM requested consultation for the proposed project. The Service did not receive the request until October 12, 2007. The Service requested additional information by email on October 22, 2007. Additional information was provided during a conference call on October 31, 2007; on November 1, 2007, and November 28, 2007. Formal consultation was initiated for the project on October 31, 2007.

BIOLOGICAL OPINION

I. Description of the Proposed Action

A. Proposed Action and Action Area

BLM proposes to amend an existing right-of-way (BLM File No. N-49781) and issue a Notice to Proceed to Great Basin Transmission, LLC (Great Basin) for construction, operation, and maintenance of a single-circuit, overhead 500 kV transmission line. The southern portion of the project begins at the Harry Allen Substation in Dry Lake, Clark County, Nevada and ends at a point approximately 3 miles west of the proposed White Pine Energy Station located approximately 34 miles north of Ely, White Pine County, Nevada (Figure 1). The transmission line and associated facilities comprise the southern portion of the Midpoint to Dry Lake segment of the SWIP, which was approved by BLM in 1994. The SWIP right-of -way was granted by BLM to Idaho Power Company (IPC), when the project was approved in 1994. Great Basin has an option to purchase the SWIP (including the BLM right-of-way) from IPC, and has been authorized by IPC to complete the project permitting process, including obtaining a notice to proceed from BLM. The scope of this biological opinion is limited to the range of the desert tortoise within southern Nevada.

Figure 1

The transmission project will consist of self-supporting, steel-lattice, and steel-pole H-frame structures placed approximately 1,200 to 1,500 feet apart. The transmission line will create a connection between existing electrical grids and service areas in southern Nevada (Nevada Power Company) and northern Nevada (Sierra Pacific Power Company), and will contribute to increased transmission reliability and sharing of the electrical supplies between the regions of the West. The project will provide a means to transmit power from power generation projects (*e.g.*, proposed wind energy projects north of Ely) to market.

BLM and IPC estimate that construction of the entire project would require approximately 28 months. Following construction, the transmission line would be inspected annually or as required, by fixed-wing aircraft, helicopters, ground vehicles, all-terrain vehicles, or on foot. Maintenance will be performed as needed. Non-emergency repairs will be completed within the range of the desert tortoise following the same measures as for ground disturbance in the original construction phase of the project. For emergency repairs, reasonable efforts will be made to protect tortoises and their habitat. Restoration and reclamation procedures following completion of repair work will be similar to those proposed during construction.

B. Proposed Minimization Measures

BLM and the project proponent propose to minimize the effects of the proposed action on the desert tortoise by implementing the following measures:

1. All construction vehicle movement outside the right-of-way will normally be restricted to pre-designated access, contractor acquired access, or public roads.

2. The areal limits of construction activities will normally be predetermined, with activity restricted to and confined within those limits. No paint or permanent discoloring agents will be applied to rocks or vegetation to indicate survey or construction activity limits.

3. In construction areas where recontouring is not required, vegetation will be left in place wherever possible and original contour will be maintained to avoid excessive root damage and allow for resprouting.

4. In construction areas (*e.g.*, marshalling yards, tower sites, spur roads from existing access roads) where ground disturbance is significant or where recontouring is required, surface restoration will occur as required by the landowner or land management agency. The method of restoration will normally consist of returning disturbed areas back to their natural contour, reseeding (if required), cross drains installed for erosion control, placing water bars in the road, and filling ditches.

5. Prior to construction, all supervisory construction personnel will be instructed on the protection of ecological resources. To assist in this effort, the construction contract will address: (a) Federal and State laws regarding antiquities and plants and wildlife,

including collection and removal; and (b) the importance of these resources and the purpose and necessity of protecting them.

6. Roads will be built as near as possible at right angles to the streams and washes. Culverts will be installed where necessary. All construction and maintenance activities shall be conducted in a manner that will minimize disturbance to vegetation, drainage channels, and intermittent or perennial streambanks. In addition, road construction will include dust-control measures during construction in sensitive areas. Only water or an alternative substance approved by BLM will be used as a dust suppressant. All existing roads will be left in a condition equal to or better than their condition prior to the construction of the transmission line. Towers will be sited with a minimum distance of 200 feet from streams and washes.

7. Fences and gates will be repaired or replaced to their original pre-disturbed condition as required by the landowner or the land management agency if they are damaged or destroyed by construction activities. Temporary gates will be installed only with the permission of the landowner or the land management agency; and will be restored to their original pre-disturbed condition following construction.

8. Hazardous materials shall not be drained onto the ground or into streams or drainage areas. Totally enclosed containment shall be provided for all trash. All construction waste including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials shall be removed to a disposal facility authorized to accept such materials.

9. Pre-construction surveys for plants and wildlife species, designated as sensitive or of concern will be conducted in areas of known occurrence or habitat, including noxious weed surveys as stipulated by the land-administering agency once the transmission line centerline, access roads, and tower sites have been located and staked in the field.

10. No widening or upgrading of existing access roads will be undertaken in the area of construction and operation, except for repairs necessary to make roads passable, where soils and vegetation are very sensitive to disturbance.

11. The alignment of any new access roads or overland routes will follow the designated area's landform contours where possible, providing that such alignment does not additionally impact resource values.

12. All new access roads not required for maintenance will be permanently closed using the most effective and least environmentally damaging methods appropriate to that area with concurrence of the landowner or land manager (*e.g.*, stock piling and replacing topsoil, seeding, or rock replacement). Public access will be controlled through the installation of

fences and gates in key locations or sections. This will limit new or improved accessibility into the area.

13. In designated areas, structures will be placed so as to avoid sensitive features such as, but not limited to, riparian areas, water courses, and cultural sites, and/or to allow conductors to clearly span the features, within limits of standard tower design. This will minimize the amount of sensitive features disturbed and/or reduce visual contrast.

14. With the exception of emergency repair situations, right-of-way construction, restoration, maintenance, and termination activities in designated areas will be modified or discontinued during sensitive periods (*e.g.*, nesting and breeding periods) for candidate, proposed, threatened and endangered, or other sensitive animal species. Sensitive periods, species affected, and areas of concern will be approved in advance of construction or maintenance by the authorized officer.

15. If blasting is necessary, all tortoises located within 100 feet of the blast site will be removed prior to blasting and temporarily relocated in accordance with desert tortoise handling protocol. Prior to any blasting, all tortoise burrows or coversites within a 200-foot radius of the blast site will be located and the entrances carefully stuffed with crumpled newspaper or other material approved by BLM and the Service. After blasting is completed, all burrows and coversites will be inspected for damage, and stuffing material will be removed. If a burrow or coversite has collapsed and there is a possibility that it could be occupied, it will be excavated to ensure that no tortoises have been buried and are in danger of suffocation.

16. With the exception of emergency repair situations, maintenance and termination activities in areas of critical habitat will be modified or discontinued during sensitive periods (March 1 through October 31), or as identified by BLM.

17. During tortoise high activity (*e.g.*, March through October), tortoise biologists shall be present during all construction, and maintenance (e.g., emergency repairs) activities where one or more pieces of heavy construction equipment are being used.

18. All movement of construction vehicles outside of the right-of-way will be restricted to pre-designated access, contractor-acquired access, or public roads.

19. The limits of construction will be predetermined, with activity restricted to and confined within those limits. No paint or permanent discoloring agents will be applied to rocks or vegetation to indicate survey or construction activity limits.

20. Construction and maintenance vehicles will not exceed a speed of 20 miles per hour in tortoise habitat, except where posted otherwise.

21. All construction sites and access roads shall be clearly marked or flagged at the outer limits prior to the onset of any surface-disturbing activity. All personnel shall be informed that their activities must be confined within the marked or flagged areas.

22. Construction sites and access roads shall be surveyed by qualified tortoise biologists no more than 15 days prior to the initiation of construction. Surveys shall provide 100-percent coverage of the construction area. All desert tortoise burrows located will be conspicuously flagged or marked. All desert tortoise burrows, and other species' burrows that may be used by desert tortoises, will be examined to determine the occupancy of each burrow by tortoises, using a fiber-optic scope, if necessary.

23. When desert tortoises are not highly active (*e.g.*, winter), environmental monitors or desert tortoise biologists will be onsite during all phases of transmission line construction to ensure that all construction vehicles and heavy equipment remain within the boundaries of the marked construction zone. If necessary, a qualified desert tortoise biologist will be brought on site to excavate any tortoise burrow in harm's way.

24. Desert tortoises and eggs found within construction sites will be removed by qualified desert tortoise biologists, in accordance with the most current protocols identified by BLM and the Service. Desert tortoises removed from the project sites will be released into undisturbed habitat within 1,000 feet of the collection site.

    Any desert tortoise removed from construction sites shall be placed in the shade of a shrub or in a natural, unoccupied burrow similar to the one in which it was found or in an artificial burrow, following the most current protocol approved by BLM and the Service. Desert tortoises shall not be placed on lands outside the administration of the Federal government without the written permission of the landowner. Desert tortoises shall be purposely moved only by qualified tortoise biologists, solely for the purpose of moving them out of harm's way.

25. Any excavated holes related to transmission line construction (*i.e.*, foundations) left open overnight will be covered, and/or tortoise-proof fencing will be installed to prevent the possibility of tortoises falling into the open holes.

26. Anyone on the right-of-way within desert tortoise habitat will be required to check under their vehicle before driving away. This includes all construction equipment and the area under vehicles should be checked any time a vehicle is left unattended, as well as in the morning before any construction activity begins.

27. H-frame structures with perch deterrents will be utilized in critical habitat south of State Route 168 in the Coyote Spring Area of Critical Environmental Concern (ACEC) and post-construction monitoring for ravens and removal of raven nests will be undertaken in

this area as part of the inspection and maintenance activities. If evidence of raven nesting is observed in the right-of-way, the Service will be notified within 3 days.

28. To prevent mortality, injury, and harassment of desert tortoises and damage to their burrows and coversites, no pets shall be permitted in any project construction area, unless confined or leashed.

29. Trash and food items will be removed daily by construction workers and placed in raven-proof containers

30. Within desert tortoise habitat, a biologist will be assigned to the pre-construction survey team(s). The biologist will be responsible for ensuring that the placement of new access routes, spur roads, and tower sites will affect as few tortoise burrows as possible. The alignment of access and spur roads will be as direct as possible, to minimize habitat disturbance and minimize the destruction of tortoise burrows. Other work areas (*e.g.*, splicing, tensioning, pulling, and batch sites) will be surveyed by a biologist as construction proceeds. Potential work areas will be flagged several days prior to construction for review by a biologist. To the extent possible, these sites will be located in previously disturbed areas.

31. Overnight parking and storage of equipment will be in previously disturbed areas (*i.e.*, lacking vegetation). These areas will also be designated by the pre-construction survey team. If previously disturbed areas are not available, these activities will be restricted to the right-of-way and will be cleared of tortoises by the on-site biologist prior to use.

32. Within desert tortoise habitat, construction and maintenance workers will strictly limit their activities and vehicles to construction areas and routes of travel that have been identified and/or flagged to eliminate adverse impacts to desert tortoises and their habitat. Aside from these areas, workers may not drive cross-country, even within the right-of-way. All workers will be instructed that their activities are restricted to previously identified, flagged or cleared areas.

33. The project proponent will designate a Compliance Inspector Contractor (CIC), who will be responsible for overseeing compliance with protective stipulations for the desert tortoise and for coordinating compliance. The CIC will have the authority to halt activities of construction equipment that may be in violation of the stipulations.

