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Working to protect and restore Western Watersheds

By E-mail

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Chris Otahal
U.S. Department of the Interior
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Barstow Field Office
2601 Barstow Road
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Re: Environmental Assessment for the Translocation of Desert Tortoises onto Bureau of Land Management and Other Federal Lands in the Superior-Cronese Desert Wildlife Management Area, San Bernardino County, California Bureau of Land Management Environmental Assessment CA-680-2009-0058

Dear Mr. Otahal:

On behalf of Western Watersheds Project and myself, please accept the following comments on the Environmental Assessment for the Translocation of Desert Tortoises onto Bureau of Land Management and Other Federal Lands in the Superior-Cronese Desert Wildlife Management Area, San Bernardino County, California Bureau of Land Management Environmental Assessment CA-680-2009-0058 ("EA").

Western Watersheds Project works to protect and conserve the public lands, wildlife and natural resources of the American West through education, scientific study, public policy initiatives, and litigation. Western Watersheds Project and its staff and members use and enjoy the public lands, including the lands at issue here, and its wildlife, cultural and natural resources for health, recreational, scientific, spiritual, educational, aesthetic, and other purposes. Western Watersheds Project has a particular interest in the desert tortoise and recently petitioned the Department of Interior to list the Sonoran desert tortoise population under the Endangered Species Act.

The purpose of the project is to translocate large numbers of desert tortoises from areas that are now within the boundaries of Fort Irwin and that will be used by the Army for training, to public lands and compensation lands acquired by the Army. The proposed action outlined in the EA encompasses two desert tortoise translocation efforts; the continued removal of tortoises from critical habitat in the Southern Expansion Area according to protocols in the "Original Plan" which is predicted to require moving up to 89 tortoises on to eight sections of BLM managed lands within the Superior-Cronese DWMA; and, the removal of 516 to 1,143 tortoises

from the Western Expansion Area according to the USGS “Amended Translocation Plan” onto Army and BLM managed lands within the Superior-Cronese DWMA (EA at 9-10). The BLM is deciding whether or not to authorize translocation of desert tortoises onto public lands managed by BLM, consistent with the USGS Original and Amended Translocation Plans, and with the associated Biological Opinions.

The proposed project is highly controversial, of great public interest, and of special interest to Western Watersheds Project members. In 2008, the Army translocated 569 desert tortoises from the Southern Expansion Area (“SEA”) and then halted the project when massive fatalities of translocated and resident tortoises occurred. According to the U.S. Fish and Wildlife Service’s draft Biological Opinion, over 252 resident and translocated tortoises died, many of these deaths (67%) being attributed to predation by coyotes. The actual number of deaths is unknown in part because not all affected tortoises are being tracked, and mortalities continue to be reported. Large scale desert tortoise translocation is experimental, and thus scientifically controversial, and the large number of tortoise mortalities engendered in the 2008 translocation fueled public indignation. Despite this, the BLM released the EA with only a 15-day comment period and without adequate public notice in defiance of both the Federal Land Policy Management Act (“FLPMA”) and the National Environmental Policy Act (“NEPA”). Although we submitted timely scoping comments on the proposed project (see attached letter dated 02/18/09) we received no official notification of the release of the EA. When we asked the Bureau why we had not been notified we were informed that there was no record of our involvement. After we forwarded a copy of Dr. Quillman’s acknowledgment of our scoping comments we were then told that our comments were indeed in the record. Evidently, the BLM has either erred in not informing all the interested public or has ignored our scoping comments. Either way, the agency falls short of its obligations under NEPA and FLPMA. Notices to interested individuals and organizations are also required by BLM Handbook 1745 which sets out BLM policy governing species relocations.

On August 6, 2009 we submitted a joint request with five other interested organizations requesting a 60-day extension of the comment period because of the complex and controversial nature of the project. The BLM agreed to extend the comment period to August 31, 2009. We applaud the BLM for granting the extension. However, NEPA procedures must ensure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. We requested copies of various personal communications that are referenced in the EA that relate directly to the environmental effects of the proposed project. We were told that obtaining these would require a FOIA request, which we immediately submitted. We received these documents at the end of the comment period, leaving little or no time to review and digest the information. This flaunts both the spirit and intent of the NEPA and FLPMA requirements to involve the public in making decisions.

The National Environmental Policy Act requires agencies to take a “hard look” at the environmental impacts of its actions. The purpose of an EA is to provide sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (“EIS”) or issue a finding of no significant impact (“FONSI”) for a project. NEPA requires considerations of both context and intensity of the impacts of a project in determining if it significantly impacts the human environment. As we show below, based on these two criteria the project clearly falls into

the “will significantly impact” category and an EIS is required. The Bureau has determined that its proposed action, to allow the Army to release desert tortoises from Fort Irwin onto public lands in the western translocation area, is likely to adversely affect the desert tortoise.¹

(1) Baseline Data on the Prior Desert Tortoise Translocation.

The large scale translocation of any animal, especially a listed species, is inherently complex. In this regard, the results of the Army’s prior desert tortoise translocation effort should inform the process. *A priori*, at least the basic data from that effort needs to be presented. However, there is considerable confusion in the EA and associated documents even over the numbers of desert tortoises that have been affected and have died. The EA and the USFWS draft Biological Opinion² indicate that 569 desert tortoises were translocated from the Southern Expansion Area (“SEA”). Transmitters were left in place on 357 (i.e. 63%) of these animals following translocation. Some of the resident tortoises at the receptor sites and at control sites (sites where no tortoises were translocated to) were also processed and fitted with transmitters. Both the EA and draft Biological Opinion set this at 289 tortoises (149 controls and 140 recipients). The total number of tracked (i.e. transmittered) tortoises is thus 646. The actual number of resident desert tortoises at the receptor and control sites has not been determined. However, according to the EA, over 430 resident desert tortoises have been monitored in various studies. Since this was referenced by a personal communication, it is unclear if the 141 (i.e. 430-289) non-tracked resident tortoises were simply encountered during monitoring, if they were located in systematic surveys, were used in the various research projects, or what percentage of the total number of resident tortoises they represent. On August 27, 2009 we received a copy of the referenced personal communication (Email from R. Averill-Murray, dated 07/17/09). It was not helpful in clarifying this question.

The EA cites an unreleased analysis of predation of the tracked tortoises performed by the Desert Tortoise Recovery Office (“DTRO”). This analyzed population included 149 control, 140 recipient, and 357 translocated tortoises, i.e. 646 animals. Of these 646 tortoises, 147 died from “various causes”. This number calculates to 23% of the tracked tortoises. The EA (at 3) states that animals that were lost due to transmitter failure, difficulty in tracking, or undetected predation events were excluded from this analysis but does not provide the number that was excluded. Assuming that this was greater than zero, the overall mortality rate was higher than 23%. The EA is silent on the number of tortoise deaths attributed to predation versus other causes. The draft Biological Opinion (at 48) states, “To conduct research on how translocation affected desert tortoises, workers placed transmitters on 149 control, 140 resident, and 357 translocated desert tortoises. As of April 2009, coyotes had killed 169 desert tortoises; an additional desert tortoise was reported as ‘depredated.’ Five desert tortoises died of natural causes, 7 were killed by common ravens, 1 was killed by a vehicle, and 15 were euthanized. The cause of death was reported as unknown in 43 cases and as ‘other’ for 5 desert tortoises; no cause of death was reported for 6 desert tortoises. In total, approximately 252 desert tortoises died while translocation was under way (unpublished data: Excel file ‘mortalities 071709’). We

¹ Letter from the BLM California Desert District Manager to Diane Noda, USFWS, requesting initiation of consultation over the plan to translocate desert tortoises from Fort Irwin to Public Lands, dated July 23, 2009.

