



In Response Reply To:
Region 8-ES

United States Department of the Interior

FISH AND WILDLIFE SERVICE
California and Nevada Region
2800 Cottage Way, Room W-2606
Sacramento, California 95825-1846



Lisa Jorgensen, Environmental Project Manager
Department of Energy, Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401

JUL 07 2008

Subject: Notice of Intent to Prepare a Programmatic Environmental Impact Statement to Evaluate Solar Energy Development, Develop and Implement Agency-Specific Programs, Conduct Public Scoping Meetings, Amend Relevant Agency Land Use Plans, and Provide Notice of Proposed Planning Criteria (ER 08/0004)

We offer the below comments on the subject project as it relates to interests of the U.S. Fish and Wildlife Service within the jurisdiction of the California and Nevada Region. We preface the following comments by recognizing the need for development of renewable energy, and stand ready to offer our assistance as you navigate the challenge of balancing solar energy development with conserving our natural resources in the southwest.

Background

The Bureau of Land Management (BLM) and Department of Energy (DOE) are co-leads on developing the Programmatic Environmental Impact Statement (PEIS) that will evaluate solar energy development in six western states (Arizona, California, Colorado, New Mexico, Nevada, and Utah) and implement agency-specific programs that would establish environmentally responsible policies and mitigation strategies for this development. Through this process, the BLM expects to identify BLM-administered lands in the six-state study area that may be environmentally suitable for solar energy development and lands that would be excluded from such development. The PEIS will not include lands within the National Landscape Conservation System, such as National Conservation Areas, National Monuments, Wilderness Areas, Wilderness Study Areas, Wild and Scenic Rivers, and National Scenic and Historic Trails. The PEIS also will not include lands that the BLM has previously identified in its land use plans as environmentally sensitive, such as Areas of Critical Environmental Concern (ACECs) or other special management areas that are inappropriate for or inconsistent with extensive, surface-

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disturbing uses. The PEIS will also consider whether designation by BLM of additional electricity transmission corridors on BLM-administered lands is necessary to facilitate utility-scale solar energy development.

General Comments and Recommendations

Based on the number of applications already received and an unknown number expected to be submitted, the cumulative impacts of renewable energy projects across the southwest on listed, sensitive, and other wildlife and plant species and a variety of ecosystems may be substantial. In particular, potential wide-spread loss, degradation, or fragmentation of habitats outside special management areas due to direct, indirect, or cumulative effects of numerous large-scale renewable energy projects on public lands could place threatened and endangered species at additional risk. We are supportive of and recognize the need for development of renewable energy, and offer our assistance to reduce the magnitude and severity of impacts from these projects on Federal lands.

Because of the potential impacts to listed, sensitive, and other wildlife and plant species and their habitats, we recommend that a comprehensive strategy for achieving the goals of renewable energy projects in a sustainable manner that protects ecosystem integrity be articulated in the PEIS. Some topics for consideration as this process moves forward include, but are not limited to, the following:

- **Cost analysis:** The agencies should perform a study to compare the economic benefit/impact of retrofitting infrastructure within urban areas where energy is most needed versus constructing new solar plants within habitats that would require extensive transmission lines and transfer facilities to convey energy to the urban areas. The cost analysis should include all costs that are reasonably foreseeable during the development of energy facilities and associated infrastructure, such as the costs necessary to minimize and mitigate to natural and other resources on public lands.
- **Alternatives considered:** We strongly recommend that the PEIS include a least environmentally damaging alternative that would allow for the limited development of BLM lands with only relatively low wildlife habitat function, in combination with a package of incentives (or extension of existing incentives) through DOE to maximize local solar generation in currently urbanized communities. This would include retrofit of urban infrastructure to generate solar and wind power where it is needed most.
- **Definition of "other special management areas":** In addition to lands identified in the NOI as inappropriate for or inconsistent with extensive, surface-disturbing uses (*i.e.*, lands under the National Landscape Conservation System and ACECs), other special management areas that should be excluded from solar energy development include federally-designated critical habitats, Desert Wildlife Management Areas, and Wildlife Habitat Management Areas. These land allocations were assigned because the areas are considered environmentally sensitive and play an important role in the recovery and conservation of listed and sensitive species, and are therefore also inappropriate for

extensive, surface-disturbing uses.

- Site selection: The PEIS should include, but not be limited to, the following standards and guidelines for projects that will be located outside urban centers: Siting of projects should be focused on previously disturbed lands, both private and public; in close proximity to existing infrastructure and roads to minimize new disturbance; close to urban centers to minimize extensive utility lines and energy attenuation; away from critical habitats to minimize edge effects; and outside other conservation-specific lands. In addition, we recommend that BLM and DOE consider recovery actions and criteria contained in existing recovery plans for listed species when evaluating site locations of proposed energy projects in the PEIS.

The DOE and BLM should also analyze the effects of siting solar projects in areas designated in existing land use plans for other activities; the siting of solar projects in such areas could displace current uses, which could then affect fish and wildlife resources. For example, the BLM has designated several areas specifically as off-highway vehicle management areas. If current uses of these areas are displaced by solar projects, the BLM may determine a need exists to designate other off-highway vehicle management areas; such areas are generally not conducive to the management of fish and wildlife resources because of the extensive disturbance caused by vehicles. Alternatively, displaced users of these areas may begin to recreate illegally in other areas of the desert that have greater value for fish and wildlife resources.

