



**DESERT TORTOISE COUNCIL**

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**Via email and BMP NEPA ePlanning Portal**

March 20, 2025

Elroy Masters, District Manager  
Chris Bowman-Prideaux  
Bureau of Land Management  
Phoenix District Office  
2020 E Bell Road  
Phoenix, Arizona 85022  
[cbprideaux@blm.gov](mailto:cbprideaux@blm.gov)

RE: Draft Arnold (No. 03004) and Beloat (No. 03007) Grazing Allotments Reauthorization  
Environmental Assessment (DOI-BLM-AZ-P020-2025-0006-EA)

Dear Mr. Masters,

The Desert Tortoise Council (Council) is a non-profit organization comprised of hundreds of professionals and laypersons who share a common concern for wild desert tortoises and a commitment to advancing the public's understanding of desert tortoise species. Established in 1975 to promote conservation of tortoises in the deserts of the southwestern United States and northern Mexico, the Council routinely provides information and other forms of assistance to individuals, organizations, and regulatory agencies on matters potentially affecting desert tortoises within their geographic ranges.

Both our physical and email addresses are provided above in our letterhead for your use when providing future correspondence to us. When given a choice, we prefer to receive emails for future correspondence, as mail delivered via the U.S. Postal Service may take several days to be delivered. Email is an "environmentally friendlier way" of receiving correspondence and documents rather than "snail mail."

We appreciate this opportunity to provide comments on the above-referenced project. Given the location of the proposed action in habitats occupied by the Sonoran desert tortoise (*Gopherus morafkai*) (synonymous with Morafka's desert tortoise), our comments include recommendations intended to enhance protection of this species and its habitat during activities that may be

authorized by the Bureau of Land Management (BLM), which we recommend be added to terms and conditions in the authorizing documents [e.g., issuance of grazing authorization, National Environmental Policy Act (NEPA) decision document] for the proposed action as appropriate. Please accept, carefully review, and include the Council’s following comments and attachment for the proposed action in the relevant project file.

The International Union for Conservation of Nature’s (IUCN) Species Survival Commission, Tortoise and Freshwater Turtle Specialist Group, now considers the Sonoran desert tortoise, located in Arizona and Sonora, Mexico, to be Vulnerable at this time, but nearly qualifies as Endangered (Averill-Murray et al. 2023). “Steep declines of approximately 54% have occurred in recent years in several formally monitored local subpopulations in Arizona.” “Despite evidence that several subpopulations have stabilized or increased, survival rates are predicted to decline with future drought conditions, which are expected to intensify with global climate change.” In Mexico, “patterns of rainfall and drought across Sonora mirror those in Arizona and suggest that Sonoran subpopulations likely increased and decreased similarly over time.” According to the IUCN, this designation of Vulnerable means that the species is “considered to be facing a high rate of extinction in the wild” and is one step above endangered.

The IUCN identified several threats to the survival of the Sonoran desert tortoise including residential, commercial, and industrial development; ranching and farming; roads and railroads; hunting and trapping; recreational activities; wildfires and fire suppression activities; invasive non-native plant species; and drought/temperature extremes from climate change. The proposed project directly deals with management of ranching and indirectly deals with wildlife, invasive non-native plant species, and drought/temperature extremes from climate change.

The Council thanks BLM for notifying the Council about the opening of the 15-day public comment period for this EA.

### **Description of the Proposed Action and Alternatives**

The proposed action is whether to authorize livestock grazing for the Arnold and Beloat Allotments. In the Draft Arnold (No. 03004) and Beloat (No. 03007) Grazing Allotments Reauthorization Environmental Assessment (Draft EA) (BLM 2025), BLM identified three alternatives in addition to the no action alternative:

**Alternative A:** This is the No Action Alternative. Under Alternative A, the Arnold and Beloat permits would be renewed for a period of 10 years under the same terms and conditions as the existing permits. Currently BLM has authorized the following grazing of cattle for these two allotments. The Arnold Allotment is classified as ephemeral use only and the Beloat Allotment is classified as perennial/ephemeral. The latter has a maximum base herd of 287 cows. Animal Unit Months (AUMs) authorized under this alternative would be 0 AUMs for the Arnold allotment (subject to annual forage availability) and 2,859 for the Beloat Allotment (Table 1).

Table 1. Comparison of Animal Unit Months among the four grazing alternatives.

Allotment	Alternative A	Alternative B	Alternative C	Alternative D
Arnold	Ephemeral	Ephemeral	Ephemeral	0 AUMs
Beloat	2,859 AUMs	433 AUMs	Ephemeral	0 AUMs

**Alternative B:** This is the Reduced Grazing Alternative. Under Alternative B, no perennial grazing would occur with the Sonoran Desert National Monument (SDNM). Both allotments have the southern portions of their acreage in the SDNM. For the Arnold Allotment, 1,612 acres of the 22,344 acres of BLM land are in the SDNM; for the Beloat Allotment, 33,758 acres of the 97,354 acres of BLM land are in the SDNM (Figure 1).

For the Arnold Allotment, the constraints include rain requirements, a reduction in the approvable ephemeral forage utilization by cattle to 40%, and a specified duration for individual grazing periods to conform with BLM Arizona’s current guidelines. For the Beloat Allotment, BLM would authorize an 84.5% reduction in perennial AUMs in response to degraded land health. AUMs would be reduced to 433 for the two perennial pastures with one of these pastures restricted to winter only grazing, and 0 AUMs (subject to annual forage availability) for the three ephemeral pastures (Table 1).

**Alternative C:** This is the Ephemeral Grazing Only Alternative. Under this alternative, all pastures in the two allotments (two in the Arnold Allotment and five in the Beloat Allotment) would be converted to Ephemeral Only grazing along with other modifications to the terms and conditions. No more than 40 percent of available ephemeral forage may be grazed. This alternative is the same as Alternative B for the Arnold Allotment (Table 1).

**Alternative D:** This is the No Grazing Alternative. Under this alternative, BLM would not authorize grazing on the Arnold and Beloat Allotments on the BLM-managed lands both inside and outside of the SDNM boundary (Table 1). Grazing on private lands and on Arizona State Trust Land leases would be expected to continue.

The Arnold and Beloat Allotments are located approximately 25 miles southwest of the City of Phoenix in Maricopa County, Arizona (Figure 1). The Allotments are adjacent to each other and bound by the Gila River to the north, the Estrella Mountains to the east, the North Maricopa Mountains to the south, and highway 85 to 140 the west. The southern portion of both allotments is located in the SDNM. The allotments contain Category I, II, and III tortoise habitats (Figure 2).

