Appendix X

Burrowing Owl Clearance Survey Protocol

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1.0 Qualified Biologist Definition

As described in Section 6.3.3.2 of the MSHCP Amendment, the following terms and definitions will be used to determine qualified biologists to conduct burrowing owl clearance surveys and exclusions. Survey and clearance guidance is based on the California Department of Fish and Wildlife Staff Report on Burrowing Owl Mitigation.[1] No published standard guidance specific to Mojave Desert populations is currently available. Guidance and protocols as described in this document may be updated to be consistent with current guidelines.

1.1 MSHCP Lead Species Biologist

A person with demonstrated experience working with desert tortoise and burrowing owl and their habitats including conducting protocol surveys, locating desert tortoise and burrowing owl sign, burrow excavation, and oversight of tortoise fence installation. Resumes will be submitted to the DCP for approval prior to implementing the desert tortoise and burrowing owl measures. Qualifications must meet the current U.S. Fish and Wildlife Service (USFWS) standards for a desert tortoise authorized biologist. The DCP will also develop a Species Clearance class approved by the USFWS for biologists on desert tortoise and burrowing owl biology, clearance protocols. All MSHCP Lead Species Biologists must attend this class prior to conducting activities that may result in take covered under the MSHCP Amendment.

1.2 MSHCP Assistant Species Biologist

A person with demonstrated experience working with desert tortoises, burrowing owl, and their habitats including conducting protocol surveys, locating tortoise and burrowing owl sign, burrow excavation, and oversight of tortoise fence installation. MSHCP Assistant Species Biologists are generally less experienced than MSHCP Lead Species Biologists and must be overseen by a MSHCP Lead Species Biologist when conducting clearance surveys or other activities approved under the MSHCP Amendment. Resumes will be submitted to the DCP for approval prior to implementing the desert tortoise measures. Attendance at the Species Clearance class is also required prior to conducting activities that may result in take covered under the MSHCP Amendment.

2.0 Burrowing Owl Survey

2.1 General Survey Guidance

1. Surveys shall occur up to 1 month prior to construction.
2. One MSHCP Lead Species Biologist per clearance survey site shall be present to supervise MSHCP Assistant Species Biologists and oversee clearances.
3. Clearance surveys require a single pass with 100 percent coverage of the project area.
    a) Focus on locating all burrowing owls residing in the project area above and below ground
    b) Surveys must consist of at least two consecutive surveys of the site
    c) Surveys shall involve walking transects either

[1] *[CDFW] California Department of Fish and Wildlife, formerly California Department of Fish and Game (CDFG). 2012. Staff report on burrowing owl mitigation. Unpublished report. Sacramento, California, USA.*

i) less than or equal to 10 feet (3 meters) wide under typical conditions, if in desert tortoise potential habitat and conducting desert tortoise clearance surveys simultaneously, or

ii) spaced between 23 feet to 65 feet (7 meters to 20 meters) apart, adjusting for vegetation height and density, when outside of desert tortoise potential habitat. Transect spacing shall not exceed 65 feet (20 meters) but exact spacing is determined by the length at which 100% of ground and burrow visualization is achieved.

d) While walking transects,
   i) Surveyors shall scan the entire visible project area for burrowing owls using binoculars at the start of each transect and at least every 330 feet (100 meters). This shall be done to minimize missing flushed owls.
   ii) Surveyors shall scan areas to the left and right of the transect line up to the halfway point to the next transect line. Scans shall focus on burrowing owl sign.

e) Clearance surveys should be conducted during the non-breeding season (September 1 – January 31), to the extent feasible, to avoid encountering breeding owls; however, clearance surveys may be conducted at any time of year (see 2.2).

f) Surveys should be conducted when burrowing owl are most active above ground, and time of day can vary based on weather, latitude, and season. Typically, survey between morning civil twilight and 10:00 AM (although potentially earlier with elevated daytime summer temperatures) and two hours before sunset until evening civil twilight provide the highest detection probabilities (CDFW 2012).

g) When in desert tortoise habitat, surveys should also be conducted when desert tortoise are most active (see I and ii, below) if possible
   i) April and May, or September and October, and

   ii) Air temperatures are below 95 degrees F (35 degrees C) with air temperature measured approximately 5 centimeters from the soil in an areas of full sun but in the shade of the observer.

4. Any time a vehicle is parked, whether the engine is engaged or not, the ground around and under the vehicle shall be inspected for desert tortoise immediately prior to moving the vehicle.

5. If desert tortoise is observed, desert tortoise protocols (MSHCP Appendix C) shall be implemented for capture and translocation.

