UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
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NOV 12 2013

Amy Heuslein
Regional Environmental Protection Officer
Bureau of Indian Affairs
Western Regional Office
2600 North Central Avenue, 4th floor
Phoenix, AZ 85004-3008

Subject: Draft Environmental Impact Statement for the Proposed Moapa Solar Energy Center, Clark County, Nevada (CEQ #20130260)

Dear Ms. Heuslein:

The U.S. Environmental Protection Agency has reviewed the Draft Environmental Impact Statement for the Proposed Moapa Solar Energy Center. Our review and comments are provided pursuant to the National Environmental Policy Act, the Council on Environmental Quality Regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act.

EPA continues to support increasing the development of renewable energy resources in an expeditious and well-planned manner. Using renewable energy resources such as solar power can help the nation meet its energy requirements while reducing greenhouse gas emissions. We are also very supportive of tribal government interests in renewable energy as a means to help meet tribal economic development goals and help the nation's transition to cleaner energy.

EPA is a cooperating agency for the project and provided formal scoping comments on August 21, 2012. We also provided comments on preliminary draft chapters of the Administrative DEIS to the Bureau of Indian Affairs on December 13, 2012 and April 11, 2013. Our comments on the complete Administrative DEIS were sent to BIA on July 3, 2013.

Based on our review of the DEIS, we have rated the project and document as *Environmental Concerns – Insufficient Information* (EC-2) (see the enclosed "Summary of EPA Rating Definitions"). We commend the BIA for extensive early agency coordination on this project and were pleased to note a number of changes to the document in response to our comments to date. In particular, we support the decision to no longer include, as part of the proposed action, the use of water intensive, wet-cooled concentrating solar power (CSP) technology. This is a significant improvement and addresses our previously identified concerns regarding water use and impacts to groundwater resources. To help ensure minimal groundwater use for this project, the Final EIS should include a commitment from BIA to coordinate further with cooperating agencies on the project if wet-cooled CSP is again considered as part of the proposed action. We were also pleased to note the addition of recent groundwater modeling, analysis of potential groundwater drawdown and impacts to the endangered Moapa dace, and mitigation measures to reduce the risks to avian species.

Notwithstanding the positive aspects of the proposed project, some of our previously provided comments have not yet been fully addressed and are reiterated in the enclosed detailed comments. EPA remains concerned about the project's potential impacts to site hydrology, air quality, and endangered species, as well as the project's possible cumulative impacts when considering the additional energy and residential developments proposed in the area. We provide specific recommendations regarding analyses and documentation to assess potential significant direct, indirect, and cumulative impacts from the proposed project, and to minimize adverse impacts that cannot be avoided. We are available to further discuss the recommendations provided.

Please note that, EPA Headquarters no longer accepts paper copies or CDs of EISs for official filing purposes. Submissions must be made through the EPA's new electronic EIS submittal tool: *e-NEPA*. Electronic submission does not change requirements for distribution of EISs for public review and comment, and lead agencies should still provide one hard copy of each Draft and Final EIS released for public circulation to the EPA Region 9 office in San Francisco (Mail Code: CED-2).

EPA appreciates the opportunity to review this DEIS. If you have any questions, please contact Tom Plenys, the lead reviewer for this project. Tom can be reached at (415) 972-3238 or plenys.thomas@epa.gov.

Sincerely,

for Jeff Scott, Director, Waste Management Division and Communities and Ecosystems Division

Enclosures: Summary of EPA Rating Definitions
EPA's Detailed Comments

cc: Paul Schlafly, Natural Resource Officer, Bureau of Indian Affairs
Kellie Youngbear, Superintendent, Bureau of Indian Affairs
Darren Daboda, Environmental Director, Moapa Band of Paiutes
Alethe Tom, Acting Chairwoman, Moapa Band of Paiutes
Mark Chandler, Bureau of Land Management
Susan Cooper, U.S. Fish and Wildlife Service
Amee Howard, National Park Service

SUMMARY OF EPA RATING DEFINITIONS*

This rating system was developed as a means to summarize the U.S. Environmental Protection Agency's (EPA) level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the Environmental Impact Statement (EIS).

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

ADEQUACY OF THE IMPACT STATEMENT

"Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, Policy and Procedures for the Review of Federal Actions Impacting the Environment.