- Cumulative effects: The PEIS should analyze public lands with regard to their value and function in maintaining viable ecosystems and compatibility with solar energy development. This information should then be used to analyze impacts of the solar energy program at the landscape scale, rather than on a project-by-project, site-by-site, or state-wide basis. We make this recommendation because species and habitat cross state lines and other legal boundaries. We envision that this analysis would identify additional areas, outside of those already identified in the NOI as unsuitable for solar development because of their value for maintaining ecosystem functions on other public lands.

In addition, we recommend the BLM adopt standards and guidelines to be used when individual projects are being considered to ensure that impacts at the scale of recovery or management units and of hydrological units are fully considered. In addition to spatial considerations, these standards and guidelines should allow for a clear analysis of the potential effects on physical features and behavioral needs, such as aquifers and migration corridors.

- General project-specific avoidance and minimization measures: (1) Avoiding vegetation removal during nesting/breeding season for migratory birds; (2) incorporating buffers along surface waters and riparian zones; (3) implementation of monitoring and adaptive management plans to address potential long-term hydrological effects and impacts to listed species related to project impacts; (4) appropriate off-site hazardous waste disposal; and (5) long-term raven (*Corvus corax*) monitoring and depredation plans to minimize

impacts to desert tortoise. Historically, translocation has been used to mitigate project impacts on desert tortoises; however, we do not consider this a standard operating procedure, and it may not be suitable for these projects. Large-scale research into translocation effects and effectiveness is being undertaken as part of the expansion of the National Training Center at Fort Irwin, California. Drawing from knowledge gained through this type of research, the draft revised desert tortoise recovery plan proposes development of specific guidelines and protocols for population augmentation, which will include guidance for translocation of individuals. Other avoidance and minimization measures may be required depending on the geographic location of the project and the species that may be affected.

- Policies and incentives: Federal and State policies and incentive programs that encourage individual homeowners, private business, and commercial industry to retrofit *existing* urban infrastructure to support solar and wind generated power should be legislated and existing programs should be extended. These types of incentives promise to reduce the impacts to natural landscapes and promote the use of renewable energy where it is needed most.

Potential impacts to federally-listed species, State-protected species, sensitive species, and migratory birds from solar energy development may be widespread and intense. Therefore, BLM and DOE should ensure that a thorough analysis be conducted in the PEIS that identifies all direct, indirect, and cumulative effects that are expected from solar energy projects and associated infrastructure as well as measures to avoid, minimize, or mitigate impacts to natural resources. Impacts are likely to result from vegetation clearance, surface and groundwater pumping for energy generation and maintenance, construction and maintenance of facilities and transmission lines, construction and maintenance of access roads, construction of staging areas, and transport and fate of hazardous materials. We also understand that each of the solar facilities will be have chain link fences constructed around project perimeters, which will result in considerable habitat fragmentation and elimination of wildlife corridors. We recommend that this component of project design be carefully analyzed relative to potential impacts to the wildlife species throughout the planning area. Other unforeseen impacts should be disclosed and analyzed as well.

Trust Resources that may be Affected by Solar Energy Development

For projects that are authorized, funded, or carried out by a Federal agency, we provide information on federally-listed species pursuant to section 7(c) of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*). We have attached a list of the federally listed and candidate species that occur in Nevada to facilitate landscape-level analyses of whether these species may be affected by solar development projects (Attachment 1). Please note that a species list and species-specific concerns and recommendations for California are not provided herein; however, we will continue to work with the BLM and DOE to provide this information as the PEIS process moves forward.

Large-scale, disjunct solar energy projects could have far-reaching impacts on listed species, particularly the threatened desert tortoise (*Gopherus agassizii*) and other widespread species,

through habitat loss, population and habitat fragmentation, changes in water flow (both surface and groundwater), introduction of pollutants, mortality by vehicle encounters, and alteration of the adjacent desert tortoise conservation areas (defined as lands targeted for species conservation such as Desert Wildlife Management Areas, ACECs, and designated critical habitat) through edge effects. We consider tortoise conservation areas to be the *minimum* baseline necessary within which to focus our recovery efforts, and activities occurring on lands beyond the boundaries of the conservation areas can affect tortoise populations and the effectiveness of conservation actions occurring within those boundaries. Effects from proposed solar energy projects combined with other impacts associated with human encroachment may have substantive effects to the desert tortoise and other listed and sensitive species and may impact the integrity of essential characteristics of terrestrial and aquatic ecosystem as a whole. Therefore, we recommend that solar energy projects should be excluded within desert tortoise conservation areas and designated critical habitats of other listed species to ensure recovery efforts can progress.

In addition, solar energy projects and/or associated utility corridors (*i.e.*, Westwide Energy Corridor Project) may impact the Large-Scale Translocation Site (LSTS) for the desert tortoise, which is located near Jean, Nevada. The LSTS encompasses approximately 27,098 acres of lands managed by the BLM, and has been used as a site for the past 10 years to translocate desert tortoises that are displaced by development in Clark County, Nevada. We recommend that solar energy projects and utility corridors avoid the LSTS.

