Decision Record and Rationale for (DOI-BLM-NV-S010–2014–0038-DNA) – *Eldorado Valley Tortoise Translocation*

Based on Environmental Assessment DOI-BLM-NV-S010–2012–0097–EA

Desert Tortoise (*Gopherus agassizii*) Translocation Throughout the Species Range within Southern Nevada District and Caliente Field Office

Decision:

BLM will authorize USGS to translocate up to 600 desert tortoises (300 adults, 300 juveniles) to the Eldorado Valley area of Clark County as described in the proposed action (DOI-BLM-NV-S010–2014–0038-DNA) in Spring and Fall of 2014.

Rationale:

1. This decision of the current proposed action is consistent with the Las Vegas Resource Management Plan (RMP) and Record of Decision (ROD) approved in 1998 as it in conformance with the following management actions in RMP and ROD.
    - FW-2. Re-establish native fauna (including naturalized species) to historic habitat and improve population numbers in current use areas.
    - FW-2–a. Cooperate with State and Federal wildlife agencies in implementing introductions, reintroduction, and augmentation releases of native and/or naturalized species (such as desert bighorn sheep, and chukar).
    - SS-3. Manage desert tortoise habitat to achieve the recovery criteria defined in the Tortoise Recovery Plan and ultimately to achieve delisting of the desert tortoise.
    - SS-3–a.c. Implement inventory, monitoring, and research projects dealing with management issues within desert tortoise areas of critical environmental concern.
    - SS-4. Encourage the obtainment and dissemination of knowledge regarding the Mojave Desert ecosystem including desert tortoise biology.

2. The current proposed action falls under the programmatic tortoise translocation proposed action analyzed in the existing Environmental Assessment (EA) DOI-BLM-NV-S010–2012–0097–EA and is within the same analysis area. The current proposed action meets all the criteria required for translocation sites as analyzed under DOI-BLM-NV-S010–2012–0097–EA.

3. The range of alternatives as analyzed in DOI-BLM-NV-S010–2012–0097–EA is appropriate with respect to the current proposed action and any new information or circumstances would not substantially change the analysis of the new proposed action.

4. Direct, indirect, and cumulative effects that will result from implementation of the new proposed action area are similar (both quantitatively and qualitatively) to those analyzed in) DOI-BLM-NV-S010–2012–0097–EA and public involvement and interagency reviews associated with the DOI-BLM-NV-S010–2012–0097–EA and the site specific translocation plan are adequate for the current proposed action.

Mitigation Measures:

Mitigation measures were provided for in the original EA and shall become stipulation for this new action and shall be implemented to reduce impacts. The stipulations are as follows:

Tortoise Stipulations

1. Follow USFWS DTRO guidance for translocation site selection, disease testing, genetic testing, survey protocols, handling, and monitoring techniques.

2. Speed limit of 25 mph will be maintained on all unposted dirt roads.

3. Workers will be instructed to check underneath all vehicles before moving them as tortoises often take cover underneath parked vehicles.

4. Tortoise burrows, if needed, will be constructed outside wilderness and wilderness study areas.

Other Stipulations

1. All vehicles will be cleaned prior to entering the area, as well as after they are removed from the area to prevent the spread of noxious weeds.

2. Fire restrictions will be upheld.

3. Applicant must not disturb archaeological and historical sites, including, but not limited to, petroglyphs, ruins, historic buildings, and artifacts. Any cultural artifacts inadvertently discovered during permitted operations must be left in place.

4. All motorized vehicles are restricted to existing roads.

Finding

Based on the attached Environmental Assessment (DOI-BLM-NV-S010–2012–0097–EA), which includes a Finding of No Significant Impact (FONSI) and Decision Record, and the attached Determination of NEPA Adequacy (DNA) (DOI-BLM-NV- S010–2014–0038-DNA), I have determined that the EA DOI-BLM-NV-S010–2012–0097–EA is adequate, and that the impacts are not expected to be significant.

Appeal or Protest Opportunities:

This decision may be appealed to the Interior Board of Land Appeals (IBLA), Office of the Secretary, in accordance with the regulations contained in 43 CFR Part 4 and Form 1842–1. If an appeal is taken, your notice of appeal must be filed in this office within 30 days of the decision. The appellant has the burden of showing that the decision appealed from is in error.

If you wish to file a petition pursuant to regulation 43 CFR 2801.10 or 43 CFR 2881.10, for a stay of the effectiveness of this decision during the time that your appeal is being reviewed by IBLA, the petition for a stay must accompany your notice of appeal. A petition for a stay is required to show sufficient justification based on the standards listed

below. Copies of the notice of appeal and petition for a stay must also be submitted to each party named in this decision and to the IBLA and the appropriate office of the Solicitor (see 43 CFR 4.413) at the same time the original documents are filed with this office. If you request a stay, you have the burden of proof in demonstrating that a stay should be granted.

Standards for obtaining a stay

Except as otherwise provided for by law or other pertinent regulations, a petition for a stay of a decision pending appeal shall show sufficient justification based on the following standards:

1. The relative harm to the parties if the stay is granted or denied.
2. The likelihood of the appellant's success on the merits.
3. The likelihood of immediate and irreparable harm if the stay is not granted, and
4. Whether the public interest favors granting a stay.

