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November 13, 2004

Honorable Mike Reilly, Chairman
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Re: Staff Report and Recommendation on Consistency Certification and Consistency Determination (Los Angeles World Airports/Federal Aviation Administration)

Dear Chairman Reilly and Commissioners:

Previous obligations prohibit me from testifying on these important items at the upcoming public hearing. Please consider these comments, prepared on behalf of The Urban Wildlands Group, in your deliberations about the Coastal Act consistency of the proposals by Los Angeles World Airports ("LAWA") and the Federal Aviation Administration ("FAA") associated with the proposed expansion of Los Angeles International Airport ("LAX"). I have published peer-reviewed scientific research on the El Segundo dunes, El Segundo blue butterfly (*Euphilotes bernardino allyni*), and associated habitats,[1] on restoration of coastal scrub ecosystems,[2] and on the effects of artificial night lighting on ecosystems.[3] My direct scientific expertise is therefore relevant to the questions under consideration by the Commission.

As a general comment, I find it disappointing that agency staff (Coastal Commission and others) continue to propagate errors in method and substance that have been corrected conclusively in the scientific literature. For example, the Staff Report (p. 27) reports that a 2002 survey of El Segundo blue butterfly estimated the total population size at 52,000–54,000 adult butterflies. This number was generated using a methodology that has been discredited, and which is prone to

1. Longcore, T.R., R. Mattoni, G. F. Pratt, and C. Rich. 2000. On the perils of ecological restoration: lessons from the El Segundo blue butterfly. Pages 281–286 *in* J. Keeley, M. Baer-Keeley, and C.J. Fotheringham, editors. *2nd Interface Between Ecology and Land Development in California*. U.S. Geological Survey Open File Report 00-62, Sacramento. Mattoni, R., T. Longcore, and V. Novotny. 2000. Arthropod monitoring for fine scale habitat analysis: a case study of the El Segundo dunes. *Environmental Management* 25:445–452. Mattoni, R., T. Longcore, C. Zonneveld, and V. Novotny. 2001. Analysis of transect counts to monitor population size in endangered insects: the case of the El Segundo blue butterfly, *Euphilotes bernardino allyni*. *Journal of Insect Conservation* 5:197–206. Mattoni, R., and T.R. Longcore. 1997. The Los Angeles coastal prairie, a vanished community. *Crossosoma* 23:71–102.
2. Longcore, T. 2003. Arthropods as indicators of restoration success in coastal sage scrub (California, U.S.A.). *Restoration Ecology* 11:397–409.
3. Longcore, T., and C. Rich. 2004. Ecological light pollution. *Frontiers in Ecology and the Environment* 2:191–198.

overestimate butterfly population size by 400%. While staff at the U.S. Fish and Wildlife Service recommended that LAWA and the FAA review and revise their quantitative methods (Staff Report, p. 38), Coastal staff failed, or declined, to note the obvious discrepancy between LAWA's methodology and the published scientific literature.[4] This is not even a disagreement among experts; our method is published in an international scientific journal while LAWA's is not. Public resource agencies should hold applicants to the use of the best available science, which has not been done in this case.

Consistency Analysis Ignores Major Coastal Zone Mitigation Projects

The scope of the analysis for the consistency determination is incorrect. The Staff Report only addresses the consistency of the development impacts within the Coastal Zone, and fails to analyze the consistency the many mitigation actions that are proposed to be conducted within the Coastal Zone (Staff Report, p. 6). LAWA in its CEQA documents makes clear that it intends to mitigate all non-wetland biological impacts by "enhancing" habitat within the 203-acre butterfly Habitat Restoration Area, which is in the Coastal Zone. The Staff Report suggests that these mitigation projects will be analyzed piecemeal as development permit applications at a later date (Staff Report, p. 6). These mitigation projects are, however, part and parcel of the proposed project for which LAWA is seeking certification — they are fully disclosed in the CEQA documentation and are integral components of the same development. The Staff Report therefore completely ignores a majority of the proposed activities that will occur within the Coastal Zone as a result of the proposed project. These additional mitigation activities should be reviewed at this time for consistency with the Coastal Act. This is necessary because LAWA plans, in part, to mitigate for the loss of grassland habitat by enhancing coastal dune habitat. As Catherine Rich and I discuss in detail in our extensive comments on the CEQA documentation for this project (in the public record and available upon request), it is not necessarily appropriate to mitigate the loss of one habitat type with another. For example, one of the proposed mitigations is to relocate black-tailed jackrabbit from outside the Coastal Zone to the butterfly reserve inside the Coastal Zone. Maintenance of habitat for jackrabbits may be inconsistent with restoration for butterflies, especially given that LAWA reports that the butterfly's foodplant, *Eriogonum parvifolium*, is already declining because seedlings are not becoming established. Management to increase the population of a herbivore may be harmful to the El Segundo blue butterfly. The interaction between the various proposed mitigations should be discussed now, not deferred until a future date.