As discussed below, potential long-term hydrological effects and impacts to listed and sensitive species as they relate to solar energy projects should be carefully considered. Water may be needed in significant amounts to cool condensers and/or generate steam for power generation, depending on the technology used for the proposed solar energy projects. We recommend that the effects (direct, indirect, and cumulative) of water withdrawal on listed and sensitive species dependent upon ground-water are thoroughly disclosed and analyzed in the PEIS.

In Nevada, proposed solar energy projects may affect listed and sensitive species dependent on the White River and Death Valley regional groundwater flow systems. Desert fish species may be impacted by small changes in groundwater levels, water quality, or flow patterns, as many inhabit spring systems that are recharged by one of these systems. Listed desert fishes such as the White River springfish (*Crenichthys baileyi baileyi*), Hiko White River springfish (*Crenichthys baileyi grandis*), Railroad Valley springfish (*Crenichthys nevadae*), Pahrump poolfish (*Empetrichthys latos*), Pahrnagat roundtail chub (*Gila robusta jordani*), White River spinedace (*Lepidomeda albivallis*), Big Spring spinedace (*Lepidomeda mollispinis pratensis*), and Moapa dace (*Moapa coriacea*) are dependent on recharge from the White River groundwater flow system. This system is comprised of the pluvial White River, which extends from Ely in central Nevada to the Moapa Valley in southern Nevada.

The Death Valley regional groundwater flow system runs west from the White River flow system and extends into the Ash Meadows and Death Valley regions. Listed aquatic species that may be affected by groundwater withdrawal from proposed energy projects from this system include Devils Hole pupfish (*Cyprinodon diabolis*), Ash Meadows Amargosa pupfish (*C. nevadensis mionectes*), Warm Springs pupfish (*C. n. pectoralis*), Ash Meadows speckled dace (*Rhinichthys*

osculus nevadensis), and the aquatic insect, Ash Meadows naucorid (*Ambrysus amargosus*).

In addition, several plant species listed under the Act, such as the Ash Meadows milkvetch (*Astragalus phoenix*), spring-loving centaury (*Centaureium namophilum*), Ash Meadows gumplant (*Grindelia fraxinoprattensis*), Ash Meadows ivesia (*Ivesia eremica*), and the Amargosa niterwort (*Nitrophila mohavensis*) are dependant upon groundwater discharge. Slight decreases or changes in discharge may render large areas of habitat unsuitable for these plants. Because the Death Valley regional groundwater system is not apportioned in the State of California and thus not regulated, listed plant and fish species mentioned above may be particularly impacted by proposed energy project requiring groundwater withdrawal from this system.

Proposed solar energy projects and utility corridors in eastern California may also impact Sierra Nevada bighorn sheep (*Ovis canadensis sierrae*). We proposed the designation of critical habitat for this species in 2007 (72 FR 40956) in portions of five California counties, including Tuolumne, Mono, Fresno, Inyo, and Tulare counties.

Species of Concern

Relative to solar energy development in Nevada, we have concerns regarding the following non-listed, species of concern:

The pygmy rabbit (*Brachylagus idahoensis*) generally occurs throughout sagebrush habitat areas of Nevada and eastern California. Information regarding the actual distribution of this species is limited. We have been petitioned to list the pygmy rabbit, and although we published a not substantial 90-day finding, a recent court-ordered remand of this decision requires that we reinitiate the finding process. Potential impacts to pygmy rabbit are similar to those identified below for sage-grouse, and we are equally concerned about conservation of this species.

Desert bighorn sheep (*Ovis canadensis nelsoni*) may be impacted by utility corridors in southern Nevada, particularly in the vicinity of the Desert National Wildlife Refuge. This subspecies occupies rocky, rugged terrain and will forage in open habitats such as meadows and low, sparse shrublands.

The greater sage-grouse (*Centrocercus urophasianus*) occurs in most counties in Nevada as well as select counties in eastern California. This species has been the subject of numerous listing petitions and legal actions. Although we determined that listing was not warranted in 2005, a court-ordered remand of this determination was issued recently that requires us to initiate a new status review, and we remain concerned with the conservation of this species. Solar energy development and utility corridors may impact sage-grouse lek sites, nesting habitat, and winter habitat and result in habitat loss, habitat fragmentation, disruption of leking and nesting behavior, and alterations to predator-prey dynamics.

Banded Gila monster (*Heloderma suspectum cinctum*) is listed as sensitive by Nevada's Natural Heritage Program and is protected under the Nevada Administrative Code 503.080. The banded Gila monster occurs primarily in the Mojave Desert scrub and salt desert scrub ecosystems in southern Nevada, southeastern California, southwestern Utah, and western Arizona. The banded

Gila monster is one of only two venomous lizard species in the world. Gila monsters are difficult to locate as they spend the majority of the year in underground burrows; however, illegal collection, construction of roads, and loss of habitat continue to threaten this sensitive species. Given that the Gila monster is known to occur within the geographic area, we recommend that you evaluate project impacts to any existing populations and suitable habitat for this species. If it is determined that the project may result in impacts to Gila monsters, we suggest that you contact the Nevada Department of Wildlife.

