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Description:	This document contains Attachment 3, Compensatory Mitigation Evaluation for Waters of the State, to the Applicant comments on the Soda Mountain Solar Project Staff Assessment (SCH #2025080161).
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Soda Mountain Solar, LLC
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Subject: Soda Mountain Solar Project, Compensatory Mitigation Evaluation for Waters of the State San Bernardino County, California

Soda Mountain Solar, LLC (SMS) has requested that Rincon Consultants, Inc. (Rincon) provide a brief evaluation of the California Energy Commission's (CEC) Soda Mountain Solar Project Staff Assessment (Staff Report) (CEC 2025), with a specific focus on the compensatory mitigation ratios applied to potential impacts on Waters of the State (WoS). To support project planning and decision making, SMS is requesting Rincon's regulatory expertise to assess the CEC's justification for the mitigation ratios outlined in the Staff Report, and offer alternative compensatory mitigation ratios such that the compensatory mitigation would be commensurate with the impacts anticipated, and consistent with the mitigation ratios required by the CEC and the Lahontan Regional Water Quality Control Board (RWQCB) for similar impacts in the region. In response to this request, Rincon has prepared the following letter outlining our initial review and our assessment of the issues raised.

Impacts to Waters of the State

The Soda Mountain Solar Project (project) would affect state-jurisdictional drainages considered to be WoS, which consist entirely of ephemeral desert washes that traverse the project area. According to the CEC Staff Report, the project site supports approximately 213.5 acres of WoS and all project impacts to WoS are considered to result in permanent or partial loss of ecological function, depending on the degree to which project infrastructure alters natural hydrology.

Permanent impacts occur where project components such as the battery energy storage system, substation and switching station pads, access roads, including the Razor Road realignment, and fenced or vegetation-free zones would fully eliminate stream channels, remove vegetation, interrupt infiltration, and sever hydrologic connectivity. Based on the CEC Staff Report, these areas total approximately 21.75 acres of WoS subject to complete functional loss.

According to the CEC Staff Report, areas beneath the solar arrays or within temporary construction zones that retain some natural hydrology represent 205.02 acres of WoS expected to experience partial functional loss but maintain residual ecological value because infiltration and flow paths would persist beneath the panels. Of this, a smaller subset of 4.12 acres along the gen-tie alignment would be temporarily impacted, as the hydrology and stream channels would be restored after construction. Temporary effects to drainages that remain confined within the existing road prism and do not alter downstream hydrology are not considered to result in jurisdictional impacts.

CEC Applied Compensatory Mitigation Ratios

In the Staff Report, the CEC applies mitigation ratios of 3:1 for permanent loss, 1.5:1 for partial functional loss, and 1:1 for temporary disturbance. Based on these ratios, the project's total mitigation obligation is estimated at 376.9 acres, pending final delineation and design verification. The CEC concludes that, without compensatory mitigation, the project's WoS impacts would be significant because permanent disturbances would substantially and irreversibly alter the hydrologic and ecological functions of desert



wash systems. Temporary impacts along the gen-tie alignment that can be fully restored after construction warrant a lower mitigation ratio, as hydrology and ecological function within active channels would return. No mitigation is required by the CEC for temporary impacts at drainage crossings on existing access roads, provided the work remains within the existing road prism and does not alter downstream hydrology.

Justification for Reducing Mitigation Ratios

The Staff Report provides several points that support adjusting the proposed mitigation ratios to better reflect actual ecological conditions. Because the report acknowledges that its ratios are discretionary, based on preliminary acreage estimates, and subject to refinement as field data are verified, there is room to apply more appropriate and defensible values. The analysis in the Staff Report support a lower 2:1 ratio for permanent impacts that reduce, but do not eliminate, ecological function; no mitigation under the solar arrays where hydrology and vegetation largely persist; and a 1:1 ratio for temporary gen-tie impacts where conditions will be restored. Thus, there is a clear basis for refining the mitigation approach. The following sections provide additional rationale, beyond what is outlined in the Staff Report, to support adjustments to the CEC proposed mitigation ratios.

Mitigation Ratio for Permanent Impacts

The Staff Report explains that the proposed 3:1 mitigation ratio is based on the assumption that permanent project features would eliminate stream channels and vegetation entirely, resulting in a complete loss of hydrologic connectivity and function. The Staff Report acknowledges the proposed ratios are discretionary rather than regulatory requirements, and that acreage estimates and related conclusions may change as field data are further verified.

As documented in the Aquatic Resources Delineation (Rincon 2025), the site is characterized by an extensive network of ephemeral alluvial-fan drainages with distributed, braided, and shifting surface flow pathways rather than single, confined channels. The delineation verifies that drainage features frequently fan, braid, or dissipate into adjacent alluvial surfaces across wide portions of the project site. These characteristics indicate that stormwater flows naturally diverge, reconnect, and re-route across the fan depending on rainfall intensity, sediment accumulation, and local microtopography.