Existing Dunes Preserve Is Not Being Managed Appropriately for Biological Resources

The Staff Report misinterprets a recommendation of the U.S. Fish and Wildlife Service ("USFWS") that, "FAA and LAWA resume active restoration and management within the El Segundo blue butterfly preserve. Activities should include weed removal, active planting of coast buckwheat plants to replace the decadent and senescent plants, and plan for further

4. Mattoni, R., T. Longcore, C. Zonneveld, and V. Novotny. 2001. Analysis of transect counts to monitor population size in endangered insects: the case of the El Segundo blue butterfly, *Euphilotes bernardino allyni*. *Journal of Insect Conservation* 5:197–206.

restoration activities" (Staff Report, p. 38). This recommendation clearly refers to the entire 203-acre dunes preserve. While staff gives the impression that the management plan now addresses this concern, it most certainly does not. **Only 5.8 acres of the butterfly preserve (~3%) will be restored or managed under the "El Segundo Dunes Habitat Restoration Plan."** This plan does not address the condition (i.e., lack of management) across the rest of the 203-acre preserve, which was the concern of the U.S. Fish and Wildlife Service. The USFWS recommendation is, frankly, a criticism of LAWA's stewardship of the El Segundo dunes. After an excellent restoration completed in 1994, LAWA has not been successful in managing the dunes so that exotic species are controlled and the habitat for the butterfly sustains itself through natural regeneration. Staff misinterprets the "El Segundo Dunes Habitat Restoration Plan" as addressing this problem. I read it cover to cover and it does not.

The lack of a current management plan for the 203-acre preserve is surprising and disappointing. LAWA had a management plan from 1995–2000, but does not seem to have one today (Staff Report, p. 28). Exotic species, especially *Acacia* and *Myoporum*, are now expanding on the restored dunes, as is obvious from driving around the perimeter. If this is the standard of management of which LAWA is capable, then the Commission should have grave concerns about the current project.

Project Would Result in Net Loss of Undeveloped Area in Habitat Restoration Area

The proposed project would result in a net loss of protected natural habitat within an area designated as a nature reserve. Make no mistake, **this proposal would allow a net loss in the size of a coastal preserve and in coastal resources**. Several factors contribute to this situation.

1. While land will be cleared for new navigational aids, the **FAA does not commit to removing all of the old navigational aids and restoring their sites** (Staff Report, p. 34, "The FAA has not yet completed its on-the-ground engineering analysis of the concrete pads to be abandoned. At this time, the FAA is unable to conclude which pads can be removed and which pads, due to their physical characteristics, cannot be feasibly be [*sic*] removed"). To find the project consistent is to approve a proposal to reduce the total habitat area of the preserve. While the 2:1 mitigations may improve habitat quality in portions of the already-protected habitat area; the total non-developed area would decrease.