The Amargosa toad (*Bufo nelsoni*), a toad species endemic to the Oasis Valley in Nevada and protected under Nevada State law, may be impacted by energy development within its range. A conservation agreement was completed in 2000, which identifies specific conservation measures that are expected to reduce or eliminate threats to the species, enhance habitat, and maintain a properly functioning ecosystem for the species of Oasis Valley. Any solar energy projects or utility corridors through the Oasis Valley should avoid riparian and spring habitats. This species is most at risk from depletion of the Amargosa River and groundwater resources within the hydrologic basin associated with solar energy production and maintenance of facilities; therefore, given the potential direct and indirect impacts to the species and its habitat, we recommend that solar energy development is consistent with the goals and objectives of the agreement and strategy.

Southern Nevada is home to the threecorner milkvetch (*Astragalus geyeri* var. *triquetrus*) and sticky wild buckwheat (*Eriogonum viscidulum*), both listed as critically endangered by the State of Nevada under Nevada Revised Statutes 527.260. Both species are also listed as BLM special status species. As State listed plants, these species may not be removed or destroyed at any time by any means except under special permit issued by the State Forester (NRS 527.270). If you determine that these species and their habitats occur on Federal lands within the project area and project implementation would impact the species, a permit from the State of Nevada is required. Requests for permits should be directed to the State Forester, Nevada Division of Forestry. Consideration of these species during project planning and early coordination with the State is important to assist with species conservation efforts and to prevent the need for Federal listing actions in the future.

Migratory Birds

Our agency also holds conservation responsibilities and management authority for migratory birds under the Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. 703 *et seq.*). Projects should be evaluated for potential impacts to migratory birds in the area. Under the MBTA, nests (nests with eggs or young) of migratory birds may not be harmed, nor may migratory birds be killed. Such destruction may be in violation of the MBTA. Therefore, we recommend land clearing, or other surface disturbance associated with proposed projects, be conducted outside the avian breeding season to avoid potential destruction of bird nests or young, or birds that breed in the area. If this is not feasible, we recommend a qualified biologist survey the area prior to land clearing. If nests are located, or if other evidence of nesting (*i.e.*, mated pairs, territorial defense, carrying nesting material, transporting food) is observed, a protective buffer (the size depending on the habitat requirements of the species) should be delineated and the area avoided to prevent destruction or disturbance to nests until they are no longer active.

In particular, the State-protected western burrowing owl (*Athene cunicularia hypugea*) is susceptible to widespread potential impacts from solar energy development. The western burrowing owl is a BLM sensitive species and identified by the Service as a bird of conservation concern. The reduction of habitat in southern Nevada is a major threat to this species; therefore, we recommend that occupied nests are avoided. If this is not possible, we ask that the recommendations in our pamphlet, "Protecting Burrowing Owls at Construction Sites in Nevada's Mojave Desert Region" (Attachment 2), be incorporated as appropriate.

There is also the potential of avian electrocution hazard from use of transmission lines. As you may know, power line electrocutions are a cause of mortality in raptors and other migratory birds. Electrocutions may cause power outages that inconvenience customers, spark grass and forest fires, and result in lost revenue. Electrocutions can be avoided by making relatively inexpensive design modifications to power lines and poles. Therefore, we have been working with the electric utility industry to develop voluntary guidelines intended to reduce the operation and avian risks that result from interactions with electric utility facilities. The Avian Protection Plan (APP) Guidelines can be found at www.aplic.org. We recommend that the APP Guidelines are followed during the construction and operation of proposed transmission lines.

Lastly, the following general recommendations would minimize possible impacts to migratory birds from construction of new structures in the Mojave Desert. Holes, gaps, or hollow spaces in the proposed facilities or structures could cause cavity-nesting migratory birds to enter and become entrapped in these spaces; holes as small as 0.75 inch in diameter could trap birds. We recommend that gaps or narrow open hollow spaces in the proposed facilities or structures be closed during construction to prevent bird entry. In addition, open-ended posts of any material or color, used to mark boundaries at construction sites should be capped; however, since caps can deteriorate over time, use of solid posts is preferred. To prevent raptors and other migratory birds from getting their feet trapped in metal sign posts, any exposed holes near the top of posts should be filled with rivets, bolts or nuts. These conservation measures for migratory birds should be included in the PEIS.

Water Issues

Streams, seeps, springs, and isolated wetlands are important aquatic features in the arid southwest that provide habitat for many species of macroinvertebrates, amphibians, reptiles, fish, birds, mammals, and plants. Impacts to these areas should be avoided to the maximum extent possible. Upland buffers around these aquatic habitats are essential in providing a zone of protection from areas of development. Buffers also provide corridors for wildlife movement, nesting habitat, and upland foraging habitat in conjunction with water quality protection.

Impacts from solar energy development on groundwater resources are also of concern. Reductions in groundwater flows and the ability to recharge associated aquifers can result in surface hydrological changes on hundreds of thousands of acres. The expected surface and groundwater requirement to construct, operate, and maintain solar energy facilities should be quantified and thoroughly analyzed for potential impacts to the aquatic resources, associated terrestrial resources, and wildlife species and plants.