34. In areas where restoration is required, reseeding will occur through the use of native plant species. Reclamation and monitoring requirements and practices will be approved by BLM.

35. Herbicides will not be used as a part of this project within desert tortoise habitat.

36. To the extent possible, access to tower sites, and at splicing and tensioning sites will occur by overland travel and crushing of vegetation, *i.e.*, no blading of such sites, will occur. The CIC will ensure that blading is conducted only where necessary. Due to construction constraints resulting from equipment size and personnel safety, blading will be needed at most spur roads and tower sites.

37. All construction and maintenance workers will participate in a tortoise-education program. The program will be developed by the project proponent prior to the beginning of construction. The program will be submitted to the Service for review and approval prior to implementation. The program will include, at a minimum, the following topics: (a) the occurrence of desert tortoises in the project area; (b) the sensitivity of the species to human activities; (c) legal protection for desert tortoises; (d) penalties for violations of Federal and State laws; (e) general tortoise activity patterns; (f) reporting requirements; (g) measures to protect tortoises; and (h) personal measures employees can take to promote the conservation of desert tortoises.

38. Injured tortoises will be transported to a qualified veterinarian. The Service will furnish direction on the final disposition of tortoises taken to a veterinarian.

39. The CIC and on-site biologist will prepare a report for BLM and the Service no later than 90 days after completion of construction within desert tortoise habitat. The report will make recommendations for modifying or refining the stipulations. The report will include the actual acreage of habitat disturbance caused by crushing and blading versus the estimates prior to construction.

40. Fees collected for Lincoln and Clark counties shall be deposited in interest-bearing escrow accounts.

II. Status of the Species/Critical Habitat Rangewide

A. *Desert Tortoise*

Listing History

On August 4, 1989, the Service published an emergency rule listing the Mojave population of the desert tortoise as endangered (54 FR 42270). On April 2, 1990, the Service determined the Mojave population of the desert tortoise to be threatened (55 FR 12178) on the basis of: significant population declines; loss of habitat from construction projects such as roads, housing and energy developments, and conversion of native habitat to agriculture; habitat degradation by grazing and off-highway vehicle (OHV) activities; illegal collection of desert tortoises by humans for pets or consumption; upper respiratory tract disease (URTD); predation on juvenile desert tortoises by common ravens and kit foxes; fire; and collisions with vehicles on paved and

unpaved roads. Critical habitat in Arizona, California, Nevada, and Utah was designated on February 8, 1994, with an effective date of March 10, 1994.

Overview of General Biology

The desert tortoise is a large, herbivorous reptile located in portions of California, Arizona, Nevada, and Utah. It also occurs in Sonora and Sinaloa, Mexico. The Mojave population of the desert tortoise includes those animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, and southwestern Utah, and in the Sonoran Desert in California.

Desert tortoises reach 8 to 15 inches in carapace length and 4 to 6 inches in shell height. Hatchlings emerge from the eggs at about 2 inches in length. Adults have a domed carapace and relatively flat, unhinged plastron. Their shells are high-domed, and greenish-tan to dark brown in color with tan scute centers. Desert tortoises weigh 8 to 15 pounds when fully grown. The forelimbs have heavy, claw-like scales and are flattened for digging. Hind limbs are more stumpy and elephantine.

Optimal habitat for the desert tortoise has been characterized as creosote bush scrub in which precipitation ranges from 2 to 8 inches, where a diversity of perennial plants is relatively high, and production of ephemerals is high (Luckenbach 1982, Turner 1982, Turner and Brown 1982). Soils must be friable enough for digging of burrows, but firm enough so that burrows do not collapse. Desert tortoises occur from below sea level to an elevation of 7,300 feet, but the most favorable habitat occurs at elevations of approximately 1,000 to 3,000 feet (Luckenbach 1982).

Desert tortoises are most commonly located within the desert scrub vegetation type, primarily in creosote bush scrub. In addition, they occur in succulent scrub, cheesebush scrub, blackbrush scrub, hopsage scrub, shadscale scrub, microphyll woodland, Mojave saltbush-allscale scrub, and scrub-steppe vegetation types of the desert and semidesert grassland complex (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 sandy-gravel soils and with scattered shrubs, and where there is abundant inter-shrub space for growth of herbaceous plants. Throughout their range, however, tortoises can be located in steeper, rockier areas.

Desert tortoises are most active during the spring and early summer when annual plants are most common. Additional activity occurs during warmer fall months and occasionally after summer rainstorms. Desert tortoises spend the remainder of the year in burrows, escaping the extreme conditions of the desert. In Nevada and Arizona, tortoises are considered to be most active from approximately March 1 through October 31.

The size of desert tortoise home ranges varies with respect to location and year. Females have long-term home ranges that are approximately half that of the average male, which range from 25 to 200 acres (Berry 1986). Over its lifetime, each desert tortoise may require more than 1.5 square miles of habitat and make forays of more than 7 miles at a time (Berry 1986). In drought years, the ability of tortoises to drink while surface water is available following rains may be crucial for tortoise survival. During droughts, tortoises forage over larger areas, increasing the likelihood of encounters with sources of injury or mortality including humans and other predators.

Further information on the range, biology, and ecology of the desert tortoise is available in Berry and Burge (1984), Burge (1978), Burge and Bradley (1976), Bury *et al*. (1994), Germano *et al*. (1994), Hovik and Hardenbrook (1989), Karl (1981, 1983a, 1983b), Luckenbach (1982), Service (1994), and Weinstein *et al*. (1987).

Survival and Recovery Needs

On June 28, 1994, the Service approved the *Desert Tortoise Recovery Plan* (Service 1994) (Recovery Plan). The Recovery Plan divides the range of the desert tortoise into 6 recovery units and recommends establishment of 14 desert wildlife management areas (DWMAs) throughout the recovery units. Within each DWMA, the Recovery Plan recommends implementation of reserve-level protection of desert tortoise populations and habitat, while maintaining and protecting other sensitive species and ecosystem functions.

As part of the actions needed to accomplish recovery, the Recovery Plan recommends that land management within all DWMAs should restrict human activities that negatively impact desert tortoises (Service 1994). The DWMAs are being designated by BLM through development or modification of their land-use plans in Arizona, Nevada, Utah, and parts of California.

Although recovery of the tortoise will focus on DWMAs, section II.A.6. of the Recovery Plan and section 2(b) of the Act provide for protection and conservation of ecosystems on which federally-listed threatened and endangered species depend, which includes both recovery and non-recovery areas. The Mojave Desert ecosystem, of which the desert tortoise and its habitat are an integral part, consists of a dynamic complex of plant, animal, fungal, and microorganism communities and their associated nonliving environment interacting as an ecological unit (Noss and Cooperrider 1994). Actions that adversely affect components of the Mojave Desert ecosystem may directly or indirectly affect the desert tortoise. The Recovery Plan further states that desert tortoises and habitat outside recovery areas may be important to the recovery of the tortoise. Healthy, isolated tortoise populations outside recovery areas may have a better chance of surviving catastrophic effects such as disease, than large, contiguous populations (Service 1994). A description of each Recovery Unit follows.

The **Northeastern Mojave Recovery Unit** occurs primarily in Nevada, but it also extends into California along the Ivanpah Valley and into extreme southwestern Utah and northwestern

Arizona. Vegetation within this unit is characterized by creosote bush scrub, big galleta-scrub steppe, desert needlegrass scrub-steppe, and blackbrush scrub (in higher elevations). Topography is varied, with flats, valleys, alluvial fans, washes, and rocky slopes. Much of the northern portion of the Northeastern Mojave Recovery Unit is characterized as basin and range, with elevations from 2,500 to 12,000 feet. Desert tortoises typically eat summer and winter annuals, cacti, and perennial grasses. Desert tortoises in this Recovery Unit, the northern portion of which represents the northernmost distribution of the species, are typically observed in low densities (about 10 to 20 adults per square mile).

The **Eastern Mojave Recovery Unit** is situated primarily in California, but also extends into Nevada in the Amargosa, Pahrump, and Piute valleys. In the Eastern Mojave Recovery Unit, desert tortoises are often active in late summer and early autumn in addition to spring because this region receives both winter and summer rains and supports two distinct annual floras on which they can feed. Desert tortoises in the Eastern Mojave Recovery Unit occupy a variety of vegetation types and feed on summer and winter annuals, cacti, perennial grasses, and herbaceous perennials. They den singly in caliche caves, bajadas, and washes. This Recovery Unit is isolated from the Western Mojave Recovery Unit by the Baker Sink, a low-elevation, extremely hot and arid strip that extends from Death Valley to Bristol Dry Lake. The Baker Sink area is generally not considered suitable for desert tortoises. Desert tortoise densities in the Eastern Mojave Recovery Unit can vary dramatically, ranging from 5 to as much as 350 adults per square mile (Service 1994).

Ivanpah and Piute-Eldorado valleys contained study plots that were analyzed in the Eastern Mojave Recovery Unit analysis. While there was no overall statistical trend in adult density over time, the 2000 survey at Goffs and the 2002 survey at Shadow Valley indicate low densities of adult tortoises relative to earlier years. Unfortunately, there are no data in the latter years for all five study plots within this Recovery Unit; and therefore, while there is no statistical trend in adult densities, we cannot conclude that tortoises have not experienced recent declines in this area. The probability of finding a carcass on a distance sampling transect was considerably higher for Ivanpah, Chemehuevi, Fenner, and Piute-Eldorado, which make up the Eastern Mojave Recovery Unit.

The **Northern Colorado Recovery Unit** is located completely in California. Here desert tortoises are located in the valleys, on bajadas and desert pavements, and to a lesser extent in the broad, well-developed washes. They feed on both summer and winter annuals and den singly in burrows under shrubs, in intershrub spaces, and rarely in washes. The climate is somewhat warmer than in other recovery units, with only 2 to 12 freezing days per year. Tortoises that occupy this unit have the California mitochondrial DNA (mtDNA) haplotype and phenotype. Allozyme frequencies differ significantly between this Recovery Unit and the Western Mojave, indicating some degree of reproductive isolation between the two.

Desert tortoises in the **Eastern Colorado Recovery Unit**, also located completely in California, occupy well-developed washes, desert pavements, piedmonts, and rocky slopes characterized by

relatively species-rich succulent scrub, creosote bush scrub, and blue palo verde-ironwood-smoke tree communities. Winter burrows are generally shorter in length, and activity periods are longer than elsewhere due to mild winters and substantial summer precipitation. Tortoises within this unit feed on summer and winter annuals and some cacti; they den singly. They also have the California mtDNA haplotype and shell type.

The **Upper Virgin River Recovery Unit** encompasses all desert tortoise habitat in Washington County, Utah, except the Beaver Dam Slope, Utah population. The desert tortoise population in the area of St. George, Utah is at the extreme northeastern edge of the species' range and experiences long, cold winters (about 100 freezing days) and mild summers, during which the tortoises are continually active. In this area the animals live in a complex topography consisting of canyons, mesas, sand dunes, and sandstone outcrops where the vegetation is a transitional mixture of sagebrush scrub, creosote bush scrub, blackbush scrub, and a psammophytic (plants that grow in sandy soils) community. Desert tortoises use sandstone and lava caves instead of burrows, travel to sand dunes for egg-laying, and use still other habitats for foraging. Two or more desert tortoises often use the same burrow. Shell morphology and mtDNA have not been studied in this Recovery Unit, but allozyme variation is similar to that found in the Northeastern Mojave Recovery Unit.

