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FIELD SURVEY PROTOCOL FOR ANY FEDERAL ACTION  
THAT MAY OCCUR WITHIN THE RANGE OF THE DESERT TORTOISE

The Mojave population of the desert tortoise was listed as a federally endangered species on August 4, 1989 by emergency rule and as a threatened species by final rule on April 2, 1990. Section 7(a) regulations of the Endangered Species Act (Federal Register Vol. 51, No. 106, pp. 19957-19963) require each federal agency to review its actions at the earliest possible time to determine whether any action may affect listed species (Mojave population of the desert tortoise) or critical habitat. If such a determination is made, formal consultation is required with the Fish and Wildlife Service. The Service may request a federal agency to enter into consultation if it identifies any action of that agency that may affect the desert tortoise and for which there has been no consultation. Through completion of the formal Section 7 process, that is issuance of a "no jeopardy" biological opinion, the federal agency receives authorization from the Fish and Wildlife Service to incidentally take a specified number of federally threatened desert tortoises and tortoise habitat through the implementation of a proposed project. Without this authorization from the Fish and Wildlife Service, the federal agency would be in violation of Section 9 of the Endangered Species Act if the proposed project were implemented and resulted in the "take" of a desert tortoise or its habitat.

Section 9 of the Endangered Species Act prohibits the "taking" of any federally listed threatened or endangered species without first obtaining necessary authority from the Fish and Wildlife Service. "Take" includes "harming, harassing, pursuing, hunting, shooting, wounding, killing, capturing, collecting, or attempting to engage in any such conduct" (Section 3(19), Endangered Species Act 1973, as amended). Harm includes "significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavior patterns, including breeding, feeding, or shelter" (50 CFR 17.3(c)). "Take" also includes modification of habitat that would result in harm to the desert tortoise.

In response to a demand for information and/or guidance on compliance with Section 7 of the Endangered Species Act, the Fish and Wildlife Service has developed a protocol for surveys within the range of the federally threatened desert tortoise. The purpose of this protocol is to provide technical assistance to federal agencies to determine 1) if a proposed action "may adversely affect" the desert tortoise and thus initiate formal consultation with the Fish and Wildlife Service and 2) the incidental take of desert tortoises and tortoise habitat. Survey information would also enable the federal agency to modify the proposed project or develop an alternative project that would minimize or avoid

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incidental take of desert tortoises or their habitat. This latter point is relevant under Section 7(a)(1) of the Endangered Species Act which requires all federal agencies to consult with the Fish and Wildlife Service and utilize their authorities to carry out programs for the conservation of endangered and threatened species.

We also recommend that you obtain a copy of "Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise" before you begin planning your project. This document is available from any of the five Fish and Wildlife Service offices listed below and provides more information on sections 7, 9, and 10 of the Endangered Species Act.

This survey protocol is subject to revision as new information becomes available. Before initiating the survey protocol described below, we recommend checking with the Fish and Wildlife Service to verify that you are implementing up-to-date survey methods.

In Arizona:

Fish and Wildlife Service  
Phoenix Field Office  
2321 W. Royal Palm Road  
Phoenix, Arizona 85021  
(602) 640-2720

In California, for Inyo, Kern, Los Angeles, and San Bernardino Counties:

Ventura Fish & Wildlife Office  
2493 Portola Road, Suite B  
Ventura, California 93003  
(805) 644-1766

In California, for Imperial and Riverside Counties:

Carlsbad Fish & Wildlife Office  
2730 Loker Avenue West  
Carlsbad, California 92008  
(760) 431-9440

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In Nevada:

Nevada Fish & Wildlife Office  
1340 Financial Blvd. Suite 234  
Reno, Nevada 89502  
(775) 861-6300

In Utah:

Utah Ecological Services Field  
Office  
1300 South Lincoln Plaza,  
Suite 404  
Salt Lake City, Utah 84105-2316  
(801) 524-5001

Survey protocol includes five parts: 1) survey need, 2) survey types, 3) survey quality, 4) survey time period, and 5) qualifications of the surveyor.

**Survey Need:** The desert tortoise may occupy numerous habitat types within its range in the Mojave and Colorado deserts and below an elevation of 5000 feet. In these areas there is a likelihood of encountering desert tortoises or tortoise sign. If the federal agency does not know if the proposed project occurs within the range of the desert tortoise, please request a species list from the Fish and Wildlife Service office listed above that has jurisdiction over the project area. If the Fish and Wildlife Service species list includes the Mojave population of the desert tortoise, this means the desert tortoise may be present within or near the project area.

The following criteria have been developed by the Fish and Wildlife Service to assist federal agencies in their determination of "may affect" for the desert tortoise: 1) desert tortoise habitat on the project site, 2) desert tortoise habitat adjacent to the project site such that the project area may overlap the home range of a desert tortoise, or 3) project would introduce direct or indirect disturbance to desert tortoise habitat (e.g., roads). Desert tortoise habitat is defined as areas with presence of tortoises or tortoise sign within areas likely to be home range, dispersal

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corridors, or habitat identified in the recovery plan. If the project area and adjacent areas meet one of these three criteria or if any tortoise sign (e.g., live tortoises, shells, bones, scutes, limbs, scats, burrows, pellets, tracks, egg shell fragments, courtship rings, drinking sites, mineral licks, etc.) is known to occur in the project area or adjacent areas, then the proposed project "may affect" the desert tortoise and consultation with the Fish and Wildlife Service should be initiated.

Please note that all free-roaming desert tortoises located north and west of the Colorado River are protected under the Endangered Species Act. For example, the desert tortoise that on occasion occurs above 5000 feet or in pinyon-juniper woodland would be protected under the Endangered Species Act.

The next step is for the federal agency to determine the likelihood of an adverse effect to the desert tortoise from implementation of the proposed project. If the proposed action may adversely affect the desert tortoise, formal consultation is required unless, as a result of the preparation of a biological assessment or as a result of informal consultation with the Fish and Wildlife Service, the federal agency determines, with the written concurrence of the Fish and Wildlife Service, that the proposed action is not likely to adversely affect the desert tortoise or critical habitat.

As mentioned above, the presence of a desert tortoise within the project boundary is not necessary for the project to result in the take of the desert tortoise. For example, a desert tortoise may be present in the Zone of Influence and may use the project site for feeding, breeding, or shelter. The Zone of Influence is defined as the area where tortoises on adjacent lands may be directly or indirectly affected by project exploration, construction, maintenance, operation, monitoring, dismantlement, enhancement, and project abandonment. Destruction of tortoise habitat used for feeding, breeding, or shelter is considered take under the Endangered Species Act.

For formal consultation, that is, projects that may adversely affect the desert tortoise, the Fish and Wildlife Service recommends the following protocols:

For a surface disturbance project that would result in the clearing or crushing of vegetation (e.g., roads, buildings, excavation or fill sites, utility towers, water improvements, driving overland for land surveying and other activities, etc.) the federal agency should conduct a Presence-or-Absence Survey (100 percent survey) for desert tortoises and tortoise sign over the entire project area and the Zone of Influence adjacent to the project area. (See Survey Types below.) The

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survey information would be used to develop a reliable incidental take statement as required in the biological opinion. Depending on the type of project, a Clearance Survey (see below) in occupied tortoise habitat may be necessary. The Fish and Wildlife Service requests that survey results (i.e., copies of the completed transect forms) be submitted to the appropriate Service office within 30 days of completion or with the request for formal consultation. If not included in the biological assessment or biological evaluation this information may be requested in the biological opinion.

For a management project that would result in modification of very large areas of desert tortoise habitat (e.g., grazing), the federal agency should coordinate with the Fish and Wildlife Service to develop an alternative method for surveying for desert tortoises and their sign. This method should consider variations in habitat quality within the project area, the natural history of the desert tortoise, and be statistically acceptable. The survey information would be necessary to develop a reliable incidental take statement as required in the biological opinion. Depending on the type of project, a Clearance Survey (see below) in occupied tortoise habitat may be necessary. The Fish and Wildlife Service requests that survey results be submitted to the appropriate Service office within 30 days unless the federal agency initiates formal consultation. If not included in the biological assessment or biological evaluation this information may be requested in the biological opinion.

If (1) the federal agency has determined that the proposed project is not likely to adversely affect the desert tortoise because the project area is not considered tortoise habitat, and (2) a desert tortoise or tortoise sign (shells, bones, scutes, limbs, burrows, pellets, scats, egg shell fragments, tracks, courtship rings, drinking sites, mineral licks, etc.) are found in the project area during implementation of the proposed action, the proposed action should immediately stop and the federal agency determine whether formal consultation is necessary to comply with the Endangered Species Act. The Fish and Wildlife Service recommends that the federal agency notify us in writing within three (3) days of the discovery. This short notification period will help ensure a prompt response by the Fish and Wildlife Service to facilitate compliance with the Endangered Species Act.