² Biological Opinion for the Proposed Addition of Maneuver Training Lands at Fort Irwin, California (8-8-09-F-43R). Draft dated July 30, 2009. 89 pp.

understand that a small number of desert tortoises have died since April but we have not received final reports on these animals.” Assuming that the 252 mortalities were among the 646 tracked tortoises as indicated in the quote, this would give a mortality rate of 39%. The 170 deaths by predation would amount to 26%.

It is unclear why the DTRO and draft Biological Opinion numbers are so disparate, especially since they were generated within the same agency. The loss of at least 252 adult desert tortoises is appalling in itself, even more so as it does not account for an unknown number of untracked tortoises that may have been affected. The lack of clarity relating to what happened during the first translocation is not helpful, and simply fuels further controversy. The various agencies involved need to better communicate with each other and with the public, and develop a clear and transparent process that will allow for the realistic documentation of the effects of the translocation that is required to meet NEPA’s requisite “hard look”.

(2) Baseline Desert Tortoise Data & Carrying Capacity at Proposed Translocation Sites.

The proposed action is to translocate up to 89 tortoises from the SEA and 516 to 1,143 tortoises from the Western Expansion Area (“WEA”) (EA at 3-4). The draft Biological Opinion cites the same number from the SEA and assumes about 1,100 tortoises could be moved from the WEA based on the midpoint of the upper estimates from two separate studies. The numbers of resident desert tortoises at the various receptor sites identified in the map (EA Figure 2) are unknown since no site specific abundances have been determined nor apparently are any planned. Instead, the agencies rely on density estimates generated in the range-wide line distance sampling (“LDS”) surveys, so we will follow their lead.

The EA identifies 205 sections in the Superior-Cronese DWMA as suitable for translocation of tortoises from the WEA based on modeling analysis. The EA (at 9) assumes an abundance of 19 desert tortoises per square mile, i.e. 3,952 tortoises on the 205 sections.³ The draft Biological Opinion assumes 16.4 desert tortoises per square mile, i.e. 3,362 tortoises on the 205 sections.⁴ If 1,100 tortoises are translocated this would increase the density on the 205 sites by 28% based on the EA numbers and 33% based on the draft Biological Opinion numbers. The most recent LDS data available, that provided in the DTRO’s draft 2007 Monitoring Report⁵, gives an estimate of 5.9 tortoises/sq km (with 95% confidence intervals of 3.72- 9.25), i.e. 15.2 tortoises per square mile (with 95% confidence intervals of 9.6- 24). Using that data, which we consider to be the most reliable estimate based on the recent improvements in sampling and statistical methodologies, the population estimate would be 3,132 and the translocation of 1,100 tortoises would increase the density on the 205 sites by 35%. These numbers are of course very simplistic estimates. Ten years ago, as part of the West Mojave Plan planning effort, tortoise sign surveys were conducted across what would become the Superior-Cronese DWMA. While not quantitative, this exercise indicated that the distribution of desert tortoises is patchy. The applicability of the DWMA-wide based LDS estimate to specific sites is also unclear since this

³ The EA cites Medica, personal communication as the source of the 19/sq mile number. In the response to our FOIA request we were sent an earlier, undated draft version of a translocation plan that cites “Medico [*sic*], personal communication”. Confusion could have been avoided if the BLM had used the actual DTRO monitoring reports.

⁴ Yet again, an example of the agencies using different datum.

⁵ Range-Wide Monitoring of the Mojave Population of the Desert Tortoise: 2007 Annual Report U.S. Fish and Wildlife Service Desert Tortoise Recovery Office, Draft dated November 2008. 50pp.

technique is geared towards obtaining trends at the range-wide and recovery unit levels. The new USGS proposed plan will avoid translocating tortoises within a 5 km buffer zone around any diseased resident tortoises. While this is an important improvement to the protocol, it will likely diminish the available receptor sites since *Mycoplasma*-positive animals have been detected in the area. Other factors too, may diminish the available receptor sites. However, the bottom line is that translocation of the WEA tortoises could increase tortoise densities by one third, and could directly impact over 3,000 resident tortoises. This level of impact cannot be discounted as minor and underscores the need for a complete EIS. Among other things, the increased density plus stress of capture, translocation, and release into foreign habitat may increase susceptibility of desert tortoises to *Mycoplasma* infections across a large area of the Superior-Cronese DWMA.

In our scoping comments, we had raised the need for the current desert tortoise carrying capacity to be estimated at the translocation sites. In the EA's response to comments section, by the comment "Need for analysis of carrying capacity of receptor sites" is the response "Addressed in sections 2.1.1.1 and 2.1.1.2". However, the issue is not addressed in either section (or elsewhere) unless the EA is referring to the unsupported claims in the sentence "Also, since there seems to be little connection between drought and non-drought conditions and mortality levels of translocated tortoises, the developers of the translocation plan considered food availability not a factor which needs be considered in the timing of translocation efforts" (EA at 7). Carrying capacity is the inherent ability of the land to support a given number of tortoises per unit area (West Mojave Plan at 3-94). While forage availability may be one factor the BLM uses in determining carrying capacity for livestock, it is not an appropriate delimiter for the ability of an area to support more desert tortoises. Instead, site-specific consideration of all the resources required over the life of a tortoise with respect to the size of the population is required: including food plants, cover sites, social hierarchies and territories, predators, essential constituents of habitat, and other ecological parameters (USFWS, 1994). This is especially important for receptor sites identified as being in "die-off regions", because the actual cause of the die-offs is so rarely known. If the translocation sites are not at carrying capacity, there must be an ecological reason. As such, adding more tortoises may create a surplus to what the local, receptor site can handle successfully. This could fuel increased density-dependent mortality via various means including parasites, disease, predation, and take by automobiles. Under the ESA, agencies must utilize their authorities in furtherance of the purposes of the Act and thus must take the most conservative approach in favor of the species and habitat when there are data gaps, like there are here. The lack of basic site-specific information such as desert tortoise abundance at each receptor site is a significant data gap.