In addition, because ephemeral washes may occur in or in the vicinity of the project area, we ask that you be aware of potential impacts project activities may have on these resources, as they serve as important habitats for many desert species, including the desert tortoise. Discharge of fill material into wetlands or waters of the United States is regulated by the U.S. Army Corps of Engineers (Corps) pursuant to section 404 of the Clean Water Act of 1972, as amended. We recommend you contact the Corps' Regulatory Section at 321 North Mall Drive, Suite L-101, St. George, Utah 84790-7314, (435) 986-3979 regarding the possible need for a permit.

Depletions such as evaporative losses and/or consumptive use of surface or groundwater within affected hydrological basins should be articulated and quantified in the PEIS. Specifically, estimates of the amount and timing of average annual water use (both historic and new uses) and methods of arriving at such estimates; locations of where water use and/or diversion occurs; if and when water will be returned to the system; and a characterization of specific water uses. The document should identify measures that will be taken during project planning, construction, and operation to avoid, minimize, and mitigate impacts to aquatic resources. In light of their importance and relative scarcity in the arid southwest, impacts to aquatic and riparian resources should be avoided first and unavoidable impacts should be fully mitigated. Both aquatic habitats and the adjacent upland buffers should be considered in project-specific design. Please note that we may have additional project-specific questions and recommendations regarding potential consumptive use of water for solar energy development.

Because of the significant amount of water resources that would be required to operate proposed energy projects, we recommend the BLM and DOE include in their policy a requirement that project proponents must use technology that utilizes the least amount of water for power generation.

Habitat Loss, Degradation, and Fragmentation

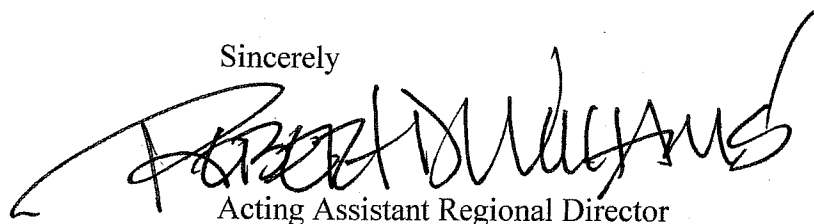
Activities adjacent to lands allocated for conservation (National Landscape Conservation System lands, ACECs, Wildlife Habitat Management Areas, Desert Wildlife Management Areas, National Wildlife Refuge System lands, National Park Service lands, designated critical habitats, etc.) can affect animal and plant populations and the effectiveness of conservation and recovery actions occurring within these management area boundaries through edge effects, and large-scale, disjunct projects may compromise recovery of the listed species through habitat fragmentation and degradation, even if disturbance only occurs outside designated special management areas. For example, potential effects of large-scale disturbance outside desert tortoise conservation areas include habitat loss, population and habitat fragmentation, changes in water flow, the introduction of pollutants, mortality by vehicles encounters, and edge effects. Edge effects in the Mojave Desert include proliferation of non-native and predator species, both of which are major threats to the desert tortoise. Because desert tortoises are wide-ranging, long-lived, and impacted by multiple, synergistic threats, the long-term persistence of extensive, unfragmented habitat is essential for the survival of the species. Especially given uncertainties related to the effects of climate change on threatened and endangered populations and distribution, we consider those lands already allocated for conservation to be the minimum baseline within which to focus recovery efforts.

As with all projects that require surface disturbance, there is a high potential for introduction and spread of non-native, invasive weeds. The spread of invasive species is known to alter fire ecology and increased frequency of wildfire. Changes in plant community composition caused by non-native plants and recurrent fire can negatively affect species such as desert tortoise by altering habitat structure and species available as food plants. All possible measures should be taken to prevent the introduction or further proliferation of invasive species. The PEIS should incorporate stipulations specific to mitigation, revegetation, and restoration efforts for impacts to wildlife and plant habitats, for instance, revegetation seed mixes should be comprised of native plant species and non-native species that will *not* naturalize, monitoring programs and contingency plans should be developed that identify appropriate success criteria, and adaptive management programs should be implemented.

We appreciate the opportunity to comment on the referenced project and offer our perspective on environmentally responsible policies for solar energy development in the southwest. We look forward to continuing to work together with the BLM and other agencies and stakeholders through this process. As the PEIS is developed and as project-specific information and analyses become available, we will continue to provide recommendations and input on alternatives to the cooperating agencies. Please do not hesitate to contact me should you have any questions or require any additional information on our trust resources.

If you have any questions regarding this matter, please contact Darrin Thome, Region 8, Section 7, HC, & EC Program Manager at (916) 414-6533.

Sincerely

A handwritten signature in black ink, appearing to read "Robert Williams". The signature is written in a cursive, flowing style with a long horizontal stroke at the end.

