WESTERN MINING ACTION PROJECT

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Reviewing Officer, Kurt Davis,
Deputy Forest Supervisor for the Coronado National Forest
300 West Congress Street
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Email: objections-southwestern-coronado@usda.gov

RE: OBJECTION to the Sunnyside Exploration Drilling Project, Draft Decision Notice (DN), Finding of No Significant Impact (FONSI) and Final Environmental Assessment (EA)

Lead Objector: Patagonia Area Resource Alliance

Pursuant to 36 CFR Part 218, on behalf of the Patagonia Area Resource Alliance (PARA), Defenders of Wildlife, Arizona Mining Reform Coalition, Center for Biological Diversity, Save the Scenic Santa Ritas, Tucson Audubon Society, Friends of Santa Cruz River, Borderlands Restoration Network, Sky Island Alliance, Friends of Sonoita Creek, and Earthworks, (Objectors), by and through their undersigned attorneys, file this Objection to the Draft DN, FONSI, and Final EA for the Sunnyside Exploration Drilling Project (Project) issued by Celeste Kinsey, District Ranger, Sierra Vista Ranger District Coronado National Forest, on or about January 25, 2023.

Because the DN is based on the inadequate EA and FONSI, these Objections show that the DN, EA, and FONSI fail to comply with numerous federal laws, including the National Environmental Policy Act, 42 U.S.C. §§ 4321 et seq. ("NEPA"); Forest Service Organic Administration Act of 1897, 16 U.S.C. §§ 475, 478, 551 ("Organic Act"); National Forest Management Act, 16 U.S.C. §§ 1600 1614 ("NFMA"); Endangered Species Act, 16 U.S.C. §§ 1531 et seq. ("ESA"); the Administrative Procedure Act, 5 U.S.C. §§ 551 et seq. ("APA"), and the implementing regulations, Executive Orders, and policies of these laws.

The remedy for these violations is for the Forest Service (USFS) to withdraw the DN, EA, and FONSI and not issue any decision or take any action based on the inadequate EA. The Forest Service must not take any action until a revised EA, and more appropriately an EIS, demonstrates full compliance with each and every law, regulation, policy, and Executive Order noted herein. The agency must withdraw the EA, DN, and FONSI with instructions to the Coronado National Forest to correct all errors noted herein before the agency can consider approving or taking any actions.

All of the Objectors filed comments on the Draft EA on or about April 2, 2021. *See* Comments submitted by Objecting groups on April 2, 2021. Pursuant to 36 CFR 218.8, the parties state that the following content of this Objection demonstrates the connections between the

Objectors' previous comments ("previous comments") for all issues raised herein, unless the issue or statement in the EA, DN or FONSI arose or was made after the opportunity for comment on the Draft EA closed, as detailed herein. Pursuant to the Administrative Procedure Act, 5 U.S.C. §553-706, and USFS requirements, the Reviewing Officer must provide a detailed response to each of the issues/objections raised in this Objection.

All of the previous comments submitted by the Objectors, including all exhibits and attachments submitted to the Forest Service by the Objectors, are hereby incorporated into this Objection and into the administrative record and hereby submitted to the Reviewing Officer for its review and consideration.

Interests and Description of Objectors

Patagonia Area Resource Alliance ("PARA")(Lead Objector) is a grassroots organization of volunteer community members committed to protecting and preserving the Patagonia, Arizona area. It is a watchdog organization that monitors the activities of industrial developers such as mining corporations, as well as government agencies, to make sure their actions have long-term, sustainable benefits to our public lands, our watershed, and our regional ecosystem.

Defenders of Wildlife is a national, nonprofit membership organization dedicated to the protection of all native animals and plants in their natural communities. Defenders is committed to protecting wild lands and wildlife in Arizona, and its Southwest office is located in Tucson, Arizona.

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.

The **Center for Biological Diversity** is a non-profit public interest organization with an office located in Tucson, Arizona, representing more than 825,000 members and supporters nationwide dedicated to the conservation and recovery of threatened and endangered species and their habitats. The Center has long-standing interest in projects of ecological significance undertaken in the National Forests of the Southwest, including mining projects.

Save the Scenic Santa Ritas is a non-profit organization that is working to protect the Santa Rita and Patagonia Mountains from environmental degradation caused by mining and mineral exploration activities.

Tucson Audubon is a 501(c)(3) member-supported community organization established in 1949. The organization promotes the protection and stewardship of southern Arizona's biological diversity through the study and enjoyment of birds and the places they live. Tucson Audubon provides practical ways for people to protect and enhance habitats for birds and other wildlife.

The **Friends of Santa Cruz River** is a non-profit organization dedicated to ensuring the continued flow of the Santa Cruz River, the life-sustaining quality of its waters, and the protection of the riparian biological community it supports.

Borderlands Restoration Network is a small, Patagonia-based nonprofit that works to grow a local restorative economy by rebuilding healthy ecosystems, restoring habitat for plants and wildlife, and reconnecting our border communities to the land through shared learning. Our work is primarily focused on protecting and restoring wildlife corridors and the surface waters of Sonoita Creek and surrounding watersheds.

Sky Island Alliance is a regional conservation nonprofit dedicated to protecting and restoring the diversity of life and lands in the Sky Island region of the U.S. and Mexico. Its mission is to ensure the Sky Islands—mountain ranges primarily in Arizona and Sonora that rise out of arid grasslands—are a place where nature thrives, open space and clean water are available to all, and people are connected to the region's innate ability to enrich lives.

The **Friends of Sonoita Creek** is a non-profit organization dedicated to protecting and restoring the water and natural habitat of the Sonoita Creek Watershed. We inform residents and visitors about its importance to life forms and relationship to the geography through hands on activities, presentations, hikes and collaboration with kindred organizations.

Earthworks is a nonprofit organization dedicated to protecting communities and the environment from the adverse impacts of mineral and energy development while promoting sustainable solutions. Earthworks stands for clean air, water and land, healthy communities, and corporate accountability. We work for solutions that protect both the Earth's resources and our communities.

According to the EA: "Arizona Standard's Sunnyside Exploration Drilling Project (SED Project) would include drilling on up to 30 constructed drill pads within three drill areas on National Forest System (NFS) lands. During the exploration drilling, no more than two drill sites at a time would be active. Drilling would be undertaken on an around-the-clock rotational work schedule with intermittent breaks, seven days a week for up to seven years. Drill holes would have a maximum depth of approximately 6,500 feet from the surface." EA at 1.

The USFS should not approve the Sunnyside Project using an EA and FONSI and instead should prepare an Environmental Impact Statement (EIS) that collects data and establishes current baselines for resources likely to be affected by the project. The EIS, or at a minimum, a revised Draft EA for public review, should identify and analyze alternatives to the proposed action, analyze cumulative impacts of all past, present, and reasonably foreseeable future actions in the project area and beyond, particularly of other mineral activities, and identify needed mitigation measures. The project will likely have significant adverse impacts on several species listed under the Endangered Species Act ("ESA") that will be harmed by direct, indirect, and cumulative impacts from present and reasonably foreseeable mining and other projects, as detailed herein. Yet the EA, DN/FONSI, and FWS Biological Opinion fail to meet the strict standards under the ESA, especially due to the serious impacts to the threatened Mexican spotted owl and its critical habitat (including Protected Activity Centers (PACs) that overlap part of the Project area), threatened western yellow-billed cuckoo, endangered jaguar and its critical habitat, endangered ocelot, threatened Chiricahua leopard frog, endangered Sonora tiger salamander, and endangered Gila topminnow.

Regarding NEPA, the EA fails to undertake the necessary "hard look" of all impacts,

alternatives, baseline conditions, mitigation measures, among other inadequacies as noted herein. The EA and agency:

1. Failed to collect and analyze and establish baseline conditions for resources that may be affected, including but not limited to wildlife (including ESA-listed species and other species and habitat that may be affected), air quality, vegetation/plants, surface and ground-water quality and quantity (including not only the water to be directly, indirectly or cumulatively affected by the drilling, but also the sources of water to be used for the project), recreation, transportation/traffic, economic activity/resources, and cultural/historical resources (with extensive government-to-government consultation with all Native American Tribes that may have current and/or historical ties to the area).

2. Failed to conduct the required detailed analysis of cumulative impacts from all mineral and other projects/activities in the area that may affect resources, including but not limited to wildlife, vegetation, water quality/quantity, air quality, recreation, transportation/traffic, and cultural resources.

3. Failed to consider all reasonable alternatives and conduct in-depth analysis of these alternatives.

4. Failed to identify appropriate and adequate mitigation (and its effectiveness) to offset impacts to all potentially affected resources.

See April 2, 2021 comments (pp. 3-4)(not satisfactorily addressed by the EA/DN/FONSI).

As shown in more detail below, the USFS's review contained in the EA/DN/FONSI contains numerous legal and factual errors and as such should be revised in order to comply with federal law.

I. FAILURE TO ADEQUATELY ANALYZE AND PROTECT NATURAL RESOURCES THAT WILL BE AFFECTED BY THE PROJECT

The Objectors raised the following issues in their April 2, 2021, comments at pp. 4-16, but were not satisfactorily addressed by the EA/DN/FONSI.

A. Water Resources –

The Patagonia Mountains are headwaters for Sonoita Creek and its tributaries, Alum Gulch and Harshaw Creek, waterways that provide essential water to downstream ecosystems and human communities. The creeks and their watersheds are recharge areas for groundwater aquifers. Residents of the Town of Patagonia and approximately 300 individual well users in the surrounding communities are entirely dependent on the water supply originating in these mountains. As authorized by 36 C.F.R. § 251.9, the Town of Patagonia applied to the Coronado National Forest to designate the Project area as its municipal watershed in August 2011. On March 4, 2014 a participating agreement was signed between the Town of Patagonia and the Coronado National Forest to "document the cooperation to monitor and measure the water quantity and quality of the Patagonia municipal supply watershed within the boundaries of the Coronado National Forest." The April 2018 Coronado National Forest Land and Resource Management Plan

makes multiple references to the Patagonia municipal supply watershed. *See*, *e.g.*, U.S. Forest Serv., Coronado National Forest Land and Resource Management Plan, at 139 & 145 (Apr. 2018), https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd583208.pdf [hereinafter Coronado NF Plan]. Because the proposed drilling operations are within the Town of Patagonia Municipal Supply Watershed as recognized by the Coronado National Forest, and because traffic supporting the drilling will travel through the watershed, this places on the USFS a duty to ensure the continued safety and adequacy of the Town of Patagonia water supply.

The US Forest Service has recognized the Town of Patagonia's Municipal Supply Watershed (see PDF attached of December 21, 2021 letter from Acting Forest Supervisor Kurt Davis to Town Mayor Wood) and a map of the recognized municipal supply watershed (see PDF attached of FS map). On August 12, 2020, the Town of Patagonia Mayor requested a comprehensive surface and groundwater study be conducted by the Forest Service (see PDF attached and PDF of the referenced 2007 study). The Town's request was supported by Congressman Raul Grijalva in his October 19, 2020 letter to the Coronado FS (PDF attached). The Forest Service did not respond. On August 25, 2021, the Town Mayor sent a follow-up letter repeating the request for a comprehensive surface and groundwater study (PDF attached). On October 6, 2021, Acting Supervisor Kurt Davis responded (PDF attached) but did not address the Town's request for a comprehensive surface and groundwater study, instead he listed various monitoring projects being conducted by the Forest Service. None of these studies are a comprehensive surface and groundwater study, which is required under NEPA, the USFS Organic Act, and the agency's duty to protect public resources.

As stated in the Sunnyside Environmental Assessment at:

- pages 59-60: details studies documenting a decline in groundwater levels.

- page 60: states that no groundwater quality samples have been collected in the project area.

- page 63, end of second paragraph: "Therefore, drill cuttings and fluids stored in temporary stumps are unlikely to lead to detectable changes in groundwater quality." There is NO baseline data. Furthermore, what testing will be done to document this claim?

As stated in the Sunnyside Water Resource Analysis Technical Report at page 15, "Analysis of Potential Effects: Artesian Flows During Drilling" section: "These conditions could allow groundwater from the deeper aquifer systems, about which little is known at this time, to flow to shallower aquifer systems or to the ground surface." It is imperative that the US Forest Service require a comprehensive surface and groundwater study as requested by the Town of Patagonia, as the failure to do this violates NEPA and USFS duties to protect public resources as discussed herein.

Historic mining operations in the Patagonia Mountains have created long-term copper, acidity, arsenic, fluoride, lead, and other water-quality problems for Alum Gulch, Sonoita Creek, Harshaw Creek, and their tributaries. The Project's proposed drill sites are within the drainage of Alum Gulch, water from which drains into Sonoita Creek. Alum Gulch, immediately downstream of Humboldt Canyon, is subject to an EPA approved Total Maximum Daily Load calculation for cadmium, copper, zinc, and acidity. See Sonoita Creek Watershed Management

Plan Phase 1, at part 3, 16–17 (May 12, 2017), http://patagonia-az.gov/wp-content/uploads/2015/12/Final-Phase-1-Sonoita-Creek-WMP-5-12-17.pdf; S. Shafiqullah, Hydrology Report for the Sunnyside Exploration Plan of Operation (Jan. 24, 2014).

Not surprisingly, further downstream, Sonoita Creek is also a state-designated impaired waterway for aquatic life and wildlife uses as a result of zinc contamination. Because the quality of these waters has already been compromised by previous mining activity, particular care should be taken when considering permits for any projects associated with mining or mineral exploration. As detailed below, the EA fails to include a complete analysis of the baseline conditions of these waters, and a full analysis of all direct, indirect and cumulative impacts to these waters (and all potentially affected waters).

Exploratory drilling involves significant quantities of water to cool drilling equipment inside the borehole. The EA does not establish the source of all the water needed for the Project, as it should under NEPA. Contaminated wastewater from drilling is typically collected in open pits (sumps) near the drill site and allowed to evaporate. The project proposes to construct on each drill pad an approximately 10-feet-wide by 15-feet-long by four-feet-deep sump to collect drill cuttings and fluids. If improperly designed or maintained, such sumps may leak and overflow with subsequent contamination of soil and water. For example, statistics from New Mexico's Oil Conservation Division show that pit overflows and liner leaks are the most common causes of drilling wastewater spills in New Mexico. *See* Yusuke Kuwayama et al., Pits versus Tanks: Risks and Mitigation Options for On-site Storage of Wastewater from Shale Gas and Tight Oil Development, Resources for the Future Discussion Paper 15-53 (Dec. 2015), https://media.rff.org/archive/files/document/file/RFF-DP-15-53.pdf.

The summer monsoon season that provides drenching rainfalls to the Patagonia Mountains could result in wastewater pit overflows that could contaminate Alum Gulch surface or subsurface waters. One waste sump on the Hermosa site adjacent to the Sunnyside site overflowed in approximately 2013.

Given these risks, water stored in sumps should be analyzed in terms of historic frequencies of spills and possible harm to surface water rather than accepting at face value the company's assertion that containment will be adequate, particularly given the possibility of severe monsoon precipitation, which in 2013 caused adits from abandoned mines in the area to overflow, contaminating Harshaw Creek with acidic waste.

The PoO states that "baseline water quality samples will be taken at nearby ephemeral or intermittent water sources prior to any disturbance activities; during drilling, and after the completion of drilling activities to document any changes in baseline water quality conditions in the Project Area." Arizona Standard LLC, Plan of Operations, Sunnyside Exploration Drilling Project, Santa Cruz County, at 30 (Feb. 28, 2021), https://www.fs.usda.gov/nfs/11558/www/nepa/111128_FSPLT3_5599116.pdf [hereinafter PoO]. Yet, under NEPA as detailed herein, this critical baseline data and analysis should have been provided in an adequate EA (for all potentially affected resources) to allow for adequate public review under NEPA. Moreover, particular attention should have been made for the baseline conditions and protection for downstream populations of species of special concern, notably the federally protected Mexican garter snake (*Thamnophis eques*) and Huachuca water umbel (*Lilaeopsis schaffneriana* ssp. recurva), both documented on the Nature Conservancy Patagonia-Sonoita Creek Preserve.

In addition to adverse effects for surface waters, exploratory drilling can contaminate, impede, or redirect the flow of groundwater. "[A] potential risk to impact groundwater quality and quantity through potential water exchange between aquifers. Deep boreholes drilled through the groundwater system could create a preferred pathway for groundwater in deeper formations to migrate upward and intermingle with the shallow parts of the system. A potential issue would be a risk of water exchange between aquifers as a result of the proposed drilling program." PoO at 31.

The PoO proposes to drill over a mile deep: "Coring drill holes will have depths of up to approximately 6,500 feet from the surface." PoO at 17. "Drill holes would have a maximum depth of approximately 6,500 feet from the surface." EA at 1. As noted, this will intersect the aquifer(s). For these reasons, further study of the baseline quality and quantity of ground and surface waters is essential for the USFS to make an informed decision about the proposed Project. *See, e.g.*, Gifford Pinchot Task Force v. Perez, 2014 WL 3019165, *25–33 (D. Or. 2014) (BLM/USFS EA for mineral exploration violated NEPA by failing to obtain and analyze baseline groundwater quality conditions); Idaho Conservation League v. U.S. Forest Serv., 2012 WL 3758161, *14–17 (D. Idaho Aug. 29, 2012).

As the EA noted:

> A segment of Alum Gulch and all segments of Harshaw Creek are listed as being impaired under Category 4a (impaired waters with U.S. Environmental Protection Agency -approved total maximum daily load); the impaired sections of the streams are shown in figure 14.
>
> The upper portion of Alum Gulch is impaired for cadmium, copper, zinc, and acidity. Harshaw Creek is impaired for copper and acidity (ADEQ 2003a). A third unnamed ephemeral drainage within the project area and west of Alum Gulch, is also listed as impaired for zinc and copper (Arizona Standard 2020).
>
> Arizona Department of Environmental Quality and U.S. Geological Survey have completed environmental studies on water quality and sources of contributions of acidity and heavy metals (ADEQ 2003a, 2003b). These studies concluded there is a clear contribution from historical mining activities, including mining wastes and adits.

EA at 61.

Further, regarding the review and protection of surface and ground waters, and their associated watershed, the record does not show how the Project will comply with the requirements for watershed protection in the FOREST SERVICE MANUAL SOUTHWESTERN REGION (REGION 3) ALBUQUERQUE, NM, FSM 2500 - WATERSHED AND AIR MANAGEMENT, CHAPTER 2540 - WATER USES AND DEVELOPMENT (attached). As the Manual states: "Upon completion of the analysis, Special Use authorizations for water developments on NFS lands should be approved using the appropriate decision document only when the long-term protection of NFS streams, springs, seeps, and associated riparian and aquatic ecosystems can be assured. The following is guidance

that specifically addresses the permitting of water developments on NFS lands." Manual at 4. The Manual details well screening processes, water protection requirements, modeling and detailed analysis requirements. Manual at 4-10. Yet the EA and DN do not discuss how these mandates have been met regarding the water encountered and used by the Project.

Overall, the USFS has not shown that the Project has been properly analyzed, and public resources protected, under the 1897 Organic Act, Clean Water Act, ESA, NEPA, and related laws.

B. Listed Species

The Objectors raised the following issues in their April 2021 comments at pp. 6-16, 16-24, but were not satisfactorily addressed by the EA/DN/FONSI. As stated in those comments, the proposed Project Area and nearby affected lands contain numerous federal listed threatened, endangered, and USFS special status species known to occur in and/or near the project area, now or in the past. Species listed under the Endangered Species Act as threatened or endangered and that have designated critical habitat within and within close proximity of the Project Area include Mexican spotted owl, yellow-billed cuckoo, and jaguar. *See* Appendix A to April 2021 comments.

These species include, among others, the federally threatened Mexican spotted owl and western yellow-billed cuckoo, and the area provides important habitat for the endangered jaguar and ocelot. Both the Mexican spotted owl and jaguar have designated critical habitat in and around the Project area. Adequate consultation with the U.S. Fish and Wildlife Service ("FWS") is required for these species, given the presence of both birds on or near the Project site, the presence of jaguar critical habitat on the site, and the historic occurrence of ocelot. See 50 C.F.R. § 402.14. In addition, for all potentially affected species and their habitat, including the threatened Chiricahua leopard frog, endangered Sonora tiger salamander, and endangered Gila topminnow (for which consultation should occur), the current baseline conditions for populations, movement, trends, and habitat conditions must be fully analyzed prior to issuance of the revised Draft EA/EIS for public review.

As raised in our comments on the draft EA at 6-16 and unsatisfactorily addressed, scientifically unsupported assumption runs through the EA's and FWS BiOp's analysis of the effects on species, to wit that individual animals, for example jaguars or Mexican spotted owls, can simply shift their activities away from the area of human disturbance and activity. "The extended duration of the exploratory drilling activities has the potential to result in avoidance of habitats within the project area while the project is ongoing, though it is more likely that jaguars and ocelots would shift their activities to avoid areas with increased human activities, such as drill areas, laydown areas, or water storage tank sites." EA at 36.

"The extended duration of the exploratory drilling activities (up to seven years) has the potential to result in temporary avoidance of habitats within the action area by Mexican spotted owls; displacement of owls could leave them more vulnerable to predation due to their potential use of unfamiliar habitats. However, it is more likely that owls would shift their activities within their existing home ranges to avoid areas with increased human activities." EA at 33. "These indirect impacts would extend across an area larger than the actual project footprint, and wildlife species that are more sensitive to fragmentation and disturbance may shift their habitat use to other areas while drilling operations are ongoing." EA at 109.

These pollyannaish assertions assume that there is no or trivial cost to individuals and populations if individuals are forced to move or forgo portions of their territories. But, in fact, there are almost certainly associated costs that may include increased mortality and decreased reproductive success. Many studies have demonstrated that there are significant fitness costs to animals that are forced to relocate—mortality rates have consistently been found higher for dispersing individuals than resident ones in a multitude of species, including ocelots. See generally Aaron M. Haines et al., Survival and Sources of Mortality in Ocelots, Journal of Wildlife Management 69: 255–263 (Jan. 2005); Xavier Bonnet et al., The Dangers of Leaving Home: Dispersal and Mortality in Snakes, Biological Conservation 89(1): 39–50 (1999).

The USFS cannot assume without scientific analysis that the costs of moving are trivial for either individuals or populations. Such analysis must be part of the cumulative effects analysis because multiple projects on the landscape, each of which causes individuals to "shift," could collectively cause significant mortality and deprive a population of enough habitat to sustain itself.

We also question the assertion that "[n]oise and visual disturbance associated with reclamation monitoring and maintenance (if needed) would not have an effect on jaguars and ocelots. The reclamation monitoring and reclamation activities would occur infrequently and would be indistinguishable from the pickup truck traffic and recreational use ongoing in the project area." EA at 36. This general statement is repeated for other listed species. EA at 34, 35, 112. This statement in the EA confuses type of effect with scale. Reclamation activities would be additive to ongoing "pickup truck traffic and recreational use" and therefore would be an additive stressor. Even if the effects of reclamation are similar to those of truck traffic and recreational use, the cumulative scale may be great enough to have a significant negative effect. The USFS must analyze such cumulative effects before it can conclude that restoration "would not have an effect."