Recommended by: _____ 3/27/14
Mathew Hamilton, Wildlife Biologist — Date

Approved by: _____ 3/27/14
Shonna Dooman — Date
Assistant Field Manager Resources, BLM Las Vegas Field Office

Determination of NEPA Adequacy (DNA)
Worksheet

U.S. Department of the Interior
Bureau of Land Management (BLM)

OFFICE:: Las Vegas Field Office, LLNVS00520

TRACKING NUMBER: DOI-BLM-NV-S010–2014–0038–DNA

CASEFILE/PROJECT NUMBER: NA

PROPOSED ACTION TITLE/TYPE: Eldorado Valley Tortoise Translocation

LOCATION/LEGAL DESCRIPTION: Eldorado Valley, south of Boulder City, Nevada

Approx T26S 62E 25,26,35,36 // T26S 63E 29–32 // T27S 62E 1,2,11,12 // T27S 63E 5–8, 16–21, 28–33

APPLICANT (if any): U.S. Fish and Wildlife Service (FWS) Desert Tortoise Recovery Office (DTRO)

A. Description of Proposed Action and any applicable mitigation measures

The FWS is planning on translocating up to 300 adult tortoises and 300 juvenile tortoises from the Desert Tortoise Conservation Center (DTCC) to the Eldorado Valley area (valley south of Boulder City) to help augment the tortoise population in the critical habitat unit. The tortoises will be radio-tracked over time to study their movements. Resident tortoises in control areas will also be monitored to compare responses to translocation activities. The detailed translocation plan is attached.

B. Land Use Plan Conformance

LUP Name	Las Vegas Resource Management Plan (RMP)	Date Approved:	1998

The proposed action is in conformance with the applicable LUP because it is specifically provided for in the following LUP decisions:

FW-2. Re-establish native fauna (including naturalized species) to historic habitat and improve population numbers in current use areas.

FW-2–a. Cooperate with State and Federal wildlife agencies in implementing introductions, reintroduction, and augmentation releases of native and/or naturalized species (such as desert bighorn sheep, and chukar).

SS-3. Manage desert tortoise habitat to achieve the recovery criteria defined in the Tortoise Recovery Plan and ultimately to achieve delisting of the desert tortoise.

SS-3–a.c. Implement inventory, monitoring, and research projects dealing with management issues within desert tortoise areas of critical environmental concern.

SS-4. Encourage the obtainment and dissemination of knowledge regarding the Mojave Desert ecosystem including desert tortoise biology.

C. Identify applicable National Environmental Policy Act (NEPA) documents and other related documents that cover the proposed action.

List by name and date all applicable NEPA documents that cover the proposed action.

This action is tiered to the following Environmental Assessment (EA):

Desert Tortoise (*Gopherus agassizii*) Translocation Throughout the Species Range within Southern Nevada District and Caliente Field Office (DOI-BLM-NV-S010–2012–0097–EA) Signed 1/31/2013

The FWS determined that the programmatic biological opinion, as amended (Service File Number 2013-F-0273), issued to the FWS DTRO for issuance of desert tortoise recovery permits adequately analyses and minimizes or mitigates anticipated effects of tortoise releases on BLM land. This amended programmatic biological opinion fulfills BLM's responsibilities for interagency consultation established in section 7(a)(2) of the Endangered Species Act (ESA).

D. NEPA Adequacy Criteria

1. Is the new proposed action a feature of, or essentially similar to, an alternative analyzed in the existing NEPA document(s)? Is the project within the same analysis area, or if the project location is different, are the geographic and resource conditions sufficiently similar to those analyzed in the existing NEPA document(s)? If there are differences, can you explain why they are not substantial?

The Eldorado Valley Translocation Plan is encompassed by and thus a feature of the proposed alternative in the Desert Tortoise Translocation EA (DOI-BLM-NV-S010–2012–0097–EA). That EA analyzed potential translocation of tortoises through the Southern Nevada District which includes the proposed Eldorado Valley project area. In the EA, potential translocation sites were specifically limited to areas that met seven different selection criteria. The following table shows how the Eldorado Valley project fits within these criteria based on information from the Eldorado Valley Translocation Plan.

Table 1. Summary of selection criteria for Eldorado Valley

Criteria	Yes-No	Eldorado Valley site characteristics
1. Habitat within 175 km of DTCC	Y	50 km
2. BLM lands below 1,677m	Y	800–1,300m
3. Protected areas (e.g. Areas of Critical Environmental Concern (ACEC))	Y	Piute/Eldorado ACEC
4. Within USGS Tortoise habitat model categories 0.6–1 (scale runs from 0–poor habitat to 1–highly suitable habitat)	Y	0.6–1
5. Fenced highways	Y	Highway 95, SR 164, and SR 165 have tortoise exclusion fencing
6. Depleted tortoise populations	Y	2.8 tortoises / km^2 (see translocation plan for further discussion)
7. Known health status of resident wild tortoises	Y	Health assessments on resident tortoises will be performed prior to the translocation project.

2. Is the range of alternatives analyzed in the existing NEPA document(s) appropriate with respect to the new proposed action, given current environmental concerns, interests, and resource value?

The Desert Tortoise Translocation EA (DOI-BLM-NV-S010–2012–0097–EA) analyzed potential translocation of tortoises through the Southern Nevada District which includes the proposed Eldorado Valley project area. Thus, the range of alternatives in the EA are appropriate for the Eldorado Valley translocation project.

3. Is the existing analysis valid in light of any new information or circumstances (such as, rangeland health standard assessments, recent endangered species listings, updated lists of BLM sensitive species)? Can you reasonably conclude that new information and new circumstances would not substantially change the analysis of the new proposed action?

The analysis in the EA is still valid and no new information is available that would lead to a different analysis. While translocation during drought conditions was not expressly analyzed in the EA, the site specific translocation plan discusses that recent research has shown that survival of translocated tortoises is similar to non-translocated tortoises even under drought conditions. Thus the analysis presented in the EA would still be valid even under drought conditions.

4. Are the direct, indirect, and cumulative effects that would result from implementation of the new proposed action similar (both quantitatively and qualitatively) to those analyzed in the existing NEPA document?