Because of this diffuse flow regime, the installation of project components that result in permanent disturbance (e.g., inverter pads, access road grading, water-control berms, and the substation/switchyard) is not expected to eliminate hydrologic connectivity entirely. Instead, surface flows will continue to move around and between project features via adjacent undisturbed portions of the alluvial fan. No project component fully spans or dams any drainage in a manner that would block downstream hydrology.

The delineation also confirms that the ephemeral drainages ultimately disperse across broad desert fan surfaces before terminating in playa basins (Soda Dry Lake, Cronise Valley), and that the drainage network does not include incised channels or confined stream courses that could be fully severed by fill. Instead, hydrology is driven by sheet flow, shallow braided channels, and low-relief alluvial features; these processes inherently allow for flow bypass around isolated permanent structures.

Therefore, based on field-verified drainage morphology and hydrologic modeling, the distributed nature of ephemeral flows, and the project's minimized grading design, the available evidence supports the conclusion that permanent project features may result in partial functional loss within direct impact footprints but will not cause a complete loss of drainage connectivity or downstream hydrologic function. Surface flows are expected to continue to route around built structures in a manner consistent with existing alluvial-fan processes. Therefore, the project would not result in complete loss of hydrologic connectivity and function, and a 3:1 mitigation ratio for impacts associated with built infrastructure



should be reduced. A 1:1 ratio would be consistent with the minimum 1:1 ratio required under the State Wetland Procedures (State Water Resources Control Board 2021). Further, the Lahontan RWQCB has recently accepted 2:1 mitigation ratios for permanent impacts to waters of the State for other projects in their purview, including for the Palmdale Ditch Conversion Project, where permanent impacts to ephemeral streams were mitigated at 2:1, and for the Hackstaff Road Bridges Project, where permanent wetland and stream impacts were mitigated at 2:1 (EcoAtlas 2024).

Support for No Mitigation Under Arrays

The CEC is requiring a 1.5:1 mitigation ratio for the areas under the arrays. This ratio suggests replacement of habitat lost and creation/restoration of additional habitat beyond the replacement habitat. However, the Staff Report concludes that areas beneath the solar arrays are expected to retain natural hydrology, support vegetation, and maintain partial ecological function.

The report acknowledges that hydrology remains functional beneath panels, consistent with studies from Penn State Engineering and the Department of Energy showing that vegetated solar sites do not meaningfully alter natural flow paths and that soil moisture stays within normal ranges (Mulhollem 2024; Cook 2013). Similarly, the Staff Report's assertion that vegetation persists under arrays are consistent with research demonstrating that these zones remain pervious, retain infiltration capacity, and continue to support ecological activity. North Carolina Department of Environmental Quality (DEQ) guidance classifies vegetated under-panel areas as pervious, and studies show that native or disturbance-tolerant species regularly use these modified habitats (Cook 2013; NCDEQ 2018).

The Staff Report explains that ecological function for ground-dwelling species such as desert tortoise, western burrowing owl, and Crotch's bumble bee is reduced but not eliminated beneath solar panels, consistent with engineering findings that major functional losses are driven primarily by mass grading and soil disturbance, not by the presence of panels themselves. Where soils and native vegetation remain intact, as is the case with the areas under the solar arrays, ecological function, including forage availability, burrow potential, and invertebrate habitat, largely persists. The Staff Report further concludes that the project's impacts on waters of the State, including approximately 213.55 acres of non-wetland waters, would not result in any long-term reduction in ecological function because the applicant's revised fluvial-geomorphic stormwater design preserves natural drainage patterns, maintains hydrologic and sediment-transport processes, and avoids channelization or flow redirection that would otherwise impair the ecological role of ephemeral desert drainages as wildlife movement corridors and resource patches. Implementation of Conditions of Certification requiring best management practices, erosion, and stormwater controls, ensures that watershed-scale ecological functions - including hydrologic connectivity, infiltration, and ephemeral-channel stability - are fully maintained, and resulting impacts are reduced to less than significant.

Arid-land ecological function depends on intact soils, infiltration, and episodic resource pulses. Arid western systems, including areas dominated by ephemeral washes, rely on infiltration rather than continuous surface flow, and solar panels do not interrupt these core hydrologic processes. Studies showing sustained hydrologic activity and vegetation beneath arrays (Mulhollem 2024; Cook 2013; NCDEQ 2018) are supported by evidence from a Mojave Desert facility where a rare annual plant maintained normal growth and demographic performance despite microhabitat changes (Pereira et al. 2025). Because desert species are adapted to disturbance and fluctuating resources, partial modification beneath arrays does not constitute habitat loss in the way it might in more mesic environments. The best available science shows that under-array areas remain modified but functional desert landscapes, and compensatory mitigation warranting replacement of the habitat is not justified.