6. Global Positioning system (GPS) data points of burrows and location of burrowing owl shall be collected in Universal Transverse Mercator (UTM) Zone 11 North American Datum 1983 (NAD83) and all data shall be entered on the data sheet (Attachment 1) and reported back to the DCP.

   a) Burrowing owl sign shall be removed after location is recorded, such that any subsequent surveys in which burrowing owl sign is detected, it will be known to be new. This shall be conducted even if burrows are collapsed.

2.2 Burrowing Owl Clearance

1. Burrowing owl clearances may occur year-round, although preferred to be conducted during the non-breeding season (as described in Section 2.1) as burrow collapse cannot be conducted if burrowing owls are confirmed to exhibit active nesting behavior. To the extent feasible, all clearance activities including burrow excavation shall occur when ambient temperatures are below 95 degrees F (35 degrees C) and not anticipated to rise above 95 degrees F (35 degrees C) in case desert tortoises are encountered and to limit exposure of evicted owls to extreme temperatures.

2. Any burrows that are more than 4 inches (11 centimeters) in diameter (height and width) and more than 60 inches (150 centimeters) in depth, and/or burrows that display burrowing owl sign such as feathers, whitewash, eggshells, or litter at the entrance pellets or bones shall be investigated with an appropriately bright light and a mirror, or scoped.

    a) Any burrow occupied by burrowing owl shall be left intact and marked for passive relocation (Section 2.3)

    b) Burrows with visible backs that are determined to be unoccupied can be collapsed on the survey line via protocol outlined in Section 3.0. Surveyors should record any sign but remove it from the area so as not to confuse future surveyors.

    c) If occupancy is inconclusive see Section 2.3.2. If appropriate, excavation will be conducted using hand tools as described in (Section 3.0).

    d) Burrows with non-visible ends shall be scoped to determine presence/absence of any protected species and or their eggs/ young. Any burrow occupied by desert tortoise shall follow protocols described in MSHCP Appendix C. Any other animals shall be left intact.

3. Should Gila monster be encountered GPS data points of burrows, photos, and location of Gila monster shall be collected in UTM Zone 11 NAD83 and all data shall be reported to the Nevada Department of Wildlife (NDOW) at (702) 486-5127.

    a) If the Gila monster is exposed and there is potential for harm or injury, alert NDOW immediately. Should NDOW's assistance be delayed, MSHCP Species Biologists or Species Handlers should detain the Gila monster out of harms way until NDOW personnel can respond. The Gila monster should be detained until NDOW biologists have responded.

        i) Should NDOW not be immediately available to respond for photo-documentation, a digital (5 megapixel or higher) or 35mm camera will be used to take good quality images of the Gila monster in situ at the location of live encounter or dead salvage. The pictures will be provided to NDOW at reptiles@ndow.org along with specific location information including GPS coordinates (as described above), date, time, and habitat description. Pictures will show the following information: (1) Encounter location (landscape with Gila monster in clear view); and if Gila monster is dead/salvage, (2) a clear overhead shot of the entire body with a ruler next to it for scale (Gila monster should fill camera's field of view and be in sharp focus); (3) a clear, overhead close-up of the head (head should fill camera's field of view and be in sharp focus).[2]

4. If a burrowing owl is seen flushing from area, estimate site location, label with flagging, and record the location with GPS.

2.3 Nest Avoidance and Passive Relocation of Non-Breeding Owls

1. Breeding season. Occupied burrowing owl burrows during the breeding season determined to have a breeding pair shall be clearly marked and given a 330-foot (100-meter) buffer zone from construction activities including but not limited to excessive dust, noise, and vibrations. If an occupied burrow is determined to be a non-breeding owl, then passive relocation of the burrowing owl can occur within the breeding season following the methods in Section 2.3.2.

[2] *[NDOW] Nevada Department of Wildlife. 2012. Gila Monster Status, Identification, and Reporting Protocol for Observations. Southern Region. September 7.*

a) This buffer zone must be clearly communicated to all construction crews on site and will remain in effect until owlets have completely fledged or the nest is otherwise determined inactive by an MSHCP Lead Species Biologist.

i) Fledging will be determined by time of year (most likely not before August 31). Once fledging or nest inactivity (failure) is suspected, a burrow must be confirmed empty by using a scope everyday consecutively for one week. The burrow can then be collapsed even if still in the breeding season while following the guidelines outlined in Section 3.0. If burrowing owl are still occupying the burrows but fledging has been determined, then passive relocation of the burrowing owls may occur following methods in Section 2.3.2.