1. Legal framework

Congress enacted the Endangered Species Act ("ESA") in 1973 to provide "a program for the conservation of . . . endangered species and threatened species." 16 U.S.C. § 1531(b). Section 2(c) of the ESA establishes that it is the policy of Congress that all federal agencies shall seek to conserve threatened and endangered species, and shall utilize their authorities in furtherance of the purposes of this Act. 16 U.S.C. § 1531(c)(1). 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." 16 U.S.C. § 1532(3). Section 4 of the ESA directs the Secretary of the Interior to list species that are threatened or endangered with extinction, and to designate "critical habitat" for such species. 16 U.S.C. § 1533(a). "Critical habitat" is the area that contains the physical or biological features essential to the "conservation" of the species and which may require special protection or management considerations. 16 U.S.C. § 1532(5)(A). Section 4 of the ESA also requires the Secretary to develop and implement recovery plans for threatened and endangered species, unless the Secretary finds that such a plan will not promote the conservation of the species. 16 U.S.C. § 1533(f). The ESA defines "endangered species" as "any species which is in danger of extinction throughout all or a significant portion of its range." 16 U.S.C. § 1532(6). The ESA defines "threatened species" as "any species which is likely to become an endangered species within the

foreseeable future throughout all or a significant portion of its range." 16 U.S.C. § 1532(20). The ESA requires the action agency, in consultation with FWS to "insure that any action authorized, funded, or carried out by" the agency "is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification" of the critical habitat of such species. 16 U.S.C. § 1536(a)(2). FWS and the action agency must use the best scientific data available during consultation. Id.

For each proposed action, the action agency must request from FWS whether any listed or proposed species may be present in the area of the proposed agency action. 16 U.S.C. § 1536(c)(1); 50 C.F.R. § 402.12. If listed or proposed species may be present, the action agency must prepare a "biological assessment" to determine whether the listed species is likely to be adversely affected by the proposed action. Id. If the action agency determines that a proposed action may affect any listed species or critical habitat, the agency must engage in formal consultation with FWS, unless the biological assessment concludes that the action is not likely to adversely affect any listed species or critical habitat, and FWS concurs with that finding. 50 C.F.R. § 402.14. To complete formal consultation, FWS must provide the action agency with a "biological opinion," explaining how the proposed action will affect the listed species or habitat. 16 U.S.C. § 1536(b); 50 C.F.R. § 402.14. If FWS concludes that the proposed action "will jeopardize the continued existence" of a listed species or result in the destruction or adverse modification of critical habitat, the biological opinion must outline "reasonable and prudent alternatives." 16 U.S.C. § 1536(b)(3)(A). If the biological opinion concludes that the action is not likely to jeopardize the continued existence of a listed species, and is not likely to result in the destruction or adverse modification of critical habitat, FWS must provide an "incidental take statement," specifying the amount or extent of incidental taking on such listed species and any "reasonable and prudent measures" that FWS considers necessary or appropriate to minimize such impact, and setting forth the "terms and conditions" that must be complied with by the action agency to implement those measures. 16 U.S.C. § 1536(b)(4); 50 C.F.R. § 402.14(i). In order to monitor the impacts of incidental take, the action agency must monitor and report the impact of its action on the listed species to FWS as specified in the incidental take statement. 16 U.S.C. § 1536(b)(4); 50 C.F.R. §§ 402.14(i)(1)(iv), 402.14(i)(3). If during the course of the action, the amount or extent of incidental taking is exceeded, the action agency must reinitiate consultation with FWS immediately. 50 C.F.R. § 402.14(i)(4).

Section 9 of the ESA and its implementing regulations prohibit the unauthorized "take" of listed species. 16 U.S.C. § 1538(a)(1); 16 U.S.C. § 1533(d); 50 C.F.R. § 17.31. "Take" is defined broadly to include harming, harassing, trapping, capturing, wounding, or killing a protected species either directly or by degrading its habitat. 16 U.S.C. § 1532(19); 50 C.F.R. § 17.3 (defining harm to include "significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering"). Taking that is in compliance with the terms and conditions specified in the incidental take statement of a biological opinion is not considered a prohibited taking under Section 9 of the ESA. 16 U.S.C. § 1536(o)(2).

Here, the Fish & Wildlife Service and the Forest Service are in violation of Section 7(a)(1) and (a)(2) of the ESA, for, among other things, failing to ensure that the proposed project conserves listed endangered and threatened species and their critical habitats, failing to implement meaningful mitigation, failing to comport with the Mexican spotted owl recovery plan, and having a legally deficient incidental take statement by, among other things, failing to implement

reasonable and prudent measures necessary or appropriate to minimize impacts.

The ESA violations are compounded by the Forest Service's NEPA shortfalls discussed herein. These include, the continued supported assumption that species would simply shift their activities away from areas of human disturbance and activity despite most studies demonstrating there are significant fitness costs to animals that are forced to relocate—mortality rates have consistently been found higher for dispersing individuals than resident ones in a multiple of species, including ocelots. *See generally* Aaron M. Haines et al., Survival and Sources of Mortality in Ocelots, Journal of Wildlife Management 69: 255–263 (Jan. 2005); Xavier Bonnet et al., The Dangers of Leaving Home: Dispersal and Mortality in Snakes, Biological Conservation 89(1): 39–50 (1999). The USFS cannot assume without scientific analysis that the costs of moving are trivial for either individuals or populations. Such analysis must, but is not, part of the cumulative effects analysis because multiple projects on the landscape, each of which causes individuals to "shift," could collectively cause significant mortality and deprive a population of enough habitat to sustain itself.

2. Mexican spotted owl (*Strix occidentalis lucida*)

The BiOp/EA/DN/FONSI are all deficit under both the ESA and NEPA as it pertains to Mexican spotted owl analysis, including, but not limited to, alternatives, direct, indirect, and cumulative impacts, mitigation of impacts, reasonable and prudent measures, terms and conditions, and environmental baseline.

As detailed below, the analysis of effects/impacts on the owls and the daylight-only alternative are superficial and inadequate. The EA makes assumptions about the technical and safety challenges that would be associated with daylight-only drilling that are unsubstantiated and contradicted by the fact that the similar San Antonio project proposes to use daylight-only drilling, demonstrating that a requirement for this project to use daylight-only drilling would be technically feasible, contrary to what the EA states.

Moreover, the proposed mitigation does not comport with the recovery plan for this species. The DN/FONSI allows for 24-7 drilling and associated activities to occur in Protected Activity Centers (PACs) and recovery habitat, that although outside the PACs is still critical habitat and only limits these activities within a PAC core area if nesting Mexican spotted owls are found. Thus, drilling, well pad scraping, road expansion, and other related activities would during the breeding season within PACs outside of Core Areas even if nesting birds in the core area are detected. By allowing detrimental development activities within and near the PACs, USFS and FWS undercut the purpose of the PACs, which are to sustain and enhance areas that are presently, recently, or historically occupied by breeding owls, thus serving an essential role in the survival and recovery of the species. This results in a violation of NEPA's mitigation requirements as well as ESA violations. The Forest Service's approach to allow 24-7 drilling without breeding season restrictions is a fait accompli for surveys that are stated to be mitigation measures. Allowing drilling and other operations within PACs outside of core areas and in recovery habitat outside the PAC even if birds are detected sacrifices not only the very areas that are to be protected for the species as they are considered "essential" to the conservation of the species, but would inevitably impact the core areas as well. It should be expected that allowing such operations to occur would result in extirpation of the impacted core areas, and thus conveniently produce surveys that detect no owls or for which no owls are inferred.

Additionally, there are serious problems with the BiOp on which the EA/DN/FONSI rely, including unfounded assertions, such as the statement that owls "will not likely permanently desert the area because of the disturbance" (BiOp at 40). This statement references Delaney et al.,1999, but Delaney's study has no bearing on this assertion because it does not speak to abandonment of territory in response to disturbance nor to the effects of long-term disturbance.

i. Status of owls and effects of the project

The entire project area falls within designated critical habitat for the Mexican spotted owl. "Critical habitat was designated for the Mexican spotted owl in 2004 (USFWS 2004). In total, 8,647,749 acres have been designated as critical habitat in Arizona, New Mexico, Colorado, and Utah (figure 10)." EA at 30. The project is located within approximately 1,682 acres of critical habitat in unit BR-W-14, which is 52,158 acres in size and is centered on the Patagonia Mountains. EA at 30. Although the Final EA attempts to trivialize the significance of this critical habitat by characterizing the impacted areas as small percentages of designated critical habitat, all habitat that has been designated as critical habitat is essential to the conservation of the species. *See e.g.* Fish and Wildlife Serv. Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for the Mexican Spotted Owl, 69 Fed. Reg. 53182, 53189 (Aug. 31, 2004).

Owls have been consistently documented in the very areas that would be directly and indirectly affected and impacted (as well as cumulatively impacted) by this 7-year proposed exploration project. "Multiple Mexican spotted owls have been observed in the project area between 2006 and 2020 (ACS 2019b, 2020c; Forest Service unpublished data; WestLand 2013a, 2016, 2017, 2018a, 2018b, 2019). Portions of five Mexican spotted owl PACs occur in the project area: PAC # 03-008, PAC # 03-018, PAC # 03-020, PAC # 03-024, and PAC # 03-025." EA at 30. These five PACs "are intended to protect the activity center of a single owl territory." MSORP at 259.

> The project would occur in areas that are known to be used by Mexican spotted owls for breeding, roosting, foraging, and dispersal. Project construction and drilling operations would occur primarily within and adjacent to PAC # 03-020, PAC # 03-024, and PAC # 03-025. Vehicle and equipment travel would occur along Harshaw Road—a primary access route to the proposed drill areas—within PAC # 03- 018 and PAC # 03-008, but no construction or drilling activities are proposed in the vicinity of these two PACs. There are two main categories of effects that may occur to Mexican spotted owls as a result of the proposed action: habitat loss/degradation and impacts related to increased human presence and heavy equipment use (i.e., disturbance from increased human presence, noise, and nighttime lighting). EA at 33.

The BiOp states that "MSO detections and active roost sites have been documented within the Project Area. Project Area is within several PACs and suitable nesting and feeding habitat for this species exists within the Project Area." (PoO at 38 (Table 6)). "PACs are intended to sustain and enhance areas that are presently, recently, or historically occupied by breeding Mexican spotted owls" (BiOp at 40).

As noted in our comments on the Draft EA (p. 8), Mexican spotted owls generally

return to the same nesting locations year after year, and most owls remain near their nesting territory in the non-breeding season, meaning that they would likely be adversely affected by drilling activities even during the non-breeding season, e.g., by noise and lights. *See* U.S. Fish & Wildlife Serv., Mexican Spotted Owl Recovery Plan, First Revision (Strix occidentalis lucida), at 26 (Sept. 5, 2012), https://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/MSO/2012MSO_Recovery_Plan_First_Revision_Final.pdf. Moreover, owls hunt almost exclusively at night relying on their keen hearing to detect prey, and hearing is an important part of their social communication. Id. at 56.

The DN would permit a) drilling and associated development 24-7 at any time of year outside of Core Areas of a PAC, including during the breeding season (BiOp at 35), and b) drilling and associated development 24-7 in Core Areas of the PAC provided that "it has been determined that the PAC is unoccupied or the owls are not nesting that year as inferred from results of surveys conducted according to protocol (see WILDLIFE-2 in BA Appendix B, DN at 8)." Drilling is only prohibited within Core Areas during the breeding season from March through August *if* the surveys detect nesting owls. An additional provision was recommended in the BiOp with respect to sound, specifically that "The USFWS (2012a) recommends breeding season restrictions (March through August) for activities that result in noise levels greater than 69 dBA for an extended period of time (more than 1 hour) within 165 feet of nest sites, or within entire PACs if nest sites are not known." However, there is no discussion of why this was not adopted as a reasonable and prudent measure or to otherwise mitigate impacts to owls. This comes from the threat specific management recommendation for noise in the MSORP, which provides specific direction for limiting impacts on owls. As noted, the Forest Service provides no discussion of why this wasn't adopted and it is also unclear how the noise tables appropriately use a different metric, of 50 feet, when the MSORP uses meters. This is a drastic difference, 50 feet is a mere 15.24 meters, while 50 meters is 164 feet.

The Project's drills will operate 24 hours a day and generate significant noise and light pollution near and inside the designated PAC and in the surrounding foraging habitat. Further, proposed road improvements and other construction, including clearing and grubbing, dredge and fill, dust control, will occur within PACs and beyond into designated recovery habitat outside of PACs but within critical habitat. The BiOp concludes that "Vehicular traffic, human presence, nighttime lighting, and/or and noise will also affect" the PACs. "The extended duration of the exploratory drilling activities has the potential to result in the avoidance of some habitats within the action area by Mexican spotted owls. Displacement of owls could leave them more vulnerable to predation due to their potential use of unfamiliar habitats, or owls may just shift their activities within their existing home ranges to avoid areas with increased human activities, such as drill areas, laydown areas, or water storage tank sites. The use of unfamiliar habitats or habitats that may have decreased prey availability could affect foraging activities of Mexican spotted owls, and result in decreased survivorship or decreased nest productivity."

The Project would significantly degrade owl habitat: "Up to 180 trees greater than 5-inch diameter at breast height or 5-inch diameter at root collar would be removed as a result of the proposed action." EA at 110. Trees of this size constitute an important component of owl habitat, with larger trees providing roost and nest sites, and perches for hunting. The recovery plan states, "Because it takes many years for trees to reach large size, we recommend that trees ≥46-cm (18 inches) dbh not be removed in stands designated as recovery nest/roost habitat unless

there are compelling safety reasons to do so or if it can be demonstrated that removal of those trees will not be detrimental to owl habitat" (MSORP at 268). For recovery foraging/nonbreeding habitat the recovery plan states, "Strive to retain (do not cut) all trees >61 cm (> 24 in) dbh, the average diameter of nest trees, unless overriding management situations require their removal to protect human safety and/or property (e.g., the removal of hazard trees along roads, in campgrounds, and along power lines), or in situations where leaving large trees precludes reducing threats to owl habitat (e.g., creating a fuel break)" (MSORP at 268). The only exceptions in this recommendation are for protecting human lives or property, or where removing the trees would reduce threats to owl habitat. There is no exemption for building drill pads or other habitat degradation planned to fulfill economic desires. The DN, EA, and BiOp does not prohibit removal even of large trees, merely stating "[a]ll trees 12 inches dbh or greater would be avoided to the extent possible" (DN at 8). There is no explanation of why a prohibition on removal of trees this size was not adopted to mitigate harm to the species and its critical habitat, nor any criteria for determining what "to the extent possible" means in practice. What determinations would be made to reroute a road or resite a drill pad to avoid large trees? We note that, as for the jaguar and ocelot discussed below, maintaining connectivity between suitable habitat patches is an essential component of Mexican spotted owl recovery. The proposed Project will contribute to the deterioration of connectivity in this region, especially when considering the numerous other drilling and mining projects proposed in the Patagonia Mountains.

The owl's status as threatened under the ESA means that the FWS has determined the species is "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." FWS has determined in its BiOp (at 40) that "In this BO, the FWS determines that the incidental take of Mexican spotted owls associated with 5 PACs for 7 years is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat." Yet, this conclusion is based on downplaying impacts and framing the impacted areas as small portions of designated critical habitat.

For example, although FWS and the Forest Service contend that "[n]o permanent effects to Mexican spotted owl habitat are anticipated due to the expected re-growth of vegetation following reclamation" from the tree removal for road widening and drill pad creation, it is undisputed that "[i]t will, however, require *decades* to regrow large trees that may be removed by the Project. The birds presently occupying the site and some proportion of their offspring will therefore experience essentially permanent, life-long effects." BiOp at 33 (emphasis added). Compounded with the conclusion that "[b]irds experiencing even temporary or short-term effects may fail to breed, fail to successfully rear young, or raise less fit young; longer-term disturbance may result in owls deserting the area because of chronic disturbance or because habitat no longer meets the owl's needs," BiOp at 40, the impacts of tree removal and constant and continually shifting human disturbance, noise from 24-7 drill rig operation, light pollution, as well as road building and expansion, spanning nearly the lifespan of an owl raises significant concerns that the affected PACs may no longer serve their designated purposes, with owls extirpated or otherwise taken as a result of the exploration activities.

Owls may not adapt readily to these impacts simply by moving their territories because the species has a high degree of site fidelity and very low rates of dispersal by adult birds, usually only occurring when owls were unmated or for other reasons failed to breed (Ganey and Rawlinson 2014). For example, owls have been observed inhabiting the same roosting and nesting sites in

Humboldt Canyon for years. Dispersal of adult Mexican spotted owls from a breeding territory to territory elsewhere is exceedingly rare, so much so that the first known case, which was observed in 2012, was reported as a special note in a scientific publication (Ganey and Jenness 2014).

FWS' assertion that this exploration project will not jeopardize owls or result in destruction or adverse modification is particularly arbitrary given the empirical evidence of owl abandonment of the neighboring Trench Camp property. The Trench Camp property is being subjected to the very same types of impacts that would occur with the Sunnyside exploration project, such as noise, visual impacts, and habitat degradation in and around the project area. EA at 38. Repeated nighttime calling station surveys have failed to detect owls in the Trench Camp area, leading the Forest Service to conclude that owls "avoid the Trench Camp property" although they use similar habitat that not subjected to these types of incompatible human impacts, including the very location for the proposed exploration that is the subject of this objection period. EA at 38.

The approach FWS and the Forest Service have taken to downplaying of the impacts from this project to owls and their critical habitat, reflect a chronic problem with how FWS has recently been interpreting the ESA, leading to death by a thousand cuts. It also exemplifies the conflict between the Trump administration's adopted definition of adverse modification of critical habitat used in the BiOp, with the ESA's plain language and focus on recovery, not merely the survival of listed species. The 2019 regulations added the phrase "as a whole" to the definition of destruction or adverse modification so that it now reads "*Destruction or adverse modification* means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species." 50 C.F.R. § 402.02. Yet, the purpose for establishing critical habitat is to carve out a territory that is not only necessary for the species' survival but also essential for the species' recovery. 16 U.S.C. § 1533(f)(1) ("The Secretary shall develop and implement plans . . . for the *conservation* and *survival* of endangered species and threatened species.") (emphasis added); *Gifford Pinchot Task Force v. United States Fish & Wildlife Serv.*, 378 F.3d 1059, 1070-71 (9th Cir. 2004). As applied, here, the new definition has resulted in arbitrarily heightening the threshold of destruction or adverse modification as the proposed project's affects would degrade PACs and recovery habitat from providing their key functions which are essential to the species' conservation and are discussed in detail herein.

ii. <u>Habitat degradation and disturbance proposed for PACs contravenes Recovery Plan which was developed to ensure the recovery of the species.</u>

Section 4(f) of the ESA unequivocally mandates that FWS develop and *implement* recovery plans. 16 U.S.C. § 1533(f)(1) (providing that FWS "*shall* develop and implement [recovery] plans for the conservation and survival of endangered species and threatened species . . .") (emphasis added). Congress further mandated that the FWS incorporate particular standards into recovery plans, such as "site-specific management actions" necessary for the conservation and survival of the species. 16 U.S.C. § 1533(f)(1)(B). Consequently, the ESA dictates that formal ESA recovery plans do indeed implement the ESA. *See Little Sisters of the Poor Saints Peter & Paul Home v. Pennsylvania*, 140 S. Ct. 2367, 2382 (2020) (explaining that, in construing legislative intent, "[t]he only question we face today is what the plain language of the statute authorizes"). A recovery plan prescribes conservation policy by offering the FWS's expert – and thus "authoritative" – statement on how the FWS and its partners can conserve a listed species through site-specific management actions. 16 U.S.C. § 1533(f)(1)(B)(i).

It is essential to look closely at how areas designated as PAC and PAC Core Areas are treated in the BiOp, DN, FONSI, and EA, and how such recommendations and requirements comport with the Mexican spotted owl recovery plan. The BiOp (at 41) sets overall context for activities initiated or approved in owl habitat by stating, "We recommend that the Coronado National Forest work to implement recovery actions as outlined in the recovery plan for Mexican spotted owl." In recovery plan identifies that "PACs are intended to sustain and enhance areas that are presently, recently, or historically occupied by breeding Mexican spotted owls," and the recovery plan specifies that the most "conservative" management occurs within PACs, compared with non-PAC habitat (p. VIII). By allowing clearing of vegetation, construction, and drilling within PACs the Forest Service would be contravening the reason the PACs were authorized and designated, i.e., protection of the most important owl habitat to ensure reproductive success and thus recovery of the species.

If we compare recommendations in the recovery plan with provisions in the BiOp and EA/DN/FONSI, it is clear that these latter provisions would allow activities associated with the project that contravene the recovery plan. This is one reason, among many, provided in these objections, that illustrates that significant effects are present, and thus an EIS, not an EA, is needed for this proposed multi-year exploration drilling plan. *See* 42 U.S.C. § 4332(2)(C).

For example, Section 3(a)iii of the recovery plan asks, "What activities are allowed in PACs outside of core areas?" In answer, the plan specifies that fire treatments or ground-disturbing activities that include "road or train maintenance, repair, and building" should only be done outside the breeding season or "unless non-breeding is inferred or confirmed that year per the accepted survey protocol." Appropriately, the BiOp and the EA/DN/FONSI require this temporal mitigation for construction and drilling associated with the project, but only within Core Areas, not within the entire PAC as specified by the recovery plan. Moreover, the language in Section 3(a)iii of the recovery plan does not mention as allowable activities construction of drill pads or drilling activities. It is clear from the totality of this section that the discussion of allowable activities pertains primarily to vegetation treatment for fuel reduction projects or other projects for the purpose of enhancing owl habitat. Indeed, Table C1 of the recovery plan (Summary of recommended management actions in Core Areas, PACs, and Recovery Habitats) states that "Removal of hardwoods, downed woody debris, snags, and other key habitat variables should occur only when compatible with owl habitat management objectives as documented through reasoned analysis" and that "New road or trail construction is not recommended in PACs," which are both contravened by this project. While the proposed exploration would remove trees equal to or greater than 5-inch dbh or drc as well as result in other woody debris, etc., (EA at 47), there was no assessment that this is compatible with owl habitat management. *See* BiOp at 33-34. It also is not clear how FWS and the Forest Service can conclude the proposed project complies with the recovery plan, much less the prohibitions on jeopardy and destruction and adverse modification of critical habitat when the agency is missing essential baseline information about nest, roost, and foraging and dispersal habitat. BiOp at 33 ("The affected acreage contains PACs and unknown proportions of both nest/roost and foraging/dispersal habitat."). Overall, it is clear that the Recovery Team did not contemplate and did not intend to greenlight drilling activities in the PACs.