BLM identified two alternatives that they considered but eliminated from detailed analysis. They are:

**Remove Livestock Grazing from the SDNM:** The southern acreage of the Arnold and Beloat Allotments occurs with the SDNM. BLM eliminated this alternative because the No Grazing, Ephemeral Grazing, and Reduced Grazing alternatives would limit grazing in the Monument and addresses the results of the Land Health Evaluation.

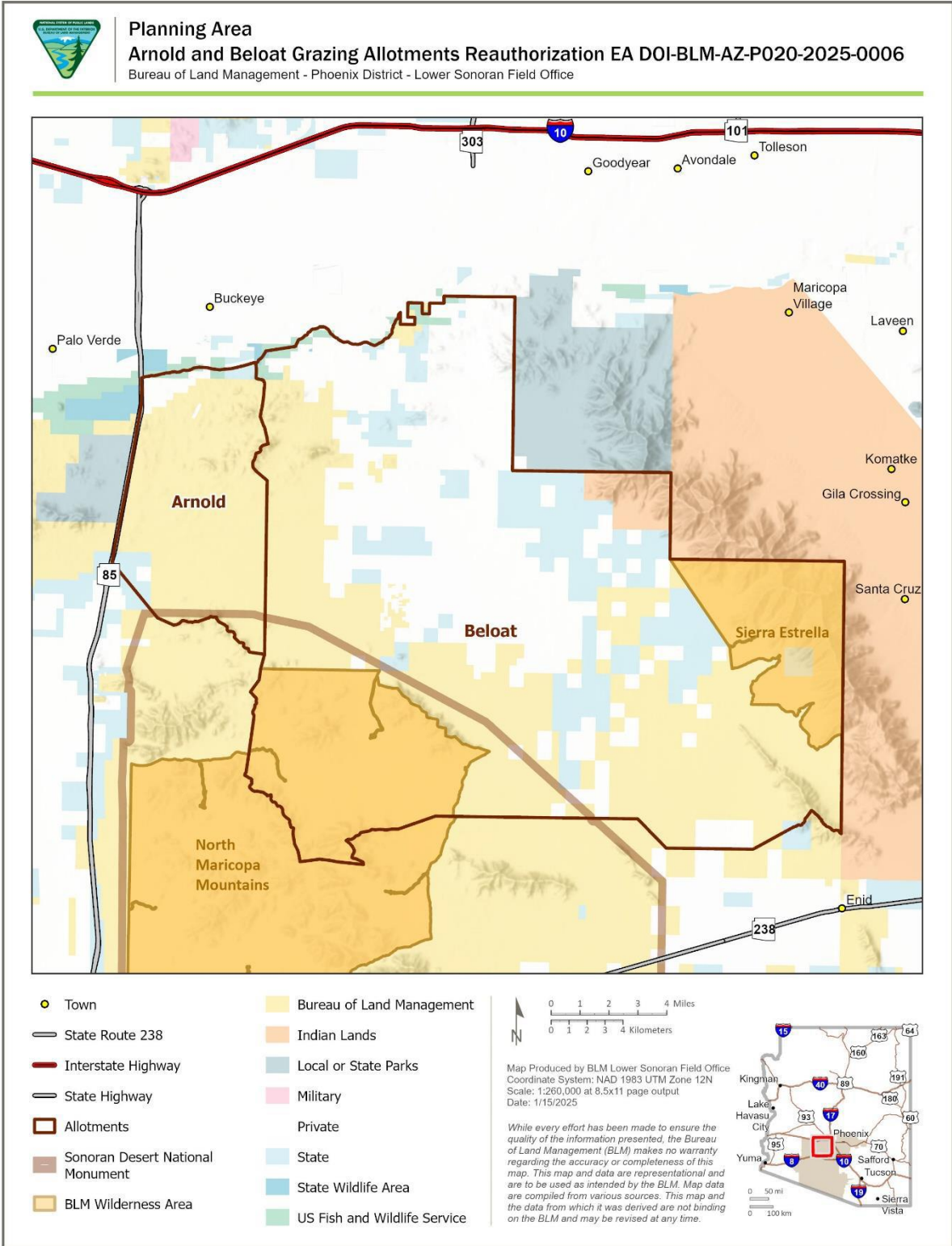


Figure 1. Location of Arnold and Beloit Allotments with respects to land use designations and land ownership.

