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Docket Number:	15-AFC-01
Project Title:	Puente Power Project
TN #:	215541
Document Title:	Rebuttal Testimony of Dr. David Revell to Testimony of Phillip Mineart
Description:	N/A
Filer:	PATRICIA LARKIN
Organization:	SHUTE, MIHALY & WEINBERGER LLP
Submitter Role:	Intervenor Representative
Submission Date:	1/24/2017 2:12:25 PM
Docketed Date:	1/24/2017

INTERVENOR CITY OF OXNARD

EXHIBIT ____

Rebuttal Testimony of Dr. David Revell

to Testimony of Phillip Mineart

MEMORANDUM

Date: January 24, 2017

To: City of Oxnard

From: David Revell, PhD

Subject: Rebuttal to Phillip Mineart, P.E. Testimony (NRG)

This testimony responds to the testimony of Phillip Mineart, P.E. that was offered in support of the proposed Puente plant under consideration by the California Energy Commission. As set forth in my opening testimony, I am qualified to render an opinion regarding the vulnerability of the Puente site to sea level rise and other coastal hazards.

Section 6a. Site Elevation

This section lacks sufficient specificity to support its claims regarding the elevation of the site. First, it uses 3 different datums without specifying the specific location where those measures were taken. For example, the difference between mean lower low water (MLLW) and mean higher high water (MHHW) is 5.3 feet at Santa Barbara whereas the Mineart testimony implies this difference would be closer to 4 feet. The section also fails to specify the datum referencing the highest observed water level in 1983. Without clearly stating the vertical datum it uses, this section is misleading.

Section 6a(ii).

This section does not discuss any of the limitations or assumptions of the Preliminary FEMA maps. The Preliminary maps did not follow FEMA's own Pacific Coast flood mapping guidelines to utilize the Most Likely Winter Profile or include any storm-induced erosion as discussed in my opening testimony. This section also does not address the use of out of date topography from 2009. Finally, the testimony ignores a relevant related FEMA report prepared by AECOM which discusses the potential impacts of sea level rise on wave run up elevations for various backshore types.¹ Instead the testimony suggests that this increase in wave run up associated with sea level rise is "overly simplistic" because the dunes might grow. However, as discussed in my testimony, topographic data demonstrates that the dunes in front of the site have eroded over the past 6 years.

¹ Vandever, et al, 2016: Conceptual response of runup-dominated coastlines to sea level rise and anthropogenic adaptation measures, Proceedings of the Conference, Solutions to Coastal Disasters, 2015.

Section 6c.

This section solely relies on a review of a small set of historic air photos to assert that the beach has accreted since 1947. The photos upon which the testimony relies are not dated to the day making it difficult to interpret. For example, photos taken in the late summer and fall would show the beach at its widest and would not reflect the variability that occurs throughout the year, particularly in the winter, when the beach would be at its narrowest. The testimony also fails to look at the available elevation data (as shown in Revell testimony) or consider the historic variability observed at that beach (also as shown in Revell testimony). The assertion that dune growth is limited by the presence of the outfall for the MGS facility is vague and unsubstantiated. In fact, it is likely that the outfall groins have widened the beach by trapping sand that would have otherwise been flushed out to sea. This phenomenon can be seen at the nearby Pierpont Beach (Figure 1).



Figure 1. Groin at Pierpont Beach trapping sand to the north (left side of picture), note offset in wet dry line on either side of the groin. Photo courtesy California Coastal Records Project

As a result of the removal of the outfall groins, the beach may actually narrow. Finally, while the 1983 storm event did not cause flooding on the MGS site, as discussed in my testimony, the 1984 aerial produced in the Mineart testimony (to CPUC) clearly shows dune erosion along the entire fronting dunes. If that storm had continued or sediment supply had been reduced, it is completely plausible that the site would have been flooded. The Mineart testimony also fails to identify what extent of erosion could be expected during a major erosion event, something that is necessary for any applicant to evaluate site stability.

Section 6d.

The Mineart testimony's perspective on sea level rise largely relies on historic extrapolation of the rates of sea level rise and, as a result, ignores state guidance on how to evaluate the potential impacts of *future* sea level rise changes.² The testimony also fails to consider the full potential life of the project, which could easily exceed 30 years.³

Even within the narrow confines of the Mineart testimony, the discussion of beach retreat is vague and does not specify the method relied upon to conclude that the beach is unlikely to narrow. Mineart presumably utilizes the simplistic Bruun approach,⁴ but then misapplies that approach. The testimony uses the foreshore beach slope (right at the water's edge, which determines wave run up elevation) instead of using the entire shoreface slope (from offshore closure depth where waves "feel the bottom") as called for in the Bruun approach. Mineart's unsubstantiated analysis ignores the variability in beach slopes and may dramatically underpredict the potential landward advancement of the beach and dune system.

Finally, there Mineart testimony makes a brief mention of sediment yield from the Santa Clara and Ventura River, but fails to distinguish between coarse sand material that could actually nourish the beach and suspended muds and silts that just muddy ocean water without accreting the beach. It also fails to mention the overall regional sand context supplied and retained by the adjacent harbors. This variability in sand supply is critical to understanding how the beach and dunes would erode in the future and is discussed further in my opening testimony.

Section 6e.

The Mineart testimony fails to cite any source of reliable information to substantiate its claim that the site is unlikely to be in the tsunami inundation zone, nor does it examine recent scientific findings that demonstrate a new tsunami source in the near vicinity to the site.⁵ This testimony also fails (as does the FSA) to discuss any potential erosion of the dunes from tsunami inundation, or the translation of tsunami wave height to wave run up elevation.

Signature



Dated

January 23, 2017

² California Coastal Commission (2015). Sea Level Rise Policy Guidance: Interpretive Guidelines for Addressing Sea Level Rise in Local Coastal Programs and Coastal Development Permits. Adopted, August 12, 2015

³ Weissman, Natural Gas as a Bridge Fuel (Center for Sustainable Energy, 2016).

⁴ Bruun, P., 1962, Sea level rise as a cause of shore erosion: Am. Soc. Civil Engineers Proc., Jour. Waterways and Harbors Div., v. 88, p. 117-130.

⁵ Ryan, K. J., E. L. Geist, M. Barall, and D. D. Oglesby (2015), Dynamic models of an earthquake and tsunami offshore Ventura, California, Geophysical Research Letters, 42, oi:10.1002/2015GL064507.