U.S. EPA DETAILED COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED MOAPA SOLAR ENERGY CENTER, CLARK COUNTY, NEVADA, NOVEMBER 12, 2013

Aquatic Resources

Drainages, Ephemeral Washes and Site Hydrology

According to the DEIS, construction activities causing ground disturbance, such as grading, would disrupt the soil surface, dislodge biological crusts that bind soil together, and increase the potential for wind and water erosion. These activities would likely have long-term adverse effects on the quality of local surface water flowing to the playa downstream of the proposed project (p. 4-15). The project site also has the potential for high winds and infrequent but strong rains that could cause erosion (p. 4-10). While we understand that drainage, grading and stormwater pollution prevention plans will be finalized prior to construction and operations (p. 2-6 and 2-8), their viability and potential effectiveness are not known, and the extent to which soil disturbance and grading will occur has not been quantified. For purposes of the analysis, the DEIS assumed the development would disturb up to the entire 850 acre site (p. ES-4, 4-41).

EPA is concerned that grading and disruption of natural flows on site could result in impacts to ephemeral washes, vegetation and site drainage without commensurate benefit to soil stability. Seven ephemeral drainages are located within the project area and drainage morphology ranges from 2-foot-wide single channels to features up to 30 feet wide (bank to bank) with multiple braided channels contained within their banks (p. 3-14). Ephemeral washes provide a wide range of functions that are critical to the health and stability of desert ecosystems and wildlife. The potential damage that could result from disturbance of flat-bottomed washes includes alterations to the hydrological functions that natural channels provide in arid ecosystems, such as adequate capacity for flood control, energy dissipation, and sediment movement; as well as impacts to valuable habitat for desert species and plant populations.

To decrease downstream peak flows, the DEIS indicates that concrete weirs or rock gabions would be constructed within the major drainages on the site at key locations to minimize velocity and decrease sediment transport. Sediment deposits on the upstream side of the gabions would be manually maintained throughout operations to ensure minimal downstream sedimentation (p. 4-16). Additionally, berms would be constructed to direct the surface flow around the project site and back into the seven drainages and playa downstream of the site (p. 4-15). These measures are included to prevent erosion on site and downstream sedimentation; however, EPA expects that, without established flow paths and increased vegetative roughness, the graded site could experience *increased* erosion.

While EPA acknowledges that the DEIS states full grading and clearing would occur only in those areas necessary to facilitate construction and operation of the photovoltaic (PV) tracking system (p. 4-40), we continue to recommend that any drainage reports and plans include designs to minimize disruption of natural flows as well as minimize erosion, local scour, sedimentation, and potential destabilization and damage that could result from installing equipment in drainages, as much as possible.

Recommendations:

The final grading and drainage plans should be completed prior to project implementation, so that the additional information they would yield can inform any needed adjustments in the project design. While we appreciate the mitigation measure identified: 'Existing vegetative buffers would be maintained as much as practical along perimeter edges of major drainages' (p. 5-2), the seven ephemeral drainages identified may warrant wider buffers so the channels may adjust to the new hydraulic conditions without the need for major human-made structures and long-term active

maintenance. We recommend including the final detailed drainage and grading plans in the Final EIS (FEIS).

Discuss in further detail where berms would be used to direct surface flow around the project site and how berms would affect upstream and downstream hydrological conditions.

Clarify, in the FEIS, the flow path of exterior storm water flow, and summarize modeled impacts (hydraulics of flow, velocity, sediment transport, sediment delivery and potential stream channel changes) of diverting drainages.

Quantify the acreages to be graded under each alternative. Demonstrate that downstream flows would not be adversely impacted due to any proposed changes to natural washes resulting from proposed grading, drainage management measures or the addition of retention ponds.

Include a framework for an adaptive management plan in the FEIS, including a discussion of the criteria that will be used to evaluate effectiveness of the erosion and sedimentation control measures and what modifications are available to address typical problems, to serve as a troubleshooting guide. For example, the framework should describe actions that could be taken if excessive erosion or sedimentation is observed.

Include, in the FEIS, permanent sediment and channel elevation monitoring stations to be established to assist in the adaptive management of erosion and sedimentation.

