

DOCKETED

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Abengoa Mojave Solar Project (MSP)
Technical Advisory Group (TAG) Meeting Notes

Date: March 28, 2018

Host: California Energy Commission, TAG Chair; meeting was conducted via conference call and in Alpha meeting room at the Abengoa Mojave Solar site

TAG Members Present:

Jon Hilliard, Chair, California Energy Commission (CEC) , via phone
Thomas Dietsch, Ph.D., USFWS

Other Staff and Invited Guests Present:

Ann Crisp, CEC, via phone
Kara Harris, Department of Energy, via phone
Gerald Monks, Designated Biologist
Jose Manuel Bravo, Abengoa
Maria Elena Lopez, Abengoa
Enrique Guillen, Atlantica Yield
Adriana Valencia, Atlantica Yield
Marguerite Hendrie, Corvus Ecological, via phone
Brooks Hart, Corvus Ecological

• **Overview of Fall 2017 Post-construction Monitoring:**

- After introductions, Brooks Hart from Corvus provided the TAG an overview of how the First Quarterly Bird Monitoring Report was prepared. Mr. Hart reviewed pertinent findings from the Executive Summary for the TAG. He noted that the report reflects data compiled over a calendar quarter, rather than over an entire season (such as the fall migrating season).
- The collected data was pooled among the five project strata surveyed (Power Blocks, Solar Collecting Fields (SCFs), Perimeter Fence, Gen-Tie Line, and Evaporation Ponds), as there were no noticeable differences in carcass persistence or searcher efficiency between these features. Also, the sample size/ data pool is too small to break out by each of the five strata.
- Searcher Efficiency (SE) and Carcass Persistence (CP) trials conducted with non-MBTA specimens, quail for small and medium, domestic chicken for large.
- All birds and bat fatalities reported for **BIO-17**. Different ways incidental discoveries treated. 34% associated with power blocks. In that, brown headed cowbirds were #1 species. Eared grebe #1 species detected overall. Four stranded live birds, but some fatalities in that group after transfer to wildlife rehabilitation center.

- Tom Dietsch suggested it was preferable to adjust the monitoring and reporting intervals to capture the entire fall migrating season. He also noted that the search intervals should be closely informed by the findings of carcass persistence. There does not appear to be a factual justification for expanding the search intervals from 7 to days to 21 days – just a matter of an operational direction from the plant that was carried over from other projects.
- Mr. Dietsch was surprised by no significant difference in SE/CP for size classes, on other project big difference in size classes. Search interval determined by SE/CP. CP justifies 1 week interval year round.
- Marguerite Hendrie noted that based on the raw data collected from the 7 and 21-day search intervals, the median carcass persistence is two days.
- Next report will cover the winter season (November through February). Mr. Dietsch recommended keeping a 7 day search interval through the summer. Fall migration season a lot longer in MSP area, survey interval is an artifact from Ivanpah.
- Mr. Hart noted it may be too soon to make change to weekly year round.
- Enrique Guillen asked if other projects surveyed weekly year round. Mr. Dietsch stated that the interval will still be comparable to Genesis which surveys every 21 days during summer and winter. The problem is more having an avian biologist available to survey that frequently year-round.
- Ann Crisp noted that the reporting deadline for winter is May 23, and it would be preferable to get it sooner, so that the TAG members could get a broader range of data to review. Mr. Hart replied that Corvus could provide some preliminary data capturing the first 6 months of monitoring. A more robust sample size could inform any adjustments to the search and reporting intervals. TAG needs to review winter preliminary data before a decision can be made. For now, the incidental avian detections are not included in the data model inputs.
- Gerald Monks noted that during winter common ravens and resident desert kit fox may impact CP. It is very easy for both species to get on site and both are scavengers.
- Ms. Crisp requested more details on why the data was pooled. Mr. Hart explained that the data was pooled because sample sizes too low across all components. Distance sampling requires a robust sample size. Need bigger sample size, otherwise wide range confidence interval (CI).