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Fish and Wildlife Service Survey Protocol for Desert Tortoises and Bureau of Land Management Categories of Desert Tortoise Habitat: The Bureau of Land Management has developed category maps for desert tortoises to assist the Bureau in managing public lands for the tortoise within the Bureau's multiple use mandate. Bureau maps were not developed to provide information on how to avoid take of the desert tortoise or comply with the federal Endangered Species Act. The Bureau has assigned three categories to their maps on desert tortoise habitat. These categories reflect the quality of tortoise habitat, quantity of tortoises present, and the Bureau's ability to manage these areas for the desert tortoise while minimizing resource conflicts. For example, Category 1 is considered better for tortoises than category 2. However, category 3 areas may contain high quality tortoise habitat and high density of tortoises, but because of resource conflicts the Bureau has assigned the area to category 3.

If an area is not classified on the Bureau's maps as category 1, 2, or 3, this does not mean that this area does not contain desert tortoises or is not considered desert tortoise habitat. The Bureau did not categorize lands that it does not manage such as military reservations or private lands. Also, the Bureau did not categorize lands in many areas that have densities of desert tortoises less than 20 per square mile. Thus, if a proposed project is not located in an area categorized as category 1, 2, or 3 by the Bureau, the project may still be located in desert tortoise habitat if it is in the desert and below 5000 feet.

Survey Types: Two types of surveys are recommended: 1) Presence-or-Absence and 2) Clearance. Neither survey utilizes the 1.5-mile triangular transect survey method developed by the Bureau of Land Management. This triangular transect method has not provided reliable information on the number of desert tortoises that would be incidentally taken as a result of implementation of the proposed project and thus is not adequate for meeting the requirements of the Endangered Species Act.

Presence-or-Absence: This survey type is recommended for all potential desert tortoise habitats. A Presence-or-Absence Survey equivalent to that described below would be requested for habitats thought to be outside suitable habitat for the desert tortoise if tortoise sign is found within these habitats located within the project area.

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The purpose of this survey is to determine impacts of potential land disturbance activities or land management activities to the local tortoise population. This includes identifying the number and location of all tortoises and tortoise sign that occur within a given project area or selected area and if any tortoises occur in adjacent areas whose home range may overlap into the project area and thus be lost or harassed by the proposed action.

The project area is defined as any area that will be cleared or partially cleared, with vehicles on or adjacent to it, temporarily or permanently used for equipment or materials storage, loading or unloading, or sites where soils/vegetation is damaged, fragmented, or disturbed (e.g., driving overland).

The entire project area is surveyed using belt transects 10 yards or 30 feet wide (100 percent coverage). In some locations, belt transects less than 30 feet wide may be appropriate (see below). In addition, the Zone of Influence is surveyed. The Zone of Influence is defined as the area where tortoises on adjacent lands may be directly or indirectly affected by project exploration, construction, maintenance, operation, monitoring, dismantlement, enhancement, and project abandonment. As a minimum, the belt transects in the Zone of Influence are located at 100, 300, 600, 1200, and 2400-foot intervals from and parallel to the edge of the project boundaries. (See Figures 1 and 2.) All tortoise sign (live tortoises, shells, bones, scutes, limbs, scats, burrows, pellets, tracks, egg shell fragments, courtship rings, drinking sites, mineral licks, etc.) within the project area and sign located on transects within the Zone of Influence should be mapped.

The extent of the Zone of Influence is dependent on the type of habitat alteration/development and its proximity to other developments. The extent of the Zone of Influence increases as the probability of increased use by domestic predators, potential human use in the Zone, road creation and use, littering, waste disposal, etc. These uses result in increased take of desert tortoises through predation, collection as pets, vandalism, road kills, and attracting predators such as ravens, coyotes, and feral dogs to the area.

Figure 1. Example of a proposed transmission line including areas with full (100 percent) survey coverage for desert tortoises (construction area) and locations of transects within the Zone of Influence.

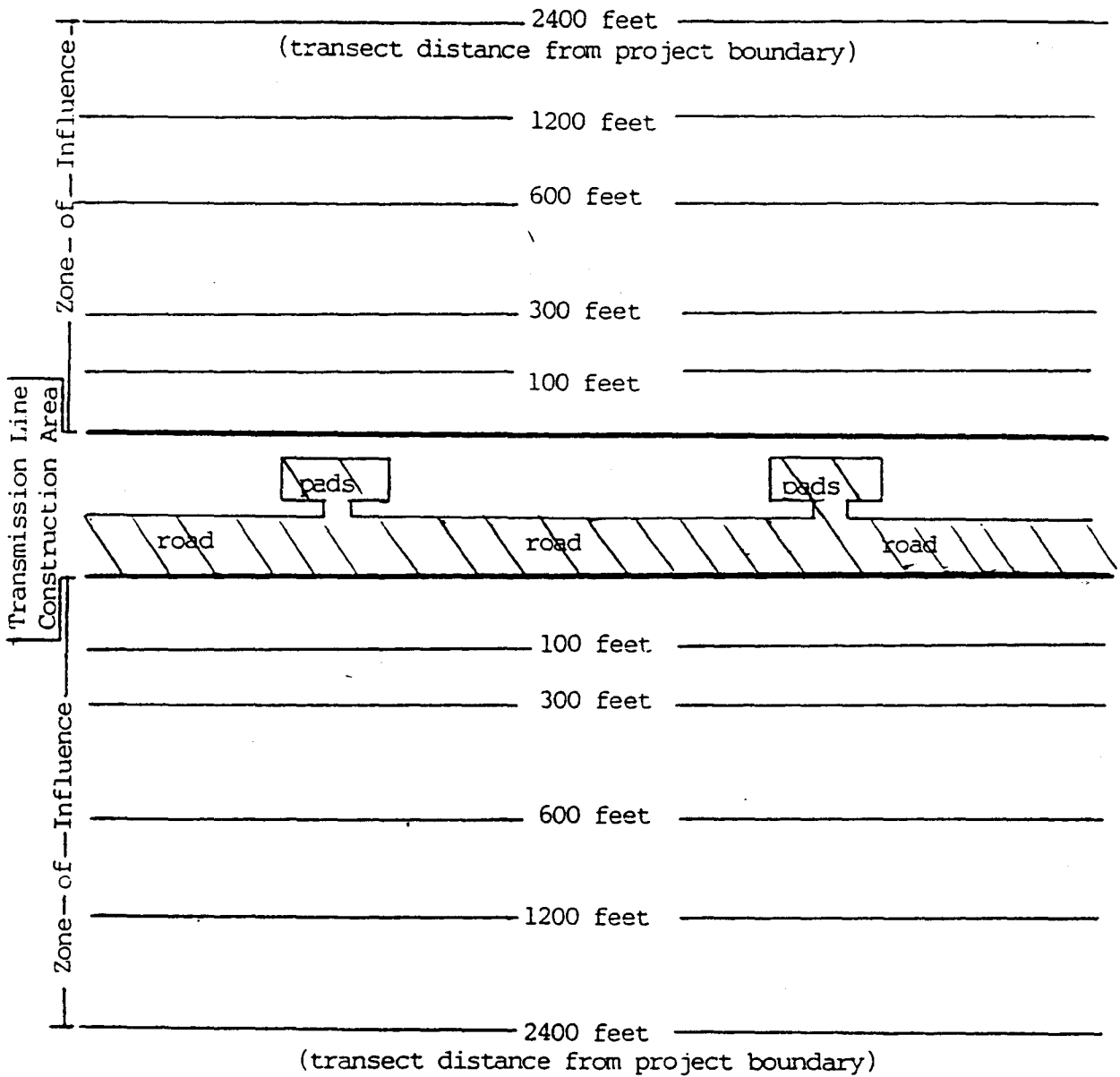
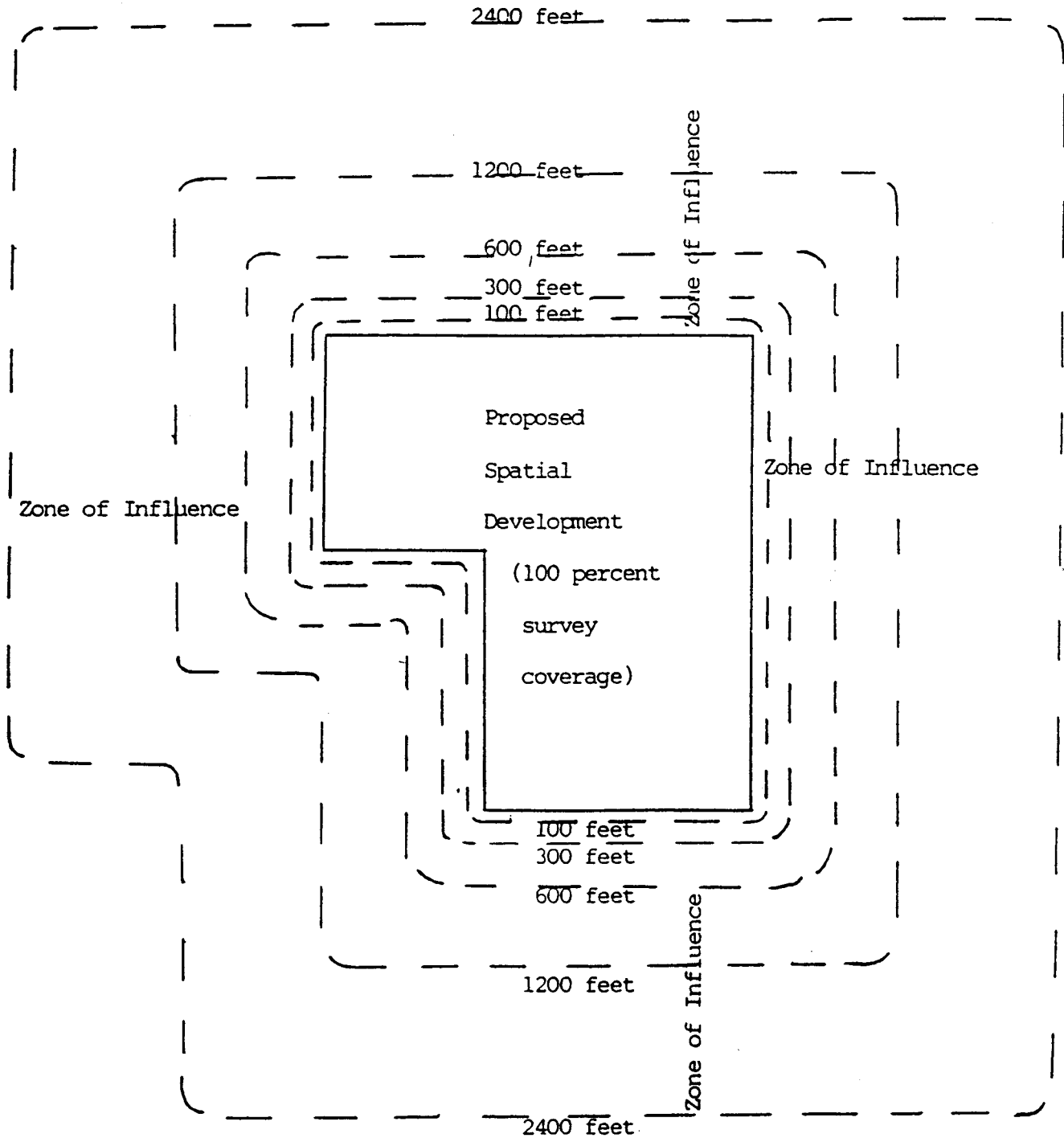


