

Data Submitted (UTC 11): 9/6/2022 7:00:00 AM

First name: Sandy

Last name: Bahr

Organization: Sierra Club - Grand Canyon Chapter

Title: Director

Comments: September 6, 2022 Reviewing Officer, Southwest Regional Forester 333 Broadway Blvd.

SE Albuquerque, NM 87102 Submitted electronically via

CARA <https://cara.fs2c.usda.gov/Public/CommentInput?Project=51592> Re: OBJECTIONS to Tonto National

Forest Land Management Plan To the Reviewing Officer, Sierra Club - Grand Canyon Chapter, Western

Watersheds Project, Center for Biological Diversity, Arizona Mining Reform Coalition, WildEarth Guardians, and

Maricopa Audubon Society respectfully submit the following objections to the U.S. Forest Service concerning the

agency's Final Environmental Impact Statement ("FEIS") and Draft Record of Decision ("Draft ROD") for the

Tonto National Forest Land Management Plan ("Forest Plan"). See Project webpage:

<https://www.fs.usda.gov/main/tonto/landmanagement/planning>. The Forest Service states that the Forest Plan

"[hellip] guides the Tonto National Forest in fulfilling its stewardship responsibilities to best meet the current and

future needs of the people and communities we serve. This plan provides the vision, strategy, and constraints

that guide integrated resource management, provide for ecological sustainability, and contribute to social and

economic sustainability on the forest and within the broader landscape." The Responsible Official who will

approve the Record of Decision for the Tonto National Forest Plan Revision is Neil Bosworth, Forest Supervisor,

Tonto National Forest. The Responsible Official for the species of conservation concern is Michiko Martin,

Regional Forester. The Regional Forester is the Reviewing Officer for the revised plan and the Forest Supervisor

is the Responsible Official (36 CFR 219.56(e)(2)). The Chief of the Forest Service is the Reviewing Officer for the

species of conservation concern identification since the Regional Forester is the Responsible Official (36 CFR

219.56(e)(2)). Lead objector: Sandy Bahr Director Sierra Club - Grand Canyon Chapter 514 W Roosevelt

St. Phoenix, AZ 85003 sandy.bahr@sierraclub.org (602) 253-8633 or (602) 999-5790 This objection is submitted

on behalf of Sierra Club - Grand Canyon Chapter, Western Watersheds Project, Arizona Mining Reform

Coalition, Center for Biological Diversity, WildEarth Guardians, and Maricopa Audubon Society. The Sierra Club's

mission is "to explore, enjoy, and protect the wild places of the earth; to practice and promote the responsible use

of the earth's ecosystems and resources; and to educate and enlist humanity to protect and restore the quality of

the natural and human environments." Inspired by nature, the Sierra Club's more than 3.7 million members and

supporters work together to protect our communities and the planet. Sierra Club has regularly participated in

stakeholder meetings and various aspects of forest planning for the Tonto over the last decade and protection of

the region's forests and wildlife is a high priority for our membership in Arizona. Our members have a significant

interest in this proposal as we have been very involved in protection of Arizona's public lands and the wildlife that

depend on them. Western Watersheds Project (WWP) is a nonprofit organization dedicated to protecting and

restoring western watersheds and wildlife through education, public policy initiatives, and legal advocacy. With

over 15,000 members and supporters throughout the United States, including Arizona, WWP actively works to

protect and improve upland and riparian areas, water quality, fisheries, wildlife, and other natural resources and

ecological values. WWP's staff and members are concerned with the management of national forests and public

lands throughout Arizona, including the Tonto National Forest. We work throughout the West, advocating for

watersheds, wildlife, and ecological integrity. The ongoing plan revision process affects our interest in the health

and integrity of the terrestrial and riparian environments found in the Tonto National Forest. Our staff and

members regularly visit the Tonto National Forest and enjoy the outstanding wildlife, wilderness, and recreational

values the Forest provides. The Center for Biological Diversity is a national, nonprofit conservation organization

with more than 1.7 million members and online activists dedicated to the protection of endangered species and

wild places. The members and activists of the Center are concerned with the management of our federal public

lands, including our national forests, especially as that management relates to the recovery and viability of native

species and their habitats. The Center has fought for protection of wilderness, wild and scenic rivers, and wildlife

on the Tonto for decades. We will continue to use science, media, and legal strategies to advance the

preservation and restoration of this incredible National Forest. WildEarth Guardians (Guardians) is a nonprofit

conservation organization whose mission is to protect and restore wildlife, wild places, wild rivers, and the health

of the American West. Guardians has offices in six states, including Arizona, and has more than 196,000 members and supporting activists across the United States and the world. Guardians has an organizational interest in ensuring the Forest Service complies with all environmental laws during the Tonto Forest Plan revision process. Guardians has a demonstrated history of advocating for an ecologically and economically sustainable transportation system on the Tonto National Forest, and protecting at-risk species. Guardians continues to engage in the Tonto travel management planning process, and works to ensure the Forest Service conducts proper monitoring of Mexican spotted owl. Arizona Mining Reform Coalition works in Arizona to improve state and federal laws, rules, and regulations governing hard rock mining to protect communities and the environment. AMRC works to hold mining operations to the highest environmental and social standards to provide for the long term environmental, cultural, and economic health of Arizona. Members of the Coalition include: Apache - Stronghold, Center for Biological Diversity, Concerned Citizens and Retired Miners Coalition, Concerned Climbers of Arizona, Dagoon Conservation Alliance, EARTHWORKS, Empire Fagan Coalition, Environment Arizona, Groundwater Awareness League, Maricopa Audubon Society, Save the Scenic Santa Ritas, Grand Canyon Chapter of the Sierra Club, Sky Island Alliance, Spirit of the Mountain Runners, Tucson Audubon Society, and the Valley Unitarian Universalist Congregation. The Maricopa Audubon Society (MAS) is a nonprofit chapter of the National Audubon Society with over two thousand members. The Society has as its core mission the conservation and preservation of native species and their habitats. The Society has a long history of advocating for the conservation and sound ecological management of our public lands. Its members have participated in all phases of forest planning and have sought to protect riparian habitats on the Tonto National Forest and other forest lands which have been damaged by trespassing cattle and horses. Our organizations submitted timely comments on the Tonto National Forest Draft Forest Plan and Draft Environmental Impact Statement ("DEIS") on March 12, 2020 as part of "A Citizen's Coalition Comment Letter ("2020 Citizen's DEIS Comments") and as Western Watersheds Project's Comments ("WWP DEIS Comments"). Our organizations also submitted scoping comments for the DEIS on May 5, 2017 Tonto Plan Comments - Scoping [CBD et al] and on the proposed preliminary Tonto National Forest Land Management Plan and we commented on various aspects of the plan, including on the wilderness inventory and process, wild and scenic rivers, etc., and have been active participants in the Tonto National Forest planning process for more than a decade. We have organizational and member interests in the proper and lawful management of the national forests, as well as the associated impacts on wildlife and wild places. These interests are magnified in light of the growing biodiversity and climate crises. Attached to these objections are documents referenced directly in the objections.

INTRODUCTIONAs noted above, our organizations have been deeply engaged in the Tonto National Forest Land Management Plan revision process for years. A detailed list of our comments is included in the ("2020 Citizen's DEIS Comments attached). WWP also has been involved and submitted comments on the draft Forest Plan and their comments, WWP DEIS Comments, are also attached. Our organizations continue to have concerns about and our objections focus on grazing, especially in riparian areas; concerns over Forest Service unwillingness to enforce grazing permits and hold permittees accountable; lack of monitoring of riparian areas; concerns over motorized recreation; protection of recommended wilderness and eligible wild and scenic rivers; enforceable and firm standards and guidelines for grazing, species of conservation concern, and mining; protection of old growth forests and habitats for Mexican spotted owl; management of fire adapted ecosystems for fire based restoration, and minimal, strategic use of mechanical treatments; and identification and protection of culturally important areas. These key concerns continue to be minimized in the Final Forest Plan and FEIS. Standards are weak or lacking, grazing is given priority, wilderness recommendations are minimal, deserving rivers have been removed from the eligibility list for Wild and Scenic Rivers, and aggressive goals for process-based ecosystem restoration (especially for riparian areas) have not been offered. The Forest Plan fails to meet the requirements of the National Environmental Policy Act ("NEPA"), the National Forest Management Act ("NFMA"), the Endangered Species Act ("ESA"), and the Wild and Scenic Rivers Act ("WSRA"), among other laws and regulations. Our objections are based on the Forest Service's failure to meet these requirements.

OBJECTION POINTSForestwide Plan Direction

RECREATIONMotorized Recreation and Roads

Objection: The Forest Plan and FEIS fail to provide for, or consider and analyze, Forest Plan components that provide for an ecologically and economically sustainable forest road system, thereby failing to meet planning rule requirements (2020 Citizen DEIS Comments, page 182-201, Forest Plan, page 29-30). The best available science shows that the Tonto National

Forest's road system is economically and environmentally unsustainable. The 2012 planning rule establishes ecological sustainability as the overarching goal of planning, and directs that land management plans should provide people and communities with ecosystem services and multiple uses that provide a range of benefits - including recreational, educational, and spiritual - for the present and into the future.¹ To achieve this, the rule requires the Forest Service to provide for "sustainable recreation," which the rule defines as "the set of recreation settings and opportunities on the National Forest System that is ecologically, economically, and socially sustainable for present and future generations."² The planning rule also requires the plan to contain "plan components, including standards and guidelines, to provide for[s]ustainable recreation, including sustainable settings."³ The Forest Service clearly has an obligation to develop plan components guiding the management of recreation settings, opportunities, infrastructure, and access that enable the agency to achieve these substantive provisions. The Forest Service does not have a planning vehicle other than the Forest Plan to direct long- term and forestwide management of the road system and to ensure compliance with current policy and regulatory direction. Travel Management Plans ("TMP") under subpart B of 36 C.F.R. part 212 are not a substitute for the integrated direction for transportation management that land management plans must provide. The main purpose of TMPs is to designate roads, trails, and areas that are open to motorized travel - not to achieve a sustainable transportation system, decommission unneeded roads, or otherwise meet the ecological restoration mandates of the 2012 Planning Rule. The Tonto Travel Management Plan does not identify or authorize implementation of a forest road system that ensures the protection of national forest lands as required under Subpart A of the Travel Management Rule ("TMR"). The FEIS fails to analyze the specific impacts of roads on various resources: air quality, soils, watersheds and water resources, riparian areas and wetlands, at-risk species, habitat connectivity, wildlife and plant species, and species of conservation concern. In order for the Forest Service to meet its substantive duties under NEPA, it needs to conduct a much more robust analysis, including but not limited to sufficiently describing or disclosing: The condition of the road system beyond the departure from objective maintenance levels. The Forest Service needs to analyze the environmental consequences of these departures to specific forest resources; How system and unauthorized roads affect the character of inventoried roadless and recommended wilderness areas; The fiscal and ecological sustainability of the transportation system, including a description of how the transportation system interacts with the hydrologic system (number of stream/route crossings; proximity of roads to streams; spatial intersection of routes and erosive soils; spatial relationship of routes and water bodies with excessive sedimentation); The number, miles, and location of system and unauthorized roads that are in wildlife movement areas and possibly impeding wildlife movement; The number, miles and location of system and unauthorized roads that are proximal to streams with at-risk fish species, and the degree to which the road segments are impacting or threatening species' habitats; and How climate change may impact the road system and its effects on other resources.

Suggested Resolution: Revise the FEIS and Forest Plan to provide for, consider, and analyze, Forest Plan components that provide for an ecologically and economically sustainable forest road system that protects forest resources. The Forest Plan should explicitly incorporate all applicable regulatory requirements for the forest's transportation system, including Subpart A of the Travel Management Rule. Enforceable plan components for roads should ensure that the Tonto National Forest will achieve compliance with these requirements over the life of the plan. The FEIS should identify current road densities in the Tonto National Forest and explain how the alternatives would impact road density. The Forest Plan should incorporate road density thresholds at a level that would protect and maintain ecological integrity and facilitate connectivity for at-risk species.

RANGELANDS, FORAGE, AND GRAZING

Objection: The Forest Service fails to set clearly defined goals and metrics in order to protect natural resources from grazing impacts into the next decade on the Tonto National Forest. Management prescriptions in the 2022 Forest Plan for Rangelands, Forage, and Grazing, at pages 42-43, are largely unchanged from what was offered in the Draft Forest Plan of 2019. Of the 27 listed Desired Conditions, Objectives, Standards, Guidelines, and Management Approaches for Rangelands Forage and Grazing, 19 are the same as in the Draft Plan, 7 are new (there is now one Standard) and 1 had minor word changes. Most of the changes seem to promote public lands ranching; none offer specific metrics and goals to help deal with the challenges of continuing drought and increasing fire on the landscape in the Southwest. Our previous comments dealt at length with the Forest Service's inadequate grazing management prescriptions for its Draft Forest Plan (2020 Citizen's DEIS Comments, pages 43- 71). Our comments pointed out that the 1985 Forest Plan contained specific metrics

and goals, such as reducing permitted cattle numbers from about 35,000 to 23,000, 30 grazing allotment inspections and 9 production/utilization surveys annually, capacity evaluations every 5 years, etc. In addition, grazing on riparian area woody species was limited to 20% per year annual growth, overstory vegetation was to be enhanced to 80% and cottonwood-willow restoration had a 20-year plan where 50% moved to the highest structural type. The 2019 Draft Forest Plan amazingly called for 50% utilization of woody and herbaceous species in riparian areas, yet the new Forest Plan has almost no metrics or clearly defined goals. Its sole focus seems centered on the subject of vacant allotments and is the one instance in which timelines and goals are mentioned. Somehow, the matter of eight vacant allotments out of 106 has become elevated to priority status with an Objective of evaluating one allotment every two years to determine options for creating a forage reserve, finding a new permittee, or closure. Other Plan components related to grazing, such as Riparian Ecological Response Units ("RERU"); Watersheds and Water Resources; and Riparian Areas, Seeps, Spring, Wetlands, and Riparian Management Zones also remain largely unchanged from the Draft Plan. All 22 of the management prescriptions to RERUs remain the same, and of the 42 prescriptions for Watershed and Water Resources all are basically the same with the welcome addition of Guideline 14, which calls for managing groundwater and surface water as one hydrologically connected system. The Riparian Areas, Seeps, Spring, Wetlands, and RMZs section contains 27 prescriptions, 24 being the same as the Draft. Mysteriously and without justification, use of the Tonto Stream Assessment Method tool for monitoring riparian areas has been discontinued in favor of weaker Bureau of Land Management monitoring methods. Thankfully missing from Management Approaches is the recommended 50% utilization of current year's growth on riparian woody/browse species and on herbaceous vegetation. What utilization limits the Forest will now employ is unclear as we now see no such metric in the 2022 Forest Plan. Notably, Objective RMZ-0-01 contains what is likely the only real metric, calling for restoration efforts on 125 miles of streams every 10 years, but is clearly inadequate. An example of livestock grazing as a focal issue affecting riparian and watershed management goals in the planning process is a recent scoping letter sent out by the Tonto National Forest asking for comments on a proposed corral in lower Pinto Creek near the community of Roosevelt. The corral would be located about 100 feet west of the stream in the Blevins pasture of the Poison Springs Allotment. This allotment was reopened to grazing in 2017 after many years of nonuse due to severe overgrazing. According to the Annual Operation Instructions, 125 cows will use Blevins pasture for 3 months in the non-growing season and while we hope efforts will be made to encourage cattle to stay out of the riparian areas, it is reasonable to assume Pinto Creek is going to see grazing impacts, especially with a new corral. The situation is not much better upstream on the Pinto Valley Grazing Allotment where new water infrastructure is proposed to ostensibly help keep cows out of the creek but the troughs will be located just outside the riparian pasture fence. Cows will likely still see the trees and push the fence and find their way into the shade of the creek. It is difficult to see the logic of coming up with 91 different management prescriptions to protect riparian areas, watersheds, seeps, springs, etc. and at the same time reintroducing cows and building livestock infrastructure in and near those same areas. Suggested Resolution: The Forest Plan must be amended to include additional goals and metrics to achieve actionable results on a timely basis. A Citizen's Coalition Comment Letter on the Draft Forest Plan contains several suggestions that unfortunately were overlooked by the Forest Service. We also strongly urge a new management prescription to prohibit all livestock facilities in riparian areas. NEPA violations related to livestock grazing. The Forest is violating NEPA, 42 U.S.C. [sect]4321 et seq. and its implementing regulations, 40 C.F.R. [sect]1500 et seq., by issuing grazing permits and making important grazing management decisions on allotments throughout the Forest without compliance with NEPA's environmental analysis or public participation requirements and by deferring all site-specific analysis to some to-be-completed-but-aspirational revision of the Forest's outdated Allotment Management Plans (WWP 2020 DEIS Comments, page 3-4). Suitability and capability for livestock grazing remain unaddressed in this Forest Plan, and this oversight must be corrected. The Forest Service's assertion that suitability and capability are beyond the scope of the analysis for this Forest Plan (and therefore "are not being considered") is incorrect (2022 Forest Plan, Vol. 3, page 160). While the rule may not require this analysis, the Forest Service knows that capability and suitability determinations will not be made at a project or allotment level, and even if this was done on an allotment-by-allotment basis the Forest Service would then never analyze the cumulative impacts of livestock grazing on a forest-wide, or even a watershed, scale. Objection: The Forest Plan analysis of grazing impacts is indefinitely deferred. We object to the direction to continue to defer actual analysis of the impacts of authorizing

