October 21, 2019

Southwest Program Office
210 Montezuma Avenue, Suite 210 | Santa Fe, New Mexico 87501 | tel 505.395.7330
www.defenders.org

Re: Sunnyside Exploration Drilling (SED) Project, described in August 19, 2019 Scoping Notice

Sierra Vista Ranger District
District Ranger. c/o Rick Goshen 4070 S. Avenida Saracino
Hereford. AZ. 85615
Filed electronically via:

https://cara.ecosystem-management.org/Public//CommentInput?Project=55719

NOTE: All documents cited in footnotes except regulations and laws have been submitted as PDFs to the USFS c/o Rick Goshen on a flash drive via certified mail on 10/21/2019.

District Ranger Celeste Kinsey, Geologist Rick Goshen:

These comments are submitted by Defenders of Wildlife and the Patagonia Area Resource Alliance (PARA), Sky Island Alliance and the other groups listed below in response to the scoping notice for the Sunnyside Project, Regal Resources (USA), Inc.'s proposed mineral exploration project located in the Sierra Vista Ranger District. These comments adopt and incorporate all PARA and Defenders' previous comments to the US Forest Service on Sunnyside and all related projects.

This project proposes to complete up to 30 drill sites with associated sumps, lay-down yards and road construction/reconstruction. According to the proposal, the Project would drill 24-7, with such drilling taking place for up to 7 years, with reclamation to be completed in 2028.

Overview of comments

The Forest Service should not approve the Sunnyside Project using an Environmental Assessment (EA) and Finding of No Significant Impact (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 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

mining activities, and identify needed mitigation measures. The project is likely to have adverse impacts on several species listed under the Endangered Species Act (ESA) that will be harmed by cumulative impacts from present and reasonably foreseeable mining projects, as detailed herein. As a result, the Forest Service should consult with the U.S. Fish and Wildlife Service regarding the Project's impacts on listed species, including jaguar (*Panthera onca*), ocelot (*Leopardus pardalis*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) and threatened Mexican spotted owls (*Strix occidentalis lucida*), which have a Protected Activity Center (PAC) that overlaps part of the project area.

If the agency decides to prepare an EA first, a complete NEPA analysis must be conducted, with full public opportunity to review a Draft, and include at a minimum:

1. Collection and analysis of data to 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 affected by the drilling, but also the sources of water to be used for the project), recreation, 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. Detailed analysis of cumulative impacts from all mining and other projects/activities in the area that may affect resources, including but not limited to wildlife, vegetation, water quality/quantity, air quality, recreation, and cultural resources.

3. Development of alternatives and in-depth analysis of these alternatives.

4. Identification of appropriate and adequate mitigation (and its effectiveness) to offset impacts on the above resources and others that might be negatively affected.

Signatory Organizations

Arizona Mining Reform Coalition ("AZMRC") is comprised of Arizona groups (Apache Stronghold, Center for Biological Diversity, Concerned Citizens and Retired Miners Coalition, Concerned Climbers of Arizona, Dragoon Conservation Alliance, Earthworks, Environment Arizona, Grand Canyon Chapter of the Sierra Club, Groundwater Awareness League, Maricopa Audubon Society, Patagonia Area Resource Alliance, Save the Scenic Santa Ritas, Save Tonto National Forest, Sky Island Alliance, Spirit of the Mountain Runners, Tucson Audubon Society, Valley Unitarian Universalist Congregation) and individuals that work to ensure that responsible mining contributes to healthy communities, a healthy environment, and, when all costs are factored in, is a net benefit to Arizona. The Arizona Mining Coalition expects the mining industry to clean up after itself, comply full and in the spirit of safeguards

in place to protect Arizona, and to interact in a transparent and open manner with Arizona citizens.

Borderlands Restoration Network is both an independent public charity, 501c3 and a collaborative of multiple organizations working to build a regional restoration-based economy in which diverse, fulfilling livelihoods support the restoration of thriving natural ecosystems and build prosperous, vibrant, healthy communities in the US - Mexico borderlands.

The Center for Biological Diversity is a non-profit public interest organization with headquarters located in Tucson, Arizona, representing more than 1.6 million 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.

Circle Z Ranch, which started as a sheep-herding operation in the 1880's, was developed as a dude ranch in the 1920's. It is the oldest continuously operating dude ranch in Arizona.

The Coalition for Sonoran Desert Protection is a 501(c)3 organization that works to achieve the long-term conservation of biological diversity and ecological function of the Sonoran Desert through comprehensive land-use planning.

Community Water Coalition of Southern Arizona promotes water conservation, river and riparian area protection, and environmental justice through policy development, education and advocacy.

Defenders of Wildlife is a national, non-profit 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.

Friends of Sonoita Creek (FOSC), a 501(c)(3) non-profit organization, was founded in 2004. Its mission is to educate and protect the Sonoita Creek watershed. FOSC informs residents and visitors about the watershed and its importance to life forms and relationship to the geography through hands-on activities, presentations, hikes, and financial support to kindred organizations.

Grand Canyon Chapter, Sierra Club's mission is to explore, enjoy, and protect the wild places of the earth; to practice and promote the responsible use of the earth's ecosystems and resources; to educate and enlist humanity to protect and restore the quality of the natural and human environment; and to use all lawful means to carry out these objectives.

Hummingbird Monitoring Network is a science-based, project-driven, nonprofit

organization dedicated to the conservation of hummingbird diversity and abundance throughout the Americas—investigates what hummingbirds need to survive, successfully reproduce, and maintain thriving populations through monitoring, education/outreach, research, and habitat restoration/enhancement.

Patagonia Area Resource Alliance ("PARA") is a grassroots organization of volunteer community members committed to protecting and preserving the Patagonia, Arizona area. PARA 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 community.

Ravens-Way Wild Journeys LLC (RWWJ) is devoted to protecting and preserving the unparalleled biodiversity of the Sky Islands region via ecotourism, unique educational programs, and sustainable living practices. Since 1993 RWWJ has been committed to land conservation, hands-on experiential education, and raising awareness about the urgent need to protect the diverse and fragile ecosystems within the amazing Sky Islands. RWWJ owns and actively manages two nature sanctuaries, by Patagonia Lake and in the Chiricahua mountains.

Save the Scenic Santa Ritas is a non-profit 501(c)(3) organization works to protect the scenic, aesthetic, recreational, environmental and wildlife values of the Santa Rita Mountains, Patagonia Mountains, Canelo Hills and San Rafael Valley through education and outreach, including protection of these areas from degradation due to mining activities.