Moreover, the USFS decision would clearly contravene the recovery plan by allowing drilling activities in the PACs (outside the Core Areas) year-round. This is compounded by the unknown "survey" approach as it is not discussed in any detail or specificity in BiOp or the Forest

Service documents. The recovery plan states in the section "What Activities Are Allowed in PACs Outside of Core Areas?" that "Road or trail maintenance, repair, and building in PACs should be undertaken during the non-breeding season (1 Sep–28 Feb) to minimize disturbance to owls unless non-breeding is inferred or confirmed that year per the accepted survey protocol (Appendix D)" (p. 261). It is not clear what this survey protocol is, much less how it meets the survey requirements found in the MSORP or whether a complete inventory, which requires a period of two year, has been conducted. *See* MSORP Appendix D. The monitoring slated to occur for a single breeding season after the project completion, even though two breeding seasons are required for a complete inventory, is similarly deficient given the lack of information as to how the monitoring will be conducted. To be a complete survey, multiple surveys are required (and must be required) and must also span the key period of time that is identified in the MSORP. This means four complete surveys spaced out over the breeding season, with two of the four surveys March 1 through June 30 with no more than on survey in March and with all surveys completed before August 31. If the survey plan for determining non-breeding any particular year is actually consistent with the MSORP, then activities wouldn't be able to occur much, if any sooner, than the conclusion of breeding season, September 1.

The recovery plan is clear that the overriding purpose of PACs is to "sustain and enhance" key habitat, and that this habitat needs to be protected from disturbance, unless it occurs as a result of management with the goal of protecting or enhancing the habitat. There is no language in the plan that can be reasonably interpreted as permitting projects that diminish the condition of habitat or result in take of the owls. The Management section of the recovery plan (p. VIII), clearly intends that whatever disturbance does occur should be done "to sustain or enhance desired conditions for the owl, including fire-risk reduction, as well as monitoring owl response." This section of the plan calls out several types of permissible disturbances, but they all have the goal of sustaining or enhancing desired conditions, and they do not contemplate disturbances like drilling that would decrease desired conditions for the owl. Therefore, by greenlighting this project's ground-clearing and drilling activities the BiOp's fails to correctly interpret and enforce the Service's own recovery plan protections for PACs.

Within PACs, designated Core Areas receive even greater protection than other areas of the PACs because they typically contain breeding sites. By greenlighting project activities within the Core Areas, whether during the breeding season or not, the BiOp, EA, and DN make a mockery of the intent of the recovery plan. Moreover, by allowing 24-7 drilling without breeding season restrictions within the PAC outside of core areas, the BiOp, EA, and DN results in an absurd feedback loop where noise, light, and other disturbances will likely prevent breeding even within the PACs core areas, resulting in no detected nesting birds, which would then subject the core areas to 24-7 drilling during the breeding season, making it even more unlikely that any nesting birds would be detected.

Beyond the PACs, the recovery plan designates a broader category of critical habitat called "recovery habitat." The plan specifies that 10 to 25 percent of this category "should be managed as recovery nest/roost habitat" and that the remainder should be "managed for other needs (such as foraging, dispersing, or wintering) provided that key habitat elements are retained across the landscape" (p. VIII). As is the case with PACs, this language is clear that the primary purpose of designating recovery habitat is to identify it as critical for the recovery of the species and to specify management that meets the owl's needs. Clearly, the Recovery Team did not envision that habitat-harming activities would be approved by FWS within critical PACs or recovery habitat.

The lack of compliance with the MSORP is relevant to the question of significance and is one of the many reasons, as discussed herein, that the Forest Service needs to conduct an EIS.

iii. Failure to adequately discuss environmental baseline

As discussed below, baseline information must be part of the EA/EIS and be subjected to public review and comment under NEPA. This has not been satisfactorily accomplished for owls, which is critically concerning as once a project starts it is impossible to reverse the wheels of time and determine what the pre-project effect would have been. While the EA mentions that owls have been observed in the project area between 2006 and 2020, it is not clear what detailed surveys have actually been done in order to obtain accurate baseline information as to owl use and presence as well as quality of the habitat within the five PACs that occur within the proposed project area. *See e.g.* EA at 30. This is because the references to surveys are vague in the EA as well as the BiOp, where the reader is even referred back to the withheld BA, which is supposed to provide locations of observations and a close-up view of the PACs and owl observations in the immediate vicinity of the proposed drill areas. BiOp at 31. Because the Forest Service has withheld the BA, refusing to post it on the project document site or provide to the Objectors, despite requests prior to the close of the Objection period, there is a dearth of information and evidence showing how these surveys were conducted, if they were complete surveys and inventories, as well as how the information on observed owls matches with places slatted for 24-hour drilling operations, related noise, light pollution, and tree cutting. The withholding of the BA has also prevented the Objectors from accessing information used and relied on for conclusions of other listed species and their critical habitat. This violates the public review requirements of NEPA and the ESA.

To have secured an adequate baseline, it is imperative that the Forest Service and FWS execute a complete survey and inventory as the MSORP sets forth in Appendix D. Appendix D provides a detailed protocol for complete inventories and surveys. Complete inventories require at least 4 complete surveys be completed over the course of two years. MSORP at 305. Complete surveys include a combination of pre-call (daytime reconnaissance of habitat to be called at night), a nighttime calling survey, and if owls are detected, a daytime follow-up survey. MSORP at 305. The four complete surveys must be spaced out over the breeding season, with two of the four surveys March 1 through June 30 with no more than on survey in March. *Id*. Owl calling activity trends increase from March through May, making that the optimal time period for locating owls. *Id*. All surveys must be completed before August 31, with no more than one survey in August. *Id*. We are also concerned that there appears to have been no surveys conducted in 2021 or 2022 even though such information is critical for minimizing, mitigating, and avoiding impacts to the species and its critical habitat. Additionally, information needs also account for the quality of habitat. The USFS must do a baseline mapping of existing habitat, including where this habitat is connected and where it is disconnected due to the past, present or future cumulative effects. This information remains outstanding, as even the maps that are referenced to in the withheld BA do not appear to have looked at or captured this information.

Ultimately, because key information about the surveys – how, when, and what they specifically found – has been withheld, and because the information that has been disclosed is insufficient for establishing a baseline as to the number of owls determined from complete surveys, locations, and habitat quality, the mandates of NEPA and the ESA as it pertains to baseline information remain outstanding. In summary, it is not clear that there has been, as part of

the baseline, a complete inventory of the five PACs within the project area and how that information matches up with the proposed multi-year exploration project. Without this being done the agencies do not have accurate and adequate information to determine impacts and effects under both NEPA and the ESA.

iv. Failure to adequately analyze cumulative effects/impacts

Both the ESA and NEPA require the FWS and the Forest Service to address cumulative impacts/effects. Under NEPA, cumulative effects are those "effects on the environment that result from incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time." 40 C.F.R. § 1508.7. Biological opinions must have "[a] description of the effects of the action and an analysis of any cumulative effects." 50 C.F.R. § 402.14. "Cumulative effects are those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." 50 C.F.R. § 402.02. Despite these requirements, this analysis that is required by NEPA and the ESA is deficient, fundamentally undermining the conclusions that FWS and the Forest Service have reached.

Neither the BiOp nor the EA/DN/FONSI includes quantitative or mapping analysis on how the cumulative effects/impacts of the nearby mineral exploration, electric transmission lines, and road projects, any tree removal or timber projects, would affect the populations of owls. The BiOp has no analysis of how individual projects would collectively affect the owl and relies on general statements about what effects might be, e.g., "Thus, non-federal actions on adjacent non-federal lands may reduce the quality and quantity of habitats for listed species within the action area…" (BiOp at 38). The EA is similarly lacking, even though it at least describes in a non-quantitative way how specific projects might affect the owl, e.g., "Current exploration activity at the neighboring Trench Camp property has created noise and visual impacts and habitat degradation that may be affecting Mexican spotted owls in and around the project area. (EA at 38).

Yet again, there is no effort to map existing territories and suitable habitat and to analyze specifically how various projects are collectively affecting the owls and their critical habitat. It is known, however, that ongoing projects negatively affect the owls. For example, the EA (at 38) states that

> Repeated nighttime calling station surveys over the past five years indicate that Mexican spotted owls avoid the Trench Camp property, but use similar habitat in the surrounding landscape, including habitat within the Sunnyside Exploration Drilling project area.

This statement exemplifies the point that a) human activity associated with projects will likely displace owls, and b) the owls may be displaced by multiple projects with the end result that there is inadequate habitat to sustain them within or near their current territories, within the very PACs and critical habitat that were established to further this species' recovery so it is no longer threatened with extinction. If owls are displaced by Trench Camp, Sunnyside, Flux Project, Hermosa Project, San Antonio Project, and other activities, how does that affect the integrity of the PACs, the stated incidental take proxies, and the ultimate conclusions as to this proposed

exploration not resulting in jeopardy or destruction or adverse modification? What areas of suitable habitat within the PACs and critical habitat within this area remain viable for them?

As the EA acknowledges, the analysis conducted by the Forest Service for this proposed project was prepared pursuant to the 1978 implementing regulations because it was commenced prior to the Council of Environmental Quality NEPA regulations that were published July 16, 2020. Accordingly, CEQ guidance for the 1978 regulations are fully relevant as to how an area of analysis should be defined that will consider the various actions that could influence the effects of the project. According to CEQ, "for a proposed action" the analysis should "[d]etermine the geographic areas occupied by those resources outside of the project impact zone. In most cases, the largest of these areas will be the appropriate area for the analysis of cumulative effects" (CEQ 1997 at 15). For Mexican spotted owls, the appropriate area for analysis is the larger area inhabited by the metapopulation of owls that includes owls in the smaller project area. The analysis of cumulative effects included in the BiOp and conclusions reached in the EA and DN based on this analysis are flawed because the area of analysis was restricted to a ten-mile radius around the project area rather than the much larger area inhabited by the metapopulation.

Studies of dispersal of juvenile Mexican spotted owls show that they travel substantial distances, including crossing habitat unsuitable for breeding to reach distant mountain ranges, so it is therefore likely that the owls in the project area are part of a metapopulation that is genetically and demographically dependent on the various PACs and/or subpopulations that constitute it. Therefore, to be adequate, the assessment of cumulative effects must evaluate effects of the project and other actions within the range of the metapopulation in the Patagonias and other mountain ranges within typical dispersal distances, such distances observed in studies to be as great as 73 kilometers (Arsenault et al. 2014, Ganey et al. 1998).

In the case of the present action, the analysis should include the range of the MSO at least throughout the Patagonia Mountains, and likely should include the Huachuca and Santa Rita Mountains because it is possible that individuals in these three ranges constitute a single interbreeding metapopulation. Not only should the effects of the project outlined in the POO be analyzed within this broader area, but the analysis must include other actions, past, present, and future, that could affect the population.

The EA is also bereft of any discussion of cumulative effects from regionwide impacts to PACS resulting from mysterious losses of pairs within PACs, widespread loss of critical habitat from wildfire, and the fact that that there are proposed impacts to 40% of PACs from ongoing and planned restoration projects.

To be adequate, analysis must address the regionwide impacts that are resulting in dramatic impacts to designated critical habitat and PACs as well as identify current owl territories, identify exclusion zones around existing projects based on observed avoidance of human activity, identify remaining habitat that the birds may use and from which they are not, nor will be excluded. Without this information, FWS and the Forest Service are deprived of critical information for informing the ultimate question as to whether the proposed project is indeed not crossing the prohibition thresholds set out in the ESA and whether there are additional measures needed to minimize, mitigate, and prevent impacts to the species and its critical habitat. This will require not only knowing where the birds are, but also the quantity and quality of habitat available to them. The USFS must do a baseline mapping of existing habitat, including where this habitat is

connected and where it is disconnected due to the past, present or future cumulative effects. Without such analysis, the conclusions of the BiOp and EA/DR/FONSI are merely self-serving guesswork. Indeed, the EA assumes that the birds can shift to new habitat when displaced by project activities without actually knowing whether such unoccupied habitat exists, is reachable, and also is not degraded from other actions in a way that makes it unviable for owl habitat.

Moreover, as acknowledged in the EA (at 33), one can hypothesize that shifting to a new site might reduce reproductive success or fitness of the parents, given that the new site might not provide the same resources as the previous proven site and that predation may also increase. There could also be negative effects on existing pairs outside the project area were displaced birds to try and set up territories within or near the existing pairs. Although such studies have not been done on Mexican spotted owls, a study of the endangered Egyptian vulture in Spain found that pairs that shifted to new habitats in response to human disturbance had significantly lower productivity compared to in their habitual nests (Morant et al. 2018).

Further, the BiOp on which the EA/FONSI/DN ultimately rely does not analyze total take in terms of cumulative impact of the projects occurring or likely to occur in the immediate vicinity of the project. The BiOp (at 40) concludes that "We anticipate the proposed action's incidental take will be in the form of short-duration, nonsimultaneous harassment that affects feeding, breeding, and/or sheltering of adult Mexican spotted owls and their progeny within the five affected PACs during seven years." In the BiOp section "Cumulative Effects – Mexican Spotted Owl" (at 37) there is no quantification of total take affecting the population, including contributions from the San Antonio and Hermosa projects. The analysis in the EA is inadequate without a comprehensive analysis of take throughout the range occupied by the affected population of owls. The USFS must analyze total take permitted or likely to be permitted across all the projects contributing to cumulative effects, come up with a total, and then characterize the effects of this total on the population's viability to actually determine cumulative impacts.

Ultimately, this inadequate analysis of the cumulative effects of disturbance on the population of owls in the project area is an example of the observation by Martínez-Abraín et al. (2009), based on a metanalysis of effects of repeated disturbance due to recreation on raptors, that "often environmental impact studies provide poor evidence of impact, or poor evidence of absence of impact, of these activities on breeding parameters of individual raptor pairs, and especially on the population and meta-population consequences of human activities…"

In the EA, cumulative effects analysis areas are poorly explained and justified. For example, for Mexican spotted owl and Western yellow-billed cuckoo the analysis area is defined as a 10-mile radius, but there is no indication of what the center point of the radius is. The justification for this 10-mile-radius area is that this captures the individuals that may be roosting, foraging, or breeding within the project area. But such a limited area considers only individuals directly affected by the project and does not consider the actual cumulative effects of the project in conjunction with other projects. To actually understand the cumulative impact/effect requires analyzing all the actions likely to affect long-term viability of the owl population in the Patagonias and beyond (see discussion of metapopulation above).

v. Failure to adequately analyze the "Daytime Operations Only" alternative

The EA (at 20) states that "the ID Team considered an alternative that would limit all

project-related activities to daylight hours only (i.e., dawn to dusk)." The analysis section pertaining to this alternative is scant, slightly more than one page long. It acknowledges that proscribing night-time drilling would "reduce some of the impacts to nocturnal wildlife species, including the jaguar, ocelot, and Mexican spotted owl." However, the section then counters this with the observation that extending the drilling time beyond the seven years now planned for 24-7 drilling would extend the period of day-time disturbance for those species. There is no analysis of how the owl and other ESA-listed wildlife would be affected by 24-7 drilling for seven years versus daytime-only drilling for longer; it is not even clear whether the EA considers these two alternatives equivalent or whether one is better than the other.

As for effects on nearby human communities, the EA notes that there would be less daily traffic on the roads, although use of the roads for drilling would extend beyond the now-planned seven-year period. With respect to traffic, the USFS seems to assume that residents (as well as wildlife) would prefer a shorter period of 24-7 drilling compared with a longer period of daytime-only drilling but presents no evidence that residents have been polled.

Seeming to justify the decision to not consider only daytime operations, the EA provides a series of contradictory assumptions. The EA concludes, without evidence, that extending the drilling period would increase overall erosion and sedimentation downstream, apparently suggesting that the erosion control mechanisms specified in the PoO would be inadequate. Yet, elsewhere the EA concludes that erosion and sedimentation downstream would not pose a long-term problem: "Erosion and stormwater control devices would be monitored and replaced as necessary during reclamation monitoring and maintenance to ensure there would be no longterm adverse effects related to soil erosion and stormwater runoff. The proposed action would have a negligible effect on vegetation (see Appendix D). Therefore, there would not be changes in surface water flow, soil erosion and stormwater runoff, and vegetation that would result in detectable changes to the hydrologic function of floodplains" (EA at 45). It is disingenuous to, on the one hand, find that erosion problems will be minimal and on the other to use them as justification for not requiring and analyzing in meaningful detail daytime-only drilling.

The EA contends that "Additional risks are associated with a daytime operations-only alternative because the drill pads and sumps would be left unattended each night" and extensively details the risks and inefficiencies that starting and stopping the drilling process on a daily basis would entail (EA at 20). In uncritically accepting these arguments against daytime-only drilling, the USFS fails to adequately analyze this alternative.

Strong evidence that USFS has failed to adequately evaluate this alternative is that in 2022 the Service approved the nearby San Antonio exploration drilling project, which would drill during day-light hours only. Accordingly, daytime-only drilling is technically and economically reasonable, contrary to the assertion in the Sunnyside EA. Moreover, the San Antonio project resolves the night-time security issue that the Sunnyside EA presents as a major barrier by proposing to hire a single security guard for each night shift "that would ensure security of the equipment" (San Antonio PoO 2020 at 7)(previously submitted with comments). *See also* Decision Memo, San Antonio Exploratory Drilling Project, Acting District Ranger John Kraft, March 30, 2022 (attached).

The EA lacks any quantification and fails to cite studies to substantiate the assertions about the technical and economic barriers presented by daytime-only drilling. For example, there is no

evidence presented that would allow the public to assess the probability that stopping and restarting drilling could cause drills to get stuck in the hole and require redrilling. In the eventuality that a drill does get stuck, there are generally available techniques for freeing a drill. Without information of a) the frequency of drills getting stuck during start-stop drilling, b) the frequency with which stuck drills can be freed, and c) the frequency with which replacement holes must be drilled, it is impossible for USFS to evaluate the level of risk from start-stop drilling. Again, the fact that the San Antonio project will use daylight-only drilling demonstrates that the technical and economic difficulties stated in the EA are overblown and that the Forest Service has arbitrarily and capriciously dismissed a viable alternative that would reduce impacts on nocturnal species and their critical habitat. Indeed, the EA makes no effort to flesh out the risks and impacts of 24-hour drilling as opposed to only daytime drilling on owls and other ESA-listed species. Instead, the EA provides a superficial effort to justify an *a priori* decision to approve 24-7 drilling at the request of the proponent rather than a genuine effort to evaluate an alternative that could very well be better for wildlife and their critical habitat. Rather than simply accommodating the desires of the project proponent, as is apparently the case here, USFS must do a rigorous analysis of the proposed alternatives.

In conclusion, it is clear that the USFS failed to adequately evaluate the daytime-only alternative and instead of presenting such evaluation simply presents a list of unsubstantiated and contradictory arguments to justify discarding this reasonable alternative.

vi. Failure to require adequate mitigation

The suggested mitigation measures are inadequate and without sound scientific foundation. Indeed, there is no evidence that even the minimal mitigation for impacts on owls would be effective. Consider the proscription of drilling within PAC Core Areas when birds are breeding. As described above, this means that drilling would be allowed during the breeding season a) within a PAC outside the Core Areas and b) within Core Areas if surveys show that breeding is not taking place.

As an initial matter, FWS alleged it could not quantify the number of owls for the Incidental Take Statement, in part, because "the species is secretive and we rarely have information regarding the number of owls occupying a PAC and/or their reproductive status." BiOp at 40. The agencies can't have it both ways—claiming that through surveys in core areas of PACs it can be determined whether there are no nesting birds during breeding season and thus drilling operations can occur in the core area, but then claim that a numerical take cannot be provided because the agencies "rarely have information regarding the number of owls occupying a PAC and/or their reproductive status." *Id*.

Second, no evidence is presented that habitat alteration outside the breeding season does not a have a lasting effect beyond the breeding season. Indeed, while the Forest Service does not present evidence to the contrary, evidence has shown that disturbance effects can carry over to the next breeding season and negatively affect breeding success in other raptors. For example, a study of endangered Egyptian vultures nesting in northern Spain found that over-winter habitat alterations, including trail construction, tripled the probability that pairs would switch to a new nest site, demonstrating that over-winter habitat alteration "can strongly impact the breeding behavior of long-lived species (Morant et al. 2018)." The researchers found that "modification of non-key habitat structures in the proximity of the nests triggers responses in the subsequent

breeding season, resulting in displacements to lower quality habitat and decreased productivity." Also, for Egyptian vultures Zuberogoitia et al. (2014) found that although a ban on habitat alterations during the breeding season precluded direct impacts on breeders and nesting failure, it did not prevent effects in the following years. Another study on the vultures found that of 20 nest sites abandoned due to human disturbance during the non-breeding season, ten were never used again. A review by Roman and Muck (1999) of studies of how raptors respond to human-caused disturbances concluded that "raptors which successfully nest during a disturbance may abandon the nesting territory the year following the disturbance," citing several studies.

That even out-of-season impacts can have significant ramifications on avian species makes it even more inappropriate that the Forest Service is proposing to allow drilling and pad clearing to occur in PACs and in core areas, regardless of "survey" results as to breeding and considering that those surveys effective mitigation.

Third, neither the BiOp nor the EA provides any measure of how disturbance in core areas or non-core areas outside of the breeding would affect the owls. Presumably, these areas are excellent hunting grounds since they support breeding birds and offspring during the breeding season, and as designated critical habitat, are essential to the survival and conservation (recovery) of the species.

Another required mitigation is to down-shield lights, with the presumption that this provides significant mitigation. However, no evidence is presented that this mitigation is adequate to avoid take due to exclusion from hunting areas, reductions in prey, temporary dazzling of the eyes of owls, or physical harm to the owls' eyes from long-term exposure. There is evidence that blue wavelengths of light can interfere and potentially harm the eyes of animals dependent on night vision (Ambrose 2020), and a standard mitigation that would be applicable in this case is to use lights with reduced or filtered blue, violet and ultra-violet wavelengths (Govt. of Australia 2020 at 9). In the absence of any cited research supporting the assumption that night lighting will not harm owls if down-ward directed lights are used, the proper mitigation measure would be to prohibit night activities when the owls are active and would be affected (see above for discussion of daytime-only drilling), or at least require lights with little blue emissions.

As indicated by the BiOp and EA, noise from equipment will be a major stressor on owls. We talk about this elsewhere in this objection letter in detail, but here we will note that the EA does not contain a monitoring protocol for determining when the noise produced by machinery is too loud. The EA should specify how sound will be measured, how often it will be measured, and how the sound will be referenced to key habitat elements, for example, sound levels at x many feet from a Core Area and/or PAC. Without a strong monitoring protocol that includes rapid corrections when sound exceeds tolerances as a mandatory mitigation measure, the information in Table that estimates "noise level at 50 feet" is useless.