Figure 2. Example of a proposed spatial development (e.g., residential development, commercial development) with full (100 percent) survey coverage for desert tortoises and locations of transects within the Zone of Influence.



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Additional transects may be recommended at 3600- and 4800-foot intervals from the perimeter of the project area for developments 1) located in or within one mile of categories 1 or 2 habitats as defined by the Bureau of Land Management or 2) associated with residential development, new or increased road use, landfills, or projects that would result in increases in human use or litter.

For example, if a project area is 640 acres or one square mile, 176 parallel transects each one mile long and 30 feet wide would be necessary to provide 100 percent coverage of the project area. Additional transects would be necessary to survey the adjacent areas or Zone of Influence.

If the project area contains locations with vegetation or topography that obscures or reduces that surveyor's ability to see tortoise sign at distances of up to 15 feet on the ground, the width of the survey should be reduced to 10 feet, that is, 5 feet on either side of the surveyor. Some examples of situations where a 10-foot wide transect should be conducted instead of a 30-foot wide transect would be: 1) foothills and slopes of mountains which contain rocks, boulders, and/or vegetation that obstruct the surveyor's view of the ground at distances greater than 5 feet, and 2) areas in which the vegetation density is greater than that of typical creosote or creosote/bursage flats or bajadas in the Mojave Desert such as desert wash scrub or woodlands and ecotones between habitat types. In these areas the surveyor's view of the ground and tortoise sign, if present, would be obstructed and a 30-foot wide transect would not be acceptable.

When mapping tortoise sign, the recommended map scale is 1 inch=100 feet for plans involving ground disturbance and 1 inch=1000 feet for preliminary planning (master planning or specific planning). These map scales are based on those frequently required by city or county planning departments. The map should include locations and specific types of all tortoise sign found on the project area and Zone of Influence including the number live tortoises, reference to the corresponding transect form with additional information on tortoise sign found, significant landmarks, legal description of the project area, survey dates, and the range of elevation within the project boundaries. Please note that a federal Fish and Wildlife License/Permit is required before a surveyor can capture, touch, or "harass" a live desert tortoise even for the purposes of taking measurements or determining its sex. A permit may also be required from the appropriate state wildlife resource agency (e.g., Arizona Game and Fish

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Department, California Department of Fish and Game, Nevada Department of Wildlife, Utah Division of Wildlife Resources). **The Fish and Wildlife Service emphasizes that the surveyor should only estimate the size of all live desert tortoises encountered.**

If the surveyor wishes to use a fiber-optic scope or video camera that is placed inside a tortoise burrow instead of or in addition to a hand-held mirror to investigate desert tortoise shelter sites, you should contact the Fish and Wildlife Service at one of the offices listed above. We will need information on the type of equipment you will be using and your qualifications to use it. Improper use of such equipment may disturb or injure tortoises, damage the shelter site, and may promote the spread of disease. These actions may be considered take under the Endangered Species Act. You should refer to the Desert Tortoise Handling Protocols for information on when and how to utilize these scopes to avoid the possible transmission of disease between tortoises.

The following format is recommended for recording transect data. (See Figure 3.) This format has been modified from the Bureau of Land Management's Interim Techniques Handbook for Collecting and Analyzing Data on Desert Tortoise Populations and Habitats. One form is used for each transect where tortoise sign occurs. Pages 1, 2, and 3 of the form would be completed for each transect in the project site and the Zone of Influence where tortoise sign occurs. If additional space is needed, more forms may be used for each transect and stapled together.

If no tortoise sign is located during Presence-or-Absence Surveys, we recommend that the surveyor complete and submit summary form(s) (Figure 4) to the appropriate Fish and Wildlife Service office listed above.

**Please do not collect any desert tortoise sign.** Tortoise scats may be used by tortoises to mark or identify travel areas and shelter sites. Tortoise shells may be an important source of minerals for reptiles and mammals.

Figure 3. Desert tortoise survey form for  
Presence-or-Absence and Clearance Surveys  
(4 pages).