The direct, indirect, and cumulative effects from the Eldorado Valley translocation are similar to those analyzed in the EA because the EA's cumulative impacts analysis covered potential tortoise translocations throughout the district, which includes Eldorado Valley.

5. Are there public involvement and interagency reviews associated with existing NEPA document(s) adequate for the current proposed action?

The public involvement and interagency reviews of the EA and the Eldorado Valley Translocation Plan are adequate. The BLM had a comment period for the draft EA from August 15 to October 31, 2012. BLM also presented information on the EA at Town Board meetings in Bunkerville, Moapa, Goodsprings, Searchlight, Las Vegas, Indian Springs, Mesquite, Pahrump, Amargosa Valley, Alamo, and Caliente. BLM received over 230 written comments and the EA was revised based on the comments. The final, signed EA was then available for a 30 day appeal period during which no appeals were filed.

As required in the EA, the Eldorado Valley Translocation Plan was also made available for public comment from December 20, 2013 until January 20, 2014. One letter with comments was received on the Eldorado Valley plan during the comment period. Two additional letters were received after the comment period. Based on the comments in the three letters, the translocation plan was updated to clarify the proposed project.

The following were the main concerns raised in the three comment letters along with BLM's response.

Table 2. Public Comments and BLM Response

Comment/Concern	BLM Response
Disagree with the Purpose and Need stated in the EA	The purpose and need for the project as stated in the Programmatic EA is to implement the Desert Tortoise Recovery Plan, which identifies augmentation of depleted populations through a strategic program as a recovery action. Thus translocation of tortoises from the DTCC to the Eldorado Valley meets that specific recovery action.

Eldorado Valley Translocation Plan needs its own NEPA analysis	A project specific NEPA review of the Eldorado Valley Translocation Plan was done through a Determination of NEPA Adequacy that is tiered to the Desert Tortoise Translocation EA. The proposed action in the Eldorado Valley Translocation Plan was compared to the existing analysis of the tiered EA and the EA was determined to have adequately analyzed the impacts of translocations such that a new full EA would not be required.
Questions about the carrying capacity of Eldorado Valley	A discussion of the population status of tortoises in the Eldorado Valley is included in the Eldorado Valley translocation plan. Based on the best scientific information available, the BLM agrees with FWS that the population can support additional tortoises, and the translocation plan places a conservative limit on the number of tortoises to be added relative to densities seen within the region.
Translocation Plan is inconsistent with Desert Tortoise Recovery Plan which requires augmentations to be carried out experimentally	The augmentation of tortoises in Eldorado Valley will be carried out in an experimental approach with monitoring conducted in both areas receiving tortoises and in control areas that will not receive tortoises.
Translocation Plan is not in conformance with BLM Land Use Plans and other policies	The BLM is in conformance with BLM Manual 1745 — Introduction, Transplant, Augmentation, and Reestablishment of Fish, Wildlife and Special Status Plants. This plan will only augment existing populations. BLM will not be reintroducing tortoises to areas where they have been locally extirpated nor will we be introducing tortoises to areas where tortoises have never existed. Therefore we are in compliance with the BLM Manual Section 1622.1 and 1621.3. In the Las Vegas RMP, SS-3 states that the BLM will "Manage desert tortoise habitat to achieve the recovery criteria defined in the Desert Tortoise Recovery Plan and ultimately to achieve delisting of the desert tortoise".
Translocation of tortoises from DTCC will lead to genetic pollution of wild population	The EA includes a discussion of the genetics of translocated tortoises. The Eldorado Valley Translocation Plan also includes a discussion of genetics, which has been expanded in the final draft. The FWS DTRO has determined that genetic testing of all translocated tortoises is unnecessary, as reflected in the EA, as long as the recipient sites are within 175km of the DTCC. The Eldorado Valley recipient site is approximately 50km from the DTCC.
Disease testing is inadequate	Only tortoises from the DTCC that are asymptomatic for diseases, determined through multiple health screenings, will be used for translocation as described in the translocation plan. While blood samples are drawn for all tortoises at the DTCC, test results are not used to screen tortoises because a positive result for mycoplasma antibodies is not the best indicator for the health of the tortoise. The EA does discuss that even with health screenings, there is still a slight chance of the introduction and spread of disease into the resident population by the translocated tortoises. The Eldorado Valley Translocation Plan contains an expanded discussion of health risks and screening procedures for the project.
Translocation will occur during drought conditions	A discussion of translocating during drought has been added to the Eldorado Valley Translocation Plan. Recent research has shown that survival of translocated tortoises is similar to non-translocated tortoises even under drought conditions. Therefore, while overall survival may be lower than in wetter years, augmentation is expected to improve population status by providing a net increase in tortoise numbers.

Section 7 ESA consultation with FWS was not done	BLM has conferred with the FWS who determined that the BO issued to the FWS DTRO does cover the Eldorado Valley Translocation project and thus meets the requirements under ESA.
Proposed monitoring is insufficient	While 2 years of monitoring are currently planned as part of the Eldorado Valley Translocation project, the plan does state that additional funding will be sought in order to continue the monitoring. The final draft includes potential monitoring topics that may be pursued based on the results of initial monitoring within Eldorado Valley and results from other translocation projects across the range.