To ensure avoidance and to minimize direct and indirect impacts to ephemeral drainages, EPA recommends that the FEIS:

- Evaluate and commit to maximizing the retention of ephemeral drainages that can remain stable with project operation. Describe how the design flexibility of the proposed photovoltaic (PV) system technology has been used to site solar arrays outside of natural drainage areas. Solar arrays close to drainages could be installed using deeper support posts to help ensure they remain stable in the event the adjacent channel moves.
- Clarify that the types of "facilities" covered by the proposed mitigation measure "placing project facilities in washes would be avoided by all alternatives" (p. 5-2) would include all solar PV structures and supports, as well larger ancillary facilities on the site.
- Evaluate and commit to minimizing the number of road crossings over washes and designing necessary crossings to provide adequate flow-through during storm events.
- Consider co-locating the proposed access road in an existing utility corridor, or along a proposed transmission line, to avoid crossing the major drainage to the south of the project site.
- Discuss the benefits of maintaining some or all of the ephemeral washes, including preserving important habitat, retaining ephemeral wash functions, potentially reducing erosion, reducing construction costs, and improving the implementation and success of closure plans after the site is retired from operation.

It is our understanding that other PV solar companies have proposed designs that reduce the need for site clearing and grading by mounting PV panels at sufficient height above ground to maintain vegetation, which could also minimize drainage disturbance, the need for site grading and generation of fugitive dust. As the site is relatively flat, the telescoping legs of the proposed solar modules appear to present an opportunity to eliminate the need for grading altogether. It remains our understanding that the proponents of the neighboring K-Road solar project had committed to proceed without grading.

Recommendation:
The FEIS should evaluate mounting PV panels at sufficient height above ground, utilizing the telescoping legs of the proposed solar modules, to maintain vegetation and minimize drainage disturbance. Quantify acreage of natural vegetation and soil that would not require clearing and grading as a result of using telescoping legs. Compare these results to existing alternatives, and incorporate project design changes into site design and conditions of certification, accordingly.

Fencing

The DEIS does not provide information about the effects of security fencing and desert tortoise fencing on drainage systems. By entraining debris and sediment, fencing can interfere with natural flow patterns. Fence design should address hydrologic criteria, as well as security and desert tortoise protection performance criteria.

Recommendation:
Describe, in the FEIS, where permanent fencing will be used and the potential effects of fencing on drainage systems. Ensure that the fencing proposed for this project will meet appropriate hydrologic performance standards.

Groundwater

In light of multiple ongoing and reasonably foreseeable projects in the area (including the Southern Nevada Water Authority proposed groundwater development project, the existing Harry Allen Power Plant and proposed expansion, the approved K-Road Moapa Solar Project, the proposed 960 MW Brightsource solar thermal-powered project, and the 111,000 residential unit Coyote Springs Investment Development Project on 21,400 acres), we are concerned about the potential groundwater drawdown and cumulative impacts to the California Wash Basin, and neighboring basins. We further note that the estimated perennial yield for the California Wash Basin is 2,300 acre-feet/year (AFY) (where the supply well for the project is located) and the committed use is over 3,000 AFY. The DEIS indicates that it is not known what sources of water would be used for most of the foreseeable projects, and thus it is not possible to assess the magnitude of the impacts. The DEIS indicates that future Endangered Species Act (ESA) Section 7 consultations for these projects would assess cumulate impacts to groundwater and associated biological concerns with potential decreases in flow to local springs (p. 4-115).

As raised by EPA in comments provided during earlier reviews of this project, the cumulative impacts to groundwater appear to have the potential to be significant considering the reasonably foreseeable projects identified and the cumulative effects that climate change could have on water resources, including higher temperatures and more frequent heat waves (p. 3-3). With regard to climate change impacts on water resources in the area, we note that the Nevada Climate Change Advisory Committee Final Report (2008) states that "the Colorado River basin is expected to see less precipitation overall, and a greater percentage will come as rain rather than snow. As the Las Vegas Valley receives over 90% of its drinking water from the Colorado River, this will present challenges to maintaining municipal water supply". The DEIS cites results from a Department of Interior (DOI) regional groundwater study that showed that, as pumping increased, both the regional groundwater levels and surface water flows would be more greatly affected. The DEIS summarizes that, if pumping were to increase to a rate equal to the total of all existing groundwater rights (Scenario 2), the Muddy River Springs, habitat for the endangered Moapa dace, would completely dry up in approximately 1,100 years. The scenarios with higher rates of pumping (3 through 7) showed an acceleration of time when the predicted impacts would occur, but the DEIS does not identify these impacts. The discussion also does not add in the cumulative effects of climate change on

water resources in the desert and may not have estimated water usage from reasonably foreseeable projects mentioned above. Muddy River, located approximately 12 miles northeast of the proposed project, is the nearest perennial water source, is considered impaired and is on the 303(d) list as required by the Clean Water Act (p. 3-37).