According to the EA (at 8), relocation of the remaining SEA tortoises would result in the density increasing up to approximately 30 animals per square mile on eight sections of land. Apparently, this is to maintain the integrity of the ongoing tortoise research project. This could thus impact 240 desert tortoises in the Southern Translocation Area. The EA (at 28) states, "While this increased translocation density (relative to the Amended Translocation Plan) may exasperate the issues of disease transmission and predation, the USGS/University of Nevada-Reno team (and independent reviewers) have concluded that this increased density would not significantly raise the threat of disease or predation above back ground levels and that the conservation benefits gained by the on-going research would outweigh these potential drawbacks

(Todd Esque, USGS, personal communication).” The EA is silent on why the threat of disease or predation would not be above background levels. In fact, since the research sites are well within the range of movement of translocated tortoises, the carrying capacity of the SETA sites is unknown, and these sites are within the same general area that experienced massive coyote depredation rates in 2008, the benefit of staying with the original translocation protocol is not only unclear but appears to be outweighed by the risks not just to these 240 resident and translocated tortoises but even to the tortoises at the nearby research sites. The ESA requires the agencies to minimize incidental take. We see no evidence in the EA that staying with the original translocation protocol for the remaining SEA tortoises will do so.

(3) The Fort Irwin Desert Tortoise Translocation and Predation.

The EA and supporting documents take the view that the Fort Irwin translocation had no effect on coyote depredation but rather that the massive loss of tortoises would have occurred anyway. This is based on similar predation rates observed among translocated, control and resident tortoises that were tracked as part of the research effort in the original translocation. However, no data is available (and evidently was never collected) on the fate of the resident tortoises that were not part of the research study; nor is it clear if survival data was collected on those translocated tortoises whose transmitters were removed at release. The EA (at 3) references a personal communication as the source of its information on these similar predation rates. This was the email from Roy Averill-Murray dated 07/17/09. It contains the two paragraphs that were cut and pasted into the EA with no additional supporting data.

The translocation involved extensive manipulation of the tracked desert tortoises including transmitter attachment and removal, repeated monitoring, and the presence of large numbers of biologists and support staff at the receptor sites. Some of the receptor sites were close to human habitation. All these factors could contribute to alerting predators and altering predation rates. Boarman *et al* (1998) reviewed possible effects of transmitter attachment on chelonians. They concluded “Studies should be conducted to evaluate the effect that transmitters and their attachment methods have on turtles and tortoises with the results reported in the literature.” That observers may influence predation rates is a known issue for desert tortoises. For example, Bjurlin and Bissonette (2004) raised concern that monitoring may facilitate predator detection of desert tortoise nests and cautioned that a systematic study of researcher impact on predator behavior is warranted. In a preliminary study of the possible risks of tracker dogs attracting predators such as coyotes when being used to locate desert tortoises, Cablk *et al* (2004) found that human presence alone may attract coyotes especially with prolonged stays. Cablk also provides a brief literature review of related studies. The large scale of the Fort Irwin translocations would make these kinds of observer effects of particular concern.

The Draft Biological Opinion includes the following table; a similar table was shown by Dr. Esque during his presentation at the 2009 Desert Tortoise Council Symposium.

Location	Sample Size	Number Dead	Percent Loss
Superior-Cronese, CA	15	1	6.7
Marine Corps Air Ground Combat Center, CA	11	1	9.1

Coyote Springs Valley, NV	26	4	15.4
River Mountains, NV	19	4	21.1
Piute Valley, NV	14	3	21.4
Fort Irwin, CA	647	147	22.6
Soda Mountains, CA	29	12	41.4
Chuckwalla Bench, CA	16	7	43.8
Chemehuevi, CA	11	5	45.5

How the data was collected, actual site locations, the level of manipulation of the animals, the demographics of the sampled tortoises, when the sites were sampled, the statistical significance of the losses, how the losses to predation were actually determined, and what other causes of death were observed are not explained. However, the authors speculate that this data provides evidence of range-wide coyote depredation. The documents provide no data showing trends in coyote depredation rates over time at any of these locations. Without these data, it is difficult to determine whether depredation rates changed in 2008 and what contribution manipulation of a tortoise may have made to it subsequently being preyed upon. Certainly, if the tabulated numbers are taken at face value and the none-Fort Irwin data is representative of un-harassed tortoises, the observation of only a 6.7% loss (a single tortoise) at the Superior-Cronese site compared to the 22.6% loss in the Fort Irwin translocation is deeply troubling.⁶ It suggests that the magnitude of the intervention may have contributed to the massive loss of tortoises in the Fort Irwin translocation. There is no foundation for the claim reiterated in the documents that the Fort Irwin translocation did not contribute to the massive losses. Accordingly, predation cannot be discounted and must be fully factored into the environmental analysis.

We included a brief review of literature related to coyote predation on desert tortoises in our scoping comments. Over 60 years ago, Woodbury and Hardy (1948) found evidence for coyote predation on desert tortoise and concluded that the rate probably increased in dry years when rabbit populations were low. Given the background literature and recent experience, canid depredation of desert tortoises following translocation is clearly likely to occur, and needs to be mitigated for to minimize take. We do not advocate lethal control of local coyotes, since this is at best a stopgap measure and it is unclear as to how effective coyote removal would be at reducing depredation (cf. Goodrich & Buskirk, 1995). Rather, predator distribution and presence should be criteria used in selecting translocation sites. Appropriate predator mitigation measures (such as temporary protective fencing and stringent protocols to minimize prolonged human presence at translocation sites) should be incorporated into the translocation plan. Any proposals for control of coyotes and other predators need to be fully analyzed in the NEPA documents. Coyote removal could result in new packs moving in from adjacent areas and occupying the now vacant territory, potentially compounding the problem. Lethal coyote control could have potential long-term consequences for the local desert ecosystem. Coyote removal could trigger an increase in the local rabbit and black-tailed hare population and change the availability of tortoise food plants in subsequent years. Coyote eradication could lead to increased kit fox numbers and increased predation on desert tortoise nests.

⁶ On August 31, 2009 we obtained a copy of a table provided by USGS in response to a FOIA request entitled “Working Tortoise Predation Table 10Aug2009”. This included the same information provided in the draft Biological Opinion with additional data columns for 2006 and 2007. The mortality for 2007 at the Superior Cronese plot was $1/16 = 6.3\%$, i.e. a statistically identical result to 2008. No data was provided for 2006.

The EA claims that the translocation project may have a positive long-term effect on the upward or stationary trend of desert tortoise within the DWMA by increasing the available pool of healthy adult females of reproductive age. Yet as we mentioned in our scoping comments, Berry et al (2009) reported that more females than males were killed by predators in the 2008 translocation. In the EA's response to comments section, by the comment "Need for development of protocols to address gravid females." is the response "Discussed in section 4.3.1.1". However, no such discussion occurs in that section (or elsewhere in the EA). The translocation plan must include mitigation measures to address this imbalance. The plan should include specific guidelines related to the translocation of gravid females to minimize risks to this crucial demographic group.

(4) The Experimental Nature of Large Scale Translocation.