Acting Assistant Regional Director

Enclosures

cc: Solar Energy PEIS Scoping, Argonne National Laboratory
Field Supervisor, VFWO
Field Supervisor, NFWO
Field Supervisor, CFWO

**U. S. FISH AND WILDLIFE SERVICE
NEVADA FISH AND WILDLIFE OFFICE**

**ENDANGERED, THREATENED, PROPOSED, and CANDIDATE SPECIES within the GEOGRAPHIC
AREA (NV and part of CA) covered by the NEVADA FISH AND WILDLIFE OFFICE**
(Updated May 14, 2008)

Species	Federal Status	Critical Habitat in NV/CA	Office Lead	State NV/CA
Mammals				
Fisher, <i>Martes pennanti</i> (West Coast DPS)	C	N/A	YFWO	CA
Bighorn sheep, <i>Ovis canadensis sierrae</i> (Sierra Nevada DPS)	E	P	VFWO	CA
Birds				
Yellow-billed cuckoo, <i>Coccyzus americanus</i> (Western U.S. DPS)	C	N/A	SFWO	NV/CA
Southwestern willow flycatcher, <i>Empidonax traillii eximiu</i>	E	Y	AESFO	NV
Yuma clapper rail, <i>Rallus longirostris yumanensis</i>	E	N	AESFO	NV
Reptile				
Desert tortoise, <i>Gopherus agassizii</i> (Mojave population)	T	Y	NFWO	NV/CA
Amphibians				
Yosemite toad, <i>Bufo canorus</i>	C	N/A	SFWO	CA
Columbia spotted frog, <i>Rana luteiventris</i> (Great Basin DPS)	C	N/A	NFWO	NV
Mountain yellow-legged frog, <i>Rana muscosa</i> (Sierra Nevada DPS)	C	N/A	SFWO	NV/CA
Relict leopard frog, <i>Rana onca</i>	C	N/A	SNFO	NV
Fishes				
Warner sucker, <i>Catostomus warnerensis</i>	T	N	BFO	NV/CA
Cui-ui, <i>Chasmistes cujus</i>	E	N	NFWO	NV
White River springfish, <i>Crenichthys baileyi baileyi</i>	E	Y	SNFO	NV
Hiko White River springfish, <i>Crenichthys baileyi grandis</i>	E	Y	SNFO	NV
Railroad Valley springfish, <i>Crenichthys nevadae</i>	T	Y	NFWO	NV
Devils Hole pupfish, <i>Cyprinodon diabolis</i>	E	N	SNFO	NV
Ash Meadows Amargosa pupfish, <i>C. nevadensis mionectes</i>	E	Y	SNFO	NV
Warm Springs pupfish, <i>Cyprinodon nevadensis pectoralis</i>	E	N	SNFO	NV
Pahrump poolfish, <i>Empetrichthys latos</i>	E	N	SNFO	NV
Desert dace, <i>Eremichthys acros</i>	T	Y	NFWO	NV
Humpback chub, <i>Gila cypha</i> *	E	N	CESFO	NV
Bonytail chub, <i>Gila elegans</i>	E	Y	AESFO	NV
Pahranagat roundtail chub, <i>Gila robusta jordani</i>	E	N	SNFO	NV
Virgin River chub, <i>Gila seminuda</i> ^a	E	Y	UFOSLC	NV
White River spinedace, <i>Lepidomeda albivallis</i>	E	Y	NFWO	NV
Big Spring spinedace, <i>Lepidomeda mollispinis pratensis</i>	T	Y	SNFO	NV

E = Endangered; T = Threatened; C = Candidate

Y = Yes; N = No; P = Proposed; N/A = Not Applicable

* = Believed extirpated from Nevada; ^a Endangered only in the Virgin River; population in Muddy River is species of concern.

AESFO = Arizona Ecological Services Field Office, BFO = Bend Field Office, CESFO = Colorado Ecological Services Field Office, KFFWO = Klamath Falls Fish and Wildlife Office, NFWO = Nevada Fish and Wildlife Office, SFWO = Sacramento Fish and Wildlife Office, SNFO = Southern Nevada Field Office, UFOSLC = Utah Field Office Salt Lake City, VFWO = Ventura Fish and Wildlife Office, YFWO = Yreka Fish and Wildlife Office

**U. S. FISH AND WILDLIFE SERVICE
NEVADA FISH AND WILDLIFE OFFICE**

**ENDANGERED, THREATENED, PROPOSED, and CANDIDATE SPECIES within the GEOGRAPHIC
AREA (NV and part of CA) covered by the NEVADA FISH AND WILDLIFE OFFICE**
(Updated May 14, 2008)