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M/D/Y

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

Date \_\_\_\_\_
Transect No. \_\_\_\_\_
State \_\_\_\_\_
County \_\_\_\_\_
City \_\_\_\_\_
Recorder \_\_\_\_\_
Address \_\_\_\_\_
Project Name \_\_\_\_\_
Type of Project \_\_\_\_\_
Quad Name \_\_\_\_\_
Scale \_\_\_\_\_
Site Name \_\_\_\_\_
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_
1/4 Sec \_\_\_\_\_ 3/4 Sec \_\_\_\_\_
UTM Zone \_\_\_\_\_
Northing \_\_\_\_\_
Easting \_\_\_\_\_
Parcel No. \_\_\_\_\_

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site | | Zone of Influence | | \_\_\_\_\_ ft from Project Site
Transect Length: \_\_\_\_\_ ft Width: 30 ft Other \_\_\_\_\_ ft Time \_\_\_\_\_
Weather: Airtemp at: 5 cm \_\_\_\_\_ °C Surface \_\_\_\_\_ °C Cloud cover \_\_\_\_\_ %
Rainfall \_\_\_\_\_ in Wind speed \_\_\_\_\_ Rainfall in last 30 days \_\_\_\_\_ in
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_
% Slope: high \_\_\_\_\_ low \_\_\_\_\_ Aspect \_\_\_\_\_ Elevation \_\_\_\_\_ ft
Soils \_\_\_\_\_
Vegetation: dominant perennials \_\_\_\_\_

dominant annuals \_\_\_\_\_

Adjacent Land Use: up to 1 mi \_\_\_\_\_
Soils \_\_\_\_\_
Vegetation \_\_\_\_\_

TOTAL NUMBER OF

Corrected Sign Live Tortoises Adult/Juv. Shelter Sites Pallet/Burrow/Den Active/Inactive 1 Scats 2 Shell Remains 3
|| A= J= || M= F= Unk=

Tracks Eggshell Fragments Drinking Sites Courtship Rings Other Neotoma Middens w/sign :w/o sign

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks Human Footprints Dog Sign Trash Dump Sites Shotgun/Rifle Shells Blading Ravens Other



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Show locations of types of tortoise sign on transect line below:



Drawing: Scale 1 in = \_\_\_\_\_ ft  
Recorder \_\_\_\_\_ Date \_\_\_\_\_

Drawing or Map Reference No. \_\_\_\_\_ Transect No. \_\_\_\_\_  
Parcel No. \_\_\_\_\_ Location \_\_\_\_\_

INFORMATION INDEX FOR DESERT TORTOISE SIGN  
Burrows and Dens, Scats, and Shell Remains

- <sup>1</sup>Burrows and Dens: 1. currently active, with tortoise or recent tortoise sign  
2. good condition, definitely tortoise; no evidence of recent use  
3. deteriorated condition (please describe); definitely tortoise  
4. deteriorated condition; possibly tortoise (please describe)  
5. good condition; possibly tortoise (please describe)
- <sup>2</sup>Scats: 1. wet (not from rain or dew) or freshly dried; obvious odor  
2. dried with glaze; some odor; dark brown  
3. dried; no glaze or odor; signs of bleaching (light brown),  
tightly packed material  
4. dried; light light brown to pale yellow, loose material; scaly  
appearance  
5. bleached, or consisting only of plant fiber
- <sup>3</sup>Shell Remains: 1. fresh or putrid  
2. normal color; scutes adhere to bone  
3. scutes peeling off bone  
4. shell bone is falling apart; growth rings on scutes are  
peeling  
5. disarticulated and scattered

Figure 4. Desert tortoise summary form for  
Presence-or-Absence and Clearance Surveys  
(3 pages).

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M/D/Y

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

Date \_\_\_\_\_
Transect No. \_\_\_\_\_
State \_\_\_\_\_
County \_\_\_\_\_
City \_\_\_\_\_
Recorder \_\_\_\_\_
Address \_\_\_\_\_
Project Name \_\_\_\_\_
Type of Project \_\_\_\_\_
Quad Name \_\_\_\_\_
Scale \_\_\_\_\_
Site Name \_\_\_\_\_
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_
1/4 Sec \_\_\_\_\_ 1/4 Sec \_\_\_\_\_
UTM Zone \_\_\_\_\_
Northing \_\_\_\_\_
Easting \_\_\_\_\_
Parcel No. \_\_\_\_\_

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site | | Zone of Influence | | \_\_\_\_\_ ft from Project Site
Transect Length: \_\_\_\_\_ ft Width: 30 ft Other \_\_\_\_\_ ft Time \_\_\_\_\_
Weather: Airtemp at: 5 cm \_\_\_\_\_ °C Surface \_\_\_\_\_ °C Cloud cover \_\_\_\_\_ %
Rainfall \_\_\_\_\_ in Wind speed \_\_\_\_\_ Rainfall in last 30 days \_\_\_\_\_ in
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_
% Slope: high \_\_\_\_\_ low \_\_\_\_\_ Aspect \_\_\_\_\_ Elevation \_\_\_\_\_ ft
Soils \_\_\_\_\_
Vegetation: dominant perennials \_\_\_\_\_

dominant annuals \_\_\_\_\_

Adjacent Land Use: up to 1 mi \_\_\_\_\_

Soils \_\_\_\_\_

Vegetation \_\_\_\_\_

TOTAL NUMBER OF

Table with columns: Corrected Sign, Live Tortoises Adult/Juv., Shelter Sites Pallet/Burrow/Den Active/Inactive, Scats, Shell Remains. Includes sub-columns A=, J=, M=, F=, Unk=.

Table with columns: Tracks, Eggshell Fragments, Drinking Sites, Courtship Rings, Other, Neotoma Middens w/sign, Neotoma Middens :w/o sign.

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Table with columns: Tire Tracks, Human Footprints, Dog Sign, Trash, Dump Sites, Shotgun/Rifle Shells, Blading, Ravens, Other.

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SUMMARY FORM (continued)  
FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS  
FOR DESERT TORTOISE SIGN

Comments/Drawings

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INFORMATION INDEX FOR DESERT TORTOISE SIGN  
Burrows and Dens, Scats, and Shell Remains

- <sup>1</sup>Burrows and Dens:
1. currently active, with tortoise or recent tortoise sign
  2. good condition, definitely tortoise; no evidence of recent use
  3. deteriorated condition (please describe); definitely tortoise
  4. deteriorated condition; possibly tortoise (please describe)
  5. good condition; possibly tortoise (please describe)
- <sup>2</sup>Scats:
1. wet (not from rain or dew) or freshly dried; obvious odor
  2. dried with glaze; some odor; dark brown
  3. dried; no glaze or odor; signs of bleaching (light brown), tightly packed material
  4. dried; light light brown to pale yellow, loose material; scaly appearance.
  5. bleached, or consisting only of plant fiber
- <sup>3</sup>Shell Remains:
1. fresh or putrid
  2. normal color; scutes adhere to bone
  3. scutes peeling off bone
  4. shell bone is falling apart; growth rings on scutes are peeling
  5. disarticulated and scattered

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Clearance Survey: For projects located in areas with habitat used by desert tortoises, especially those projects with a linear band of disturbance (e.g. pipelines, roads, transmission lines), a Clearance Survey may be required as part of the Terms and Conditions of a biological opinion to reduce incidental take of the desert tortoise. The purpose of the survey would be to temporarily relocate or salvage tortoises from the area of construction and any other area deemed necessary to avoid or minimize the death of desert tortoises that may be caused by the project. A Clearance Survey would require full coverage of the project area, and would focus on locating all desert tortoises above and below ground within the project area. This survey would be conducted immediately prior to surface disturbance at each site within the project area. The survey period may be stipulated in the Terms and Conditions of the biological opinion to reduce the incidental take of desert tortoises.

Survey Quality: To determine the accuracy of the surveyor in locating desert tortoise sign during Presence-or-Absence Surveys for each project area, the Fish and Wildlife Service recommends that the surveyor conduct an intensive survey in a portion of the project area following completion of the 100 percent survey. The size of the intensive survey area is 5 percent of the size of the project area. The intensive survey area would also receive 100 percent coverage using transects 10 feet wide rather than 30 feet or 5 feet wide rather than 10 feet wide. The location of the intensive survey would be plotted on the map and a comparison made between the sign recorded in this area during the 100 percent survey effort and the intensive survey effort. The quality or accuracy of the survey for the project area will be determined by comparing these two data sets for this area.

If the surveyor does not meet the minimal qualifications stated below or if there is a major difference in number of sign recorded between the intensive survey effort and the 100 percent survey effort, the survey may not be deemed adequate by the Fish and Wildlife Service.

If the survey results do not include the Zone of Influence, the Fish and Wildlife Service may not concur with the survey results.

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**Qualifications of Surveyor:** The Fish and Wildlife Service does not endorse any individual or company with respect to their abilities to conduct satisfactory surveys. We recommend the following criteria for selecting someone to conduct surveys to determine presence or absence of desert tortoises in a given area or recent use of the area by the desert tortoise.

As a general rule, a qualified desert tortoise surveyor is a biologist with a bachelors degree or graduate degree in biology, ecology, wildlife biology, herpetology, or related fields. He/she must have demonstrated prior field experience using accepted resource agency techniques to survey for desert tortoises. Field experience may mean a minimum of 60 days field experience searching for desert tortoises and tortoise sign.

The surveyor should have the following qualifications for the survey results to be accepted by the Fish and Wildlife Service: 1) ability to recognize and accurately identify all types of desert tortoise sign listed above, and 2) ability to carefully, legibly, and completely record all sign including size of shelter sites, shells, and estimated size of live tortoises.