The 1994 Recovery Plan considered translocation as a potentially important conservation tool if the techniques can be perfected, and recommended that research be conducted to achieve this. It was with this in mind that the Fort Irwin translocation was built around conducting vital research. This research is still ongoing, and large scale desert tortoise translocations remain experimental and the object of scientific controversy. This is recognized in the EA, and is why different protocols were adopted for the SEA versus WEA tortoises. The remaining SEA tortoises cannot be released according to the amended protocols (i.e., dispersed across the Southern Expansion Translocation Area), because they would compromise the study design (control animals) in the research projects currently under way.⁷

Certainly there has been some welcome progress in desert tortoise translocation related research. A recent paper by Field *et al.* (2007) provides data from a small scale translocation conducted at the LSTS in 1997-1998. They translocated tortoises that had been held at the Desert Tortoise Conservation Center in Las Vegas. They observed a 21.4% fatality in the first year that they attributed to drought conditions at the release site, and zero the second year (1998) which was one of wettest years on record for the area. Despite the small sample size, short duration of the study, and absence of long term follow up, they concluded that tortoise translocation should be considered a valid tool for desert tortoise conservation. At its March 13, 2009 meeting, the DTRO's Science Advisory Committee reached consensus that translocation is fraught with long-term uncertainties, notwithstanding recent research showing short-term successes, and should not be considered lightly as a management option.⁸ Given the high degree of scientific uncertainty, large scale translocation remains experimental, scientifically controversial, and unproven as a tool for desert tortoise conservation.

The 1994 Recovery Plan proposed DWMA as protected areas within Recovery units where preserve level management would be implemented to recover the desert tortoises. While the Recovery Plan entertained the concept of "experimental zones" within DWMA, it recommends that these be limited to no more than 10% (Recovery Plan at 36). Neither the

⁷ Per 07/16/2009 e-mail from Roy Averill Murray to Chris Otahal.

⁸ Meeting Summary Desert Tortoise Science Advisory Committee Meeting, March 13, 2009, San Diego Wild Animal Park, Escondido, CA. 4 pp.

Recovery Plan nor the governing land use plan (West Mojave Plan) envisioned making entire DWMA experimental zones.

(5) Range of Alternatives.

The NEPA implementing regulations specify that NEPA documents must analyze a full range of alternatives. Based on the information and analysis presented in the sections on the Affected Environment (40 C.F.R. § 1502.15) and the Environmental Consequences (40 C.F.R. § 1502.16), the NEPA document should present the environmental impacts of the proposed action and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public. The regulations specify that agencies shall:

- (a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.
- (b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.
- (c) Include reasonable alternatives not within the jurisdiction of the lead agency.
- (d) Include the alternative of no action.
- (e) Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.
- (f) Include appropriate mitigation measures not already included in the proposed action or alternatives.

In our scoping comments, we had recommended that the BLM consider an alternative based on the recommendations of the 1994 Desert Tortoise Recovery Plan. This alternative would fully implement the recommendations of the 1994 Desert Tortoise Mojave Population Recovery Plan Appendix B. This alternative would identify translocation sites outside the DWMA. Analysis of this alternative would have provided a baseline for fully analyzing risks to the tortoises and to the DWMA, since tortoises would be translocated outside the DWMA under this alternative. We are surprised that the BLM has not just ignored our proposed alternative but has failed to consider any alternative based on the current Desert Tortoise Recovery Plan in the EA. In doing so, the BLM has failed to explore and evaluate a reasonable range of alternatives.

The EA reviews four alternatives; the proposed action under which tortoises would be translocated onto BLM managed and Army owned lands in the Superior-Cronese DWMA guided by the USGS original and amended translocation plans; alternative A which is the same as the proposed action but would also allow tortoises from the SEA to be translocated onto 65 square miles of the Soda Mountains Wilderness Study Area (“WSA”) at the east end of the Superior-Cronese DWMA; alternative B under which tortoises would be translocated onto 62 square miles of Army and state owned lands in the Superior-Cronese DWMA; and “no action”, under which no translocation and no army training would occur.

Although the BLM claims to have analyzed alternatives A and B in depth, the habitat quality of the WSA lands, the Army acquired lands, and the state lands is not described and no

maps are provided to even indicate the locations. Again, the BLM is failing to take a hard look at environmental consequences and what's best for this listed species. The EA (at 12) states, "For the purposes of the analysis in this EA, it is assumed that all of these lands would be available for receiving translocated animals, though[t] it is likely that some locations would be deemed unacceptable for translocation". The absence of habitat quality and suitability data, and basic maps of the locations make it difficult for the public to appreciate the relative merits of these alternatives. The EA also makes incorrect assertions about management on the state and the Army's acquired compensation lands. The general management of these lands essentially reflects what is going on, on the public lands around them. What is different though is that these lands are not open to BLM's multiple use policy and therefore are not available for mining and energy development, etc. If the Army's compensation lands are transferred to the BLM they will be open to these developments and other consumptive uses. The EA should consider alternatives under which the Army's compensation lands are not transferred to BLM or are only transferred if the BLM guarantees that these lands will be conserved in perpetuity for the purposes of conserving and recovering desert tortoises and other special status species.

For alternative B, receptor sites would be on Army compensation lands and state lands only. However, state lands were considered unsuitable in the site selection decision support model (Amended Translocation Plan at 30). Further, according to the Amended Translocation Plan, State lands are not being considered due to the administrative burden related to such activities (Amended Translocation Plan at 6). Thus, it is unclear why this alternative is even being considered in the EA.

Under the "no action" alternative the translocation effort would not take place on BLM managed lands and no military activities would take place. For the purposes of analysis, it is assumed that conditions on BLM managed lands would not change from the current baseline conditions. Yet, based on bald claims made in the EA and associated documents, some 25% or so of the DWMA's adult tortoises were depredated by coyotes in 2008. This is a catastrophic level of change that cannot be ignored. Why does the BLM not expect densities of desert tortoise to change if predation is such an issue? Assuming that densities will not change is not helpful in establishing the base-line for impacts from the proposed action, particularly if mortality continues at the rates observed in the prior translocation.

(6) Clearance Surveys.

The clearance surveys for the WEA tortoises described in the EA and Amended Translocation Plan could result in large numbers of tortoises being left in the training area. The proposed action is to undertake a single pass survey by tortoise pedestrian survey teams through one kilometer blocks. If more than four adult tortoises are found within any one square kilometer block, then the block would be surveyed a second time in its entirety. Four tortoises per square kilometer equal 10.3 tortoises per square mile. But the Amended Translocation Plan (at 4) also indicates that the percentage of tortoises detected on a single pass was only 70%. Assuming this detection rate is correct and is achievable under field conditions, the trigger for a second survey would be an abundance greater than 14.8 tortoises per square mile. This density is similar to the actual Superior-Cronese DWMA abundance of 15.2 adult tortoises per square mile

determined in the most recent range wide LDS monitoring. Thus, the trigger for a second “sweep” is finding an average number of tortoises for the area.

Because the second sweep will only occur on habitat that supports equal or higher numbers of tortoises than the average abundance for the area, the clearance surveys will leave a large number of tortoises within the WEA. It is difficult for us to calculate the number of tortoises that would be left since we do not have access to the agencies’ survey data.⁹ However, for a worse-case scenario if we assume that the LDS abundance of 5.9 tortoises/km² (15.2 tortoises/mile²) is a median value, half of the WEA (125 km²) would not receive a second pass, and 221 (i.e. 5.9 x 125 x .3) adult tortoises would be missed from areas that received only a single pass. The total number of adult tortoises actually left in the WEA would be higher since the detection rate for 2 passes is 95% (i.e. 5% missed), and an unknown number of hatchlings and young tortoises will also be missed. The criteria for triggering a second sweep will not minimize incidental take and should be reconsidered.

