

**A Compilation of Frequently Implemented
Best Management Practices
to
Protect Mojave Desert Tortoise
during
Implementation of Federal Actions**



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1.0 Introduction and Purpose

This document was prepared to assist and support those preparing Biological Assessments, federal agencies preparing Biological Opinions, and project proponents in understanding the potential requirements and in the siting of their projects to reduce impacts and costs.

The Desert Tortoise Council prepared this document to assist non-federal project proponents (project proponents) and federal agencies that are proposing federal actions (federal action agency) that may adversely affect the Mojave (Agassiz's) desert tortoise (*Gopherus agassizii*) (hereafter desert tortoise), a species listed as threatened under the Endangered Species Act of 1973 (16 United States Code § 1531 et seq. [ESA]). A federal action is any action that is authorized, funded, or carried out by a federal agency. Most federal actions that may adversely affect the desert tortoise are ground disturbance actions, and these actions would be located in or near habitat for the desert tortoise or at locations where the desert tortoise is likely to occur. Consultation with the U.S. Fish and Wildlife Service (USFWS) is required for any project that may affect the desert tortoise or its designated critical habitat. For projects that may adversely affect the desert tortoise, the USFWS prepares a Biological Opinion that includes mandatory terms and conditions as well as discretionary conservation actions for implementation by the federal agency. This document contains a compilation of frequently implemented avoidance, minimization, and protection measures (hereafter Best Management Practices [BMPs]) in recent biological opinions issued by the USFWS for the desert tortoise in Nevada and California. Note that additional measures may be required by state agencies and for projects seeking approval under ESA Section 10 for actions on private lands.

For proposed federal actions in the range of the desert tortoise, this document has three purposes:

- (a) To assist project proponents during project planning. Knowing the BMPs that are likely to be required by the federal action agency and/or US Fish and Wildlife Service would inform the project proponent in determining the cost of implementation of the BMPs over the life of the project, as well as any potential impacts to the project schedule. Many proposed actions have pre-construction and construction phases followed by operations, maintenance, and perhaps decommissioning. The federal action agencies and USFWS may require BMPs for all phases of the project.

Due to the cost or delays associated with implementing BMPs, the project proponent may elect to locate the proposed action outside of desert tortoise habitat so the need to implement BMPs is substantially reduced or eliminated. If a project must occur in the range of the desert tortoise, then knowing the BMPs that are frequently implemented would inform the project proponent in making project development decisions that would reduce or avoid potential impacts to the desert tortoise and its habitat, thereby minimizing the costs associated with implementation of BMPS.



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- (2) To assist federal action agencies that are proposing projects within the range of the desert tortoise. This compilation of frequently implemented BMPs would assist agencies in the preparation of biological assessments, as required by 50 Code of Federal Regulations [CFR] 402.12, and thereby facilitate consultation with USFWS.
- (3) To serve as a compilation of frequently implemented BMPs that the USFWS may draw upon when preparing project consultation documents under section 7(a)(2) of the ESA..

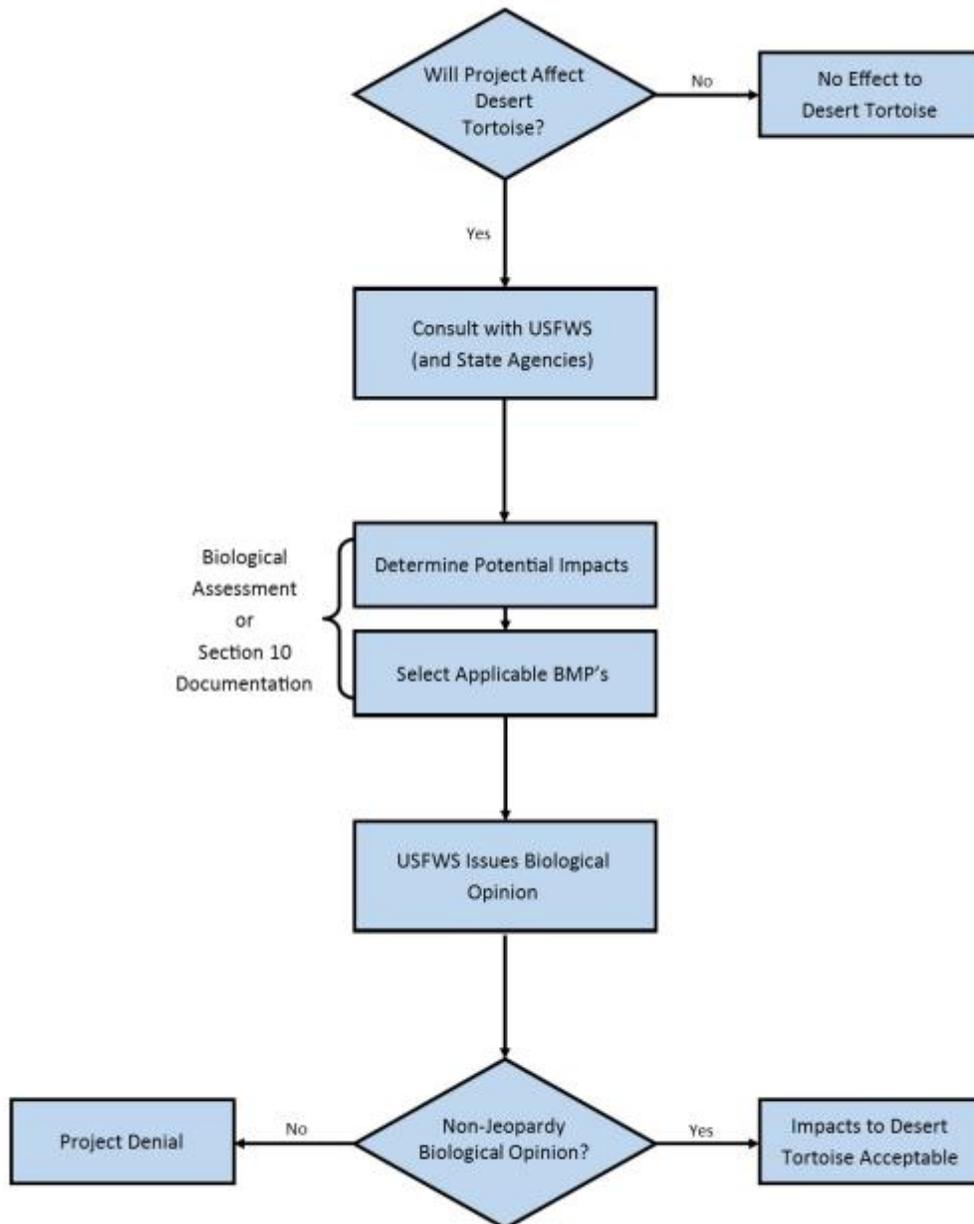
Note that the BMPs in this document are not a complete list of all BMPs that may be required for a particular action. Conversely, some BMPs may not be appropriate for some federal actions. Since each proposed action impacts tortoises under a unique set of conditions (e.g., location, timing), additional BMPs may be required. In addition, this compilation of BMPs is current as of the date of this publication. As the scientific community learns more about the biology of the desert tortoise, its habitat needs, the type and extent of adverse effects from proposed actions, and the effectiveness of the BMPs, the list of BMPs may grow and/or change.