**Survey Time Period:** Survey time for determination of "may affect" is not limited. Survey time for Presence-or-Absence Surveys is limited to the following approximate activity period of the desert tortoise, March 25 to May 31. This survey time may be extended by the Fish and Wildlife Service if tortoises on or near the project area have been observed above ground prior to March 25 or after May 31.

This survey window is based on the activity period for the desert tortoise throughout its range during a typical year and equates to the period of time when a tortoise is not brumating or aestivating. During dry years this activity period may be shorter and in wet years it may be longer. Desert tortoises may also become active during and after summer rains.

Surveys conducted outside this window will be subject to close scrutiny by the Fish and Wildlife Service. The Service may consider the results of these surveys as under-representing the number of tortoises on and use of the project site by desert tortoises.

Presence-or-Absence or Clearance surveys should only be conducted during daylight hours.

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The Fish and Wildlife Service considers the results of a Presence-or-Absence Survey, including the Zone of Influence, to be valid for no more than one year. This time period of survey data reliability may be significantly reduced depending on project size, location, or proximity to other land disturbance.

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FIELD SURVEY PROTOCOL FOR ANY NON-FEDERAL ACTION  
THAT MAY OCCUR WITHIN THE RANGE OF THE DESERT TORTOISE

The Mojave population of the desert tortoise was listed as a federally endangered species on August 4, 1989 by emergency rule and as a threatened species by final rule on April 2, 1990. section 9 of the Endangered Species Act prohibits the "taking" of any federally listed threatened or endangered species without first obtaining necessary authority from the Fish and Wildlife Service. "Take" includes "harming, harassing, pursuing, hunting, shooting, wounding, killing, capturing, collecting, or attempting to engage in any such conduct" (section 3(19), Endangered Species Act 1973, as amended). Harm includes "significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavior patterns, including breeding, feeding, or shelter" (50 CFR 17.3(c)). "Take" also includes modification of habitat that would result in harm to the desert tortoise.

In response to a demand for information and/or guidance on compliance with the Endangered Species Act, the Fish and Wildlife Service has developed a protocol for surveys within the range of the Mojave population of the desert tortoise which is listed as federally threatened. The purpose of this protocol is to provide technical assistance to entities to determine presence or absence of this animal and thus avoid "take" of the desert tortoise. Where avoidance is not possible, this protocol will provide information from which the project proponent can develop a "conservation plan" with guidance from the Fish and Wildlife Service. The conservation plan is the primary component of a section 10(a)(1)(B) permit application intended to obtain the necessary authorization to incidentally "take" a federally listed species as specified in the Endangered Species Act.

Please note that the presence of a desert tortoise within the project boundary is not necessary for the project to result in the take of the desert tortoise. Please see the Survey Need section below for more information.

If part or all of the project will be authorized, funded, or carried out by a federal agency or located on federal land, the project proponent, through the federal agency, will need to comply with section 7 of the federal Endangered Species Act rather than section 10. If you believe your project may have such a federal "connection", we urge you to contact the Fish and Wildlife Service for confirmation. Please see the "Field Survey Protocol for Any Federal Action that May Occur within the Range of the Desert Tortoise". If there is no federal "connection" in any part of the proposed project, you must ensure that your project either will not result in "take" of the desert tortoise

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or obtain a section 10(a)(1)(B) incidental take permit from the Fish and Service prior to implementing your project.

**We also recommend that you obtain a copy of "Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise" before you begin planning your project. This document is available from any of the five Fish and Wildlife Service offices listed below and provides more information on sections 7, 9, and 10 of the Endangered Species Act.**

This survey protocol is subject to revision as new information becomes available. Before initiating the survey protocol described below, we recommend checking with the Fish and Wildlife Service to verify that you are implementing up-to-date survey methods.

**In Arizona:**

Fish and Wildlife Service  
Phoenix Field Office  
2321 W. Royal Palm Road  
Phoenix, Arizona 85021  
(602) 640-2720

**In California, for Inyo, Kern, Los Angeles, and San Bernardino Counties:**

Ventura Fish & Wildlife Office  
2493 Portola Road, Suite B  
Ventura, California 93003  
(805) 644-1766

**In California, for Imperial and Riverside Counties:**

Carlsbad Fish & Wildlife Office  
2730 Loker Avenue West  
Carlsbad, California 92008  
(760) 431-9440

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In Nevada:

Nevada Fish & Wildlife Office  
1340 Financial Blvd. Suite 234  
Reno, Nevada 89502  
(775) 861-6300

In Utah:

Utah Ecological Services Field  
Office  
1300 South Lincoln Plaza,  
Suite 404  
Salt Lake City, Utah 84105-2316  
(801) 524-5001

Survey protocol includes six parts: 1) survey need, 2) survey types, 3) survey quality, 4) survey time period, 5) qualifications of the surveyor, and 6) reporting survey results.

Survey Need: The desert tortoise may occupy numerous habitat types within its range in the Mojave and Colorado deserts and below an elevation of 5000 feet. In these areas there is a likelihood of encountering desert tortoises or tortoise sign. Activities such as land clearing are likely to result in "take" of desert tortoises or tortoise habitat, unless site specific information indicates that no take of desert tortoises or tortoise habitat would occur.

The Fish and Wildlife Service recommends that the project proponent conduct a Presence-or-Absence Survey for tortoises and tortoise sign over the entire project area and the Zone of Influence adjacent to the project area. The Zone of Influence is defined as the area where tortoises on adjacent lands may be directly or indirectly affected by project exploration, construction, maintenance, operation, monitoring, dismantlement, enhancement, and project abandonment. The survey information would be part of the requirements of the federal Endangered Species Act section 10(a)(1)(B) permit application. Tortoise sign would include shells, bones, scutes, limbs, burrows, pellets, scats, egg shell fragments, tracks, courtship rings, drinking sites, mineral licks, etc.

Depending on the type of project, a Clearance Survey immediately prior to construction (see below) in recently occupied tortoise habitat may also be necessary. The Fish and Wildlife Service requests that all survey results, including copies of the completed transect forms, be submitted to the appropriate Fish and Wildlife Service office within 30 days. This information is

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vital to the ongoing management for recovery of the desert tortoise. Providing this information to the Fish and Wildlife Service will help ensure that the survey has been correctly completed and the data have been properly assessed. Submittal of survey results also allows the Fish and Wildlife Service to advise you of the appropriate requirements, if any, in accordance with the definition of "take" in the federal Endangered Species Act. This definition includes take of habitat (see page 1).

Please note that all free-roaming desert tortoises located north and west of the Colorado River are protected under the Endangered Species Act. For example, the desert tortoise that on occasion occurs above 5000 feet or in pinyon-juniper woodland would be protected under the Endangered Species Act.

As mentioned above, the presence of a desert tortoise within the project boundary is not necessary for the project to result in the take of the desert tortoise. For example, a desert tortoise may be present in the Zone of Influence and may use the project site for feeding, breeding, or shelter. Destruction of tortoise habitat used for feeding, breeding, or shelter is considered take under the Endangered Species Act.

Also note that planning agencies or other local or state agencies have not been delegated authority to determine if or when a section 10(a)(1)(B) incidental take permit is needed under the federal Endangered Species Act. The Fish and Wildlife Service is available to answer inquiries and make determinations on the need for an incidental take permit based on the submission of survey results.

Before initiating any activity that will result in surface disturbance within the range of the desert tortoise including overland driving for land surveying or other forms of take, the Fish and Wildlife Service recommends that you contact one of the five offices listed above to determine if your action may require a section 10(a)(1)(B) permit.

All requirements of the Endangered Species Act should be completed prior to the initiation of any part of the proposed project. Failure to submit survey forms to and coordinate directly with the Fish and Wildlife Service on the proposed project may result in delay or modification of the proposed project. We strongly suggest coordinating with the Service early in the planning process.

Projects that would not result in take of desert tortoises or tortoise habitat are not subject to the prohibitions of take of the desert tortoise as defined in the federal Endangered Species

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Act. However, in the event that a desert tortoise or tortoise sign (shells, bones, scutes, limbs, burrows, pellets, scats, egg shell fragments, tracks, courtship rings, drinking sites, mineral licks, etc.) are found in the project area during construction, all surface disturbance should immediately stop. The Fish and Wildlife Service recommends that the project proponent notify us and the local planning and zoning department in writing within 3 days of the discovery. This short notification period will help ensure a timely response by the Fish and Wildlife Service to facilitate compliance with the federal Endangered Species Act and avoid unauthorized take.

