



(415) 310-5109

Peter R. Baye, Ph.D.
Coastal Ecologist, Botanist
33660 Annapolis Road
Annapolis, California 95412



baye@earthlink.net

M E M O R A N D U M

To: Steve Mattarazo, Community Development Director, City of Sand City
1 Sylvan Park
Sand City, CA 93955

Date: 15 January 15, 2013

SUBJECT: Comments on **THE COLLECTION AT MONTEREY BAY** draft Environmental Impact Report, SCH# 2006041070: biological resources and coastal ecological impacts.

I am submitting the following technical review of the Environmental Impact Report, and supporting environmental documents, on behalf of the Ventana Chapter of the Sierra Club (contact: Rita Dalessio, puffin@mbay.net). The scope of my review focuses on critical review of the assumptions and conclusions of environmental impact assessments related to dune and dune habitats, ecological and geomorphic processes, vegetation, and special-status species, and the technical feasibility and suitability of proposed beach/dune restoration and management plans. The opinions and technical arguments in my comments reflect my independent professional views only.

2. Qualifications: My qualifications for expert comments on environmental planning, regulation, and assessment of coastal dunes are as follows. My Ph.D. dissertation concerned coastal dune vegetation and its response to sand deposition, and I have studied coastal dunes in the Atlantic and Pacific North American coasts since 1974. My principal professional experience in California has been with conservation planning for coastal habitats and ecosystems, and recovery planning for endangered coastal species. I was a contributing author for sections of the Recovery Plan for Seven Coastal Plants and Myrtle's Silverspot Butterfly (1998) prepared by the U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office. My contributions included technical background information on California coastal dune systems, and specific recovery recommendations for federally listed Central Coast dune plants, including Monterey spineflower (*Chorizanthe pungens* ssp. *pungens*). I was the lead author for the Service's Recovery Plan for Coastal Plants of the Northern San Francisco Peninsula (2002), which featured coastal dune species. I have conducted independent field investigations of coastal dune and wetland systems in central and northern California, including geomorphologic, hydrologic, and ecological conditions throughout the 1990s to the present. I serve on the scientific review panel (with Andrea Pickart and Pete Connors) for the planning of the Bodega Dunes Restoration Project, managed jointly California State Parks/University of California Bodega Marine Laboratory (currently the largest coastal dune restoration project in California). I am also a technical advisor/subconsultant for

Peter R. Baye Ph.D.
Coastal Ecologist, Botanist,
baye@earthlink.net
(415) 310-5109

multiple federal dune restoration projects managed by the National Parks Service, Presidio Trust, and Point Reyes National Seashore in the San Francisco Bay area (Muir Beach, Presidio, Abbott's Lagoon). I was co-author of a recent habitat management plan for Laguna Creek Lagoon's barrier beach and wetland complex (California State Parks) in Santa Cruz, which supports a wintering population of western snowy plovers. I have been an active member of the Dunes/Coastal Habitat Guild of the California chapter of the Society of Ecological Restoration (SERCAL) since it formed in the early 1990s, and have led field trips and presentations for the Guild. I also served as senior scientific and regulatory staff of the U.S. Army Corps of Engineers, San Francisco District, where I managed Environmental Impact Statements/Reports, and conducted endangered species consultations (including western snowy plovers). My resume is available on request.

3. Scope of review: I have reviewed the DEIR (November 15, 2012) project description and sections on geology, land use, biological resources, and its appendices B (coastal recession) and D (biological resources).

4. Assessment of DEIR impact analysis and mitigation.

The premises of the DEIR's mitigation measures for biological resources -- specifically special-status dune plants and animals -- are fundamentally incompatible with the DEIR's assessment geological impacts -- specifically, shoreline retreat and bluff erosion processes. The mitigation measures for significant biological impacts are fundamentally biologically infeasible because one of core components of the project description is physically infeasible and contradicts impact GEO-2. Impact GEO-2 correctly states the inevitable unmitigable impacts of the project lying within the 50 yr coastal erosion set-back line:

Impact GEO-2: The proposed project would result in significant unmitigated impacts due to portions of the project being located within the 50-year coastal erosion setback line. **(Significant Impact without Mitigation)**

The EIR, however, proposes to locate key mitigation elements of the Habitat Protection Plan, including infeasible reconstructed foredunes, within the inevitable erosion set-back line. Project description **1.3.1.7 Proposed Sand Dune Management and Maintenance** proposes removal of all existing coastal armoring and reconstruction of the coastal foredunes on the site, even though the location is geomorphically unstable and predicted in Appendix B to erode within the project lifetime.

The project would remove the existing coastal armoring along the seaward side of the site and reconstruct the coastal foredunes on the site. The reconstructed dunes would reach approximately 25 to 45 feet in height (refer to Figures 5 and 7). The dunes will be planted with pioneer dune species and coastal scrub species in order to stabilize the dunes and mitigate wind erosion. Stabilization of the rear dunes along the SR 1 corridor would be included in the project to keep sand from drifting into the southbound lanes of the highway. Dune stabilization and restoration that addresses sand stabilization, landscaping and bluffs management has been developed as part of the Habitat Protection Plan (refer to Appendix E) prepared for the project. The Habitat Protection Plan provides an on-going series of restoration goals and objectives that are translated

into site-specific performance standards. This comprehensive program addresses on-going monitoring criteria. Management, repair and replacement of sand dunes and revegetation efforts will be the responsibility of the resort operation. (EIR p. 44)