The BMPs included in this document were required by federal action agencies and/or the USFWS and were compiled from numerous recent federal documents including biological opinions. State agencies, under their authorities, may require additional BMPs. We suggest that project proponents contact the appropriate state agency with jurisdiction over their project early in the planning process to determine if the state agency would require additional BMPs.



2.0 Flowchart of the Federal Process of Best Management Practices

This flowchart illustrates a simplified version of the general federal process for application of BMPs for the desert tortoise and the decision process by the federal action agencies and US Fish and Wildlife Service.





3.0 Best Management Practices

3.1 Authority for Requiring Best Management Practices

Congress enacted the ESA to protect critically imperiled species from extinction as a "consequence of economic growth and development untempered by adequate concern and conservation." The U.S. Supreme Court (*TVA v. Hill et al.* 1978) found that "the plain intent of Congress in enacting" the ESA "was to halt and reverse the trend toward species extinction, whatever the cost." The BMPs listed below were developed by project proponents, federal action agencies, and the USFWS to comply with the requirements in the ESA, specifically sections 7(a)(1 – 3) and the implementing regulations for interagency consultation, 50 CFR 402.8 – 402.16 (Interagency Cooperation). Note that section 7(a)(1) requires federal agencies to utilize their authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation of endangered and threatened species. Sections 7 (a)(2) and 7(a)(3) and their implementing regulations require federal action agencies to consult with the USFWS for their proposed action and the proposed action of a non-federal applicant for a federal license or permit to ensure that the proposed action is not likely to jeopardize the continued existence of a listed species.

These BMPs are sometimes called avoidance and/or minimization measures, protective measures, conservation actions, or become terms and condition in a biological opinion issued by the USFWS for proposed federal actions that are likely to adversely affect the desert tortoise. These BMPs are mandatory when included in a permit or authorization from a federal action agency, included as part of the description of the proposed action during informal or formal consultation with USFWS, or when included as terms and conditions in a biological opinion

3.2 List of Frequently Implemented Best Management Practices

3.2.1 Field Contact Representative

The federal action agency will ensure that the project proponent designate a Field Contact Representative (FCR) who shall be responsible for overseeing compliance with all protective measures for the desert tortoise identified in the project description, authorization requirements from the federal action agency, and the Biological Opinion. The FCR will be onsite during all active ground disturbance activities that could result in the "take" of a desert tortoise. The FCR will have the authority to receive and investigate reports of non-compliance and will have the authority to stop all activities that may violate these protective measures.

3.2.2 Authorized Desert Tortoise Biologist

Authorized Desert Tortoise Biologists (Authorized Biologists) shall be onsite during all activities that have the potential to disturb soil, vegetation, and wildlife (=ground-disturbing activities) to ensure compliance with the Biological Opinion. Prospective Authorized Biologists will submit their statement of qualifications to the federal action agency for review. If deemed qualified, the federal action agency will submit their name(s) and qualifications to the USFWS for review and approval at least 30 days prior to the need for the Authorized Biologist to perform those activities in the field. For authorization of



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specialized handling activities (e.g., transmitter placement or health assessments), the federal action agency will clearly define activities for which it is requesting authorization and provide credentials that are specific to those activities to the USFWS for review. Only the USFWS may approve an applicant to be an Authorized Biologist. Use of Authorized Biologists will be in accordance with the most up-to-date USFWS guidance and shall be required for monitoring any pre-construction, construction, operations or maintenance, or decommissioning activities that may result in take of the desert tortoise. The current guidance is provided in Chapter 3 of the Desert Tortoise (Mojave Population) Field Manual (herein “USFWS 2009”).