livestock grazing, the dominant land use of the Tonto National Forest. The Forest Service has illegally deferred the analysis of livestock grazing throughout the Forest: "Allotments are analyzed on a site-specific basis" (page 160) "New range improvements would be evaluated and approved at the site-specific project level" (page 161) "Allotment management is handled in project level planning and analysis" (page 162) "Vacant allotments will be evaluated on a site-specific basis" (page 162) "Planning components provide direction to complete at least one evaluation every 2 years" Where feasible, multiple allotments may be considered at once." (page 162) "Nothing precludes us from evaluating more allotments when possible but this objective makes it a priority to work on at least that many." (page 162) The Forest Service has also failed to use the best available science (addressed more fully elsewhere in these comments). We pointed out these violations in our prior comments (2020 WWP DEIS comments at page 4; 2020 Citizen's DEIS Comments, page 20) and these problems were not remedied by the revision of the EIS. Not only were these violations not remedied by the revision process, but rather they were exacerbated by the clear direction to continue to defer actual analysis on grazing permits by refusing to identify any lands as suitable or unsuitable for livestock grazing as part of the Plan revision process and the Forest Service's decision to highlight the historical use of the Forest for livestock grazing while largely ignoring the devastating impacts that historical grazing has had on the land and the unfeasible economics related to the livestock grazing industry. By focusing on the romantic notion of ranching families as a lifestyle choice and incorrectly describing the livestock grazing producers as traditional communities (livestock producers are industries, they are not communities), the Forest Service has inaccurately described the situation and the issue. The Forest Service acknowledges that this commercial activity is not economically viable - contributing just 530 jobs, and \$8.58 million annually in labor income (2022 Forest Plan FEIS Vol. 1, pages 203-204), but failed to disclose the costs of administering and managing livestock grazing permits. This leaves the economic impacts analysis of livestock grazing authorizations incomplete. Unfortunately, the FEIS is the perfect example of the NEPA shell game whereby analysis is deferred from the larger planning document to a yet-to-be-conducted site-specific analysis that will then refer back to the larger planning document as evidence that an analysis has already been conducted and therefore will not be conducted at the site-specific or project level. Clearly, the agency has no intention of actually completing the site-specific analysis and continues to permit the underlying activity in the meantime. This is evidenced by the lack of any plan to analyze the land health of all allotments, while including a plan to analyze vacant allotments. Vacant allotment analysis is prioritized with analysis of these allotments scheduled for "at least one allotment every 2 years." For the remaining ~100 allotments that are currently grazed, there is no plan or schedule for evaluating land health. If the same plan - one allotment every two years - were applied to open allotments, it could be more than 200 years before the Forest Service has analyzed the impacts of grazing forest-wide. We realize that the Forest Service could perhaps group allotments together for analysis, and if we generously say that 10 allotments will be evaluated every 2 years, this means that more than two decades will pass before all of the allotments are even considered for evaluation. This is a clear violation of law and must be remedied before a final decision is implemented. The problems with deferring any action to site-specific analysis are manifold given the tremendous impact livestock grazing has had on the ecological conditions of the Tonto National Forest. The decades-old reduction in capacity, capability, and suitability as a result of long-term drought, climate impacts, and housing and industrial development in the surrounding communities is not reflected in the analysis or pending decision to continue to allow an excessive number of livestock to be permitted on the forest. Instead of attempting to manage grazing in sensitive areas, the Forest Service should be prohibiting grazing on sensitive areas at the Forest Plan level. This failure to recognize and analyze a reduction in capacity by analyzing an alternative that would have reduced or eliminated livestock grazing forest-wide is also a failure to analyze a range of reasonable alternatives as mandated by NEPA. Suggested Resolution: This deficiency must be corrected by amending the Forest Plan to prohibit grazing in sensitive areas, including all riparian areas. An analysis of grazing capability and suitability must be conducted and disclosed. Objection: The Forest Service has failed to adequately address trespass livestock. The Forest Service continues to ignore the issue of trespass livestock. In our prior comments we provided the government's own documentation of the inability of the Forest Service (and other land managers) to ensure livestock remain where they are authorized to be (2020 WWP DEIS Comments, page 3-5). We asked the Forest Service to disclose the level of unauthorized grazing that has occurred throughout the forest over the past 10 years, including incidents that were handled "informally," and including willful and non-willful incidents. The cumulative

impact of unauthorized livestock grazing was undisclosed in the DEIS and remains undisclosed in the FEIS. The Forest Service's response to our concerns was to state that it "should" notify owners promptly when unauthorized livestock are found and ask that they be removed, or if the owner is unknown or uncooperative, initiate impoundment procedures (2022 Forest Plan FEIS Vol. 3, page 159). There is no information as to how much trespass or unauthorized use occurs on the Tonto National Forest, despite our specific request for this information. While we realize non-compliance is not something the plan revision can address directly, it is something the Forest Service must accurately disclose and consider in its analysis and assumptions used for the analysis. Here, we have an acknowledgment that trespass or unauthorized livestock are a well-known problem on Forest Service managed lands, a request that information and documentation related to trespass be included in the analysis, and a refusal by the Forest Service to provide or consider this information. Therefore the Forest Service cannot rely upon this FEIS as it relates to livestock grazing management because an important aspect of livestock grazing (ubiquitous trespass) was not considered. Suggested Resolution: This deficiency and incorrect assumption must be corrected by revising the FEIS to address the impacts of trespass cattle. Objection: The Forest Service has failed to analyze a range of reasonable alternatives for managing livestock grazing. The analysis of alternatives under NEPA is the "heart" of an environmental impact statement.⁵ The Forest Service must "[r]igorously explore and objectively evaluate all reasonable alternatives" to a proposed action.⁶ "Without substantive, comparative environmental impact information regarding other possible courses of action, the ability of an EIS to inform agency deliberation and facilitate public involvement would be greatly degraded."⁷ Consistent with NEPA's basic policy objective to protect the environment, this includes more environmentally protective alternatives.⁸ An agency risks a finding that it has violated NEPA if it considers only the no action alternative and its primary, preferred alternatives, and ignores action alternatives suggested in public comments.⁹ Put simply, "[t]he existence of a viable but unexamined alternative renders an [analysis] inadequate."¹⁰ Here, the Forest Service claims that analyzing an alternative that would eliminate livestock grazing from the entire forest "would not meet legal direction that forests will be managed using multiple use and sustained yield principles" and that "[t]his alternative would not allow the attainment of the desired condition for livestock grazing to contribute to the long-term socioeconomic diversity, stability, and cultural identity of local communities." (2022 Forest Plan ROD 2022, page 32). The refusal to consider our recommended "no grazing" alternative belies the Forest Service's predetermined outcome that livestock grazing should be authorized forest-wide and that the desired conditions were also already determined. However, the Forest Plan process is where the desired conditions are determined and, therefore, identifying a no-grazing alternative cannot be contrary to desired conditions that are not yet decided upon. Furthermore, the Forest Service has mistakenly identified livestock grazing and the associated cowboy culture as the only source of long-term socioeconomic diversity, stability, and cultural identity of local communities. The failure to analyze a no-grazing alternative has resulted in a failure to accurately identify the impacts of livestock grazing throughout the forest, including the long-term impairment of forest resources, increased fire risk, loss of watershed health, and increases in non-native invasive species and displacement of native wildlife, including harm to threatened and endangered species, which reduces the diversity of plant and animal communities forest-wide. Livestock grazing is the one use of the forest that dominates the landscape forest-wide, often displacing other uses and users, reducing the multiple use capacity of the entire forest. The Forest Service's plan to continue to authorize 11,000 to 25,000 head of livestock and more than 170,000¹¹ animal unit months ("aum") to just 85 grazing permittees (on 106 allotments and one sheep driveway) to graze the entire forest year-round and its refusal to consider a no-grazing alternative fails to recognize the primary purpose of the creation of the Tonto National Forest, which is to provide water for the surrounding communities (2022 Forest Plan FEIS Vol. 1, pages 144, 422; Vol. 2, page 69). This ubiquitous grazing will cause long-term, and possibly irreparable harm to the watersheds upon which millions of people rely. The Forest Service has failed to explain how allowing 85 permittees to displace wildlife, native plants, and millions of other forest users is compliant with its multiple use mandate. As yet another example of the lack of a range of alternatives, there is no difference in the estimated number of jobs or labor income attributed to livestock grazing across the alternatives (2022 Forest Plan FEIS Vol. 1, pages 203-204). There is "no variation in animal unit months[hellip]across alternatives[hellip]" (2022 Forest Plan FEIS Vol. 1, page 206). There is also evidence in a failure to conduct a thorough analysis - the Forest Service looked at jobs and labor income generated, but not at the costs associated with managing those grazing allotments. The Forest Service's focus

on the custom and culture of livestock grazing in local communities and the need to "support a way of life" by authorizing livestock grazing so widely is not within the responsibilities identified in the 2012 Forest Planning rule. The failure to analyze a range of alternatives that included an alternative excluding livestock grazing resulted in a skewed analysis wherein the Forest Service could not identify areas of the forest that might return to, or move towards, the desired ecological response from which they are severely departed, especially for frequent fire ecological response units, which are the most highly departed and which livestock grazing has significant impacts on. Suggested Resolution: Withdraw the ROD, FEIS, and Forest Plan, and take a step back to provide a robust NEPA process that includes full consideration and analysis of a "no-grazing" alternative. Objection: The Forest Service failed to analyze an alternative that would allow for Voluntary Permanent Retirement of livestock grazing. In our prior comments we asked the Forest Service to consider an alternative that would authorize the permanent retirement of grazing allotments that are voluntarily waived by the permittee (WWP 2020 DEIS Comments, page 7; 2020 Citizen's DEIS Comments, page 69). The Forest Service has not adequately responded to our comments on this topic and simply states that the Forest is managed under the Multiple Use and Sustained Yield Act, which authorizes grazing, and that Forest Service policy does not support voluntary permit retirement (2022 Forest Plan FEIS Vol. 3, page 24, 104, 178, 184). We therefore reiterate, the Forest Plan must allow permits to be waived back to the agency for permanent resource protection. The option of permanent voluntary retirement of permits and associated grazing privileges represents an equitable solution to wildlife conflicts with agricultural operations on public lands. It provides security to livestock producers facing declining economic returns, increasing price instability, a shrinking available workforce, and other challenges, and allows the Forest Service to redesignate lands to other uses, including wildlife habitat, recreation, and hunting. The permit waiver system represents the increasing public interest in maintaining natural systems and restoring native species, and allows land managers to facilitate the win-win resolution of grazing conflicts that impact not only native species, but also water quality and the recreational experience of users. Allotments already vacated for resource protection, either through Forest Service actions or through the voluntary relinquishment of grazing preference, must be closed. The assertion that there is no legal alternative to grazing public land is false. It is disturbing and frankly deeply chilling to see a public agency that is formally tasked with managing public resources belonging to and intended for the benefit of all of the people in the United States so completely captured and directed by a single, industrial use of publicly owned resources. There is ample legal precedent for permanent retirement of industrial grazing on some public land areas through NEPA analysis (reflecting the will of the public owners of the land) and any number of other administrative policy and regulation applications on many public lands. Examples of where livestock can be excluded or retirement may be applicable include, but are not limited to: designation of administrative areas, recreational areas, where mining may and may not occur, archaeological areas, bighorn sheep habitat, and protection for species listed under the ESA. Suggested Resolution: We again request the Forest Service consider an alternative that would authorize the permanent retirement of grazing allotments that are voluntarily waived by the permittee. The Forest Plan should allow permits to be waived back to the agency for permanent resource protection. The option of permanent voluntary retirement of permits and associated grazing privileges represents an equitable solution to wildlife conflicts with agricultural operations on public lands. It provides security to livestock producers facing declining economic returns, increasing price instability, a shrinking available workforce, and other challenges, and allows the Forest Service to redesignate lands to other uses, including wildlife habitat, recreation, and hunting. The permit waiver system represents the increasing public interest in maintaining natural systems and restoring native species, and allows land managers to facilitate the win-win resolution of grazing conflicts which impact not only native species, but also water quality and the recreational experience of users. Allotments already vacated for resource protection, either through Forest Service actions or through the voluntary relinquishment of grazing preference, must be closed. Objection: Information provided to the public was inadequate: there are no grazing allotment lists or maps. The DEIS, FEIS, and Forest Plan do not include any lists or maps of the grazing allotments. This information should have been provided during the comment periods and we asked for this information in our prior comments (2018 WWP Comments, page 3). Failure to provide lists or maps of grazing allotments prevents the public from having a clear understanding of how widespread livestock grazing is on the Tonto National Forest, and how great the impacts of livestock grazing are on their recreational experiences. Suggested Resolution: Withdraw the ROD, FEIS, and Forest Plan, take a step back, and conduct a NEPA process that provides all the

information needed for adequate public review and comment. Objection: The Forest Service failed to use the best available science, which was provided in the 2020 Citizen's DEIS comments. We can find no evidence that the Forest Service considered the extensive information and scientific literature specific to the impacts of livestock grazing and management practices provided in the 2020 Citizen's DEIS Comments at pages 45-51. See also WWP 2018 Comments, page 2; WWP 2020 DEIS Comments, pages 2-3. As just one example, the Forest Service has not even included any reference to its own review and assessment of livestock grazing impacts on terrestrial wildlife in Region 3, which we provided in our prior comments as an attachment, and asked the Forest Service to incorporate into the analysis for Forest Plan Revision.¹² We specifically asked the Forest Service to include the best available science we provided and to analyze the synergistic effects of livestock grazing coupled with other stressors (2020 Citizen's DEIS Comments, page 58). The Forest Service has refused to do so, in violation of the requirements of NEPA and Forest Planning Regulations. Suggested Resolution: Withdraw the ROD, FEIS, and Forest Plan, take a step back and incorporate the best available science and other information provided by the public, and issue a new decision, FEIS, and Forest Plan that reflects the incorporation of the best available science and an analysis of the synergistic effects of livestock grazing forest-wide.