(7) Selection of Translocation Sites.

Translocation sites should be selected based on sound, science-based criteria and manageability to maximize likely success.

The Amended USGS plan incorporates “die-off” as a positive factor in choosing translocation sites. Die-off regions are identified as areas in which the carcass encounter rate exceeded the live encounter rate in the range-wide LDS monitoring. However, the efficacy of using this ratio is unclear since both carcasses and live tortoises are likely to be more frequently encountered in higher tortoise density areas, but available carcasses are easier to find than are live tortoises depending on the conditions on the day of the survey. Use of this factor in choice of translocation sites also assumes that whatever caused the die-off is no longer an issue in those areas. Since we rarely know the cause of die-offs, this hypothesis needs critical evaluation, and requires ground-truthing at each translocation site. Recent studies of tortoise and wildlife translocations emphasize the need to abate existing threats for translocations to be successful (Fischer and Lindenmayer, 2000; Fields *et al.*, 2007). The cause of any die-offs needs to be determined so that the threat(s) can be ameliorated.

Translocation sites should be selected in areas where resident desert tortoises share similar genetic backgrounds. In this case, the project would translocate desert tortoises throughout the range of what has been identified as a genetically distinct “Central Mojave” population of desert tortoises (Murphy *et al.*, 2007). Murphy *et al.* considered the range of this population to encompass Rowlands’ Central Mojave botanic region (Rowlands, 1995). The Superior-Cronese DWMA boundary was based on administrative boundaries, roads and other defined barriers. While it includes much of the Central Mojave it also overlaps with the West Mojave botanic unit. The USGS (Amended Translocation Plan at 21) apparently considered

⁹ Today, August 31, 2009, we obtained a copy of Walde, A. D., Boarman, W. I. and Woodman, A. P. *Desert Tortoises Estimates on the Western Expansion Area of Fort Irwin dated 6 February 2009*. They surveyed 62 sq km plots in the WEA in a single pass survey. They found densities of 5 or fewer tortoises on 44 plots and 6 or more tortoises on 18 plots. This suggests that our worse-case scenario may be over-optimistic; more than half of the plots may only get a single sweep.

genetic integrity in choosing possible translocation sites but did not explicitly acknowledge the significance of the Central Mojave desert tortoise population. Since no maps were provided, it is unclear if the lands that would be used under alternative B fall within the Central Mojave region. The Central Mojave botanic region boundary, not the Superior-Cronese DWMA boundary, should be the delimiter for translocation sites used in the decision support modeling, so that translocation does not compromise the genetic integrity of the Central Mojave desert tortoise population.

We had commented that the habitat quality of translocation sites should be comparable to the habitat from which the tortoises have been removed based on site-specific surveys of soils, hydrology, vegetation, invasive species, and anthropogenic threats. The BLM describes the tortoises and their habitat within the DWMA as having been “adversely affected by multiple stress factors, including anthropogenic factors and disease and drought that swept through populations in the 1990’s” (EA at 4). It is unclear if these factors have been ameliorated. The decision support model appendix mentions the condition of vegetation at receptor sites but it is unclear if this consideration was added to the model (Amended Relocation plan at 31). Nor does the model seem to have incorporated invasive weed presence and fire risk. The feasibility of being able to close off the area around translocation sites should disease containment be required was not addressed. The decision support model has also not explicitly addressed predator distribution. While proximity to human habitation may be of some value, the model could certainly have factored in proximity to open waters since water availability may be rate-limiting for coyote distribution, and coyote sign is much higher around developed waters (DeStefano *et al*, 2000).

(8) Biological Goals, Objectives, Outcomes, Criteria for Success.

The EA does not provide explicit biological goals and objectives for the translocation project. Is the translocation a large experiment, is it meant as a conservation measure, or is it merely to address the human-tortoise conflict created by the expansion of Army training activities?

The EA claims that the translocation project may have a positive long-term effect on the upward or stationary trend of desert tortoise within the DWMA by increasing the available pool of healthy adult females of reproductive age (EA at 25). Certainly, adding tortoises will temporarily increase the number of tortoises, but there is a difference between temporarily increasing the total population size by releasing tortoises and increasing the breeding or effective population size. The latter will require that the translocated tortoises integrate with residents, adapt to the new local ecological conditions, and form a stable, breeding population. The claim that the translocation may positively benefit the population trends is hypothetical at best, and should be clearly construed as such.

The EA describes large-scale monitoring that will occur but does not explain how this data will be used, and without any stated biological goals and objectives its utility cannot be determined. The Amended Translocation Plan mentions the development of testable hypotheses several times, but does not specify these.

The lengthy time-scale over which translocations must be monitored to determine their success or failure is an important consideration that is repeated extensively in the scientific literature (see for example, Dodd and Seigel, 1991; Fischer and Lindenmayer, 2000). Both the method of release and the distance of release from capture sites affect the behavior of translocated desert tortoises (Walde *et al.*, 2009). If the goal of the large-scale translocation is population augmentation, then measurable long term objectives must be specified. The 5 year monitoring period may provide information on initial survival, but it is insufficient to determine the success of population augmentation and the success of translocation as a conservation tool. The NEPA documents should provide clear biological and conservation goals and objectives, expected outcomes, and benchmark criteria that measure the success in achieving the established goals and objectives.

(9) Health and Disease Issues, and Contingency Planning.

The USGS have incorporated important, additional protocols to evaluate the health status of translocated desert tortoises into the Amended Translocation Plan. These protocols will reduce but not eliminate the risk of infectious tortoises being moved into the DWMA.

The Amended Translocation Plan also proposes sampling resident tortoises at 64 sample points located across the translocation area. This will provide data on the disease status of tortoises that will be used to modify the translocation area. Translocated tortoises will not be released within a 5 km buffer around any detected diseased resident tortoises.¹⁰ This is an important improvement over the Original Translocation Plan, however its likely effectiveness is not addressed and no alternative buffer sizes are considered. Since 5 km is less than half the maximum distance moved by many tortoises in previous translocations, the measure may reduce but will not eliminate the risk of translocated tortoises moving into the home range of infected resident tortoises. This factor is of particular concern with species like the desert tortoise that have complex social behavior, since translocated tortoises may disrupt the social structure of resident populations by displacing residents (Berry, 1986). Long distance movements by both translocated and resident tortoises could lead to disease spread and place the larger population at risk of epidemics. In this respect, Walde *et al.* (2009) reported that one of the 2008 translocated tortoises moved as far as 23 km. The translocation plan should include an epidemiological analysis, and the EA should consider additional measures such as temporary fencing to reduce the risk posed by tortoises making long distance movements.