The **Western Mojave Recovery Unit** occurs completely in California and is exceptionally heterogeneous and large. It is composed of the Western Mojave, Southern Mojave, and Central Mojave regions, each of which has distinct climatic and vegetational characteristics. The most pronounced difference between the Western Mojave and other recovery units is in timing of rainfall and the resulting vegetation. Most rainfall occurs in fall and winter and produces winter annuals, which are the primary food source of tortoises. Above-ground activity occurs primarily in the spring, associated with winter annual production. Thus, tortoises are adapted to a regime of winter rains and rare summer storms. In this area desert tortoises occur primarily in valleys, on alluvial fans, bajadas, and rolling hills in saltbush, creosote bush, and scrub steppe communities. Tortoises dig deep burrows (usually located under shrubs on bajadas) for winter hibernation and summer aestivation. Desert tortoises within this unit generally den singly. They have a California mtDNA haplotype and a California shell type.

Desert Tortoise Recovery Plan Assessment and Recommendations

The U.S. General Accounting Office (GAO) Report, *Endangered Species: Research Strategy and Long-Term Monitoring Needed for the Mojave Desert Tortoise Recovery Program* (GAO 2002), directed the Service to periodically reassess the Recovery Plan to determine whether scientific information developed since its publication could alter implementation actions or allay some of the uncertainties about its recommendations. In response to the GAO report, the Service initiated a review of the existing Recovery Plan in 2003.

In March 2003, the Service impaneled the Desert Tortoise Recovery Plan Assessment Committee to assess the Recovery Plan. The Committee was selected to represent several

important characteristics with particular emphasis on commitment to solid science. The charge to the Committee was to review the entire Recovery Plan in relation to contemporary knowledge to determine which parts of the recovery plan will need updating. The recommendations of the Committee were presented to the Service and Desert Tortoise Management Oversight Group approximately a year later, on March 24, 2004. The recommendations will be used as a guide by a recovery team of scientists and stakeholders to modify the 1994 Recovery Plan. A revised recovery plan is anticipated in 2008.

Desert Tortoise Distribution

The 1994 Recovery Plan conceived desert tortoises to be distributed in large populations that required large areas and large densities to recover. However, existing data are consistent with the possibility that tortoises have evolved to exist in *metapopulations*. Metapopulation theory conceives that tortoises are distributed in metapopulation patches connected with corridors that allow inefficient and asynchronous movements of individuals among the patches (Hanski 1999, Levins and Culver 1971, Levin *et al*. 1984). This paradigm conceives that some habitat patches within the range of the desert tortoise will have low population numbers or no tortoises at all, and others will have higher population numbers. Movement among the patches is necessary for persistence of the "system." If desert tortoises evolved to exist in metapopulations, then long-term persistence requires addressing habitat fragmentation caused by highways and "satellite" urbanization. Satellite urbanization occurs when blocks of habitat become developed which are substantially disjunct from existing developments (leap-frog development) resulting in a greater edge effect and creating an area of habitat between the developments which becomes degraded over time. Ensuring the integrity and function of natural corridors among habitat patches might require active management of tortoise densities in habitat patches and associated corridors.

The prescriptions for recovery in the Recovery Plan were for individual populations and recovery planning was based on managing threats in that habitat. However, that original paradigm, and the prescriptions made within that paradigm, may be wrong. Existing data have revealed population crashes that have occurred asynchronously across the range. There are reports that some populations, which have crashed previously, have subsequently increased in population density. Additionally, all known dense populations of desert tortoises have crashed. This suggests that density-dependent mortality occurs in desert tortoise populations, and that population dynamics may be asynchronous. To date, the status and trends of desert tortoise populations are difficult to determine based only upon an assessment of tortoise density due largely to the tortoise's overall low abundance and its subterranean sheltering behavior, and the cryptic nature of this species.

If desert tortoises have historically existed in metapopulations, then connections among habitat patches are a necessary part of conservation prescriptions. Additionally, habitat suitable for tortoises, but without tortoises, should be regarded as equally necessary for recovery. Long-term persistence cannot be determined from tortoise density or tortoise numbers alone, but assessment must include the complexities of metapopulation dynamics and the habitat characteristics that

promote metapopulation dynamics including habitat connectivity through inefficient corridors (*i.e.*, partial connectivity), asynchrony of subpopulation dynamics, and several separate habitat patches.

The Desert Tortoise Recovery Plan Assessment Committee proposed a revision to the previous delineation of recovery units based on new scientific information. The recommended delineations reflect the prevailing concepts of subpopulation "discreteness," and "significance," and incorporate morphological, behavioral, genetic, and environmental information. The Committee's recommendation reduces the number of recovery units from six to five by leaving the original Upper Virgin River and Western Mojave units intact and recombining the four central units into three reconfigured units: (1) Lower Virgin River Desert; (2) Northeastern Mojave Desert (including Amargosa Valley, Ivanpah Valley, and Shadow Valley); and (3) Eastern Mojave and Colorado Desert. These recommended recovery units are based largely on the best biochemical/genetic data presented in Rainboth *et al*. (1989), Lamb *et al*. (1989), Lamb and Lydehard (1994), and Britten *et al*. (1997). Because these delineations are general and not definitive at this time, more data and analyses are needed that may result in additional modification of Recovery Unit delineations.

Threats

The Service identified key threats when the Mojave population of the desert tortoise was emergency listed as endangered and subsequently listed as a threatened species, which remain valid today. Since becoming listed under the Act, more information is available on threats to the desert tortoise with some threats such as wildfires and alien plants affecting large areas occupied by tortoises.

Alien plants continue to contribute towards overall degradation or habitat quality for the desert tortoise. Land managers and field scientists identified 116 species of alien plants in the Mojave and Colorado deserts (Brooks and Esque 2002). The proliferation of non-native plant species has also contributed to an increase in fire frequency in tortoise habitat by providing sufficient fuel to carry fires, especially in the intershrub spaces that are mostly devoid of native vegetation (Service 1994; Brooks 1998; Brown and Minnich 1986). Changes in plant communities caused by alien plants and recurrent fire may negatively affect the desert tortoise by altering habitat structure and species composition of their food plants (Brooks and Esque 2002).

Changing ecological conditions as a result of natural events or human-caused activities may stress individual tortoises and result in a more severe clinical expression of URTD (Brown *et al*. 2002). For example, the proliferation of non-native plants within the range of the tortoise has had far-reaching impacts on tortoise populations. Tortoises have been documented to prefer native vegetation over non-natives (Tracy *et al*. 2004). Non-native annual plants in desert tortoise critical habitat in the western Mojave Desert were identified to compose over 60 percent of the annual biomass (Brooks 1998). The reduction in quantity and quality of forage may stress tortoises and make them more susceptible to drought- and disease-related mortality (Brown *et al*.

1994). Malnutrition has been associated with several disease outbreaks in both humans and turtles (Borysenko and Lewis 1979). What is currently known with certainty about disease in the desert tortoise relates entirely to individual tortoises and not populations; virtually nothing is known about the demographic consequences of disease (Tracy *et al*. 2004).

Disease was identified in the 1994 Recovery Plan as an important threat to the desert tortoise. Disease is a natural phenomenon in wild populations of animals and can contribute to population declines by increasing mortality and reducing reproduction. However, URTD appears to be a complex, multi-factorial disease interacting with other stressors to affect desert tortoises (Brown *et al*. 1994; Tracy *et al*. 2004). The disease occurs mostly in relatively dense desert tortoise populations, as mycoplasmal infections are dependent upon higher densities of the host (Tracy *et al*. 2004).

Numerous wildfires occurred in desert tortoise habitat across the range of the desert tortoise in 2005 due to abundant fuel from the proliferation of non-native plant species after a very wet winter. These wildfires heavily impacted two of the six desert tortoise recovery units, burning less than 19 percent of desert tortoise habitat in the Upper Virgin River and 10 percent in the Northeastern Mojave Recovery Unit (Table 1). In the Upper Virgin River Recovery Unit, 19 percent of the Upper Virgin River critical habitat unit (CHU) burned. In the Northeastern Mojave Recovery Unit, three CHUs were impacted: about 23 percent of the Beaver Dam Slope CHU burned, 13 percent of the Gold Butte-Pakoon CHU, and 4 percent of the Mormon Mesa CHU. Although it is known that tortoises were burned and killed by the wildfires, tortoise mortality estimates are not available.

In 2006, less than 50,000 acres of desert tortoise habitat burned which includes less than 20,000 acres of desert tortoise critical habitat.

Table 1. Approximate Acres of Desert Tortoise Habitat Burned in Each Recovery Unit during 2005.

Recovery Unit	Habitat Burned (acres)	Percent Habitat Burned	CH* Burned (acres)	Percent CH Burned
Upper Virgin River**	10,446	< 19	10,446	19
Northeastern Mojave***	500,000	10	124,782	11
Eastern Mojave	6,000	< 1	1,219	<1
Western Mojave	0	0	0	0
Northern Colorado	0	0	0	0
Eastern Colorado	0	0	0	0
Total	**516,446**	**-**	**136,447**	**-**

* CH – critical habitat
** Estimates only for Upper Virgin River; GIS analysis needed
*** Potential habitat was mapped and calculated as Mojave Desert less than 4,200 feet in elevation minus playas, open water, and developed and agricultural lands.

Desert Tortoise Reproduction

Desert tortoises possess a combination of life history and reproductive characteristics that affect the ability of populations to survive external threats. Tortoises grow slowly, require 15 to 20 years to reach sexual maturity, and have low reproductive rates during a long period of reproductive potential (Turner *et al*. 1984, Bury 1987, Tracy *et al*. 2004). At Yucca Mountain, Nye County Nevada (Northeastern Mojave Recovery Unit), Mueller *et al*. (1998) estimated that the mean age of first reproduction was 19 to 20 years; and reported that clutch size (1 to 10 eggs) and annual fecundity (0 to 16 eggs) were related to female size but annual clutch frequency (0 to 2) was not. Further, Mueller *et al*. (1998) suggested that body condition during July to October may determine the number of eggs a tortoise can produce the following spring.

McLuckie and Fridell (2002) determined that the Beaver Dam Slope desert tortoise population, within the Northeastern Mojave Recovery Unit, had a lower clutch frequency (1.33 ± 0.14) per reproductive female and fewer reproductive females (14 out of 21) when compared with other Mojave desert tortoise populations. In the 1990s, dramatic tortoise population declines occurred at Beaver Dam Slope due primarily to disease and habitat degradation and alteration (Service 1994). The number of eggs that a female desert tortoise can produce in a season is dependent on a variety of factors including environment, habitat, availability of forage and drinking water, and physiological condition (Henen 1997, McLuckie and Fridell 2002).

Desert Tortoise Numbers

Data collected on 1 square-mile permanent study plots in California indicate that tortoise populations have declined both in numbers of tortoises located during surveys and in densities of live tortoises at most sites since the plots were first established 20-30 years ago (Berry *et al*. 2002). Declines of 50 to 96 percent have occurred regardless of initial tortoise densities.

Increases in the occurrence of shell-skeletal remains have been found to correspond with declines in numbers and densities of live tortoises with the exception of certain plots where poaching has been documented (Berry 2003). Results of desert tortoise surveys at three survey plots (Beaver Dam Slope, Littlefield, and Virgin Slope) in Arizona indicate that all three sites have experienced significant die-offs.