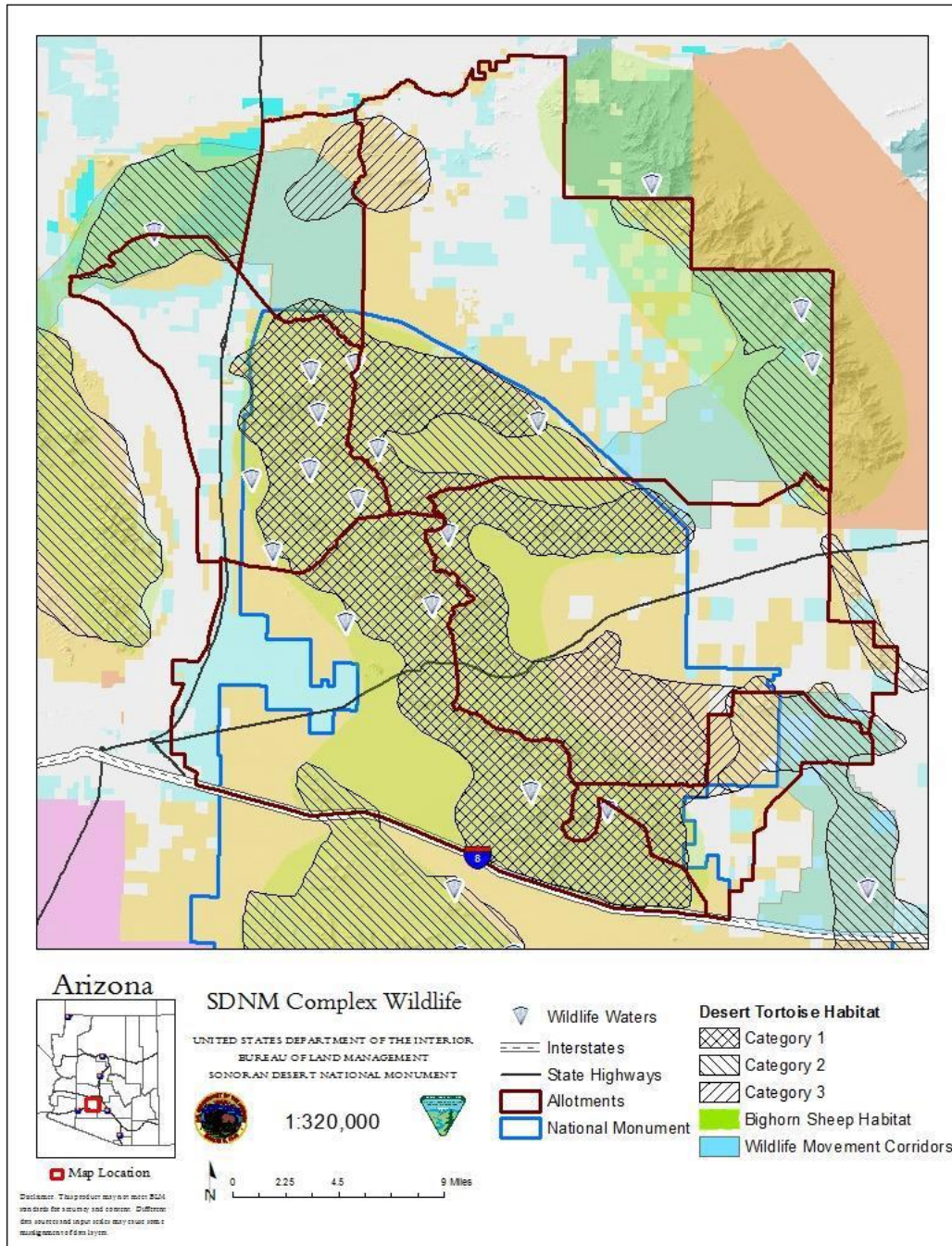


Figure 2. Location of Category I, II, and III tortoise habitats and wildlife movement corridors in the Arnold and Beloat Allotments and Sonoran Desert National Monument.

Remove Livestock Grazing from All Ecological Sites that Do Not Meet Standards for Rangeland Health. BLM eliminated this alternative because ecological sites and plant communities form a mosaic within pastures and the allotments. A specific ecological site within a specific pasture may have met grazing standards despite the overall ecological site type not meeting standards overall.

### **Comments on the Environmental Assessment**

Pages 10-11, Lower Sonoran RMP: BLM adopted the Lower Sonoran Resource Management Plan (RMP) (BLM 2012) in 2012. This is three years prior to the BLM signing the Candidate Conservation Agreement for the Sonoran Desert Tortoise (USFWS et al. 2015) (Agreement). In this Agreement BLM committed to managing for the tortoise at a landscape and local level and mitigating for impacts to the tortoise from BLM's actions. Because BLM has not revised/amended the 2012 RMP, there is no specific direction in this RMP for management of the tortoise that has it complying with the Candidate Conservation Agreement. Consequently, compliance with this RMP does not demonstrate that BLM is managing for the tortoise under the Agreement. BLM should describe and analyze in the Environmental Consequences section of the EA how its actions for grazing management are meeting or exceeding the commitments BLM made in the Agreement for the tortoise/tortoise populations/tortoise habitat. We strongly recommend that BLM revise this RMP to include objectives and actions that it will implement to achieve the commitment BLM made in the Agreement with respect to the tortoise/tortoise habitat.

Page 10: “GR-1: “Manage livestock grazing in the Lower Sonoran Decision Area to provide for multiple uses while maintaining healthy ecosystems.”

This objective may be in the RMP but BLM must also comply with the Federal Land Policy and Management Act (FLPMA) in its management of BLM lands that are not managed under other authorities. BLM frequently reports that it must manage lands for multiple use but does not include FLPMA's additional requirements for managing for sustained yield, environmental quality, and prevent undue or unnecessary degradation of the land. Please add these mandates and see our comment below under Pages 20 – 30 for additional information on these statutory requirements.

Page 11, Lower Sonoran RMP: “GR-1.1.7 “All existing water developments will be evaluated and modified, as necessary, to provide the maximum benefit and minimum impact to priority wildlife and special status species.” In the Proposed Action and Alternatives section of the Draft EA, we request that BLM describe these water developments and how they have been modified and maintained so they do not result in unintentional entrapment or drowning of tortoises.

Page 12, SDNM RMP: “GR-1.1.1. “All existing water developments will be evaluated, and modified as necessary, to provide the maximum benefit and minimum impact to priority wildlife and special status species.” In the Proposed Action and Alternatives section of the Draft EA, we request that BLM describe these water developments and how they have been modified and maintained so they do not result in unintentional entrapment or drowning of tortoises.

Page 14, Pages 20 – 56: BLM identified five resource issues to analyze in the Draft EA – land health, cultural resources, wildlife (including migratory birds and special status species), wildlife

movement in corridors, and local air quality. In Appendix 3, Affected Resources Checklist of the Draft EA, BLM identified Climate Change (Reasonably Foreseeable Related Effects on Communities) as an affected resource and indicated it was “Analyzed in Sections 3.3 and 4.5.” However, we were unable to find this analysis in the Draft EA.

Climate change/greenhouse gas emissions were not identified and analyzed in the EA. Livestock production is a major producer of greenhouse gas (GHG) emissions and a significant contributor to climate change (IPCC 1990, Dijkstra et al. 2011, McGregor et al. 2021). The livestock sector is responsible for 18% of global anthropogenic greenhouse gas emissions, with enteric CH<sub>4</sub> of livestock being 25% of the livestock related greenhouse gases (Dijkstra et al. 2011).

Kauffman et al. (2022) recently reported that livestock grazed on public lands “influence climate change in three profound ways: (1) they are significant sources of greenhouse gases through enteric fermentation and manure deposition; (2) they defoliate native plants, trample vegetation and soils, and accelerate the spread of exotic species resulting in a shift in landscape function from carbon sinks to sources of greenhouse gases; and (3) they exacerbate the effects of climate change on ecosystems by creating warmer and drier conditions.” Kauffman et al. (2022) calculated part of the social cost of livestock grazing and it far exceeded the grazing fees charged on public lands. They concluded that “[c]essation of grazing would decrease greenhouse gas emissions, improve soil and water resources, and would enhance/sustain native species biodiversity thus representing an important and cost-effective adaptive approach to climate change” (Kauffman et al. 2022).

Removing or reducing livestock across large areas of public land would alleviate a widely recognized and long-term stressor and make these lands less susceptible to the effects of climate change (Beschta et al. 2013). Where livestock use continues, or where significant densities of wild or feral ungulates occur, management should carefully document the ecological, social, and economic consequences (both costs and benefits) to better ensure management that minimizes ungulate impacts to plant and animal communities, soils, and water resources (Beschta et al. 2013).