We are concerned about the adequacy of the sampling of resident tortoise populations in the Western Expansion Translocation Area (“WETA”) to determine their health status. The Amended Translocation Plan proposes to sample tortoises at 64 sites throughout the WETA. The number of tortoises to be sampled at each site is unclear. Sample sizes for the resident tortoises need to be appropriate to detect the presence of *Mycoplasma* and other diseases. In the 2008 translocation, some 7 of 142 sampled translocated tortoises (i.e. about 5%) initially tested positive or suspect positive for *Mycoplasma agassizii* or *M. testudineum* (Berry et al, 2009). Based on that report, a large sample size would be needed to determine absence of disease among residents at each of the 64 sites. This must be addressed in the EA and supporting

¹⁰ Presumably, the buffer zones will have a 5 km radius, not diameter. Neither the Plan nor the EA are explicit on this.

documents. In addition, none of 64 proposed disease sampling sites are on the “red squares” on the Amended Translocation Plan maps. These “red squares” are not slated as translocation sites but may be adjacent to the “green square” translocation sections and form a checkerboard in some areas. Because a higher live tortoise to carcass ratio was a negative factor in the model used to select translocation sites, the adjacent and nearby “red squares” may have higher tortoise densities. Since disease transmission may be density dependent, sampling should also be conducted in any “red squares” with higher tortoise densities that are within the expected range of movement of translocated tortoises.

In our scoping comments, we raised the need for contingency planning to deal with potential disease outbreaks that could be triggered by the translocation including quarantine measures. This has not been done. The agencies must do more than simply monitor tortoises for disease but describe specific remedies that will taken to avoid disease outbreaks reaching epidemic levels. The NEPA analysis should identify counter-measures should disease epidemics be detected, and should include specific triggers for implementation of these counter-measures.

(10) Risk Assessment.

The BLM recognizes that this large-scale translocation will adversely affect desert tortoises. It may result in some lethal and non-lethal Section 9 ESA take, and if the carrying capacity at a translocation site is exceeded, may result in adverse modification of critical habitat and retardation of recovery of the population. Translocated tortoises may undergo long-distance movements, can disrupt the social behavior of residents (Berry, 1986) and may result in other stresses such as weight loss (Gowan *et al.*, 2009) that could contribute to the outbreak of clinical signs of disease and disease spread. Because negative social interactions could result in resident tortoises moving off site, there is a risk of both resident and relocated tortoises contracting and spreading infectious disease. The USGS amended plan has recognized the importance of this issue in building in a 5 km buffer around areas with infected tortoises. The 5 km buffer is based in part on a distance that is 50% of the maximum linear movements made by tracked tortoises in prior translocations. Since tortoises are known to move considerably more than 5 km, the buffer may diminish but does not remove the risk. The large-scale proposal to translocate tortoises throughout the Superior-Cronese DWMA places the entire West Mojave population, particularly the Central Mojave type tortoises described by Murphy *et al*, at risk. The agencies should formally evaluate this risk not just recognize it, and a credible, quantitative risk assessment should be made for each alternative analyzed in the NEPA process.

(11) Use of Best Available Science.

The Endangered Species Act clearly mandates that “Each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency (hereinafter in this section referred to as an “agency action”) is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with affected States, to be critical, unless such agency has been granted an exemption for such action by the Committee pursuant to subsection (h) of this section. In fulfilling the requirements of this

paragraph each agency shall use the best scientific and commercial data available.” (Emphasis added). In this case, the project would translocate desert tortoises throughout the range of what has been identified as a genetically distinct “Central Mojave” population of desert tortoises (Murphy *et al.*, 2007). This entire Central Mojave population would be placed at risk by the proposed action. Loss of this population would produce a significant gap in the range of the species. None of the documents including the EA, the various translocation plans, and the draft Biological Opinion even mention Murphy *et al.* let alone analyze the potential impacts to this identified population.

The EA list of references does not include a single citation from the primary literature; all the listed references are derivative agency documents. Instead, the EA relies heavily on “personal communications”. In many cases, these “personal communications” consist of nothing more than the actual wording that was inserted into the EA and contain no substantive, supportive data or references. This is particularly egregious with respect to the controversial claims that there is little connection between drought and predator prey base availability and the success of desert tortoise translocation. The claims made in the personal communications all cite the similar mortalities among the 2008 translocated, resident, and control tortoises. These provide no data on mortality among non-manipulated residents, and as discussed above, data in the Biological Opinion shows lower mortality at a nearby Superior-Cronese site and does not support this claim.

The EA also misrepresents existing literature. For example, the EA (at 8) states that “Climate change and drought were not regarded as threats to the desert tortoise in the 1994 Recovery Plan”. The Recovery Plan certainly recognized drought as an issue (USFWS, 1994). And, even though the Recovery Plan was written in 1994, it was a far-seeing document that incorporated climate change considerations. Climate change was incorporated into the population viability analysis (Recovery Plan at C3), threats analysis including fire (Recovery Plan at D24), and research on “climate and vegetation” was included in its implementation schedule. While criticizing the Recovery Plan, the EA fails to mention that the proposed translocation does not follow the science-based recommendations of that plan.

(12) Monitoring Programs.

The NEPA documents must explain the monitoring programs that will be in place to judge both the short and long term effectiveness of the translocation based on sound biological goals and objectives. Because most of the affected resident tortoises will not be tracked, funding should be ear-marked to assure routine inclusion of the Superior-Cronese DWMA in the range-wide LDS monitoring effort, or additional population monitoring protocols developed to ensure that the non-transmitted resident tortoises that will be affected by the translocation receive appropriate short and long term monitoring. The NEPA documents should include the timelines, and estimated costs and sources of funding for all components of the monitoring programs.

(13) Compliance with BLM Policy and Land Use Plans.

All translocations must fully comply with relevant BLM policies. BLM Handbook 1745 requires that “Decisions for making introductions, transplants, or reestablishments should be

made as part of the land use planning process (see BLM Manual Section 1622). Releases must be in conformance with approved RMPs. A Land Use Plan Amendment must be prepared for proposed releases if management direction is not provided in the existing Land Use Plan (see BLM Manual Section 1617, emphasis added).” There is no consideration in the California Desert Conservation Area Plan as amended by the West Mojave Plan EIR/EIS for using the designated DWMAs for large-scale desert tortoise translocations. This is recognized in the EA at 4 – “translocation of desert tortoises is not specifically addressed in the CDCA Plan, as amended”. Therefore, a plan amendment is required to comply with BLM policy.

In addition, BLM Handbook 1745 at .1.12A requires that the activity plan be site-specific and include “Site-specific and measurable vegetation/habitat population objectives which are based on existing ecological site potential/condition, habitat capability, and other important factors. (See BLM Manual Sections 1619, 6780, and 4120).” As we discussed above, the EA does not adequately describe existing ecological conditions nor does it address the capability of the habitat at the translocation sites to support additional tortoises.

The BLM should adhere to its own policy and prepare an EIS that proposes and analyses an amendment to the CDCA Plan that provides the required management direction with respect to desert tortoise translocation. It could then use that guidance to develop a translocation plan for the Fort Irwin tortoises that includes the required site-specific analyses to comply with BLM policy, FLMPA, and NEPA.

(14) Miscellaneous Issues.

Under the proposed action desert tortoises would not be translocated to wilderness. However, the USGS proposes to monitor tortoises in Wilderness as a “control” group in its Amended Translocation Plan. In addition, some of the potential translocation sites are in areas under active consideration for wilderness designation by Senator Feinstein and thus may not be available. The NEPA documents should analyze potential impacts of monitoring to Wilderness values and any potential cumulative impacts to areas being considered as wilderness.