If tortoise sign is found, a Presence-or-Absence Survey of the project area and a Clearance Survey immediately prior to construction may be necessary. Please see the discussion on Presence-or-Absence and Clearance surveys below.

Fish and Wildlife Service Survey Protocol for Desert Tortoises and Bureau of Land Management Categories of Desert Tortoise Habitat:

The Bureau of Land Management has developed category maps for desert tortoises to assist the Bureau in managing public lands for the tortoise within the Bureau's multiple use mandate. Bureau maps were not developed to provide information on how to avoid take of the desert tortoise or comply with the federal Endangered Species Act. The Bureau has assigned three categories to their maps on desert tortoise habitat. These categories reflect the quality of tortoise habitat, quantity of tortoises present, and the Bureau's ability to manage these areas for the desert tortoise while minimizing resource conflicts. For example, Category 1 is considered better for tortoises than category 2. However, category 3 areas may contain high quality tortoise habitat and high density of tortoises, but because of resource conflicts the Bureau has assigned the area to category 3.

If an area is not classified on the Bureau's maps as category 1, 2, or 3, this does not mean that this area does not contain desert tortoises or is not considered desert tortoise habitat. The Bureau did not categorize lands that it does not manage such as military reservations or private lands. Also, the Bureau did not categorize lands in many areas that have densities of desert tortoises less than 20 per square mile. Thus, if a proposed project is not located in an area categorized as category 1, 2, or 3 by the Bureau, the project may still be located in desert tortoise habitat if it is in the desert and below 5000 feet.

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**Survey Types:** Two types of surveys are recommended: 1) Presence-or-Absence and 2) Clearance. Neither survey utilizes the 1.5-mile triangular transect survey method developed by the Bureau of Land Management. The Bureau of Land Management's triangular transect method does not provide reliable information on the number of desert tortoises that would be taken as a result of implementation of the proposed project and thus is not adequate for meeting the requirements of the federal Endangered Species Act. Alternative methods for surveying for desert tortoises and their sign over very large areas may be submitted to the Fish and Wildlife Service for consideration.

**Presence-or-Absence Survey:** This survey type is recommended for areas below 5000 feet and within the known range of the desert tortoise. The purpose of this survey is to determine impacts of potential land disturbance activities to the local tortoise population. This includes identifying the number and location of all tortoises and tortoise sign that occur within a given project area and if any tortoises occur in adjacent areas (Zone of Influence) whose home range may overlap into the project area and thus be taken or lost by the proposed action.

The project area is defined as any area that will be cleared or partially cleared, with vehicles on or adjacent to it, temporarily or permanently used for equipment or materials storage, loading or unloading, or sites where soils/vegetation is damaged, fragmented, or disturbed (e.g., driving overland).

The entire project area is surveyed using belt transects 10 yards or 30 feet wide (100 percent coverage). In some locations, belt transects less than 30 feet wide may be appropriate (see below). In addition, the Zone of Influence is surveyed. The Zone of Influence is defined as the area where tortoises on adjacent lands may be directly or indirectly affected by project exploration, construction, maintenance, operation, monitoring, dismantlement, enhancement, and project abandonment. As a minimum, the belt transects in the Zone of Influence are located at 100, 300, 600, 1200, and 2400-foot intervals from and parallel to the edge of the project boundaries. (See Figures 1 and 2.) All tortoise sign (live tortoises, shells, bones, scutes, limbs, scats, burrows, pallets, tracks, egg shell fragments, courtship rings, drinking sites, mineral licks, etc.) within the project area and sign located on transects within the Zone of Influence should be mapped:

Figure 1. Example of a proposed transmission line including areas with full (100 percent) survey coverage for desert tortoises (construction area) and locations of transects within the Zone of Influence.

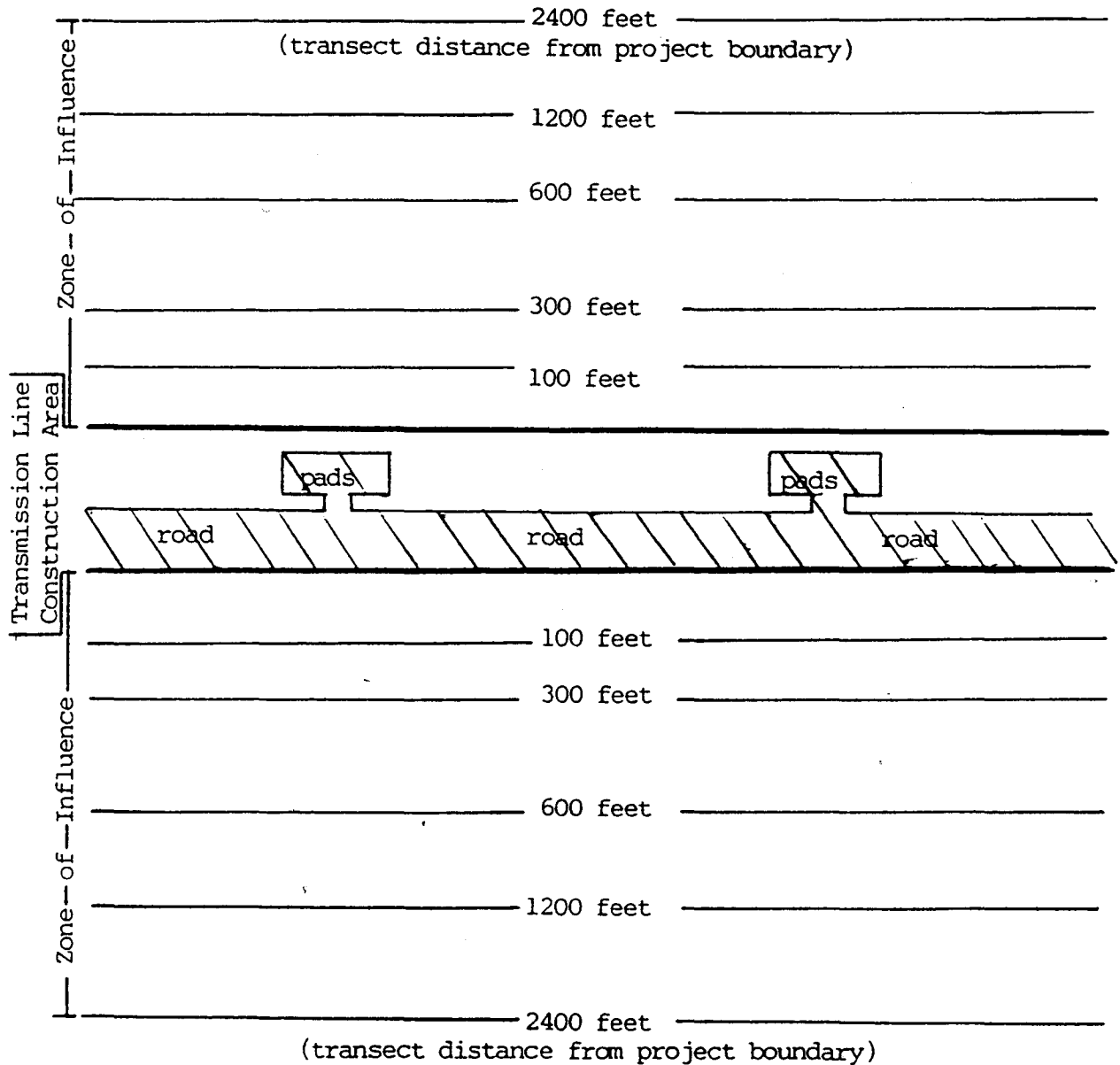
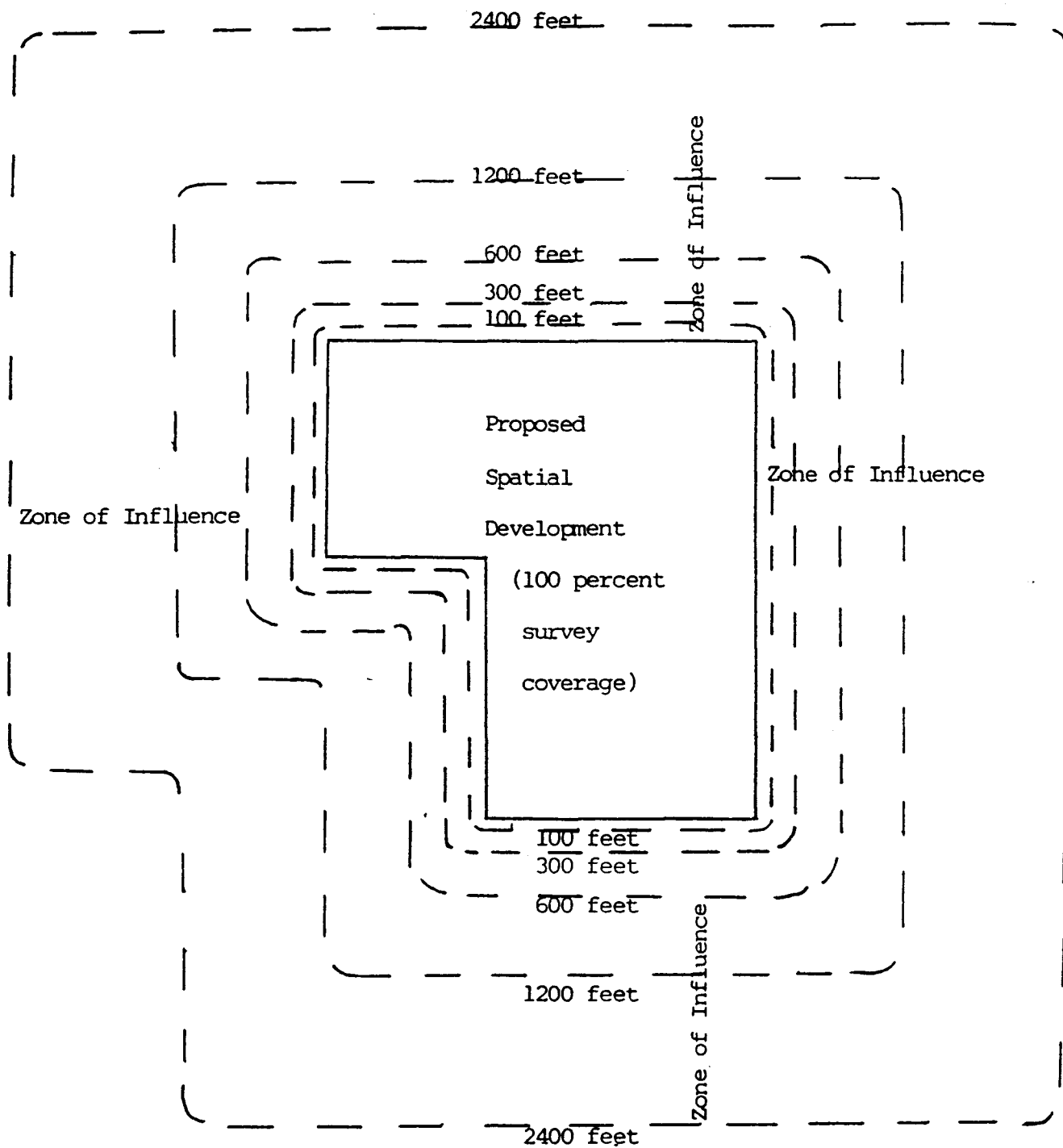