We request that the EA analyze the effects of the grazing alternatives on climate change. This analysis should include: (1) effects to habitats within the allotment and adjacent areas affected by grazing that provide important habitat for the tortoise; (2) how the grazing alternatives would affect the spread and proliferation of nonnative invasive plant species, both existing and new; (3) how this spread/proliferation would affect the tortoise and its habitats (including its nutrition and the frequency, size, and intensity of fires); and (4) how the grazing alternatives may affect the likelihood of fires. We reiterate that if BLM uses science to form its decision, BLM would select the No Grazing alternative as the environmental and economic costs of grazing on public lands far outweigh the benefits to the human environment.

Page 15, Alternative A – No Action: “Under Alternative A, the No Action alternative, the Arnold and Beloat permits would be renewed for a 465 period of 10 years under the same terms and conditions as the existing permits (Table X and X).”

Editorial comment – for Table X and X, we believe the two Xs are placeholders for specific tables. Please provide the appropriate table identifier in this section of the EA.

Pages 20-30, Will the Proposed Grazing Management Pose a Risk To Land Health: Although this is one of five issues that BLM identified that should be answered in the Draft EA (page 7), we do not believe it is appropriate given BLM’s mandate under FLPMA and the Presidential Proclamation 7397 issued in 2001. FLPMA directs BLM to use and observe the principles of multiple use and *sustained yield* (emphasis) added. The term “sustained yield” means the achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the public lands consistent with multiple use.

In addition, under FLPMA BLM is required to “take any action necessary to prevent unnecessary or undue degradation of the lands.” Presidential Proclamation directs the land manager, currently BLM, to *protect* [emphasis added] the objects listed in the Proclamation. These objects include fauna – endangered Sonoran pronghorn, desert bighorn sheep, three species of bats, numerous species of nesting birds, and the Sonoran desert tortoise. These objects include flora – the “large saguaro cactus forest communities,” “palo verde/mixed cacti association,” “saguaro, palo-verde trees, ironwood, prickly pear, and cholla” along with other plant species. In addition, 25,000 acres of “critical habitat” for the Sonoran desert tortoise in the Maricopa Mountains are listed in the Proclamation along with the diversity of native wildlife and vegetation in the Monument and the biological, scientific, and historic resources. Thus, BLM’s issue should not be whether the proposed grazing alternatives pose a risk to land health, but whether the proposed grazing provides for sustained yield of renewable resources including the Sonoran desert tortoise, its habitat, and connectivity habitat; and prevents unnecessary or undue degradation of the lands. For the areas of the allotments in the SDNM the issue should be whether the proposed grazing protects the artifacts identified in the Presidential Proclamation that includes the tortoise, large saguaro cactus forest communities, palo verde/mixed cacti association, saguaros, palo-verde trees, ironwood, prickly pear, and cholla along with other plant species, and 25,000 acres of “critical habitat” for the Sonoran desert tortoise in the Maricopa Mountains. From figure 3 on page 9 of the EA, it appears that the southern part of the Beloit Allotment extends into the Maricopa Mountains.

For rangeland health standards, BLM listed three standards, two of which apply to upland sites and tortoise habitat (Table 2).

Table 2. Applicable Arizona Bureau of Land Management Rangeland Health Standards

Grazing Standard	Description
1- Upland Sites	Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate and landform (ecological site).
2- Riparian-Wetland Sites	Riparian-wetland areas are in proper functioning condition.
3- Desired Resource Conditions	Productive and diverse upland and riparian-wetland communities of native species exist and are maintained.

In this section of the Draft EA (pages 21 and 22) and in the SDNM EA (BLM 2024), BLM reported the 22,344-acre Arnold Allotment has three major ecological sites with four plots each. One of the three sites did not meet Grazing Standard 1 because hydrological function objectives. Grazing was determined to cause 12.5% of the Creosote – Bursage plant community to not achieve Grazing Standard 1. BLM reported that two of the three major ecological sites within the Arnold Allotment are achieving Standard 3. This conclusion is based on 3 of 4 plots at site 1, 0 of 4 plots at site 2, and 3 of 4 plots at site 3 achieving Standard 3. Thus, 6 of 12 plots in this Allotment did not meet



Standard 3. This conclusion is based on 3 of 4, 4 of 4, 3 of 4, 1 of 4, 3 of 4, 2 of 4, and 3 of 5 plots at these seven sites meeting standards.

For the 97,354 Beloat Allotment, five of the seven major ecological sites within the Beloat Allotment are achieving Standard 1 with 20 of the 29 plots achieving this standard. Grazing Standard 1 was not met on Sandy Loam Deep or Sandy Loam Upland ecological sites, the magnitude of the deviations from expected soil and hydrological function exceeded the objective, and the reason for that deviation was cattle grazing activity. When analyzed by plant community, cattle activity was the cause for 50% of the Palo Verde – Mix Cactus and 9% of Creosote Bursage plant communities not meeting this standard. Also not meeting this standard was 11% of Category I and 39% of Category II tortoise habitat that was attributed to livestock grazing. Five of the seven major ecological sites within the Beloat Allotment are achieving Standard 3.

For Grazing Standard 3, BLM reported that for the Arnold Allotment 62.5% of the Creosote – Bursage communities, did not meet objectives for Standard 3. Grazing was determined to be the cause of 25% of the community not meeting Standard 3; the remaining 37.5% was caused by recreational use or other causes. In ( the Palo Verde – Mixed Cactus community, 25% of the community was not achieving Standard 3 objectives, but the reason was not determined. For the Beloat Allotment, one of the seven ecological sites did not meet Standard 3 although BLM reported this site did not show evidence of cattle grazing.

In summary the Arnold Allotment has been under an ephemeral grazing authorization for the last 10 years. According to BLM the last time this allotment was grazed was in 2015. The Arnold Allotment did not meet Grazing Standard 1, and 6 of the 12 plots in this Allotment did not meet Grazing Standard 3. The Beloat Allotment has been under a perennial grazing authorization for the last 10 years with some of the pastures not grazed or lightly grazed because of drought (thus the full authorization of AUMs was not implemented, did not meet Grazing Standard 1 or 3, and some of this impact was attributed to grazing.

Using these results, the Council concludes that continuing to authorize ephemeral grazing in the Arnold Allotment (Alternatives A, B, and C) will result in the same of greater degradation indicated by the Land Health Evaluation to this allotment. Only Alternative D (No Grazing) would change the management of this allotment and likely achieve compliance with Land Health Standards over time.