The different alternatives may have different impacts on cultural resources. For example, Alternative A apparently would include the Cronese Lakes ACEC, although the maps are inadequate to ascertain this and the ACEC is not mentioned by name. The proposed action appears to include translocation sites within the Blackwater Well Archeological District. All ground-disturbing activities in these areas should be scrutinized and fully analyzed in the NEPA documents.

(15) Continued Public Involvement.

We requested in our scoping comments that the translocation plan should incorporate specific measures aimed at keeping the public informed on the progress of translocations, including providing daily or weekly updates of translocation numbers, demographics, and any losses on the California Desert District website. Given the high level of interest in the desert tortoise, providing meaningful and timely data should be an essential component of management if the agencies are to engender public support for this highly controversial project.

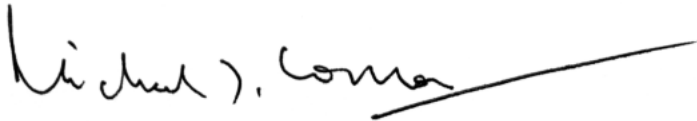
(16) Conclusions.

The purpose of an EA is to provide sufficient evidence and analysis to determine whether a project requires preparation of an environmental impact statement (EIS) or whether issuance of a finding of no significant impact is merited. [CEQ NEPA Implementing Regulations, 40 C.F.R. §1508.9]. Given the significance of the proposed translocation to desert tortoise survival and recovery, the unanswered questions outlined above, the need for a land use plan amendment, the considerable scientific controversy, and the intense public interest the 2008 translocation generated, the EA provides no basis for a FONSI and a comprehensive EIS is clearly required for this project. Given the Army's wish to begin training in the SEA and WEA, the BLM should immediately embark on initiating the required EIS.

We hope that you find our comments useful. Please continue to keep Western Watersheds Project informed of all further substantive stages in the NEPA process and document our involvement as members of the 'interested public' in the record.

If I can be of any assistance or provide more information please feel free to contact me by telephone at (818) 345-0425 or by e-mail at <mjconnor@westernwatersheds.org>.

Yours sincerely,

A handwritten signature in black ink that reads "Michael J. Connor". The signature is written in a cursive style and is underlined with a single horizontal line.

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Mickey Quillman, Roxie Trost, BLM Barstow Field Office

Attachment: Western Watersheds Project Scoping Comments on the Proposed Fort Irwin Desert Tortoise Translocation. Dated February 18, 2009.

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Electronic copies of these documents are available on request.

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Working to protect and restore Western Watersheds

By E-mail

February 18, 2009

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Re: BLM Seeks Public Comments on Desert Tortoise Translocation near Fort Irwin

Dear Dr. Quillman:

On behalf of Western Watersheds Project and myself, please accept the following scoping comments as you embark on the NEPA analysis for the translocation of desert tortoises from the Fort Irwin expansion areas to nearby public and private lands.

Western Watersheds Project works to protect and conserve the public lands, wildlife and natural resources of the American West through education, scientific study, public policy initiatives, and litigation. Western Watersheds Project and its staff and members use and enjoy the public lands, including the lands at issue here, and its wildlife, cultural and natural resources for health, recreational, scientific, spiritual, educational, aesthetic, and other purposes. Western Watersheds Project has a particular interest in the desert tortoise and recently petitioned the Department of Interior to list the Sonoran desert tortoise population under the Endangered Species Act.

The scoping notice for the proposed translocation was posted as a press release on the BLM website on February 4, 2009. It provided for a 15-day period for submission of scoping comments, with an ending date of February 18, 2009. We understand the urgency in undertaking the analysis since desert tortoise translocation is most likely to be successful in the spring months, but this is an unreasonably short comment period for such an important and controversial project. We are not aware of any Federal Register notice, so our comments are based on the sparse information provided in the press release.

Specific issues of concern that should be addressed in the NEPA documents to ensure compliance with NEPA and to ensure that NEPA's requisite "hard look" at the environmental impacts include:

(1) Range of Alternatives.

The NEPA implementing regulations specify that NEPA documents must analyze a full range of alternatives. Based on the information and analysis presented in the sections on the Affected Environment (40 C.F.R. § 1502.15) and the Environmental Consequences (40 C.F.R. § 1502.16), the NEPA document should present the environmental impacts of the proposed action and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public. The regulations specify that agencies shall:

- (a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.
- (b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.
- (c) Include reasonable alternatives not within the jurisdiction of the lead agency.
- (d) Include the alternative of no action.
- (e) Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.
- (f) Include appropriate mitigation measures not already included in the proposed action or alternatives.

Based on prior experience, the agencies should consider the following reasonable alternatives in addition to any proposed action. Comparison of these alternatives will help define the issues and provide a clear basis for making an informed decision.

(a) No Action Alternative. This alternative is required. Full analysis of “no action” will help clarify the need for the translocation by identifying both the tortoise population that will be impacted by the Army’s training program and by identifying and characterizing the resident tortoise populations in any proposed translocation sites.

(b) Desert Tortoise Recovery Plan Alternative. This alternative would fully implement the recommendations of the 1994 Desert Tortoise Mojave Population Recovery Plan Appendix B. This alternative would identify translocation sites outside the DWMA.

(c) Fort Irwin Translocation Plan Alternative. This alternative would consider implementation of the July 29, 2005 USGS Plan (Esque et al., 2005). Review of this alternative will provide a frank assessment of the successes and failures of the 2008 translocation effort and inform both the public and the decisionmakers as to appropriate mediation measures.

(2) Purpose of an Environmental Assessment

The scoping announcement indicates that the BLM is preparing an Environmental Assessment (EA) for this project. The purpose of an EA is to provide sufficient evidence and analysis to determine whether a project requires preparation of an environmental impact statement (EIS) or whether issuance of a finding of no significant impact is merited. [CEQ NEPA Implementing Regulations, 40 C.F.R. §1508.9]. Given the significance of the proposed translocation to desert tortoise survival and recovery, the considerable scientific controversy, and

the intense public interest the 2008 translocation generated we expect that the EA will result in a determination that an EIS is required. The BLM should seriously consider initiating the EIS process immediately.

(3) Population Assessments.

The NEPA documents must clearly identify the number of tortoises that will be translocated and their demographics. The desert tortoise populations currently resident at any proposed translocation sites should be similarly characterized.

The NEPA documents should provide frank estimates of the expected losses of both translocated and resident desert tortoises that may occur for all alternatives considered.

(4) Selection of Translocation Sites.

Translocation site should be selected based on sound, science-based criteria and manageability to maximize likely success.

There is no consideration in the current West Mojave Plan EIR/EIS for using designated DWMA's for large-scale desert tortoise translocations. This should be addressed in the NEPA documents if use of habitat within the DWMA's as translocation sites is considered. All translocations should fully comply with relevant BLM policies.