We note that mitigation measures are typically put into three categories: avoidance, minimization, and active mitigation measures designed to enhance or protect habitat, reduce threats, or increase survival and reproduction (FWS HCP Handbook at 9-13 – 9-14). With the exception of hypothetical habitat enhancement in the distant future when forest has regrown on a some acres of decommissioned non-system roads (which will take decades by the agencies' own admission), the mitigation measures required are minimal and restricted to insufficient minimization measures, e.g., not drilling in core areas of PACs during breeding season so long as

surveys indicate breeding and the use of down-shaded lights. Given that take of the owl and other ESA-listed species is expected even with these minimization measures, USFS should require substantive mitigation, that would actually result in avoiding as many of the impacts the proposal would have on owls as possible. This could include only daytime operations, annual seasonal restrictions on all area within PACs (March 1 to September 1), and contributing substantially to the type of scientific research desperately needed to better understand the effects on the owls of activities associated with drilling and cumulative effects on the species' and its habitat. It is a sad commentary that much of the USFS analysis depends on largely inapplicable work done by Delaney and coinvestigators in the 1990s.

vii. Failure to provide scientific evidence for generalizations that downplay effects of disturbance.

In key places the EA asserts as "likely" owl responses without any scientific basis. For example, it states, "The extended duration of the exploratory drilling activities (up to seven years) has the potential to result in temporary avoidance of habitats within the action area by Mexican spotted owls; displacement of owls could leave them more vulnerable to predation due to their potential use of unfamiliar habitats. However, it is more likely that owls would shift their activities within their existing home ranges to avoid areas with increased human activities" (EA at 33). First, there is no scientific basis for suggesting that avoidance will be "temporary," a serious omission given the evidence that some raptors may permanently abandon nesting territory in response to persistent disturbance (Roman and Muck 1999). And regrowth may take years, if not decades or even longer due to climate disruption affecting precipitation and increasing aridification. Second, there is no basis given for the statement that owls would "more likely" shift their activities within their existing home ranges.

Another serious flaw in the BiOp and therefore the EA that depends on it is repeated mischaracterizations of a paper by Delaney et al., 1999, that the Forest Service and FWS use to support otherwise unsupported contentions, especially in the BiOp. For example, the BiOp states, "Owls experiencing short-term harm may fail to successfully rear young or may depart in one or more breeding seasons but will not likely permanently desert the area because of the disturbance (Delaney et al. 1999)." There is zero support for this statement in the BiOp other than this reference to Delaney, and Delaney says nothing of the kind. The Delaney study was restricted to a short-term study in which Mexican spotted owls were subjected to a few flyovers by helicopters or exposures to chain-saw noise. There is nothing in the Delaney study that supports the BiOp's conclusion that owls "would not likely permanently desert the area" especially with 24-7 operations over a seven-year period. Indeed, Delaney cautions that, "[E]xtrapolation to different avian genera or species, or other aircraft and locations, must be done with caution… We also caution against use of these findings to infer how spotted owls would respond under different circumstances that were not directly tested… While our research was effective in answering the original, specific disturbance question, these results must be qualified by the limiting context of their derivation when applied to broader managerial questions." Moreover, there is nowhere in Delaney's paper where he discusses whether birds are likely to return to the original nest site in subsequent years.

Also concerning about the BiOp's use of the Delaney paper is that Delaney's study exposed the birds to only a handful of short events for very brief periods. At 17 sites, birds were

exposed to helicopter overflights that lasted less than 30 seconds in the immediate vicinity of the birds, and they were exposed to less than 10 minutes of a chain saw. The total numbers of tests were 57 with helicopter overflights and 55 with chain saws, meaning that birds at each site were exposed to helicopters an average of 3.4 times, and to chainsaws an average of 3.3 times. The purpose of this study was to determine how far an owl needs to be from a particular decibel sound source before it ceases to be scared into flight (flushes) and was not a study of season-long effects of repeated, constant periods of noise on nesting and brooding birds. Delaney's finding that birds did not flush at particular decibel levels at particular distances was used in the EA to justify how close noisy machines like road graders and chain saws will be allowed to approach nesting owls. However, extrapolating from Delaney's minimal, short-term exposures to conclude that a virtually continuous cacophony of noise accompanied by lights and constant human activity would have minimal effects is unfounded. For example, Table 6 of the EA (at 14) predicts that road graders would operate for 10 hours per day "as needed" at 82-85 decibel levels at 50 feet, nearing those deemed excessive by Delaney, but no such tolerance can actually be derived from the Delaney paper. Indeed, a later study by Delaney and Grubb (2004) concluded that owls can hear (although they won't necessarily flush) road maintenance equipment like graders and rock crushers "out to distances of at least 400m," suggesting that birds could be stressed for significant distances.

Without evidence, there is no reason to suppose that repeated noise below the threshold that causes flushing is benign. In fact, there is solid scientific evidence that noise can decrease fitness and reproductive success by affecting such factors as hunting, parenting behavior, and stress hormone levels. For example, constant anthropogenic noise produced by natural gas fields caused glucocorticoid-signaling dysfunction and decreased fitness in a community of secondary cavity-nesting birds, including reduced hatching success (Kleist et al. 2018). Likewise in northern spotted owls NSO) both short-term acute noise from motorbikes and long-term exposure to general road noise raised levels of glucocorticoid metabolites, associated with disturbance stress, and NSOs close to noisy roads fledged significantly fewer young than those near quieter roads (Hayward et al. 2011).

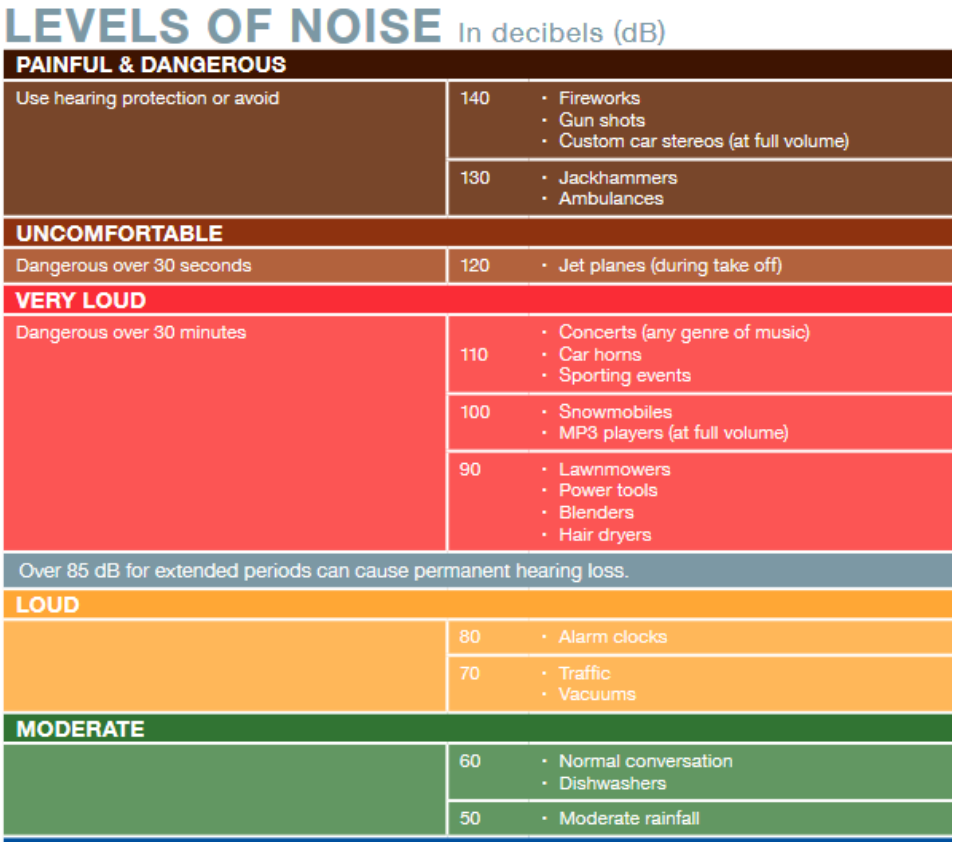

Chart from American Academy of Audiology which reflects dBA for humans.

As shown in the EA, the activities that would occur for this project range from 75-98 dBA at an alleged 50 feet away (which no explanation is provided for why that distance is adopted). EA at 14-15. Additionally, noise would consistently be at or above 85 dBA, which for humans as shown in the chart above and are less sensitive, would still be risking permanent hearing loss if exposed for extended periods. Yet again, rather than engaging in any meaningful analysis as to impacts and adopting meaningful mitigation, the Forest Service relied on its assumption that the birds will find somewhere else to go.

Particularly concerning, given that USFS will allow drilling and associated activities in the breeding season outside of core areas (even if nesting birds are detected within the core area), is that Hayward et al.'s NSO study found that males had the highest hormonal responses to noise during the breeding season, at which time males showed hormonal stress responses to test noise from motorcycles at up to 800 meters (Hayward et al. at 5). This effective distance at which noise can cause detrimental physiological changes in NSOs far exceeds the paltry BiOp recommendation for a setback of 165 feet from nest sites when noise exceeds 69 dBA for an extended period of time (more than 1 hour). Moreover, we do not see even this inadequate setback carried forward to the DN, as there is no such mitigation measure adopted. To the contrary, the DN's only measure is that if there are nesting birds in a core area, the core area cannot be subjected to drilling and related activities, yet everywhere else, including the PAC outside the core area and the recovery habitat has no mitigation measures to minimize, mitigate, much less avoid impacts. To make this failure to protect the birds even more farcical, the DN states that "In addition to the design features that were included in the analysis, the U.S. Fish and Wildlife Service issued a Biological Opinion with non-discretionary Terms and Conditions that must also be implemented, yet the BiOp states

that "Given that there are no Reasonable and Prudent Measures, there are similarly no Terms and Conditions associated with minimizing the effects of incidental take (at 41)." Clearly USFS has failed to do a meaningful analysis of the effects of noise and other disturbance on the owls and failed to implement effective mitigation measures.

This issue of noise setbacks demonstrates another case in which the BiOp misinterprets Delaney et al. 1999 to reach faulty conclusions about possible take on owls. The BiOp states that, "Noise levels in the project vicinity are expected to attenuate below the threshold level for injury of owls (92 dBA per Delaney et al. 1999)." First, the phrase "below threshold level for injury of owls" mischaracterizes the Delaney study. Delaney et al. state that "During the nesting season, spotted owls did not flush when the SEL sound level for helicopters was -102 dBO (92 dBA) and the LEQ level for chain saws was -59 dBO (46 dBA)." Apparently the BiOp equates failure to flush in response to a short-term, brief exposure to noise with lack of injury. Yet Delaney et al. makes no mention of injury, nor do they speculate on the harmful effects of long-term exposure. The papers cited in the paragraph above clearly establish that at least in some species, including northern spotted owls, long-term noise, even if distant (up to 800 m) can elevate stress hormones and decrease reproductive success, which equates to "injury." Furthermore, the BiOp misrepresents Delaney et al.'s 92 dBA number, which the BiOp says is the "threshold level for injury of owls." Delaney et al. actually wrote, as quoted above, that the flushing sound exposure (SEL) level dBA for helicopters was 91, yet the equivalent average energy level ($LEQ_{avg.\ 10\text{-}sec}$) dBA for chain saws was 46. These SEL and $LEQ_{avg.\ 10\text{-}sec}$ are two different measurements and cannot be directly compared. However, the conclusion is inescapable that the BiOp inappropriately cherry-picked the higher value by stating that 92 dBA is the "threshold level for injury of owls." Delaney's study showed that chain saws, which will be used in the Sunnyside project, disturb MSOs much more than do helicopters (see discussion below) and do so at sounds that are approximately 200 times softer than the 92 dBA value for helicopters. Helicopters are not chain saws, and it is a misrepresentation of Delaney et al.'s paper to conclude that MSOs will not be materially injured by noises below 92 dBA.

Moreover, Delaney at al. point out that the effects of noise on MSOs are dependent on the quality of the noise, notably whether it starts suddenly, like a chain saw when it is turned on, and which sound frequencies carry the most energy. In the case of Delaney et al.'s study, chain saws carry more energy than helicopters at frequencies that are most noticed by owls. Therefore, the BioP, EA, DN, and FONSI are inadequate unless they analyze owl response to various predicted sound emitters (e.g., road graders and chain saws) dependent on their sound characteristics. Note also that USFS and FWS err in extrapolating from Delaney et al.'s study, given that they say, "[h]owever, any application of our spotted owl response distances to develop management protocols for spotted owls elsewhere is inherently limited because it is predicated on having the same stimulus in a context similar to our experimentation" (at 74).

In sum, there are numerous significant shortfalls with the Forest Service's analysis and reliance upon the Fish and Wildlife Service's BiOp that has resulted in a range of NEPA and ESA violations.

3. Western yellow-billed cuckoo (*Coccyzus americanus*)

i. Status of cuckoos and effects of the project

The western distinct population segment of the western yellow-billed cuckoo (WYBC or WYBCU) is listed under the Endangered Species Act as a threatened species. 79 Fed. Reg. 59,992 (Oct. 3, 2014). Critical habitat was designated in 2014. 79 Fed. Reg. 71,373 (Dec. 2, 2014).

The cuckoo's status as threatened under the ESA means that the FWS has determined the species is "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." FWS has determined in its BiOp (at 19) that "the action, as proposed, is not likely to jeopardize the continued existence of the species and is not likely to destroy or adversely modify critical habitat for the species." Yet, this conclusion is based on downplaying impacts and framing the impacted areas as small portions of designated critical habitat.

For example, the BiOp at 17 states that "[w]e do not anticipate permanent impacts to yellow-billed cuckoo habitat due to the expected regrowth of vegetation following reclamation of disturbed areas, though it may take an indeterminate number of additional years to regrow any large trees removed by the Project." Elsewhere in the BiOp at 33 FWS states that "[i]t will, however, require decades to regrow large trees that may be removed by the Project." Thus, we can expect degraded conditions of habitat to continue for many cuckoo generations, certainly much longer than the 7 years of the project's proposed life. Moreover, there is a contradiction in the BiOp at 17 where on the one hand it states that "The Proposed Action may affect yellow-billed cuckoos by temporarily (7 years) altering the quality and quantity of habitat in the action area" and on the other hand it states that "it will … require decades to regrow large trees."

"A number of YBCU detections have been documented within the Project Area. Suitable nesting and feeding habitat for this species exists within the Project Area." PoO at 38 (Table 6). Since 2012 surveys, although not formal surveys in 2018, were conducted that show consistent use by WYBCU in and within the vicinity of the project area including regular and consistent detections along the new Flux Canyon Road route, near the roue along FR 4685A, and FR 215 and FR 4701, all of which would be used and many, if not all, also impacted by road improvements, such as road widening and building turnouts. BiOp at 16; EA at 11-12. In 2018, a detection was made in the vicinity of Drill Area A in Flux canyon as well as near Harshaw Creek within the riparian vegetation. Both the Harshaw Creek detections in 2018 and 2019 detections along FR 215 and 4701 led to the conclusion that these areas are "possible breeding territories" because two or more detections were made in each of the areas during two survey visits at least 10 days apart. BiOp at 16. "The result of the combined survey efforts indicates that yellow-billed cuckoos frequently occur, and may breed, in the action area." BiOp at 16. Although normally associated with riparian forest, a 2012 survey found the species in Hermosa Canyon outside the riparian area, indicating that in the project area cuckoos might use "untypical" non-riparian habitat. See generally Jonathan Horst, Expert Statement, western Yellow-billed Cuckoo at the San Antonio Project Site (2020). This is substantiated by statements in the BiOp, e.g., "Surveys conducted in southeastern Arizona have documented yellow-billed cuckoos breeding along ephemeral and intermittent drainages, and in encinal (oak-dominated) upland habitats" (at 14). Also "Southwestern breeding habitat occurs within or along perennial, intermittent, and

ephemeral drainages in montane canyons, foothills, desert floodplains, and arroyos. It may include woody side drainages, terraces, and hillsides immediately adjacent to the main drainage bottom" (BiOp at 13).

The BiOp at 22 states, "The action area along these survey routes has most recently (2021 survey season) been occupied by up to eight individual observed cuckoos, with birds on two routes considered to be part of two breeding territories based on the criteria that two or more total detections were made in each of these areas during two survey visits at least 10 days apart."

The BiOp at 18 concludes that the project would degrade both foraging and nesting habitat and would have effects from drilling and other proposed activities "similar to those discussed the manner in which Mexican spotted owls are affected." Noise and human activity, including using heavy equipment and chainsaws to clear sites and modify roads, would likely exclude cuckoos from using habitat within their territories. The BiOp states at 18, "Yellow-billed cuckoos appear to be sensitive to noise and human disturbance (Goodwin and Shriver, 2011, Wiggins, 2005) and may avoid the action area when selecting sites for breeding and foraging. If yellow-billed cuckoos attempt to nest in the action area while Project activities such as road construction, drilling, or reclamation are ongoing, the associated noise and visual disturbance could affect productivity or survivorship. For example, yellow-billed cuckoos could flush from their nests excessively during incubation, thus exposing eggs to increased vulnerability to predation."

ii. Failure to require adequate mitigation

The greatest impacts to yellow-billed cuckoos will be from disturbance due to: (1) increased human presence during Project activities; (2) increased noise from the use of construction and drilling equipment; and (3) nighttime lighting. BiOp at 20. Although at least in the case of the MSO the DN proposes the minimal precaution of prohibiting project activities from the core areas of PACs when owls are breeding, for WYBCs there is no analogous restriction near nest sites during breeding season, whether or not cuckoos are actively breeding. Without such a restriction, there is no attempt whatsoever to minimize take by modifying the manner in which the project is carried out. Indeed, the BiOp at 17 states that "there is the potential for direct mortality of yellow-billed cuckoo nests if vegetation removal occurs during the breeding season." The BiOP, EA, and DN fails to adequately evaluate the possibility of restricting project activity near nests or in other critical habitat during the breeding season, and indeed gives no analysis or explanation for why a) such restriction is in place for the San Antonio project (see following paragraph) and b) why at least a minimal breeding-season restriction is in place for Mexican spotted owls, but not for WYBC.

We note that decision memo for the San Antonio exploration drilling project approved by USFS in 2022 specifies "IC Exploration will conduct all aspects of the proposed Project outside of the cuckoo breeding season (May 15 – September 30)." If the Forest Service considered it essential for the San Antonio project to carry out its activities outside of the WYBC breeding and nesting season, why is the same not true for the Sunnyside Project, especially given that "yellow-billed cuckoos frequently occur, and may breed, in the action area"? BiOp at 16. Neither the BiOp, EA, nor DN explains or analyzes reasons for holding

these two projects to different standards when both are exploration drilling projects that would have impacts on cuckoo critical habitat and even in the same general area. Moreover, we observe that it is extremely likely that the cuckoos on the two sites are part of the same metapopulation, given large dispersal distances typical of the cuckoos, and therefore should be treated the same.

The Final EA for the Forest Service's Cienega Creek FireScape (CCFS) project also provides significant constraints on project activities during the cuckoo's breeding season: "treatments would avoid their breeding season (June 15 – September 30)." CCFS at 33. But the EA for this project goes even farther in protecting the cuckoo. At 33 it states, "[t]reatments would not occur in or within ½ mile of yellow-billed cuckoo habitat…" The BiOP, EA, and DN analysis is flawed in that it ignores the precautions taken by other nearby projects, including the San Antonio and Cienega Creek FireScape projects, and provides no analysis or explanation of why the Sunnyside project would be approved without similar mitigation measures.

The BiOp at 20 optimistically observes that "prohibitions within Mexican spotted owl PACs during the spotted owl breeding season… will reduce but not entirely avoid effects to yellow-billed cuckoos due to partial overlap with the April 1 through September 30 cuckoo breeding season." But in practice, this means that cuckoos will be subject to project activities at any time and any place within the project area during part of their breeding season and will be protected during the Mexican spotted owl breeding season only within core areas of MSO PACs. This nearly, if not complete lack of protection makes a mockery of the critical habitat concept and demonstrates that there is no real mitigation measure to avoid impacts to this listed species and its critical habitat.

The BiOp, EA, and DN make scientifically erroneous or unfounded assertions about effects of noise and human activity on MSO and by extension WYBC. For example, the BiOp states at 20 that, "The disturbance resulting from this [work during the WYBC breeding season] is partially minimized by the taxon's low nest site fidelity." The BiOp explains what it means by continuing, "The shifting of birds upon arrival or in active nests may disturb other arriving or nesting yellow-billed cuckoos, but the species 'overlapping home ranges, low territoriality, flexible home ranges, shifting of ranges during the breeding season reduce the potential for this effect to occur." The gist of the idea appears to be that because cuckoos are known to shift their territories during the breeding season, they can do so with little reduction in fitness or reproductive cost in response to the project's disturbance. But this simplistic argument fails on at least two counts. First, although it can't be known in every instance why birds shift their territories, we do know that nesting birds and their young are heavily dependent for food on short-term, localized booms in insect abundance (e.g., BiOp at 18), and cuckoo range territory shifts may be tracking such booms (Johnson 2021). Thus, it is incorrect to think that territory is fungible, i.e., it is incorrect to assume that because cuckoos may shift their territories there is no fitness cost. It is equally valid to assume that the reason cuckoos shift their territories is that food gives out or fails to appear in one area, so they must find a new food source. When disruption by the project drives the birds out of a traditionally occupied area, this is tantamount to depriving the birds of an area with proven food production. Without analysis and scientific data, the BiOp's assumption that birds can shift territories with minor cost is merely guesswork.

Second, historically, the greatest contributor to decline of the cuckoo has been habitat loss, meaning that there is not a great deal of "extra" unoccupied territory waiting to be occupied by cuckoos excluded from the project area, and the idea, put forward in the BiOp at 20 that "[s]ome activities are also likely to be underway when yellow-billed cuckoos arrive in the project area, so there is an opportunity for cuckoos to select sites further from the disturbance," is likely a fiction. At a minimum the BiOp and EA need to do a more complete job of evaluating the evidence bearing on their assertion.

The terms and conditions in the BiOp do nothing to minimize impacts on these birds and the wildlife measures found the EA do not cure these shortfalls or otherwise meet NEPA's mitigation requirements (*see* section II.D.). For example, there is no requirement to avoid nesting birds or cuckoo habitat during the nesting season. Moreover, there is no requirement to even locate the birds before commencing activities in an area so that, for example, their nesting trees could be protected from removal or other disturbance. The reasonable and prudent measures do nothing to minimize take as they are merely monitoring measures without any substantive provisions that would actually reduce take. The two terms and conditions in the BiOp fare no better, merely providing for measures only *after* the exploration activities are completed: 1) the Forest Service "shall conduct site visits sufficient to determine that the total of 10.06 acres of habitat alteration are reclaimed in accordance with the Mine Plan of Operations" and 2) conduct site visits sufficient to determine that the 4.2 acres of decommissioned roads remain closed and off the Motor Vehicle Use Map. BiOp at 23. These strictly post-exploration project monitoring terms and conditions provide zero protection for the birds during the lifetime of the project and only hope that habitat restoration will ultimately benefit the birds by providing replacement habitat as the restored areas mature, which will take years. Both NEPA and the ESA require more.