Species	Federal Status	Critical Habitat in NV/CA	Office Lead	State NV/CA
Moapa dace, <i>Moapa coriacea</i>	E	N	SNFO	NV
Lahontan cutthroat trout, <i>Oncorhynchus clarki henshawi</i>	T	N	NFWO	NV/CA
Paiute cutthroat trout, <i>Oncorhynchus clarki seleniris</i>	T	N	NFWO	CA
Woundfin, <i>Plagopterus argentissimus</i>	E	Y	UFOSLC	NV
Colorado pikeminnow, <i>Ptychocheilus lucius</i> *	E	N	CESFO	NV
Independence Valley speckled dace, <i>Rhinichthys osculus lethoporus</i>	E	N	NFWO	NV
Ash Meadows speckled dace, <i>R. osculus nevadensis</i>	E	Y	SNFO	NV
Clover Valley speckled dace, <i>R. osculus oligoporus</i>	E	N	NFWO	NV
Bull trout, <i>Salvelinus confluentus</i> (Jarbidge River DPS)	T	N	NFWO	NV
Razorback sucker, <i>Xyrauchen texanus</i>	E	Y	AESFO	NV
Invertebrates				
Ash Meadows naucorid, <i>Ambrysus amargosus</i>	T	Y	SNFO	NV
Elongate mud meadows springsnail, <i>Pyrgulopsis notidicola</i>	C	N/A	NFWO	NV
Carson wandering skipper, <i>Pseudocopaedodes eunus obscurus</i>	E	N	NFWO	NV/CA
Plants				
Ash Meadows milk-vetch, <i>Astragalus phoenix</i>	T	Y	SNFO	NV
Spring-loving centauray, <i>Centaureum namophilum</i>	T	Y	SNFO	NV
Ash Meadows sunray, <i>Enceliopsis nudicaulis</i> var. <i>corrugata</i>	T	Y	SNFO	NV
Churchill Narrows buckwheat, <i>Eriogonum diatomaceum</i>	C	N/A	NFWO	NV
Steamboat buckwheat, <i>Eriogonum ovalifolium</i> var. <i>williamsiae</i>	E	N	NFWO	NV
Ash Meadows gumplant, <i>Grindelia fraxinopratenensis</i>	T	Y	SNFO	NV
Ash Meadows ivesia (mousetail) <i>Ivesia eremica</i> (= <i>I. kingii</i> var. <i>eremica</i>)	T	Y	SNFO	NV
Webber's ivesia, <i>Ivesia webberi</i>	C	N/A	NFWO	NV/CA
Ash Meadows blazing star, <i>Mentzelia leucophylla</i>	T	Y	SNFO	NV
Amargosa niterwort, <i>Nitrophila mohavensis</i>	E	N	SNFO	NV
Soldier Meadows cinquefoil, <i>Potentilla basaltica</i>	C	N/A	NFWO	NV
Tahoe yellow cress, <i>Rorippa subumbellata</i>	C	N/A	NFWO	NV/CA
Ute lady's tresses, <i>Spiranthes diluvialis</i>	T	N	UFOSLC	NV
Las Vegas Buckwheat, <i>Eriogonum corymbosum</i> var. <i>nilesii</i>	C	N/A	SNFO	NV

E = Endangered; T = Threatened; C = Candidate

Y = Yes; N = No; P = Proposed; N/A = Not Applicable

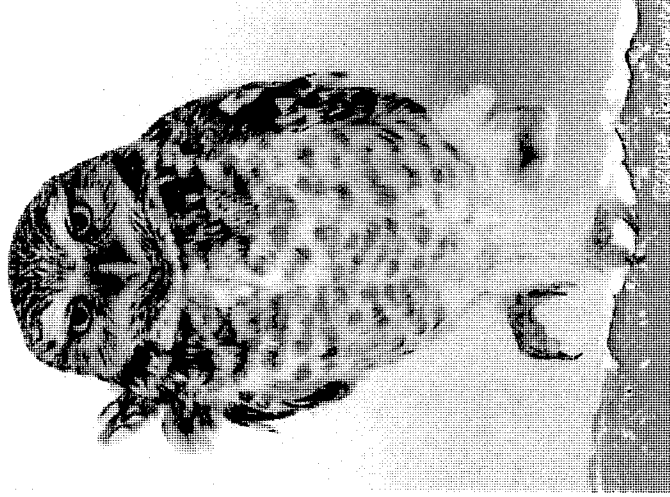
* = Believed extirpated from Nevada; ^a Endangered only in the Virgin River; population in Muddy River is species of concern.

AESFO = Arizona Ecological Services Field Office, BFO = Bend Field Office, CESFO = Colorado Ecological Services Field Office, KFFWO = Klamath Falls Fish and Wildlife Office, NFWO = Nevada Fish and Wildlife Office, SFWO = Sacramento Fish and Wildlife Office, SNFO = Southern Nevada Field Office, UFOSLC = Utah Field Office Salt Lake City, VFWO = Ventura Fish and Wildlife Office, YFWO = Yreka Fish and Wildlife Office