Changing the authorization in the Beloat Allotment from perennial/ephemeral to reduced grazing (Alternative B) would likely validate (on paper) the reduced grazing the permittee has already been implementing (BLM 2024a, BLM 2025). Thus, Alternative B would likely result in little or no improvement to the Land Health Standards for this allotment especially in Palo Verde – Mixed Cactus vegetation that is slow growing (Bashan et al. 2009) and may take several years or longer to recover from grazing. Converting the grazing authorization to ephemeral grazing only (Alternative C), would likely result in a similar result as that of the Arnold Allotment, which has been under ephemeral grazing for at least a decade and last grazed in 2015. BLM concluded that the Beloat Allotment is not meeting Standard 1, and is not meeting Standard 3 for many of the plots (up to 49%), especially in Palo Verde – Mix Cactus vegetation. Thus, Alternative C would likely result in little or no improvement to the Land Health Evaluation standards for this allotment.

Consequently, if BLM is to manage the lands in these two allotments to meet Land Health Evaluation standards, and comply with FLPMA and the Presidential Proclamation, it should authorize no grazing in the Beloat Allotment.

Page 24, Standard 3: Desired Resource Conditions - Plant Community: “At the four sites where data were collected six of seven utilization assessments had key forage species utilization recorded below 30%, with the last below 32% (Table 11). This is within the realm of conservative grazing forage utilization that is determined to be sustainable for deserts (Holechek et al. 1999, 2006).”

The Holechek et al. (2006) journal article did not analyze studies on the effects of livestock grazing on Sonoran Desert vegetation. Of the 20 studies analyzed, most of the studies were in Northern mixed prairie, Southern mixed prairie, sagebrush grassland, and short-grass prairie. One was in the Mojave Desert and two were in the Chihuahuan Desert.

The Holechek et al. (1999) journal article reported on the Martin and Cable study for the 10 year study period (1957 - 1967) in the Santa Rita Experimental Range southeast of Tucson. The current climatic conditions differ from the time of the study and the elevations on the Experimental Range are from the 2,950- 4,757 ft (900-1450 m). Elevations in the Arnold Allotment area range from 900 ft. to 1,500 ft. and in the Beloat Allotment area from 1,100 ft. to 2,493 ft. (BLM 2024a). This cited research occurred at higher elevations and in earlier decades when precipitation amounts were greater; evaporation rates were lower and the impacts of invasive plant species, wildfires, and climate change were not as severe as they are today. These impacts have a high probability of increasing in severity in the future. The Allotments are located farther west from the summer monsoon storm events at the Santa Rita Experimental Range. Rainfall amounts from summer storms typically increase in amount on a west to east gradient. Thus, the Holechek et al. (1999 and 2006) journal articles cited by BLM occurred in a wetter and cooler climate and under different environmental conditions than the Arnold and Beloat Allotments. It is unlikely that the results of these studies can be applied directly to the Arnold and Beloat Allotments.

Page 25, Standard 3: Desired Resource Conditions - Plant Community: “Based on that, the entire ecological site is meeting standards. Data were also collected in Limy Fan sites (Table 12**Error! Reference source not found.**)”

Editorial comment – We suggest deleting the Error message.

Page 25-29, Environmental Impacts: From the SDNM EA (BLM 2024a) BLM provided the following information: – “Livestock grazing has not occurred on the SDNM portions of these allotments since 2015. On the Arnold (ephemeral) Allotment no grazing has occurred due to lack of available ephemeral forage in recent years and/or permittees voluntarily choosing to use other non-SDNM portions of the grazing allotments. Ephemeral grazing has not been authorized on any perennial/ephemeral allotments since 2005 when all SDNM allotments, excluding Hazen and Lower Vekol, were authorized for ephemeral increases. The only ephemeral grazing that has occurred on or near the SDNM was on the Arnold Allotment, an ephemeral only allotment. BLM authorized a total of 852 AUMs in 2014 and 2015.

We conclude that grazing has not occurred on the Arnold Allotment in the last several years (i.e., since 2015), yet it did not meet Land Health Evaluation standards. This suggests that vegetation in the Sonoran desert is slow to grow and recover (Bashan et al. 2009) from disturbance such as grazing, and that pausing grazing for several years does not allow sufficient time for vegetation and soils in allotments to achieve Land Health Evaluation standards.

Because the results of the Land Health Evaluation indicated that both allotments did not achieve grazing standards (and we note that for Standard 3, BLM sets a low bar by requiring that a majority – 51% or more of the plots in each ecological site to achieve this standard), please explain how BLM’s findings of not meeting grazing standards in both allotments, would support a decision by BLM to allow perennial or ephemeral grazing in these allotments at this time.

In the Draft EA (BLM 2024a), BLM states that, “according to the Presidential Proclamation, the remaining allotments north of I-8 “...shall be allowed to continue [to be grazed] only to the extent that the Bureau of Land Management determines that grazing is compatible with the paramount purpose of protecting the objects identified in this proclamation.”

BLM should clearly analyze with supporting information and citations from the scientific literature whether each alternative is compatible with the paramount purpose of protecting the objects identified in the Presidential Proclamation, including the tortoise.

BLM may choose to include this analysis under the issues “Does the Proposed Grazing Management Pose a Risk for Wildlife, Migratory Birds, BLM Sensitive Species, and Threatened and Endangered Species” (pages 31-49), “What Are the Past, Present, and Foreseeable Future Effects of The Proposed Alternatives on General Wildlife, BLM Sensitive Species, Threatened and Endangered Species, and Migratory Birds” (pages 65-66), and “What Are the Past, Present, and Foreseeable Future Effects of the Proposed Alternatives on Wildlife Movement Corridors” (pages 66-68).

Page 26, Alternative D No Grazing: “Removing cattle from an area with a long grazing history can increase invasive grass cover and reduce native grass cover (Porensky et al. 2020).” This information is presented here and other locations in the Draft EA. This may be true in the sagebrush grassland vegetation in Wyoming where the Porensky et al. (2009) study was conducted. However, areas grazed by livestock have higher densities of invasive annual plants than ungrazed areas in warm and hot desert vegetation communities in the southwestern U.S. (Webb and Stielstra 1979 for sheep grazing; Brooks 1995, 1999a, 2000c). At the Desert Tortoise Research Natural Area Berry et al. (2014) reported that grazing disturbs soils, thereby enhancing opportunities for non-native annual plants to thrive at the expense of the natives.

We could not find that BLM’s conclusions this section of the Draft EA were supported with appropriate citations from the scientific literature. Please add the supporting citations to the Final EA.