Pertaining to noise, the arguments made herein in our comments about Mexican spotted owl apply. WYBC, like MSO and other birds are likely to be disrupted in their behaviors and hormonal functioning by noise, with resulting decreases in survival and reproductive fitness. As in the case of MSO, the analysis in the BiOp on which the EA and DN depend, was flawed in its interpretation of work by Delaney et al. (1999). The generic statement that measure would be taken so that "internal combustion engines are fitted with a properly operating muffler, and all equipment would undergo regular maintenance" (EA at 8) is inadequate to account for the level and consistency of noise throughout the duration of the proposed project. At a minimum the EA/DN should set a schedule for testing decibel levels of equipment to make sure adequate sound protection is occurring. In other words, rather than a process approach, e.g., using mufflers (of which it is unknow by how much this would even decrease decibles and where this then would make noise fall on the scale of distruptive to these avian species), the Forest Service should require an outcome approach, i.e., monitoring to ensure that excessive decibel levels are not reached certain distances from the birds. Moreover, as is the case for MSOs, adequate precautions would at a minimum require mapping territories of nesting birds and mapping "no-go" zones where noisy equipment like chainsaws and road graders would be prohibited.

iii. Failure to adequately analyze the "Daytime Operations Only" alternative

Pertaining to 24-7 drilling, in the MSO section we question the arguments used to make the case that daylight-only drilling is technically and economically infeasible, in part because

daylight-only drilling is planned for the nearby San Antonia project. Here we include by reference our arguments and data in the MSO section, but we also note that even diurnal birds like the cuckoos can be harmed by nighttime lighting. Clearly, cuckoos could be harmed by being flushed from roosts or nests at night by light and associated human activity, as noted in the BiOp at 18. However, the BiOp and EA failed to analyze chronic effects of nighttime lighting on diurnal birds like the cuckoo, effects that include depressive-like responses evidenced by reduced eating, cognitive disfunction, impaired learning, and misalignment of circadian clock rhythms (Aulsebrook et al. 2021, Tahajjul Taufique 2021).

iv. Cumulative effects

The BiOp's section on cumulative effects for the WYBC contains even less analysis than that for the MSO, whose analysis was inadequate, as detailed in this document's Mexican spotted owl section. The WYBC cumulative effects section contains three paragraphs of boilerplate that define cumulative effects, followed by one short paragraph describing in general terms possible effects from the nearby Hermosa Project, followed by a short summary paragraph that concludes "Thus, non-federal actions on adjacent non-federal lands may reduce the quality and quantity of habitats for listed species within the action area, result in increased levels of anthropogenic disturbance (e.g., noise and visual disturbance), and contribute as cumulative effects to the Proposed Action." BiOp at 19. As this conclusion and the discussion of the Hermosa Project only cover non-federal lands and fail to discuss relevant projects on federal lands, despite that several are listed in Table 8 of the EA, the Forest Service, to ensure it meets it NEPA obligations necessarily must fill this gap with the EA. For example, there is no discussion in the BiOp under the cuckoo's cumulative impacts section of the nearby Flux Canyon, San Antonia, or Cienega Creek FireScape projects, all of which contain cuckoo habitat. These projects are at best, superficially discussed in the EA. Thus, there is not sufficient analysis in the EA to show how the Forest Service reached its conclusion that there would be "moderate cumulative impacts to the yellow-billed cuckoo within the cumulative effects analysis area due to the potential for noise and visual disturbance from increased human activity and the further loss, degradation, and fragmentation of habitat." EA at 40.

Neither the BiOp nor the EA/DN/FONSI includes quantitative or mapping analysis on how the cumulative effects/impacts of the nearby mineral exploration, electric transmission lines, and road projects, any tree removal or timber projects, would affect the populations of cuckoos.

We note that, as for the MSO, jaguar and ocelot, maintaining connectivity between suitable habitat patches is an essential component of YBCU recovery. The proposed Project will contribute to the deterioration of connectivity in this region, especially when considering the numerous other drilling and mining projects proposed in the Patagonia Mountains and other mountain ranges that may host cuckoos belonging to the metapopulation, including the Santa Ritas and Huachucas.

4. Jaguar (*Panthera onca*) and Ocelot (*Leopardus pardalis*)

i. Overview

The Patagonia Mountains are critical for the recovery and movement of jaguars and ocelots, both as core habitat and as a wildlife corridor. The Patagonia range crosses the

international border, creating a bridge for species movement and providing an excellent wildlife corridor for species migrating north or south. According to the Arizona Game and Fish Department (see Appendix A of the Draft EA letter), the Project falls within the designated Patagonia-Santa Rita Linkage Wildlife Corridor. Moreover, the Patagonia Mountains' closeness to other ranges (e.g., the Huachucas and Santa Ritas) where jaguars and ocelots have been found, sets this range right in the heart of potential habitat and makes the area critical for connectivity. Because the Project is located within the Patagonia range, it will degrade and fragment northern jaguar and ocelot habitat.

The PoO contains several misunderstandings about these cats and their habitat, stating that: "The lack of any documented occurrences of jaguars and ocelots suggests that the Patagonia Mountains do not support resident populations of these species. Therefore, it is unlikely that jaguars or ocelots would occur in the Project vicinity and any individuals that were to be present would likely be transient individuals from Mexico." PoO at 37.

First, lack of recent documentation does not mean that jaguars and/or ocelots do not use the Patagonia Mountains—it is difficult to prove absence for a cryptic and nocturnal animal like the jaguar where there was also no effort made to detect the species until only more recently. Second, even if neither of these cats are currently present in the Patagonia Mountains, this does not mean that they might not use the habitat in future if it is not degraded by mineral operations. Third, the habitat is high quality for either of these cats, as evidenced by its inclusion in the relatively small amount of critical habitat designated by FWS for jaguars. Fourth the designation of critical habitat means that the FWS believes this habitat is "essential for the conservation of the species," meaning that by definition the section of the Patagonia Mountains is essential for the species. In turn, the designation requires that Federal agencies must "ensure that actions they plan to undertake, fund, or authorize do not destroy or adversely modify that habitat" in the Patagonia Mountains.
FWS 2019. Critical Habitat. https://www.fws.gov/endangered/what-we-do/critical- habitats.html.
Fifth, the PoO mischaracterizes U.S. jaguars and ocelots as "transient individuals from Mexico" when several are known to have resided in the United States for years. For example, El Jefe, a jaguar resided primarily in the Santa Ritas, part of the same critical habitat unit as the Patagonias, from at least 2011 to 2016. It is possible that he could have visited the Patagonias during this period. A male ocelot is known to have lived in the Arizona mountains for at least 5 years.
Rosane, 2019. "Rare Footage of Arizona Ocelot Shows What Could Be Lost by Border Wall." Ecowatch. https://www.ecowatch.com/mark-rutte-bikes-to-work- 2640672478.html.

As reviewed in the Draft Jaguar Recovery Plan (FWS 2016a), opinions about the relative importance of peripheral populations is that they may be particularly important for the long-term survival of species than central populations. For example, Channell and Lomolino (2000) assessed 245 species that had lost large portions of their ranges, often due to human activity, and concluded that, overall, species at risk persist best in peripheral areas that may be less affected by people. R. Channell & M. V. Lomolino, Dynamic biogeography and conservation of endangered species, Nature 403: 84-86. (2000). Thus, recovery of U.S. jaguars and ocelots may be an important contribution to conservation of these cats overall, and this recovery depends on preserving sufficient habitat, which means in the case of jaguars at minimum conserving all its critical habitat. Culver and Hein (2016) found that jaguars from Arizona and Sonora possessed mitochondrial DNA haplotypes found nowhere else. M. Culver, & A. Ochoa Hein, Jaguar taxonomy and genetic diversity for southern Arizona, United States, and Sonora, Mexico: U.S.

Geological Survey Open-File Report 2016-1109 (2016). They hypothesized that northern jaguars may be pre-adapted to hot, arid conditions, which are expected to become more prevalent with climate change. It is clear that borderlands jaguars may experience unique ecological conditions when compared to its overall range in the Americas.

ii. Jaguar

The Sky Island mountain ranges that line the U.S.-Mexico border, including the Patagonia, Baboquivari, Atascosa, Huachuca, and Peloncillo Mountains, as well as several additional ranges in Arizona and Sonora, are historical and potential habitat for the federally endangered jaguar. Accordingly, the FWS included the Patagonia Mountains in its March 5, 2014 designation of jaguar critical habitat, along with the nearby Santa Rita, Empire, and Huachuca Mountains and the Grosvenor and Canelo Hills. See 79 Fed. Reg. 12,572 (Mar. 5, 2014). Together these form critical habitat Unit 3, habitat patches with connectivity for jaguars to travel from one to patch to another.

The Patagonia Mountains contain the physical and biological features essential to jaguar conservation. They provide remote, unfragmented, Madrean evergreen woodland habitat that connects jaguar populations in Sonora, Mexico, with jaguar habitat in the Patagonias and in other adjacent mountain ranges in southeast Arizona—the Santa Ritas, the Whetstones, the Canelo Hills, and the Huachucas. The current nighttime view from Red Mountain at the northern end of the Patagonia range is of darkened, uninhabited wild lands extending into Mexico. The region is highly rugged, with sufficient surface waters and minimal human population density, and has historically been a hotspot for jaguar occurrences in Arizona.

In the critical habitat rule, the FWS identified as essential "expansive open spaces in the United States of at least 100 square km [32 to 37 square miles]," "with adequate connectivity to Mexico that contain a sufficient native prey base and available surface water, have suitable vegetative cover and rugged topography to provide sites for resting, are below 2,000 m (6,562 feet (ft)), and have minimal human impact, id. at 12,583, all features currently found in the Patagonia Mountains. Also essential are areas with "minimal to no human population density, no major roads, or no stable nighttime lighting over any 1- km2(0.4-mi2) area, likewise descriptive of the Patagonia Mountains. The FWS stressed that habitat connectivity is crucial, stating that "connectivity between expansive open areas of habitat for the jaguar in the United States is necessary if viable habitat for the jaguar is to be maintained," and "[t]his is particularly true in the mountainous areas of Arizona and New Mexico. . . ." Id. at 12,607. It is clear that 24/7 lighting for drilling and/or other mine development would undermine key qualities that resulted in the Patagonia Mountains being designated critical habitat, e.g., "no stable nighttime lighting over any over any 1- km2(0.4-mi2) area."

The FWS called special attention to the threat posed by mining activity to jaguar habitat in mountain ranges such as the Patagonias: "Jaguar habitat and the features essential to their conservation are threatened by the direct and indirect effects of increasing human influence into remote, rugged areas, as well as projects and activities that sever connectivity to Mexico. These may include . . . mineral extraction and mining operations . . . and human disturbance related to increased activities in or access to remote areas." Id. at 12,588.

Mining and the increased human disturbance that accompanies a mining project "may

render an area unsuitable for jaguars." Id. at 12,573. Due to these impacts, the FWS concluded that "[f]uture projects should avoid (to the maximum extent possible) areas identified as meeting the definition of critical habitat for jaguars, and if unavoidable, should be constructed or carried out to minimize habitat effects." Id. at 12,617. Brown and Lopez-Gonzales (2001, page 6, Table 1) list at least seven jaguars reportedly killed or photographed in the Patagonia Mountains area, dating from 1904 (2 jaguars), 1926 (1, maybe two jaguars), 1932/33 (1 jaguar), 1948 (1 jaguar), and one from 1965. Additionally, given the wide ranges that jaguars occupy and move through, it is critically important to consider the jaguar's recent presence in mountain ranges near the Patagonias. In the last decade (from 2001–2007), McCain and Childs (2008) monitored at least two jaguars ("Macho A" and "Macho B") on several mountain ranges (the Atascosa, Tumacacori, and Baboquivari Mountains) west of the Patagonia Mountains (30–60 miles away). In 2010 and 2011, Sky Island Alliance documented two different jaguars 40 miles south of the Patagonia Mountains. In 2016 two jaguars were recorded by trail cameras, one in the Santa Rita Mountains approximately 20 miles north of the Patagonias, and one in the Huachuca Mountains approximately 40 miles east. Considering that the estimated minimum home range of a northern jaguar can be up to 525 square miles, the Patagonia Mountain area is highly important at a regional level for habitat connectivity, movement corridors, and potential territories to be established completely or in part in the Patagonia Mountains.

That jaguars can travel between the Sky Islands Mountains is evidenced by the fact that El Jefe, the jaguar photographed in the Santa Rita Mountains in 2016 had been previously photographed in the Whetstone Mountains, 30 miles from Patagonia, and the jaguar photographed in the Huachuca Mountains in 2016 was subsequently killed in Mexico in 2018.

iii. Ocelot

Even though critical habitat has not yet been designated for the ocelot, many of the habitat and connectivity requirements associated with jaguars are also applicable to ocelots, so much of the above in the section on jaguars also pertains to ocelots. The Project sits 30 to 40 miles from locations where ocelots have been documented, both in Arizona and Sonora, Mexico. Sky Islands Alliance (SIA) has systematically documented ocelots 40 miles to the southeast, in the Sierra Azul Mountains, since 2007. Similarly, in 2009, SIA documented an ocelot in Cochise County, 20-30 miles to the northeast of the Patagonia Mountains. In February and May 2011, the Arizona Game and Fish Department documented two separate ocelot sightings approximately 20 miles from the proposed mine area, in the Huachuca Mountains. The habitat type, elevation, and physical characteristics of each place are extremely similar, leading biologists to believe that the project area is also potential ocelot habitat.

To the best of our knowledge, no long-term monitoring efforts have been conducted in the Patagonia Mountains to determine the presence of ocelots. However, there are historical records that document ocelots in the Patagonia Mountains (1960), the Huachuca Mountains (1964), and the San Pedro River Valley (1980). Through the use of remote sensing cameras, from 2007 through 2011, the ocelot has been recorded as close as 40 miles south of the Patagonia Mountains. To date, SIA has confirmed the northernmost known breeding population (presence of males, females, and kittens) of this tropical feline within short distances of the United States, suggesting that ocelots may be traveling northward or currently residing in southern Arizona. Estimated dispersal distances for ocelots in south Texas are between 3 to 20 miles (Caso, 1994; Crawshaw, 1995), which is similar to the distance between the northernmost breeding population

and sightings in Arizona.

Ocelots are notoriously difficult to detect, particularly in low densities such as they exist in their northern range. It is possible that all of these occurrences of ocelots are connected by existing corridors and are part of an established population. It is highly probable that ocelots documented in northern Sonora and in Arizona are connected by migration corridors, including the Patagonia Mountains, and therefore these ocelot occurrences potentially represent localities of an established trans-boundary population. This possibility is based on observations of open lands in northern Sonora and southern Arizona, where extensive patches of undeveloped lands—including both private ranches and public lands—contain suitable habitat and prey species to support a healthy cross-border ocelot meta-population. Even though these recently documented ocelots in Arizona could represent dispersing males, and there has not been enough field research to determine the source population, their preferred habitats, their migrating corridors, or even existence of established ocelot populations along the borderlands. Despite the lack of research, one reasonable explanation of the recent occurrences of ocelots in southern Arizona is that they may have originated from a breeding population somewhere south of the U.S. border, and used the Patagonia Mountains as a travel corridor.

5. Chiricahua leopard frog (*Rana chiricahuensis*)

The USFS must analyze effects of the project on the federally threatened Chiricahua leopard frog. The Draft EA deals summarily with the frog, with analysis restricted to two tables. Table E-1 states that "No records of Chiricahua leopard frog exist in the Patagonia Mountains," Draft EA at E-1 (Appendix E), and Table 6 of the Plan of Operations states that "No known records occur within or near the Project Area. Suitable aquatic habitat for this species in the form of cienegas, springs, pools, cattle tanks, streams, and rivers is generally lacking within the Project Area." PoO at 39. The PoO also states that the species is "unlikely to occur within or near the Project Area and that there will be "no effect." PoO, at 36.

The statement that "no recent records of Chiricahua leopard frog exist in the Patagonia Mountains" is false. *See* EA at 116. While the response to comments notes that the speices hasn't been documented in the last 10 years, there is no discussion of what efforts were made to try to locate the species, and thus determine that the conclusion of the species not being present is supported. This shortfall is problematic given that other Forest Service analysis have acknowledged the presence and suitable habitat for the species.

For example, the 2010 Final Environmental Assessment, Redrock Canyon Renovation Project list a location record from 1998 at Harshaw Creek near the Harshaw town site. U.S. Forest Serv., Final Environmental Assessment, Redrock Canyon Renovation Project, 97 (Appendix B) (Sept. 2010). This statement is further contradicted by the 2014 Hermosa Drilling Project draft Environmental Assessment, for a similar project neighboring the proposed Sunnyside project area. The Hermosa draft EA's Table 14 concluded that "[p]roject area contains suitable habitat. . . . [and the species is] [k]nown to occur within 1 mile of the project area." U.S. Forest Serv., Hermosa Drilling Project, Draft Environmental Assessment, at 44–45 (Mar. 2014) [hereinafter Hermosa Draft EA]. Moreover, Table 6 of the Plan of Operations makes the dubious claim that "[s]uitable aquatic habitat for this species in the form of . . . streams . . . is generally lacking within the Project Area." PoO at 39. Given that Harshaw Creek falls into the category of "stream," a category that may constitute "suitable habitat" (PoO, Table 6), and given that

Harshaw Creek will be affected by the project activities, it is clear that habitat is present in the Project Area.

While the EA noted that drilling, road building, and related activities could result in release of artisanal flows and increased sediment runoff into Harshaw Creek, these references have now been removed for an unknown reason. The DEA has stated that: "Aggrading or degrading sediment deposition in surface waters could degrade stream morphology, floodplain function, and wetland/riparian resources." EA at 7.

Moreover, cumulative impacts must be analyzed including the huge releases of produced water expected by the neighboring Hermosa Project. There still does not appear to be discussion about the proposed discharges of "treated water from the exploratory declines to Harshaw Creek." Table 8, EA at 26. If large volumes of water are discharged into Harshaw Creek by the Hermosa project, this water would mix with artisanal releases and sediment runoff caused by the Sunnyside Project.

These cumulative flows will change the hydrology, geomorphology, and vegetation form and composition of Harshaw Creek, thereby affecting any frogs that may be present. Moreover, water discharge into Harshaw Creek will ultimately enter Sonoita Creek where it would have similar effects on hydrology, geomorphology, and vegetation. It is important to note that the 2007 Final Recovery Plan for the Chiricahua leopard frog designated Recovery Unit 2, the Santa Rita-Huachuca-Ajos/Bavispe Recovery Unit to include "Sonoita Creek downstream of Patagonia," the confluence of Harshaw and Sonoita creeks. U.S. Fish & Wildlife Serv., Final Recovery Plan for the Chiricahua Leopard Frog, at B-14 (Apr. 2007), https://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/CLF/Final_CLF_Plan.pdf. The recovery plan goes on to say, "Chiricahua leopard frogs are still well-represented in RU 2, including populations on the eastern slope of the Santa Rita Mountains, Patagonia Mountains, Canelo Hills . . . ." Id. Therefore, it is clear that the project would affect habitat and possibly extant populations of this threatened species. Prior to approving this project, USFS must do a thorough baseline survey to identify possible presence in both Harshaw and Sonoita creeks, and must analyze potential adverse effects.

6. Sonoran tiger salamander (*Ambystoma tigrinum stebbinsi*)

While the EA concludes that habitat for the endangered Sonoran tiger salamander does not exist within the project area, EA at 116, the Forest Service has not satisfactorily explained the contradiction this conclusion has with he 2014 Hermosa Drilling Project draft Environmental Assessment. The Hermosa draft EA's Table 14 concluded that "[p]ortions of the project area contain suitable habitat [and the species is] [k]nown to occur within one mile of the project area." Hermosa Draft EA at 45. The same arguments pertain to this species as for the leopard frog, namely that direct effects of the Sunnyside Project, and the combined cumulative effects of the Sunnyside and Hermosa projects, could significantly alter the habitat of the salamander. Prior to approving this project, USFS must do a thorough baseline survey to identify possible presence in both Harshaw and Sonoita creeks, and must analyze potential adverse effects, which still remains to be done. Moreover, the Forest Service's reference to the BA, which has been withheld from the public, further undermines the ability for the public to meaningfully engage on this issue.

7. Gila topminnow (*Poeciliopsis occidentalis*)

The PoO concludes that there will be "no effect" on the endangered Gila topminnow because "[b]ased on the range, general habitat requirements, potential for occurrence, and/or survey results, the . . . Gila topminnow [is] unlikely to occur within or near the Project Area. PoO, at 36. However, USFS should conduct a baseline analysis of the Harshaw Creek potential topminnow habitat and the existing population in Sonoita Creek.

The 1998 Gila topminnow revised recovery plan (1998) identified Harshaw Creek as one of the "known habitats available for reestablishment of Gila topminnow" as part of the overall recovery strategy. U.S. Fish & Wildlife, Gila Topminnow, *Poeciliopsis occidentalis*, Revised Recovery Plan, at 31 (Dec. 1998), https://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/GilaTopminnow/gtop94fn.pdf (listed in Table 3). Given that Harshaw Creek was identified as a potentially important habitat in recovering the topminnow, USFS should analyze its suitability for reintroducing the topminnow and the effects of this project on that suitability.

Further, the topminnow inhabits Sonoita Creek downstream from Patagonia and below the point where Harshaw Creek joins Sonoita Creek. As described in the section on the Chiricahua leopard frog, drilling and road building associated with the project may cause changes in "stream morphology, floodplain function, and wetland/riparian resources" in Harshaw Creek. *See* Draft EA at 10. Because Harshaw Creek connects to Sonoita Creek above the creek's topminnow population, these changes, including sediment deposition, could affect the topminnow. Water pollution is one of the factors impeding this species' recovery, and further mining-related contamination of the headwater tributaries of Sonoita Creek would likely be deleterious. USFS should analyze possible effects to the species. Moreover, as in the case of the leopard frog, USFS must analyze the cumulative effects of this project with that of the Hermosa Project's proposed water discharge, which will reach Sonoita Creek after being discharged into Harshaw Creek.

8. Other Listed Species

In addition to the above species, the Patagonia Mountains are known habitat for another endangered nocturnal species, the lesser long-nosed bat, which roosts in the nearby Patagonia bat cave. This species will likely also be affected by the noise and light pollution from the proposed drilling operations. Human activity associated with the Project may also destroy agave plants, the species' primary food source in the region. Moreover, particular attention should be made for the baseline conditions and protection for downstream populations of species of special concern, notably the threatened Mexican garter snake (*Thamnophis eques*) and the endangered Huachuca water umbel (*Lilaeopsis schaffneriana var. recurva*), both documented on the Nature Conservancy Patagonia-Sonoita Creek Preserve.