Sky Island Alliance is a 501c3 non-profit Tucson, AZ based organization working to protect and restore the biodiversity and natural heritage of the Sky Islands using science, education, and advocacy to connect the binational landscapes, people, and wildlife of the Sky Islands for the benefit of all.

Tucson Audubon Society is a regional conservation nonprofit founded in 1949 with members across Southeast Arizona. We work to inspire people to love and protect birds and the places they need. Tucson Audubon coordinates the Important Bird Area program for Arizona in partnership with Audubon Arizona. The Tucson Audubon Paton Center for Hummingbirds is the top tourist destination in Patagonia, AZ drawing over 14,000 local, national, and international tourists. The Patagonia and Santa Rita Mountains act as irreplaceable habitat to many of our native and migrant avian species and Tucson Audubon prioritizes their protection and conservation.

I. Unique value of the Patagonia Mountains to worldwide biodiversity.

The Patagonia Mountains are one of the ranges collectively known as Sky Islands, areas of very high biodiversity.[1,2] These mountains contain existing and potential habitat for numerous threatened, endangered, and otherwise sensitive wildlife and plant species, as detailed herein. The Patagonia Mountains in particular have been identified as an Arizona Important Bird Area, under the auspices of Audubon Society's world-wide Important Bird Areas program.[3]

Biologist E O Wilson writing in his book "Half Earth: Our Planet's Fight for Life" makes the point that even though extinction rates are soaring, a great deal of Earth's biodiversity can still be saved. Wilson contacted 18 of the world's senior naturalists with international expertise in biodiversity and ecology and asked them to "name one to five places in the world you consider best on the basis of richness, uniqueness, and most in need of research and protection . . ." Among the top choices are the Madrean mountain chains of Mexico and the Sky Islands of New Mexico and Arizona where the Patagonia Mountains are located.

II. Legislative Framework.

The purpose of the regulations under 36 CFR 228, issued by the Forest Service, is to protect the non-mineral values of the National Forest System lands against unnecessary or unreasonable damages from prospecting, exploration, development, mining, and processing operations without unreasonably inhibiting or restricting the activities of prospectors and miners.[4]

The Organic Administration Act of June 4, 1897, authorizes the Secretary of Agriculture to regulate occupancy and use of the National Forests for the protection and management of their surface resources. All National Forest users, including prospectors and miners, are required to observe these regulations.[5]

The Endangered Species Act ("ESA") and its implementing regulations prohibit entities like the proponents of the Sunnyside plan of operations from engaging in take of endangered or threatened species such as the jaguar and Mexican spotted owl.[6] The Forest Service has a duty under Section 7 of the ESA to insure that its actions do not jeopardize listed species or destroy or adversely modify their designated critical habitat.[7]

---

[1] Coronel-Arellano, H. N. E. Lara-Díaz, C. E. Moreno, C. .E Gutiérrez-González, C. A. López-González 2018. "Biodiversity conservation in the Madrean sky islands: community homogeneity of medium and large mammals in northwestern Mexico." *J. of Mammology* 99(2): 465-477.

[2] Warshall, P. 1995. "The Madrean Sky Island Archipelago." U.S. Forest Service

[3] Arizona Important Bird Areas Program. 2019. Accessed 10-20-2019. http://aziba.org/?page_id=2271

4 "Mining in National Forests: Protection of Surface Resources"

5 "Mining in National Forests: Protection of Surface Resources"

[6] *See* 16 U.S.C. § 1538(a)(1)(B); 50 C.F.R. § 17.31.).

[7] *See* 16 U.S.C. § 1536(a)(2).

III. Natural Resources That May Be Affected by the Project

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 a region abutting and possibly overlapping 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 (such as pages 139 and 145). Because the proposed drilling operations are either very near or overlap the watershed, and because traffic supporting the drilling will travel through the watershed, this places on the Forest Service a duty to ensure the continued safety and adequacy of the Patagonia water supply.

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. As described in the scoping notice, 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.[8,9] 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.[10] 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. As detailed below, a complete analysis of the baseline conditions of these waters must be completed and submitted for public review during the NEPA process.

Exploratory drilling involves significant quantities of water to cool drilling equipment

---

[8] *See* Ariz. Dep't of Water Res., Water Quality in the Cienega Creek Basin, *available at* http://www.azwater.gov/AzDWR/StatewidePlanning/WaterAtlas/SEArizona/Water/CienegaCreek.htm.

[9] Shafiqullah, S. 2014. Hydrology Report for the Sunnyside Exploration Plan of Operation. January 24, 2014.

[10] *See* U.S. EPA, *supra* n. 1.

inside the borehole, in the case of the Sunnyside project an estimated 12,500 gallons per day per well site.[11] "Confirmed water sources include, but are not limited to, the City of Nogales (Kino Springs), Santa Cruz County (Nogales International Airport), and the City of Sonoita."[12] The EA should evaluate whether withdrawal of the projected quantities of water would have significant effects on municipal water supplies or groundwater.

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.[13] If improperly designed or maintained, such sumps may leak and overflow with subsequent contamination of soil and water.[14] 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.[15] (Also, see comment letter by Save Our Sky Blue Waters for photos of overflowed mineral exploration sumps in Minnesota.[16]) 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 (Figure 1).

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. Any sumps must be lined with an impermeable liner and fully reclaimed upon completion of the activity.

We support the provision in the POO to take baseline water samples "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." We note, however, that the POO states that during drilling activities monitoring shall be by visual inspection, e.g. for "visible petroleum induced water sheen," [17] but there should also be more rigorous on-going chemical analysis to detect possible contamination during the drilling process. Additionally, all baseline data collection and analysis

[11] 2019 Plan of Operations at 14
[12] 2019 Plan of Operations at 14.
[13] 2019 Plan of Operations at 14.
[14] Earthworks 2019. Alternatives to Pits. https://earthworks.org/issues/alternatives_to_pits/
[15] Resources for the Future 2015. Pits versus Tanks: Risks and Mitigation Options for On-site Storage of Wastewater from Shale Gas and Tight Oil Development. https://media.rff.org/archive/files/document/file/RFF-DP-15-53.pdf
[16] Save Our Sky Blue Waters 2011. Comment on Draft Environmental Impact Statement for the Federal Hardrock Mineral Prospecting Permits Project on the Superior National Forest, Minnesota. https://www.sosbluewaters.org/USFS_Hardrock_Draft_EIS.html)
[17] 2019 Plan of Operations at 18.