Six live tortoises were located in a 2001 survey of the Beaver Dam Slope Exclosure Plot (Walker and Woodman 2002). Three had definitive signs of URTD, and two of those also had lesions indicative of cutaneous dyskeratosis. Previous surveys of this plot detected 31 live tortoises in 1996, 20 live tortoises in 1989, and 19 live tortoises in 1980. The 2001 survey report indicated that it is likely that there is no longer a reproductively viable population of tortoises on this study plot.

Thirty-seven live tortoises were located in a 2002 survey of the Littlefield Plot (Young *et al*. 2002). None had definitive signs of URTD. Twenty-three tortoises had lesions indicative of cutaneous dyskeratosis. Previous surveys of this plot detected 80 live tortoises in 1998 and 46 live tortoises in 1993. The survey report indicated that the site might be in the middle of a die-off due to the high number of carcasses observed since the site was last surveyed in 1998.

Nine live tortoises were located during the marking phase of a 2003 survey of the Virgin Slope Plot (Goodlett and Woodman 2003). The surveyors determined that the confidence intervals of the population estimate would be excessively wide and not lead to an accurate population estimate, so the recapture phase was not conducted. One tortoise had definitive signs of URTD. Seven tortoises had lesions indicative of cutaneous dyskeratosis. Previous surveys of this plot detected 41 live tortoises in 1997 and 15 live tortoises in 1992. The survey report indicated that the site may be at the end of a die-off that began around 1996-1997.

The Western Mojave has experienced marked population declines as indicated in the Recovery Plan and this decline continues today. Spatial analyses of the West Mojave show areas with increased probabilities of encountering dead rather than live animals, areas where kernel estimates for carcasses exist in the absence of live animals, and extensive regions where there are clusters of carcasses where there are no clusters of live animals. Collectively, these analyses point generally toward the same areas within the West Mojave, namely the northern portion of the Fremont-Kramer DWMA and the northwestern part of the Superior-Cronese DWMA. Together, these independent analyses, based on different combinations of data, all suggest the same conclusion for the Western Mojave. Data are not currently available with sufficient detail for most of the range of the desert tortoise with the exception of the Western Mojave (Tracy *et al*. 2004).

Declines in tortoise abundance appear to correspond with increased incidence of disease in tortoise populations. The Goffs permanent study plot in Ivanpah Valley, California, suffered 92 to 96 percent decreases in tortoise density between 1994 and 2000 (Berry 2003). The high prevalence of disease in Goffs tortoises likely contributed to this decline (Christopher *et al*. 2003). Upper respiratory tract disease has not yet been detected at permanent study plots in the Sonoran Desert of California, but is prevalent at study plots across the rest of the species' range (Berry 2003) and has been shown to be a contributing factor in population declines in the western Mojave Desert (Brown *et al*. 1999, Christopher *et al*. 2003).

High mortality rates at permanent study plots in the northeastern and eastern Mojave and Sonoran Deserts appear to be associated with incidence of shell diseases in tortoises (Jacobson *et al*. 1994). Low levels of shell diseases were detected in many populations when the plots were first established, but increased during the 1980s and 1990s (Jacobson *et al*. 1994, Christopher *et al*. 2003). A herpes virus has been discovered in desert tortoises, but little is known about its effects on tortoise populations at this time (Berry *et al*. 2002, Origgi *et al*. 2002).

A kernel analysis was conducted in 2003-2004 for the desert tortoise (Tracy *et al*. 2004) as part of the reassessment of the 1994 Recovery Plan. Kernel analyses identify the distributions of live

tortoises and carcasses and qualitatively search for areas where distributions of live tortoises and carcasses do not overlap. These non-overlapping areas may indicate areas that have experienced recent die offs or expansions of populations. The kernel analysis revealed several areas in which the kernel estimations for live tortoises and carcasses did not overlap. These regions lacking overlap of live tortoises and carcasses (*i.e.,* carcasses are located but no live tortoises) represent areas where there were likely recent die-offs or declines in tortoise populations. The pattern of non-overlapping kernels of greatest concern is that in which there were large areas where the kernels encompassed carcasses but not live animals. The kernel analysis indicated large areas in the Piute-Eldorado Valley where there were carcasses but no live tortoises. For this entire area in 2001, there were 103 miles of transects walked, and a total of 6 live and 15 dead tortoises were located, resulting in a live encounter rate of 0.06 tortoises per mile of transect for this area. This encounter rate was among the lowest that year for any of the areas sampled in the range of the desert tortoise (Mojave population) (Tracy *et al*. 2004).

Kernel analysis for the Coyote Springs DWMA showed areas where the distributions of carcasses and living tortoises do not overlap; however, densities of adult tortoises for the region do not show a statistical trend over time. Thus, while there may be a local die-off occurring in the northern portion of this DWMA, this does not appear to influence the overall trend in the region as interpreted by study plot data. Because permanent study plots for this region were discontinued after 1996, if there have been recent declines in numbers they are not reflected in the kernel analysis. Nevertheless, large regions of non-overlapping carcass and live tortoise kernels in the regions were not identified adjacent to the Coyote Springs DWMA. The probability of finding either a live tortoise or a carcass was relatively very low for Beaver Dam Slope and Gold-Butte Pakoon and moderately low for Mormon Mesa/Coyote Springs.

The kernel analysis of the Eastern Colorado Recovery Unit shows that the distributions of the living tortoises and carcasses overlap for most of the region. The Chuckwalla Bench study plot occurs outside the study area, which creates a problem in evaluating what may be occurring in that area of the Recovery Unit. However, the few transects walked in that portion of the DWMA yielded no observations of live or dead tortoises. This illustrates a concern for drawing conclusions at a regional scale based on data from areas represented by too few study plots. The percentage of transects with live animals was relatively high for most DWMAs within the Eastern Colorado Recovery Unit. In addition, the ratio of carcasses to live animals was low within this Recovery Unit relative to others.

Long-term monitoring of desert tortoise populations is a high priority recovery task as identified in the Recovery Plan. From 1995 to 1998, pilot field studies and workshops were conducted to develop a monitoring program for the desert tortoise. In 1998, the Desert Tortoise Management Oversight Group identified line distance sampling as the appropriate method to determine rangewide desert tortoise population densities and trends. Monitoring of populations using this method is underway across the range of the desert tortoise. Successful rangewide monitoring will enable managers to evaluate the overall effectiveness of recovery actions and population responses to these actions, thus guiding recovery of the desert tortoise (Mojave population).

Rangewide Population Monitoring Results: 2001-2005

Rangewide tortoise population monitoring began in 2001 and is conducted annually (Table 2). Rangewide sampling of desert tortoises consisted of 4,986 transects totaling 15,957 miles which is the most comprehensive attempt undertaken to date to establish the density of this species (Service 2006). The rangewide monitoring program is designed to detect long-term population trends. However, density estimates from any brief window of time (*e.g.*, 2001-2005) would be expected to detect only catastrophic declines or remarkable population increases. Therefore, following the first five years of the long-term monitoring project, the goal is not to document trends within this time period, but to gather information on baseline densities, and year-to-year and recovery unit-to-recovery unit variability. This information will also reflect transect-to-transect variability in observations as well as regional variability in detection functions.

Rangewide sampling was initiated during a severe drought that intensified in 2002 and 2003, particularly in the western Mojave Desert in California. At the time the Recovery Plan was written, there was less consideration of the potentially important role of drought in the desert ecosystem, particularly regarding desert tortoises. In the meantime, studies have documented vulnerability of juvenile (Wilson *et al*. 2001) and adult tortoises (Peterson 1994, Peterson 1996, Henen 1997, Longshore *et al*. 2003) to drought.

Considerable decreases in density were reported in 2003 in the Eastern Colorado and Western Mojave recovery units, with no correspondingly large rebound in subsequent estimates. Desert tortoise densities reported in these recovery units were approximately 8 to 9 tortoises per square mile.

Table 2. Summary of Desert Tortoise Densities by Recovery Unit

	Year	# of Transects	Length (mi)	# of Adult Tortoises Located	Density (mi^2)	95 percent Confidence Interval Low	95 percent Confidence Interval High
Recovery Units (5)	2001	1,631	1,653	279	9.40	8.02	11.0
	2002	1,010	2,490	289	8.95	7.35	10.9
	2003	990	2,407	354	8.19	6.77	9.90
	2004	610	4,086	445	8.05	6.97	9.29
	2005	745	5,321	489	8.76	7.66	10.0
Upper Virgin River[1]	2001	159	195	168	48.6	37.0	63.7
	2002	–	–	–	–	–	–
	2003	157	192	96	27.2	21.1	35.0
	2004	–	–	–	–	–	–
	2005	155	189	136	35.1	26.4	46.7

[1]Data from McLuckie *et al*. (2006)

B. *Desert Tortoise Critical Habitat*

On February 8, 1994, the Service designated approximately 6.45 million acres of critical habitat for the Mojave population of the desert tortoise in portions of California (4.75 million acres), Nevada (1.22 million acres), Arizona (339 thousand acres), and Utah (129 thousand acres) (59 FR 5820-5846, also see corrections in 59 FR 9032-9036), which became effective March 10, 1994. Desert tortoise critical habitat was designated by the Service to identify the key biological and physical needs of the desert tortoise and key areas for recovery, and focuses conservation actions on those areas. Desert tortoise critical habitat is composed of specific geographic areas that contain the primary constituent elements of critical habitat, consisting of the biological and physical attributes essential to the species' conservation within those areas, such as space, food, water, nutrition, cover, shelter, reproductive sites, and special habitats. The specific primary constituent elements of desert tortoise critical habitat are:

1. Sufficient space to support viable populations within each of the six recovery units, and to provide for movement, dispersal, and gene flow;
2. sufficient quality and quantity of forage species and the proper soil conditions to provide for the growth of these species;
3. suitable substrates for burrowing, nesting, and overwintering; burrows, caliche caves, and other shelter sites;
4. sufficient vegetation for shelter from temperature extremes and predators; and
5. habitat protected from disturbance and human-caused mortality.

CHUs were based on recommendations for DWMAs outlined in the *Draft Recovery Plan for the Desert Tortoise (Mojave Population)* (Service 1993). These DWMAs are also identified as "desert tortoise ACECs" by BLM. Because the critical habitat boundaries were drawn to optimize reserve design, the critical habitat unit may contain both "suitable" and "unsuitable" habitat. Suitable habitat can be generally defined as areas that provide the primary constituent elements.

Although recovery of the tortoise will focus on DWMAs/ACECs, section II.A.6. of the Recovery Plan and section 2(b) of the Act provide for protection and conservation of ecosystems on which federally-listed threatened and endangered species depend, which includes both recovery and non-recovery areas. The Mojave Desert ecosystem, of which the desert tortoise and its habitat are an integral part, consists of a dynamic complex of plant, animal, fungal, and microorganism communities and their associated nonliving environment interacting as an ecological unit (Noss and Cooperrider 1994). Actions that adversely affect components of the Mojave Desert ecosystem may directly or indirectly affect the desert tortoise. The Recovery Plan further states that desert tortoises and habitat outside recovery areas may be important in recovery of the tortoise. Healthy, isolated tortoise populations outside recovery areas may have a better chance of surviving catastrophic effects such as disease, than large, contiguous populations (Service 1994).