Finally, numerous imperiled plant species occurring the Patagonia Mountains are listed in Appendix A of the April 2021 comments. The proposed Project may directly threaten a specimen of willow-leaf oak in Humboldt Canyon that represents one of only a handful of occurrences of this species in the United States. See T.R. Van Devender et al., Northern Distributional Limits of the Mexican Willow Oak (*Quercus viminea* Trel.) in Arizona, Sonora, and Chihuahua, 48 Phytoneuron 1 (2013), http://aaronflesch.com/sites/default/files/publications/northern-distributional-limits-of- the-mexican-willow-oak-quercus-viminea-in-arizona-sonora-and-chihuahua-van-devender- 2013.pdf. The FWS has also identified that Bartram's stonecrop

(*Graptopetalum bartramii*)— which was proposed for listing in 2019—may also be in the Project area and may be affected by the Project if present.

9. Sensitive Wildlife Species

In addition to impacts to species listed under the ESA, the EA and proposed action also fail to adequately protect sensitive species and comply with the requirements of the Forest Plan and agency manuals, policies and directives requiring protection of sensitive species as required by the National Forest Management Act (NFMA). As stated in the Final EIS for the revised Forest Plan (2018):

The regional forester's sensitive species program is the Forest Service's dedicated initiative to conserve and recover plant and animal species according to Forest Service policy found in Forest Service Manual 2670. The Coronado National Forest improves habitat and restores ecosystems for sensitive species through vegetation treatments and management practices. Sensitive species are those plant and animal species identified by the regional forester for which population viability is a concern, as evidenced by the following:

- significant current or predicted downward trends in population numbers or density
- significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution

"Other forest planning species" are not listed as threatened, endangered, or sensitive but still have species-specific threats to their population viability that are not addressed by the coarse-filter analysis.

U.S. Forest Serv., Final Programmatic Environmental Impact Statement for Revision of the Coronado National Forest Land and Resource Management Plan, at 251 (Apr. 2018), https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd583210.pdf [hereinafter FEIS]. FEIS Table 73 has the Coronado's list of sensitive species, including those in the Huachuca Ecosystem Management Area, which covers the project area. *See* FEIS at 252–54. At a minimum, the EA does not analyze how the project's impacts, alone and cumulatively with other past, present, and reasonably foreseeable activities that may affect these species, complies with these requirements.

Nor does the EA contain the required analysis of the baseline conditions, numbers, and habitat for these species (the same is true for ESA-listed species) in the lands/waters potentially affected by the project, in violation of both NEPA, the NFMA, and agency manuals, policies and directives.

II. THE USFS FAILED TO CONDUCT AN ADEQUATE NEPA REVIEW OF THE SUNNYSIDE PROJECT

The Objectors raised the following issues in their April, 2021, comments at pp. 17-24, but were not satisfactorily addressed by the EA/DN/FONSI.

A. The Impacts of this Project, Especially Added to Other Cumulative Projects, Will Be Significant

Given the relatively large scope of this Project, and the fact that it will be occurring in the context of other substantial mining operations in the immediate area, we urge that the USFS require an EIS to fully explore the possible effects, particularly cumulative effects with other ongoing and reasonably foreseeable projects. The activities described in the scoping notice and the EA, drilling at several test sites 24 hours a day, seven days a week, with enlargement of access roads and increased human and vehicular traffic, continuing for over seven years, will likely result in significant environmental impacts, which must be adequately analyzed in an EIS before the project moves forward. Furthermore, many similar impacts have already been observed on private land in the area where operations have been ongoing, so the USFS should know that the impacts will not be insignificant.

B. The Draft EA Failed to Fully Analyze All Direct, Indirect, and Cumulative Impacts

Under the National Environmental Policy Act ("NEPA"), the USFS must fully review the impacts from all "past, present, and reasonably foreseeable future actions." These are the "cumulative effect/impacts" under NEPA. To comply with NEPA, the USFS must consider all direct, indirect, and cumulative environmental impacts of the proposed action. 40 C.F.R. §§ 1502.16, 1508.8, 1508.25(c).[1] Direct effects are caused by the action and occur at the same time and place as the proposed project. 40 C.F.R. § 1508.8(a). Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. 40 C.F.R. § 1508.8(b). Both types of impacts include "effects on natural resources and on the components, structures, and functioning of affected ecosystems," as well as "aesthetic, historic, cultural, economic, social or health [effects]." Id. Cumulative effects are defined as:

> [T]he impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

40 C.F.R. § 1508.7. In a cumulative impact analysis, an agency must take a "hard look" at all actions.

> An EA's analysis of cumulative impacts must give a sufficiently detailed catalogue of past, present, and future projects, and provide adequate analysis about how these projects, and differences between the projects, are thought to have impacted the

[1] "On July 16, 2020, the Council on Environmental Quality (CEQ) published a Final Rule updating the regulations implementing NEPA (CEQ 2020); the updated regulations took effect on September 14, 2020. Projects initiated prior to September 14, 2020 have the option of proceeding under the 1978 NEPA implementing regulations, as amended (40 C.F.R. Parts 1500–1508). This analysis and NEPA documentation is being prepared pursuant to the 1978 implementing regulations." EA at 3.

> environment. . . . Without such information, neither the courts nor the public . . . can be assured that the [agency] provided the hard look that it is required to provide.

Te-Moak Tribe of Western Shoshone v. U.S. Dept. of Interior, 608 F.3d 592, 603 (9th Cir. 2010) (rejecting EA for mineral exploration that had failed to include detailed analysis of impacts from nearby proposed mining operations). A cumulative impact analysis must provide a "useful analysis" that includes a detailed and quantified evaluation of cumulative impacts to allow for informed decision-making and public disclosure. Kern v. U.S. Bureau of Land Management, 284 F.3d 1062, 1066 (9th Cir. 2002); Ocean Advocates v. U.S. Army Corps of Eng'rs, 361 F.3d 1108 1118 (9th Cir. 2004). The NEPA requirement to analyze cumulative impacts prevents agencies from undertaking a piecemeal review of environmental impacts. Earth Island Institute v. U.S. Forest Serv., 351 F.3d 1291, 1306–07 (9th Cir. 2003). The NEPA obligation to consider cumulative impacts extends to all "past," "present," and "reasonably foreseeable" future projects. Blue Mountains, 161 F.3d at 1214–15; Kern, 284 F.3d at 1076; Hall v. Norton, 266 F.3d 969, 978 (9th Cir. 2001) (finding cumulative analysis on land exchange for one development failed to consider impacts from other developments potentially subject to land exchanges); Great Basin Mine Watch v. Hankins, 456 F.3d 955, 971–74 (9th Cir. 2006) (requiring "mine-specific . . . cumulative data," a "quantified assessment of their [other projects] combined environmental impacts," and "objective quantification of the impacts" from other existing and proposed mining operations in the region). NEPA regulations also require that the agency obtain the missing "quantitative assessment" information 40 C.F.R. § 1502.22. "If there is 'essential' information at the plan- or site-specific development and production stage, [the agency] will be required to perform the analysis under § 1502.22(b)." Native Village of Point Hope v. Jewell, 740 F.3d 489, 499 (9th Cir. 2014).

Thus, in this case, the USFS must fully consider the cumulative impacts from all past, present, and reasonably foreseeable future projects in the region on, at a minimum, water and air quality including ground and surface water quantity and quality, recreation, cultural/religious, wildlife, transportation/traffic, scenic and visual resources, etc. At a minimum, this requires the agency to fully review, and subject such review to public comment in a revised Draft EA or EIS, the cumulative impacts from all other mining, exploration, grazing, recreation, energy development, roads, etc. in the region.

The EA is based on a seriously deficient view regarding its duties to review these impacts. The agency admits that there are large-scale mineral operations active and proposed in the area (Hermosa and San Antonio projects). This includes current exploration activities as well as anticipated mining projects (in the case of the Hermosa and San Antonio projects). *See generally* Ariz. Dep't of Envtl. Quality, Draft Statement of Basis for Major Modification of Arizona Pollutant Discharge Elimination System Permit No. AZ0026387 (2021), https://static.azdeq.gov/pn/210205_azmin_sb.pdf; Ariz. Dep't of Envtl. Quality, Draft Authorization to Discharge Under the Arizona Pollutant Discharge Elimination System Permit No. AZ0026387 (2021), https://static.azdeq.gov/pn/210205_azmin_dp.pdf; U.S. Forest Serv., SOPA: Plan of Operations, Minerals Exploration, Hermosa Drilling Project, https://www.fs.usda.gov/project/?project=41158 (last visited Apr. 1, 2021); IC Exploration, LLC, Plan of Operations, San Antonio Exploratory Drilling Project, Santa Cruz County, Arizona (June 3, 2020), https://www.fs.usda.gov/nfs/11558/www/nepa/114239_FSPLT3_5343449.pdf; U.S. Forest Serv., SOPA: San Antonio Drilling Project, https://www.fs.usda.gov/project/?project =58629 (last visited Apr. 1, 2021). The impacts from the nearby proposed Rosemont Copper

Mine Project on wildlife, transportation/traffic, and other potentially affected resources was also not analyzed.

Regarding the South32 Hermosa Project: Because this project will operate from private, patented lands to conduct an underground lateral drilling operation, there is very little public information about the impacts. A January 17, 2022 Hermosa Project Update (see PDF attached of the January 17, 2022 Hermosa Project Update) provided limited public information, but did state that the company expects a 22 year resource life on the Taylor Deposit producing 4.3 million metric tonnes per year; there are other deposits and exploration targets (see PDF of page 17 of the Project Update), but no information on those are provided. It is known that the Flux Prospect has a pending application with the USFS for exploratory drilling (whose impacts should have been fully analyzed by the EA). The Hermosa Project is located next to the Sunnyside Project and the Flux Prospect is on USFS public lands less than ten miles from the Sunnyside Project.

Regarding Historical Mining: The Water Resource Analysis Technical Report for the Sunnyside Projects states at page 9 that "ADEQ and USGS have completed environmental studies on water quality and sources of contributions of acidity and heavy metals (ADEQ, 2003a and 2003b). These studies concluded that there is a clear contribution from historical mining activities, including mining wastes and adits." Therefore, ALL historical mines in the region must be included in the analysis of cumulative impacts.

The Ninth Circuit has clearly held that proposed mining projects must be fully reviewed in NEPA documents for nearby projects. See Te-Moak Tribe of Western Shoshone v. U.S. Dept. of the Interior, 608 F.3d 592, 603 (9th Cir. 2010) (rejecting EA for mineral exploration that had failed to include detailed analysis of impacts from nearby proposed mining operations). Even projects that have not reached the formal proposal stage (which is not the case here) are considered "reasonably foreseeable" and must be reviewed in this EA or EIS. Northern Plains Resource Council, Inc. v. Surface Transp. Bd., 668 F.3d 1067, 1078–79 (9th Cir. 2011).

The EA contains a cursory cumulative effects/impacts section, mostly focusing on impacts to listed species. Although Table 8 lists a number of projects that will result in cumulative impacts, no details about the actual impacts are provided. The Table merely lists the projects, their locations, and what resources will be affected. Such a listing was expressly found to violate NEPA in Great Basin Mine Watch v. Hankins, 456 F.3d 955, 971–74 (9th Cir. 2006) (requiring mine-specific cumulative data, quantified assessment of combined environmental impacts of other projects, and objective quantification of the impacts from other existing and proposed mining operations in the region). Yet for each of these resources/impacts, none of the required analysis regarding other existing and proposed activities in the region is provided.

As other examples of the deficient cumulative impacts and baseline analysis, the EA acknowledges the dewatering and water discharges expected from the Hermosa Project (on the regional aquifer and Harshaw Creek). "South 32 [Hermosa] intends to treat the water collected from the declines and discharge it to Harshaw Creek at a rate of up to 4,500 gallons per minute, which represents an approximately 40-fold increase over current stream flow." EA at 68.

There is no detailed analysis, as NEPA requires, of the baseline conditions of these affected resources and of these impacts on water quality and quantity, streamflow, erosion, wildlife and habitat, transportation/traffic, sedimentation, recreation, and other impacted

resources. For example, there is little/no analysis of the water-related impacts from the Project and other reasonably foreseeable activities on sediment in Harshaw Creek (and on other water quality baseline conditions, resources and impacts) along Harshaw Road, and other roads, such as increased sediment loading from Project and other activities, along with the increased water discharges (and other pollutant loadings in Harshaw Creek and downstream waters). The fact that Arizona Standard may apply for a state discharge permit does not substitute for the USFS's NEPA duties for full public and agency analysis. As one example, there is no analysis of the baseline conditions for sediment conditions in Harshaw Creek, nor the expected sediment and other pollutant loading from the Project along with the other current and reasonably foreseeable projects that may affect the Creek and downstream waters (such as Sonoita Creek).

C. The Draft EA Fails to Fully Analyze All Baseline Conditions

The Project proposes an extensive network of roads, drilling sites, and support facilities across a large area. These activities will adversely impact a number of critical public resources such as air, water (surface and ground, quantity and quality), wildlife, recreation, visual/scenic, transportation/traffic, cultural/religious, historical, etc. As noted above, each of these potential impacts must be fully reviewed, not just in the immediate location of the impact, but on a regional scale. In addition, the agency must prepare for public review a detailed analysis of the current baseline conditions for all potentially affected resources, both at the immediate site locations, but also nearby and regionally (e.g., for all the resources within the Cumulative Effects Analysis Area, CEAA).

The USFS is required to "describe the environment of the areas to be affected or created by the alternatives under consideration." 40 C.F.R. § 1502.15. The establishment of the baseline conditions of the affected environment is a fundamental requirement of the NEPA process:

> "NEPA clearly requires that consideration of environmental impacts of proposed projects take place before [a final decision] is made." LaFlamme v. FERC, 842 F.2d 1063, 1071 (9th Cir.1988) (emphasis in original). Once a project begins, the "pre-project environment" becomes a thing of the past, thereby making evaluation of the project's effect on pre-project resources impossible. Id. Without establishing the baseline conditions which exist in the vicinity . . . before [the project] begins, there is simply no way to determine what effect the proposed [project] will have on the environment and, consequently, no way to comply with NEPA.

Half Moon Bay Fisherman's Mktg. Ass'n v. Carlucci, 857 F.2d 505, 510 (9th Cir. 1988). "In analyzing the affected environment, NEPA requires the agency to set forth the baseline conditions." Western Watersheds Project v. BLM, 552 F. Supp. 2d 1113, 1126 (D. Nev. 2008). "The concept of a baseline against which to compare predictions of the effects of the proposed action and reasonable alternatives is critical to the NEPA process." Council of Environmental Quality, Considering Cumulative Effects under the National Environmental Policy Act (May 11, 1999).

Such baseline information and analysis must be part of the EA/EIS and be subject to public review and comment under NEPA. The lack of an adequate baseline analysis fatally flaws an EA or EIS. "[O]nce a project begins, the pre-project environment becomes a thing of the past and evaluation of the project's effect becomes simply impossible." Northern Plains v. Surface

Transp. Bd., 668 F.3d 1067, 1083 (9th Cir. 2011). "[W]ithout [baseline] data, an agency cannot carefully consider information about significant environment impacts. Thus, the agency fail[s] to consider an important aspect of the problem, resulting in an arbitrary and capricious decision." Id. at 1085.

Here, as noted above, the PoO and EA admit that groundwater may be adversely affected by the Project: a potential risk to impact groundwater quality and quantity through potential water exchange between aquifers. Deep boreholes drilled through the groundwater system could create a preferred pathway for groundwater in deeper formations to migrate upward and intermingle with the shallow parts of the system. A potential issue would be a risk of water exchange between aquifers as a result of the proposed drilling program.

Yet, the Draft EA admits that: **"No groundwater quality samples have been collected in the project area and the quality of groundwater in the project area is unknown (SRK 2020).**" EA at 60 (emphasis added).

The USFS's failure to require baseline groundwater studies, analysis and mitigation measures in reviewing a mining/exploration plan under NEPA and the 228 regulations has been ruled illegal by the federal courts. In Idaho Conservation League, 2012 WL 3758161 (D. Idaho 2012), the Idaho federal court concluded that the USFS acted arbitrarily and capriciously by authorizing exploratory hardrock mineral drilling without fully analyzing the baseline groundwater and hydrology. Id. at *17. Such analysis should include "a baseline hydrogeologic study to examine the existing density and extent of bedrock fractures, the hydraulic conductivity of the local geologic formations, and [measures of] the local groundwater levels to estimate groundwater flow directions." Idaho Conservation League, 2012 WL 3758161, at *16; see also Shoshone-Bannock Tribes of Fort Hall Reservation v. U.S. Dep't of the Interior, 2011 WL 1743656, at *10 (D. Idaho 2011).

Further, relying on mitigation measures to reduce drilling impacts does not satisfy the USFS's duty to fully analyze the baseline conditions of all potentially affected resources. Idaho Conservation League, 2012 WL 3758161, at *17. This holds true for potential impacts to all resources from the proposed project, not just groundwater (e.g., wildlife and habitat, recreation, air quality, surface water, etc.).

The federal courts have reiterated the NEPA requirement for a detailed groundwater baseline analysis. "Ninth Circuit cases acknowledge the importance of obtaining baseline condition information before assessing the environmental impacts of a proposed project." Gifford Pinchot Task Force v. Perez, 2014 WL 3019165, at *28 (D. Or. 2014) (USFS/BLM EA for mineral exploration project failed to obtain and analyze baseline water quality data in violation of NEPA).

Here, at a minimum, prior to considering or approving any exploration, the USFS must first obtain this required baseline information for all potentially affected resources and subject the information and analysis to public review and comment in a revised Draft EA or EIS. "NEPA requires that the agency provide the data on which it bases its environmental analysis. Such analyses must occur before the proposed action is approved, not afterward." Northern Plains, 668 F.3d at 1083 (internal citations omitted) (concluding that an agency's "plans to conduct surveys and studies as part of its post-approval mitigation measures," in the absence of baseline

data, indicate failure to take the requisite "hard look" at environmental impacts). This requirement applies not only to ground and surface waters, but any potentially affected resource such as air quality, recreation, soils, cultural/historical, wildlife, etc.

D. The Draft EA Fails to Include an Adequate Analysis of Mitigation Measures, and Their Effectiveness

Under NEPA, the agency must have an adequate mitigation plan to minimize or eliminate all potential project impacts. NEPA requires the agency to: (1) "include appropriate mitigation measures not already included in the proposed action or alternatives," 40 C.F.R. § 1502.14(f); and (2) "include discussions of: . . . Means to mitigate adverse environmental impacts (if not already covered under 1502.14(f))." 40 C.F.R. § 1502.16(h). NEPA regulations define "mitigation" as a way to avoid, minimize, rectify, or compensate for the impact of a potentially harmful action. 40 C.F.R. §§1508.20(a)–(e). "[O]mission of a reasonably complete discussion of possible mitigation measures would undermine the 'action-forcing' function of NEPA. Without such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse effects." Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 353 (1989). NEPA requires that the agency discuss mitigation measures, with "sufficient detail to ensure that environmental consequences have been fairly evaluated." Id. at 352.

> An essential component of a reasonably complete mitigation discussion is an assessment of whether the proposed mitigation measures can be effective. Compare Neighbors of Cuddy Mountain v. U.S. Forest Service, 137 F.3d 1372, 1381 (9th Cir.1998) (disapproving an EIS that lacked such an assessment) with Okanogan Highlands Alliance v. Williams, 236 F.3d 468, 477 (9th Cir.2000)(upholding an EIS where "[e]ach mitigating process was evaluated separately and given an effectiveness rating"). The Supreme Court has required a mitigation discussion precisely for the purpose of evaluating whether anticipated environmental impacts can be avoided. Methow Valley, 490 U.S. at 351–52, 109 S. Ct. 1835 (citing 42 U.S.C. § 4332(C)(ii)). A mitigation discussion without at least some evaluation of effectiveness is useless in making that determination.

South Fork Band Council v. Dept. of Interior, 588 F.3d 718, 727 (9th Cir. 2009) (rejecting EIS for mining project for failure to conduct adequate review of mitigation and mitigation effectiveness in EIS). "The comments submitted by [plaintiff] also call into question the efficacy of the mitigation measures and rely on several scientific studies. In the face of such concerns, it is difficult for this Court to see how the [agency's] reliance on mitigation is supported by substantial evidence in the record." Wyoming Outdoor Council v. U.S. Army Corps of Eng'rs, 351 F. Supp. 2d 1232, 1251 n. 8 (D. Wyo. 2005). See also Dine Citizens v. Klein, 747 F. Supp. 2d 1234, 1258–59 (D. Colo. 2010) (finding "lack of detail as the nature of the mitigation measures" precluded "meaningful judicial review").

The EA is devoid of any detailed analysis of the effectiveness of the purported mitigation measures. It is impossible for the USFS to contend that it fully reviewed the effectiveness of mitigation measures—as required by NEPA—when the EA lacks any reference to such analysis. Simply referring generally to potential mitigation measures, as the EA does, does not comply with NEPA. As held recently by the federal courts, an EA violates NEPA if it "fails to address the

effectiveness of the mitigation measures." Gifford Pinchot Task Force v. Perez, 2014 WL 3019165, at *39 (D. Or. 2014). As in Gifford Pinchot, no analysis, let alone mention, of how effective these mitigation measures will be is contained in the EA. As such the EA violates NEPA. In addition, because the agency relies on these purported mitigation measures to allegedly meet its responsibilities under the Organic Act and Part 228 regulations to "minimize adverse impacts," the failure to adequately support these measures also violates these requirements.

E. The Draft EA Failed to Fully Review All Reasonable Alternatives

NEPA requires the agency to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources." 42 U.S.C. § 4332(E); 40 C.F.R. § 1508.9(b). It must "rigorously explore and objectively evaluate all reasonable alternatives" to the proposed action. City of Tenakee Springs v. Clough, 915 F.2d 1308, 1310 (9th Cir. 1990). The alternatives analysis is considered the heart of a NEPA analysis. 40 C.F.R. § 1502.14. The alternatives analysis should present the environmental impacts in comparative form, thus sharply defining important issues and providing the public and the decisionmaker with a clear basis for choice. Id. The lead agency must "rigorously explore and objectively evaluate all reasonable alternatives" including alternatives that are "not within the [lead agency's] jurisdiction." Id.

Even if an EA leads to a FONSI, it is essential for the agency to consider all reasonable alternatives to the proposed action. Bob Marshall Alliance v. Hodel, 852 F.2d 1223, 1228–29 (9th Cir. 1988) (citations omitted, emphasis in original). "While a federal agency need not consider all possible alternatives for a given action in preparing an EA, it must consider a range of alternatives that covers the full spectrum of possibilities." Ayers v. Espy, 873 F. Supp. 455, 473 (D. Colo. 1994).

Here, the EA only considers an alternative to the proposed project of helicopter access and daytime-only operations. EA at 19-21. Yet that is not the only reasonable alternative to the project proposal. For example, regarding access, the revised Draft EA/EIS should consider not upgrading Flux Canyon road and rely on Harshaw Road for drilling access (which is certainly reasonable based on the Draft EA maps).