(for all potentially affected resources) must be completed prior to the issuance of the Draft EIS (or EA) to allow for adequate public review under NEPA. Moreover, particular attention should be made during monitoring to ensure that 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. The 2019 Plan of Operations (POO) says that "Interception of (a) high pressure, artesian aquifer(s) is unlikely based on the current understanding of the local hydrogeology in the area," but this statement appears contradicted by Regal Resource's 2013 Plan of Operations for a similar Sunnyside exploratory drilling project, which stated that "water is expected to be encountered in drilling at depths in excess of 1,000 feet" during drilling operations[18] and that: "Previous exploration drilling encountered water flow at the depths contemplated."[19] Notably, an exploratory borehole drilled in Humboldt Canyon by Sarco near the Project site in the 1970s or 1980s created an artificial artisanal "spring" near the top of the canyon, a spring which continues to flow water to the surface to this day. Given these statements by the company about previous drilling and Sarco's experience, it would be unwise to accept at face value the company's assertion that interception of a high-pressure artesian aquifer is "unlikely." There is good reason to believe that similar interception of water could occur with this more extensive drilling project (30 wells versus six in the project proposed in 2013).

The agency cannot approve exploration drilling into groundwater without fully ascertaining the baseline conditions and the direct, indirect, and cumulative impacts to groundwater that will or may be encountered, such analysis being made available for public review and comment. Such analysis and comment should be done within the framework of an EIS, or if done first, a complete EA.

For these reasons, further study of the impacts of drilling on the regional water supply and quality, of both ground and surface waters, is essential for the Forest Service to make an informed decision about the proposed Project.[20]

[18] 2013 Plan of Operations at 6.

[19] 2013 Plan of Operations at 6.

[20] *See, e.g.. Idaho Conservation League v. U.S. Forest Serv.*, 2012 WL 3758161, *14–17 (D. Idaho Aug. 29, 2012); *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 conditions).

B. Listed Species

A list of federally listed threatened, endangered, and Forest Service special status species known to occur in and/or near the project area, now or in the past, according to the Arizona Game and Fish Department's list of Endangered Species of Patagonia.[21] 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, including designated jaguar critical habitat. Consultation with the US Fish and Wildlife Service (USFWS) will be required for these species, given a) 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.[22] In addition, for all potentially affected species and their habitat, the current baseline conditions for populations, movement, trends, and habitat conditions must be fully analyzed prior to issuance of the Draft EA/EIS for public review.

1. Mexican Spotted Owl

As proposed, the Project falls within designated critical habitat for the Mexican spotted owl known as a Protected Activity Center (PAC). Over the last 10 years, observers have regularly reported at least one breeding pair of owls occupying the narrow gorge at the head of Humboldt Canyon.[23] A recent survey by Westland Resources shows that the owls currently reside in drilling area C of the project[24].

In general, Mexican spotted owls 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.[25] 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.[26]

The Project's drills will operate 24 hours a day and generate significant noise and light pollution near and inside the designated Protected Activity Center and in the surrounding foraging habitat. Therefore, the proposed Project may have significant adverse effects for owls, including, but not limited to causing the owls to relocate to a less suitable territory, increasing stress, decreasing foraging success, and decreasing breeding success.

---

[21] Arizona Game and Fish Department, July 2013. "Federally Threatened, Endangered and Sensitive Species: Patagonia Mountain area."

[22] *See* 50 C.F.R. § 402.14.

[23] M. Brown, pers. comm.

[24] 2019 Plan of Operations, Exhibit 8.

[25] *See* U.S. Fish & Wildlife Serv., Mexican Spotted Owl Recovery Plan, First Revision (*Strix occidentalis lucida*), 26 (Sept. 5, 2012).

[26] *See id.* at 56.

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 may contribute to the deterioration of connectivity in this region, especially when considered in light of the numerous other drilling and mining projects proposed in the Patagonia Mountains.

3. Western yellow-billed cuckoo

The Yellow-billed cuckoo (Coccyzus americanus) is listed under the Endangered Species Act as a threatened species,[27] and critical habitat was designated in 2014.[28]

"Yellow-billed cuckoos were previously detected on surveys conducted in 2012 along portions of nearby Harshaw Creek, Hermosa Canyon, Goldbaum Canyon, Coral Canyon, and Willow Spring Canyon, suggesting that they are likely to occur within the Project Area."[29] Follow-up surveys in 2018-2019 again identified the presence of cuckoos on or near the project area.[30] Although normally associated with riparian forest, the 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.[31]

We note the following inadequacies in the 2015 Revised Biological Assessment (RBA) for a previously requested Sunnyside Exploratory Drilling Permit to advise against making similar conclusions in the EA for the current project. The RBA concluded that the proposed project was not likely to jeopardize the continued existence of the cuckoo, in part because it would avoid removing trees greater than 12 inches dbh and that all ground disturbing activities would maintain a-15 foot setback from the "active stream bank" to limit impacts to potential breeding habitat. Draft EA, Table 16, at 52. However, preservation of trees greater than 12 inches dbh is a design feature to protect the Mexican spotted owl (see discussion above) not the cuckoo. The cuckoo is not an "old growth" dependent forest species, but primarily a streamside vegetation-dependent species. Streamside vegetation used by cuckoos is frequently less than 12 inches dbh,[32] and therefore significant cuckoo habitat could be lost to clearing, even if no trees greater than dbh are cut. Moreover, a 15-foot setback from the "active stream bank" is a minor protection—15 feet is the length of a car. There was no evidence or discussion of whether cuckoos will continue to use areas, especially for breeding, within 15 feet of a drilling site or other construction activity.