E. Persons/Agencies/BLM Staff Consulted

Table 3. List of Staff Consulted

Name	Role	Discipline
Mathew Hamilton	Wildlife, T&E, ACECs, VRM	Wildlife Biologist
Sendi Kalcic	Wilderness, WSA, BLM Natural Areas, LWC	Wilderness Lead
Krystal Johnson	Farmlands, Wild Horse & Burro	Wild Horse and Burro Lead
Boris Poff	Floodplains, Hydrologic Conditions, Soils, Water Resources, Wetlands	Hydrologist
Ben Klink	Fuels, Weeds,	Weeds Specialist
Kerri-Anne Thorpe	Lands	Realty Specialist
Katie Kleinick	Grazing, Rangeland Health, T&E Plants, Forestry, Vegetation,	Natural Resources Specialist
Marilyn Peterson	Recreation, Wild & Scenic Rivers	Recreation Specialist
Lisa Christiansen	Air Quality, GHG, Wastes	Air and Hazardous Waste Lead
Mark Boatwright	Cultural Resources, Native American Religious Concerns,	Archeologist
Gayle-Marrs Smith	Environmental Justice, Socioeconomics	Field Manager, Las Vegas FO
Lorri Dee Dukes	Geology/Minerals,	Geologist

Note

Refer to the EA/EIS for a complete list of the team members participating in the preparation of the original environmental analysis or planning documents.

Conclusion

Based on the review documented above, I conclude that this proposal conforms to the applicable land use plan and that the NEPA documentation fully covers the proposed action and constitutes BLM's compliance with the requirement of NEPA.

3/27/14

Signature of Project Lead

3/27/14

Signature of NEPA Coordinator

Signature of the Responsible Official

3/27/14
Date

Note:

The signed Conclusion on this Worksheet is part of an interim step in the BLM's internal decision process and does not constitute and appealable decision process and does not constitute an appealable decision. However, the lease, permit, or other authorization based on this DNA is subject to protest or appeal under 43 CFR Part 4 and the program-specific regulations.

Translocation Plan

ELDORADO VALLEY

Clark County, Nevada

December 17, 2013
Revised: March 19, 2014

Prepared by

Roy C. Averill-Murray, Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service
Kimberleigh J. Field, Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service
Linda J. Allison, Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service

Purpose of translocation: Population Augmentation

Critical Habitat Unit: Piute-Eldorado

Recovery Unit: Eastern Mojave

Recipient site land ownership: Bureau of Land Management

Action permitted by federal and state wildlife agencies? (list permits, BOs): Yes
federal: TE-08592A-1 (Douglas G. Myers, Zoological Society of San Diego)
FWSDTRO-1 (Roy Averill-Murray, USFWS – Desert Tortoise Recovery Office)

state: S35185 (Allyson Walsh, Desert Tortoise Conservation Center)
S36694 (Edward Koch, USFWS)

BO: 2013-F-0273, 2013-F-0273.AMD1

Date of proposed translocation: Spring/Fall 2014

Source of translocatees: Desert Tortoise Conservation Center, Clark County, Nevada

Number of translocatees: Maximum 300 adults, 300 juveniles

Translocation Plan Narrative

Site description

The Eldorado Valley translocation site encompasses approximately 46,000 acres (185 km^2) of public lands managed by the BLM in Clark County (Figure 1). The site includes the portion of the designated Eldorado Valley Critical Habitat Unit that occurs on BLM lands and small portions of the Boulder City Conservation Easement west of U.S. 95. The site is bounded by the McCullough Mountains and Highland Range on the west and by U.S. 95 on the east. Tortoises will be released south of the Boulder City Conservation Easement; the southern boundary of the site is S.R. 164 and the town of Searchlight (Figure 2). The site comprises approximately 16% of designated critical habitat within Eldorado Valley, which includes approximately 285,000 acres (1153 km^2).