Recommendations:
Include in the FEIS additional discussion of the cumulative effects on groundwater for all alternatives, including wet-cooled concentrated solar power (CSP) alternatives. Incorporate a discussion of the additive effects from climate change, more detail on future pumping scenarios from the DOI study, and estimates for water usage for reasonably foreseeable projects. It is important to understand how the value of water will increase in the future under continued groundwater development and a potentially hotter and drier climate.

Address, in the FEIS, what mitigation measures would be taken, and by whom, should groundwater resources in the basins become overextended to the point that further curtailment is necessary due to, for example, additional growth, the influx of large-scale solar projects (including in the neighboring solar energy study area), drought, climate change, or the utilization of existing or pending water rights in the basin.

EPA recognizes the proposed action would utilize less water during operations (30 AFY) as compared to the other alternatives evaluated in the DEIS. Although the DEIS did not provide a quantitative breakdown, panel washing would generate the majority of the water demand for the proposed project (p. 2-3). We have reviewed other PV projects that have committed to no water use for panel washing, such as First Solar's Desert Sunlight Solar Farm in Riverside County, CA. It is also our understanding that First Solar's Silver State facility in Nevada will not require PV panel washing.

Recommendation:
In light of the arid environment and potential additional stresses on water supplies in the future, discuss in the FEIS the technical feasibility of eliminating periodic washing of solar panels, and consider adopting, as a condition of certification in the FEIS and Record of Decision, that water will not be used for panel washing. Describe any measures that will be used to clean the solar panels, if applicable. Provide a quantitative breakdown for operational water usage in the FEIS.

Air Quality

The Las Vegas 1997 8-hour ozone nonattainment area excludes the Moapa River Indian Reservation; however, this nonattainment area surrounds the reservation and emissions from the project have the potential to impact it.[1] Therefore, emissions of ozone precursors such as volatile organic compounds (VOCs) and oxides of nitrogen (NOx) should be minimized through mitigation measures, especially during the construction phase.

Further, in light of the ongoing and reasonably foreseeable development projects previously mentioned, including the potential for future developments in the 5,700 acre Dry Lake Solar Energy Zone and the neighboring solar study area, EPA supports incorporating mitigation strategies to reduce or minimize fugitive dust emissions. We also advocate minimizing disturbance to vegetation and soils as much as possible, so that the need for measures to reduce fugitive dust emissions is minimized or eliminated.

[1] The Las Vegas area was recently designated a 'maintenance area' for the 2008 8-hour ozone standard; however, the 1997 nonattainment designation currently still applies.

Recommendations:
We commend BIA for including a number of the mitigation measures we previously proposed. Any approvals made by BIA for the project should also include a condition that the lessee incorporate the following measures into construction contracts. For more information on nonroad mobile sources and mitigation, see at http://www.epa.gov/nonroad.

- Maintain and tune engines per manufacturer's specifications to perform at verified standards applicable to retrofit technologies, where applicable.
- Employ periodic, unscheduled inspections to limit unnecessary idling and to ensure that construction equipment is properly maintained.
- Prohibit any tampering with engines and require continuing adherence to manufacturer's recommendations.
- If practicable, lease new, clean (diesel or retrofitted diesel) equipment. In general, commit to the best available emissions control technology. Tier 4 engines should be used for project construction equipment to the maximum extent feasible[2]. The FEIS should indicate the expected availability of Tier 3 and Tier 4 engines for the construction equipment list provided on page 4-33.
- Install wind fencing capable of maintaining natural hydrological flows and phase grading operations where appropriate, and operate water trucks for stabilization of surfaces under windy conditions.
- When hauling material and operating non-earthmoving equipment, prevent spillage and limit speeds to 15 miles per hour and speed of earth-moving equipment to 10 mph.

Discuss, in the FEIS, whether fugitive dust emission estimates during operations were quantified for any other sources than unpaved roads. Discuss the impact that grading and vegetation removal may have on fugitive dust during constructions and operations. Provide additional support for the statement that the panels themselves would shield the ground from prevailing winds so surface soils could be less disturbed by windy conditions (p. 4-25). Update construction and operations emissions tables to reflect estimated fugitive dust emissions that would result for on site grading and vegetation removal.

Evaluate and discuss, in the FEIS, the benefits of maximizing natural vegetation under a higher PV panel clearance option, and the benefits of minimizing grading, in reducing fugitive dust.