2. Passive Relocation. Burrowing owls in the non-breeding season burrows or owls determined to be non-breeding season or nests inactive (fledging of owlets or other reasons) as described in Section 2.3.1 may be passively relocated. Passive relocation shall be conducted to assist the burrowing owl in self-relocating to other burrows outside of the project area. Self-relocation may reduce potential that the burrowing owl attempts to re-occupy the project area. Record and document location of occupied burrow.

a) A one-way door should be installed in the neck of the burrow to prevent an owl from re-entering the burrow once it leaves. This shall also be done at burrows with inconclusive occupancy (Section 2.2.2c).

b) Do not assume that the bird has left, and do not assume that the one-way door has worked correctly. The burrow must be confirmed empty via scope by either two MSHCP Species Biologists (at least one must be a MSHCP Lead Species Biologist and the second may be either a MSHCP Lead Species Biologist or an MSHCP Assistant Species Biologist), or by scoping on two consecutive days. Once vacancy is confirmed, the burrow may be collapsed as described in Section 3.0.

c) If not possible to use a one-way door, a motion sensor camera or other camera trap device suitable for detection of burrowing owl must be placed at the burrow mouth for a minimum of 3 days, and then the burrow must be scoped to determine vacancy. Burrow excavation should follow guidelines outlined in Section 3.0.

3.0 Burrowing Owl Burrow Excavation

Burrow excavation will follow guidelines for desert tortoise burrow excavation (MSHCP Appendix C Section 3.0) and are repeated here. All burrows shall have been inspected for desert tortoise and eggs as described in MSHCP Appendix C and confirmed vacancy of burrowing owl as described above in Section 2.0. If desert tortoise or their eggs are encountered follow protocols for handling and transport of desert tortoise as described in MSHCP Appendix C.

1. Excavators should wear leather or cloth gloves during burrow excavation to avoid being bitten or stung by venomous animals. Excavators should wear N95 masks and eyeglasses to avoid potential exposure to Valley Fever fungal spores.

2. If burrowing owl or burrowing owl nests are encountered during excavation, start again with protocols outline in Section 2.3.

3. All potential burrows within the project site shall be excavated, except those occupied by other animals.

a) Spider-webs, litter, and other debris may accumulate in burrow openings overnight, and openings may collapse during winter rains.

b) Do not assume that a burrow is inactive if it looks unused or collapsed.

c) If excavation is not possible with hand tools because of rock or sediment type, the burrow will be scoped to the extent feasible to determine occupancy. If confirmed unoccupied, the entrance will be closed to block reentry by desert tortoise, burrowing owl, and other wildlife. If the burrow cannot be confirmed unoccupied by desert tortoise or burrowing owl, a motion sensor camera or other camera trap device suitable for detection of desert tortoise and burrowing owl will be installed to monitor the entrance for a minimum of 3 days. If no desert tortoise or burrowing owl activity is detected at the burrow, the entrance will be closed. If desert tortoise or burrowing owl is observed to use and occupy the burrow, the Service will be consulted for next steps such as use of mechanized equipment to excavate the burrow.

4. Feel for desert tortoise eggs by gently probing the soil in front of the burrow opening with a blunt instrument and along the floor of the burrow as it is excavated.

   a) Areas of less compacted soil may indicate a nest.

   b) Desert tortoise eggs have been found up to 6 feet (1.9 meters) in front of (outside of) the burrow opening and up to 6 feet (1.9 meters) within the burrow.

   c) Removal of the top 10 inches (25 centimeters) of soil (or until a hard layer of soil is encountered) will typically ensure that all desert tortoise eggs, if present, will be detected.

   d) If eggs are detected, see methods in MSHCP Appendix C, Section 5.

5. Blunt-nosed shovels or garden trowels shall be used for excavation.

   a) Place a shovel in the burrow entrance, or garden trowel for small burrows, and slice away the ceiling with the second shovel or trowel.

   b) Remove the soil with the first shovel or trowel as excavation proceeds and repeat.

6. The burrow shall be excavated slowly and carefully.

   a) Stop often to see if a tortoise or eggs are within reach.

   b) Do not collapse inside the burrow ahead of the shovel or trowel.

7. Burrows shall be excavated an additional foot-or-so (0.3 meter) beyond the suspected end to ensure that a desert tortoise is not behind a dirt plug or mound.

   a) All side tunnels within the burrow shall be searched for tortoises.

   b) If a tortoise is found, do not assume that it is alone.

   c) After removing the first tortoise encountered, return to the burrow and continue to excavate it looking for additional tortoises or eggs.