[27] USFWS 2019. Western Yellow-billed Cuckoo Species Information. Accessed October 18, 2019. https://www.fws.gov/sacramento/es_species/Accounts/Birds/yellow_billed_cuckoo/
[28] Federal Register/ Vol. 79, No. 231 / Tuesday, December 2, 2014. 71373.
[29] Federal Register/ Vol. 79, No. 231 / Tuesday, December 2, 2014. 71373.
[30] Regal Resources, Inc. 2019. Plan of Operations: Sunnyside Exploratory Drilling Project, Santa Cruz County, Arizona. P. 21.
[31] 2019 Plan of Operations CITE
[32] See 78 Fed. Reg. 61622

3. Jaguar and ocelot

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 the Arizona Game and Fish Department (see Appendix A), 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."[33]

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. 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 mining. 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 USFWS for jaguars. Fourth the designation of critical habitat means that the USFWS 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"[34] in the Patagonia Mountains. Fifth, the POO mischaracterizes US jaguars and ocelots as "transient individuals from Mexico" when several are known to have resided in the US 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. An male ocelot is known to have lived in the Arizona mountains for at least 5 years.[35]

---

[33] 2019 Plan of Operations at 22.
[34] USFWS 2019. Critical Habitat. https://www.fws.gov/endangered/what-we-do/critical-habitats.html. Accessed Sept. 27, 2019.
[35] 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. Accessed 9/27/2109.

As reviewed in the Draft Jaguar Recovery Plan (FWS 2016a), opinions about the relative importance of peripheral populations vary, but some studies have suggested that they may be more 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. Thus, recovery of US 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. 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. Thus, a US population might preserve unique genes that could provide long-term survival benefits for the species in the face of climate change. Although not studied, it's possible the same could be true for ocelots.

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 Fish and Wildlife Service 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.[36] 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 Service identified as essential "expansive open spaces in the United States of at least 100 square km [32 to 37 square miles]," "with adequate connectivity

[36] *See* 79 Fed. Reg. 12572 (Mar. 5, 2014).

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.,[37] 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 Service 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. . . ."[38] 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 Service 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."[39] Mining and the increased human disturbance that accompanies a mining project "may render an area unsuitable for jaguars."[40] Due to these impacts, the Service 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."[41]

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

[37] *Id.* at 12583.

[38] *Id.* at 12607.

[39] *Id*. at 12588.

[40] *Id.* at 12573.

[41] *Id*. at 12617.

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.

Ocelot

Even though critical habitat has not yet been designated for 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 forty 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.

3. 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.

The downstream waters of Sonoita Creek are habitat for several imperiled fish species, including endangered Gila 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.

Finally, numerous imperiled plant species occurring the Patagonia Mountains are listed in Appendix A. 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.[42]

II. The Need for Adequate NEPA Review of the Sunnyside Project

A. The Impacts of this Project 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 Forest Service require an EIS to fully explore the possible effects, particularly cumulative effects with

[42] *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).

other ongoing and reasonably foreseeable projects. The activities described in the scoping notice, 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 7 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 exploration has been ongoing, so the Forest Service should know that the impacts will not be insignificant (Figures 2 and 3).

B. The Forest Service Must Consider Cumulative Impacts of All Actions in the Area.

A cumulative impact is defined as "the 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."[43] Furthermore, "cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."[44]

In light of the close proximity of the proposals for mineral exploration in the Patagonia Mountains currently under consideration by the Coronado National Forest, as well as other past and reasonably foreseeable future mineral and other actions occurring in this relatively small mountain range, there will be significant cumulative impacts that should be addressed during the scoping process.

Contributing mineral projects. Several exploration projects (see claims map) totaling almost 50,000 acres are underway adjacent to or nearby the project, whose cumulative impacts must be quantified and analyzed. An Australian mining company, South32, seeks to build a huge underground mine in the Patagonia Mountains. The company owns a 450-acre inholding in the Coronado National Forest and holds 26,073 acres of unpatented mining claims on adjacent or nearby public lands of the Coronado National Forest. It currently has 200 employees at work and has cleared extensively on its private inholdings close to the Sunnyside Project (see Figure 2) There are additional unpatented claims on public lands held by Barksdale Capital in addition to the project that is this Plan of Operations. Barksdale Capital currently controls a total of 12,280 acres of projects known as Sunnyside, Four Metals, and San Antonio.

Each of these projects involves drilling multiple exploratory holes, and the noise, traffic, and physical footprint of the combined projects will be substantial. Moreover, there are drilling and other activities already taking place on private land in the area that will further exacerbate the environmental impacts of exploration activities.

---

[43] 40 C.F.R. § 1508.7.

[44] 40 C.F.R. § 1508.7.

Of these projects, the Hermosa Mine project owned by South32 is the farthest along and has already caused substantial ground disturbance (Figures 1 and 2). Since August 2018, the company has:

- Drilled exploratory holes at 251 locations on its 450 acres of private inholdings.[45]
- Blasted "ceremonial" openings of two portals in August 2018.
- Constructed a new tailings storage facility and relocated 2,262,000 tons of materials from legacy environmental damage ASARCO tailings.[46]
- Completed additional claim filings bringing the project total to 450 patented acres and 26,073 acres of unpatented claimed public lands.
- Commenced site construction for processing plant area.
- Created massive road disturbance (Figure 3), plus closures of Flux Canyon Road, FR5521 and FR4687.
- South32 has stated publicly that it continues to have about nine to 12 active exploratory drill operations working 24/7

The Project and the other proposed exploratory drilling projects in the Patagonia Mountains have the purpose of facilitating development of mines in this mountain range. The mines that would result from these exploratory drilling projects are reasonably foreseeable. Evidence that a mine is reasonably foreseeable in Sunnyside's area is evidenced by the Sunnyside June 11, 2012 technical report summarizing reanalysis of historical core drilling showing presence of silver, copper, lead and zinc."[47] The company South32 reports for the proposed Hermosa Mine "5.3 million tonnes of zinc, 5.7 million tonnes of lead and 344 million ounces of silver."[48] Such evidence of recoverable minerals will be impetus for full-scale mine development, the planned outcomes of the Sunnyside exploratory drilling project and others.

We urge the Forest Service to consider the cumulative impacts of subsequent open pit and other mining on these ecosystems, species, and resources before it approves any proposed drilling project here. The full scope of these impacts should be understood by the agency, the public, and the mining companies before any exploration activities may be considered for approval.

[45] South32 June 17, 2019 Mineral Resource Declaration
[46] APP Permit No P-512235 at page 2
[47] APEX Geoscience. 2014. Technical Report on the Sunnyside Project, Arizona, USA. June 11, 2012 43-101 Technical Report for Sunnyside. Accessed October 17, 2019. https://www.regalres.com/site/assets/files/3494/regal_resources-sunnyside-43-101.pdf
[48] South32. 2019. Hermosa Project – Mineral Resource Declaration.