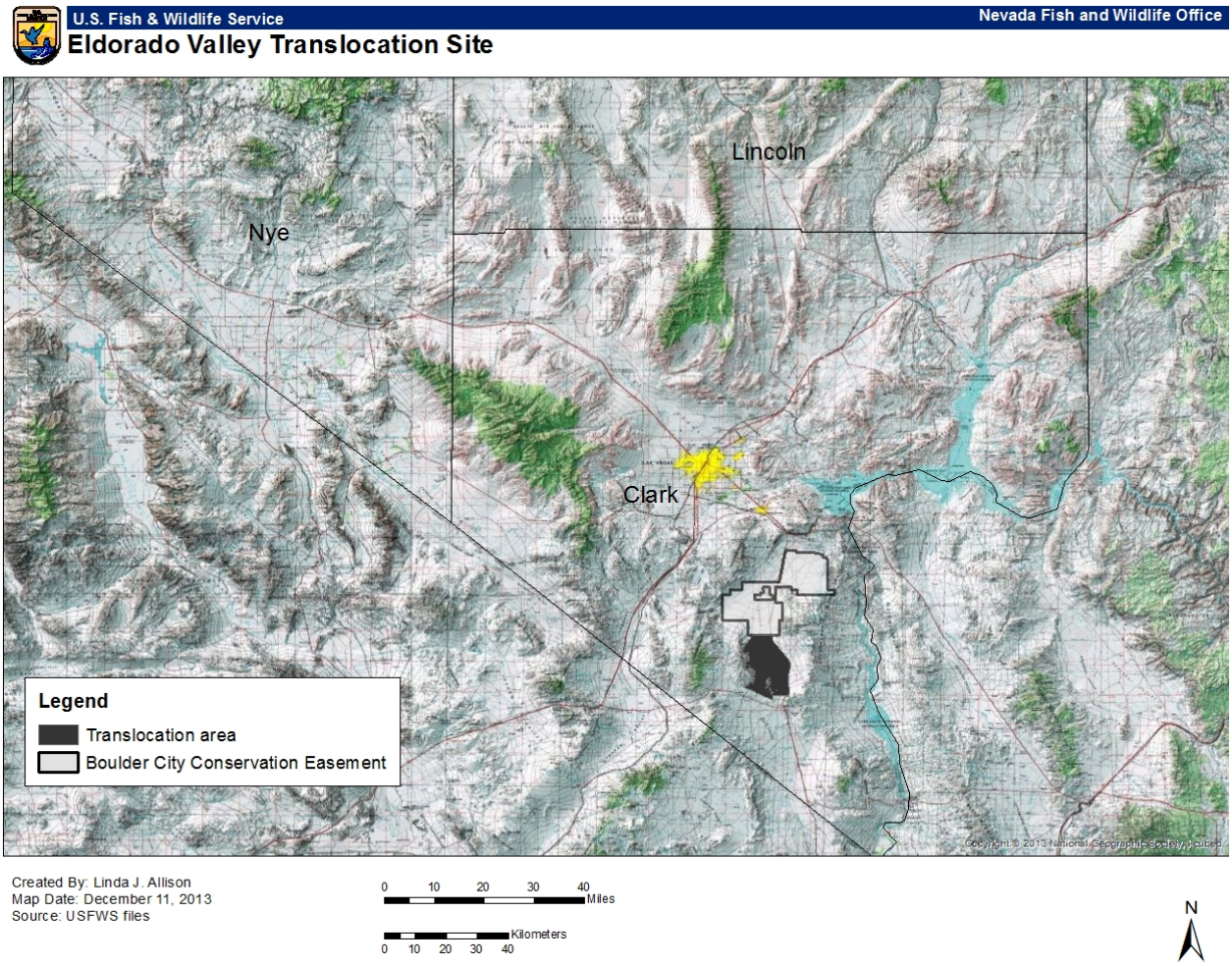

Figure 1. Location of proposed translocation site within Clark County, Nevada, relative to the Boulder City Conservation Easement.

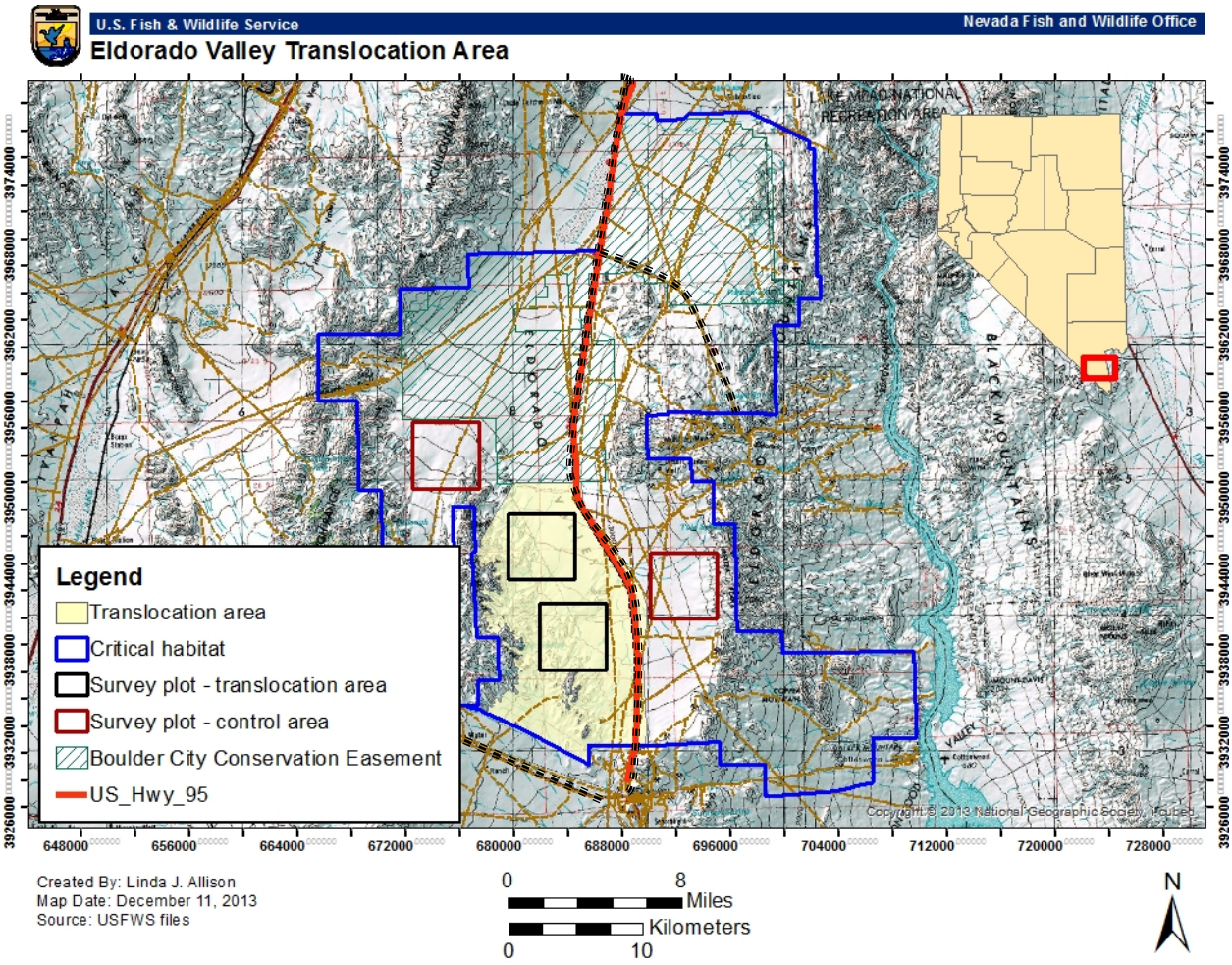

Figure 2. Locations of survey plots within translocation and control areas of Eldorado Valley north of Searchlight, Nevada. Fencing within critical habitat (black dashed lines) prevents tortoises from accessing the roadway.

The portions of U.S. 95, S.R. 164, and S.R. 165 that pass through critical habitat have been fenced with tortoise-exclusion fencing. There are several designated utility corridors, power lines, rights of way, and unpaved roads within the area. Off-highway-vehicle use within the area is restricted to designated roads and trails. The area surrounding Eldorado Valley is currently classified as experiencing "moderate drought" conditions (Palmer Drought Severity Index = -2.0 – -2.9; Tinker 2014). Since the beginning of 2012, this condition has been present in the area during May-July 2012, May-August 2013, and February 2014 (National Climatic Data Center 2014).