- Mr. Hart then noted some limitations in the survey protocols contained the Bird Monitoring Plan. He stated it would be preferable to survey the solar fields traveling perpendicular to the trough rows, versus the current method of searching those areas horizontal to the rows. The ground at the trough rows contains a small, shallow ditch that can result in missed detections by the searchers (see Figure 8 on Page 28 of the Quarterly Report). Corvus had actually presented two different options for surveying methods in the trough fields, and Marguerite will send these to the TAG members for their review. One option is to walk while searching the center of the solar troughs and driving at the edges. Corvus will propose a modification to the Bird Monitoring Study search methods illustrated on Figures 3 and 4 in the document.
- Mr. Hart discussed some changes made in winter quarter of surveys. The surveyor no longer drives perimeter as it's not safe or practical and just as fast to walk. They have found the surveyor gets a better view walking. They also are no longer running SE and CP concurrently. The field lead continues to manage the trial specimens.
- Mr. Guillen inquired about the issue of netting the evaporation ponds, as discussed in the January 23, 2018 Compliance Advice letter from the CEC. Mr. Dietsch noted that the second monitoring year for the evaporation ponds is wrapping up at the Genesis project, which will help inform any recommendations on netting for the MSP ponds. He also requested a summary of the data collected for avian mortalities during the construction and operation of MSP, along with the various adaptive management methods employed in response. Ms. Crisp noted we had requested this information previously from MSP, but were told by a previous project manager that it wasn't a requirement of their license.
- Mr. Monks, Designated Biologist, asked if MSP could perform a focused study of the ponds and develop a mitigation strategy based on solid science rather than go straight to netting the ponds. He further stated his opinion that the ponds provide some wildlife benefit, particularly for saline-tolerant migratory birds such as black neck stilts, sandpipers, avocets, and phalaropes. etc. Mr. Dietsch noted that was why the TAG would like to review aggregated data for the pond mortalities and mitigation activities, to "tease out" some conclusion regarding the hazards and benefits posed by the ponds. Mr. Monks agreed that examining that data and measuring seasonal variation and diversity of wildlife attracted to the ponds might provide a better sense of their risks and benefits. He wanted to test the hypothesis that birds can tell the water is toxic.
- Ms. Crisp commented that staff would need to discuss with the Energy Commission legal counsel before giving any recommendations regarding further studies. Ms. Crisp noted the concern due to the large amounts of solids in the ponds at the neighboring SEGS VIII and IX facilities. These power plants have been in operation since the early 1990s. Mr. Monks

estimated it would take 10-15 years before build-up of solids would occur and the ponds would be unable to support invertebrates.

- Mr. Hart directed discussion back to the Executive Summary findings regarding detections, and the high number of mortalities found at the cooling tower basin sumps - 18, or 34% of detections on the site. This figure is considered skewed, because the cooling towers including the cooling tower basin sump and pump pit intake screens have to be checked more closely on foot and more frequently than the other four strata. Therefore, cooling tower should be omitted from the modeled estimate in the report and only the mortalities discovered driving the route around power block perimeter will be included in the estimator.
 - Ms. Crisp asked what “weather and logistics” challenges mentioned in the report were encountered while performing the monitoring surveys, and why these factors prevented execution of a uniform search interval. Jose Manuel Bravo Romero replied that MSP would provide a more detailed explanation in future reports. One of the issues is high winds warnings that require workers get off field
 - The meeting concluded with Mr. Hart noting the quarterly report is in draft form, and can be revised based on feedback from the TAG. Ann Crisp stated she will be preparing notes of the meeting, which can be merged with those from the other participants and reviewed by the TAG, and docketed when finalized.
- **Action Items:**
 - Corvus will provide graphs of data going forward. Timing: in Revised Fall 2017 report and going forward. TAG will provide formal edits on report as soon as possible.
 - TAG members present agreed the Quarterly Reports will be based on seasons going forward. Timing: starting with next report. Confirm with California Department of Fish and Wildlife (CDFW).
 - Corvus will provide preliminary data for next season (winter) prior to May 23, so that a decision can be made on adjusting search intervals to weekly year-round. Timing: as soon as possible.
 - Corvus will provide a proposed modification to the Bird Monitoring Study search methods illustrated on Figures 3 and 4 in the document. Timing: as soon as possible.
 - TAG members will confirm agreement that the cooling tower, including the cooling tower basin sump, mortalities not be included in estimator for the power block. Timing: as soon as possible. Confirm with CDFW.
 - Corvus will provide details on weather and logistic challenges including dates. Timing: in Revised Fall 2017 report and going forward. TAG will provide formal edits on report as soon as possible.

Technical Advisory Group first meeting
03/28/2018, Alpha meeting room
Agenda / Minutes

Attendees: Kara Harris (DOE, via phone), Adriana Valencia (AY), Enrique Guillen (AY), Ann Crisp (CEC via phone), Jon Hilliard (CEC via phone), Gerald Monks (BioRecon), Maria Elena Lopez (ASIO), Brooks Hart (Corvus), Marguerite (Corvus via phone) Thomas Dietsch (USFWL), Jose Manuel Bravo (ASIO)

Headlines

BIO 17, Quarterly TAG Meeting 1. Meeting started at 10.01 AM. Brief introduction by ASIO CPM and roundtable presentation.