The Recovery Plan recommended DWMAs and subsequently the Service designated CHUs based on these proposed DWMAs (Service 1993). When designated, desert tortoise critical habitat contained all the primary constituent elements. The following seven principles of conservation biology serve as the standards by which the Service determines whether or not the CHUs are functioning properly:

(1) *Reserves should be well-distributed across the species' range*. The entire range of the Mojave desert tortoise occurs within one of the six recovery units identified in the Recovery Plan and at least one DWMA and CHU occurs within each recovery unit. The reserves remain well-distributed across the range of the desert tortoise.

(2) *Reserves should contain large blocks of habitat with large populations of target species*. The desert tortoise requires large, contiguous areas of habitat to meet its life requisites. Each DWMA and its associated CHUs were designated to conserve contiguous blocks of habitat that exceed 500,000 acres, with the exception of the Upper Virgin River Recovery Unit (Table 3). The Upper Virgin River Recovery Unit does not meet the minimum size requirement identified in the Recovery Plan; however, the Service anticipates that reserve-level management will adequately conserve the desert tortoise within this recovery unit. Designation of CHUs were based largely on transect data and included areas with the largest populations of desert tortoises.

(3) *Blocks of habitat should be close together*. This principle was met when CHUs were designated and remains valid.

(4) *Reserves should contain contiguous rather than fragmented habitat.* This principle was met when CHUs were designated and generally continues to be met. Desert tortoise-proof fencing has been constructed along major roads and highways that traverse critical habitat including Interstate 15 in Nevada and California (Ivanpah Valley DWMA/CHU), U.S. Highway 95 in Nevada (Piute-Eldorado DWMA/CHU), and Highway 58 in California (Fremont-Kramer DWMA/CHU). Major roads and highways alone constitute a barrier to tortoise movements without fencing; however, the fencing minimizes take of tortoises and culverts or underpasses allow for limited tortoise movement across the road or highway.

(5) *Habitat patches should contain minimal edge-to-area ratios*. This principle was met when CHUs were designated and generally continues to be valid. Notable exceptions include the northern Gold Butte-Pakoon CHU, and the southern termini of the Mormon Mesa, Ivanpah Valley, and Chuckwalla CHUs which have large edge-to-area rations and are further compromised by highways that traverse these relatively narrow areas within the CHUs. Pending development of private lands in Coyote Spring Valley would substantially increase the edge-to-area ratio in the southwestern section of the Mormon Mesa CHU.

(6) *Blocks should be interconnected by corridors or linkages connecting protected, preferred habitat for the target species.* Most CHUs are contiguous with another CHU with the exception of Ord-Rodman, Ivanpah Valley, Gold Butte Pakoon, and Upper Virgin River CHUs. Interstate

15 and the Virgin River separate the Gold Butte-Pakoon CHU from other CHUs in the Northeastern Mojave Recovery Unit. Similarly, Interstate 40 separates the Piute-Eldorado and Chemehuevi CHUs, and Ord Rodman and Superior-Cronese CHUs. Ongoing and proposed development in Coyote Spring Valley may fragment the Mormon Mesa DWMA by restricting tortoise movements between the Kane Springs ACEC to the north and Coyote Springs ACEC to the south, depending on the extent of development.

(7) *Blocks of habitat should be roadless or otherwise inaccessible to humans*. Achieving this principle is the most problematic. A 2001 inventory of roads in the Western Mojave suggests that road density increased from the mid-1980s. Further evaluation should be conducted as some of the recently mapped roads were actually historical roads especially with the advent of effective mapping capabilities (Tracy *et al.* 2004). Roads proliferate desert tortoise habitat rangewide and may be increasing in density (Tracy *et al.* 2004).

The recommendations for desert tortoise critical habitat in the Recovery Plan include elimination of specified activities that are incompatible with desert tortoise conservation including habitat destruction that diminishes the capacity of the land to support desert tortoises, and grazing by livestock, feral burros and horses. Since approval of the Recovery Plan, all livestock grazing in desert tortoise critical habitat has either been eliminated (Nevada) or substantially reduced and managed to minimize potential impacts to desert tortoise critical habitat (California, Arizona, and Utah). BLM and National Park Service (NPS) manage for zero burros in Nevada and the California Desert Managers Group developed a burro management plan in 2004.

Table 3. Desert Tortoise CHUs, DWMAs, and Recovery Units- Size and Location

CHU	SIZE (ac.)	STATE	DWMA	RECOVERY UNIT
Chemehuevi	937,400	CA	Chemehuevi	Northern Colorado
Chuckwalla	1,020,600	CA	Chuckwalla	Eastern Colorado
Fremont-Kramer	518,000	CA	Fremont-Kramer	Western Mojave
Ivanpah Valley	632,400	CA	Ivanpah Valley	Eastern Mojave
Pinto Mountain	171,700	CA	Joshua Tree	Western Mojave/Eastern Colorado
Ord-Rodman	253,200	CA	Ord-Rodman	Western Mojave
Piute-Eldorado- CA Piute-Eldorado- NV	453,800 516,800	CA NV	Fenner Piute-Eldorado	Eastern Mojave Northeastern & Eastern Mojave
Superior-Cronese	766,900	CA	Superior-Cronese Lakes	Western Mojave
Beaver Dam	87,400 74,500 42,700	NV UT AZ	Beaver Dam Beaver Dam Beaver Dam	Northeastern Mojave (all)
Gold Butte-Pakoon	192,300 296,000	NV AZ	Gold Butte-Pakoon Gold Butte-Pakoon	Northeastern Mojave (all)
Mormon Mesa	427,900	NV	Mormon Mesa Coyote Spring	Northeastern Mojave
Upper Virgin River	54,600	UT	Upper Virgin River	Upper Virgin River

Further information on the status of desert tortoise critical habitat can be found in the following documents:

- Desert Tortoise Recovery Plan Assessment Report (Tracy *et al*. 2004) - all CHUs.
- Final Environmental Impact Report and Statement for the West Mojave Plan (BLM 2005) - Fremont-Kramer CHU, Superior-Cronese CHU, Ord-Rodman CHU, and Pinto Mountains CHU.
- Mojave National Preserve General Management Plan (NPS 2002) - Ivanpah Valley CHU and Piute-Eldorado CHU.
- Northern and Eastern Colorado Coordinated Management Plan (BLM 2002a) - Chemehuevi CHU, Pinto Mountains CHU, and Chuckwalla CHU.
- Northern and Eastern Mojave Desert Management Plan (BLM 2002b) - Ivanpah Valley CHU, Piute-Eldorado CHU, and Chemehuevi CHU.
- Clark County Multiple Species Habitat Conservation Plan (HCP) (RECON 2000) - Beaver Dam Slope CHU, Mormon Mesa CHU, Gold Butte-Pakoon CHU, and Piute-Eldorado CHU.
- Washington County HCP (Washington County Commission 1995).
- Biological Assessment for the Proposed Addition of Maneuver Training Land at Fort Irwin, CA (U.S. Army National Training Center 2003) - Superior-Cronese CHU.

III. Environmental Baseline

A. Status of the Species/Critical Habitat Within the Action Area

The vegetation type that occurs within the range of the desert tortoise and the project area is Mojave Desert scrub. The southeastern portion of Nevada is characterized as an intermediate zone between the Great Basin Desert Scrub located generally to the north of Delamar, Clover, and the Pahranagat Mountains, and the Mojave Desert Scrub to their south. Plants and animals occupying Mojave Desert Scrub are similar to those observed in the Lower Colorado River Subdivision of Sonoran Desert Scrub, within the creosote bush series, *Larrea tridentata-Ambrosia dumosa* association. These open-plant communities occupy areas characterized by gravelly bajadas and inconspicuous low plains. Common plant species observed during surveys include creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), Mojave yucca (*Yucca schidigera*), Mormon tea (*Ephedra* spp.), ratany (*Krameria* spp.), and fourwing saltbush (*Atriplex canescens*).

Desert tortoise surveys were conducted and other forms of data were collected in support of preparation of the environmental impact statement for SWIP. Survey data were collected within 2-mile-wide study corridors centered on the proposed alignment. In July 2006, two biologists conducted field surveys for the desert tortoise along the right-of-way. The survey consisted of a total of 29 triangular strip transects providing 43.5 miles of total transect length. Each side of the triangular strip transect is 0.5 mile and is walked by desert tortoise biologists while recording tortoises and sign observed within a 9-meter-wide (10-yard-wide) area. The total number of

tortoise sign per transect was then adjusted such that multiple sign obviously associated with a single individual was reduced to one sign (referred to as the Corrected Sign or CS). The total CS per transect was used to estimate the number of tortoises inhabiting the survey area based on methods described by Berry and Nicholson (1984). Tortoises or sign thereof were found in 10 of the 29 transects. Most of the CS (88 percent) was found along the right-of-way at the southernmost portion of the Mormon Mesa CHU and north of Kane Springs Road in the same CHU. Two live tortoises were encountered with a total of 32 observations of tortoise sign. Total corrected sign for all transects was 25.

Desert tortoise population data was collected in 2001, 2002, 2003, using line transects and distance sampling (TDS). The ratio of carcasses versus live tortoises was calculated from transect observations (Tracy *et al*. 2004). Ratios much larger than "1" suggest excessive tortoise mortality and therefore, a decline in tortoise populations. Ratios around "1" indicate a stable population. The Mormon Mesa CHU ratio was 1.58 suggesting that desert tortoise populations in this CHU have only experienced a small decline.

Specific data on the distribution and abundance of desert tortoise in the project area was obtained from BLM's Las Vegas Field Office including maps showing the results of the 1.5-mile triangular strip-transect surveys. Updated biological information was collected including literature reviews and field surveys for the desert tortoise along the transmission line from the southern end of Delamar Lake to the Harry Allen Substation.

The proposed project would occur within the Mormon Mesa CHU. The right-of-way that occurs within critical habitat approximates U.S Highway 93. The right-of-way enters critical habitat approximately 10 miles north of Interstate 15. Approximately 43 miles of the right-of-way occurs within or immediately adjacent to desert tortoise critical habitat.

The Mormon Mesa CHU includes expansive bajadas which provide prime tortoise habitat. The CHU is unique in that it is the only east-west oriented CHU in Nevada and may serve as an east-west corridor for movement of tortoises within and between Nevada, Utah, and Arizona. Desert tortoise populations are patchy in distribution in the Mormon Mesa CHU, as they typically are throughout their range, but estimates identify 41 to 87 subadults and adults per square mile (Service 1994).

B. Factors Affecting the Desert Tortoise and Its Critical Habitat Within the Action Area

Most impacts to the Mormon Mesa CHU occur along the western section of the CHU which includes the proposed action area. In 2005, wildfires burned across the northernmost portion of the right-of-way at the northern range limit for the desert tortoise. A commercial recycling facility occurs on private land east of the proposed project near the intersection of US 93 and Kane Springs Road. A large residential and commercial development (Coyote Springs Investment; CSI) is under development mostly just east of US 93, north of State Route 168, and south of Kane Springs Road. The development will result in habitat loss, fragmentation, and

alteration. Although tortoises are being removed from the development, some inadvertent mortality may occur. Development in Coyote Spring Valley would also increase human activities within the CHU such as recreational activities, increasing the likelihood of collection, handling, vandalism of tortoises, and dumping. Human interaction can also alter the predator regime by introducing domestic dogs and attracting raven populations. Release of captive tortoises may introduce diseased tortoises into the wild population, increasing the risk of disease.