The project proponent will employ Authorized Biologists, approved by the USFWS and State wildlife agency for the proposed action, to ensure compliance with protective measures for the desert tortoise. As such, all Authorized Biologists are functionally agents of the USFWS and shall report directly to the USFWS/state wildlife management agency, the federal action agency, and the project proponent concurrently regarding all compliance incidents and take of desert tortoises; this includes all draft and final reports of non-compliance or take.

[For more detail please see

https://www.fws.gov/carlsbad/PalmSprings/DesertTortoise/DT_Auth_Bio_qualifications_statement_10-20-08.pdf for a description of the duties, responsibilities, and qualifications of an Authorized Desert Tortoise Biologist]

3.2.3 Biological Monitors

Biological Monitors shall be employed and responsible for ensuring that all compliance measures in the Biological Opinion are properly implemented, including: reporting non-compliance incidents; reporting all tortoises found in harm’s way; ensuring that project vehicles and equipment remain in designated areas; and minimizing the risk to tortoises on project access roads.

Working under the supervision of an Authorized Biologist, Biological Monitors will be present in all active ground disturbance and construction locations. Biological Monitors will provide oversight to ensure proper implementation of protective measures, record and report desert tortoise and desert tortoise sign observations in accordance with approved survey protocols, and report incidents of non-compliance in accordance with the Biological Opinion and other relevant project permits/authorizations. The federal action agency will ensure that an adequate number of Biological Monitors are present to monitor all aspects of the activities that have the potential to injure or kill desert tortoises.

[For more detail please see

https://www.fws.gov/carlsbad/PalmSprings/DesertTortoise/DT_Auth_Bio_qualifications_statement_10-20-08.pdf for a description of the duties, responsibilities, and qualifications of Biological Monitor]

3.2.4 Capturing, Handling, and Monitoring Desert Tortoises

The federal action agency will ensure that desert tortoises are handled only when air temperature, measured at two inches above the ground (shaded bulb) is not expected to exceed 35 degrees Celsius



(95 degrees Fahrenheit) during the handling session. If air temperature exceeds 35 degrees Celsius during handling or processing, desert tortoises will be shaded in an environment where the ambient air temperatures do not exceed 32.8 degrees Celsius (91 degrees Fahrenheit). The federal action agency will not release desert tortoises until the air temperature at the release site has declined to below 35 degrees Celsius and is expected to remain below 35 degrees Celsius for the remainder of that day.

Only Authorized Biologists will capture and handle desert tortoises and their eggs in compliance with the most up-to-date guidance from the USFWS (2009). An Authorized Biologist shall be responsible for recording each observation of desert tortoise and eggs handled in the tortoise monitoring reports. This information will be provided directly to the USFWS and the federal action agency. Note that a Biological Monitor may assist in handling under the direct supervision of an Authorized Biologist.

When performing tasks where tools and equipment may contact desert tortoises, the federal action agency will ensure that Authorized Biologists disinfect all tools via the USFWS's disease prevention protocols (Service 2016) or most recent Service guidance.

Desert tortoises exhibiting fence-pacing behavior during any phase of the proposed action will be moved to a safe location away from the fence and monitored. If temperatures are above 35 degrees Celsius, an Authorized Biologist will construct an artificial burrow for the desert tortoise or hold it in a climate-controlled location until temperatures fall below 32.8 degrees Celsius and are expected to remain below 35 degrees Celsius for the remainder of that day.

3.2.5 Re-hydrating Desert Tortoises

The federal action agency will ensure that Authorized Biologists re-hydrate desert tortoises that void their bladder using methods approved by the USFWS. These may include placing the tortoise in a shallow pan of drinking water in a confined quiet area for several minutes to allow the animal to drink on his own, epicoelomic injections of sterile saline, or by nasal or oral administration of drinking water. If a desert tortoise smaller than four inches in carapace length voids its bladder, the Authorized Biologist will offer fluids nasally or orally.

The federal action agency will ensure that Authorized Biologists do not perform specialized handling activities (e.g., transmitter placement, health assessments, fluid injection, or blood collection) for which they are not specifically authorized by the USFWS.

3.2.6 Health Assessments (for Translocation)

The federal action agency will ensure that Authorized Biologists follow the protocols outlined in USFWS (2016) or the most current USFWS guidance when performing health assessments on the desert tortoise.



3.2.7 Desert Tortoise Exclusion Fencing

Installation of tortoise-proof fencing that is designed to protect desert tortoises by excluding them from construction zones where ground-disturbing activities would occur. Depending on the specifics of the project, fencing could be permanent, temporary, or both.