Figure 2. Example of a proposed spatial development (e.g., residential development, commercial development) with full (100 percent) survey coverage for desert tortoises and locations of transects within the Zone of Influence.



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The extent of the Zone of Influence is dependent on the type of habitat alteration/development and its proximity to other developments. The extent of the Zone of Influence increases as the probability of increased use by domestic predators, potential human use in the Zone, road use, littering, waste disposal, etc. These uses result in increased take of desert tortoises through predation, collection as pets, vandalism, road kills, and attracting predators such as ravens, coyotes, and feral dogs to the area.

Additional transects may be recommended at 3600- and 4800-foot intervals from the perimeter of the project area for developments 1) located in or within one mile of categories 1 or 2 habitats as defined by the Bureau of Land Management or 2) associated with residential development, new or increased road use, landfills, or projects that would result in increases in human use or litter.

For example, if a project area is 640 acres or one square mile, 176 parallel transects each one mile long and 30 feet wide would be necessary to provide 100 percent coverage of the project area. Additional transects would be necessary to survey the adjacent areas or Zone of Influence.

If the project area contains locations with vegetation or topography that obscures or reduces that surveyor's ability to see tortoise sign at distances of up to 15 feet on the ground, the width of the survey should be reduced to 10 feet, that is, 5 feet on either side of the surveyor. Some examples of situations where a 10-foot wide transect should be conducted instead of a 30-foot wide transect would be: 1) foothills and slopes of mountains which contain rocks, boulders, and/or vegetation that obstruct the surveyor's view of the ground at distances greater than 5 feet, and 2) areas in which the vegetation density is greater than that of typical creosote or creosote/bursage flats or bajadas in the Mojave Desert such as desert wash scrub or woodlands and ecotones between habitat types. In these areas the surveyor's view of the ground and tortoise sign, if present, would be obstructed and a 30-foot wide transect would not be acceptable.

When mapping tortoise sign, the recommended map scale is 1 inch=100 feet for plans involving ground disturbance and 1 inch=1000 feet for preliminary planning (master planning or specific planning). These map scales are based on those frequently required by city or county planning departments. The map should include locations and specific types of all tortoise sign found on the project area and Zone of

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Influence including the number live tortoises, reference to the corresponding transect form with additional information on tortoise sign found, significant landmarks, legal description of the project area, survey dates, and the range of elevation within the project boundaries. Please note that a federal Fish and Wildlife License/Permit is required before a surveyor can capture, touch, or "harass" a live desert tortoise even for the purposes of taking measurements or determining its sex. A permit may also be required from the appropriate state wildlife resource agency (e.g., Arizona Game and Fish Department, California Department of Fish and Game, Nevada Department of Wildlife, Utah Division of Wildlife Resources). The Fish and Wildlife Service emphasizes that the surveyor should only estimate the size of all live desert tortoises encountered.

If the surveyor wishes to use a fiber-optic scope or video camera that is placed inside a tortoise burrow instead of or in addition to a hand-held mirror to investigate desert tortoise shelter sites, you should contact the Fish and Wildlife Service at one of the offices listed above. We will need information on the type of equipment you will be using and your qualifications to use it. Improper use of such equipment may disturb or injure tortoises, damage shelter sites, and may promote the spread of disease. These actions may be considered as take under the Endangered Species Act. You should refer to the Desert Tortoise Handling Protocols for information on when and how to utilize these scopes to avoid the possible transmission of disease between tortoises.

The following format is recommended for recording transect data. (See Figure 3.) This format has been modified from the Bureau of Land Management's Interim Techniques Handbook for Collecting and Analyzing Data on Desert Tortoise Populations and Habitats. One form is used for each transect where tortoise sign occurs. Pages 1, 2, and 3 of the form would be completed for each transect in the project site and the Zone of Influence where tortoise sign occurs. If additional space is needed, more forms may be used for each transect and stapled together.

If no tortoise sign is located during Presence-or-Absence Surveys for a proposed project, we recommend that the surveyor complete and submit a summary form (Figure 4) to the appropriate Fish and Wildlife Service office listed above.

Figure 3. Desert Tortoise Survey Form For  
Presence-or-Absence and Clearance Surveys  
(4 pages)

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M/D/Y

(place a 4 X 6 photograph showing the area where the transect was conducted)

This form should be completed for those transects that contain one or more desert tortoise sign. After the project site and Zone of Influence have been surveyed for tortoise sign, the results from the transect forms should be compiled on a summary form.

If no tortoise sign occurs on the project site or Zone of Influence, the summary form should be completed. Please fill in all sections on the top 2/3 of the page of the summary form.