On June 6, 2007, the Service issued a reinitiated, tiered biological opinion to the U. S. Army Corps of Engineers (Corps) for construction of a flood detention basin along and west of US 93 (File No. 1-5-05-FW-536-Tier 01R) to support development in Coyote Spring Valley. The Corps will amend their Section 404 (of the Clean Water Act) permit for the CSI development to include the new location of potable water reservoir facilities and detention basins on BLM-administered land. In coordination with the Corps, BLM will approve the right-of-way application for the construction and operation of potable water reservoir facilities and detention basins in BLM utility corridor located west of US 93. The proposed SWIP project would cross through this area.

Numerous paved and unpaved roads occur within the action area, some of which have been identified and proposed for access for the project. Signs of human activities were observed during the July 2007 survey including a campsite, garbage dumping/littering, shooting areas (firearms), utility lines, and cattle scat. The Harry Allen Substation occurs at the southern terminus of the proposed project.

Habitat Conservation Plans Completed in the Action Area

1. On July 11, 1995, the Service issued a section 10(a)(1)(B) incidental take permit under the Act (No. PRT-801045) to Clark County, Nevada, including cities within the county and the Nevada Department of Transportation (NDOT). The permit became effective August 1, 1995, and allowed the "incidental take" of desert tortoises for a period of 30 years on 111,000 acres of non-Federal land in Clark County, and approximately 2,900 acres associated with NDOT activities in Clark, Lincoln, Esmeralda, Mineral, and Nye counties, Nevada. The Clark County Desert Conservation Plan (DCP) served as the permittees' habitat conservation plan and detailed their proposed measures to minimize, monitor, and mitigate the effects of the proposed take on the desert tortoise (Regional Environmental Consultants 1995). The permittees imposed, and NDOT paid, a fee of $550 per acre of habitat disturbance to fund these measures. The permittees expended approximately $1.65 million per year to minimize and mitigate the potential loss of desert tortoise habitat. The majority of these funds were used to implement minimization and mitigation measures, such as increased law enforcement; construction of highway barriers; road designation, signing, closure, and rehabilitation; and tortoise inventory and monitoring within the lands initially conserved during the short-term HCP, and other areas being managed for desert tortoise recovery (e.g., ACECs or DWMAs). The benefit to the species, as provided by the DCP,

substantially minimized and mitigated those effects which occurred through development within the permit area and aided in recovery of the desert tortoise.

2. On November 22, 2000, the Service issued an incidental take permit (TE-034927) to Clark County, Nevada, including cities within the county and the Nevada Department of Transportation. The Clark County Multiple Species Habitat Conservation Plan (MSHCP) and Environmental Impact Statement (RECON 2000), serves as the permittees' HCP and details their proposed measures to minimize, mitigate, and monitor the effects of covered activities on the 78 species. In the biological/conference opinion (File No. 1-5-00-FW-575), the Service determined that issuance of the incidental take permit would not jeopardize the listed desert tortoise or southwestern willow flycatcher, or any of the 76 species that are not listed nor proposed for listing under the Act that are covered under the incidental take permit. The incidental take permit allows incidental take of covered species for a period of 30 years on 145,000 acres of non-Federal land in Clark County south of the 38th parallel in Nevada. The MSHCP covers the CSI development in the Clark County portion of Coyote Spring Valley.

   On November 2, 2007, the Service published a Notice of Availability (72 FR 62254) of the Coyote Spring MSHCP and supporting documents addressing the potential effect of development in Coyote Spring Valley in Lincoln County, Nevada. If issued, the incidental take permit for the Coyote Spring MSHCP would exempt incidental take for the desert tortoise and four other listed species on 21,454 acres.

Programmatic Consultations Affecting the Action Area

1. BLM Las Vegas Field Office. On November 25, 1997, the Service issued a programmatic biological opinion (File No. 1-5-97-F-251) to BLM for implementation of various land management programs within non-critical desert tortoise habitat and the Las Vegas planning area. Activities that were proposed that may affect the desert tortoise in the action area include issuance of rights-of-way, R&PP leases, mineral material sales and leases, and mining plans of operation.

   On June 18, 1998, the Service issued a programmatic biological opinion (File No. 1-5-98-F-053) to BLM for implementation of various land management programs within desert tortoise habitat and the Las Vegas planning area, including desert tortoise critical habitat and ACECs. Activities that were proposed that may affect the desert tortoise in the action area include recreation; designation of utility corridors and mineral material extraction areas along US 93; and designation of the Coyote Spring, Mormon Mesa (Clark County portion), and Gold Butte desert tortoise ACECs.

2. BLM Caliente Field Station. On March 3, 2000, the Service issued a programmatic biological opinion (File No. 1-5-99-F-450) to BLM for implementation of various land management programs within desert tortoise habitat and the Caliente planning area.

Activities that were addressed were similar to BLM's Las Vegas Field Office including designation of the Kane Springs, Mormon Mesa (Lincoln County portion), and Beaver Dam Slope ACECs.

IV. Effects of the Proposed Action on the Listed Species/Critical Habitat

Linear construction projects can negatively affect desert populations. Studies suggest that differences in the extent of the threat are related to the scale of the project, the ability of crews to avoid disturbing burrows, and timing of construction to avoid peak activity periods of tortoises (Boarman 2002). In addition to the discrete disturbance points formed by towers and lines, maintenance roads and repeated operations can (1) introduce continuous sources of disturbance and (2) provide potential sites for invasion of exotic species. Rights-of-way can cause habitat destruction and alteration where vegetation is minimal, possibly increasing mortality, directly or indirectly (Boarman 2002).

The greatest potential threat to desert tortoises resulting from the proposed action is from vehicles and heavy equipment activity on new and existing access roads. Roads provide direct invasion routes and habitat generation for invasive weedy plants. Tortoises could also be killed or injured as a result of being crushed by worker vehicles commuting to and from the project area. Tortoises in harm's way and not located before project activities commence, or not avoided by vehicles, could also be killed or injured. Any tortoise on an access road during project hours would be highly vulnerable. If vehicles travel at excessive speeds on access roads they may inadvertently run over desert tortoises. Project vehicles or equipment that stray from designated areas or widen existing access roads may crush desert tortoises aboveground or in their burrows or damage habitat outside the project area. Tortoises could wander into the construction work area or take refuge underneath project vehicles and equipment, and be killed or injured when the vehicle/equipment is moved.

Following construction, the public may use project access roads which may result in adverse effects to tortoise populations. Humans use the desert for off-road exploration, casual shooting and target practice, personal or commercial collection of animals and plants, searches and digging for minerals and gems, geocaching (GPS guided stash hunts), and even the production of illegal drugs. Desert tortoise shells found in the Mojave Desert with bullet holes were examined forensically with the finding that the tortoises were alive when they were shot (Berry 1986), suggesting that illegal shooting of tortoises could occur. Project personnel could illegally collect tortoises for pets or bring dogs to the project area. Measures proposed by BLM to (1) clear project areas of tortoises, (2) implement a desert tortoise awareness program, (3) provide an onsite biologist, (4) prohibit pets from the project area, (5) impose a speed limit, (6) avoid "sensitive periods" for the desert tortoise, and (7) close unnecessary roads following construction and control public access, should minimize the potential effects to the tortoise described above. Although a maximum speed limit of 20 miles per hour will be established and biological monitors will be present, the potential remains (though minimized) for vehicle-wildlife related accidents.

Project activities may provide food in the form of trash and litter which attracts important tortoise predators such as the common raven, kit fox, and coyote (BLM 1990, Boarman and Berry 1995). The majority of raven predation occurs during the spring and is most likely accomplished by breeding birds (Boarman 2002). Ravens use transmission towers as well as other anthropogenic structures as nest sites which threaten small tortoises in the area surrounding the nest site (Boarman 2002). During the raven breeding season, most foraging is probably done near the nest (Sherman 1993) and most food is likely brought back to or near the nest. Natural 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. Common raven populations in some areas of the Mojave Desert have increased 1500 percent from 1968 to 1988 in response to expanding human use of the desert (Boarman 1992). Since ravens were scarce in this area prior to 1940, the current level of raven predation on juvenile desert tortoises is considered to be an unnatural occurrence (BLM 1990). Some forms of trash may be ingested by tortoises or they may become entangled resulting in their injury or death. If fuel or other hazardous materials are spilled in desert tortoise habitat, desert tortoises and their habitat may be adversely affected as a result. Measures proposed by BLM to (1) implement a litter-control program and require trash and food to be disposed of properly in predator-proof containers, (2) inspect structures for raven nesting, (3) prohibit hazardous material drainage, and (4) provide desert tortoise awareness training and an onsite biologist, should minimize these effects.

Tortoises that are physically moved out of project areas to prevent mortality or injury could be inadvertently harmed if not handled properly. Urine and large amounts of urates may be voided during handling and may represent a severe water loss, particularly to juveniles (Luckenbach 1982). Overheating can occur if tortoises are not placed in the shade when ambient temperatures equal or exceed temperature maximums for the species (Desert Tortoise Council 1994, revised 1999). The timing of the proposed project to avoid sensitive periods for the tortoise and measures proposed by BLM to conduct clearance surveys and provide qualified biologists should minimize these effects.

The proposed project would result in disturbance of 231 acres of non-critical desert tortoise habitat and 365 acres of critical desert tortoise habitat. Disturbance consists of access routes for project vehicles and equipment, tower work sites, a concrete batch plant, wire pulling and tensioning sites, and guard structures. Approximately 200 acres will be lost for an indefinite period and the remaining approximately 400 acres will not return to pre-construction function for more than 10 years (long-term disturbance). Measures proposed by BLM to (1) assess remuneration fees, (2) initiate restoration activities, (3) limit extent of disturbance and travel by project vehicle and equipment, (4) minimize disturbance of vegetation, (5) implement a tortoise awareness training, and (6) flag or mark construction limits, should minimize most of these effects.

The use of blasting may result in take of desert tortoises through noise and ground vibration. Open excavations may result in tortoise falls and entrapment. The right-of-way would become a linear disturbed area that provides open, barren areas that increase the visibility of tortoises to

avian and other predators and reduce the thermal cover for tortoises, contributing towards fragmentation of tortoise habitat and populations. The disturbance and use of earth moving equipment may increase the spread of weeds and alien grasses which facilitate wildfires. Measures proposed by BLM to (1) relocate tortoises from blasting zones, (2) cover or fence open excavations, and (3) restore habitat, should minimize most of these effects.

The Service believes that implementation of the proposed action including the minimization measures may result in no more than two desert tortoises being killed or injured. All desert tortoises that appear on the right-of-way in harm's way may be captured and relocated or temporarily penned (when inactive).

V. Cumulative Effects

Cumulative effects are those effects of future non-Federal (State, tribal, local government, or private) activities that are reasonably certain to occur in the action 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 Service determined that future actions in the action area would likely require section 7 consultation or fall under purview of an HCP (section 10 of the Act). Thus, no future non-Federal activities are reasonably certain to occur in the action area; thus, there are no cumulative effects as a result of the proposed action.

VI. Conclusion

After reviewing the current status of the desert tortoise and its critical habitat, the environmental baseline for the action area, the effects of the proposed project, and the cumulative effects, it is the Service's biological opinion that the project, as proposed and analyzed, is not likely to jeopardize the continued existence of the threatened desert tortoise (Mojave population).