The federal action agency will ensure that all permanent and temporary desert tortoise exclusion fencing is inspected at least monthly and immediately after rainfall events (i.e., the same day or the morning after an evening rain). Repairs will occur on all damaged exclusion fencing within two days; temporary fencing will be used to close gaps until the permanent fencing is repaired. If monitoring identifies gaps in exclusion fencing that cannot be adequately closed by temporary fencing, the federal action agency will ensure that a Biological Monitor is posted at the gap until fence repairs are made.

Following installation of any desert tortoise exclusion fence, the federal action agency will ensure that an Authorized Biologist checks the fence alignment for desert tortoises that are exhibiting fence-pacing behavior. From April 1 to October 15 and during other unseasonably warm periods of the year, fence checks will occur two times daily for 2 weeks following completion of fence construction. If midday temperatures are likely to be above 40.6 degrees Celsius, one of these checks will occur one hour prior to the forecasted temperature high. If a given fence alignment is installed in the winter, inspections will occur three times per day for the first 3 weeks of the next active season.

3.2.7.1 Permanent Desert Tortoise Exclusion Fencing

Fence material will be galvanized, one inch horizontal by two-inch vertical wire mesh, and will incorporate tortoise-proof gates or cattle guards at all entry points. Permanent desert tortoise exclusion fencing shall be designed and installed around the boundary of the facility in accordance with chapter 8 (USFWS 2009) or most recent version. An Authorized Biologist will monitor construction of exclusion fencing to relocate all tortoises in harm's way (including those now trapped inside the fence) to outside the fenced area. State requirements for the fencing may vary to protect hatchlings.

3.2.7.2 Temporary Desert Tortoise Exclusion Fencing

Should it be necessary to fence an area temporarily to exclude desert tortoises during construction, the temporary fencing would consist of: 1) portable stand-alone chain-link fence modules or plastic snow fencing supported by standard metal fencepost; and 2) desert tortoise fencing in compliance with Chapter 8 of USFWS (2009). Snow fencing or orange safety fencing are typically made from plastic or polyvinyl chloride and do not survive well in desert conditions and should not be used for more than 60 days.

3.2.8 Desert Tortoise Clearance Surveys and Relocation to Nearby Areas

After installation of desert tortoise exclusion fencing and prior to any surface-disturbing activities, Authorized Biologists shall conduct clearance surveys to locate and remove all desert tortoises from harm's way, using techniques that provide full coverage of areas that will experience surface disturbance (see Chapter 6 in USFWS 2009 or most recent version). If more than 5 desert tortoises are



to be moved a distance of more than 500 meters then a separate Translocation Plan must be prepared and approved by USFWS.

Desert tortoises found during the clearance survey will either be relocated outside the project impact area or translocated to a recipient site (see 3.2.31 Translocation Plan) in accordance with the Biological Opinion and Translocation Plan, if applicable.

In some cases where the proponent owns contiguous lands or those lands are managed by the BLM (which would require prior approval of the BLM), tortoises may be relocated a short distance onto those lands and monitored by either the Authorized Biologist or Biological Monitor until which time the tortoise(s) is judged to be out of harm's way (see definition of harm in 50 CFR 17.3). In some cases, an artificial burrow will need to be constructed by Authorized Biologists (see Chapter 6, Subsection 7 in USFWS 2009).

Authorized Biologists will perform desert tortoise clearance surveys of all unfenced work areas outside the main project site immediately prior to the onset of pre-construction, construction, operations and maintenance, and decommissioning activities for project facilities. Desert tortoise monitoring shall be conducted during all related work activities in accordance with USFWS (2009) or most recent version, the Biological Opinion, and the Translocation Plan, if applicable.

During pre-construction clearance surveys for construction and maintenance activities, the federal action agency will ensure that all desert tortoise burrows are inspected for small and large desert tortoises and all mammal burrows that may host large desert tortoises. All active burrows will be flagged and avoided wherever feasible.

When marking and flagging burrows, the federal action agency will ensure that the guidance in the Desert Tortoise Field Manual (USFWS 2009) or more recent version s followed.

3.2.9 Burrow Blockage, Excavation, and Collapsing

The federal action agency will ensure that the guidance provided in the Desert Tortoise Field Manual (Service 2009) or most recent version is followed when blocking and marking a desert tortoise burrow.

If activities from the proposed action cannot avoid an active burrow, an Authorized Biologist will excavate the burrow according to the protocols in the Desert Tortoise Field Manual (Service 2009) or most recent version. Authorized Biologists will move all desert tortoises excavated from active burrows to the nearest unoccupied natural burrow, an artificially constructed burrow, or place it under a shrub if it can be released within specified temperature limits. The federal action agency will ensure that further activities associated with the proposed actions do not disrupt the release location.

The federal action agency will ensure that a burrow is confirmed as inactive only if close inspection can locate all interior edges of the burrow, such that hidden/walled chambers are not missed.



3.2.10 Education and Environmental Awareness Program for All Workers at the Site of the Proposed Action

A Worker Environmental Awareness Program (WEAP) shall be presented by an Authorized Biologist to all project personnel prior to them starting work at the project site or conducting activities that may affect desert tortoises. This program will contain information concerning the biology and distribution of the desert tortoise, desert tortoise activity patterns, its sensitivity to human activities, its legal status, and occurrence in the proposed project area. The program will also explain the definition of “take” and its associated penalties, the required measures for minimizing effects during project-related activities, measures that personnel can take to promote the conservation of desert tortoises, and reporting requirements and measures to implement if a desert tortoise is encountered. Personnel shall be instructed to check under vehicles before moving them as tortoises often seek shelter under parked vehicles.

