PO Box 63
Shoshone, CA 92384
(702) 900-7589
www.amargosaconservancy.org

Solar Energy Programmatic EIS Scoping,
1849 C Street NW
Washington, DC 20240.

Submitted electronically via email to: solar@blm.gov

Thank you for this opportunity for the Amargosa Conservancy to provide comments on the Draft Utility-Scale Solar Energy Development PEIS/RMPA (DOI-BLM-HQ-3000-2023-0001-RMP-EIS)

These comments summarize the Conservancy's concerns regarding groundwater use by solar facilities. We reserve the right to submit or sign onto additional comments to express concerns about other relevant issues.

The Amargosa Conservancy is a 501(c)3 non-profit organization with over 1,800 members and supporters based in Shoshone, California and has been the leading voice for the conservation of the Amargosa Basin for two decades. The Amargosa Conservancy is dedicated to standing up for the wilds, waters, and communities of the scenic Amargosa Basin and Eastern Mojave. The Conservancy engages in advocacy, education, science, on-the-ground conservation, and land preservation in order to promote the long-term sustainable health of the Amargosa Basin watershed.

The Amargosa Basin is one of the most hydrologically and biologically unique places in North America. Centered on the Amargosa River and several tributaries, it is home to dozens of species that live nowhere else on Earth. The springs in Nevada and California that create the river in Oasis Valley, Ash Meadows, Shoshone and Tecopa, and into Death Valley National Park are the product of a vast carbonate aquifer flow system which underlies dozens of valleys in the southwestern Great Basin. These springs sustain human communities which rely on the water for survival and economic growth. The watershed also sustains delicate biological communities that otherwise would not exist in the hottest, driest place on the continent.

The Amargosa Basin spans two states, Nevada and California; and four counties, Nye, Clark, Inyo, and San Bernardino; and has a variety of land management and protective designations. Public lands within the basin are managed by the Bureau of Land Management (BLM), the National Park Service, the US Fish and Wildlife Service, the U.S. Forest Service, the Department of Defense, and the Department of Energy. The Basin contains numerous protected areas including Ash Meadows National Wildlife Refuge, home to the densest concentration of endemic species in North America; eight BLM Wilderness Areas, eight Areas of Critical Environmental Concern, and one Wilderness Study Area; Death Valley National Park, the largest national park in the lower 48 states; the Spring Mountains National Conservation

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Area; numerous private nature preserves managed by The Nature Conservancy; significant portions of the Old Spanish National Historic Trail; and 33.7 miles of the Amargosa Wild and Scenic River (AWSR). The federal reserve water rights for the AWSR, Death Valley National Park, and the eight Wilderness areas were established by statute.

The Amargosa Basin is host to 15 species of groundwater-dependent plants and animals protected as threatened or endangered under the Endangered Species Act (ESA). These include four fishes, one invertebrate, seven plants, one mammal, and two migratory birds. The groundwater which gives rise to the Amargosa River also is essential to the continued existence of these species. As many as 50 additional groundwater dependent endemic species have been identified within the Basin.

From its beginnings in the Oasis Valley north of Beatty to its ultimate evaporation on the salt flats of Badwater Basin in Death Valley National Park, the Amargosa's water provides the vital resource which sustains life throughout the watershed. It is a complex hydrological system, which has only been thoroughly studied and documented in the past twenty years or so. It has become apparent over the past several decades of monitoring that the watershed is very sensitive to groundwater pumping or hydrological diversion activities. Decreasing or increasing the amount of water flowing through the system at one point in the system will inevitably entail changes at another point. Increasing development pressures over the last 50 years throughout the basin have contributed to the alteration and diminution of downgradient flows. Additionally, intensified drought, flooding, and evapotranspiration associated with climate change continues to impact groundwater flows in myriad ways.

The Amargosa Basin is broadly defined as the topographic watershed and ground watershed of the Amargosa River, including Nevada groundwater basins 228, 227B, 229, 227A, 226, 225, 230, 162 (including portions in California), and likely additional basins further to the north and east; and the topographic watershed of the Amargosa River in California, including Chicago Valley, California Valley, Silurian Valley, Shadow Valley, the Amargosa River Valley, and Death Valley itself.

The springs, seeps, and flows in areas including Ash Meadows National Wildlife Refuge and Death Valley National Park are dependent on groundwater flows extending from Beatty, NV through the Amargosa Desert. Groundwater management in this area has been significantly structured around the preservation of water levels in the Devils Hole, a disjunct enclave of Death Valley National Park within Ash Meadows NWR. Though water levels in the Devils Hole have stabilized as a result of management actions intended to protect the Devils Hole pupfish (*Cyprinodon diabolis*), reports of decline in domestic wells in Amargosa Valley signal ongoing imbalance of use and recharge in this region.

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A substantial portion of the water in the Amargosa groundwater flow system also comes from the Pahrump Valley aquifer, which in turn receives recharge principally from the Spring Mountains as well as from groundwater flows from several contributory basins in Southern Nevada. This water flows through carbonate bedrock and alluvial fill aquifers beneath the Nopah Range and emerges at key springs such as Twelvemile Spring, Resting Spring, Tecopa Hot Springs, Chappo Spring, and Shoshone Spring, as well as in the flow of the Amargosa Wild & Scenic River. Surface flows of these and other springs have already experienced a precipitous decline as a result of aquifer overdraft, almost certainly the result of historical over-pumping in the Pahrump Valley.