Critical habitat for the desert tortoise has been designated in portions of the Piute and Eldorado valleys, Mormon Mesa, Gold Butte, and Beaver Dam Slope areas of Nevada. The proposed project would result in new disturbance of critical habitat in the Mormon Mesa CHU. However, it is the Service's biological opinion that the proposed project is not likely to result in adverse modification of designated critical habitat for the desert tortoise (Mojave population) or diminish the capability of the area to serve its role for recovery by continuing to provide the primary constituent elements of critical habitat. This conclusion is based on the following:

1. The proposed project will not result in a level of take of desert tortoise that would significantly affect the rangewide number, distribution, or reproduction of the species; tortoises that are taken as a result of the project are anticipated to remain in the wild with

no long-term effects except for two desert tortoises estimated to be killed or injured by project activities.

2. Measures have been proposed by BLM and Great Basin to minimize the effects of the proposed action on the desert tortoise.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act, as amended, prohibits 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). Incidental take is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant. Under the terms of sections 7(b)(4) and 7(o)(2) of the Act, taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The terms and conditions may include restated or modified measures proposed by BLM or additional measures considered necessary by the Service. Where these terms and conditions vary from or contradict the minimization measures proposed under the Description of the Proposed Action, specifications in these terms and conditions shall apply. The measures described below are nondiscretionary and must be implemented by BLM so that they become binding conditions of any project, contract, grant, or permit issued by BLM or other jurisdictional Federal agencies as appropriate, in order for the exemption in section 7(o)(2) to apply. The Service's evaluation of the effects of the proposed actions includes consideration of the measures developed by BLM, and repeated in the *Description of the Proposed Action* portion of this biological opinion, to minimize the adverse effects of the proposed action on the desert tortoise. Any subsequent changes in the minimization measures proposed by BLM may constitute a modification of the proposed action and may warrant reinitiation of formal consultation, as specified at 50 CFR § 402.16. These reasonable and prudent measures are intended to clarify or supplement the protective measures that were proposed by BLM as part of the proposed action.

BLM has a continuing duty to regulate the activity that is covered by this incidental take statement. If BLM fails to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to permits or grant documents, and/or fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

I. Amount or Extent of Take Anticipated

Based on the analysis of effects provided above, measures proposed by BLM, and anticipated project duration, the Service anticipates that the following take could occur as a result of the proposed action:

1. The Service determined that no more than two desert tortoises would be incidentally killed or injured as a result of the proposed project. Should any desert tortoise be killed or injured in association with the proposed action, all activity in the vicinity of the incident shall cease and the project proponent shall immediately contact the Service.

2. All desert tortoises located in harm's way will be harassed by capture and removal from the project area. Based on survey data, description of proposed activities, timing of the proposed project, and description of the project area, the Service estimates that no more than 45 desert tortoises may be taken (other than killed or injured) by non-lethal means as a result of project activities.

3. An unknown number of desert tortoise nests with eggs may be excavated and relocated. The Service determined that no desert tortoise nests with eggs are anticipated to be destroyed as a result of project activities.

4. An unknown number of desert tortoises may be taken as a result of increased raven predation in association with the proposed action; however, the Service estimates that the potential increase in ravens will be minimized by measures proposed by BLM to control litter and identify raven nest sites on the right-of-way.

II. Effect of Take

In the accompanying biological opinion, the Service has determined that this level of anticipated take will not jeopardize the continued existence of the desert tortoise.

III. Reasonable and Prudent Measures

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

1. BLM shall ensure implementation of measures to minimize injury and mortality of desert tortoise as a direct or indirect result of project activities including capture and handling of desert tortoises.

2. BLM shall ensure implementation of measures to minimize predation on tortoises by ravens or other desert tortoise predators attracted to the project area.

3. BLM shall ensure implementation of measures to minimize loss and long-term degradation and fragmentation of desert tortoise habitat, such as soil compaction, erosion, crushed vegetation, or introduction of non-native invasive plants or weeds as a result of project activities.

4. BLM shall ensure implementation of measures 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, BLM must ensure full compliance with the following terms and conditions, which implement the reasonable and prudent measures described above.

1. To implement Reasonable and Prudent Measure Number 1, BLM shall ensure implementation of the following measures to minimize mortality and injury of desert tortoises as a result of project activities, including capture and handling of desert tortoises:

    a. An authorized desert tortoise biologist will be onsite during project activities within desert tortoise habitat. Biologists, monitors, or anyone responsible for conducting monitoring or desert tortoise field activities associated with the project shall complete the Qualifications Form (Attachment A) and submit it to the Service for review and approval as appropriate. Allow 30 days for Service review and response.

    b. Prior to initiation of construction, an authorized biologist or authorized monitor shall present a desert tortoise awareness program to all personnel who will be onsite, including but not limited to contractors, contractors' employees, supervisors, inspectors, and subcontractors. This program will contain information concerning the biology and distribution of the desert tortoise and other sensitive species, their legal status and occurrence in the project area; the definition of "take" and associated penalties; the terms and conditions of this biological opinion; the means by which employees can help facilitate this process; responsibilities of workers, monitors, biologists, and the CIC; and reporting procedures to be implemented in case of desert tortoise encounters or non-compliance with this biological opinion. The name of every individual trained will be recorded on a sign-in sheet. Each trained individual will be given evidence indicating they have received this training and will keep that evidence with them at all times when they are in the project area.

    c. Immediately prior to vehicle and equipment travel on the right-of-way, Service-authorized individuals shall survey for desert tortoises and their burrows using

techniques providing 100-percent coverage of the right-of-way and an additional area approximately 90 feet from both sides of the right-of-way. Transects will be no greater than 30 feet apart. All potential desert tortoise burrows will be examined to determine occupancy of each burrow by desert tortoises and handled in accordance with Term and Condition 1.d. below.

d. All potential desert tortoise burrows located within the project area that are at risk for damage shall be excavated by hand by authorized personnel, tortoises removed, and collapsed or blocked to prevent occupation by desert tortoises. All desert tortoise handling and removal, and burrow excavations, including nests, shall be conducted in accordance with the Service-approved protocol (Desert Tortoise Council 1994, revised 1999). If the Service or Desert Tortoise Council releases a revised protocol for handling of desert tortoises before initiation of project activities, the revised protocol shall be implemented for the project area. Alternatively, tortoises may be temporarily penned to ensure their safety in accordance with Term and Condition 1.e. below.

e. Desert tortoises found in the project area sheltering in a burrow during a period of reduced activity (*e.g.*, winter), may be temporarily penned. Tortoises should not be penned in areas of moderate or heavy public use. Penning shall be accomplished by installing a circular fence, approximately 20 feet in diameter to enclose the tortoise/burrow. The pen should be constructed with durable materials (*i.e.*, 16 gauge or heavier) suitable to resist desert environments. Fence material should consist of ½-inch hardware cloth or 1-inch horizontal by 2-inch vertical, galvanized welded wire. Pen material should be 24 inches in width. Steel T-posts or rebar (3 to 4 feet) should be placed every 5 to 6 feet to support the pen material. The pen material should extend 18 to 24 inches aboveground. The bottom of the enclosure will be buried several inches; soil mounded along the base; and other measures should be taken to ensure zero ground clearance. Care shall be taken to minimize visibility of the pen by the public. A biologist, monitor, or designated worker shall check the pen daily.

f. Desert tortoises and eggs found within construction sites will be removed by an authorized desert tortoise biologist or authorized monitor in accordance with the most current protocols identified by BLM and the Service. Desert tortoises will be moved solely for the purpose of moving them out of harm's way. Desert tortoises will be relocated up to 1,500 feet into adjacent undisturbed habitat on protected public land in accordance with Service-approved handling protocol (Desert Tortoise Council 1994, revised 1999). The disposition of all tortoises handled shall be documented.

g. Desert tortoises shall be treated in a manner to ensure that they do not overheat, exhibit signs of overheating (*e.g.*, gaping, foaming at the mouth, *etc*.), or are

placed in a situation where they cannot maintain surface and core temperatures necessary to their well-being. Desert tortoises shall be kept shaded at all times until it is safe to release them. No desert tortoise shall be captured, moved, transported, released, or purposefully caused to leave its burrow for whatever reason when the ambient air temperature is above 95ºF. Ambient air temperature shall be measured in the shade, protected from wind, at a height of 2 inches above the ground surface. No desert tortoise shall be captured if the ambient air temperature is anticipated to exceed 95ºF before handling and relocation can be completed. If the ambient air temperature exceeds 95ºF during handling or processing, desert tortoises shall be kept shaded in an environment that does not exceed 95ºF and the animals shall not be released until ambient air temperature declines to below 95ºF.

h. All fuel, transmission or brake fluid leaks, or other hazardous materials shall not be drained onto the ground or into streams or drainage areas. All petroleum products and other potentially hazardous materials shall be removed to a disposal facility authorized to accept such materials. Waste leaks, spills or releases shall be reported immediately to BLM. BLM or the project proponent shall be responsible for spill material removal and disposal to an approved off-site landfill. Servicing of construction equipment will take place only at a designated area. All fuel or hazardous waste leaks, spills, or releases will be stopped or repaired immediately and cleaned up at the time of occurrence. Service and maintenance vehicles will carry a bucket and pads to absorb leaks or spills.

i. Vehicles shall not exceed 20 miles per hour on access roads except where otherwise posted. Authorized desert tortoise biologists and/or monitors will ensure compliance with speed limits during construction.

j. Project personnel shall exercise caution when commuting to the project area and obey speed limits to minimize any chance for the inadvertent injury or mortality of species encountered on roads leading to and from the project site. All desert tortoise observations, including mortalities, shall be reported directly to an authorized desert tortoise biologist and the Service. Pets will be prohibited on the project.

k. Any vehicle or equipment on the right-of-way within desert tortoise habitat will be checked underneath before moving. This includes all construction equipment and the area under vehicles should be checked any time a vehicle is left unattended, as well as in the morning before any construction activity begins. If a desert tortoise is observed, an authorized biologist will be contacted.

l. The biologist shall ensure that no habitat is disturbed outside designated areas as a result of the project, including ensuring that all vehicles and equipment remain on

the right-of-way or areas devoid of native vegetation. All cross-country travel and travel outside designated areas are prohibited.

m. All desert tortoises observed within the project area or access road shall be reported immediately to the authorized biologist. The biologists shall halt activities as necessary to avoid harm to a desert tortoise. Project activities that may endanger a desert tortoise shall cease until the desert tortoise moves out of harm's way or is moved out of harm's way by an authorized desert tortoise biologist.

n. Only water or an alternative substance approved by BLM will be used as a dust suppressant.

o. If blasting is necessary, all tortoises located within 100 feet of the blast site will be removed and temporarily relocated in accordance with desert tortoise handling protocol, prior to blasting. Prior to any blasting, all tortoise burrows or coversites within a 200-foot radius of the blast site will be located and the entrances carefully stuffed with crumpled newspaper or other material approved by BLM and the Service. After blasting is completed, all burrows and coversites will be inspected for damage, and stuffing material will be removed. If a burrow or coversite has collapsed and there is a possibility that it could be occupied, it will be excavated to ensure that no tortoises have been buried and are in danger of suffocation.

p. To prevent mortality, injury, and harassment of desert tortoises and damage to their burrows and coversites, no pets shall be permitted in any project construction area.

q. Any excavated holes related to transmission line construction (*i.e.*, foundations) left open overnight will be covered, and/or tortoise-proof fencing will be installed to prevent the possibility of tortoises falling into the open holes.

r. Any tortoise injured as a result of the proposed project shall immediately be transported to a qualified veterinarian and reported to the Service's Nevada Fish and Wildlife Office in Las Vegas at (702) 515-5230.