Note that the WEAP is to include species that are recognized and protected by the state wildlife agency and the federal action agency.

WEAP training shall be mandatory, and as such, workers shall be required to sign in and wear a sticker on their hard hat to signify that they have received the training and agree to comply. The federal action agency and project proponent will inform all personnel of their responsibility to report any form of injury or mortality of desert tortoises to the official responsible for overseeing compliance with the protective measures (FCR and ABs and BMs)

3.2.11 Access to Project Site

Access to the project site during all phases will be confined to the project right-of-way (ROW) and established access roads as defined in pertinent federal authorization documents. The federal agency will ensure that project personnel know that driving off-road or performing ground-disturbing activities outside of designated areas during construction, operations and maintenance, or decommissioning is prohibited.

During all phases of the proposed action, employees will report any desert tortoise sightings along established access roads and project right-of-way to the Authorized Biologist

The federal action agency will ensure that only road surfacing and sealants and soil bonding and weighting agents are not toxic to wildlife and plants on unpaved surfaces.

3.2.12 Speed Limits and Signage

Until the desert tortoise exclusion fence has been constructed (where applicable), a speed limit of 15 miles per hour shall be maintained during the periods of highest tortoise activity (March 1 through November 1), and a limit of 25 miles per hour maintained during periods of lower tortoise activity. This will reduce dust and allow for observation of tortoises in the road. Speed limit and caution signs will be installed along access roads to promote awareness of desert tortoises in the project area and encourage



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personnel not to stray off established routes to and within the project site. (Note that the speed limit set by the federal agency is based on local conditions such as tortoise population density, vegetation cover, terrain, visibility, and the amount of project related traffic.)

Where tortoise exclusionary fence is installed and desert tortoise clearance surveys have been completed, speed limits within the fenced and cleared areas shall be established by the construction contractor. Limits will be based on surface conditions and safety considerations. Vehicle travel in unfenced areas will adhere to speed limits established above.

3.2.13 Trash and Litter Control Program

A food, trash, and litter control program shall be implemented by the project proponent and monitored by Authorized Biologists to remove or contain foodstuffs, trash, or other wastes that may attract predators at the project site. The purpose of the program is to reduce the attractiveness of the area to opportunistic and subsidized predators such as desert kit foxes, coyotes, badgers, and common ravens. Trash and food items shall be disposed of properly in wind and predator-proof containers with re-sealing lids. Trash containers shall be emptied and construction waste shall be removed daily from the project area and disposed of in an approved landfill, recycling, or compost facility.

3.2.14 Dogs, Other Pets, and Firearms

Firearms, domestic dogs, and other pets shall be prohibited on the project site.

3.2.15 Avian Predator Control and Raven Management Plan

Authorized biologists are responsible for inspecting structures annually for nesting ravens and other predatory birds and report observations of nests to the USFWS. Transmission line support structures and other facility structures shall be designed to discourage use by raptors for perching or nesting (e.g. by use of anti-perching devices) in accordance with the most current Avian Power Line Interaction Committee guidelines (APLIC 2006). BMPs to discourage the presence of ravens onsite include trash management, food management, removal of road-killed animals on the project site, elimination of available water sources including puddles of water, designing structures to discourage potential nest sites, use of hazing to discourage raven presence, removing inactive nests in the project area, and active monitoring of the site for raven presence.

The federal action agency will ensure that a common raven management plan, if required, is developed and implemented with approval of the USFWS. The Plan's purpose is to eliminate or substantially reduce the availability of subsidies of food, water, and roosting and nesting sites for common ravens and the potential for ravens to occupy the area of the proposed action during all phases of development and use. The Plan will include a monitoring component to assess its effectiveness and modify its implementation if it is not effective.

Note there also may be additional State-specific requirements; e.g., the State of California commonly finds that it is not possible to completely exclude ravens from using project infrastructure (e.g.,



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buildings, fences, power poles and transmission lines, etc..) as nesting, perching, and roosting substrates (during breeding as well as non-breeding seasons), therefore a regional raven management plan was developed by several cooperating federal agencies. To offset the Indirect and cumulative effect of development project in the range of the desert tortoise in California, the project proponents may be required to contribute funds to help implement the Raven Management Plan.

3.2.16 Compensation for Loss/Degradation of Habitat

Desert tortoise compensation in the form of fees or acquisition of land for habitat adversely affected by the proposed action will likely be required by the federal action agency from the project proponent to offset unavoidable adverse effects of the proposed action to the desert tortoise. The total acres of permanent and temporary disturbance shall be adjusted by the federal action agency based upon final site design and disturbance acreage at the time a Notice to Proceed has been issued for the project (an increase in habitat disturbance may require re-initiation of formal consultation).

Compensation fees are used to support desert tortoise recovery, which may include the following actions: habitat restoration and recovery; monitoring of habitat, populations, and effectiveness of conservation and recovery actions; applied research to promote conservation/recovery; public outreach; predator management; and other actions recommended by USFWS approved Desert Tortoise Recovery Implementation Teams.