Biological Resources

The development of the project site, utilities and transmission corridor could result in the long-term loss of approximately 960 acres of foraging and nesting habitat for species including the endangered Mojave desert tortoise and a number of migratory birds (p. 4-47). Such loss could alter breeding behavior of the tortoise and add pressure to food resources and foraging habitat in neighboring areas. The Biological Assessment, included in Appendix N, indicates the project could result in the take of up to 357 desert tortoise eggs and up to 24 adult desert tortoise (p. 54).

Further, as the DEIS notes, water drawdowns could affect instream flows in the Muddy River, the sole habitat for the endangered Moapa dace (p. 4-42). The DEIS concludes that while the Moapa dace would

[2] Diesel engines < 25 hp rated power started phasing in Tier 4 Model Years in 2008. Larger Tier 4 diesel engines will be phased in depending on the rated power (e.g., 25 hp - <75 hp: 2013; 75 hp - < 175 hp: 2012-2013; 175 hp - < 750 hp: 2011 - 2013; and ≥ 750 hp 2011- 2015).

not be directly affected by the construction or operation and maintenance of the proposed project, the groundwater withdrawals associated with the proposed project would indirectly affect the Moapa dace (p. 4-59).

We understand that the Biological Opinion for this project has not yet been finalized. The Biological Opinion will play an important role in informing the decision on the commitments, terms, and conditions that must accompany the project.

Recommendations:
The FEIS should provide an update on the ESA Section 7 consultation process, and any relevant documents associated with the process, including the Biological Opinion, should be summarized and included in an appendix.

Include, in the FEIS, results of discussions with US Fish and Wildlife Service (USFWS) of whether adequate desert tortoise movement corridors would result for each alternative. Discuss, in the FEIS, how resulting habitat connectivity corridors would be preserved in light of foreseeable projects, including potential future development in the immediately adjacent solar study area.

Mitigation and monitoring measures that result from consultation with USFWS to protect sensitive biological resources, including desert tortoise and Moapa dace, should be included in the FEIS and, ultimately, the ROD.

Discuss, in the FEIS, potential impacts to wildlife movement in the area under future climate change scenarios.

Discuss and identify in the FEIS, as appropriate, available lands for compensatory habitat mitigation for impacts to the desert tortoise for the proposed project, as well as reasonably foreseeable projects identified in the DEIS. Clarify how the reservation-wide desert tortoise management and conservation plan prepared for the K Road Moapa Solar project, and approved by the tribe, BIA and USFWS, will be utilized for this project.

Regarding impacts to birds, we were pleased to see the latest Avian Power Line Interaction Committee (APLIC) recommendations were referenced in the DEIS to prevent bird fatalities associated with transmission lines. As previously noted in our Administrative DEIS comments, the Bird and Bat Conservation Strategies (BBCS) document in Appendix O states that "there is no scientific evidence of fatality risks to birds associated with solar PV arrays" (p. 15). We are aware, however, that there have been a number of unexpected bird fatalities at the photovoltaic Desert Sunlight Solar Project in Riverside County, CA. It is possible that birds are mistaking the PV panels for water but information is preliminary. It is our understanding that these fatalities, as well as those at the Ivanpah Solar Electric Generating System site, are currently under investigation. We understand that the USFWS is starting to gather information for recommendations to reduce mortality. We appreciate the commitment in the BBCS that the applicant will monitor and document avian mortalities (p. 23).

Recommendation:
Include, in the FEIS, any appropriate adaptive management measures to respond to bird fatalities, based on discussions with avian experts at the USFWS, as appropriate. Note that as part of the avian mortality monitoring, USFWS may request that developers apply for a Special Purpose Utility Permit (SPUT) that will allow developers to collect dead bird carcasses on the site for the purposes of data collection and research. We recommend consulting with USFWS on this issue to

determine whether obtaining a SPUT permit is appropriate to include as a mitigation measure. The permit application is available at: http://www.fws.gov/pacific/migratorybirds/Permits/salvage.html.

Additional Comments

- According to the DEIS, one or two gen-tie transmission lines would be constructed based on the customer for the power generated at the site (p. 2-6). We note the proposed 230 kV line crosses a Federal Emergency Management Agency (FEMA) Flood Zone A area and, according to Figure 3-8, does not appear to be routed through a designated utility corridor. Further, figure 3C in Appendix H shows numerous desert tortoise burrows were found right along the anticipated route of the 230 kV line. As possible avoidance of impacts to desert tortoise, we recommend that the FEIS consider alternative routing of the 230 kV line to the Harry Allen substation either through the existing Section 368 Utility Corridor or through the BLM Utility Corridor.