The EA also never considers other restrictions to protect public resources, as required by the 1897 Organic Act, such as not allowing 24/7 day operations, as well as further seasonal restrictions to protect wildlife, water resources (from flood impacts for example), and recreation.

In addition, the EA failed to consider, at a minimum, the following reasonable alternatives:

- Approval of only activities on current existing roads.
- Reduction in the amount, scope, and impact of each activity or group of activity.
- Timing restrictions to protect wildlife, recreation, and other public resources;
- Avoidance of any impact to recreational users of the Arizona Trail (visual, scenic, noise, etc.).
- Avoidance of cultural and historic areas.
- Review of the Project under the correct legal regime as noted herein, with

mitigations to protect the public interest from adverse impacts.

The EA asserts that alternatives that would reduce Arizona Standard's desired scope of work and "purpose and need" required the rejection of alternatives. However, the agency cannot circumscribe its duty to fully review "all reasonable alternatives" in this manner. The CEQ regulations warn that a NEPA document is not to be used to justify a decision already made. 40 C.F.R. § 1502.2(g). Thus, "an agency may not define the objectives of its action in terms so unreasonably narrow that only one alternative . . . would accomplish the goals of the agency's action, and the EIS would become a foreordained formality." Citizens Against Burlington, Inc. v. Busey, 938 F.2d 190, 196 (D.C. Cir. 1991), cert. denied, 502 U.S. 994, 112 S. Ct. 616 (1991). See Muckleshoot Indian Tribe v. U.S. Forest Serv., 177 F.3d 800, 814 n.7 (9th Cir. 1999); Friends of Southeast's Future v. Morrison, 153 F.3d 1059, 1066 (9th Cir. 1998).

F. Additional Issues and Corrections

This section contains additional questions, issues, and concerns about the inadequate project documents such as the DN, EA, FONSI, and supporting reports, that were raised in their April, 2021, comments at pp. 4-24, but were not satisfactorily addressed by the EA/DN/FONSI.

Re: DN and FONSI

Pages 1 and 2: In addition to the other reasons address herein and in the previous comments, there should be an EIS because: (1) there are numerous past, present and reasonably foreseeable cumulative impacts, (2) there are "related [mining] actions" in the same mountain range and vicinity, (3) because it is in a highly controversial setting – the Patagonia Mountains, (4) the cumulative impacts of increased road density within the watershed have not been considered, and (5) groundwater from the project area flows to Sonoita Creek – not Cienega Creek. As presented, there is too much ambiguity and controversy about groundwater flow direction.

Design Features-Air Quality (page 2 bullet 1): Thirty (30) pads of unknown dimensions are not minimal. Assuming that the size of the pads are at least one acre each, the impacted area could be ten (10) acres total, assuming at least three (3) boreholes per pad. Timber slash is to be lopped and scattered. Whole trees would be removed. Will they be cut into smaller pieces to make it more aesthetically appealing and foster decomposition?

Design Features-Air Quality (page 3 bullet 4): Arizona Standard will "attempt to secure Tier III and Tier IV engines." Is there a contingency for air monitoring at the pads if this does not occur?

Design Features-Hazardous Substances (page 3 Bullet 15): Fuel will "be brought to the site as needed." Brought by a vendor or stored at another site related to the project? If stored at another site, are all the necessary contingencies developed for leaks and spills there?

Design Features-Hazardous Substances (page 4 Bullet 4): How will large drums with contaminated soils be protected until removed by an agent?

Design Features-Solid Waste (page 5 Bullet 11): Inert materials are planned to be used as drilling fluids. What is the chemical composition of any drilling fluids that may be used instead of the inert materials?

Design Features-Water Quality (page 5 Bullet 13): Water obtained for drilling will be "periodically tested." This is ambiguous and the agency should specify an actual testing interval.

Design Features-Water Quality (page 5, Bullet 1): "Water obtained for drilling would be periodically tested to ensure it meets water quality standards." Does not specify which "standards."

Design Features-Water Quality (page 6, Bullet 2): Pressure readings at each meter would be evaluated and logged on a regular basis to ensure there are no potential leaks in the water distribution system and that the water pumps are operating as expected. Does not specify a time interval for "on a regular basis."

Design Features-Water Quality (page 6, Bullet 10): Water diversion structures/erosion-control may be utilized on roads to prevent runoff and reduce erosion. The words "may be" should be changed to "shall be", to make a road erosion protection a requirement, not just an option.

Design Features-Water Quality (page 6, Bullet 11): Install seamless or welded seam sump-liners with sufficient strength to prevent leakage, tearing, or holes. Double liners should be considered for optimum leak prevention.

Design Features-Water Quality (page 6, Bullet 13): Maintain stormwater run-on/runoff and erosion controls around sumps. Report any release of drilling water outside the authorized drill pad area to the Forest Mineral Administrator and/or Hydrogeologist, and the Arizona Department of Environmental Quality, as required by that agency. This should also be part of the SWPPP.

Design Features-Water Quality (page 6 Bullet 13): What is the contingency plan?

Design Features-Water Quality (page 6 Bullet 14): Ambiguous. The concurrent reclamation should commence after drilling is completed at a given pad.

Design Features-Water Quality (page 6, Bullet 14): Although interim shutdown periods are not expected, regular inspections of the site's erosion control system would be performed by the operator at least monthly during inactive periods. At no time will the containment sump at each drill site be allowed to exceed 50 percent capacity, in order to accommodate any potential heavy precipitation events. Monthly monitoring is inadequate, especially during monsoon season(s).

Design Features-Water Quality (page 6, Bullet 15): Exposure of disturbed areas to rainfall should be minimized by building drill pads only prior to scheduled drilling activity. Regrading and reseeding should be scheduled to commence following completion of drilling to stabilize the site.

Design Features-Water Quality (page 7 Bullet 16): Temporary roads will be out-sloped, "if feasible." What will determine feasibility?

Design Features-Water Quality (page 7 Bullet 17): All revegetation should be with native vegetation of the Patagonia, AZ region.

Design Features-Water Quality (page 7 Bullet 20): All monitoring should be done in the presence of USFS personnel or an independent third party.

Design Features-Water Quality (page 7 Bullet 24): If excess water does occur, the water should be tested for pollutants before it is discharged and in the event that there are pollutants, they should be removed before discharging.

Design Features-Water Quality (page 7 Bullet 24): Statement says that "decanted water flow onto the forest floor." Elsewhere it is stated that water will not be allowed to flow onto the forest floor. The agency must clarify and analyze this.

Design Features-Water Quality (page 8 Bullet 1): Typo error. "ADWQ" should "ADWR" regulations pertaining to borehole abandonment procedures.

Finding of No Significant Impact (page 17 para 6): The vegetation alteration calculation seems lower than expected for 30 borings and associated pads.

Finding of No Significant Impact (page 19, para 4): "In this context, the term "controversial" refers to cases where substantial scientific dispute exists as to the size, nature, or effects of a major federal action on a human environmental factor rather than to public opposition of a proposed action or alternative." Substantial scientific dispute does exist within the scientific context of NEPA as to the size, nature, or effects of wildlife present and the effects on them by this proposed action; and scientific controversy is also noted regarding groundwater flow direction from the project area.

This FONSI has failed to show that incorporating appropriate design features and maintenance practices can avoid impacts to natural resources, including water quality, and wildlife, especially with regard to cumulative impacts. Just "minimizing" such cumulative impacts does not meet the letter or spirit of NEPA. All cumulative impacts (past, present, and reasonably foreseeable) must be fully considered with a "good hard look" as required by NEPA. (Page 19).

Existing controversy in this case goes well beyond, but is also reflected by, the strong public opposition that has resulted from numerous historic and recent environmental impacts from mining in the Patagonia Mountains. (Page 19).

Sunnyside Exploration Drilling Project-Environmental Assessment
Water Resources-Affected Environment-Groundwater Hydrology

IN GENERAL, there are too many misleading and ambiguous groundwater resource statements about Cienega Creek that do not necessarily apply to Flux Canyon and Sonoita Creek.

Water Source Discrepancy: The Environmental Assessment at page 58 states that the source of water will be the City of Nogales, but the Plan of Operations at page 30 states that the source of water will be from the City of Nogales (Kino Springs), Santa Cruz County (Nogales International Airport), and the City of Sonoita. This must be clarified and fully analyzed.

NOTE: there is no "City" of Sonoita, Sonoita is an unincorporated area of Santa Cruz County.

page 1: Substantial scientific dispute does exist within the scientific context of NEPA as to the size, nature, or effects of wildlife present and the effects on them by this proposed action.

page 1: This EA has failed to show that incorporating appropriate design features and maintenance practices can avoid impacts to natural resources, including water quality, and wildlife, especially with regard to cumulative impacts. Just "minimizing" such cumulative impacts does not meet the letter or spirit of NEPA. All cumulative impacts (past, present, and reasonably foreseeable) must be fully considered with a "hard look" as required by NEPA.

page 1 and 4: The existing controversy in this case goes well beyond, but is also reflected by, the strong public opposition that has resulted from numerous historic and recent environmental impacts from mining in the Patagonia Mountains.

page 23: Cumulative Impacts to Resources — "In addition, the detailed analysis that follows determined that there would be negligible impacts to floodplains, social and economic conditions, and water resources. There would be no measurable contribution to these resources'/uses' respective cumulative impacts; therefore, there is no cumulative effects analysis for these resources/uses." This statement ignores the long-term impacts of South 32 dewatering. A cone of depression is highly likely to dry-up Patagonia area wells and thus must be analyzed.

pages 23 and 24: "This 10-year period constitutes the temporal bounds of the cumulative effects analysis because it is the period during which the effects of past, present, and reasonably foreseeable future actions are most likely to overlap with the proposed action." But the groundwater moves very slowly and this assumption has not been supported.

page 24: Past and Present Actions. "The cumulative effects analysis does not attempt to quantify the effects of past human actions by adding up all prior actions on an action-by-action basis. Existing conditions reflect the aggregate impact of prior human actions and natural events that have affected the environment and could contribute to cumulative effects. By looking at current conditions, the residual effects of past human actions and natural events are captured, regardless of which particular action or event contributed those effects." The residual effects of past human actions and natural events do not always accurately quantify the effects of past human actions, depending on weather, environmental conditions, subsequent disturbances, type of prior human action, length of time since the action occurred.

page 47: "Over time, the road surface of improved system roads would naturally deteriorate, and existing conditions would resume." This is an unsupported assumption, that "existing conditions would resume" with "natural deterioration." Erosion would more likely eventually result even from "reclaimed/re-seeded" roadways, if BMPs are unmaintained, especially with higher intensity storms due to climate change.

page 58: "Water for the project would be obtained from the City of Nogales located in the neighboring Santa Cruz Active Management Area 11 groundwater basin. Although a small portion of the project area falls within the Santa Cruz Active Management Area groundwater basin, no project-related activities would occur within this basin. Surface water, however, does flow from within the project area into the Santa Cruz Active Management Area groundwater basin."

However, groundwater from the project area also flows to the Sonoita Creek – not Cienega Creek. Mountain-front and mountain-block recharge maintain Sonoita Creek perennial flows into Patagonia Lake. This must be fully analyzed.

pages 58-59: "Sonoita Creek and its subterranean aquifer provides the only source of potable water for the town of Patagonia with over 900 residents and more than 300 private well users within a 3-mile radius of town. The shallow depth of the aquifer, combined with the nature of the soils and underlying geology, make the relationship between the surface and ground water watersheds a particularly close and interconnected one (Forest Service 2018b)." This EA statement further verifies that groundwater from the project area also flows to the Sonoita Creek – not Cienega Creek.

pages 58-59: While the drilling project site is within the Cienega Creek groundwater basin, much of the discussion (and references) throughout this section pertains to the northern portion of the groundwater basin, along Cienega Creek itself (downstream stretches) and Empire Ranch area. The agency should have fully analyzed this issue.

page 59: "The Humboldt Well, as it was called, was capped in the early 2000s but was observed flowing again in September 2009 (ADEQ 2020). Continued artesian flow from the Humboldt Well has been observed during recent site visits (SRK 2022)." This EA statement confirms that capped wells can flow again, (even after a short 9-year period), thus can foreseeably contaminate surface waters if the wells are artesian; and if they are not artesian, they can contaminate the aquifer from the surface and from contaminated boreholes.

page 59: "Other than the artesian flow observed in the Humboldt Well, little is known about the deeper bedrock aquifer system." This EA statement itself further questions the groundwater flow direction from this project and must be fully analyzed.

page 59 para 5: Has the Humboldt Well been repaired and no longer discharging to Alum Creek? The agency must clarify and analyze this issue.

page 60 para 5: The Maximum Contaminant Level (MCL) for inorganic arsenic is 0.01 mg/L, not 0.02 mg/L. The MCL was lowered from 0.05 mg/L a number of years ago. Arsenic in groundwater is prevalent in many areas of Arizona and the desert southwest.

page 60 para 6: The report states that the "quality of groundwater in the project area is unknown." This shows the agency's violation of its NEPA duties to fully analyze groundwater quality and quantity.

page 61 para 1: Please update the new definition of WOTUS and revise the agency's analysis and oversight accordingly.

page 61 para 3: The Forest Service has embarked on an ambitious plan to eliminate discharges from adits. What is the progress of that program? The numerous small tributaries to Harshaw Creek are ephemeral. The main stem of Harshaw Creek is intermittent, as a number of segments of the creek run most of the time. No information is known regarding groundwater inputs to the creek.

page 61-62 para 7: Caution should be exercised when characterizing background, especially when using the term "substantial." There are reports (from ADEQ and other entities) that do not characterize background reasonably. Many investigations have misused "background" concentrations of contaminants.

page 62 para 4: Vertical cross-contamination is a substantive issue when drilling through multiple aquifers. Each aquifer must be sealed properly before advancing the borehole. Water samples may aid in assessing mixing aquifer water. Proper and careful abandonment (tracking volume of material emplaced in the borehole) is essential to assuring that an abandoned borehole is not contributing to vertical cross contamination. Will a third party be present to verify abandonment?

pages 62 and 63: "With the implementation of design features, the drilling methods that would be employed would not enhance the flow of groundwater between aquifers." "The proposed action is not expected to lead to groundwater movement that has a detectable impact on groundwater quality in the project area." These are idealistic optimistic statements, but realistically, these design features can foreseeably deteriorate and subsequently fail/leak, (same as capped wells).

page 63: "Drilling fluid additives such as bentonite clay and fish oils are non-toxic and pose no risk to groundwater quality, while other additives such as drilling mud, mudlube, and quick gel are potentially hazardous." Potentially hazardous drilling fluid additives should not be used.

page 66 para 3: What is the status of the Humboldt well and its impacts on Humboldt Canyon as of this date?

page 68: "Cumulatively, the reasonably foreseeable future actions would create moderate, short-term, direct, and indirect, adverse impacts and moderate, long-term, direct and indirect, beneficial impacts on wetlands and riparian areas." This statement totally ignores the long-term impacts of South 32 dewatering and other activities. A cone of depression is highly likely to dry-up Patagonia area wells and this must be fully analyzed, which the USFS has not done.

Water Resource Analysis Technical Report

page 5: Notes that the South32 acquired a new NPDES and an APP for these facilities/activities, but does not mention that S32 APP has been appealed.

page 5: "The piedmont between the mountain ranges in both the Cienega Creek and Sonoita Creek groundwater basins is primarily composed of basin-fill deposits." This statement seems to clearly acknowledge a difference between Cienega Creek and Sonoita Creek groundwater basins, which is an important issue as discussed herein.

page 6: "Groundwater in and around the project area is in both alluvial sediments and bedrock. The project is in the Cienega Creek groundwater basin, as shown in Figure 5. The Cienega Creek groundwater basin encompasses approximately 605 square miles of southern Arizona, includes the towns of Patagonia and Sonoita, and overlaps three surface water watersheds: Cienega Creek watershed, Sonoita Creek watershed, and Babocomari River watershed (Towne, 2012)." This statement exemplifies the controversial groundwater science of the Sonoita aquifer.

page 7: "Other than the artesian flow observed in the Humboldt Well, little is known about the deeper bedrock aquifer system." This statement itself further questions the groundwater flow direction from this project.

page 8: "Based on USGS stream gage data, annual mean discharge observed at Cienega Creek (USGS09484550) has decreased from 3.79 cubic feet per second (cfs) in 2006 to 1.46 cfs in 2016, indicating a reduction in flow (USGS, 2020)." This information from Cienega Creek has nothing to do with the surface water discharge from Sonoita Creek because there is no stream gage on Sonoita Creek. These are two different watersheds.

page 8: "The project area is within the Cienega Creek groundwater basin, not the Santa Cruz groundwater basin. Surface water, however, does flow from within the project area into the Santa Cruz groundwater basin." But so does the groundwater from the project site. Groundwater from the project area also flows to the Sonoita Creek – not Cienega Creek.

page 9: "Field observations confirm that these streams and their associated tributaries are ephemeral and that groundwater (springs and mine adits) is the sole source of flow during baseflow conditions for these streams." This statement confirms that groundwater from the project area is a source of baseflow for Sonoita Creek.

page 9: "ADEQ and USGS have completed environmental studies on water quality and sources of contributions of acidity and heavy metals (ADEQ, 2003a and 2003b). These studies concluded that there is a clear contribution from historical mining activities, including mining wastes and adits." This statement confirms that past human [mining] activities should be evaluated as part of the Cumulative Impacts Analysis.

page 15: "Effect will be considered negligible after the DF has been completed by the USFS and/or ADEQ to abandon the well properly and remediate the condition of the artesian flow." "DF" is not defined. Assumed here to mean "Design Feature" to properly abandon the well and seal off the artesian flow of deeper groundwater to the surface. This must be clarified.

page 15: "During drilling, the proponent may encounter artesian conditions like those found at the Humboldt Well described above. These conditions could allow groundwater from the deeper aquifer systems, about which little is known at this time, to flow to shallower aquifer systems or to the ground surface." This statement further exemplifies the controversial groundwater science of the Sonoita aquifer and the inadequacies of the DN, EA, and FONSI.

page 17: "With proper abandonment of all boreholes using the DF outlined above, pathways for enhanced movement of groundwater between bedrock zones should be minimal, and any residual impacts should be negligible." This is an idealistic optimistic statement, but realistically, these design features can foreseeably deteriorate and subsequently fail/leak, (same as some capped wells have done). How will they know if this occurs during or after the drilling is done?

page 20: "Site-specific erosion control measures would be detailed in the SWPPP prepared for the project. The SWPPP should describe run-on/runoff controls and stabilization methods/materials for disturbed areas and stockpiled materials." A properly designed and implemented SWPPP should address all stormwater runoff erosion and sedimentation possibilities. The SWPPP should include ingress and egress vehicle tracking controls to keep drilling mud and other potential

pollutants on-site.

page 21: "Maintain the natural drainage pattern of the area wherever practicable." Any altered natural drainage patterns should be restored after drilling operations are completed.

Water Sampling and Analysis Plan

IN GENERAL: There is a difference between water testing and water monitoring. The agency should require Sunnyside Exploration to have a monitoring plan, not just test the water before they do anything, and then again many, many years later at the end. They mention sampling "during" exploration but do not specify a true monitoring plan. They should have a quarterly or seasonal monitoring plan to adequately assess water quality effects from their actions. They use vague terms "periodically tested" (Plan of Operations, p. 33, 2nd bullet) and "several centimeters" (page 6, para 1) for things that should be quantified.

page 2 para 1: The Forest Service operates a stream gage on Harshaw Creek.

page 2 para 3: Has a Construction General Permit (CGP) been issued by ADEQ? Applied for? No provisions are included to sample groundwater, yet they state that the quality is unknown.

page 2: "Field observations confirm that these streams and their associated tributaries are ephemeral and that groundwater (from springs and mine adits) is the sole source of flow during baseflow conditions for these streams. No flow gaging stations exist on any of these streams." This statement confirms that groundwater from the project area is a source of baseflow for Sonoita Creek.

page 2: "Arizona Standard will implement the Stormwater Pollution Prevention Plan (SWPPP) which has been prepared and approved for the Project to minimize and manage stormwater within the Project Area." A properly designed and implemented SWPPP should address all stormwater runoff erosion and sedimentation possibilities. The SWPPP should include ingress and egress vehicle tracking controls to keep drilling mud and other potential pollutants on-site.

page 4 bullet 2: A discharge caused by snowmelt from a storm event that produces 3.25 inches or more of snow within a 24 hour period: where does this amount of snow come from? The snow water equivalent would vary for the depth in inches.

page 4 last para: "In addition, water sampling may occur any time a sump overflows, and after any release of potentially hazardous materials, or at the request of the Forest Service." Overflowing sumps and releasing hazardous materials sounds like a given. The agency should require additional protections to ensure against this potential.

page 4 last para: Another statement: reclamation that "effectively minimized impacts to surface water quality and streamflow." But in effect, adverse effects may have been somewhat reduced, not minimized as required by the Organic Act and 36 CFR part 228 rules.

page 6 para 2: Frequency of sampling should also be during rain events that exceed an average day for a given month, so that the need for sampling according to this plan can be determined.

page 7 para 4: Duplicate samples should also be collected for every sampling event, not just 10% of the total samples. The text makes reference to the “judgment by the laboratory.” The duplicate samples should be blind. Duplicates are labeled as another sample. All results should be evaluated along with internal laboratory QC analyses (MS/MSD; matrix spike/matrix spike duplicates).

page 8: Where is the required testing for petroleum and petroleum byproducts used in drilling procedures?

page 8: Turbidity should be part of the monitoring plan since construction will be part of the project from beginning to end.

page 9 para 3: The plan states “As resources are available...” This is ambiguous, what resources?

page 29, para 2: Field observations confirm that these streams and their associated tributaries are ephemeral and that groundwater (from springs and mine adits) is the sole source of flow during baseflow conditions for these streams. This sentence does not comport with site conditions.

Environmental Assessment

page 64, para 2: All monitoring should be done in the presence of USFS personnel or an independent third party. Monitoring “visit” should be conducted at least quarterly to the operation sites.

page 64, para 4: All revegetation should be with native vegetation of the Patagonia, AZ region.

page 65, para 2: All monitoring should be done in the presence of USFS personnel or an independent third party. Monitoring “visit” should be conducted at least quarterly to the operation sites.

page 65, para 4: Minimum or no disturbances should be happening on these sites due to its uniqueness of habitat and watering holes for wildlife. Trap cameras should be installed on site to detect any wildlife presences and monitor any disturbance. Trap cameras should be monitored by USFS or independent third party.

page 67, para 1: Trap cameras should be installed on site to detect any wildlife presences and monitor any disturbance. Trap cameras should be monitored by USFS or independent third party.

page 67, para 4: This same approach should be done at the letdown yards to diminish or “harvest-capture” rainwater runoff that could benefit native vegetation.

page 68, para 3: This is a huge increase of water movement "unnaturally" that could bring all kinds of changes to creek morphology, vegetation, erosion, sediments due to water flowing permanently. There are several concerns here in the sense of water quality and quantity surface water in addition to "dewatering" a portion of the Patagonia Mountains. What will happen underground on the dewatering sites? Is it going to be creating vacuums on fractured rock environment. Is there a risk of crumbling or subsiding?