Conservation actions by the federal action agency will likely be requested by the USFWS to offset unavoidable adverse effects of the proposed action to the desert tortoise. These may include funding to support desert tortoise recovery or implementation of land management actions that contribute to the recovery of the desert tortoise.

Note that the States may have differing compensation requirements that must be met. California, for example, requires compensation in the form of lands that must offer habitat characteristics similar to those of the lands lost and be approved by the California Department of Fish and Wildlife.

3.2.17 Trenches, Borings, and Other Excavations Outside Desert Tortoise Exclusion Fencing

An Authorized Biologist or Biological Monitor will inspect any excavations that are not within desert tortoise exclusion fencing on a regular basis (at least 3 times daily) and immediately prior to filling the excavation. If midday temperatures are likely to be above 35 degrees Celsius, one of these checks will occur one hour prior to the forecasted high temperature. If project personnel discover a desert tortoise in an open trench, an Authorized Biologist or Biological Monitor working under the supervision of an Authorized Biologist will move it to a safe location and monitor it. To prevent entrapment of desert tortoises during non-work hours, the federal action agency will ensure that excavations that are outside the permanently fenced project areas with desert tortoise exclusion fencing (e.g. trenches for water pipeline) are covered or fenced using temporary desert tortoise exclusion fencing at the end of each day.



3.2.18 Checking for Tortoises beneath Vehicles and Equipment

All project personnel shall be instructed to inspect beneath and around all parked vehicles and equipment, located in or near desert tortoise habitat, prior to moving the vehicle or equipment. Tortoises often seek shelter under parked vehicles or equipment. Vehicle door magnets or stickers that remind vehicle operators to look beneath tires before driving or moving equipment shall be prepared and distributed by the Authorized Biologist. If project personnel encounter a desert tortoise under a vehicle or equipment, they will contact an Authorized Biologist. If the desert tortoise is not in immediate danger or not impeding progress for the proposed action, the Authorized Biologist will allow the tortoise to move on its own to a safe distance away prior to moving the vehicle. If the tortoise is in immediate danger or impeding progress of the proposed action, an Authorized Biologist or Biological Monitor may move the desert tortoise to a safe location to allow for movement of the vehicle/equipment.

3.2.19 Construction Area Flagging

Designated areas to protect desert tortoises and their habitat will be identified by an Authorized Biologist. An Authorized Biologist, Biological Monitor, or construction survey personnel, will flag boundaries of these areas for avoidance. Restricted areas may be identified and shall be monitored to ensure desert tortoises are protected during construction. ROW boundaries shall be flagged prior to beginning construction activities, and disturbance shall be confined to the ROW. In some cases, an Authorized Biologist or Biological Monitor shall escort all survey crews on site prior to construction. All survey crew vehicles will remain on existing roads and stay within flagged areas. In cases where construction vehicles are required to go off existing roads, an Authorized Biologist or Biological Monitor (on foot) would precede the vehicles and clear the area.

3.2.20 Blasting

If blasting is required in desert tortoise habitat, detonation shall only occur after the area has been surveyed and cleared by an Authorized Biologist no more than 24 hours prior. A 200-foot radius buffer area around the blasting site shall be surveyed, and all desert tortoises above ground within this 200-foot buffer shall be moved at least 500 feet from the blasting site, placed in unoccupied burrows, and temporarily penned to prevent from returning to the site. Tortoises located outside of the immediate blast zone and that are within burrows would be left in their burrows. All burrows, regardless of occupied status, will be stuffed with newspapers, flagged, and the location recorded using a GPS unit. Immediately after blasting, newspaper and flagging will be removed. If a burrow or cover site has collapsed that could be occupied, it shall be excavated to ensure no tortoises have been buried and are in danger of suffocation. Desert tortoises removed from the blast zone would be returned to their burrow if it is intact or placed in a similar unoccupied or constructed burrow.

3.2.21 Penning

Penning of desert tortoises shall be accomplished using the current methods approved by the US Fish and Wildlife Service (USFWS). The current method is to install a circular fence, approximately 20 feet in diameter, to enclose and surround the occupied tortoise burrow (USFWS 2009). The pen should be



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constructed with 1-inch horizontal by 2-inch (smaller for hatchlings) vertical, galvanized welded 16-gauge wire. Steel T-posts or rebar should be placed every 5 to 6 feet to support the pen material. Pen material will extend 18 to 24-inches above ground. The bottom of the enclosure will be buried 6 to 12 inches or bent towards the burrow, have soils mounded along the base, and other measures implemented to ensure zero ground clearance. Care shall be taken to minimize visibility of the pen by the public. An Authorized Biologist or Biological Monitor shall check the pen at least daily to ensure the desert tortoise is secure and not stressed. No desert tortoise shall be penned for more than 48 hours without written approval by the USFWS.

Because this is a relatively new technique, all instances of penning or issues associated with penning shall be reported to the USFWS by phone and email within 24 hours by an Authorized Biologist. Desert tortoises shall not be penned when conditions are favorable for desert tortoise activity unless approved in advance by the USFWS. Pens for juvenile and hatchling-sized desert tortoises will consist of ½ inch by ¼ inch fencing with a cover to prevent predators, including smaller predators from gaining access to the tortoise (USFWS 2011).