Objection: The Forest Plan and ROD perpetuate the myth of "sustainable livestock grazing," which is not based on the best available science. The Forest Service should acknowledge that there is no way to conduct a sustainable and commercially viable livestock grazing operation in the arid Southwest and to remove all references to "sustainable livestock grazing" in the Forest Plan. As we noted in our prior comments (at pages 2-3), public lands grazing operates at a profound financial public deficit (economically unsustainable), has converted and degraded entire landscapes (ecologically unsustainable), converts thousands of gallons of potable water into sewage every year (hydrologically unsustainable), produces greenhouse gasses at levels that exceed other forms of agriculture (climatically unsustainable), and results in a product that is demonstrably adverse to human health when ingested frequently or in high amounts (nutritionally unsustainable).

Additionally, the reliance on removing top predators from the landscape as a way of making it safe for untended livestock is highly impactful on native wildlife species such as the Mexican gray wolf, coyote, cougar, and black bear. The Forest Service did not adequately respond to our concerns regarding this mis-statement of fact. The analysis of grazing in the FEIS discusses the history of livestock grazing in the Tonto National Forest, but fails to acknowledge the long-lasting negative impacts livestock grazing has had on the forest and appears to attribute any ill-effects of livestock grazing to long-past unregulated grazing. There is no discussion of how recent and "well-managed" livestock grazing has contributed to and continues to exacerbate altered fire regimes, invasive species, loss of species diversity, and degraded watersheds. The Forest Plan states that "[s]ustainable and productive rangelands are one of the key ecosystem services on the Tonto National." (2022 Forest Plan at 41). This is completely incorrect and this statement must be corrected to state that "livestock grazing permittees utilize the ecosystem services of the Tonto National Forest at a greatly reduced cost compared to those same services found on privately owned and managed lands and grazing on arid lands in the Southwest is unsustainable." Suggested Resolution: To address this significant concern, the Forest Service must apply the best available scientific information, 36 C.F.R. [sect] 219.3, to determine which areas of the Tonto National Forest are suitable for livestock grazing, and which are not, and then determine the reality of "sustainable" livestock grazing. 36 C.F.R. [sect] 219.7(e)(1)(v).

Objection: The public has not had an opportunity to review and comment upon newly added and controversial grazing provisions. At least two significant changes were made to the Forest Plan Guidelines and Management Approaches without any opportunity for public review and comment, in violation of NEPA. The addition of Guideline GRZ-G 09 "A stock and monitor approach¹³ incorporating best available science should be used when evaluating stocking rates in grazing decisions[]" was added (2022 Forest Plan at 43). This approach seems similar to an outcome based grazing model, which has not been disclosed, analyzed, nor discussed in the draft Forest Plan or DEIS. The public must be provided an opportunity to review and comment upon this significant change. Similarly, "targeted grazing" was not included in the draft Forest Plan or DEIS, yet appears in the final Forest Plan as a "possible future management action" related to Rangelands, Forage, and Grazing (number 11), for treatment of invasive species of plants (number 14), and as a Management Approach (2022 Forest Plan at 43, 204, and 212). Targeted grazing is scientifically controversial, inappropriate for use in arid ecosystems, and the public was not provided an opportunity to review and comment upon this significant change. Nor did the Forest Service analyze the impacts of this proposed

grazing regime.

We can find no references to, or analysis of, targeted grazing in the DEIS or the FEIS, yet it appears as a Management Approach in two separate areas of the Forest Plan, one of which is outside the "possible future management action" section and is therefore likely to be implemented as part of the Forest Plan without any analysis or public review. Suggested Resolution: Revise the Forest Plan and FEIS to strike all "targeted grazing" Management Approaches. Additional Objections related to Livestock Grazing Objection: The Forest Service cannot rely upon monitoring to justify forest-wide livestock grazing authorizations. The Forest Service relies heavily upon monitoring to justify its authorization of forest-wide livestock grazing and to prop up the premise that grazing is "well-managed" on the Tonto National Forest. However, the monitoring program includes just 57 of the 106 allotments and those allotments cover just 1.48 million acres of the more than 2.8 million acres of land managed by the forest (Forest Plan FEIS Vol. 2 at 69). The Forest Service conducted a "coarse review" of just 265 monitoring reports collected since 2001 (just a portion of the reports covering less than half of the allotments on the forest) and found that "most" monitoring sites were stable or trending upward "for the time monitored." (Forest Plan FEIS Vol. 2 at 69). Suggested Resolution: The decision must be withdrawn and the Forest Service must conduct a reality-based analysis of the impacts of livestock grazing. Objection: The Forest Service failed to include a Forest Plan Standard for livestock grazing utilization limits. We noted in our prior comments that the Tonto National Forest has many Ecological Response Units ("ERUs") that are functioning poorly and are not achieving desired conditions due to livestock grazing combined with drought (2020 Citizen's DEIS Comments, page 59). We asked the Forest Service to include a Forest Plan Standard that limits utilization (Id). Suggested Resolution: Include a Forest Plan Standard that limits utilization for livestock grazing. Objection: The Forest Plan failed to incorporate our recommendations specific to Desired Conditions GRZ-DC, GRZ-O, GRZ-G. In our prior comments we asked the Forest Service to remove references to "sustainable" livestock grazing and we provided rationale for this change (2020 Citizen's DEIS Comments, pages 66-67; 2020 WWP DEIS Comments, pages 2, 12-15). We made specific recommendations for the grazing Desired Conditions (GRZ-DC), Objectives (GRZ-O) and Guidelines (GRZ-G) as well (2020 Citizen's DEIS Comments, page 67-70; 2020 WWP DEIS Comments, page 12-15). The Forest Service has ignored these recommendations and has not provided adequate rationale for rejecting our suggestions. As one example of a specific recommended change we made that the Forest Service arbitrarily and capriciously ignored, please consider our recommendations to install wildlife escape ramps in all troughs and open tanks (2020 Citizen's DEIS Comments, page 67; 2020 WWP DEIS Comments, page 13). The Forest Service response to our comments states that "[a]dding or removing individual range improvements such as fences or water troughs are handled on a project level basis and undergo environmental analysis in compliance with" NEPA and other regulations (2022 Forest Plan FEIS Appendix A, page 159). This not only ignores our specific concern about adding ramps to existing troughs, it also ignores the fact that the Draft Forest Plan itself included a provision to add range infrastructure (escape ramps) on a specific time frame. Clearly, our requests are not "outside the scope" and should have been considered. To add further confusion, the Forest Service now says that escape ramps in stock tanks and troughs were installed years ago and that the issue is maintenance so they are always in functional condition (Forest Plan FEIS Vol. 3 p. 185). If that is indeed the case, we suggest that Guideline (GRZ-G) 04 be changed to read "Wildlife escape ramps be maintained in functional condition in all livestock water troughs and open storage tanks." Suggested Resolution: Incorporate the specific recommendations for GRZ-DC, GRZ-O, GRZ-G, and remove all references to "sustainable" livestock grazing, management, and operations. Objection: The Forest Plan failed to include Management Approaches for Annual Operating Instructions (AOIs). We made specific recommendations on "best practices" for livestock grazing and ask that the Forest Plan include Management Approaches for AOIs (2020 WWP DEIS Comments, pages 15-16). The Forest Service dismissed our recommendations as "outside the scope" which ignores the reality that the Forest Planning level is the appropriate level to set direction and guidelines for the broad parameters of what should be included in AOIs. Suggested Resolution: Incorporate the recommended Management Approaches for AOIs. Objection: Livestock grazing is allowed and should be prohibited in the Sierra Ancha Experimental Forest. As we noted in our prior comments, the Forest Plan would authorize livestock grazing in portions of the Sierra Ancha Experimental Forest, in addition to authorizing grazing in several currently vacant allotments (2022 Citizen's DEIS Comments, page 61). In response to our concerns and our statement that it was hard to imagine livestock

grazing on the Reavis or Superstition allotments, the Forest Service provides a rude and snarky response: "To help you imagine cows grazing on Reavis or Superstition Allotments, a cow on the adjacent Millsite allotment looks very similar to one standing on the Reavis or Superstition allotments." (2022 Forest Plan FEIS Vol. 3, page 163). In addition, after raising the issue of returning cows to portions of the Sierra Ancha Experimental Station in the Draft Forest Plan, the Forest Service now refuses to discuss the matter any further saying it is not within the scope of analysis because it is managed by the Rocky Mountain Research Station (FEIS Vol. 1, p. 20). It is worth pointing out that the DEIS in Vol. 2 p. 243 stated that "livestock grazing is not compatible with the Experimental Forest" and that "permitting livestock grazing would go against the desired conditions of the area[hellip]" As grazing in the Experimental Forest was not authorized in the 1985 Plan, we fail to understand the "confusion" over where grazing could occur and reject the idea that the new Forest Plan will provide more clarity and focus to this area as the Forest Service now claims. Not only are these responses inconsiderate, unprofessional, and rude, they also utterly fail to respond to the issue raised by our comment which is: how will these lands that have been protected from grazing be impacted by newly authorized grazing? Instead of responding unkindly, the Forest Service should have provided an analysis of how livestock grazing would impact vegetation, wildlife, and recreation in the Sierra Ancha Experimental Forest. Suggested Resolution: Revise the Forest Plan to prohibit livestock grazing in the Sierra Ancha Experimental Forest and all other long-vacant allotments. Objection: The Forest Plan employs a faulty assessment methodology: Measuring utilization is inappropriate for the Tonto. Guideline RMZ-G-05 states that "Annual operating instructions should schedule pasture use to achieve 50 percent utilization of current year's growth on riparian woody/browse species and 50 percent utilization of herbaceous vegetation within the riparian management zone." It is ironic that this objective is in the section on Riparian Management Zones because it promotes livestock use, will likely harm riparian recovery, and seriously undercuts the Forest Service's ability to "provide for the diversity of plant and animal communities based on the suitability and capability of the specific land area" and to contribute to the recovery of ESA-listed species, many of which depend for survival on good-condition riparian habitat. This objective is a huge step backward from the 1985 Tonto National Forest Plan, which specified "utilization in the riparian areas that will not exceed 20% of the current annual growth by volume of woody species," and set a goal of rehabilitating "at least 80% of the potential shrub cover in riparian areas through the use of appropriate grazing systems and methods." The 1985 plan further specified that "[m]anagement emphasis in riparian areas will feature wildlife needs over recreation and grazing," and that "[d]amage to riparian vegetation, stream banks, and channels should be prevented," which is certain when cattle are grazing in riparian areas. Far from featuring wildlife needs over recreation and grazing, the new 50% utilization objective appears to shift the balance substantially in favor of cattle production. In addition, anyone who has been out on the Tonto's streams and rivers knows first-hand that the Forest Service has failed to accomplish any of those objectives under the 1985 Forest Plan. The objective of RMZ-G-05 appears to be a prescription for grazing every year in a given RMZ, something the FEIS for the Tonto Plan recognizes is harmful to riparian vegetation. The FEIS states, "The number of livestock, length of grazing period, and the length of time the riparian area is allowed to rest between grazing periods are significant factors on how long a riparian area can sustain grazing without deteriorating (Briggs 1996). Negative impacts to riparian conditions generally occur when areas are grazed repeatedly without adequate rest periods." We again point out the complete contradiction between that quote and the intention of RMZ-G-05. The FEIS fails to analyze and/or justify the potentially harmful new prescription devoting 50% of annual growth to cattle production. Indeed, the FEIS states that "[s]tocking decisions regarding the amount of livestock grazing authorized for each grazing allotment are considered as part of the project-level analysis (NEPA) and is beyond the scope of this programmatic analysis for the Forest Plan." Forest-wide objectives like 50% utilization will drive decisions on stocking rates on allotments throughout the forest, and analysis of the effects of this objective and other forest-wide objectives cannot be deferred to project-level analysis. Measuring utilization is inappropriate for the Tonto. As a background, quantitative methods for measuring utilization were mostly developed for perennial grasses.¹⁴ Utilization is directly related to the physiological response of the plants being grazed, as is usually the case where utilization is measured on perennial grasses and shrubs.¹⁵ The 50% rate is based on a decades-old laboratory experiment that showed under optimal conditions, 50% utilization of a plant is the maximum before roots cease growing. In the context of the drought which has befallen the region since this experiment was conducted, conditions are far from optimal, and 50% utilization will likely lead to rapid loss of

vegetation. According to the Principles of Obtaining and Interpreting Utilization Data on Southwest Rangelands, University of Arizona Cooperative Extension publication AZ1375: "Most of the quantitative methods for measuring utilization have been developed for perennial grasses. However, there are many rangelands where shrubs and/or annuals comprise a major portion of the forage resource for both livestock and wildlife. Some examples include Desert Scrub, chaparral, annual grassland, and some formerly grassland areas invaded by shrubby species. In these situations the basic assumptions regarding proper use and the relationship between use on key forage species and total forage consumption may not hold, i.e. estimated utilization may not be well-correlated with the amount of forage used unless all forage classes are considered.¹⁶ Tonto National Forest allotments are lands where shrubs and/or annuals comprise a major portion of the forage resource for livestock. The specific examples given in the above paragraph fit the landscape of much of the Tonto allotments, i.e. desert scrub, chaparral, annual grassland, and some formerly grassland areas invaded by shrubby species. Are utilization measurements correlated with forage use in oak-juniper woodlands, semi-desert grasslands, or transition zones? Likely not. The document goes on:

"As described earlier, estimates of utilization on key forage species to indicate grazing intensity assume a constant relationship between use on key forage species and other species in the plant community. This assumption may be reasonable on ranges used in a limited grazing season or where most forage species have similar life forms. It breaks down when grazing occurs yearlong, or at least across different seasons, and the forage resource is comprised of diverse life forms and varying seasonal growth responses. Studies have shown that livestock diet selection varies markedly depending on the growth response of different categories of plants. For example, Smith, Ogden and Gomes (1993) observed drastic changes in cattle diet preference depending on the season in southern Arizona. Cattle shifted their preference among cool-season annuals, shrubs, cacti, and warm-season perennial grasses from month to month depending on availability and attractiveness of each category of plants. Clearly, in this case, the percentage utilization on a perennial grass key species would have to be considered in terms of the season of use and would not be well-correlated with total forage harvest by livestock".¹⁷ In the Tonto, most grazing occurs yearlong and/or across multiple seasons, and the forage resource is diverse and varies seasonally- sometimes dramatically. Cattle consume a wide variety of shrubs, cacti, and annuals in southern Arizona. Thus, utilization is not appropriate for the Tonto, according to the Forest Service's own guiding document for utilization. Furthermore, "Utilization guidelines cannot be employed for seasonal utilization because there is no known consistent relationship between seasonal utilization estimates and utilization based on the entire growing season's forage production. To establish such a relationship would require that the amount of subsequent forage growth could be accurately predicted at any given time during the growing season. Information to make such predictions does not exist. For this reason seasonal utilization estimates are not reliable for grazing compliance decisions employing utilization guidelines based on end-of-season production."¹⁸ To corroborate the conclusions of Smith, Ogden and Gomes (1993), the Society for Rangelands Management (2018) states: Measuring utilization on "key species" as a basis for adjusting stocking rates (i.e., either removing some or all animals from a pasture) or for calculating the "desired" stocking rate for following years, is based on the concept that the use on the key species is gradual throughout the grazing period and correlated with stocking rate. Except for monocultures or very short grazing periods, this is not often the case because animal preferences shift as different plants or locations become more or less attractive to them. The above issues make it unlikely that "utilization limits" have much actual relevance except maybe where the growing season and grazing season are concurrent, and utilization is measured at the end of both.¹⁹