Specific release points will be selected close to the time of release and will take into account conditions at that time. The goal is to distribute tortoises throughout the site while minimizing risks to individuals by staying at least 6.5 km from unfenced portions of U.S. 95 just north of Searchlight that are not otherwise bounded by topographic features or other hindrances to

tortoise dispersal (most desert tortoises are expected to settle within 6.5 km of their release point; USFWS 2012b). Designated 4WD roads will be used to access different portions of the larger release area, and tortoises will be distributed broadly rather than released within one localized area.

Density/Trends of Resident Tortoise Population

A 2.6-km^2 study plot was surveyed in 1994 in the Eldorado Valley, approximately 3.2 km south of the McCullough substation and 4.8 km west of U.S. Highway 95 (Goodlett et al. 1994). The 60-person-day survey resulted in 11 encounters of 8 individual tortoises, only 4 of which were $\geq$180 mm midline carapace length (MCL). These limited data provided an abundance estimate of 4 adult tortoises on the plot. In contrast, 19 shell remains were found during the survey, 15 of which were $\geq$180 mm MCL. Three of the individuals were estimated to have died within the 4 previous years. The condition of the environment during and immediately preceding the survey was characterized as drought-stressed.

Before tortoise barrier fencing was installed along U.S. 95, S.R. 164, and S.R. 165 in 2002, Hoff and Marlow (2002) documented areas of depletion up to 4 km from these unfenced, heavy traffic-volume roads. Smaller areas of depletion were documented on roads in the valley with lower traffic volumes.

Annual distance sampling surveys conducted within the Eldorado Valley portion of the Piute-Eldorado Valley Critical Habitat Unit between 2004 and 2012 (except in 2006) indicate declining trends in densities of adult desert tortoises, with a current density estimate of 2.8 adult tortoises/km^2 (USFWS, unpubl. data). Between 2007 and 2011, 36 of 96 tortoise detections during range-wide monitoring in Eldorado Valley were of shell remains. This ratio of dead:live tortoises (0.60) exceeded the average for all other regular monitoring strata in Nevada (range = 0.16-0.42); only Pahrump Valley (0.93 in 2008) and an area north of Mormon Mesa (0.83 in 2008-09) exceeded the proportion of dead tortoises observed in Eldorado Valley (USFWS, unpubl. data).

The tortoise population within Eldorado Valley has suffered a recent decline, warranting the application of population augmentation. Despite the area currently experiencing drought conditions, the proposed translocation targets an area that is considered to have high tortoise habitat potential (Nussear et al. 2009). Furthermore, recent research has shown that survival of translocated tortoises is similar to non-translocated tortoises even under drought conditions (Esque et al. 2010; Nussear et al. 2012). Therefore, while overall survival may be lower than in wetter years, we expect augmentation to improve population status by providing a net increase in tortoise numbers. Delaying augmentation until a wetter year may increase individual survival, but inaction could be extended indefinitely given the uncertainty of future drought. Proceeding in 2014 increases the probability that additional tortoises will more immediately contribute to population recovery.

Specific Goal of Translocation

Population augmentation is an important tool for conservation of the Mojave desert tortoise (USFWS 2011). The goal for translocation to Eldorado Valley will be to increase the population in one portion of the valley, while comparing results elsewhere in the valley. Little to no information on specific habitat characteristics or measures of habitat quality exist relative to carrying capacity for Mojave desert tortoises (USFWS 2011). Therefore, we will use densities recently observed elsewhere in the recovery unit to set a conservative population-density target. In this area, we hope to increase density by up to one standard deviation. Densities described by a single standard deviation of the mean tortoise density for a recovery unit are not unusually high. Therefore, given appropriate habitat and tortoise management (i.e., within the designated Eldorado Valley Critical Habitat Unit) exist, maximum post-translocation density of adult tortoises should not exceed the 68% confidence interval of the mean density in the respective recovery unit (USFWS 2012b). For the Eastern Mojave Recovery Unit, this density is 5.8 adult tortoises/km^2.

Although there are almost 1160 km^2 in the northern portion of the Piute-Eldorado Critical Habitat Unit, only 185 km^2 are east of the Highland Range, west of U.S. 95, and south of the Boulder City Conservation Easement. Assuming that translocated tortoises will remain in this 185 km^2, we therefore plan to add between 100 and 300 adult tortoises to the estimated resident population of 518 adult tortoises. The planned release is thus $\leq$54% of the maximum limit (see Table for calculations).

By keeping augmentation expectations within the limit described above, a reasonable but ambitious recovery goal has been set. Limiting the translocation to the west side of U.S. 95 provides an opportunity to evaluate the results of the augmentation against conditions elsewhere within the critical habitat unit (see Monitoring, below). Specific limits have not been set for juvenile tortoises, given naturally higher mortality rates than adults, but this number should not exceed the number of adults released.

Calculation of numbers of adult tortoises that may be released to the Eldorado Valley translocation site (185 km^2).	
Maximum post-translocation abundance	5.8/km^2 * 185 km^2 = 1073 adult tortoises
- Current abundance	2.8/km^2 * 185 km^2 = 518 adult tortoises
= Maximum number of new adult tortoises	555 adult tortoises
Planned release	~300 adult tortoises (54% of maximum limit)
Maximum estimated post-translocation density	(518 + 300)/185 km^2 = 4.4 adults/km^2

Health Considerations

Health in a population context can be thought of as the ability of a population to perform all of its ecological functions with typical efficiency (Hanisch et al. 2012). Inherent in this is the idea that healthy populations should be able to remain resilient and self-sustaining in the face of naturally occurring disease. It is neither possible nor desirable for organisms to be "parasite and disease free", so there is rarely cause to consider translocation unfeasible due to disease or parasites if reasonable precautions are taken (IUCN 2013). However, all aspects of the translocation process can cause stress-induced disease (but see Drake et al. 2012), so strict disease-prevention, quarantine, and handling/release protocols will be implemented based on the most recent guidance available (e.g., Woodford 2000; USFWS 2012b) and procedures described below.