Missing from the Draft EA is information in and conclusions from the report by Hall et al. (2005) on “The Impacts of Livestock Grazing in the Sonoran Desert: A Literature Review and Synthesis.” To better inform decision-making, the BLM’s Phoenix Field Office contracted The Nature

Conservancy in Arizona to write this report that reviews of the scientific literature regarding the state of knowledge of: (1) the impacts of domestic livestock grazing (primarily cattle) on natural and cultural resources in desert ecosystems, with a focus on the Sonoran Desert; (2) the implications of different grazing management strategies; and (3) Sonoran Desert plant community dynamics. The report evaluates the literature relative to how livestock grazing in the Sonoran Desert impacts:

- composition, structure, and function of plant communities
- saguaro recruitment and survival
- other individual components of plant communities (such as rare plants)
- soils and biological soil crusts
- wildlife, including non-game species
- cultural sites

Hall et al. (2005) uses this information and the roles of climate, based in part on an analysis of local weather data, vegetation response, and range ecology theory to report findings and make recommendations to BLM regarding livestock grazing in the SDNM. Hall et al. (2005) concludes that “continuous grazing in which livestock are maintained within fenced allotments yearlong is not a feasible grazing management strategy on Sonoran Desert public lands.” Further, they state that in most of the Sonoran Desert, “only grazing in response to winter rains may be feasible.” We question why BLM brought forward for analysis Alternative B that has reduced but perennial yearlong continuous grazing when a report that BLM contracted states that this alternative is not feasible. Please explain this discrepancy in the Final EA.

BLM should revise its analysis for *reasonable* [emphasis added] alternatives (i.e., feasible alternatives). We suggest that BLM start with the information provided to BLM in Hall et al. (2005) and add all recent research conducted on the effects of livestock grazing on vegetation in the Sonoran Desert and other relevant research. The results of the research should be summarized in the Final EA including identifying assumptions and omissions made, and the impacts analyzed using the results of science-based, statistically robust research. BLM should ensure that it does not give the public the impression of using an *a posteriori* approach to the selection of alternatives and the analysis of the impacts of these alternatives.

Page 31, Does the Proposed Grazing Management Pose a Risk For Wildlife, Migratory Birds, BLM Sensitive Species, and Threatened and Endangered Species: The Council requests that BLM revise the issue so it complies with FLPMA and Presidential Proclamation 7397 and analyze in the Final EA how each of the alternatives would or would not meet these requirements including for the tortoise. The issue is not one of risk; it is one of protection of object identified in the Presidential Proclamation including the tortoise and its “critical habitat” in the SDNM, and sustained yield, environmental quality, and undue or unnecessary degradation to the tortoise and its habitat on the remaining lands managed by BLM for the allotments.

Page 40, Environmental Impacts, BLM Sensitive Species: BLM describes a few of the impacts that may occur to tortoises and their habitats from livestock grazing. Impacts not discussed include soil surface disturbance and the introduction and spread of non-native invasive plants that compete with native vegetation. Non-native invasive plants do not provide the nutritional quality needed by

tortoises for survival, reproduction, and growth (Drake et al. 2016). Livestock waters attract tortoise predators to and may result in increased predation pressure on tortoises in the area.

Regarding other impacts to the tortoise/tortoise habitat, in the SDNM EA (BLM 2024a), “the remaining two allotments (Arnold and Beloat), will be closed to grazing until the BLM first completes implementation-level NEPA analysis, on an allotment-by-allotment, or group of allotments, basis. Upon conclusion of implementation-level analysis, the BLM would proceed to authorize potential new range improvements and issue grazing permit(s) with terms and conditions . . .”

In this statement BLM indicates that authorizing range improvements may be part of the process when issuing grazing permits. If BLM authorizes grazing in the Arnold or Beloat Allotments, any construction, reconstruction, and/or maintenance activities in addition to grazing authorizations should comply with the following documents or their most recent versions:

- Arizona Game and Fish Department. 2010. Desert Tortoise Survey Guidelines for Environmental Consultants
- Arizona Game and Fish Department. 2014. Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects
- Arizona Interagency Desert Tortoise Team. 2008. Recommended Standard Mitigation Measures for Projects in Sonoran Desert Tortoise Habitat. June 2008
- U. S. Fish and Wildlife Service and Cooperating Agencies comprising the Arizona Interagency Desert Tortoise Team. 2015. Candidate Conservation Agreement for the Sonoran Desert Tortoise (*Gopherus morafkai*) in Arizona. Phoenix AZ.
- Bureau of Land Management. 2021. Instructional Memorandum on Mitigation (2021a), Mitigation Handbook (2021b), and Mitigation Manual (2021c)
- Bureau of Land Management 2022. Habitat Connectivity on Public Lands Instruction Memorandum 2023-005.
- Bureau of Land Management. 2024b. Special Status Species Management – Manual 6840. Washington, D.C. September 9, 2024.

Authorizing or implementing range improvements may result in additional impacts to the tortoise/tortoise habitat than those described presented in the Draft EA. For example, a range improvement may include the installation of a cattle guard or construction of a pipeline or livestock watering site. For this type of range improvement, we request that BLM would include requirements to avoid injury and mortality of the tortoise such as designing, constructing, and maintaining cattle guards so tortoises are not trapped in them when trying to cross them, ensuring that trenching for pipeline construction and maintenance is covered so tortoises and other small wildlife are not able to access the trench and become trapped, ensuring that pipes with exposed ends are covered to prevent tortoises and other small wildlife from entering them and using them for cover, and ensuring that watering sites are not accessible to tortoises such that they could become trapped or drown.

In addition, we remind BLM that the restoration, maintenance, and/or new construction of artificial watering sites in grazing allotments creates increased livestock densities near these watering sites and results in disturbance gradients called piospheres that extend several hundred meters from the watering sites (Brooks et al. 2006). Piospheres result in degradation to biological resources

including soils, vegetation, and wildlife. Brooks et al. (2006) reported that the absolute and proportional cover of non-native annual plants increased with proximity to these artificial watering sites, whereas cover and species richness of native annual plants decreased. Not all non-native plant species responded the same, with *Erodium cicutarium* and *Schismus* spp. increasing with proximity to watering sites. These data suggest that some non-native annual plant species thrive in areas with surface disturbance.

Cover and species richness of shrubs also decreased with increasing proximity to sources of water. Livestock prefer certain forbs, when they are available, and can rapidly deplete available favored food plants of the tortoise through trampling and foraging (Berry 1978, Webb and Stielstra 1978). The seedbank for native annuals and herbaceous perennials may also be reduced (Brooks 1995).

The Council requests that BLM revise the description of the alternatives to include the type, location, and number of improvements that would likely be authorized, and in the Environmental Consequences section of the Final EA, analyze their direct and indirect impacts to the objects that BLM is to protect within the SDNM portions of the Arnold and Beloit Allotments including the tortoise and its “critical habitat.” For the non-SDNM areas of the allotments, the Council requests that BLM analyze the direct and indirect impacts of these range improvements with respect to how they affect the sustained yield of biological resources, specifically the tortoise and tortoise habitat, including habitats for connectivity between populations, and how they would/would not result in unnecessary or undue degradation to these resources. In the analyses of impacts to tortoises/tortoise habitat (i.e., Environmental Consequences sections of the Final EA), please include supporting documentation from journal articles, and identify effective mitigation that BLM would implement/require to be implemented to avoid, minimize, reduce, rectify, and compensate for these direct and indirect impacts.