Brooks Hart from Corvus did the quarterly report summary, 10.10 AM – 10.25 AM.

Below the items discussed during the meeting.

End of meeting times 12.10 PM

1. BIO 17

Table

#	Task	Description	Status	Due Date	Responsible
10.25		From section 3.3 of the report, Tom Dietsch / Ann Crisp asked about Median info available for carcass persistence average data	2 days – Marguerite provided info – will provide curves and graph	In Revised Fall 2017 report and Winter 2017 report due 5/23/2018	Corvus
10.55		TD. Question about why the report was “quarterly” instead of “seasonal”. TD argue that this method will have a better search methodology	From now on, the reports will be seasonal (Sept-Oct) (Nov-Feb) (Mar-May) (Jun-Aug). The upcoming report will include November 2017. Will confirm agreement with CDFW.	Winter 2017 report due 5/23/2018	MSP / Corvus/TAG
11.10		Ann- Report due May 23, to report information prior to that date from Corvus	To be provided ASAP	As soon as available, no later than 5/23/2018	Corvus / MSP

11.35 AM	<p>Propose changes to driving transect routes.</p> <p>Either a perpendicular transect and parallel transect or drive outside and walk inside.</p> <p>Also move to searcher trial and persistence from 21 days interval to 7 days interval during non-migration seasons</p> <p>Send Proposal for changes</p>	MSP / Corvus will send the proposal for the potential changes discussion (table 3, page 23 discussed)	as soon as possible so can implement in June.	MSP / Corvus
11.45	<p>Chema – 1st year monitoring, will we jump into 2nd year w/o gaps in between? Dietsch’s answer is ‘yes’</p>	MSP will continue the study without interruption	September 2018	MSP
11.50	<p>Enrique (AY) – Netting. Although AY concurs with the CEC and USFWS that if at the end of the one-year-study is demonstrated that netting is the deterrent that minimizes the avian mortality at the ponds, then that is the way Mojave Solar should take, AY also backed up Gerald Monks’ motions: 1) To incorporate to the study the avian mortality data from the ponds since 2014; and 2) If the study demonstrates that the ponds can bring more benefit to the majority of the birds that stop by the Mojave Solar ponds, then the MSP can file a Petition to Amend CEC BIO 19 for consideration in discarding the use of netting or any deterrent at the ponds.</p>	<p>Motion 1: Mojave Solar will ask Corvus to incorporate the data in the analysis.</p> <p>Motion 2: CEC will analyze with their legal department and come back confirming whether this possibility is viable or not.</p>	<p>Motion 1: Pending on Corvus to indicate how long it will take for them to analyze the data and incorporate. Due Date: August 2018.</p> <p>Motion 2: CEC did not indicate a specific date. ASAP</p>	CEC / USFWS / MSP
11.55	<p>Page 23 of quarterly report % of fatalities</p> <p>Power block should only be surveyed via driving route. Cooling tower should be excluded from this analysis,</p>	TAG will provide formal edits on report as soon as possible. Will confirm agreement with CDFW.	In Revised Fall 2017 report and Winter 2017 report due 5/23/2018	MSP / BioRecon/TAG

Commented [CA1]: This data should not be included in BIO-17 study. Please clarify which analysis is referenced here.

		Brooks proposed, Ann and Thomas agree with the removal			
12.00		Dietsch-Grapeseed extract as deterrent mentioned that it is used at Ivanpah Solar Electric Generating System	MSP will investigate options	N/A	MSP
		Gerald Monks explained the possibility of comparing Mono Lake biodiversity with Mojave Solar ponds and the option of having a fresh good groundwater stream along the evaporation ponds. MSP have a chemical water quality trend available	To be continued in other meeting	N/A	MSP / BioRecon
12.05		Kara-Weather conditions, logistic reasons, to be included in the reports going forward	TAG will provide formal edits on Fall 2017 report as soon as possible.	In Revised Fall 2017 report and Winter 2017 report due 5/23/2018	MSP / Corvus/TAG
12:10		Minutes report for this meeting to be provided to Ann after the meeting	MSP CPM to send the draft meeting minutes for review and comments	ASAP	MSP CPM