Health status of resident tortoise population

One pathogen of long-standing concern is *Mycoplasma agassizii*, a bacterium known to cause upper respiratory tract disease. Seroprevalence of *M. agassizii* was recorded at levels up to 13% in the Eldorado Valley area (Sandmeier et al. 2013), so extensive disease screening for this pathogen is likely unnecessary (IUCN 2013). As described in the Monitoring section below, we plan to focus efforts on two 25km^2 core areas within Eldorado Valley. In Spring 2014, we will conduct pre-release surveys within each core area and conduct complete a health assessment according to standardized protocols (USFWS 2013), including collection of biological samples, on each tortoise found. The health assessment will take place in May, thus when tortoises are located during April surveys they will have radio transmitters temporarily affixed to facilitate location for assessments. For monitoring comparison purposes, we will also conduct complete health assessments and collect samples from tortoises found on two 25km^2 control plots (Figure 2) using the same approach.

Health status of translocatees

Current guidance developed for wild-to-wild translocation projects provides a structured approach for evaluating health status of individual desert tortoises prior to translocation (USFWS 2013; Figure 3). All tortoises to be translocated in this project will be selected from the collection residing at the Desert Tortoise Conservation Center (DTCC) in Las Vegas. The DTCC is operated by San Diego Zoo Global (SDZG), and comprehensive physical exam and sample collection protocols were developed by San Diego Zoo Global veterinarians in conjunction with other consulting veterinarians, scientists, and biologists. These protocols include health assessments that take into account body condition, clinical signs of disease, exam findings (e.g., coelomic masses or white mucous membranes), weight history, medical history while at the DTCC, presence of ectoparasites, concurrent illness in cohorts, and other factors determined to be important in appropriately assessing an individual's health and determining suitability for translocation. The protocols have been adapted from published recommendations (Berry and Christopher 2001) and IUCN guidelines (Woodford 2000). Quarantine before release is a basic disease-prevention precaution for translocation, and potential stress caused by confinement may usefully bring out latent infections (IUCN 2013). All tortoises to be released will have undergone a quarantine period of $\geq$90 days with repeated health evaluations (Woodford 2000).

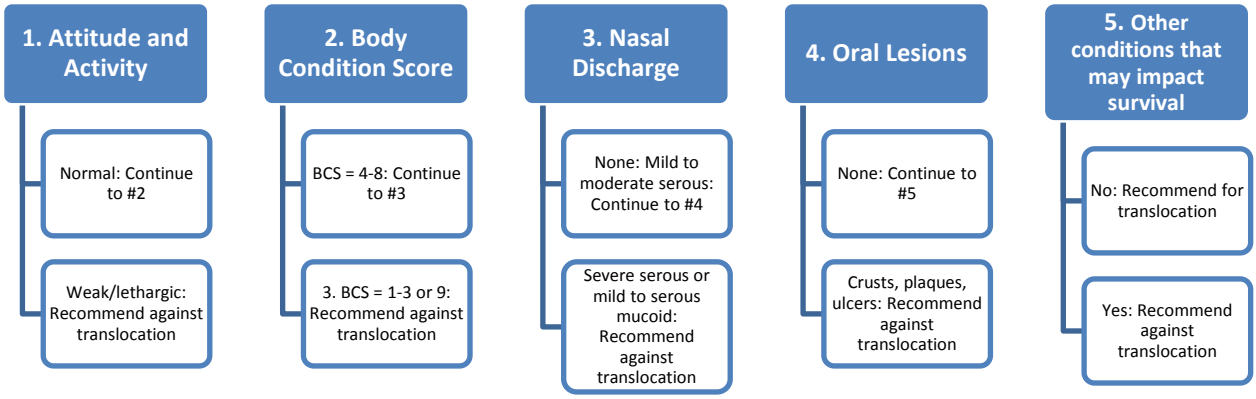

Figure 3. Algorithm for evaluating if desert tortoises are suitable for translocation, taken from USFWS (2013) guidance for wild-to-wild translocation projects. BCS = body condition score.

Given the particular condition of using captive tortoises for population augmentation, additional health-related eligibility criteria will be applied beyond those depicted in Figure 3 (Attachment 1; these criteria may be modified to incorporate new information). For example, individuals housed together in pens will be disqualified collectively and subjected to additional quarantine if a single individual shows signs of disease. Additional individual criteria to minimize risks to individual translocated tortoises, as well as to the resident population in Eldorado Valley, include screening for bladder stones and ectoparasites and ensuring that each translocated tortoise has a history of maintained or increased weight (Attachment 1). Health-history documentation of all release candidates will be evaluated, and all release candidates will be assessed according to current protocols. The history of repeat evaluations increases the chances of observing an abnormal condition and minimizes the chance of releasing a sick individual. Only tortoises that pass the DTCC's comprehensive health screening will be released.