All pens will be approved by USFWS and the federal action agency, and the Authorized Biologist shall check pens daily to ensure all desert tortoises within the pens are present, are not subject to predation or attempted predation (e.g., ants, etc.) and no damage to the pens has occurred. Any impacts to penning or desert tortoises shall be reported to USFWS within one day. USFWS shall be contacted within one day of observation of desert tortoise injury or mortality.

3.2.22 Timing of Construction and Temperature Concerns

The federal action agency shall ensure that when possible, the project proponent schedules and conducts construction, operations, and maintenance activities within desert tortoise habitat during the less-active season (generally November 1 to March 1) and during periods of reduced desert tortoise activity (typically when ambient temperatures are less than 60 degrees Fahrenheit or greater than 95 degrees Fahrenheit).

3.2.23 Confining Activity to Delineated Areas and Times

The federal action agency will ensure that all project activities, project vehicles, equipment, and supplies are confined within designated areas or delineated boundaries of work areas that Authorized Biologists or Biological Monitors have identified and cleared of desert tortoises. Parking and storage will occur within desert tortoise exclusion fencing to the extent feasible. Work areas will be confined to previously disturbed areas, and if none is available, to the smallest practical area, considering topography, placement of facilities, location of burrows, public health and safety, and other limiting factors. During phases following construction, all vehicle parking, material stockpiles, and construction, operations and maintenance and decommissioning-related materials will be confined to the permanently fenced project site.



3.2.24 Noise Reduction

Noise reduction devices (e.g. mufflers) will be employed to minimize impacts to tortoises and other protected species. Explosives will be used only within specified times and at specified distances from sensitive wildlife or surface waters as established by the relevant federal and state agencies. Operators will ensure that all equipment is adequately muffled and maintained in order to minimize disturbance to wildlife.

3.2.25 Installing Shade Structures and Shelters

If interior fences are in place during the active season and prior to the removal of desert tortoises from within the area, the federal action agency will ensure that shade structures are installed along these fences. Shade structures will also be installed outside tortoise exclusion fence to protect desert tortoises that have been relocated from within the project site, as well as desert tortoises occurring in the wild outside the project perimeter. The shelters will be designed and installed to provide shelter for both small and large tortoises. The shelters will be installed at approximately 1,000-foot intervals (or as approved by the USFWS), with one smaller sized shelter placed in between each larger shelter in order to provide additional locations for subadults and juveniles.

Shelters will be made from either PVC tubes, wood, or similar material with a diameter of 14 inches or greater for the larger shelters and 6-8 inches for the smaller ones. Tubes should be cut into 2-3 foot minimum lengths and then cut horizontally to mimic a naturally occurring burrow. Each shade structure would be partially buried and covered with a minimum 4 inches of soil and rocks to keep them from being blown away and to assist with thermoregulation within the shelter. Alternatively, the PVC tubes may be wired to the exclusion fence. During all fence monitoring, these structures will be inspected regularly for their effectiveness and adjusted as needed to increase their effectiveness. These inspections will continue until either no tortoises are found consistently walking the fence during an entire active season or until the end of the project's construction period, whichever is earlier.

3.2.26 Moving Construction Pipes, Culverts, and Similar Structures

When outside the fenced project areas, project personnel will not move construction pipes greater than 3 inches in diameter if they are stored less than 8 inches above the ground, until they have inspected the pipes to determine whether desert tortoises are present. As an alternative, the project proponent may cap all such structures before storing them outside of areas with desert tortoise exclusion fencing.

3.2.27 Spill Prevention/Fire Management Plan

All vehicles and/or equipment will be maintained in good working condition and will be repaired promptly if there is evidence of leaking motor oil, antifreeze, hydraulic fluid, or other hazardous materials.

A Spill Prevention and Emergency Response Plan will be developed that considers sensitive ecological resources. Spills of any toxic substances will be promptly addressed and cleaned up before they can enter aquatic or other sensitive habitats because of runoff or leaching. A Fire Management Plan will be



developed to implement measures that minimize the potential for a human-caused fire to affect ecological resources and that respond to natural fire situations.

3.2.28 Water Storage

Water needed for any phase of the proposed action should be stored in tanks. If evaporation ponds are used, they will be fenced to prevent use by wildlife and treated in a manner approved by the federal action agency partner and USFWS to prevent drowning and attracting predators of the desert tortoise. Wildlife escape ramps will be installed and the liner will be textured sufficiently to ensure that all wildlife can escape if they enter the pond. The ponds and fence shall be inspected at least daily. The Authorized Biologist will be responsible for monitoring the use by common ravens and will coordinate with the project proponent/federal action agency to ensure they implement appropriate action to prevent/deter use of water for any phase of the proposed action by common ravens.

3.2.29 Non-emergency Expansion

Any non-emergency expansion of activities into areas outside of the areas considered in this Biological Opinion will require approval by the federal land management partner and USFWS, as well as necessary desert tortoise clearance surveys. These expanded activities may require re-initiation of consultation with the USFWS.

3.2.30 Geotechnical Testing

An Authorized Biologist or Biological Monitor will be at each of the geotechnical test sites for all necessary activities. Appropriate desert tortoise clearance will be conducted, including the testing site, and access and staging areas. The Authorized Biologist or Biological Monitor will have the authority to micro-site the geotechnical test locations and stop work, if necessary, to avoid sensitive resources including take of desert tortoise and damage to burrows.