The recurring theme is that utilization estimates cannot be used to make inferences on anything except the responses of cattle-preferred forage to grazing. Measuring utilization has no value for evaluating the effects of the on-going livestock grazing on federally proposed and listed threatened and endangered species and their critical habitats. One cannot make inferences on the quality of wildlife habitat or the health of the ecosystem based on annual utilization measurements of preferred cattle forage. Habitat designated as critical should have management objectives according to Recovery Plans. Utilization estimates are meaningless within critical habitat. In critical habitat, there are species-specific objectives to be met. These should be clearly defined per species and new, customized monitoring strategies must be implemented where the objective is to avoid adverse modification. To reiterate, utilization estimates can only be useful if your objectives are to describe the physiological response of cattle-preferred plant species to grazing. There is no known relationship to make

inferences on threatened and endangered species and their habitat based on utilization estimates. In addition to fundamental issues with reliance on utilization estimates for management decisions, we are concerned that grazing permittees on the Tonto are the ones conducting monitoring on their own allotments- a proverbial 'fox in the henhouse' scenario. "Reading the Range" ("RTR") was established in 2002, with the University of Arizona (U of A) Cooperative Extension office in Gila County, Gila County Cattle Growers Association and the Tonto National Forest with the assistance of the U.S. Department of Agriculture. The program was originally funded from a variety of contributors with 46% being federal funding sources, 5% being state and local government funding sources, and 49% from private funding sources.²⁰ According to the Forest Service they "do not have enough personnel to complete an on-going need for range monitoring." The Program was developed in part as a response to ongoing NEPA litigation brought on by environmental groups: "In 2001, Jim Sprinkle, then Area Cooperative Extension Agent for Animal Sciences in Gila County, responding to ranchers' and land management agency personnel's expressed needs for training in rangeland monitoring [Figure 4, image of ranchers monitoring] started the Reading the Range (RTR) programme. The programme's objectives were to provide training in range monitoring to ranchers and agency personnel, establish demonstration ranches with technical support, use the data to assist in management, and provide training for the NEPA process technical support, use the data to assist in management, and provide training for the NEPA process."²¹

There are 1.5 million acres in Tonto National Forest using RTR program²², with 100% rancher participation in the Tonto Conservation District.²³ We have been assured by U of A agents that RTR data is not used to inform stocking rates, but we also know this isn't true and can provide examples upon request. Suggested Resolution: The FEIS must justify how the "Reading the Range" program fits with monitoring and adaptive management procedures on the Tonto. Objection: The Tonto Forest Plan violates NEPA by failing to take a "hard look" at the key issue of riparian restoration and how that is directly impeded by authorized and unauthorized grazing activities. According to the Tonto Forest Plan, overarching needs and concepts to be considered and addressed through the forest plan revision process in order to create sustainable resources, goods, and services include to maintain, improve, or restore ecosystems on the Tonto National Forest, provide for plant and animal habitat diversity including at-risk species, increase resiliency of ecosystems and incorporate adaptive management, and sustainably manage water resources. The Revised Plan clearly states the need for improved standards and guidelines to address the issue of riparian and wetland degradation which was caused by grazing cattle. Ironically, livestock grazing is permitted on most of the Tonto, including the most sensitive riparian systems throughout the forest. We sent photo documentation of unauthorized and unlawful cattle destruction of important riparian areas in our March 12, 2020 Coalition comments. We have been closely monitoring and documenting degradation in all important riparian areas throughout the Tonto on an ongoing basis ever since. Despite stated goals and objectives, the Tonto Forest Plan and FEIS ultimately ignore adverse impacts that grazing management can have on riparian resources, rendering the 'hard look' requirements under NEPA entirely deficient. If livestock grazing is not excluded from riparian areas, wetlands, and aquatic ecosystems in, during, and following restoration projects, the proposed action is unlikely to achieve any level of restoration success, denying our public lands of the ecological integrity and resilience they need to endure increasingly stressful conditions driven by climate change. What is particularly worrisome is that not only will the permitted grazing status quo clearly continue, but it will be intensified! If the Forest Service increases acceptable utilization and/or stocking rates to accompany any potential restoration progress, how will that ever result in restoration progress? From our vantage, increased utilization or stocking equals increased grazing pressure, and it would seem from such statements that the goal will always be to break even by maintaining the status quo. Status quo does not equal restoration, and restoration progress should not immediately be used for increased cattle stocking. Restoration, as opposed to status quo degradation, requires different management action that results in different outcomes. There is no evidence that adjusted grazing management strategies are even being considered here. The Tonto Plan will not move restoration forward. According to the Multiple-Use Sustained-Yield Act, which the Plan cites in reference to grazing practices: "Section 4 of the Multiple-Use Sustained-Yield Act states, 'Multiple use' means: The management of all the various renewable surface resources of the national forests so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some land

will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output. 'Sustained yield of the several products and services' means the achievement and maintenance in perpetuity of a high level annual or regular periodic output of the various renewable resources of the national forests without impairment of the productivity of the land."There are certain qualifiers here, such as "without impairment of the productivity of the land", and "not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output" and "to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions" (climate change), and "some land will be used for less than all of the resources". Providing a no-riparian grazing alternative does not conflict with the Multiple-Use Sustained-Yield Act, in fact it better supports the Act's true intention. According to the Multiple Use Sustained Yield Act, not all forest resources are likely to be available and suitable for use in every management area. Federal code states that "[i]n the administration of the national forests due consideration shall be given to the relative values of the various resources in particular areas."²⁴ A number of limitations must be considered as the Forest Service attempts to balance the production of forest products and services for a given management area. The Multiple Use Sustained Yield Act clearly establishes that "some land will be used for less than all of the resources" and that the national forests are utilized in such a manner that does not impair the productivity of the land.²⁵ Let us be clear, the Tonto is ecologically impaired, and the Forest Service would be hard-pressed to disagree with that statement. Yet, the Tonto is pushing for Multiple Use no matter what the cost, and the result of such a philosophy is decline in quality of wildlife habitat and in forage production, which is both predicted and observed.²⁶

Suggested Resolution: Revise the EIS to take a 'Hard Look' at the impacts of grazing on riparian ecosystems and obligate wildlife, including a discussion of all connected and cumulative actions and concurrent restoration efforts.

Objection: The Tonto Forest Plan violates NEPA as the Forest Service relies on a vaguely detailed adaptive management strategy. The Tonto Forest Plan relies on adaptive management, but it does not contain key elements required to comply with Forest Service regulations, nor does it meet the goals for such a plan set out by academics. It is presently unclear how monitoring of restoration outcomes will be achieved, especially when permitted grazing activities subject to adaptive management are only dealt with on the project level. To be effective and legal, adaptive management must: (1) clearly identify measurable thresholds that, if exceeded as determined by monitoring, will require a change in management; (2) clearly identify what that changed management will entail; and (3) disclose in the NEPA document the impacts caused by that change in management. Pre- and post-restoration assessments are vital, especially when relying on adaptive management. Adaptive management still requires a general plan and framework to inform decisions. None of these aspects are currently put forth in the Tonto Forest Plan. Because the Tonto Forest Plan fails on all three counts, the Forest Service cannot rely on the adaptive management strategy as currently proposed. What is especially concerning is that the Tonto has repeatedly admitted that it does not have the resources or personnel or overall capacity to monitor what is required, especially for a legitimate adaptive management program, and thus has relied extensively on the "Reading the Range" program where grazing permittees conduct their own monitoring on leased allotments.

The Law and Policy of Adaptive Management. Academic recommendations concerning adaptive management. Academics conclude that effective adaptive management should involve treating management interventions as experiments, the outcomes of which are monitored and fed back into management planning. As outlined by land management experts, an adaptive management approach to forest management should include the following:

- [bull] Creation of management strategies (specific action alternatives in this case);
- [bull] Implementation of those strategies/actions;
- [bull] Monitoring of the effects (under the monitoring framework developed as part of the planning process); and
- [bull] Predetermined triggers for changes in management based on the results of monitoring.

²⁷ Forest Service experts have said that "[a]daptive management requires explicit designs that specify problem-framing and problem-solving processes, documentation and monitoring protocols, roles, relationships, and responsibilities, and assessment and evaluation processes."²⁸ The fourth component, regarding triggers, is described by adaptive management experts in the following statement: The term trigger, as used here, is a type of pre-negotiated commitment made by an agency within an adaptive management or mitigation framework specifying what actions will be taken if monitoring information shows x or y. In other words, predetermined decisions, or more general courses of action,

are built into an adaptive framework from the beginning of the process.²⁹ The literature cited here calls for details and specifics, not ambiguity. Regulations concerning adaptive management. This academic framing is reinforced by the Forest Service's NEPA regulations, adopted in 2008, which define adaptive management as: "[a] system of management practices based on clearly identified intended outcomes and monitoring to determine if management actions are meeting those outcomes; and, if not, to facilitate management changes that will best ensure that those outcomes are met or re-evaluated. Adaptive management stems from the recognition that knowledge about natural resource systems is sometimes uncertain."³⁰

These regulations further state that: "An adaptive management proposal or alternative must clearly identify the adjustment(s) that may be made when monitoring during project implementation indicates that the action is not having its intended effect, or is causing unintended and undesirable effects. The EIS must disclose not only the effect of the proposed action or alternative but also the effect of the adjustment. Such proposal or alternative must also describe the monitoring that would take place to inform the responsible official during implementation whether the action is having its intended effect."³¹ The preamble to the Forest Service's regulation that adopted the adaptive management definition states that the agency must identify the proposed changes, and their impacts, in the NEPA document. "When proposing an action, the responsible official may identify possible adjustments that may be appropriate during project implementation. Those possible adjustments must be described, and their effects analyzed in the EIS."³² Federal case law concerning adaptive management. Federal courts have found agencies violated NEPA or the ESA where the agency relied on an "adaptive management" plan that was vague, set no specific triggers for future action, failed to describe that future action, or failed to ensure that resources will be protected as the adaptive management plan asserts. In *Natural Resources Defense Council v. U.S. Army Corps of Engineers*, 457 F. Supp. 2d 198 (S.D.N.Y. 2006), the court found that the Army Corps' attempt to supplement an inadequately explained finding of no significant impact concerning a dredging project was arbitrary and capricious where the agency relied on ill-defined "adaptive management" protocols to conclude that impacts would be mitigated below the level of significance. The Plan makes several promises that it will alter its monitoring plan should it prove necessary. For example, the Plan relies on a general promise that it will "as appropriate, reevaluate, the need for altering its dredging methods" [hellip] through the use of its coordination plan and monitoring program. The Plan also explains that the Corps will follow "adaptive management practices as it moves through construction of its contracts," thus allowing it to change future contracts should the data indicate it is necessary. These promises, however, provide no assurance as to the efficacy of the mitigation measures. The Corps did not provide a proposal for monitoring how effective "adaptive management" would be.³³ *Mountaineers v. United States Forest Service*, 445 F. Supp. 2d 1235 (W.D. Wash. 2006) set aside a Forest Service decision to open motor vehicle trails where the agency proposed to monitor impacts to wildlife and potentially change the trails later based on an adaptive management plan. The court stated that these adaptive management strategies "amount [hellip] to a 'build-first, study later' approach to resource management. This backward-looking decision making is not what NEPA contemplates."³⁴ Other cases similarly conclude that NEPA forbids the use of ill-defined adaptive management plans to assume away likely impacts of agency action.³⁵ Courts also hold unlawful agency projects that may impact species protected by the ESA where the biological opinion is based on the assumption that a vague and ill-defined monitoring and adaptive management plan will mitigate impacts to the species at issue. These cases provide a useful analogy to adaptive management in the NEPA context. *Natural Resources Defense Council v. Kempthorne*, 506 F. Supp. 2d 322 (E.D. Ca. 2007) is key precedent. There, plaintiffs challenged a proposed plan to manage water diversions in a manner that could adversely impact the delta smelt, a species listed as threatened under the ESA. The Fish and Wildlife Service ("FWS") prepared a biological opinion ("BiOp") on the proposal which concluded that the project would neither jeopardize the smelt nor adversely modify the smelt's critical habitat. "Although the BiOp recognize[d] that existing protective measures may be inadequate, the FWS concluded that certain proposed protective measures, including [hellip] a proposed 'adaptive management' protocol would provide adequate protection." Plaintiffs alleged, among other things, that the BiOp "relie[d] upon uncertain (and allegedly inadequate) adaptive management processes to monitor and mitigate the [project's] potential impacts." They asserted that the adaptive management plan, which required a working group meet and consider adaptive measures in light of monitoring, failed to meet the ESA's mandate that mitigation be: "reasonably specific, certain to occur, and capable of implementation" because: (1) the [working group] has complete discretion over whether

to meet and whether to recommend mitigation measures; (2) even if the [working group] meets and recommends mitigation measures, the [agency management team] group is free to reject any recommendations; (3) there are no standards to measure the effectiveness of actions taken; (4) reconsultation is not required should mitigation measures prove ineffective; and (5) ultimately, no action is ever required."The Kempthorne court cited prior case law holding that "a mitigation strategy [in the ESA context] must have some form of measurable goals, action measures, and a certain implementation schedule; i.e., that mitigation measures must incorporate some definite and certain requirements that ensure needed mitigation measures will be implemented." The court found that adaptive management plan "does not provide the required reasonable certainty to assure appropriate and necessary mitigation measures will be implemented." The court concluded that: "Adaptive management is within the agency's discretion to choose and employ, however, the absence of any definite, certain, or enforceable criteria or standards make its use arbitrary and capricious under the totality of the circumstances."Objection: The Tonto Forest Plan does not comply with the law or policy for adaptive management. The Tonto Plan fails to do the following: Describe what changed management or actions the Forest Service will take (beyond doing more of the same) if restoration goals succeed or fail. Disclose what ecological outcomes would determine project success and fails to describe what thresholds or triggers would initiate a changed course of action. Define thresholds that influence a subsequent decision. Identify measurable triggers that, if exceeded as determined by monitoring, will require a change in management. Describe the nature or impacts of project adjustments. We do not argue that the Forest Service cannot adopt and expand on an adaptive management approach for the final plan. An adaptive management approach may be feasible and helpful in terms of permitting the agency to fine tune its management in the face of changing conditions. However, the agency's proposed approach fails to meet the conditions required to establish a lawful and effective plan. Suggested Resolution: The FEIS must provide an adaptive management plan that meets legal, regulatory, and scientific requirements.

MINING, MINERALS, AND ABANDONED MINES

Objection: The Tonto National Forest did not include a specific expectation rather than a goal that extractive users of public lands comply with the law. While pleased that the Tonto National Forest believes mining and mineral activities should comply with law, regulation, and policy, this should be the expectation rather than a goal. One would hope that the Forest Service would not only encourage, but demand extractive users of our public lands go well beyond the bare minimum required by law in protecting our public lands and stewarding public resources. We discussed this in our DEIS comments (2020 Citizen's DEIS Comments, page 223), but the language in the Final Forest Plan remains inadequate (2022 Forest Plan Desired condition 01, page 57). Suggested Resolution: Language should be added to this condition saying: companies engaging in mining and mineral activities are expected to not only follow the letter of mining regulations, but to go beyond in an effort to return public land to a condition the same or better than when activities commenced.