Other Past, Present, and Reasonably Foreseeable Future Actions. Below is a non-inclusive list of other past, present and reasonably foreseeable future actions that raise additional uncertainty about the significance of the cumulative effects resulting from this project. At a minimum, the cumulative impacts from these activities must be fully quantified and analyzed:

- Rosemont Copper Project (including the proposed activities in Sonoita Creek recently approved by the Army Corps of Engineers);
- The CNF TMP process, which is ongoing and may result in an expansion of the designated road system in the Sierra Vista Ranger District;
- The CNF LRMP revision, which is ongoing and may result in additional impacts to resources in this area related to revised management strategies;
- Continued ATV use and unauthorized road creation in the affected watershed, as well as the reasonably foreseeable dispersal of motorized recreation activities that currently occur in the project area into neighboring watersheds;
- Continued population growth and associated residential need for groundwater in the Patagonia area, which will affect surface water and ongoing impacts from old mine sites;
- Grazing; and
- Any activity listed in the Schedule of Proposed Activities (SOPA) for the Sierra Vista Ranger District and Coronado National Forest in and around the Patagonia Mountains and nearby lands/waters.

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 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 BLM-issued 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). The NEPA requirement to analyze cumulative impacts prevents agencies from undertaking a piecemeal review of environmental impacts. *Earth Island Institute v. U.S. Forest Service*, 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.** *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, 971-974 (9th Cir. 2006)(emphasis added) (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). As the Ninth Circuit has further held:

Our cases firmly establish that a cumulative effects analysis "must be more than perfunctory; it must provide a *useful analysis* of the cumulative impacts of past, present, and future projects." Klamath–Siskiyou, 387 F.3d at 994 (emphasis added) (quoting Ocean Advocates v. U.S. Army Corps of Eng'rs, 361 F.3d 1108, 1128 (9th Cir.2004)).

To this end, we have recently noted two critical features of a cumulative effects analysis. First, it must not only describe related projects but also enumerate the environmental effects of those projects. *See* Lands Council v. Powell, 395 F.3d 1019, 1028 (9th Cir.2005) (holding a cumulative effects analysis violated NEPA because it failed to provide "adequate data of the time, place, and scale" and did not explain in detail "how different project plans and harvest methods affected the environment"). Second, it must consider the interaction of multiple activities and cannot focus exclusively on the environmental impacts of an individual project. *See* Klamath–Siskiyou, 387 F.3d at 996 (finding a cumulative effects analysis inadequate when "it only considers the effects of the very project at issue" and does not "take into account the combined effects that can be expected as a result of undertaking" multiple projects).

Oregon Natural Resources Council Fund v. Brong, 492 F.3d 1120, 1133 (9th Cir. 2007), quoting *Klamath–Siskiyou Wildlands Center v. BLM*, 387 F.3d 989, 994, 996 (9th Cir. 2004). As a recent mining case held, the agency must "**enumerate the environmental effects of other projects**" and "**consider the interaction of multiple activities.**" *Great Basin Resource Watch v. BLM*, 844 F.3d 1095, 1106 (9th Cir. 2016)(emphasis added).

Climate Emergency: The Forest Service must consider climate change as a direct, indirect and cumulative impacts. According to USFS guidance, the agency is mandated to consider climate change in project-level NEPA analysis, including documentation on both the effects of agency action on global climate change and the effects of climate change on the project.[49]

The Intergovernmental Panel on Climate Change's (IPCC) most recent assessment demonstrates that climate change—in particular as a result of anthropogenic driver causing global warming—is a pressing issue that must be addressed by the world's communities.[50]

When compared to the 20th century average, the western United States has experienced an increase in average temperature during the last five years that is 70 percent greater than the

49 US Forest Service. 2009. Climate Change Considerations in Project Level NEPA

50 Intergovernmental Panel on Climate Change (IPCC), 2007: Summary for Policymakers. In: Climate Change 2007: The Physical Science Basis, Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, M. Tirnor and H.L. Millers (Eds.)] Cambridge University Press, Cambridge, Unit3ed Kingdom and New York, NY, USA

world as a whole.[51] The average temperature in the southwest is projected to rise by 2.5 to 5.5 degrees Fahrenheit by 2050. In Arizona, winter precipitation is already becoming more variable with a trend toward both more frequent extremely dry and extremely wet winters.[52]

Flood severity is expected to increase in much of the west because increased inter-annual variability in precipitation will cause increased runoff in wet years and increased rain-on-snow probability in low-elevation snow packs.[53] Of special concern is that the increase in temperatures occurs more at higher elevations than lower elevations, affecting snow resources which supply much of the western United States' fresh water supply.[54] The IPCC projects that warming of the western climate will continue, making it imperative that agencies in this region consider the impacts of global warming on each proposed action, especially intensive land use activities such as mining.

Global climate changes presents a significant threat to the current ecosystems of the southwest.[55] Weiss and Overpeck (2005) noted that the boundary and plant distribution in the Sonoran Desert is strongly influenced by freezing temperatures and suggested that increased warming in the region may result in the expansion of the Sonoran Desert "northward, eastward, and upward in elevation, as well as changes to distribution of plant species."[56] One indication of climate change in the southwest is that with increasing average minimum and maximum temperatures, especially in summer, both the diversity and composition of flowering plant taxa are changing, particularly at higher elevations.[57]

Most recently, the Rocky Mountain Research Station released "An Assessment of Climate Change and the Vulnerability of Wildlife in the Sky Islands of the Southwest," in which the 30 vertebrate species of interest on the CNF were assessed for vulnerability to climate change. Vulnerability scores were calculated for a habitat and physiology category and management

51 Saunders, D, C. Montgomery and T Easley, 2008 "Hotter and Drier: The West's Changed Climate" The Rocky Mountain Climate Organization and The National Resources Defense Council, 64 pp.Arizona's average temperatures were 2.2 degrees Fahrenheit warmer in 2003-2007 than for the previous 100 years.

52 Karl, T.R., J.M. Melillo, and T.C. Peerson (eds.) 2009. Global Climate Change Impacts in the United States. Cambridge University Press

53 Hamlet, A.F., and D.P. Lettenmaier. 2007. Effects of 20th century warming and climate variability on flood risk in the western U.S., Water Resour. Res., 43. W06427, dos: 10.1029/2006WR005099

54 Hotter and Drier, 5

55 Weltzin, J. andG. McPeherson, 1995. "Potential Effects of Climate Change on Lower Treelines in the Southwestern United States". In USDA Forest Service, Biodiversity and management of the Madrean Archipelago: the Sky Islands of Southwestern United States and Northwestern Mexico. Proceedings of the conference held Sept 9-23, 1991 in Tucson, AZ. General Technical report RM-GTR-264, pp. 180-193

56 Weiss, J. L. and J. T. Overpeck. 2005. "Is the Sonoran Desert Loving its Cool?" *Global Change Biology* 11(12): 2065-2077.