A threat assessment should be conducted for all potential translocation sites. Threats that should be assessed include vehicle routes, off-road vehicle activity, livestock grazing and residual impacts from livestock use, invasive species and fire risk, predator levels (including ravens and coyotes) and proximity to human developments including housing, energy transmission corridors, and roads. Translocation sites should be located in areas with defensible boundaries and that can be conserved. This should include the feasibility of closing the area around translocation sites should disease containment be required.

Habitat quality of translocation sites should be comparable to the habitat from which the tortoises have been removed. This should be based on site-specific surveys of soils, hydrology, vegetation, invasive species, and anthropogenic threats. The current desert tortoise carrying capacity should be determined for each translocation site. Translocation sites should be designated for conservation use only.

Where possible, desert tortoises should be relocated to immediately adjacent protected sites. This would include tortoises located on the base close to the training area boundaries and those tortoises located close to conservation areas on the base itself including the Lane Mountain Milkvetch refuges.

Translocation sites should be selected in areas where resident desert tortoises share similar genetic backgrounds. Murphy et al (2007) have identified at least three measurably distinct populations within the West Mojave recovery unit. The translocation must not compromise the genetic integrity of these populations.

It is well established in the literature that desert tortoises may make long-distance movements following translocation. Translocation sites should be selected such that the tortoises can be safely confined to minimize risks posed by this behavior, but any enclosed sites must be of sufficient size for the tortoises to establish new home ranges.

The NEPA analysis should address the threats that have contributed to localized population declines for any potential translocation sites where resident tortoise populations have declined or have been extirpated, and explain how these threats will be ameliorated. Where disease and predation issues are of concern, appropriate mitigations should be specified.

Translocation sites for diseased tortoises should be double fenced to minimize potential risks to healthy tortoises. These confined animals could theoretically continue to contribute to the gene pool through future headstarting projects and the like. However, fencing off areas within the DWMA boundaries amounts to a direct loss of habitat to the free ranging population. Accordingly, translocation sites for diseased tortoises should be located outside the DWMA in accordance with the 1994 Desert Tortoise Recovery Plan. Alternatively, measures need to be taken to mitigate for the loss of habitat. The proposed mitigation ratio for the Superior-Cronese DWMA is 5:1 under the West Mojave Plan.

(5) Predation Issues.

Desert tortoise depredation by coyotes has been documented at least as far back as Woodbury and Hardy (1948) who found tortoise remains in coyote scat. Boarman (2002) reviewed more recent literature related to coyote predation on desert tortoise. Based on their observations of tortoise fatalities, Woodbury and Hardy concluded that coyote predation on desert tortoise increased when rabbit populations were low. In his review, Boarman (2002) also explores the coyote-desert tortoise relationship, and the hypothesis that coyotes switch to preying desert tortoises following drought-induced reduction in the coyotes' normal prey. Field et al, 2007 also includes an extensive review of the topic in the discussion section.

The 2004 Biological Opinion for the Fort Irwin expansion briefly reviewed aspects of the proposed desert tortoise translocation (USFWS 2004). The Biological Opinion discusses the Bird Springs Valley, Nevada desert tortoise translocation study conducted by Dr. Nussear (USFWS 2004, pages 40-41). It notes that predation by canids was the cause of death for all but one of the resident and translocated desert tortoises that died in the first year (USFWS 2004, page 40). The Biological Opinion concludes: "In summary, predation comprised the most dramatic source of mortality for both translocated and resident desert tortoises over the 3 years of the study." (USFWS 2004, page 41).

In his subsequent thesis, Dr. Nussear reports that at Bird Spring Valley, 7 of 53 (13%) resident and 7 of 48 (15%) translocated tortoises were lost to predation by large canids in the first year (Nussear, 2004). He concluded that predation was the leading cause of mortality.

Given the background literature, the USFWS Biological Opinion, and recent experience, canid depredation of desert tortoises following translocation is clearly likely to occur. We do not advocate lethal control of local coyotes, since this is at best a stopgap measure and it is unclear

as to how effective coyote removal would be at reducing depredation. Rather, predator distribution and presence should be criteria used in selecting translocation sites. Appropriate predator mitigation measures (such as temporary protective fencing) should be incorporated into the translocation plan. Any proposals for lethal control of coyotes and other predators need to be fully analyzed in the NEPA documents. Coyote removal could result in new packs moving in from adjacent areas and occupying the now vacant territory, potentially compounding the problem. Lethal coyote control could have potential long-term consequences for the local desert ecosystem. Coyote removal could trigger an increase in the local rabbit and black-tailed hare population and change the availability of tortoise food plants in subsequent years. Coyote eradication could lead to increased kit fox numbers and increased predation on desert tortoise nests.

Berry et al (2009) report that more females were predated than males in the 2008 translocation. The translocation plan must include mitigation measures to address this imbalance. The plan should include specific guidelines related to the translocation of gravid females to minimize risks to this crucial demographic group.

The translocation sites should also consider risks of raven predation at each site on the offspring of translocated tortoises since this may limit the ability of the translocated animals to continue to contribute to the recovery of the species.

(6) Health and Disease Issues.

The plan should evaluate the health status of all translocated and resident desert tortoises and analyze how the translocation may be expected to change this.

The denser a given population is, the more likely it is that individuals in that population will encounter other individuals and present opportunities for disease transmission. This factor is of particular concern with species like the desert tortoise that have complex social behavior. Translocation can lead to disrupted social behavior (Berry, 1986) and may result in other stresses such as weight loss (Gowan et al., 2009) that could contribute to the outbreak of clinical signs. Relocated tortoises are at risk of both contracting and spreading infectious disease.

Wildlife disease epidemiologists should be consulted with respect to known infectious disease issues, and the direct, indirect and cumulative risks for disease spread fully assessed.

(7) Monitoring Programs.

The NEPA documents must explain the monitoring programs that will be in place to judge the short and long term effectiveness of the translocation. This should include the timelines, and estimated costs and sources of funding for the monitoring programs.

(8) Contingency Planning.

The translocation plan and NEPA analysis must include contingency plans, including specific triggers, for potential future impacts including quarantine measures that could be

implemented should disease outbreaks be triggered. Spread of *Mycoplasma* has been shown to be host density-dependent in other species such as house finches and domestic chickens (Hochachka and Dhondt, 2000) and this seems likely true for the desert tortoise too as evidenced by the rapid collapse of the high-density tortoise population at the Desert Tortoise Natural Area in the late 1980s. Given the presence of *Mycoplasma agassizii* and *M. testudineum* in tortoises in the area and the well-known propensity of translocated desert tortoises to move long distances following translocation, the risk of triggering a URTD epidemic remains a serious concern.

(9) Public Involvement.

The translocation plan should incorporate specific measures aimed at keeping the public informed on the progress of translocations. This should include providing daily or weekly updates of translocation numbers, demographics, and any losses on the CDD website. Given the high level of interest in the desert tortoise, providing meaningful and timely data should be an essential component of management if the agencies are to engender public support.

If I can be of any assistance or provide more information please feel free to contact me by telephone at (818) 345-0425 or by e-mail at <mjconnor@westernwatersheds.org>.

Yours sincerely,

A handwritten signature in black ink that reads "Michael J. Connor". The signature is written in a cursive style and is underlined with a single horizontal line.

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