Objection: The Final Forest Plan fails to consider the social and community impacts on the plan's direction. Under the NFMA, the agency cannot approve any use of Forest Service land that is not consistent with the applicable Forest Plan, including all standards, guidelines, directives and desired management conditions in that Plan. There is no exemption for mining projects. "The Forest Service's failure to comply with a Forest Plan violates the NFMA." *Save Our Cabinets v. U.S. Dept. of Agriculture*, 254 F.Supp.3d 1241, 1258 (Forest Service approval of mine failed to comply with Forest Plan Desired Conditions and thus violated the NFMA). "Each proposed site- specific project must (1) be consistent with the Forest Plan and any amendments; [and] (2) be analyzed as required by NEPA." *Rock Creek Alliance v. U.S. Forest Service*, 703 F.Supp.2d 1152, 1182 (Forest Plan requirements apply to ROD for mining project). See also *Hells Canyon Preservation Council v. Haines*, 2006 WL 2252554, *7-*10 (D. Or. 2006) (approval of mining violated Forest Plan). The Mining section is weak and lacking in specific information and this lack of any specificity does not adhere to the necessities of Forest Plan components, required by NFMA. Mining on the Tonto National Forest is dealt with only sporadically in the three-volume, 1000 plus page DEIS, with just four pages devoted to discussion of mining's environmental effects, and then only superficially. Any discussion of the impact of mining on the Tonto National Forest is also scant in the FEIS. There is no mention, for example, that mining is directly responsible for the removal of Pinto Creek from the list of eligible Wild and Scenic Rivers as it has become dewatered from pumping and contaminated from spills. Similarly, there is little acknowledgement of the conflict and controversy over public lands hardrock mining as the 1985 Management Plan, however briefly, pointed out.

Objection: The Forest Service had failed to discuss its regulatory authority regarding mining of locatable minerals with respect to

protection of the environment. In particular, the Forest Plan fails to provide how the Forest Service intends to fully utilize its regulatory authority. For example, routing a creek on a bench inside a mine pit (Carlota Mine) is not the act of a prudent person as the pit slope will fail, the diversion channel will be swept away, and Pinto Creek's water will go into the pit. The Pinto Valley Mine's proposed expansion and the groundwater pumping will destroy Pinto Creek, and unstable tailings piles - among the highest in the world - are going to fail and pollute Pinto Creek and Roosevelt Lake. The Forest Service has failed to address impacts to a project it is attempting to codify through the new Forest Plan. The Forest Service continues to ignore a powerful tool the Forest Service possesses - NEPA. This review process not only allows but requires a rigorous analysis of environmental impacts and alternatives to the proposed project to reduce these impacts. The agency is often reluctant to pursue meaningful alternatives in the mistaken belief that the mining laws guarantee the right to mine but it is not the agency's problem if the proposed Plan of Operations submitted by the mining company is flawed. The project at Oak Flat, for example, is thought by many to be more of an experiment than a proposed mine (Mining Technology, 24 February, 2020, Evaluations of Predictions...Steve Emerman, 2019).

We discussed this in our DEIS comments (2020 Citizen's DEIS Comments, page 221), but the language in the Final Forest Plan remains inadequate (2022 Forest Plan, pages 57-59). Suggested Resolution: The third paragraph on p. 57 of the Final Forest Plan should be revised to read: "[hellip]The Forest Service follows regulations under 36 CFR 228 Subpart A for locatable minerals AND HAS ADDITIONAL REGULATORY AUTHORITY to minimize adverse impact on National Forest System surface resources." We suggested any number of resolutions for this concern in our 2020 Citizen's DEIS Comments on pages 221-222. We have copied the relevant portion of our DEIS comments here for ease. First, the Mining Laws, as antiquated and obsolete as they are, should be properly interpreted and applied. For example, the 1872 law and subsequent amendments are clear that for a lode mining claim to be valid there has to be a valuable ore deposit on that 20 acre site. If a claim cannot be shown to be valid the agency has every right to deny its use. Also clear in the Mining Laws is the prudent person principle, which states that if a prudent person thought he had found an economically viable ore deposit, he/she was entitled to mine, provided the area was not specifically withdrawn from mining. Another powerful tool the Forest Service possesses is the National Environmental Policy Act (NEPA). This review process not only allows but requires a rigorous analysis of environmental impacts and alternatives to the proposed project to reduce these impacts. The agency is often reluctant to pursue meaningful alternatives in the mistaken belief that the Mining Laws guarantee the right to mine but it is not the agency's problem if the proposed Plan of Operations submitted by the mining company is flawed. The project at Oak Flat, for example, is thought by many to be more of an experiment than a proposed mine (Mining Technology, 24 February, 2020, Evaluations of Predictions [hellip].Steve Emerman, 2019). The Draft Environmental Impact Statement should have required a more proven and less destructive mining method other than block caving, which has rarely been done at this depth. The Mining Laws do not require the Forest Service to provide a mining company with maximum financial return. The Forest Service can require conditions and mitigation in conjunction with special use permits. Special use permits are used to grant access across forest service lands for things such as waterlines and transmission lines which impact our public lands. Conditions attached to these permits can reduce and mitigate environmental impacts and should be used to the fullest extent. The Tonto National Forest has a dozen instream flow rights on the Tonto to support beneficial uses for fish, wildlife and recreation. While these rights can be junior to previous rights, mining companies should not be able to pump so much water that instream flow rights cannot be maintained. The Forest Service should require reduced or managed pumping or alternative water supplies in order to keep flows in its creeks and rivers. Given the extreme impacts mining has had on the Forest, the proposed Plan should include a discussion on the importance of adequate bonding to ensure proper reclamation occurs and long term protections are in place when mines close. We see no discussion regarding land exchanges on the Forest and no direction as to how these exchanges should be conducted to ensure the public receives equal value. In addition to our 2020 comments, recent developments should be reviewed before the Forest Plan is approved. The Ninth Circuit court of appeals recently upheld a decision over the Rosemont Mine proposed to use public land in the Coronado National Forest that should be reviewed before this Forest Plan is finalized and approved. The U.S. Department of Agriculture is also beginning a review of its section 228 regulations and at the same time, Congress is looking at changes to the 1872 Mining Law. In light of these new developments, the Forest Plan could be obsolete soon after it is approved. Objection: Objective 01 (MMAM-O) Forest Plan page 58

is overly conservative and will not result in the timely reclamation of abandoned mines. Granted the Tonto National Forest has limited resources, but planning to only reclaim 10 abandoned mines over the 10-15 year life of this Forest Plan out of the hundreds that exist on the Tonto would take centuries to clean them all up. We addressed this in our 2020 Citizen's DEIS Comments, page 223. Suggested Resolution: Change objective 01 to: Initiate at least one environmental review for closure of one or more abandoned or inactive mine(s) every two years. Objection: The Forest Service has violated NEPA by failing to identify or discuss the cumulative impacts from damage caused by historic and current mining in the FEIS. Several Standards and Guidelines that were included in the DEIS have been watered down or outright removed from the FEIS. In addition, we proposed several additional Standards and Guidelines that should have been considered and added to the FEIS and Final Forest Plan. In our comments on the DEIS, we had encouraged a more robust description and history of the effects of mining on the Tonto National Forest. This would have the additional effect of providing more complete information, which would have made the Standards, Guidelines, and Objects in the Final Plan more objective and less arbitrary. Forest Service failed to require conditions and mitigation in conjunction with future special use permits associated with mining and failed to disclose how they will address water rights conflicts between users. Conditions attached to these permits can reduce and mitigate environmental impacts and should have been identified in the proposed forest plan. The Tonto National Forest has a dozen instream flow rights on the Tonto to support beneficial uses for fish, wildlife and recreation. While these rights can be junior to previous rights, mining companies should not be able to pump so much water that instream flow rights cannot be maintained. Given the extreme impacts mining has had on the Forest, the proposed Plan should have included a discussion on the importance of adequate bonding to ensure proper reclamation occurs and long-term protections are in place when mines close. Mining operations with a history of large and damaging spills that have incurred significant cleanup and environmental costs will not be allowed to operate beyond what is specified in the current Plan of Operations. We addressed this in our 2020 Citizen's DEIS Comments, pages 223-224. The relevant standards and guidelines in the DEIS plan are found on pages 54-56. The Standards and Guidelines in the Final plan are found on pages 57-59. Suggested Resolution: Adopt the Standards and Guidelines from our 2020 Citizen's DEIS Comments (pages 223-224) as follows: Standards 01 - Retain 02 - Retain and modify as follows: Required reclamation activities shall be designed to establish resilient post-mining ecosystems. 03 - Retain 04 - Mines that are determined to pose a threat to public health and safety will undergo a special review process involving all necessary federal and state agencies to determine an appropriate remedy and course of action. 05 - Instream flow rights will be defended to protect fish, wildlife, and recreation values in the affected waterway. 06 - No mines will be permitted that require rerouting of major streams where future environmental costs are determined likely to exceed benefits from the mine. 07 - Mining operations with a history of large and damaging spills that have incurred significant cleanup and environmental costs will not be allowed to operate beyond what is specified in the current Plan of Operations. 08 - When preparing Plans of Operations, mining companies will be encouraged to coordinate with other nearby mine operators regarding disposition and timing of projects to help facilitate finding brown field sites for safe disposal of mine waste. Guidelines (In general, change the word "should" to "shall" in this section.) 01 - Retain 02 - modify as follows: Placer mining shall not damage riparian vegetation, degrade water quality, and negatively impact channel stability. 03 through 06 - Retain In addition, we suggest adding the following Management Approaches to the Final Forest Plan 07 - Fully incorporate and pursue alternatives in the NEPA process that will help protect the Tonto National Forest from extreme adverse environmental impacts. 08 - Begin a discussion of a minimum ore grade below which the Forest that can advise project proponents to not pursue due to extreme amount of waste and increased risk of tailings failures. 09 - Create a working group of independent mine engineers, federal and state agencies, and interested public to study and make recommendations relating to the hazards of mine waste on the Tonto National Forest. WILDLIFE, FISH, AND PLANTS Objection: The Forest Plan and FEIS do not address wildlife habitat connectivity in an integrated manner sufficient to conserve ecological integrity (2020 Citizen's DEIS Comments, page 73 and Forest Plan, page 116). We previously commented that the planning process offers an opportunity to reduce wildlife habitat fragmentation and preserve key wildlife corridors in order to improve connectivity and increase the resilience of wildlife to climate change. Relatively recent modeling depicts the Tonto's wildlife connectivity value. It does not appear that these products were referenced or utilized, nor does the agency's response to our comments address these available planning products. NFMA requires the Forest Service to develop planning

regulations that shall "provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives" (i.e., the "diversity requirement").³⁶ The preamble of the Planning Rule states, "The rule contains a strong emphasis on protecting and enhancing water resources, restoring land and water ecosystems, and providing ecological conditions to support the diversity of plant and animal communities, while providing for ecosystem services and multiple uses."³⁷ Additionally, management plans must: "Contribute to ecological, social, and economic sustainability by ensuring that all plans will be responsive and can adapt to issues such as the challenges of climate change; the need for forest restoration and conservation, watershed protection, and species conservation; and the sustainable use of public lands to support vibrant communities."³⁸ These passages clearly demonstrate that the Planning Rule affirms that wildlife and habitat protection must be given the same priority as forest uses. The Rule requirements in 36 C.F.R. [sect] 219.8 and 36 C.F.R. [sect] 219.9 make this principle a mandate. The Rule requires forest plans to have plan components to maintain or restore the integrity of the terrestrial and aquatic ecosystems in the plan area and the diversity of ecosystems and habitat types throughout the plan area.³⁹ Essentially, this requires forest plans to maintain or restore the variety of ecosystems and habitat types found on national forests and grasslands (e.g., conifer forests, wetlands, grasslands), as well as the condition of the ecosystems themselves. In accordance with 36 C.F.R. [sect] 219.9(b)(1), plan components must provide the "ecological conditions necessary to: contribute to the recovery of federally listed threatened and endangered species [hellip] ." This means developing desired conditions toward which management actions are achieved that can be measured through monitoring. The desired conditions must include all of the necessary ecological conditions to enable each species listed under the ESA to recover. Additionally, providing the necessary ecological conditions to contribute to recovery means including standards and guidelines to mitigate all manageable threats to these species from uses of the Forest. A national forest or grassland management plan revision process must be integrated with the procedures outlined in NEPA, and an EIS must be prepared as part of the process.⁴⁰ Management plans propose a program of projects and activities over the life of the plan, which is usually at least 15 years. These projects and activities will have effects on at-risk species. In order to contribute to the recovery of threatened and endangered species, conserve species proposed or candidates for listing under the ESA, and maintain the viability of species of conservation concern, a plan must have significant beneficial effects and minimize adverse effects to the greatest extent possible. Adverse impacts of forest uses on at-risk species addressed by the plan must also be disclosed in the EIS. The effects analysis must be more than a subjective, qualitative, and comparative estimation[mdash]it requires in-depth analyses of significant issues, including species viability requirements. Note that under the Council on Environmental Quality ("CEQ") Regulations governing application of NEPA, agencies must, "to the fullest extent possible": "Use all practicable means, consistent with the requirements of the Act and other essential considerations of national policy, to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects of their actions upon the quality of the human environment."⁴¹ Nowhere is this mandate more important than with at-risk species, for which impacts from human uses can drive them closer to extinction, where recovery might become impossible. A full disclosure of the impacts on these species is critical to ensuring that measures can be applied and management can be directed to facilitate their maintenance and recovery on the landscape. Thus, the EIS must properly characterize what the plan components direct the Forest to do. The plan components comprise the "action" that must be analyzed. The analysis must detail how specific plan components affect each ecological condition needed by each at-risk species. This requires an evaluation of both plan components that are directly related to at-risk species and the ecological conditions upon which they depend and also plan components of the multiple uses that may adversely affect the species and/or the ecological conditions they depend on, such as vegetation management, livestock grazing, recreation, roads and other infrastructure, and mining. The FEIS fails in this regard. It is important that the Forest grasp the relationship between NEPA procedures and NFMA requirements. NEPA requires procedures - the analysis of effects. However, NFMA requires that those effects meet a substantive threshold, and that determination should be based on documented analysis found in the EIS. The ROD must address compliance with the viability requirement.⁴² It is not sufficient to state that a plan meets this requirement because it simply analyzed effects. The ROD must explain how the effects disclosed within the EIS demonstrate contributions to recovery and viability. While this analysis may be contained in a NEPA document, it is being used to demonstrate compliance with a substantive legal requirement

in NFMA, and therefore requires rigor and certainty that go beyond the disclosure purpose of NEPA. The planning documents must do more than just list or restate the plan components that "support" a conclusion; they must present a reasoned rationale for viability based on reference to specific plan components. Unfortunately, the Forest has not met this bar. The Final Forest Plan and FEIS must comply with the ESA. Section 7(a)(1) of the ESA explicitly directs all federal agencies to "utilize their authorities" to carry out "programs for the conservation of endangered species and threatened species."⁴³ The ESA defines "conservation" to mean "the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this [Act] are no longer necessary."⁴⁴ In this sense, "conservation" and "recovery" are essentially synonymous. ESA section 7(a)(2) requires the Forest Service to ensure that its actions are not "likely to jeopardize the continued existence" of any listed species or "result in the destruction or adverse modification of" critical habitat.⁴⁵ To ensure compliance with these prohibitions, the Forest Service must engage in a consultation with FWS upon proposing to authorize, fund, or carry out any "agency action" that "may affect" a species or its critical habitat.⁴⁶

Suggested Resolution: Revise the Forest Plan and FEIS to include site-specific plans to protect key wildlife corridors in order to preserve connectivity for wildlife habitat and increase resiliency of wildlife relative to climate change to comply with NFMA.