57 Breshears, D.D., T.E. Husman, H.D. Adams, C.B. Zou, and J.E. Davison. 2008. "Vegetation synchronously leans upslope as climate warms". School of Natural Resources; Institue for the Study fo Planet Earth, Department of Ecology and Evolutionary Viology and Viosphere 2/B2 Earthscience. University of Arizona, Tucson

considerations based on this assessment given.[58] The report notes: "The range in elevation the CNF means that some species may be able to move upslope in the fact of increasing temperatures. Thus, maintaining corridors may allow some species on the CNF to locate more suitable conditions as the environment changes."

Scientists have already recognized global warming as a key threat to biodiversity.[59] A primary reason for this is because the cumulative impacts of climate change combined with other, non-climate stressors affecting the landscape will simply be too much for many species to adapt to. Ongoing habitat fragmentation combined with the impacts of climate change may be the biggest threat of all. According to Lovejoy and Hannah in their 2005 book *Biodiversity and Climate Change*, "The synergistic implications of climate change and habitat fragmentation are the most threatening facet of climate change for biodiversity." The best scientific information available clearly points to the need to maintain landscape connectivity and overall resiliency, and to facilitate the migration of native species and expansion of new suitable habitat in order to allow species to adapt to the growing impacts of climate change in this region.

Given the huge challenge that climate change poses the Forest Service for the protection of its resources, the agency should give high priority to protecting surface resources critical for the survival of the plants and animals under its care. This means placing high priority on protecting corridors for animal migration and future climate refugia, notably mountain slopes. This requires the Forest Service to scrutinize carefully any mining plans that could jeopardize water supplies or species, particularly those in danger of extinction, and, where the law allows, give highly valuable surface resources higher priority than mining.

The importance of these surface resources is underscored on the Forest Service's "Managing Land" webpage: "The Forest Service is a steward of many of our Nation's most treasured landscapes, and within those landscapes are resources that people need and want, such as clean air and water, recreational opportunities and forest products. Impacts from climate change, extreme weather, and other disturbances—along with changing human demands—challenge our ability to ensure that ecosystems are healthy, resilient, and more adaptable to changing conditions. The Forest Service is adjusting behaviors and actions by using the best available science and information to ensure our forests and grasslands continue to deliver values, products, and services both now and in the future."

---

58 Coe, Sharon J., Deborah M Finch, Megan M Friggens. 2012. An Assessment of Climate Change and the Vulnerability of Wildlife in the Sky Islands of the Southwest. Gen Tech Rep, RMRS-GTR-273. Fort Collins, CO; US Department of Agriculture, Forest Service, Rocky Mountain Research Station. P 208

59 See e.g., Malcom, Jay R.; Liu, Canran; Neilson, Ronald P.; Hansen, Lara; Hannah, Lee, "Global Warming and Extinctions of Endemic Species from Biodiversity Hotspots," Conservation Biology, Vol. 20(2): 538 -548 (2006See also Matthews, Stephen N.; O'Connor, Raymond J.; Iverson, Louis R.; Prasad, Anantha M., "Atlas of Climate Change Effects on 150 Bird Species of the Eastern United States," Forest Service Northeastern Research Station Gen. Tech. Report NE-318 (2004) (projecting that as many as 78 of 150 common bird species may decrease by at least 25 percent due to global climate change); and the IPCC's April, 2007, Summary for Policymakers, "Climate Change 2007: Impacts, Adaptation and Vulnerability"

Economic impacts. The communities now known as Patagonia, Sonoita and Elgin were united by the railroad from 1882 to 1962. Following the departure of the railroad and the shutdown of area mining operations, this region's businesses struggled to establish a reliable economic prosperity. In 1968 the Sonoita Creek was dammed to create Lake Patagonia. In 1969, The Nature Conservancy purchased 312 acres known by locals as "the grove" and that property has grown to an 873-acre riparian habitat known as The Patagonia-Sonoita Creek Preserve. These key events helped establish the region as a destination for natural outdoor activities.

The region has evolved into an eco-tourism destination for visitors from Arizona, the United States, and the world, as well as growing economic sector dependent on an uncontaminated environment. Relevant economic activities include local food production, restoration of ecosystem processes and native habitat, conservation, vineyards, and ranching. Numerous businesses (retail stores, restaurants, lodging, health services, food markets, construction) are woven into a diverse economic base that is regenerative and stable. The full fabric of services includes schools, emergency services, and community organizations. Based on 2016 FYE Town of Patagonia sales tax revenue, the Town's local economy grew 421% and the population grew 69% since the mines ceased operations.[60] A nature-based economy and 21st century industrialized mining are mutually exclusive activities.

Tourism is the number one driver of Arizona's economy, ranking first in Arizona's export-oriented business sectors.[61]

Outdoor recreation generates $21.2 billion in consumer spending, directly supports 201,000 jobs, creates $5.7 billion in wages, and generates $1.4 trillion in state and local tax revenue.[62] The results of the 2007 National Visitor Use Monitoring Survey show that more than 67 percent of visitors to the Coronado NF participate in viewing natural features (scenery), that this activity was the second most popular primary activity after hiking and walking, and that more than 25 percent of Coronado NF visitors travel on a forest scenic byway.[63]

All of the preceding income streams could be put at risk from the cumulative impacts of mining in and near the Patagonia Mountains that degrade the visitor experience and/or contaminate water needed for crops and ecological restoration. The EIS should therefore analyze cumulative impacts of all past, present, and reasonably foreseeable future actions that could affect the economy of the project area and should identify needed mitigation measures.