Hydrological conditions and historical trends indicate that any groundwater withdrawals within the Amargosa Desert or the Pahrump Valley aquifer could have continued detrimental effects on groundwater flows and dependent resources within the Amargosa River system itself.

SUMMARY OF CONCERNS AND DESIRED ANALYSIS

Virtually all resource values in the Amargosa Basin depend on sustained groundwater flows for their survival. As such, the conservation of groundwater resources needs to be a chief guiding priority in assessing the suitability of public lands in this region and around the arid West for industrial development, including solar.

We are pleased to see the BLM is already taking into consideration impacts to groundwater resulting from industrial solar development in sensitive areas such as Ash Meadows and the Devils Hole in the Amargosa Desert. In October of 2023, the BLM Southern Nevada District Office conducted an application prioritization process for nine proposed solar projects in the Amargosa Desert. Of the nine applications evaluated, six were conferred low priority status based on the explicit rationale that "...the application(s) proposed development within an area where modifications to surface hydrology/groundwater pumping may have adverse effects on Ash Meadows National Wildlife Refuge, Ash Meadows ACEC, Death Valley National Park (Devil's Hole), and to the thirteen threatened or endangered species (ESA) and their critical habitats that are present within them."[1] We support BLM's use of groundwater impacts as a meaningful criterion in determining suitability for solar development, and believe such a consideration sufficiently demonstrates the need to exclude areas like the Amargosa Desert and Pahrump Valley as part of this planning process.

The State of the Basin Report (SBR) 2020 (see attached) significantly adds to our knowledge of the system. The Basin is an extremely complicated hydrologic system which relies on subsurface groundwater flows from a variety of sources. The SBR makes clear that a

[1] See Appendix I.: N-100448 Amargosa East_Priority Determination.pdf

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substantial portion of the water in the Amargosa system comes from the Pahrump Valley aquifer with snowpack in the Spring Mountains in Nevada acting as a significant source of recharge.

Combined perennial yield in Nevada Division of Water Resources Basins 225-230 is estimated at 24,000 acre feet annually. Perennial yield in Nevada Division of Water Resources Pahrump Valley Basin (Basin 162) is estimated at 20,000 acre feet annually. [BLM Project Priority Determination Worksheet - 8/19/20 (PPDW)] According to the Nevada State Engineer's office, nearly 62,000 acre-feet of water have been permitted via paper rights in the Pahrump Valley Aquifer – more than three times the estimated annual yield from recharge. This is already a significant concern for the Amargosa Conservancy, and may well constitute an existential threat to the Amargosa Basin's unique and irreplaceable ecosystems and endemic species.

All alternatives in the Draft Utility-Scale Solar Energy Development PEIS/RMPA would designate acreage in the Pahrump Valley as suitable for solar development. Alternative 3, the BLM's preferred alternative, would designate in excess of 175,000 acres in the Pahrump Valley as suitable for solar development. If just twenty percent of that land was developed for solar photovoltaic, resulting in 8.8 gigawatts of generating capacity and roughly 22,000 gigawatt-hours of annual output, given the 29% capacity factor for solar PV in Nevada, the annual operational water consumption would be approximately 1,350 acre-feet just for cleaning and ancillary operational uses. This is significant in a basin already oversubscribed by more than 300 percent. Of greater concern would be water use during construction of these solar facilities for dust control and related uses. Construction water use for that hypothetical 20 percent of the available area in Pahrump Valley under Alternative 3 could surpass 8,000 acre-feet per year. Developing half of Alternative 3's designated area in the Pahrump Valley would mean an annual construction water demand roughly equivalent to the total annual estimated recharge of the basin, and that is leaving current use out of consideration.

State and local regulations are likely to affect the fate of projects that would add that much additional water demand from solar development in sensitive and stressed hydrographic basins such as the Pahrump Valley and Amargosa Desert. We describe the effect of potential development under the Preferred Alternative as an illustrative example, as we are quite familiar with hydrological issues in the region. Many other locations in the Draft PEIS's 11-state study area face similar oversubscription of local aquifers, in Nevada and elsewhere.

The Amargosa Conservancy urges BLM to include projected local groundwater consumption versus supply in the matrix of potential resource conflicts that might exclude areas similar to the Pahrump Valley from consideration for solar development.

Barring the addition of groundwater to the resource conflict matrix, the Bureau should consider aggressive mitigation policies, including:

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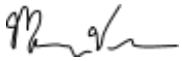
- Requiring project applicants to identify the source and amount of the water they anticipate using for construction and operation
- Requiring applicants to purchase water rights from a willing seller prior to approval of the project
- Requiring applicants to purchase and retire existing water rights in some multiple of the project's protected water use
- Requiring applicants to purchase nearby sensitive habitats and convey those lands or conservation easements thereon to an appropriate agent.

As noted, we have not commented on a variety of our concerns regarding consequences such as due to ancillary development, including power stations and distribution lines, and population increases largely due to primary and secondary workers. Such actions would have consequences on water resources, socio-economic features, and a wide variety of Public Land resources. We also have concerns regarding the adequacy, efficacy, and sufficiency of long term monitoring and Adaptive Management efforts. These efforts rarely fully mitigate the destruction of existing habitat and additional consumption of fossil groundwater resources.

Thank you for your consideration of these concerns.

Signed,



Mason Voehl – Executive Director

for the Board of the Amargosa Conservancy