Objection: The Forest Plan fails to provide the ecological conditions necessary to contribute to Mexican spotted owl (MSO) recovery, in violation of NFMA (36 CFR 219.9(a)(1) & (b)(1)), NEPA, and the ESA. The objection issues we discuss in this section are based on comments previously submitted, including CBD 2018 and CBD et al. 2020. In addition, we refer to recent agreements between some objectors and the Forest Service, including:

- The July 2020 understanding between the Center for Biological Diversity, U.S. Forest Service, U.S. Fish and Wildlife Service, states of New Mexico and Arizona and Eastern Arizona Counties Organization, as recorded in the workshop notes from the June 17 & 26, 2020 meeting of the MSO Leadership Forum Workgroup, dated July 3, 2020.
- The October 27, 2020 stipulation letter from Elaine Kohrman (Southwestern Region USFS) and Amy Lueders (US Fish and Wildlife Service) to John Horning, of WildEarth Guardians, where the agencies describe current and ongoing commitments to ensure conservation and recovery of the MSO.

Forest stands used by spotted owls for nesting and roosting have certain structural features in common. These typically include relatively high tree basal area ("BA"), numerous large trees, multi-storied canopy, multi-aged trees, high canopy cover, and decadence in the form of downed logs and snags in varying stages of decay. Studies of MSO have consistently found that higher canopy cover of trees is required for MSO occupancy, survival, and reproduction. The recovery of the MSO is directly related to the protection and recruitment of key habitat features such as high basal area, canopy cover, and proportion of large trees. The 2012 MSO Recovery Plan provides the following Recovery Criteria for MSO:

- 1) Owl occupancy rates must show a stable or increasing trend after 10 years of monitoring; and
- 2) Indicators of habitat conditions (key habitat variables) are stable or improving for 10 years in roosting and nesting habitat. Relevant key habitat variables and recommended minimum conditions in a minimum of 10% of PPF and 25% of dry mixed-conifer ("MCD") forests are:

- * Minimum canopy cover of 40% in photosynthetic photon flux ("PPF") and 60% in MCD
- * Diversity of tree sizes with trees 12-18 inches DBH contributing >30% of the stand basal area (BA) and trees >18 inches DBH contributing >30% of stand BA in PPF and MCD
- * Minimum tree BA in stands = 110 ft²/acre in PPF and = 120 ft²/acre in MCD
- * Minimum density of large trees (>18 inches DBH) = 12 trees per acre in PPF and MCD

The Forest Plan identifies desired conditions at three geographic scales (landscape scale, midscale, and fine-scale) for each of several forest types, categorized as ecological response ERUs. For the dry mixed-conifer forest type, for example, the Forest Plan identifies the following desired vegetative conditions.

Landscape Scale desired conditions include: 60 percent of the area "[d]ominated by trees 10.0 - 20.0 inches or greater diameter", 10 - 29.9 percent canopy cover, open and multi-storied structure; 25 percent of the area dominated by trees 10.0 - 20.0 inches in diameter, over 30% canopy cover, closed structure; "Forest appearance is variable but generally uneven-aged and open; occasional patches of even-aged structure are present;" and "Denser tree conditions exist in some locations such as north facing slopes and canyon bottoms."⁴⁹

Midscale desired conditions include: "Tree density within forested areas generally ranges from 30 to 125 square foot basal area per acre;" and "Snags are typically 18 inches or greater at dbh and average 3 per acre."⁵⁰

Fine-Scale desired conditions include:

"Crowns of trees within the mid- to old-age groups are interlocking or nearly interlocking[hellip]Groups at the mid- to old-age stages consist of 2 to approximately 50 trees per group."⁵¹Despite identifying these specific desired conditions, which include significant large-tree components, the Forest Plan identifies only a single guideline for dry mixed-conifer forest type: "Management activities should leave an average of 1 to 2 snags greater than 18 inches per acre."⁵²This guideline both fails to achieve the specific desired conditions identified for the ERU at the various geographic scales, and fails to provide the ecological conditions necessary for the recovery of the Mexican spotted owl. Specifically, with respect to the latter, this guideline fails to provide the habitat conditions in dry mixed-conifer forest type, as identified in the Recovery Plan: minimum canopy cover of 60 percent; trees greater than 18 inches DBH contributing greater than 30 percent of stand basal area; minimum basal area or 120 square feet per acre; and minimum density of trees greater than 18 inches DBH equal to 12 trees per acre.⁵³The Forest Plan similarly fails to achieve either the desired conditions for the ponderosa pine forest type and the wet mixed-conifer forest type, and fails to provide the ecological conditions identified in the Recovery Plan. The guidelines for ponderosa pine forest type include only a single guideline: "Management activities should leave an average of 1 to 2 snags greater than 18 inches per acre."⁵⁴ The guidelines for wet mixed-conifer forest type include only: "Management activities should leave an average of 1 to 5 snags greater than 18 inches per acre."⁵⁵As we recommended in our comments to the Draft Forest Plan and DEIS, the Forest Plan should include standards and guidelines that explicitly protect the large and old trees and old growth structure needed by Mexican spotted owls and northern goshawk. This would mean essentially retaining all large and old trees[mdash]defined as trees greater than 18 inches dbh and trees 150 years old and older, respectively. The Forest Plan failed to include such standards and guidelines.The FEIS dismissed this recommendation, in part, by claiming that the Forest Plan incorporates within its standards and guidelines various measures applicable to the Mexican spotted owl and other federally listed species. "In addition to project consultation and analyses, many desired conditions applicable to Mexican spotted owl and its critical habitats have been incorporated in plan components found throughout the revised forest plan and Appendix G of the environmental impact statement. Plan direction includes standards and guidelines that protect old growth as well as large trees and snags."⁵⁶The referenced Appendix G identifies the specific objectives, standards, and guidelines in the Forest Plan meant to achieve the collective desired conditions to protect against negative impacts to Mexican spotted owl.⁵⁷ For the activity category of vegetation and timber management, Appendix G identifies five standards and four guidelines.FP-S-01 Timber harvest and vegetation manipulation shall only occur where soil, slope, and watersheds will not be irreversibly damaged, and protection must be provided for streams, streambanks, riparian, shorelines, lakes, wetlands, other waterbodies, fish, wildlife, recreation, cave and karst formations, cultural, and aesthetic resources.FP-S-02 No harvest for the purpose of timber production will occur on lands not suited for timber production. Timber harvest may occur on these lands to meet other resource objectives and move toward achieving desired ecological conditions.FP-S-04 When openings are created with the intent of regeneration, efforts shall be made to ensure that lands can be adequately restocked within 5 years of final harvest.FP-S-08 The quantity of timber that may be sold is limited to an amount equal to or less than that which can be removed from such forest annually in perpetuity on a sustained yield basis,²⁹ unless the departure is justified and approved in accordance with direction found in FSH 1909.12, Chapter 60, section 64.33. This limit may be measured on a decadal basis.FP-S-09 Harvesting systems shall primarily be selected for their ability to move toward achieving desired conditions (e.g., vegetation, watershed, and riparian) and not for their ability to provide the greatest dollar return or unit output of timber, while remaining as economical as possible.FP-G-01 Timber harvests may include uneven-aged or even-aged methods that reflect the scale of natural disturbances and should be designed to move towards achieving, or maintaining, desired conditions (e.g., size class distribution, species composition, patch size, fuel reduction, and pathogens).FP-G-03 Forest treatments should focus on uneven-aged management consistent with desired conditions for ecological response units.FP-G-04 Firewood harvest within woodland ecological response units should be designed to be consistent with maintaining or moving toward ecological desired conditions.FP-G-06 Log landing areas should be located outside of sensitive environments (e.g., riparian areas, wetlands and natural meadows, archeological sites, karst formations, and sensitive species areas). When landings must be located in these areas, effects to the sensitive resource should be mitigated.None of these specified standards and guidelines for vegetation and timber management protect the large and old trees and old growth structure needed by Mexican spotted owls and

northern goshawk or otherwise speak to the ecological conditions necessary to contribute to Mexican spotted owl recovery as specified in the Recovery Plan. Furthermore, simply stating that timber harvests should be designed to move towards achieving, or maintaining, desired conditions (as in FP-G-01) is entirely ambiguous as to which objectives and which desired conditions must be considered. Nor does this guideline require that timber harvests be designed to achieve desired conditions, it only states ambiguously that timber harvests should be designed to achieve the unspecified desired conditions. Suggested Resolution: The Forest Plan should be revised to require the retention of trees greater than 18 inches dbh and the basal area and minimum canopy cover objectives specified in the MSO recovery plan. Objection: The Forest Plan fails to identify management goals specific to the Mexican spotted owl. For the Forest Plan to provide ecological conditions necessary to contribute to Mexican spotted owl recovery, it must demonstrate that the key habitat variables listed above will be stabilized or improved under the direction of plan components. The FEIS and Forest Plan fail to adequately address how these variables will be inventoried, monitored, restored, retained, conserved, and protected. In fact, the Forest Plan does not identify any management goals specific to the Mexican spotted owl. As stated in the FEIS, "The revised forest plan does not incorporate goals for management [of federally listed species]. This goal has been replaced by guidelines indicating that recovery plans, best available science, and other conservation methods are used to contribute to the recovery of federally listed species."⁵⁸ This is in contrast to the existing 1985 Forest Plan, which includes a goal to "[p]revent destruction or adverse modification of critical habitats for Threatened and Endangered species and manage for a goal of increasing population levels that will remove them from the lists."⁵⁹ Rather than identifying specific management goals to protect the Mexican spotted owl and to prevent adverse modification of critical habitat, the Forest Revised Plan instead refers to the general guidelines WFP-G-01 and WFP-G-03 for wildlife, fish and plants.⁶⁰ WFP-G-01. Activities occurring within federally-listed species habitat should apply habitat management objectives and species protection measures from approved recovery plans. WFP-G-03. The best available science and/or conservation measures should be used to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain viable populations of species of conservation concern and rare endemic species.⁶¹ By simply noting that future activities should refer to recovery plans, and noting that the best available science should be used, the Forest Plan fails to provide the specific ecological conditions necessary to contribute to Mexican spotted owl recovery. Furthermore, guidelines WFP-G-01 and WFG-G-03 state only that future activities should apply objectives and measures from recovery plans, and that the best available science and conservation should be used. As we recommended in our comments to the Draft Forest Plan and DEIS, Guideline WFP-G-01 should be revised to: "Activities occurring within federally-listed species habitat shall apply habitat management objectives and species protection measures from approved recovery plans."⁶² This change would establish the guideline as a standard. By failing to do so, and leaving this as a general statement of aspiration, the Forest Plan both fails to ensure that such criteria will be used and fails to provide specific guidelines on how those measures will be applied. In those comments we also recommended that the Forest Plan incorporate the best available science into the analysis of the effects of plan approval and/or proposed or possible actions on the Mexican spotted owl.⁶³ By failing to revise the guideline and leaving it as a general statement of aspiration, the Forest Plan both fails to incorporate the best available science into specific standards and guidelines, and fails to provide the basis for analyzing the environmental impacts of the Forest Plan on MSO habitat and recovery. Suggested Resolution: The Forest Plan should be revised to include specific standards that require that all activities must apply objectives and measures from recovery plans. Also, the Forest Plan should enumerate management goals for at-risk species[mdash]and Mexican spotted owl, in particular[mdash]and the FEIS should analyze the Forest Revised Plan with respect to effects on those species based on the recovery plan objectives. Objection: The Forest Plan fails to address monitoring requirements for Mexican Spotted Owl abundance and habitat quantity and distribution, as required by the 2012 Recovery Plan for the species. The Forest Plan identifies MSO as a focal species in the monitoring criteria for vegetation, fire, and forest products activities, identifying "presence/absence of Mexican spotted owls in associated habitats" and naming "pre- and post-project surveys" and "regional occupancy modeling" as possible actions.⁶⁴ This is an improvement on the Draft Revised Plan. However, the Forest Plan does not include monitoring for MSO abundance and distribution, to analyze the cumulative impacts of all management activities on MSO. Furthermore, the Forest Plan fails to identify MSO recovery habitat or the estimated acres associated with recovery habitat, and fails to identify MSO potential

nesting or roosting habitat or the estimated acres associated with potential nesting or roosting habitat. The 2012 MSO Recovery Plan lists specific criteria that must be met before the MSO can be delisted and acknowledges that "[m]eeting two of those criteria will require large-scale monitoring of trends in owl abundance and habitat quantity and distribution."⁶⁵ As we recommended in our comments to the Draft Forest Plan and DEIS⁶⁶, the Revised Plan should:

- Identify, map, and manage for MSO recovery habitat as defined in the 2012 Recovery Plan; and
- Delineate required pre- and post-project monitoring consistent with the 2012 Recovery Plan for all activities, including, but not limited to, forest management activities (thinning, logging, prescribed burns...), livestock grazing, oil and gas development, mining, and recreation (in particular, motorized recreation). This is especially relevant to the agency's unsupported claim that timber management will benefit MSO and its habitat. The Monitoring Plan of the Forest Plan fails to provide the level of detail needed to evaluate whether or not projects approved under the plan "contribute to the survival, recovery, and delisting of species under the Endangered Species Act." The monitoring questions are vague and the indicators fail to capture essential habitat features needed by MSO such as canopy cover, large tree basal area, and other metrics. The 2012 MSO Recovery Plan monitoring guidelines require the following:

1. Landscape analyses must be conducted prior to initiating any management actions. These analyses should identify known owl sites, areas to be managed as replacement nest/roost habitat, potential foraging habitat, and prospective habitat corridors.
2. Forest restoration and fuels-reduction treatments must be evaluated over time using appropriate modeling, rigorous monitoring, management experiments, and/or research to assess their effectiveness in maintaining or creating owl habitat and/or their effectiveness in reducing the threat of high severity or stand-replacing wildland fire.
3. Monitoring Treatment Effects on Owls. Monitoring must be designed and implemented to evaluate effects of treatments on owls and retention of or movement towards desired conditions. The monitoring design must be rigorous and adhere to strict quality assurance/quality control standards. Designing such a monitoring study requires a coordinated effort across administrative units. Ideally, the monitoring design should be developed by a scientific committee and implemented by the action agencies.
4. In all cases where salvage logging is being considered, the PAC and a buffer extending 400 m (433 yd) from the PAC boundary should be surveyed for owls before non-occupancy is inferred. This survey should occur during the breeding season following the fire or other large-scale mortality events and should adhere to the accepted protocol (Appendix D) except that it could be completed with four visits in a single season.

The Forest Plan fails to provide clear direction to accomplish any of these guidelines, again leaving planning and implementation of individual projects up to the judgment of district level managers. To provide an example of a specific Standard that would address this deficiency in monitoring, we again point to the MSO Leadership Forum, where the June 2020 Notes recommend that "Monitoring in PACs post treatment needs to be clearly stated as five years post treatment."⁶⁷

Suggested Resolution: The Forest Plan should be revised to identify, map, and manage for MSO recovery habitat as defined in the 2012 Recovery Plan; and delineate required pre- and post-project monitoring consistent with the 2012 Recovery Plan for all activities, including, but not limited to, forest management activities (thinning, logging, prescribed burns...), livestock grazing, oil and gas development, mining, and recreation (in particular, motorized recreation).