This project description component, which is the core of the Habitat Protection Plan, is ecologically meaningless. First, there are in fact no coastal foredunes on the site, and no historic coastal foredunes on the site, to restore in the first place. Second, even if coastal foredunes, plantings, and stabilization measures were constructed, they would be removed by shoreline retreat within the project lifetime, according to Appendix B. The 2009 HPP and biological mitigation measures were inconsistent with the 2007 draft coastal retreat analysis of Appendix B. The EIR overall is incoherent in its physical (geomorphic, engineering) and biological reasoning as a whole, as are its fundamental mitigation proposals for biological resources

The beach and backshore profile is correctly characterized in Appendices B and D as an erosional, retreating coastal bluff, not a foredune. It is also correctly identified as an erosional bluff in the project site description at page 128, which indicates that the bluff is eroding by wave attack at the bluff base, below the concrete slurry veneer.

The project site includes a sand beach backed by a 30 to 36-foot high degraded coastal bluff which fronts much of the 1,500 linear feet of ocean frontage, with the exception of two **breaks** in the bluff where the beach extends inland.The bluff is eroding from underneath the cement.
(EIR p. 128)

Appendix B correctly distinguishes the backshore profile as a steep (2:1) bluff, not a foredune. A *foredune* is a vegetated dune depositional feature composed of wind-blown sand located at the back of a beach. A coastal bluff is an erosional feature cut into an older sedimentary deposit. The “dune” at the project site is not a modern depositional foredune, but an essentially erosional bluff profile cut in ancient dunes, with a thin modern cap of recent reworked (wind-eroded, re-deposited) from underlying “fossil” ancient dune and beach sand. The bluff substrate is composed of Holocene or Pleistocene (ice-age) and early deposits that are not associated with modern sea level or contemporary beach processes. The “dunes” Appendix B correctly identifies the future steep, erosional bluff form and process of extensive erosional bluff retreat:

To calculate future (2053) bluff crest recession line positions that conform to the 2003 HKA methodology, use the following procedure: extend a **2:1 (H:V) coastal bluff** dune face rising landward from the point at the 2053 toe of dune/back of beach position upward. (Appendix B,p. 37).... How many years of future coastal recession should be used as a basis for the setback for the proposed Project should be determined by the various regulatory agencies in light of their jurisdiction. At some point in the future, coastal erosion will cause coastal recession which will undermine and damage the proposed Project.....(Appendix B p. 11).....

The 50 year extent of predicted bluff retreat analyzed in Appendix B, applied to the project description component of foredune construction, makes it clear that the

constructed foredunes will inevitably erode within the project lifetime and are essentially transient, sacrificial (and thus token, infeasible) mitigation measures, providing no meaningful long-term biological resource mitigation value even during the entire project life.

The calculated results indicate that 40 to 50 years from now wave runup will flow across the project site and up to an elevation +32 feet NGVD (that is 32 feet above mean sea level). This will flow under many of the proposed buildings closest to the ocean. (Appendix B, p. 25)

The problem of deposition of windborne sand will get worse with time due to the fact that coastal erosion and recession will naturally result in the project buildings, elements and facilities being closer and closer to the beach as time goes on. (Appendix B, p. 15)

It is virtually certain that the geotechnical, geologic and oceanographic conditions are getting worse with time. Rising sea level, more severe wave runup, steeper backshore slopes and perhaps more rapid erosion are predicted to occur over time. (Appendix B, p. 28)

Eventually, wave runup and coastal flooding will have severe and significant impacts. (Appendix B p. 26)

The EIR mitigation measures for stabilizing dunes with vegetation and establishing replacement (compensatory) habitat for Monterey spineflower (BIO-1) and host plant habitat for Smith's blue butterfly (BIO-3) are physically incompatible with the coastal geomorphic processes and rates identified in Appendix B, and summarized in impact GEO-2. The Habitat Protection Plan on which all biological mitigation measures for special-status species rely is basically unsound "paper mitigation", inconsistent with the physical coastal retreat of its setting. It is bizarre and unexplained in the EIR that the Habitat Protection Plan does not address coastal erosion and stability of restored habitat.

The Habitat Protection Plan (Zander 2009, Appendix D), as the core of all mitigation measures, fails to address the most basic feature of coastal dune and bluff habitats: the ability to migrate landward in response to shoreline retreat and rising sea level. The proposed dune construction and stabilization activities for mitigation are utterly useless in the long-term (and even within the project life) without dynamic design and room to migrate landward with no significant obstructions. This ability depends on accommodation space, or geomorphic set-back room, for retreat of the beach and bluff, and bluff-top dunes. It is exactly this physical accommodation space that the project will inevitably impact significantly, causing unmitigated systematic "coastal squeeze" on collision course with retreating habitats. The EIR fails to analyze or mitigate this systematic ecological impact (applicable to all special-status species), despite the analysis in Appendix B that assumes 1.5 ft sea level rise in the 50 year scope of analysis.

Conclusion: The EIR's biological impact analysis is fundamentally flawed due to their incompatibility with the physical coastal processes analyzed in Appendix B. The corresponding biological mitigation measures are basically infeasible because they are

incompatible with prevailing physical processes of shoreline retreat and bluff retreat at the project location. The EIR fails to reconcile Appendix D's physical premises with those of Appendix B, and is essentially incoherent in addressing physical and biological impacts within a consistent time-frame and geomorphic context. This is particularly problematic given that Appendix B was prepared prior to the revised biological appendices of Appendix D.