Genetic Considerations

Eldorado Valley is located approximately 50 km southeast of the DTCC. Moving tortoises within 175 km of the DTCC ensures that the vast majority of released tortoises will remain in a genetic unit equivalent to that of their origin (actual locality of genetic origin, not that of the area immediately surrounding the DTCC) (USFWS 2012a). Additionally, the risk of inducing outbreeding depression in desert tortoises is low and would only manifest itself on a time scale of 600 years or more (Averill-Murray and Hagerty, in press). As a result, we consider genetic analysis of individuals as a means of selecting tortoises to be translocated to be unnecessary. If any translocated individuals originate from a more distant population, they may be poorly adapted to conditions at Eldorado Valley and may not successfully integrate into the resident population (Edwards and Berry 2013). This would further limit potential negative genetic effects, however large numbers of mortalities unknowingly related to poor adaptation to the release site could compromise the evaluation of translocation success (Averill-Murray and Hagerty, in press).

Monitoring

We primarily will use changes in density of adult tortoises to assess the success of this translocation. (*Note: a minimum of 100 adult tortoises will be translocated, subject to availability of eligible tortoises at the DTCC, but not to exceed 300 adults, as described above. If fewer than 100 tortoises are available, the project will not occur due to reduced ability to detect effects under the planned monitoring design.*) We will survey 2 square, 25km^2 plots in the translocation area and 2 similar plots in control areas unaffected by the translocation (Figure 2). By surveying control and augmentation plots before the translocations, we can compare starting densities, then use changes in density assessed after the translocation to describe whether populations have increased from their baseline before translocation and whether these changes are greater than any changes seen due to natural year-to-year fluctuation on the control plots. One of the 2 control plots will be northwest of the translocation area, between the McCullough Mountains and the Highlands Range. The second control plot will be just east of the translocation area, but inaccessible to the translocated tortoises because it is on the east side of U.S. 95.

Focused data collected from these 4 study plots during the initial 2 years will provide a short-term indication of translocation success (and identify any immediate complications for resolution). These data will be integrated with longer-term data collected from range-wide monitoring within Eldorado Valley, with the goal of showing a stable enhanced effect of the translocation on population size. Additional funding also will be sought to conduct repeated, intensive surveys of the sample plots over time. Plans for more specific, longer-term monitoring will be informed by results of the initial monitoring plan, as well as results of other ongoing translocation projects. Archived blood samples of all translocated tortoises will be available for comparison with resident tortoises if particular questions about health or genetics arise in the future. Other monitoring topics that may be pursued in the future include long-term changes in prevalence of upper respiratory tract disease, as measured by observation of clinical signs of disease, and correlates of population change with respect to habitat characteristics or threats in the translocation and control areas.

<u>Field and Analytical Approach</u>

We will conduct surveys within each study plot during the spring of 2014 before translocation releases as well as during the spring of 2015 following translocation releases. Surveys will be conducted on 100 5km-long transects in each plot to meet preproject survey protocol guidance to provide for the detection of 20 tortoises per plot (the protocol recommends a survey effort of at least 446 km in the Eastern Mojave Recovery Unit; USFWS 2010). This number of tortoise detections will be adequate to 1) develop encounter rate estimates for each plot individually and to 2) estimate the detection probability of these cryptic animals by developing a distance sampling detection curve. Detection probabilities are used to adjust raw encounter rates to account for tortoises that were visible but not seen because tortoises become more cryptic the farther they are from the transect walker (Buckland et al. 2001).

Each surveyor will use a GPS unit to walk pairs of parallel strip transects, first surveying one transect then returning to the vicinity of their starting point at the end the second transect (i.e., the end point of the second transect will be near the start point of the first transect). Surveys will start after the first week of April. All tortoises that are found will be measured, sexed, scored for body condition, and given a permanent mark (numbered paper tag and matching marginal scute notching). A transmitter will be temporarily attached until a telemetry specialist can locate and more securely affix the transmitter within 48 hours of the initial encounter with the resident tortoise. These transmitters will only remain on the tortoises until health assessments can be completed (see Health Considerations, above).

To adjust for the number of tortoises that could not be detected because they were deep underground in burrows, we will make behavioral observations on radio-outfitted tortoises in a nearby population to estimate the proportion that are not detectable while surveys are conducted on transects (USFWS 2012c). A population of tortoises is already outfitted with these transmitters at a site approximately 19 km south of the center of the proposed translocation area, in Piute Valley (tortoises in the translocation and control plots that have transmitters attached to facilitate location for health assessments will not be used for this purpose to avoid biasing detectability estimates that may arise as a result of handling).

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Attachment 1

Health Eligibility Criteria
2014 Translocation from DTCC to Eldorado Valley

Initial Assessment of Pen Group Eligibility

- Assess **all** individuals occupying pen concurrently.
- The pen group is preliminarily deemed eligible if no tortoises in the pen have signs of disease.
- If one or more tortoises in the pen show mild to moderate signs of disease, the pen is not eligible for release, and all tortoises in pen will be treated and observed with re-assessment for eligibility after 3 months.
- If one or more tortoises in the pen has a Body Condition Score $\leq$ 3 and/or moderate to severe signs of disease, those individuals receive a follow-up health assessment immediately, and the pen is quarantined for 30 days.

Individual Eligibility

- Pre-release comprehensive health assessment, which includes a full physical exam and collection and banking of biological samples (blood, choanal swab, cloacal swab, nasal lavage) conducted
- Normal behavior for season and time of day
- Normal bodily functions
- No active signs of communicable disease
- Serous 1 nasal and/or ocular discharge **does not disqualify** a tortoise from eligibility if there is no scarring or missing scales around the nares and no other health issues
- No oral lesions
- No white oral cavity
- No bladder stones
- No ectoparasites
- No generalized skin conditions
- Body Condition Score 4-7
- History of maintained or increased weight
- 4 legs and normal ambulation
- No gross disfigurements such as severely flattened carapace, unusually domed or peaked carapace, or grossly enlarged carapace
- Midline carapace length $\leq$ 330 mm

Final approval for release will be given by the DTCC's Conservation Program Specialist or DVM after review of assessments.