Objection: The Forest Plan fails to satisfy key requirements identified in the Biological Opinion. The Biological Opinion identifies Recreation Activities—including motorized vehicles—as having a negative effect on Mexican spotted owls, but dismisses these impacts by reasoning that the Tonto National Forest could feasibly take actions to mitigate the impacts or compensate through decreased activities elsewhere. REC objectives may result in projects that involve adverse effects such as disturbance, harassment, mortality, and habitat destruction/fragmentation, but have long-term benefits if they decrease recreational traffic and reduce effects from unsustainable trails.⁶⁸ Despite the assertion in the Biological Opinion, the Forest Plan contains no monitoring or criteria that would signal the need for such mitigating actions. Therefore, this statement in the Biological Opinion is entirely aspirational with no basis in practical application in the Forest Plan. The Biological Opinion also asserts that "[i]f projects occur in areas with Mexican spotted owl, LRMP Components will consider owls during project development."⁶⁹ However, the Forest Plan does not identify management goals specific to the Mexican spotted owl, instead referring generally to the application of recovery plans. As stated in WFP-G-01: "Activities occurring within federally-listed species habitat should apply habitat management objectives and species protection measures from approved recovery plans."⁷⁰ The Biological Opinion asserts that, with respect to actions described in the Vegetation and Ecological Response Units (ERU) component of the Forest Plan, "the

Forest Service would design all treatments in PAC and recovery habitats to move toward the desired conditions as identified in the recovery plan and to focus removal on small-diameter trees."⁷¹ However, a focus on the removal of small-diameter trees is not equivalent to retaining large-diameter trees. For example, the Forest Plan identifies only a single guideline for large-tree retention in ERU projects in mixed-conifer forest type: "Management activities should leave an average of 1 to 2 snags greater than 18 inches per acre."⁷² This guideline fails to provide the minimum 12 trees per acre, greater than 18 inches dbh, identified in the Recovery Plan as the desired habitat conditions in dry mixed-conifer forest type.

Suggested Remedy: The Forest Plan should 1) identify, map, and manage for MSO recovery habitat as defined in the 2012 Recovery Plan; 2) delineate required pre- and post-project monitoring consistent with the 2012 Recovery Plan for all activities; 3) conduct spotted owl surveys to determine how owls modify their territories in response to fuels treatments, forest restoration, and wildland fire.

Objection: The Final Environmental Impact Statement fails to adequately analyze the cumulative effects on Mexican spotted owl populations and recovery. The Forest Service, at the planning stage in the development of the Forest Plan, is required to: ensure viable populations of at-risk species impacted by the Forest Plan; comply with the requirements of the federal ESA; and disclose the impacts of foreseeable actions, including cumulative effects, as required under NEPA. The Final EIS fails to adequately analyze the cumulative effects to Mexican spotted owl by asserting that all subsequent projects will comply with the MSO Recovery Plan and deferring site-specific analysis to those future projects. This completely impedes the ability to understand and analyze the cumulative effects of the Revised Plan on Mexican spotted owl populations and recovery. The Forest Service cannot meet the goal of ensuring viable populations if the Revised Plan doesn't address the impacts of the Plan.

Suggested Resolution: The Final EIS must be revised to analyze the cumulative effects of the vegetation treatments covered under the Revised Plan and ensure viable populations of Mexican spotted owl and consistency with the MSO Recovery Plan. The Final EIS must also analyze an alternative that would minimize impacts to Mexican spotted owl populations and habitat.

Objection: The Forest Plan and FEIS fail to provide plan direction to fulfill the Forest Service's duty to conserve and recover the Mexican gray wolf. The US Fish and Wildlife Service's Mexican Wolf Recovery Team includes a Science and Planning Subgroup ("SPS") that is composed of scientists appointed by the Fish and Wildlife Service's Regional Director. These scientists, recognized for their expertise in scientific disciplines relevant to Mexican gray wolf recovery, have emphasized that "only three major core areas of suitable [wolf] habitat" are capable of supporting Mexican wolf populations of sufficient size to contribute to recovery.⁷³ Those three core areas are: 1) The current Mexican Wolf Experimental Population Area ("MWEPA"); 2) The Grand Canyon and adjacent public lands in northern Arizona and southern Utah (as bounded on the west by I-15 and on the north by I-70); 3) Two linked areas of public lands and private lands with conservation management in northern New Mexico and southern Colorado (bounded on the north by I-70 and on the east by I-25).⁷⁴ The SPS also recommended that a minimum of three, naturally connected subpopulations of at least 200 individuals each comprising a metapopulation of at least 750 wolves in the U.S. are essential to the survival and recovery of Mexican gray wolves in the wild.⁷⁵ This recommendation comported with earlier credible science but was omitted from the 2017 Mexican wolf recovery plan. The 2015 Final Rule expanded the MWEPA by moving the southern boundary from Interstate Highway 10 to the United States-Mexico international border across Arizona and New Mexico.⁷⁶ Ten National Forests (approximately 19 million acres)⁷⁷ including the Tonto National Forest, lie within the expanded MWEPA region designated for Mexican wolf recovery, for now restricted to regions south of Interstate 40. Wolves have been observed on at least five of the forests and are predicted to continue dispersing into and, if population losses are kept sufficiently low, eventually recolonizing all the Forests within the current MWEPA. These Forests provide significant habitat and connectivity value that can contribute to the conservation and recovery of Mexican gray wolves;⁷⁸ however there are no plan components in the Forest Plan or FEIS that adequately address wolf recovery or provide management direction for when wolves populate the Tonto National Forest. The MWEPA is relevant to the Tonto Forest planning effort, but is virtually ignored. This, despite that the FEIS identifies that the Mexican gray wolf is an at-risk species associated with many of the Tonto's ERUs.

Suggested Resolution: The Forest Plan and FEIS should be revised to expressly identify and address the fine-filter needs of the Mexican wolf, using best available science.

Riparian Ecological Response Units ("RERU") In addition to setting forth measurable targets for riparian conditions, the Forest Plan should prescribe a framework for integrated management of stressors so as to improve overall riparian health. A critical preliminary requirement of such guidance is to establish measurable objectives, which

were lacking in the Draft Forest Plan (2020 Citizen's DEIS Comments, page 10) and are still largely lacking in the Final Forest Plan. Objection: The Forest Plan lacks measurable desired conditions for riparian areas (2022 Forest Plan 100-102). As we noted in our comments in the draft plan (2020 Citizen's DEIS Comments, page 10), The Forest Plan "must include plan components including standards or guidelines, to maintain or restore the ecological integrity of riparian areas in the plan area, including plan components to maintain or restore structure, function[hellip]" In order to ensure this obligation is attained, "its dominant ecological characteristics" must "occur within the natural range of variation and can withstand and recover from most perturbations imposed by natural environmental dynamics or human influence." Desired conditions based on these requirements must be "described in terms that are specific enough to allow progress toward their achievement to be determined." Because the desired conditions in the plan are so general, different managers could make very different decisions about what "trending toward proper functioning condition" means. There is no way for a manager to know when sufficient "trending" has occurred. For example, RERU-DC-07 states, "Riparian areas provide functional soil and water resources, consistent with their flood regime and flood potential, and provide diverse habitats for native species. Riparian areas are in or trending toward proper functioning conditions or other suitable scientific protocol or method." (2022 Forest Plan, page 100). Suggested Resolution: Establish quantitative metrics to measure "progress toward [hellip] achievement" and specify desired conditions with respect to reference conditions, e.g. number of acres meeting a certain level of ecological integrity, or detailed measurable specificity in subordinate standards or guidelines. The less specific and ascertainable the desired conditions are, the more mandatory standards are needed to provide certainty that the Planning Rule's requirements are being met. Objection: The Forest Plan is missing forest-wide riparian objectives (Forest Plan, pages 100-102, 2020 Citizen's DEIS Comments, page 12). The plan is missing numerical objectives for improving degraded riparian habitat forest-wide so that a substantial amount moves from unstable to impaired, and from impaired to stable. Establishing numerical objectives is essential for integrating management of activities and projects on the Tonto National Forest so that they contribute to or at least do not harm recovery of riparian vegetation. Moreover, such objectives will guide monitoring protocols and will provide a meaningful context within which to interpret monitoring[mdash]monitoring in a vacuum without desired endpoints is relatively useless. Suggested Resolution: The Forest Plan should be revised to include numerical objectives that specify improvements for riparian habitat condition and extent across the forest. Objection: The acre target of Objective RMZ-O-01 to "[c]omplete active and passive restoration projects on at least 125 miles of streams every 10 years to improve the ecological integrity of perennial and intermittent riparian ecosystems [hellip]." is inadequate to substantially improve riparian habitat across the forest in a timely manner (2022 Forest Plan, page 113 and 2020 Citizen's DEIS Comments, page 13). Suggested Resolution: Revise the Forest Plan to include a higher mileage of restoration to improve riparian habitat across the Tonto National Forest. Objection: Guideline RMZ-G-01 is inadequate to protect water flows needed to maintain riparian habitat (2020 Citizen's DEIS Comments, page 18). RMZ-G-01 states that "[n]ew spring developments and redeveloped springs (not including maintenance) should employ the strategies outlined in RMRS-GTR 40574 or the best available science associated with spring development (USDA Forest Service 2020)." This guideline is inadequate for protecting riparian resources from degradation due to spring development, which typically causes water withdrawal and use offsite. The guideline places no constraint on total amount of water withdrawal as a percentage of pre-development flow, nor does it require that enough water be left behind to maintain the pre-development quantity and quality of riparian vegetation. This is a prescription for further impairment of riparian ecosystems and increasing stressors on the diversity and at-risk species the Forest Service is required to protect. Suggested Resolution: This guideline, which ideally would be a standard instead of a guideline, should be revised to specify a) allowable withdrawal in terms of a measure like percentage of pre-development flow, and/or b) allowable decreases in quality or quantity of pre-development riparian vegetation. The guideline should specify that mitigation should occur such that any spring development would not contribute to net loss of area or quality of the pertinent RERUs across the forest, and would not contribute additional stressors to at-risk species. Ideally, considering the significance of riparian areas on the Tonto, the Forest Plan would be revised to prohibit any new spring development from diverting any amount of water from any spring. Objection: RMZ-G-05 will contribute to further degradation of riparian ecosystems (2020 Citizen's DEIS Comments, page 19, 2022 Forest Plan, page 114). Suggested Resolution: Revise the Forest Plan to remove all cattle from all riparian areas, as per Alternative C. Alternative C "would

exclude all uses and activities in riparian areas that are non-functioning. Watershed and Water

Resources Objection: The Forest Plan and FEIS fail to disclose the effects of groundwater withdrawals that will occur as a result of plan components directing increased well drilling for livestock waters (2020 Citizen's DEIS Comments, page 27, 2022 Forest Plan, page 106-110). Suggested Resolution: Revise the 2022 Forest Plan and FEIS to disclose the effects of well drilling for livestock waters and include limits on drilling to protect water resources. The FEIS must address the environmental effects of groundwater withdrawals that will occur as a result of Forest Plan direction, such as plan components that encourage development of upland water facilities to relieve riparian areas. Objection: The Forest Plan fails to create a framework for integrated management of riparian resources that would ensure well-targeted management activities. As we stated in our comments (2020 Citizen's DEIS Comments, page 10), to ensure significant improvement and movement towards desired conditions, the Forest Plan must provide a planning framework that will substantially decrease risk from stressors on riparian ecosystems and promote recovery via active and/or passive restoration of large expanses of riparian habitat. The Forest Plan fails to provide a framework for systematically and comprehensively decreasing risks because a) it fails to provide numerical targets to be reached by deadlines and b) it fails to plan for riparian recovery in the context of other stressors, such as grazing, recreation, mining, logging, and other vegetation management activities. Suggested Resolution: In addition to setting forth measurable targets for riparian condition, the Plan should be revised to prescribe a framework for integrated management of stressors so as to improve overall riparian health. Management Areas Plan Direction RECOMMENDED WILDERNESS Objection:

The Forest Service's faulty wilderness inventory and evaluation led to improper 'downgrading' of units, with unit-specific and systemic implications (2020 Citizen's DEIS Comments, pages 82-83, Forest Plan, page 136-138). As we noted in our comments on the Draft Forest Plan and DEIS, the Forest Service systematically applied multiple biases against wilderness recommendation throughout the wilderness evaluation process: These biases were systematically applied by the Forest Service in ways that inappropriately weighed in favor of livestock grazing and motorized recreation and weighed against potential wilderness recommendation. 1) The evaluation stage of the wilderness recommendation process consistently failed to adequately recognize actual topographic and vegetative conditions on the ground as they pertain to wilderness evaluation criterion apparent naturalness, opportunities for solitude, and manageability. This has improperly constrained the amount of recommended wilderness in the Forest Plan and FEIS. 2) The Tonto National Forest unduly penalized wilderness evaluation polygons for the mere presence of improvements (i.e. stock ponds, troughs, wildlife water catchments, non-motorized trails) regardless of how they appear on the landscape. This has improperly constrained the amount of recommended wilderness in the Forest Plan and FEIS. 3) The Tonto National Forest neglects to properly configure unit boundaries to exclude improvements (i.e. stock ponds, troughs, wildlife water catchments) where possible and necessary. Minor boundary reconfigurations could have drastically improved the wilderness character and manageability of polygons across the entire forest. This has improperly constrained the amount of recommended wilderness in the Forest Plan and FEIS. 4) The Tonto National Forest unduly penalizes the manageability ratings of polygons for the presence of cherry systems. This has improperly constrained the amount of recommended wilderness in the Forest Plan and FEIS. 5) The Tonto National Forest over-estimates the pervasiveness of adjacent sights and sounds. This has improperly constrained the amount of recommended wilderness in the Forest Plan and FEIS. 6) The Tonto frequently rated the subcriterion, "What is the composition of plant and animal communities?" through the lens of an expert, and not the average forest visitor. This occurrence is at odds with the fundamental idea behind "apparent naturalness. This has improperly constrained the amount of recommended wilderness in the Forest Plan and FEIS. 7) The Tonto does not properly recognize wilderness contiguous polygon's adjacency to designated wilderness in regards to opportunities for solitude and opportunities for primitive/unconfined recreation. This has improperly constrained the amount of recommended wilderness in the Forest Plan and FEIS.) The Tonto reconfigured boundaries to exclude Bureau of Reclamation withdrawals from wilderness evaluation polygons in Alternatives B and C of the FEIS despite designated wilderness areas across the Tonto including these withdrawals. The precedent has been set that inclusion of these withdrawals is acceptable in wilderness areas. Excluding these areas from recommended wilderness areas negatively alters the wilderness character of many polygons. Failure to address these points - all raised in our comments to the Draft Plan and DEIS - constitutes an arbitrary and capricious decision. Furthermore, the FEIS fails to include a reasonable range of alternatives regarding recommended wilderness. Suggested Resolution:

The Tonto should revise the Forest Plan and FEIS and the wilderness inventory and evaluation process to ensure inclusion of improperly excluded wilderness areas. Recognizing the significant role that topography and vegetation can (and do on the Tonto) have in screening for solitude, preventing motorized trespass, and masking the noticeability of impacts is paramount to accurately evaluating wilderness character. The Tonto must remedy this trend before proceeding to the FEIS by preparing a supplemental DEIS that corrects wilderness inventory and evaluation deficiencies. The Tonto should utilize the findings from the resulting improved evaluation to inform which lands to carry forward in a revised analysis. The Tonto National Forest must consider and provide rationale for why and how specific improvements detract from apparent naturalness. Polygons must not be penalized for merely containing improvements, especially in cases when minor boundary adjustments would exclude them. Unit boundary configurations must be revised to provide for an accurate assessment of wilderness characteristics: 1) Revise unit boundaries to exclude improvements that are along cherrystems and other boundary elements. 2) Compare the GIS boundary files of all polygons to actual on-the-ground conditions in order to locate and eliminate unneeded cherrystems, and re-analyze the new quantity of cherrystems as it pertains to manageability. 3) Remove features that are incompatible with wilderness character. 4) Consider other boundary reconfigurations that would improve the manageability of wilderness evaluation polygons. The Forest Plan must consider the site-specific conditions of each cherrystem (i.e. adjacent topography and vegetation and user groups) and how they pertain to ease of manageability. The Tonto must not unduly penalize a polygon for the mere presence of cherrystems. The Tonto should utilize the findings from this reconsideration and conduct an improved evaluation to inform which lands to carry forward in a revised inventory, evaluation, and analysis in a supplemental EIS. The Tonto National Forest should reevaluate how adjacent sights and sounds affect the evaluations of polygons by considering variables such as topography and unit acreage. The Tonto National Forest needs to revise the ratings for the subcriterion, "What is the composition of plant and animal communities?" in order to not overzealously penalize polygons because of non-native species. The Tonto must revise the wilderness evaluation to recognize where and when a polygon's opportunities for solitude and/or primitive and unconfined recreation benefit from designated wilderness contiguity. BOR withdrawals should not be excluded from the boundaries of recommended wilderness polygons in the DEIS. If the Tonto proceeds under current direction of excluding withdrawal areas, the Forest Service needs to explain how the withdrawals would be impacted by management as recommended wilderness. If the Tonto proceeds under new direction of including withdrawal areas, all affected polygons need to be reevaluated and then reanalyzed. An additional alternative must be prepared that provides unadulterated wilderness evaluation polygons for comparison with those provided in the current DEIS. Baseline information on the purpose and management of the BOR withdrawals must be included. The Tonto National Forest should consider how the implementation of the Travel Management Plan would affect the usage of wilderness evaluation polygon boundary roads and cherrystems, and ultimately affect the evaluations of all polygons.