In addition, we found no analysis in the Draft EA of how BLM is implementing the commitments it made in the Candidate Conservation Agreement to the tortoise/tortoise habitat and effective mitigation for these impacts. As a signatory to this Agreement, BLM committed to implementing:

- (1) BLM Manual 6840 (BLM 2024) that establishes specific procedures for managing the Sonoran desert tortoise as it is a BLM sensitive species, with the goal of conserving the Sonoran desert tortoise and its habitat on BLM-managed lands in cooperation with other agencies;
- (2) landscape level conservation measures (e.g., identifying areas of potential conflict between agency mission and Sonoran desert tortoise habitat and identifying and reducing or otherwise mitigating dispersal barriers between Sonoran desert tortoise populations, etc.); and
- (3) local level conservation measures (e.g., considering the effects of actions on the Sonoran desert tortoise during the planning process, and avoiding or minimizing impacts, or implementing mitigation measures to offset impacts to tortoise populations and habitat where practical and feasible, avoid, where practicable, or otherwise minimize or mitigate adverse effects of actions that could result in isolation of known Sonoran desert tortoise populations and/or landscape-level fragmentation of Sonoran desert tortoise habitat, etc.).

These three measures may only be effectively implemented when BLM knows the status and trend of the tortoise populations on the lands it manages and where the direct and indirect impacts to the tortoise are occurring, especially at a landscape level, and thus affecting tortoise populations. The Council is concerned about projects and management decisions that contribute to degradation and loss of tortoise habitat (including habitat needed for connectivity among populations) (CEQ 2023, BLM 2022) from habitat fragmentation, activities that introduce and spread non-native plant species, wildfires, etc., which result in a reduction in tortoises. To conduct an accurate regional or cumulative effects analysis and comply with the Agreement, BLM would need to track these and other impacts to the tortoise at a local and landscape level using a geospatial tracking system for all management actions and projects that it authorizes, funds, or implements. Issued grazing permits and their impacts to the tortoise/tortoise habitats should be added to BLM's geospatial tracking system.

In the Agreement, BLM says, that through [its] Resource Management Plans (RMPs), BLM managers are directed to “[a]void, minimize or mitigate impacts associated with all BLM authorized activities including mineral material sales, rights-of-way, recreational use, travel management, and *livestock grazing* [emphasis added] through project design and modifications to allowable uses in order to achieve Sonoran desert tortoise management objectives” (USFWS et al. 2015). The RMP for the area that includes the Arnold and Beloat Allotments was finalized three years before the Agreement. We are unaware that BLM has revised the RMP to add the commitments in this Agreement. Thus, if there is a commitment to avoid, minimize, or mitigate impacts to the tortoise in RMPs but those RMPs have not been updated to include this commitment, there is no commitment. BLM should explain and analyze in the Final EA how it will mitigate (avoid, minimize, and/or compensate) the direct, indirect, and cumulative impacts associated with the alternatives at a local and landscape level to achieve Sonoran desert tortoise management objectives. BLM should also explain how it will comply with its Rangewide Plan (BLM 1988) and Compensation for the Desert Tortoise (Desert Tortoise MOG 1991) for this proposed action.

According to BLM, approximately 1,760 acres of Category I and 5,339 acres of Category III tortoise habitat are within the Arnold Allotment, and 19,625 acres of Category I, 35,667 acres of Category II, and 6,293 acres of Category III tortoise habitat within the Beloat Allotment. The goal of the BLM is to maintain stable and viable populations with no net loss of habitat in Category I and II areas and to limit population declines to the extent possible in Category III habitats by mitigating impacts. Loss includes habitat quality and/or quantity. BLM should demonstrate in the Final EA how the implementation of each alternative for the Arnold and Beloat Allotments would/would not achieve this goal.

BLM should not authorize grazing until it has conducted an analysis of (1) the quantity, quality, and diversity of native annual and perennial herbaceous vegetation that must be present to support and sustain tortoise populations, (2) whether this vegetation occurs in the allotment, and (3) whether authorizing up to 40 percent utilization of grazing ephemeral forage would adversely affect the tortoise population from surviving, reproducing, and growing. We found no citation in the Draft EA that concludes whether this level of grazing utilization would protect tortoises in the SDNM, result in sustained yield for the tortoise population, provide for environmental quality, and prevent undue or unnecessary degradation of the land including tortoise habitat.

From the alternatives and limited data presented in analysis section of the Draft EA, the Council opposes implementation of all alternatives except the No Grazing Alternative. There is abundant research in the scientific literature that describes and analyzes the adverse effects of grazing on soils, native vegetation, and wildlife including desert tortoises, and on the beneficial impacts of grazing to non-native vegetation. Please see “Appendix A: Summary of Impacts from Livestock Grazing to the Sonoran Desert Tortoise and Its Habitat” attached to this letter for a few of these references. Unfortunately, BLM has not included the results of these in the analyses of impacts to the tortoise, including all life stages of the tortoises in the Draft EA with respect to the tortoise/tortoise habitat. Furthermore, we found no citations to support how BLM determined that the utilization of perennial or ephemeral forage (up to 40 percent) would provide sufficient quantity and quality of nutritional forage for all size classes of the tortoise, including reproductive females, that have different nutritional and water balance requirements. We raise this concern because of BLM’s commitment in the Agreement to the tortoise and the directive in the Presidential Proclamation to protect the tortoise and its “critical habitat” in the SDNM, directives in FLPMA, and NEPA (to “Utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making”).

Page 60, What Are the Past, Present, and Foreseeable Future Effects of the Proposed Alternatives on Land Health: For the Reduced Grazing Alternative, BLM says, “Though long-term drought could increase the risk of plant mortality, the Reduced Grazing Alternative mitigates the risk by only grazing in years with normal or above normal precipitation in most of the two allotments.”

We reiterate our comments from above. The Beloat Allotment has been under a perennial grazing authorization for the last 10 years with some of the pastures not grazed or lightly grazed because of drought (thus the full authorization of AUMs was not implemented), did not meet Grazing Standard 1 or 3, and some of this non-attainment of the grazing standards was attributed to grazing.

Using these results, the Council concludes that continuing to authorize ephemeral grazing in the Arnold Allotment (Alternatives A, B, and C) will result in the same degradation indicated by the Land Health Evaluation to this allotment. Only Alternative D (No Grazing) would change the management of this allotment and likely over time bring it to achieving compliance with Land Health Standards.