It is interesting that this paragraph comes "hidden" in the whole documents w/o much notice or mention before. Although it is possible that there may be water flowing that could benefit riparian vegetation but this could cause other conditions for flooding, erosion and sediment creation changing morphology of banks and combining this with intense rainy patterns it could cause for flooding. This paragraph requires much more attention and additional understanding and information on the potential ramification and impacts of the 4,500gal/min. Saturation of soils could contribute to flooding, which has not been adequately analyzed.

Plan of Operations

Water Source Discrepancy: The Environmental Assessment at page 58 states that the source of water will be the City of Nogales, but the Plan of Operations at page 30 states that the source of water will be from the City of Nogales (Kino Springs), Santa Cruz County (Nogales International Airport), and the City of Sonoita.

page 8: There should be required testing for petroleum and petroleum byproducts used in the drilling procedures.

page 24, last paragraph of Water Requirements for Drilling: There should be required sampling of the petroleum by-products since there seems to be a likely change of spillage.

page 29, para 3: It says that Harshaw Creek and others already have a “high acidity.” What does that actually mean? A pH of what? The agency should quantify what they mean by acidity, and provide/analyze all baseline conditions.

page 31, para 1: This seems like a real risk not a minimal risk: “Deep boreholes drilled through the groundwater system could create a preferred pathway for groundwater in deeper formations to migrate upward and intermingle with the shallow parts of the system.” This should have been fully analyzed.

pages 31 and 35: “This procedure would effectively restore the original isolation of formations by posing a barrier to the vertical migration of groundwater flow between rock formations within the bore hole.” “This would ensure that the boreholes would be effectively sealed to prevent short-term exchange of water between aquifers, or between the surface and the aquifers below.” “Upon the conclusion of drilling, the boreholes would be effectively sealed to prevent long-term exchange of water between aquifers, or between the surface and the aquifers below.” These are unsupported optimistic statements, as these design features can foreseeably deteriorate and subsequently fail/leak, (same as some capped wells have done), which should have been fully analyzed.

page 32, para 4: There is a clear difference between ephemeral and intermittent streams, which the Plan confuses in the project plan and sampling plan. Many streams in AZ are intermittent meaning they have flowing sections and dry sections at the surface. These streams are connected to groundwater not just to precipitation events. The Plan lumps these two types of streams together and muddled the meaning. Harshaw Creek is intermittent. Example: “some 62 ephemera drainages, including Harshaw Creek were proposed as WOUS,”

page 35, bullet 3: Artesian aquifer means that the aquifer is under pressure. So it is incorrect to

assert that: "the current understanding of the local hydrogeology indicates that it is unlikely these artesian aquifers are under high pressure." The agency failed to adequately analyze the baseline conditions of the local and regional ground and surface waters, and failed to adequately analyze the projects direct, indirect, and cumulative impacts to all potentially affected resources.

III. THE FOREST SERVICE FAILED TO MINIMIZE ALL ADVERSE IMPACTS AND ENSURE COMPLIANCE WITH ALL ENVIRONMENTAL AND PUBLIC LAND LAWS

The Objectors raised the following issues in their April, 2021, comments at pp. 24-25, but were not satisfactorily addressed by the EA/DN/FONSI.

On the National Forests, the Organic Act requires the USFS "to regulate their occupancy and use and to preserve the forests thereon from destruction." 16 U.S.C. § 551. "[P]ersons entering the national forests for the purpose of exploiting mineral resources must comply with the rules and regulations covering such national forests." Clouser v. Espy, 42 F.3d 1522, 1529 (9th Cir. 1994). The USFS mining regulations require that "all [mining] operations shall be conducted so as, where feasible, to minimize adverse environmental impacts on National Forest resources." 36 C.F.R. § 228.8. In addition, the operator must fully describe "measures to be taken to meet the requirements for environmental protection in § 228.8." 36 C.F.R. § 228.4(c)(3). The agency "can reject an unreasonable plan and prohibit mining activity until it has evaluated the plan and imposed mitigation measures." Siskiyou Regional Education Project v. Rose, 87 F. Supp. 2d 1074, 1086 (D. Or. 1999), citing Baker v. U.S. Dep't of Agriculture, 928 F. Supp. 1513, 1518 (D. Idaho 1996). "This court does not believe the law supports the Forest Service's concession of authority to miners under the General Mining Act in derogation of environmental laws and regulations." Hells Canyon Preservation Council v. Haines, 2006 WL 2252554, at *6 (D. Or. 2006) (finding violation of Organic Act in Forest Service's failure to minimize adverse impacts to streams).

In addition to ensuring compliance with all applicable environmental standards (which has not been shown here due to the inadequate NEPA compliance), the USFS has a mandatory duty to require "all practicable measures to maintain and protect fisheries and wildlife habitat which may be affected by the operations" under 36 C.F.R. § 228.8(e)). See Rock Creek Alliance v. Forest Service, 703 F.Supp.2d 1152, 1170 (D. Mont. 2010) (Forest Service violated Organic Act and 228 regulations by failing to protect water quality and fisheries in approving mining PoO). "Under the Organic Act the Forest Service must minimize adverse environmental impacts where feasible and must require [the operator] to take all practicable measures to maintain and protect fisheries and wildlife habitat." Id. at 1170. This duty applies to all wildlife, not just indicator, sensitive, threatened, and endangered species.

Additionally, a simple and generalized reduction of impacts does not equate to the strict requirements for minimization of impacts and protection of resources. The USFS's duty to minimize impacts is not met simply by somewhat reducing those impacts. Trout Unlimited v. U.S. Dep't of Agriculture, 320 F. Supp. 2d 1090, 1110 (D. Colo. 2004). In interpreting the Federal Land Policy and Management Act's ("FLPMA") duty on the agency to "minimize damage to . . . fish and wildlife habitat and otherwise protect the environment," 43 U.S.C. § 1765(a), the court specifically stated the agency's finding that mitigation measures would "reasonably protect" fisheries and habitat failed to meet its duty to "minimize" impacts. Id.

The agency must demonstrate that all feasible means have been required to minimize all adverse impacts to all potentially affected resources. For example, the Ninth Circuit Court of Appeals recently held that the USFS had the authority to strictly limit mining claimants' vehicular access to mining claims. Pub. Lands for the People v. U.S. Dep't of Agriculture, 697 F.3d 1192 (9th Cir. 2012). As held by the court:

> The Secretary of Agriculture has the right to restrict motorized access to specified areas of the national forests, including mining claims. [Clouser v. Espy, 42 F.3d at 1530 (citing 16 U.S.C. § 551)] (means of access "may be regulated by the Forest Service"). More specifically, we have upheld Forest Service decisions restricting the holders of mining claims to the use of pack animals or other non-motorized means to access their claims. Id. at 1536–38. Relatedly, we have rejected the contention that conduct "reasonably incident[al]" to mining could not be regulated. United States v. Doremus, 888 F.2d 630, 632–33 (9th Cir. 1989). Our precedent thus confirms that the Forest Service has ample authority to restrict motor vehicle use within the ENF [El Dorado National Forest].

Id. at 1197.

Thus, in this case, in order to minimize all adverse impacts, the agency must, among other restrictions to protect wildlife and the environment noted herein, limit project activities to existing roads, daylight hours, and other protective measures. As one example, the agency does not explain why all of the mitigation measures contained in the approval of the San Antonio Project are not included here (e.g. timing restrictions). Also, as noted herein, the agency must fully consider such limitations as reasonable alternative(s) under NEPA (which have not been analyzed).

IV. VIOLATION OF THE NATIONAL FOREST MANAGEMENT ACT

The Objectors raised the following issues in their April, 2021, comments at pp. 25-30, but were not satisfactorily addressed by the EA/DN/FONSI.

The EA and proposed project approval also do not ensure that all requirements of the Coronado National Forest Plan and Regional requirements will be met at all times, in violation of the National Forest Management Act ("NFMA"), 16 U.S.C. § 1601 *et seq.* Among other mandates, the NFMA requires the USFS to prepare a land and resource management plan, or "forest plan," for each National Forest. 16 U.S.C. § 1604(a). Each plan must include standards, guidelines, and other requirements stating how the forest shall be managed. 16 U.S.C. §§ 1604(c), (g)(2), & (g)(3).

Once a forest plan is adopted, all resource plans, permits, contracts, and other instruments for use of the lands, such as Special Use Permits, Road Use Permits, mining plan approvals, etc., must be consistent with the plan. 16 U.S.C. § 1604(i). "It is well-settled that the Forest Service's failure to comply with the provisions of a Forest Plan is a violation of NFMA." Native Ecosystems Council v. Dombeck, 304 F.3d 886, 961 (9th Cir. 2002); see also Save Our Cabinets v. U.S. Dept. of Agric., 254 F. Supp. 3d 1241, 1258–59 (D. Mont. 2017) (USFS approval of mining plan of operations that would not meet the Forest Plan's "desired conditions" protecting

water quality violated the NFMA).

Failing to follow, or to evaluate and document compliance with, a Forest Plan provision is also a NEPA violation. *See* ONDA v. BLM, 625 F.3d 1092, 1110–11 (9th Cir. 2010) (NEPA analysis must include "considerations made relevant by the substantive statute driving the proposed action"); Westlands Water Dist. v. U.S. Dep't of the Interior, 376 F.3d 853, 866 (9th Cir. 2004) ("[w]hen an action is taken pursuant to a special statute, the objectives of that statute serve as a guide by which to determine the reasonableness of alternatives" examined under NEPA).

As stated in the Coronado National Forest Plan, the agency must ensure that the desired conditions, objectives, standards, and guidelines must be met for every action taken by the agency (which includes approval of mining exploration projects such as the Sunnyside Project):

Desired conditions set forth the desired social, economic, and ecological attributes of the Coronado National Forest. They attempt to paint a picture of what we (the public and Forest Service) desire the national forests to look like and the goods and services we desire them to provide. Desired conditions are normally expressed in broad, general terms and are timeless in that there is no specific date by which they are to be completed. Desired conditions may only be achievable over a long timeframe (in some cases, several hundred years). In some cases, a desired condition matches the current condition, and the goal is to maintain it.
Desired conditions are aspirations and are not commitments or final decisions to approve projects[.]

To be consistent with the desired conditions of the plan, a project or activity, when assessed at the appropriate spatial scale described in the plan (such as landscape scale), must be designed to meet one or more of the following conditions:

- Maintain or make progress toward one or more of the desired conditions of a plan without adversely affecting progress toward, or maintenance of, other desired conditions; or
- Be neutral with regard to progress toward plan desired conditions; or
- Maintain or make progress toward one or more of the desired conditions over the long term, even if the project or activity would adversely affect progress toward or maintenance of one or more desired conditions in the short term; or
- Maintain or make progress toward one or more of the desired conditions over the long term, even if the project or activity would adversely affect progress toward other desired conditions in a negligible way over the long term.

The project documentation should explain how the project is consistent with desired conditions and describe any short-term or negligible long-term adverse effects the project may have on the maintenance or attainment of any desired condition.

Objectives are concise, time-specific statements of measurable planned results that make progress toward or maintain desired conditions. An objective forms the basis for further planning to define the precise steps to be taken and the resources to be used in achieving desired conditions. The objectives represent just some of the expected outcomes or actions

required to accomplish movement toward desired conditions. Not every action or objective the Coronado National Forest may initiate is identified in the plan, just the primary ones.

Variation in achieving objectives may occur during the next 15 years because of changes in environmental conditions, available budgets, and other factors.
Objectives are strongly influenced by recent trends, past experiences, anticipated staffing levels, and short-term budgets.

A project or activity is consistent with the objectives of the plan if it contributes to or does not prevent the attainment of any applicable objectives. The project documentation should identify any applicable objective(s) to which the project contributes and document that the project does not prevent the attainment of any objectives. If there are no applicable objectives, the project must be consistent with the objectives decisions of the plan, and the project document should state that fact.

Standards are constraints upon project and activity decisionmaking. A standard is an absolute requirement to be met in the design of projects and activities. A project or activity is consistent with a standard when its design is in accord with the explicit provisions of the standard; variance from a standard is not allowed except by plan amendment.

Guidelines are components with which a project or activity must be consistent, in either of two ways:

- The project or activity is designed exactly in accord with the guideline; or
- A project or activity design varies from the exact words of the guideline, but is as effective in meeting the purpose of the guideline to contribute to the maintenance or attainment of the relevant desired conditions and objectives.

Guidelines must be followed, but they may be modified somewhat for a specific project if the intent of the guideline is followed and the deviation is addressed in a decision document with supporting rationale. When deviation from a guideline does not meet the original intent, however, a plan amendment is required.

Coronado NF Plan at 11–12.

As shown herein, the Project, alone and in cumulatively with other past, present, and reasonably foreseeable activities in the area (discussed herein) will result in significant adverse environmental impacts and the proposed activities are not consistent with and not in compliance with, the Desired Conditions, Objectives, Standards, Guidelines of the Forest Plan. The following are some examples of these NFMA violations:

<u>Riparian Areas</u>

Guidelines

1. New road construction in riparian areas should be avoided, except to cross drainages, unless alternate routes have greater overall resource impacts. If road construction in riparian areas is unavoidable, it should be designed and

implemented to minimize effects to natural waterflow, aquatic species, channel morphology, and native vegetation communities.

2. Management activities should only be allowed in riparian areas if soil function and structure, hydrologic function and riparian plant communities (except noxious and/or invasive plants) are kept the same or improved.

Coronado NF Plan at 52–53. As shown herein, the proposed drilling, road reconstruction/construction and other project activities do not adequately protect riparian areas nor comply with these requirements.

Watersheds

Desired Conditions

Surface runoff, sheet, rill, and gully erosion, and subsequent sedimentation into connecting waters downstream is minimal. . . .

Coronado NF Plan at 57.

Natural Water Sources

Desired Conditions

Landscape Scale
Watersheds, streams, wetlands, springs ecosystems, and riparian areas have characteristics, processes, and features in low departure from reference condition.
. . . Vegetation conditions (as described in each section above) contribute to maintaining downstream water quality, quantity, and aquatic habitat features. Upland soil erosion contributes sediment in amounts that do not impair stream function or water quality.

Mid-Scale
. . . High and low flow events maintain a normal and expected sediment and water balance between streams and their watersheds. … Water quality meets or exceeds relevant State of Arizona, State of New Mexico, and Environmental Protection Agency standards for designated uses. Water quality meets critical needs of aquatic species. Nonpoint-source loading of streams and lakes from sediment, excessive nutrients, or hazardous chemicals does not reduce water quality below the State standards for Arizona and/or New Mexico.

Coronado NF Plan at 59.

Guidelines

1. Projects in upland habitats adjacent to streams should be designed to minimize input of sediment to streams.
2. Water quality, quantity, soil function and structure, and wildlife habitat (including aquatic species habitat) should be protected or enhanced at natural springs and seeps.

. . .

4. Management activities should not impair soil moisture recharge at outflows of natural water sources.

. . .

7. New road construction near springs and seeps should be avoided, unless alternate routes have greater overall resource impacts. If road construction near springs and seeps is unavoidable, it should be designed and implemented to minimize effects to natural water flow and aquatic species.
8. Projects affecting perennial streams should be designed and constructed to allow for natural instream movement of aquatic species, except where barriers are necessary to preclude the movement of nonnative species.

Coronado NF Plan at 60.

As shown herein, the proposed drilling, road reconstruction/construction and other project activities do not adequately protect watersheds and natural waters nor comply with these requirements.

Animals and Rare Plants

The Coronado National Forest has the highest biological diversity of any national forest in the western United States. This is because it is situated at a convergence zone of ecological regions, and has a wide variety of vegetation communities and steep elevation gradients. Biological diversity is further enhanced by a long growing season, bimodal precipitation, and the evolutionary consequences of isolation in the sky island mountain ranges.

The number of species inhabiting the Coronado National Forest and adjoining lands is not precisely known, and new species are periodically described.
Conservative estimates include about 2,100 species of plants, 466 species of birds, 110 species of mammals, 91 species of reptiles, over 240 species of butterflies, and nearly 200 species of mollusks.

Coronado NF Plan at 65.

Desired Conditions
Naturally occurring native ecosystems are present and sustainable across the Coronado National Forest, providing habitat to support a full complement of plants and animals, including sensitive and rare species. Habitats are interconnected within the national forest boundary while the interspaces between ecosystem management areas allow for movement of wide-ranging species and promote natural predator-prey relationships.

Forest boundaries are permeable to animals of all sizes and offer consistent, safe access for ingress and egress of wildlife. In particular, segments of the national forest boundary identified in figure 3 remain critical interfaces that link wildlife habitat on both sides of the boundary.

Coronado NF Plan at 65.

Guidelines
Guidelines for protecting animals and rare plants are also found in various other sections of chapters 2, 3, and 4.

1. Activities occurring within federally listed species habitat should apply habitat management objectives and species protection measures from approved recovery plans.

Coronado NF Plan at 67.

As shown herein, the proposed drilling, road reconstruction/construction and other project activities do not adequately protect wildlife and wildlife habitat nor comply with these requirements.

V. FAILURE TO COMPLY WITH THE NATIONAL HISTORIC PRESERVATION ACT, AND OTHER REQUIREMENTS FOR THE PROTECTION OF HISTORICAL, CULTURAL, AND RELIGIOUS SITES AND RESOURCES

The Objectors raised the following issues in their April, 2021, comments at pp. 30-32, but were not satisfactorily addressed by the EA/DN/FONSI.

The USFS failed to fully comply with the National Historic Preservation Act ("NHPA"). It is a violation of the NHPA and NEPA to complete an EA before consultation and a complete review of cultural/historical resources has been completed. Yet that has happened here.

Under the NHPA, a federal agency must make a reasonable and good faith effort to identify historic properties, 36 C.F.R. § 800.4(b); determine whether identified properties are eligible for listing on the National Register based on criteria in 36 C.F.R. § 60.4; assess the effects of the undertaking on any eligible historic properties found, 36 C.F.R. §§ 800.4(c), 800.5, 800.9(a); determine whether the effect will be adverse, 36 C.F.R. §§ 800.5(c), 800.9(b); and avoid or mitigate any adverse effects, 36 C.F.R. §§ 800.8[c], 800.9(c). The federal agency must confer with the State Historic Preservation Officer ("SHPO") and seek the approval of the Advisory Council on Historic Preservation ("Council"). Muckleshoot Indian Tribe v. U.S. Forest Service, 177 F.3d 800, 805 (9th Cir. 1999); see also 36 C.F.R. § 800.8(c)(1)(v) (agency must "[d]evelop in consultation with identified consulting parties alternatives and proposed measures that might avoid, minimize or mitigate any adverse effects of the undertaking on historic properties and describe them in the EA.")

NHPA § 106 ("Section 106") requires federal agencies, prior to approving any "undertaking," such as approval of the Project, to "take into account the effect of the undertaking on any district, site, building, structure or object that is included in or eligible for inclusion in the National Register." 16 U.S.C. § 470(f). Section 106 applies to properties already listed in the National Register, as well as those properties that may be eligible for listing. See Pueblo of Sandia v. United States, 50 F.3d 856, 859 (10th Cir. 1995). Section 106 provides a mechanism by which governmental agencies may play an important role in "preserving, restoring, and maintaining the historic and cultural foundations of the nation." 16 U.S.C. § 470.

If an undertaking is the type that "may affect" an eligible site, the agency must make a reasonable and good faith effort to seek information from consulting parties, other members of the public, and Native American tribes to identify historic properties in the area of potential effect. See 36 C.F.R. § 800.4(d)(2); see also Pueblo of Sandia, 50 F.3d at 859–63 (agency failed to make reasonable and good faith effort to identify historic properties). Consultation "must be initiated early in the undertaking's planning, so that a broad range of alternatives may be considered during the planning process for the undertaking." Pit River Tribe v. U.S. Forest Service, 469 F.3d 768, 787 (9th Cir. 2006) (internal quotations omitted).

The NHPA also requires that federal agencies consult with any "Indian tribe . . . that attaches religious and cultural significance" to the sites. 16 U.S.C. § 470(a)(d)(6)(B). Consultation must provide the tribe "a reasonable opportunity to identify its concerns about historic properties, advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance, articulate its views on the undertaking's effects on such properties, and participate in the resolution of adverse effects." 36 C.F.R. § 800.2(c)(2)(ii). "The agency official shall ensure that the section 106 process is initiated early in the undertaking's planning, so that a broad range of alternatives may be considered during the planning process for the undertaking." 36 C.F.R. § 800.1(c).

Under NEPA, the NHPA, and the other laws, policies and requirements noted herein, the USFS cannot approve this Project until a full Ethnographic Study has been completed and subject to public review (as part of the NEPA process) and full government-to-government consultation with all potentially affected tribes. The NHPA requires that consultation with tribes "recognize the government-to-government relationship between the Federal Government and Indian tribes." 36 C.F.R. § 800.2(c)(2)(ii)(C); see also Presidential Executive Memorandum entitled "Government-to-Government Relations with Native American Tribal Governments" (April 29, 1994), 59 Fed. Reg. 22,951, and Presidential Executive Order 13007, "Indian Sacred Sites" (May 24, 1996), 61 Fed. Reg. 26,771.

The USFS must also protect archeological and grave resources, Sacred Sites and Native American religious and cultural uses pursuant to the above laws and requirements as well as: (1) the American Indian Religious Freedom Act ("AIFRA"), 42 U.S.C. 1996 et seq.; (2) the Archaeological Resources Protection Act ("ARPA"), 16 U.S.C. § 470aa–mm ; and (3) the Native American Graves Protection and Repatriation Act ("NAGPRA"), 25 U.S.C. § 3001 et seq.

CONCLUSION

Because the DN is based on the inadequate EA and FONSI, these Objections show that the DN, EA, and FONSI fail to comply with numerous federal laws, including the National Environmental Policy Act, 42 U.S.C. §§ 4321 et seq. ("NEPA"); Forest Service Organic Administration Act of 1897, 16 U.S.C. §§ 475, 478, 551 ("Organic Act"); National Forest Management Act, 16 U.S.C. §§ 1600 1614 ("NFMA"); Endangered Species Act, 16 U.S.C. §§ 1531 et seq. ("ESA"); the Administrative Procedure Act, 5 U.S.C. §§ 551 et seq. ("APA"), and the implementing regulations, Executive Orders, and policies of these laws.

The remedy for these violations is for the Forest Service (USFS) to withdraw the DN, EA,

and FONSI and not issue any decision or take any action based on the inadequate EA. The Forest Service must not take any action until a revised EA, and more appropriately an EIS, demonstrates full compliance with each and every law, regulation, policy, and Executive Order noted herein. The agency must withdraw the EA, DN, and FONSI with instructions to the Coronado National Forest to correct all errors noted herein before the agency can consider approving or taking any actions.

Please direct all communications regarding this Objection to the undersigned attorney for the Objecting Groups.

Thank you,

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