Objection: The Forest Service fails to adequately explain why only two of the eleven recommended wilderness areas in the DEIS (preferred alternative B) are included in the Forest Plan and Draft Record of Decision. Of the eleven previously recommended wilderness areas, only Coronado Mesa (Mesa Ranger District, 6,419 acres) and Gun Creek (Pleasant Valley RD, 23,462 acres) now appear in the March 2022 Forest Plan document and in the accompanying Draft Record of Decision. The nine dropped from consideration include Indian Butte (Cave Creek RD, 6,140 acres) and eight smaller contiguous areas in various ranger districts in and around the Superstition Wilderness, Four Peaks Wilderness, Salt River Canyon Wilderness and Sierra Ancha Wilderness. While small (about 900 acres total) in relation to the five recommended wilderness areas in the LMP (106,000 acres), more of an explanation should be given as to why Indian Butte and the contiguous areas are no longer recommended. The November 2019 DEIS lists the eleven recommended wilderness areas on p. 128 and on pp. 130-161 describes the boundaries, geography, topography, vegetation, current uses and management, wilderness characteristics, the Forest Service's ability to manage and protect those characteristics, the evaluation process and the suitability for inclusion in the Wilderness Preservation System. All scored high in the evaluation process. The FEIS on p. 147-148 again listed the eleven recommended areas and reprinted the descriptions of each (Volume 4, Appendix D, pp. 150-182. Appendix D attempts to describe the evaluation process and directs the reader on p. 122 to the Final Wilderness Evaluation Rationale with a link to the project record, but neither the Final EIS nor the project record offers any meaningful explanation as to why the nine earlier recommended areas were dropped. Suggested Resolution: Revise the FEIS and Draft ROD to include specific rationales for dropping

nine of the eleven recommended wilderness areas that were included in the DEIS or revise the FEIS and Forest Plan to include these nine areas along with the five recommended in the Forest Plan and Draft ROD.

WILD AND SCENIC Objection: The Forest Plan fails to recognize numerous rivers that are both free-flowing and have at least one Outstandingly Remarkable Value (ORV) and not all ORVs are appropriately recognized on segments that are eligible for designation as Wild and Scenic. The Eligibility phase of the Wild and Scenic Rivers Act⁷⁹ is designed to be the broadest, with the least number of qualifications so many of the rivers included for eligibility in the current plan should be added back in. We were pleased to see the revised plan now includes the East Verde, but the plan still fails to include Haigler, Spring, Sycamore, Ellison, Pinto, and Cherry Creeks, which all possess ORVs for wildlife, scenery, geology, and recreation. Also disturbing, is the elimination of Lime Creek, Pine Creek, and the Lower Salt River. These have been inappropriately dropped as they contain one or more ORVs.

Suggested Resolution: The Forest Service should reevaluate its approach to evaluating ORVs and consider adding our segment-specific Eligibility recommendations to the Forest Plan and FEIS Preferred Alternative as outlined in our comments on the draft (2020 Citizen's DEIS Comments, page 157-165).

Objection: The Tonto National Forest's removal of Cherry Creek as an eligible Wild & Scenic River is inconsistent with the Wild and Scenic Rivers Act. The Forest Plan is deficient in not retaining Cherry Creek as an eligible Wild and Scenic River as listed in the "RESOURCE INFORMATION REPORT Potential Wild - Scenic - Recreational River Designations for National Forests of Arizona" from 1993. The use of "Regions of Comparison" does not meet the best available science requirement and inappropriately drops Cherry Creek from the plan and results in an arbitrary and capricious decision. Further, the status for Cherry Creek should be upgraded from eligible to recommended per the best available science (Cherry Creek is referenced on page 158 of the 2020 Citizen's DEIS Comments). By using "region of comparison" as a methodology for determining W & S River status, the Forest Service is undermining meaningful science as it pertains to climate change and the importance of protecting larger and more connected areas. Region of comparison does not address climate change. In fact, it works against it. If we are to save the existing riparian areas on Tonto National Forest, the Forest needs to look at the big picture of climate change and use every tool at its disposal to address the impacts of climate change. Decisions are not made in a vacuum. Small decisions on each river/stream cumulatively add up to a massive failure to protect rivers and streams and address the impacts of climate change. In addition, if one assumed that regions of comparison was a valid metric for determining W&S designation, the fact that Pinto Creek has been dropped from eligibility status gives greater importance and credibility to listing Cherry Creek as eligible as they are literally sister creeks, used on occasion for comparing streamflow and riparian conditions.

Suggested Resolution: Retain the designation of Cherry Creek as an eligible wild and scenic river as indicated in the 1993 RESOURCE INFORMATION REPORT. This designation has a "wild" component (segment 1-a) that is 14.3 miles in length and a "scenic" designation (segment 1-b) that is 6.4 miles in length.

FOOTNOTES

1 36 C.F.R. [sect] 219.1(c). 2 Id. [sect] 219.19.3 36 C.F.R. [sect] 219.10(b)(1)(i) 4 These statements are from the Forest Plan 2022 FEIS Vol. 3. Page numbers follow the statement. 5 40 C.F.R. [sect] 1502.14.6 Id. [sect] 1502.14(a); see also 42 U.S.C. [sect] 4332(2)(E) (agencies must "study, develop and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources"). 7 *New Mexico ex rel. Richardson v. BLM*, 565 F.3d 683, 708 (10th Cir. 2009). 8 40 C.F.R. [sect] 1500.2(e) (agencies must "[u]se the NEPA process to identify and assess reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment"). 9 See, e.g., *Soda Mountain Wilderness Council v. Bureau of Land Management*, 534 Fed. Appx. 680 (9th Cir. 2013), on remand to, 2013 WL 4786242 (D. Or. 2013) (failure to consider alternative to timber sale that would not have required building new roads to access three units in the project area). 10 *Western Watersheds Project v. Abbey*, 719 F.3d 1035, 1050 (9th Cir. 2013). 11 "Current authorized use averaged 191,369 animal unit months over the last four years, during which the forest experienced drought. Periods of drought are also expected to continue into the future." Forest Plan FEIS 2022 at 204. 12 Zwartjes, P.W., J.E. Cartron, P.L.L. Stoleson, W.C. Haussamen, and T.E. Crane. 2005. Assessment of Native Species and Ungulate Grazing in the Southwest: Terrestrial Wildlife. Gen. Tech. Rep. RMRS-GTR-142. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 74 p. plus CD.

https://www.fs.fed.us/rm/pubs/rmrs_gtr142.pdf¹³ The stock and monitor approach involves measuring the effects of actual stocking levels over time (either short-term or long-term) on utilization and utilization patterns, composition of vegetation, vigor, soil cover, and other factors (including wildlife) to see if changes in stocking and/or management are needed (Smith et al. 2012).¹⁴ Principles of Obtaining and Interpreting Utilization Data on Rangelands at 9.15 Id. 16 Id. 17 Principles of Obtaining and Interpreting Utilization Data on Rangelands at 9.18 Principles of Obtaining and Interpreting Utilization Data on Rangelands at 5.19 Society for Rangelands Management. 2018. Utilization and Residual Measurements: Tools for Adaptive Rangeland Management. Technical Report by SRM Rangeland Assessment and Monitoring Committee. Rangelands 40(5):146-151 (doi 10.1016/j.rala.2018.07.003).²⁰ February 16, 2016 Gila County Board Of Supervisors Meeting Minutes, 1400 East Ash Street, Globe, AZ. page 2 of 7.²¹ Julie Brugger, Mitchel P. McClaran & James E. Sprinkle (2020) 'Storytelling' Natural Resource Conflict on U.S. Public Lands, *Ethnos*, 85:1, 54-78, DOI: 10.1080/00141844.2018.1456476.²² Ibid., page 19.²³ Natural Resource Conservation Commissioner Lisa A. Atkins 2019 Annual Report, page.26.²⁴ 16 U.S.C. [sect] 529.25 16 U.S.C. [sect] 531.26 Hoglander, C. 2016. Change in Vegetation Productivity for Three National Forests in Utah, 1986-2011: Dixie, Fishlake, and Manti-La Sal National Forests. Analysis for Grand Canyon Trust. Flagstaff, AZ.²⁷ Schultz, C. and M. Nie. 2012. Decision-making triggers, adaptive management, and natural resources law and planning. *Natural Resources Journal* 52:443-521.²⁸ Stankey, G.H., R.N. Clark, and B.T. Bormann. 2005. Adaptive management of natural resources: theory, concepts, and management institutions. Gen. Tech. Rep. PNW-GTR-654. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 73 p., at page 58. Available at https://www.fs.fed.us/pnw/pubs/pnw_gtr654.pdf (last viewed August 10, 2020).²⁹ Schultz and Nie, Decision-making triggers, adaptive management, and natural resources law and planning at 455.³⁰ 36 C.F.R. [sect] 220.3 (emphasis added).³¹ 36 C.F.R. [sect] 220.5(e)(2) (emphasis added).³² 73 Fed. Reg. 43,084, 43,090 (July 24, 2008).³³ *NRDC v. United States Army Corps of Eng'rs*, 457 F. Supp. 2d at 234 (citations omitted).³⁴ *Mountaineers v. United States Forest Serv.*, 445 F. Supp. 2d at 1250.³⁵ See, e.g., *High Sierra Hikers Association v. Weingardt*, 521 F. Supp. 2d 1065, 1090-91 (N.D. Ca. 2007) (overturning a Forest Service decision to liberalize the rules limiting campfires in high country parts of a wilderness area on the grounds that the agency could not rely on adaptive management to overcome an inadequate response to the problems raised in the record).³⁶ 16 U.S.C. [sect] 1604(g)(3)(B).³⁷ 77 Fed. Reg. 21163 (April 9, 2012).³⁸ 77 Fed. Reg. 21164 (April 9, 2012).³⁹ 36 C.F.R. [sect] 219.8(a), 219.9(a)(1), & 219.9(a)(2).⁴⁰ 36 C.F.R. [sect] 219.5(a)(2)(i).⁴¹ 40 C.F.R. [sect] 1500.2(f).⁴² 36 C.F.R. [sect] 219.14(a)(2).⁴³ 16 U.S.C. [sect] 1536(a)(1).⁴⁴ 16 U.S.C. [sect] 1532(3).⁴⁵ 16 U.S.C. [sect] 1536(a)(2).⁴⁶ Id.; 50 C.F.R. [sect] 402.14(a).⁴⁷ MSO Leadership Forum Workgroup, June 17 & 26, 2020 Workshop Notes, dated July 3, 2020.⁴⁸ MSO 2 USFS letter to John Horning.⁴⁹ Revised Plan at 94.⁵⁰ Revised Plan at 95.⁵¹ Revised Plan at 95.⁵² Revised Plan at 95.⁵³ Recovery Plan at 278.⁵⁴ Revised Plan at 93.⁵⁵ Revised Plan at 98.⁵⁶ FEIS, Vol. 5 at 332, Response to comments.⁵⁷ FEIS, Vol. 4, at 459-460.⁵⁸ FEIS Vol. 5, Appendix 1 at 7.⁵⁹ FEIS Vol. 5, Appendix 1 at 7.⁶⁰ FEIS Vol. 5, Appendix 1 at 7.⁶¹ Revised Plan at 118.⁶² CBD et al. 2020, A citizen's coalition comment letter regarding the Tonto National Forest Draft Forest Plan and Draft Environmental Impact Statement, March 12, 2020, at 35.⁶³ CBD et al. 2020, A citizen's coalition comment letter regarding the Tonto National Forest Draft Forest Plan and Draft Environmental Impact Statement, March 12, 2020, at 35.⁶⁴ Revised Plan at 169-170.⁶⁵ See U.S. Fish and Wildlife Service, Mexican Spotted Owl Recovery Team. 2012. Mexican Spotted Owl Recovery Plan, First Revision (*Strix occidentalis lucida*). Albuquerque, NM: U.S. Fish and Wildlife Service, Southwest Region, at 93.⁶⁶ CBD, et al., 2020, at 36.⁶⁷ MSO Leadership Forum Workgroup, June 17 & 26, 2020 Workshop Notes, dated July 3, 2020, numerous locations.⁶⁸ Biological Opinion at 124.⁶⁹ Biological Opinion at 124.⁷⁰ Revised Plan at 118.⁷¹ Biological Opinion at 128.⁷² Revised Plan at 95.⁷³ USFWS. 2012. Draft Mexican Wolf Revised Recovery Plan. 05-07-2012. USFWS Southwest Region (Region 2). Albuquerque, New Mexico, p. 49.⁷⁴ USFWS 2012:49, Table 1 (page 51).⁷⁵ USFWS 2012.⁷⁶ USFWS. 2015. [Final Rule] Revision to the Regulations for the Nonessential Experimental Population of the Mexican Wolf. *Federal Register* 80(11):2512-2567. January 16, 2015.⁷⁷ Apache-Sitgreaves (2 million acres); Coconino (1.8 million acres); Lincoln (1.1 million acres); Carson (1.5 million acres); Coronado (1.7 million acres); Kaibab (1.6 million acres); Prescott (1.25 million acres); Tonto (2.9 million acres); Cibola (1.6 million acres); and Gila (3.3 million acres).⁷⁸ Carroll, C., M. K. Phillips, C. A. Lopez-Gonzalez, and N.A. Schumaker. 2006. Defining Recovery Goals and Strategies for Endangered Species: The Wolf as a Case

Study. *BioScience* 56: 25-37, and Carroll, Carlos, Richard J. Fredrickson, and Robert C. Lacy. 2014. Developing Metapopulation Connectivity Criteria from Genetic and Habitat Data to Recover the Endangered Mexican Wolf. *Conservation Biology* DOI:10.1111/cobi.12156.