Taken together, both the Staff Report and literature indicate that habitat functionality under arrays is not diminished to a degree warranting habitat replacement or justification for a 1.5:1 mitigation ratio, since the habitat will remain intact to support special-status species in the project area. Across studies and



regulatory guidance documents, these under-panel zones are consistently described as modified yet still functional landscapes, retaining hydrologic and biological processes rather than representing lost habitat. As such, no compensatory mitigation is proposed under the solar arrays.

Mitigation Ratio for Temporary Gen-Tie Impacts

The Staff Report's recommended 1:1 mitigation ratio for temporary gen-tie impacts aligns with how other utility-scale solar projects compensate for short-term temporary impacts. At Soda Mountain Solar, temporary construction impacts would be limited to minor surface disturbance that revegetates quickly and would be restored through a standard revegetation plan. The 1:1 ratio is appropriate and consistent with mitigation requirements for temporary disturbed areas that will be restored.

Duplicative Mitigation Requirements

The CEC's proposed mitigation ratios create a structural inconsistency in which a project proponent could be required to mitigate the same temporary ground disturbance twice, once for temporary impacts to desert tortoise habitat and again for temporary impacts to WoS. For example, the Staff Report assigns a 1.5:1 ratio for temporary disturbance between the arrays for desert tortoise habitat, even though the same footprint is simultaneously subject to a 1.5:1 ratio under the WoS framework. Because this disturbance represents a single physical impact, applying two separate ratios to the same area results in an inflated mitigation obligation rather than a resource-specific adjustment.

The Staff Report applies separate compensatory mitigation requirements to the same areas of temporary disturbance between the solar arrays, one set of ratios for desert tortoise habitat and a second set of ratios for WoS, resulting in an effective "double-counting" of mitigation obligations for the same acreage. The Biological Resources section assigns tortoise habitat compensation based on mapped temporary and permanent disturbance footprints, while the aquatic resources analysis independently requires mitigation for impacts to non-wetland waters, including ephemeral washes that occur within the same inter-array zones. Because the under-array and between-array areas are treated as both tortoise habitat and WoS features, without any indication that one mitigation requirement will offset the other, the Staff Report imposes duplicative compensatory obligations for the same physical impact. Notably, the Staff Report provides no clarification that mitigation will be consolidated, credited jointly, or otherwise adjusted to avoid redundancy, nor does it acknowledge standard interagency practice that seeks to prevent overlapping compensatory requirements for co-located resources. As written, the Staff Report therefore departs from typical CEQA/agency practice by requiring additive mitigation for two resource categories on the same acreage of temporary disturbance. In accordance with CEQA, compensatory mitigation must not be counted twice for a single physical impact.¹

Further, the CEC's recommended 1.5:1 ratio for temporary disturbance between the arrays for desert tortoise habitat is inconsistent with the 1:1 ratio required in accordance with the project's 2015 EIS/EIR, 2016 U.S. Fish and Wildlife Service Biological Opinion, and the Desert Renewable Energy Conservation Plan (DRECP). The Staff Report provides no rationale for exceeding these regulatory benchmarks.

¹ Under CEQA and established interagency mitigation practice, compensatory mitigation may not be assessed more than once for a single physical impact. Agencies may evaluate an impact across multiple resource categories, but the disturbance footprint is counted only once for purposes of calculating compensatory obligations. (See CEQA Guidelines §§15021(a)(3), 15126.4(a)(1); see also standard agency practice in multi-resource analyses, e.g., DRECP, USFWS BOs.)



Applicant Proposed Compensatory Mitigation

The Staff Report identifies 376.90 acres of required mitigation, while the Applicant proposes 47.62 acres, reflecting an 87% decrease that results primarily from the Applicant's position that no compensatory mitigation should be required for the areas under the solar arrays. This difference arises from an intentional adjustment of mitigation proposed commensurate with the anticipated extent of project impacts, precedent established by the Lahontan RWQCB for other permitted projects in the region, and the understanding that hydrologic and ecological function will largely be maintained beneath the solar arrays.

Conclusion

In consideration of the project impacts, the CEC's proposed mitigation ratios for WoS are not fully supported by the information presented in the Staff Report. Some of the mitigation ratios proposed by CEC for WoS are inconsistent with CEQA and other regulatory requirements, and exceed what is justified from both a regulatory and hydrological/ecological perspective.

Sincerely,
Rincon Consultants, Inc.

A handwritten signature in blue ink that reads "May Lau".

May Lau
Principal Regulatory Specialist

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