2. To implement Reasonable and Prudent Measure Number 2, BLM shall ensure implementation of the following measure to minimize predation on tortoises by ravens or other desert tortoise predators attracted to the project area:

a. Trash and food items shall be promptly disposed in predator-proof containers with re-sealing lids. Trash containers will be emptied daily, and waste will be removed

from the project areas and disposed in an approved off-site landfill. Construction waste also will be removed from the site each day and properly disposed.

b. H-frame structures with perch deterrents will be utilized in critical habitat south of State Route 168 in the Coyote Spring ACEC. Post-construction monitoring for ravens and removal of raven nests will be conducted along the right-of-way within desert tortoise habitat.

3. To implement Reasonable and Prudent Measure Number 3, BLM shall ensure implementation of the following measures to minimize loss and long-term degradation and fragmentation of desert tortoise habitat, such as soil compaction, erosion, crushed vegetation, or introduction of weeds as a result of construction and maintenance activities:

a. The boundaries of all areas to be disturbed shall be flagged before beginning any activities, and all disturbances shall be confined to the flagged areas. All construction vehicle movement outside the right-of-way will be restricted to pre-designated access, contractor acquired access, or public roads. No paint or permanent discoloring agents will be applied to rocks or vegetation to indicate survey or construction activity limits. Disturbance beyond the construction zone is prohibited. Authorized desert tortoise biologists will ensure that project vehicles and equipment occur only in designated areas.

b. No widening or upgrading of existing access roads will be undertaken in the area of construction and operation, except for repairs necessary to make roads passable, where soils and vegetation are very sensitive to disturbance. The alignment of any new access roads or overland route shall follow the designated area's landform contours where possible, providing that such alignment does not additionally impact resource values.

c. All new access roads not required for maintenance will be permanently closed using the most effective and least environmentally damaging methods appropriate to that area with concurrence of the landowner or land manager (*e.g.*, stockpiling and replacing topsoil, seeding, or rock replacement). This will limit new or improved accessibility into the area.

d. In construction areas where recontouring is not required, vegetation will be left in place wherever possible and original contour will be maintained to avoid excessive root damage and allow for resprouting. In construction areas where ground disturbance is significant or where recontouring is required, surface restoration will occur as required by BLM. The method of restoration will normally consist of returning disturbed areas back to their natural contour,

reseeding (if required), cross drains installed for erosion control, placing water bars in the road, and filling ditches.

e. In areas where restoration is required, reseeding will occur through the use of native plant species. Reclamation and monitoring requirements and practices including seed mixes will be approved by BLM. Herbicides will not be used as a part of this project.

f. Overnight parking and storage of equipment will be in previously disturbed areas (*i.e.*, lacking vegetation). These areas will also be designated by the pre-construction survey team. If previously disturbed areas are not available, these activities will be restricted to the right-of-way and will be cleared of tortoises by the on-site biologist prior to use.

g. To the extent possible, access to tower sites, and at splicing and tensioning sites will occur by overland travel (*i.e.*, no blading of access will occur). The CIC will ensure that blading is conducted only where necessary. Due to construction constraints resulting from equipment size and personnel safety, blading would be needed at most spur roads and tower sites.

h. Pre-construction surveys shall be conducted for noxious weeds as stipulated by BLM once the transmission line centerline, access roads, and tower sites have been located and staked in the field. BLM shall ensure that noxious weeds are monitored and appropriate control measures are implemented to ensure that weeds do not establish on the right-of-way.

i. The proposed SWIP project would disturb a total of 595 acres of both critical and non-critical desert tortoise habitat. The project proponent shall pay compensation for disturbance of desert tortoise habitat prior to surface-disturbing activities associated with the proposed project. Fees for habitat disturbance within Clark County shall be paid to the Desert Tortoise Public Lands Conservation Fund (account number 730-9999-2315) (Section 7 Account). Fees for habitat disturbance in Lincoln County shall be paid to the Lincoln County Treasurer. Refer to attached forms (Attachment B for Clark County and Attachment C for Lincoln County). The section 7 fees will be indexed for inflation based on the Bureau of Labor Statistics Consumer Price Index for All Urban Consumers (CPI-U) and becomes effective March 1 of each year. The next adjustment will occur March 1, 2008. Information on the CPI-U can be found on the internet at: http://stats.bls.gov/news.release/cpi.nws.htm.

Clark County

The proposed project would disturb a total of 296 acres of desert tortoise habitat in Clark County. Of this, 223 acres are within desert tortoise critical habitat on BLM lands, which is compensated at the current rate of $3,253 per acre (factor of 4.5 x base rate of $723). The multiplier used in this rate calculation was derived from Hastey *et al.* (1991), and consists of a multiplier of 3.0 for habitat quality (*i.e.*, critical habitat), plus 0.5 for growth-inducing effects of the project, plus 1.0 for long-term effects of the action (>10 years), for a total factor of 4.5. Total fees due for disturbance of critical habitat in Clark County are: 223 acres x $3,253/ acre = $725,419.

The remaining 73 acres would consist of disturbance of BLM land outside critical habitat in Clark County and will be compensated at $723 per acre of disturbance (73 acres x $723/acre = $52,779.)

Lincoln County

The proposed project would disturb a total of 299 acres of desert tortoise habitat in Lincoln County. Of this, 142 acres are within desert tortoise critical habitat on BLM lands, which is compensated at the current rate of $3,253 per acre as described above. Total fees due for disturbance of critical habitat in Lincoln County is: 299 acres x $3,253/acre = $972,647.

The remaining 157 acres would consist of disturbance of BLM land outside critical habitat in Lincoln County and will be compensated at $723 per acre of disturbance (157 acres x $723/acre = $113,511.)

Total Section 7 fees required for the SWIP project is $1,864,356.

j. Prior to construction, cacti and yucca to be impacted by project activities shall be excavated and transplanted as part of the restoration in accordance with BLM standards.

k. The project proponent shall prepare and implement a BLM-approved weed-control plan and habitat restoration plan for the project prior to initiation of surface-disturbing activities. Heavy equipment will be cleaned of soil with high-pressure air or water prior to arrival at the project area to minimize the potential introduction of alien plant seeds.

4. To implement Reasonable and Prudent Measure Number 4, BLM shall ensure implementation of the following measures to comply with the reasonable and prudent

measures, terms and conditions, reporting requirements, and reinitiation requirements contained in this biological opinion:

a. BLM shall designate a CIC to oversee compliance with protective stipulations for the desert tortoise and coordinating **directly** with BLM and the Service. The CIC shall have the authority to halt activities or construction equipment that may be in violation of the stipulations. BLM shall provide a copy of the terms and conditions of this biological opinion to the CIC and biologists for the project. The CIC and biologist will prepare a report for BLM and the Service no later than 90 days after completion of construction within desert tortoise habitat. The report will make recommendations for modifying or refining the stipulations, and include the actual acreage of habitat disturbance caused by crushing and blading versus the estimates prior to construction.

b. The on-site biologist shall record each observation of desert tortoise handled. Information will include the following: Location, date and time of observation; whether tortoise was handled, general health and whether it voided its bladder; location tortoise was moved from and location moved to; and unique physical characteristics of each tortoise.

The Service believes that no more than 2 desert tortoise will be accidentally injured or killed and an unknown number of tortoises may be taken by harassment or capture and moved out of harm's way during construction and operation of the material site (however, the Service believes that no more than 45 desert tortoises will be captured and moved); and an unknown number of desert tortoises taken in the form of indirect mortality through predation by ravens or other subsidized predators drawn to the project area.

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, the level of incidental take or loss of habitat identified is exceeded, such incidental take and habitat loss represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. BLM must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

Reporting Requirements

Upon locating a dead or injured desert tortoise within the action area, notification must be made to the Service's Nevada Fish and Wildlife Office in Las Vegas at (702) 515-5230. Care should be taken in handling sick or injured desert tortoises to ensure effective treatment and in handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of injured desert tortoises or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions

provided by the Service to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed. All deaths, injuries, and illnesses of desert tortoises, whether associated with project activities or not, will be summarized in an annual report.

The following actions should be taken for injured or dead tortoises if directed by the Service:

1. Injured desert tortoises shall be delivered to any qualified veterinarian for appropriate treatment or disposal.

2. 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.

3. 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.

4. BLM shall bear the cost of any required treatment of injured desert tortoises, euthanasia of sick desert tortoises, or cremation of dead desert tortoises.

5. 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.

REINITIATION

This concludes formal consultation on the actions outlined in your request dated July 24, 2007. As required by 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over an action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that 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 causing such take must cease pending reinitiation.

If we can be of any further assistance, or if you have any questions concerning this biological opinion, please contact Michael Burroughs in the Nevada Fish and Wildlife Office in Las Vegas at (702) 515-5230.

For Robert D. Williams

cc:
Assistant Field Office Manager, Division of Recreation and Renewable Resources, Bureau of Land Management, Las Vegas, Nevada
Chief, St. George Regulatory Field Office, U.S. Army Corps of Engineers, St. George, Utah
Administrator, Clark County Desert Conservation Program, Department of Air Quality and Environmental Management, Las Vegas, Nevada
Lincoln County Treasurer, Pioche, Nevada

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Attachment B

SECTION 7 FEE PAYMENT FORM
Entire form is to be completed by project proponent

Biological Opinion File Number: 84320-2008-F-0066

Fish and Wildlife Service Office that issued the Opinion:

Nevada Fish and Wildlife Office, Las Vegas, Nevada

Species: Desert Tortoise (*Gopherus agassizzi*)

Project: Southwest Intertie Project (SWIP)

Number of acres anticipated to be disturbed: _____

Fee rate (per acre): _____

Total payment required: _____

Amount of payment received: _____

Date of receipt: _____

Check or money order number: _____

Project proponent: Great Basin Transmission, LLC Telephone number: _____

Authorizing agencies: Bureau of Land Management, Las Vegas and Ely, Nevada

Make checks payable to: Clark County Treasurer

Deliver check to: Clark County Desert Conservation Program
Dept. of Air Quality and Environmental Management
Clark County Government Center
500 S. Grand Central Parkway, first floor (front counter)
Las Vegas, Nevada 89106
(702) 455-3536

If you have questions, you may call the Nevada Fish and Wildlife Office in Las Vegas at (702) 515-5230.

Attachment C

LINCOLN COUNTY SECTION 7
LAND DISTURBANCE FEE
PAYMENT FORM
Entire form is to be completed by project proponent

Biological Opinion File Number: 84320-2008-F-0066

Biological Opinion issued by: Nevada Fish and Wildlife Office, Reno, Nevada

Species: Desert tortoise (*Gopherus agassizii*)

Project: Southwest Intertie Project (SWIP)

Number of acres anticipated to be disturbed: _____

Fee rate (per acre): _____

Total payment required: _____

Amount of payment received: _____

Date of receipt: _____

Check or money order number: _____

Project proponent: Great Basin Transmission, LLC

Telephone number:

Authorizing agencies: Bureau of Land Management, Las Vegas and Ely, Nevada

Make checks payable to: Lincoln County Treasurer

Deliver check to: Lincoln County Habitat Conservation Section 7 Account
Lincoln County Treasurer
Attn: Ms. Cathy Hiatt
P.O. Box 416
Pioche, Nevada 89043
(775) 962-5805

If you have questions, you may call the Nevada Fish and Wildlife Office in Las Vegas at (702) 515-5230.