60 Shafer, C. 2016. "Discovering Arizona's Mountain Empire." Patagonia Area Resource Alliance.
61 Arizona Department of Tourism, prepared by Dean Runyon Associates. Arizona Travel Impacts 1998-2015p. Portland Oregon June 2016
62 Outdoor Industry Association. Arizona Outdoor Recreation Economy Report. July 26, 2017
63 "Hermosa Drilling Project Scenery Report" March 4, 2014 prepared by Debby Kriegel, Forest Landscape Architect, Coronado National Forest

Scope. One of the most important steps by an agency in evaluating cumulative impacts is determining the scope, including time, area and resources to be analyzed.[64] The temporal aspect of scope is often taken to be the life of a project, but actually must be extended due to the impacts of this project and all other past, present, and reasonably foreseeable future activities in the Patagonia Mountains and its environs. Thus, for Sunnyside, the time frame for cumulative impacts review should extend beyond the 7-year life of the project. The geographic boundary also must extend to areas well outside the project footprint that may be affected by these projects (including private lands). Both time and area may be chosen as a function of which resources are being analyzed. For example, the EPA has stated that "The selection of geographic boundaries and time period should be, whenever possible, based on the natural boundaries of resources of concern and the period of time that the proposed action's impacts will persist, even beyond the project life."[65]

For example, in the case of the jaguar, the animal requires large home ranges of at least several hundred square miles, as referenced above. Given that the Patagonia Mountains contains designated critical habitat, which by definition is "essential for the conservation of the species," the scope of the cumulative effects analysis should be at minimum the size of one or more jaguar home ranges, i.e. a minimum of several hundred square miles. But beyond this, the effects on the jaguar should be considered in the context of the Jaguar Recovery Plan and the importance of habitat in the Patagonia Mountains as part of a potential future borderland metapopulation of jaguars that could include animals living in the various US and Mexican sky island mountains (notably the US mountains included in critical habitat designation). It will be critical to maintain movement corridors between Mexico across the border to the US, and to protect adequate habitat to sustain jaguars that do enter the US. Therefore, an analysis of cumulative impacts for the jaguar (and the ocelot) should include other projects that would cut connectivity between the US and Mexico, cut connectivity between US sky islands, or significantly degrade or reduce the amount of habitat. This should include not only projects in the Patagonia Mountains, but also in other areas that could be biologically linked, including the Huachuca, Whetstone and Santa Rita mountains, notably the Rosemont Mine proposed for jaguar critical habitat in the Santa Rita mountains. Scopes for the other threatened and endangered species should be determined similarly based on their ecology and dispersal and population dynamics.

C. The Forest Service Must Mitigate Impacts.

Under NEPA, the agency needs to conduct a full analysis of all potential mitigation measures, for each alternative, including analyzing the effectiveness of all mitigation

64 EPA 1999. Consideration Of Cumulative Impacts In EPA Review of NEPA Documents. EPA 315-R-99-002. https://www.epa.gov/sites/production/files/2014-08/documents/cumulative.pdf. Accessed Sept. 38, 2019.
65 Ibid at Section 4.2.

measures. The Forest Service has a duty under the 1897 Organic Act, the National Forest Management Act (NFMA), the ESA, its own mining regulations, among other requirements, to fully mitigate against all potential adverse impacts to all potentially affected resources, including full minimization of all such impacts and compliance with all Forest Plan standards, guidelines, desired conditions, and other requirements. As such, effective mitigation measures are a central part of the agency's review and analysis of the proposed project.

III. The Need for Consultation with the Fish and Wildlife Service and Compliance with the ESA.

Due to the projects impacts, alone and cumulatively with the other activities noted above, the finding of any Biological Assessment (BA) should be *may affect, likely to adversely affect* for all four endangered and threatened species and for critical habitat for the jaguar and Mexican spotted owl, both of which have critical habitat on the Project area. Although critical habitat for the western yellow-billed cuckoo lies outside the Project area, appropriate consideration of cumulative impacts for this species, with an appropriately determined geographic boundary, may warrant a finding of "likely to adversely affect" for critical habitat for this species as well.

Because the Project "may affect" listed species and their habitat, and particularly because the it will occur within designated critical habitat for Mexican spotted owls, the Forest Service has a duty to engage in meaningful ESA consultation with the Fish and Wildlife Service.[66] Failure to initiate consultation resulting from a determination that this project would have no effect on listed species will violate the Forest Service's duty under Section 7 of the ESA to insure that its actions do not jeopardize listed species or destroy or adversely modify their designated critical habitat.[67] The Forest Service's duty under Section 7 exists regardless of the level of NEPA review ultimately conducted by the agency. The Forest Service must work with the Fish and Wildlife Service to determine what the likely impacts to listed species and their habitat will be; it cannot rely on unsupported statement from the proponent that no threatened or endangered species will be affected.

IV. All Reasonable Alternatives Must Be Fully Reviewed

In the Draft EA/EIS, the agency must fully analyze 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 CFR § 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

[66] *See* 50 C.F.R. § 402.14(a) (requiring consultation if agency actions "may affect" listed species); 16 U.S.C. § 1536(a)(2).

[67] *See* 16 U.S.C. § 1536(a)(2).

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, 1228-1229 (9th Cir. 1988). "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).

At a minimum, the following alternatives must be fully analyzed: (1) no road construction/reconstruction; (2) if roads are used, limiting all activities to the existing road width; (3) helicopter access instead of road use/construction/reconstruction; (4) impermeable lined sumps with full removal of materials and reclamation; (5) reduced number and scope of drilling to reduce/minimize impacts; (6) seasonal prohibitions to protect wildlife (each species should be reviewed for seasonal prohibitions/restrictions); (7) reduced time period for project (i.e., less than 7 years); (8) limiting approval to phases (i.e., not approve full 7 years of operations, based on preliminary drilling results); and (9) limiting operations to those that do not adversely affect listed species or their habitat or adversely affect water quality.

V. Conclusion

For these reasons, the Forest Service must do an EIS. At a minimum, any review (EA or EIS) and potential approval must fully comply with NEPA, the 1897 Organic Act, NFMA (Forest Plan standards, guidelines, desired conditions, etc.), the ESA, National Historic Preservation Act (NHPA)(consultation with Native American Tribes due to potential impact on cultural/historical resources), and other applicable laws. Furthermore, the Forest Service must engage in meaningful consultation with the Fish and Wildlife Service regarding potential impacts to threatened and endangered species before completing its draft review of the project.

We appreciate the opportunity to comment on this proposed action. Please include the undersigned groups/contacts as interested parties and direct all future public notices and documents to us at the addresses below. We look forward to the next public NEPA review opportunity.



Rob Peters, Ph.D.