Date \_\_\_\_\_
Transect No. \_\_\_\_\_
State \_\_\_\_\_
County \_\_\_\_\_
City \_\_\_\_\_
Recorder \_\_\_\_\_
Address \_\_\_\_\_
Project Name \_\_\_\_\_
Type of Project \_\_\_\_\_
Quad Name \_\_\_\_\_
Scale \_\_\_\_\_
Site Name \_\_\_\_\_
T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_
1/4 Sec \_\_\_\_\_ 3/4 Sec \_\_\_\_\_
UTM Zone \_\_\_\_\_
Northing \_\_\_\_\_
Easting \_\_\_\_\_
Parcel No. \_\_\_\_\_

DESERT TORTOISE HANDBOOK 1992:

FORM FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Project Site | | Zone of Influence | | \_\_\_\_\_ ft from Project Site
Transect Length: \_\_\_\_\_ ft Width: 30 ft Other \_\_\_\_\_ ft Time \_\_\_\_\_
Weather: Airtemp at: 5 cm \_\_\_\_\_ °C Surface \_\_\_\_\_ °C Cloud cover \_\_\_\_\_ %
Rainfall \_\_\_\_\_ in Wind speed \_\_\_\_\_ Rainfall in last 30 days \_\_\_\_\_ in
Land Form (e.g., mesa, bajada, wash) \_\_\_\_\_
% Slope: high \_\_\_\_\_ low \_\_\_\_\_ Aspect \_\_\_\_\_ Elevation \_\_\_\_\_ ft
Soils \_\_\_\_\_
Vegetation: dominant perennials \_\_\_\_\_

dominant annuals \_\_\_\_\_

Adjacent Land Use: up to 1 mi \_\_\_\_\_
Soils \_\_\_\_\_
Vegetation \_\_\_\_\_

TOTAL NUMBER OF

Corrected Sign Live Tortoises Adult/Juv. Shelter Sites Pallet/Burrow/Den Active/Inactive 1 Scats 2 Shell Remains 3
|| A= J= || M= F= Unk=

Tracks Eggshell Fragments Drinking Sites Courtship Rings Other Neotoma Middens w/sign :w/o sign

SIGNS OF HUMAN DISTURBANCE - NUMBER AND TYPES SEEN

Tire Tracks Human Footprints Dog Sign Trash Dump Sites Shotgun/Rifle Shells Blading Ravens Other



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Show locations of types of tortoise sign on transect line below:



Drawing: Scale 1 in = \_\_\_\_\_ ft

Drawing or Map Reference No. \_\_\_\_\_ Transect No. \_\_\_\_\_

Recorder \_\_\_\_\_ Date \_\_\_\_\_

Parcel No. \_\_\_\_\_ Location \_\_\_\_\_

**INFORMATION INDEX FOR DESERT TORTOISE SIGN  
Burrows and Dens, Scats, and Shell Remains**

- <sup>1</sup>Burrows and Dens: 1. currently active, with tortoise or recent tortoise sign  
2. good condition, definitely tortoise; no evidence of recent use  
3. deteriorated condition (please describe); definitely tortoise  
4. deteriorated condition; possibly tortoise (please describe)  
5. good condition; possibly tortoise (please describe)

- <sup>2</sup>Scats: 1. wet (not from rain or dew) or freshly dried; obvious odor  
2. dried with glaze; some odor; dark brown  
3. dried; no glaze or odor; signs of bleaching (light brown),  
tightly packed material  
4. dried; light light brown to pale yellow, loose material; scaly  
appearance  
5. bleached, or consisting only of plant fiber

- <sup>3</sup>Shell Remains: 1. fresh or putrid  
2. normal color; scutes adhere to bone  
3. scutes peeling off bone  
4. shell bone is falling apart; growth rings on scutes are  
peeling  
5. disarticulated and scattered

Figure 4. Desert Tortoise Summary Form for  
Presence-or-Absence and Clearance Surveys  
(3 pages).



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SUMMARY FORM (continued)  
FOR PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS  
FOR DESERT TORTOISE SIGN

Comments/Drawings

INFORMATION INDEX FOR DESERT TORTOISE SIGN  
Burrows and Dens, Scats, and Shell Remains

- <sup>1</sup>Burrows and Dens:
1. currently active, with tortoise or recent tortoise sign
  2. good condition, definitely tortoise; no evidence of recent use
  3. deteriorated condition (please describe); definitely tortoise
  4. deteriorated condition; possibly tortoise (please describe)
  5. good condition; possibly tortoise (please describe)
- <sup>2</sup>Scats:
1. wet (not from rain or dew) or freshly dried; obvious odor
  2. dried with glaze; some odor; dark brown
  3. dried; no glaze or odor; signs of bleaching (light brown), tightly packed material
  4. dried; light light brown to pale yellow, loose material; scaly appearance.
  5. bleached, or consisting only of plant fiber
- <sup>3</sup>Shell Remains:
1. fresh or putrid
  2. normal color; scutes adhere to bone
  3. scutes peeling off bone
  4. shell bone is falling apart; growth rings on scutes are peeling
  5. disarticulated and scattered

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**Please do not collect any desert tortoise sign.** Tortoise scats may be used by tortoises to mark or identify travel areas and shelter sites. Tortoise shells may be an important source of minerals for reptiles and mammals.

**Clearance Survey:** For projects located in areas with habitat used by desert tortoises, especially those projects with a linear band of disturbance (e.g. pipelines, roads, transmission lines), a Clearance Survey may be required as part of a section 10(a)(1)(B) permit. The purpose of the survey would be to temporarily relocate or salvage tortoises from the area of construction and any other areas deemed necessary to avoid or minimize the death of desert tortoises that may be caused by the project. A Clearance Survey would require full coverage of the project area and would focus on locating all desert tortoises above and below ground within the project area. The removal of tortoises would be conducted immediately prior to surface disturbance within the project area. The survey period would be stipulated in a section 10(a)(1)(B) permit.

**Survey Quality:** To determine the accuracy of the surveyor in locating desert tortoise sign during Presence-or-Absence Surveys for each project area, the Fish and Wildlife Service recommends that the surveyor conduct an intensive survey in a portion of the project area following completion of the 100 percent survey. The size of the intensive survey area is 5 percent of the size of the project area. The intensive survey area would also receive 100 percent coverage using transects 10 feet wide rather than 30 feet or 5 feet wide rather than 10 feet wide. The location of the intensive survey would be plotted on the map and a comparison made between the sign recorded in this area during the 100 percent survey effort and the intensive survey effort. The quality or accuracy of the survey for the project area will be determined by comparing these two data sets for this area.

If the surveyor does not meet the minimal qualifications stated below or if there is a major difference in number of sign recorded between the intensive survey effort and the 100 percent survey effort, the survey may not be deemed adequate by the Fish and Wildlife Service.

If the survey results do not include the Zone of Influence, the Fish and Wildlife Service may not concur with the survey results.

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Qualifications of Surveyor: The Fish and Wildlife Service does not endorse any individual or company with respect to their abilities to conduct satisfactory surveys. We recommend the following criteria for selecting someone to conduct surveys to determine presence or absence of desert tortoises in a given area or recent use of the area by the desert tortoise.

As a general rule, a qualified desert tortoise surveyor is a biologist with a bachelors degree or graduate degree in biology, ecology, wildlife biology, herpetology, or related fields. He/she must have demonstrated prior field experience using accepted resource agency techniques to survey for desert tortoises. Field experience may mean a minimum of 60 days field experience searching for desert tortoises and tortoise sign.

The surveyor should have the following qualifications for the survey results to be accepted by the Fish and Wildlife Service: 1) ability to recognize and accurately identify all types of desert tortoise sign listed above, and 2) ability to carefully, legibly, and completely record all sign including size of shelter sites, shells, and estimated size of live tortoises.

Survey Time Period: Survey time for Presence-or-Absence Surveys is limited to the following approximate activity period of the desert tortoise, March 25 to May 31. This survey time may be extended by the Fish and Wildlife Service if tortoises on or near the project area have been observed above ground prior to March 25 or after May 31.

This survey window is based on the activity period for the desert tortoise throughout its range during a typical year and equates to the period of time when a tortoise is not brumating or aestivating. During dry years this activity period may be shorter and in wet years it may be longer. Desert tortoises may also become active during and after summer rains.

Surveys conducted outside this window will be subject to close scrutiny by the Fish and Wildlife Service. The Service may consider the results of these surveys as under-representing the number of tortoises on and use of the project site by desert tortoises.

Presence-or-Absence or Clearance surveys should only be conducted during daylight hours.

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The Fish and Wildlife Service will consider the results of a Presence-or-Absence Survey including the Zone of Influence to be valid for no more than one year. We recommend that the Presence-or-Absence Survey be repeated if project construction has not been initiated within a year of conducting the initial Presence-or-Absence Survey.

**Reporting Survey Results:** As mentioned above, the Fish and Wildlife Service requests that survey results, including copies of the completed transect forms, be submitted to the appropriate Service office within 30 days. These forms are used by the planning and land management agencies and the Fish and Wildlife Service to assess whether the survey was correctly followed and completed, was conducted by a qualified person, and to determine the impact of the proposed project on the desert tortoise. Submission of a final report to the Fish and Wildlife Service discussing survey results may not provide adequate information for the Fish and Wildlife Service to determine if a section 10(a)(1)(B) incidental take permit is needed.

If, for legal reasons, the surveyor is unable to submit copies of the completed transect forms to the Fish and Wildlife Service, we recommend that the surveyor complete and submit the summary form(s) (Figure 4) to the appropriate Fish and Wildlife Service office listed above.