U. S. Fish and Wildlife Service

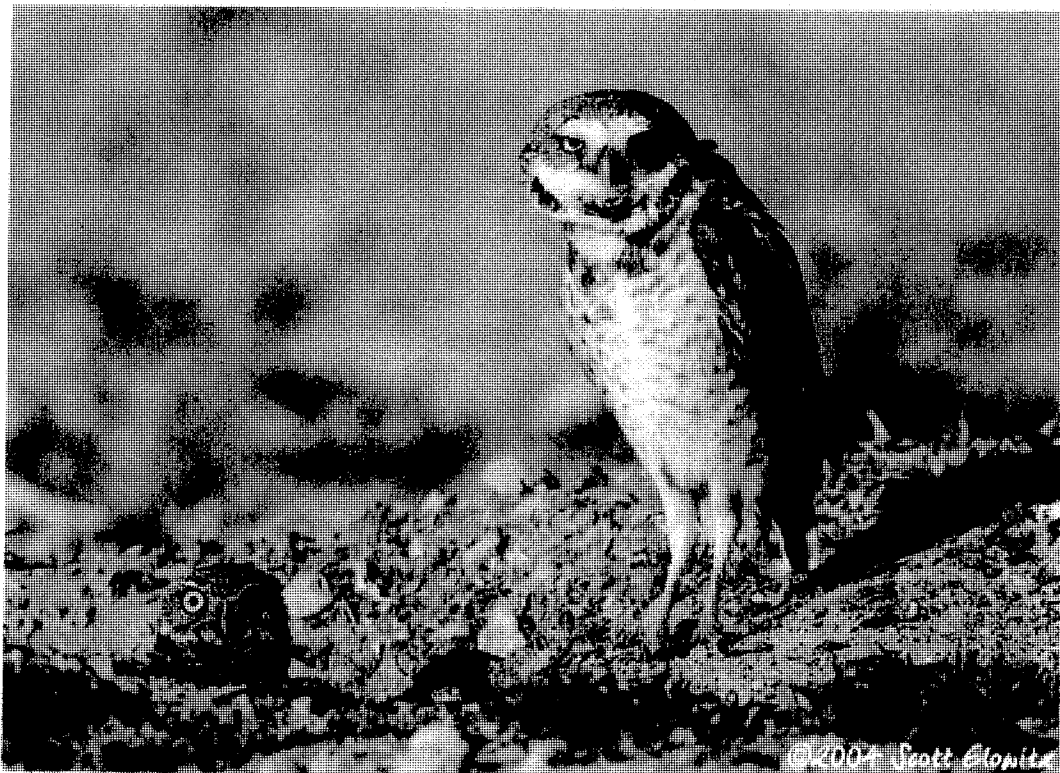
Nevada Fish and Wildlife Office
*Conserving the Biological Diversity of Great Basin, Eastern Sierra
& Mojave Desert*

**PROTECTING BURROWING OWLS
AT CONSTRUCTION SITES
IN NEVADA'S MOJAVE DESERT REGION**



Burrowing owl numbers are declining despite protection under the Migratory Bird Treaty Act. Killing or possessing these birds or destruction of their eggs or nest is prohibited.

Be part of the solution; help these owls!



U.S. Fish and Wildlife Service
Nevada Fish and Wildlife Office
4701 N. Torrey Pines Drive
Las Vegas, NV 89130
Phone: 702-515-5230
Fax: 702-515-5231

<http://www.fws.gov/nevada>

Though burrowing owls are capable of digging their own burrows, they often will use burrows of other animals for shelter and nesting. They will even adopt pipes or culverts 6" to 8" in diameter.

Tips for Protecting Burrowing Owls, Their Eggs and Young at Construction Sites:

Even though burrowing owls are often active during the day, always check burrows, cracks, and crevices for owls before beginning construction. Use of a fiber-optic scope or remote mini-camera to look into a burrow can help determine the presence of owls or nests. Ensure owls and eggs are not present in burrows when grading begins, to avoid burying them.

In southern Nevada, owls breed from about mid-March through August. If a burrow has an active nest, the site must be avoided until the chicks have fledged. To ensure that birds will not abandon the nest, a buffer of at least a 250-foot radius should be placed around the burrow, within which no construction should occur. It takes a minimum of 74 days from when eggs are laid until chicks are able to fly (fledge). After the young have fledged, check the nest burrow for any owlets before resuming construction.

The following owl behaviors may help determine breeding or the presence of an active nest:

- **A pair of owls is initially observed at a site, then only one owl is observed.** This may indicate that the pair has chosen a nest burrow, and the female has gone down into the burrow to lay and incubate eggs. Once incubation begins the female rarely leaves the burrow.
- **An owl is frequently observed carrying food to the burrow.** The male provides food for the female while she is incubating eggs. The best time of day to observe owls is dawn and dusk, but they may be active throughout the day. The male will most likely leave the food in front of the burrow and the female will come to the entrance to take

the food. This is probably the best indication that the owls have an active nest.

- **Only one owl has been seen for a period of time; then, two owls are observed.** This may indicate that either the nest has failed, or the eggs have hatched, and the female has emerged from the burrow to assist the male in hunting for food to feed the chicks. The chicks will appear at the burrow entrance when they are about 10 days old.

If you are unsure of breeding status, seek the assistance of a professional biologist or other knowledgeable person. Should breeding behavior be observed, presence of an active nest should be assumed and the area avoided until the chicks have fledged or the nest is no longer occupied.

IMPORTANT! In the Mojave Desert portions of Clark, southern Lincoln and Nye counties, owls may use desert tortoise burrows for nesting and shelter. Desert tortoises are protected under the Endangered Species Act. Killing, harming, or harassing desert tortoises, including destruction of their nests with eggs, without prior authorization is prohibited by Federal law.*

*** IF YOUR PROJECT IS IN CLARK COUNTY, PLEASE READ ON:**

Clark County holds a permit from the U.S. Fish & Wildlife Service authorizing "take" of desert tortoises during the course of otherwise legal activities on non-federal lands. **In Clark County only**, discouraging burrowing owls from breeding in the construction site on private property is allowed by collapsing tortoise burrow's during the owl's non-breeding season (September through February). This may help avoid construction delays. Prior to collapsing a burrow, always check for owls or other protected wildlife occupying the burrow for the winter. Call the Nevada Department of Wildlife at 702-486-5127 if a Gila monster is found as this is a State protected species.

Thank you for your assistance in protecting migratory birds and Nevada's endangered and threatened species!