Changing the authorization in the Beloat Allotment from perennial/ephemeral to reduced grazing (Alternative B) would likely validate (on paper) the reduced grazing the permittee has already been implementing (BLM 2024a, BLM 2025). Thus, Alternative B would likely result in little or no improvement to the Land Health Standards for this allotment especially in Palo Verde – Mixed Cactus vegetation that is slow growing (Bashan et al. 2009) and may take several years or longer to recover from grazing with no grazing occurring. Converting the grazing authorization to ephemeral grazing only (Alternative C), would likely result in a similar result as that of the Arnold Allotment, which that has been under ephemeral grazing authorization for at least a decade but was last grazed in 2015. BLM concluded that the Beloat Allotment is not meeting Standard 1 and is not meeting Standard 3 for many of the plots (up to 49%), especially in Palo Verde – Mix Cactus vegetation. Thus, implementing Alternative C would likely result in little or no improvement to the Land Health Evaluation standards, for this allotment. Consequently, if BLM is to manage the



lands in these two allotments to meet Land Health Evaluation standards and comply with FLPMA and the Presidential Proclamation, it should authorize no grazing in the Beloat Allotment.

While BLM's statement that the "Reduced Grazing Alternative mitigates the risk by only grazing in years with normal or above normal precipitation in most of the two allotments" this mitigation would be minimal at correcting the damage reported from the Land Health Evaluation and would take much longer to achieve the Land Health Evaluation standards than with a longer term pause in grazing.

Pages 65-66, What are the Past, Present, and Foreseeable Future Effects of the Proposed Alternatives on General Wildlife, BLM Sensitive Species, Threatened and Endangered Species, and Migratory Birds: We reiterate our comment on page 13 and 14 above on the Agreement and cumulative effects to the tortoise. In this section we were unable to find how these effects would impact the tortoise, its "critical habitat," palo verde/mixed cacti association, and other special status species that the Presidential Proclamation directs BLM to protect in its management of the SDNM. In addition, we were unable to find an analysis of how these effects would impact the tortoise with respect to its sustained yield and the environmental quality of tortoise habitat and would not result in undue or unnecessary degradation of the land including land that tortoises use for feeding, breeding, shelter, and movements. Please include these analyses in the Final EA with supporting citation from journal articles.

We appreciate this opportunity to provide the above comments and trust they will help protect tortoises during any resulting authorized activities. Herein, we reiterate that the Council wants to be identified as an Affected Interest for this and all other projects funded, authorized, or carried out by the BLM that may affect desert tortoises, and that any subsequent environmental documentation for this project is provided to us at the contact information listed above. Additionally, we ask that you notify the DTC at [eac@deserttortoise.org](mailto:eac@deserttortoise.org) of any proposed projects that BLM may authorize, fund, or carry out in the range of any species of desert tortoise in the southwestern United States (i.e., *Gopherus agassizii*, *G. morafkai*, *G. berlandieri*, *G. flavomarginatus*) so we may comment on it to ensure BLM fully considers and implements actions to conserve these tortoises as part of its directive to conserve biodiversity on lands managed by BLM.

Please respond in an email that you have received this comment letter so we can be sure our concerns have been registered with the appropriate personnel and office for this Project.

Respectfully,



Edward L. LaRue, Jr., M.S.

Desert Tortoise Council, Ecosystems Advisory Committee, Chairperson

Attachment: Appendix A: Summary of Impacts from Livestock Grazing to the Sonoran Desert Tortoise and Its Habitat

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Appendix A: Summary of Impacts from Livestock Grazing to the Sonoran Desert Tortoise and Its Habitat (from The Nature Conservancy. 2005. The impacts of livestock grazing in the Sonoran Desert: a Literature review and synthesis. February 2005.)

Where livestock and desert tortoise habitat overlap, livestock can cause direct impacts to juvenile and adult tortoises by trampling and crushing individuals (Grover and DeFalco 1995, Howland and Rorabaugh 2002). Indirect impacts of livestock grazing to desert tortoise are primarily due to potential competition for forage. The desert tortoise is a generalist feeder that has been documented to consume 199 species of plants associated with the Arizona Upland Subdivision of the Sonoran Desert (Van Devender and others 2002). The desert tortoise, however, is on the physiological edge of survival in the desert and must maintain optimal levels of blood hydration, salt, and mineral levels through its diet (Oftedal 2002) or run the risk of dehydration, starvation, or liver and kidney disease (Dickinson and others 2002).

Where livestock and tortoise overlap in habitat, competition for nutritionally important forage species can be a threat, particularly in the spring after high winter rainfall years (Oftedal 2002). Major forage species in the Sonoran Desert include native grasses, desert vine (*Janusia gracilis*), and mallows, including desert rose mallow (*Hibiscus coulteri*), globe mallow (*Sphaeralcea ambigua*), and Indian mallow (*Albutilon* sp.). Competition with livestock for forage has the potential to impact desert tortoise nutritional condition and water balance. Spring forage availability is associated with female reproduction and hatchling emergence. As a result, ephemeral grazing systems may be particularly detrimental to desert tortoise because their growth and reproduction depends on years of above average annual forage production (Medica et al. 1975). In the eastern portions of the Sonoran Desert and especially within the Arizona Upland Subdivision, warm season plants, including C4 grasses, may usurp the dietary importance of winter annuals (Oftedal 2002).

Non-native plants including filaree (*Erodium cicutarium*), Malta starthistle (*Centaruea melitensis*), Mediterranean grass (*Schismus barbatus*), red brome (*Bromus rubens*), Sahara mustard (*Brassica tournefortii*), and Russian thistle (*Salsola tragus*) have been documented as generally a minor part of the diet, with only red brome and filaree at times reported as a major component (Oftedal 2002, Van Devender et al. 2002). Although the nutrient value of some non-native plants that are used by desert tortoise are similar to native plants when compared within the same taxonomic groups and life forms, the presence of non-native plants that are invasive—and in particular alter fire regimes—may have an indirect effect on desert tortoise diet by causing a reduction in the abundance and richness of native forage plants (Van Devender et al. 2002 and references therein). Therefore, a concern exists that desert tortoise nutrition and long-term condition may be compromised with shifts in plant communities from predominantly native species to increased abundance of invasive non-native species. For example, the replacement of C4 grasses by annual non-native C3 grasses may impact the nutritional status of tortoises given the lower protein and potassium excretion potential content of C3 desert grasses and the associated rapid decline in such content due to rapid phenological maturation (Oftedal 2002). Livestock grazing has been implicated as a cause of the occurrence and spread of many invasive non-native species.

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