Senior Representative, Southwest Office, Tucson, AZ
Defenders of Wildlife
210 Montezuma Ave., Suite 210, Santa Fe, NM 87501
Tel: 520 623-0447 | Cell: 970 201-7642
rpeters@defenders.org | www.defenders.org

Carolyn Shafer

Patagonia Area Resource Alliance
Patagonia Area Resource Alliance
317 McKeown Ave, Patagonia, AZ 85624
Tel: (520) 477-2308 | info@patagoniaalliance.org

Sky Island Alliance
Louise Misztal, Executive Director
Louise,misztal@SkyIslandAlliance.org
PO Box 41165
Tucson, AZ. 85717

Center for Biological Diversity
Randy Serraglio, Southwest Conservation Advocate
RSerraglio@biologicaldiversity.org
PO Box 710
Tucson, AZ. 85702-0710

Arizona Mining Reform Coalition
Roger Featherstone, Director
roger@AZMiningReform.org
PO Box 43565
Tucson, AZ 85733

Sierra Club - Grand Canyon Chapter
Sandy Bahr, Chapter Director
sandy.Bahr@SierraClub.org
514 W Roosevelt St
Phoenix, AZ 85003

Borderlands Restoration Network
Kurt Vaughn, Director
info@BorderlandsRestoration.org
1 School Street
Patagonia, AZ 85624

Friends of Sonoita Creek
Kathy Pasierb, Board Member
PO Box 4508
Rio Rico, AZ 85648

Circle Z Ranch
Diana Nash
info@CircleZ.com
PO Box 194
Patagonia, AZ 85624

Ravens-Way Wild Journeys
Vincent Pinto and Claudia Campos
RavensNatureSchool@gmail.com
PO Box 393
Patagonia, AZ 85624

Tucson Audubon Society
Nicole Gillett, Conservation Advocate
NGillett@TucsonAudubon.org
300 E University Blvd #120
Tucson, AZ. 85705

Community Water Coalition of Southern Arizona
Melanie Mizell, Director
info@CommunityWaterSoAZ.org
PO Box 41512
Tucson, AZ. 85717

Save the Scenic Santa Ritas
Gayle Hartmann, Board Chairperson
Board@ScenicSantaRitas.org
8987 E Tanque Verde Rd #309
Tucson, AZ. 85749

Hummingbird Monitoring Network
Susan Wethington, Director
hummonnet@gmail.com
PO Box 115
Patagonia, AZ. 85624

Coalition for Sonoran Desert Protection
Carolyn Campbell, Executive Director
carolyn.Campbell@SonoranDesert.org
738 N 5th Ave, Suite 212
Tucson, Arizona 85705
520-388-9925

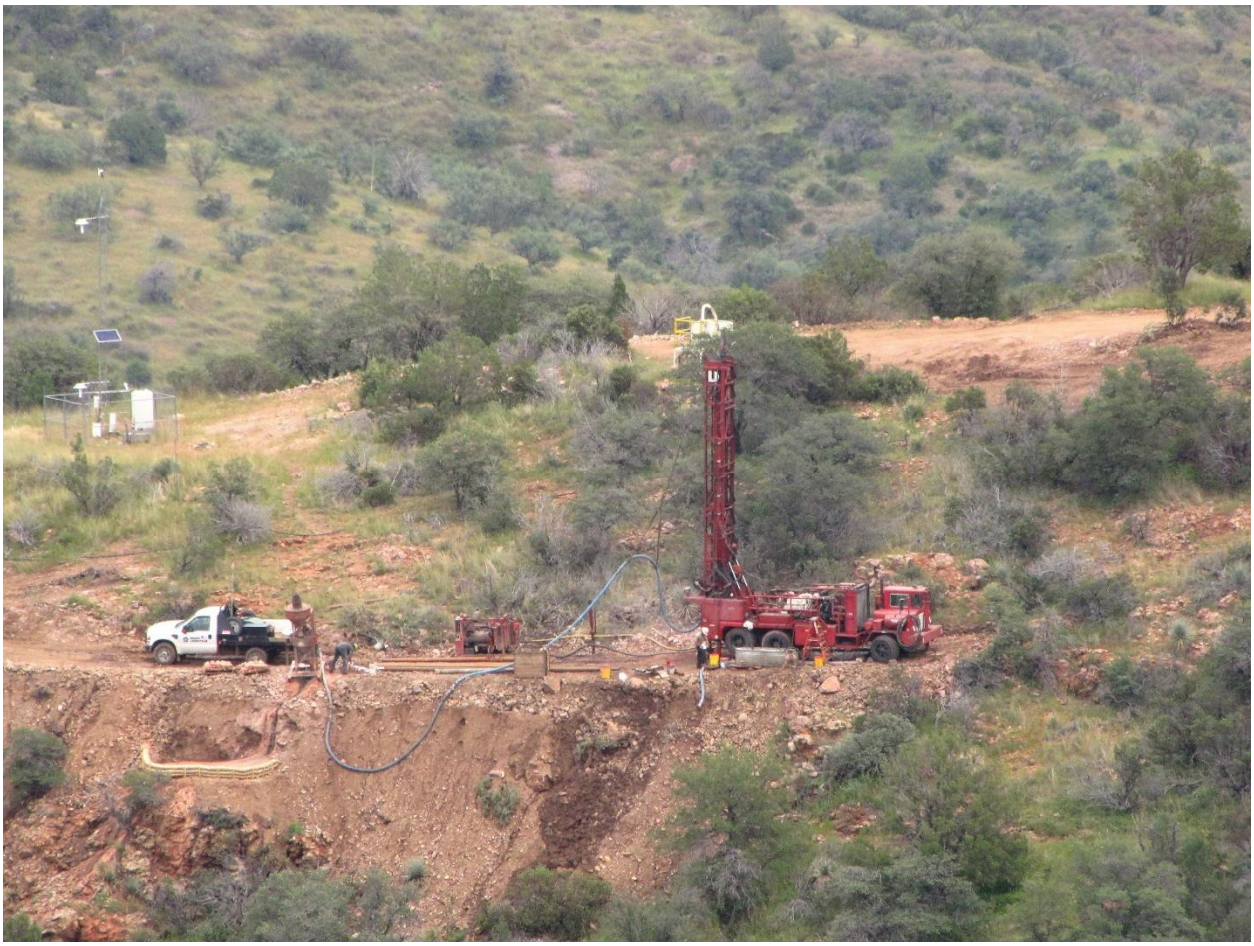


Figure 1. Hermosa drilling sump overflow, approx..2013.



Figure 2. Hermosa Underdrain Collection Pond and Portal Area.



Figure 3. Hermosa Project Site, Google Earth, May 2019.