3.2.31 Translocation Plan

If more than 5 desert tortoises are to be moved a distance of more than 500 meters then a Translocation Plan must be prepared and approved by USFWS. Desert tortoises located during protocol clearance surveys of the action area may be relocated to areas outside the action area or transferred to an off-site quarantine facility (ex situ) for translocation, or monitored on the project site (in situ) via telemetry. If ex situ monitoring is selected, the off-site facility will be constructed, operated, and maintained according to the USFWS Draft Translocation Guidance (2011) or latest USFWS translocation guidance.

The Translocation Plan will include implementation of a monitoring method to evaluate whether the translocation program achieves its long-term goals of maximizing survival and assimilation of translocated desert tortoises within their new habitat and populations.

The federal action agency will not translocate or otherwise move wild desert tortoises that show clinical signs of disease. If the Authorized Biologist or Biological Monitor locates a desert tortoise that must be



moved, and it has clinical signs of upper respiratory tract disease, they will quarantine this individual and contact the USFWS to determine appropriate disposition of the animal.

Desert tortoises captured will be translocated to the most appropriate recipient site given the conditions within recipient sites at the time of capture, as determined in coordination with the USFWS and BLM if the recipient site is located on public lands, and subject to standard health assessment results and restrictions on translocation of ELISA-seropositive desert tortoises into critical habitat.

Depending on environmental conditions and hydration states, desert tortoises to be translocated may need to be hydrated within 12 hours before release, according to existing protocols (Service 2009). This may include soaking in shallow clean drinking water, nasal/oral administration of clean drinking water, or epicoelomic injection of sterile saline.

Desert tortoise will be translocated only when ambient temperatures will not exceed 35 degrees Celsius within one week of release and 32degrees Celsius within three hours of release.

A record of all desert tortoises encountered and translocated during project surveys and monitoring will be maintained. The record will include the following information for each desert tortoise: location (narrative, vegetation type, UTM coordinates, and maps) and dates of observations; burrow data; general conditions and health; appropriate measurements; any apparent injuries and state of healing; if moved, the location at which it was captured and the location at which it was released; voiding of the bladder and rehydration method/duration; and diagnostic markings (i.e. identification numbers).

The federal action agency will ensure that Authorized Biologists mark desert tortoises in accordance with the Desert Tortoise Field Manual (Service 2009a) or other USFWS-authorized method.

Authorized Biologists that have received approval from the USFWS for this specialized handling activity will affix transmitter to desert tortoises following USFWS guidance. The federal actin agency will ensure that Authorized Biologists attach only transmitters of appropriate size, weight, and conformation to desert tortoises. Transmitter mass will not exceed 10 percent of the desert tortoise's mass.

The federal action agency will ensure that Authorized Biologists replace transmitters earlier than the recommended battery life of the transmitter to reduce the potential of losing desert tortoises.

3.2.32 Weed Management/Revegetation

To prevent the spread and propagation of invasive plant species, the federal agency will ensure that a weed management plan is developed and implemented at the project site. This plan includes how to effectively manage weeds at the project site that will occur because of ground-disturbing activities and prevent the introduction of seeds and plant propagules from external sites (e.g., on the tires of vehicles and construction equipment brought to the project site).the size of any ground-disturbing activities during all phases of the proposed action are confined to the minimum area and the access routes are limited. This plan should include revegetation of native species at temporarily disturbed areas and monitoring for effectiveness. To prevent the spread of non-native plants via transport on vehicles and



mobile equipment to the site during construction and decommissioning, an appropriate method that dislodges seeds and plant propagules will be used prior to transporting the vehicles

3.2.33 Reporting

Depending on the scale of the project, federal agencies/USFWS may require reports at either project close or quarterly during the duration of construction phase, and annual updates after that. The federal action agency may delegate this responsibility to the project proponent.

Specifically, all reports must include information on any instances when desert tortoises were killed, injured, or handled; the circumstances of such incidents; and any actions undertaken to prevent similar incidents from reoccurring. Additionally, the reports should provide detailed information regarding each desert tortoise handled or observed, with the names of all Authorized Biologists or Biological Monitors (and the Authorized Biologist who supervised their actions) involved in the project. Information will include the following: location (UTM), date and time of observation, whether the desert tortoise was handled, general health, whether it voided its bladder, re-hydration method and duration, if applicable, location the desert tortoise was moved from and location moved to, unique physical characteristics of each tortoise, and effectiveness and compliance with the desert tortoise protective measures.

Any incident occurring during implementation of the proposed action that was considered by the Authorized Biologist or Biological Monitor to be in non-compliance with this Biological Opinion will be documented immediately and reported to the FCR by the Authorized Biologist.



4.0 Acknowledgments

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- Scott Hoffman
- Andrew Butsavich
- Lyndsi Lillis
- Lacey Taplin
- Zoey Vazquez
- Catherine 'CJ' Patton

5.0 References

Below is a list of literature that was used to compile the list of frequently implemented BMPs.

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***A Compilation of Frequently Implemented Best Management Practices to
Protect Desert Tortoises during Implementation of Federal Actions***

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