2. **Coastal staff has preliminarily agreed to allow LAWA and FAA to omit coast buckwheat, *Eriogonum parvifolium*, entirely from restoration plantings in areas where the old navigational aids were found.** This is akin to agreeing to restore coastal sage scrub but wanting to leave out the sage. If coast buckwheat is not part of the plant palette for backdune and foredune sites, then it is not restoration. Coast buckwheat is a "keystone" species — it is an essential part of the plant community. The only possible explanation for this arrangement is that LAWA does not want the El Segundo blue butterfly to spread its range onto the old navigational aid sites, especially those outside of the butterfly preserve. It is not consistent with the goals of the Coastal Act to allow inappropriate restoration just because a landowner is afraid that doing the job right would

attract endangered species. What if a hotel developer in Palos Verdes, for example, wanted to leave California sagebrush out of the restoration plantings when repairing a temporary impact so that the restored vegetation would not support California gnatcatcher? Such a proposal would be dismissed at the staff level. The Commission should absolutely insist that coast buckwheat be included in any foredune or backdune plantings whether the site is in or out of the butterfly preserve. Staff's ill-informed arrangement to the contrary is not ecologically sound, nor is it a fair application of the restoration standards to which the Commission routinely holds other applicants.

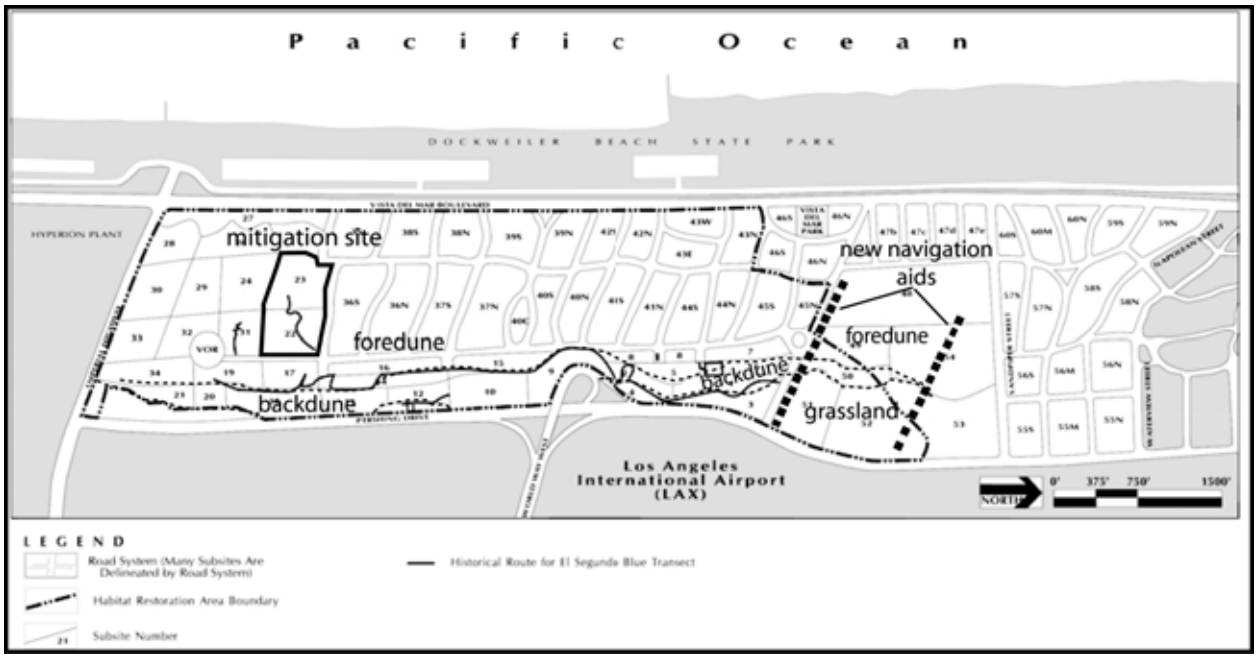

Figure 1. Location of new navigational aids in the El Segundo dunes. The aids would be located in Los Angeles coastal prairie (prairie/grassland), backdune, and foredune habitat. The mitigation site is only foredune habitat.

3. **The restoration plan proposes mitigating for impacts to prairie/grassland and backdune habitat by restoring foredune habitat.** Our research has shown, as has that of LAWA's consultants, that El Segundo blue butterfly density is highest on the backdune slope. Many of the navigational aids will affect backdune and prairie/grassland areas, but the mitigation sites (22 and 23) are foredune habitats and therefore out-of-kind mitigation for many of the impacts (Figure 1). The foredune mitigation sites were surveyed from 1984 to 1994 and consistently supported a below-average number of butterflies, except during a high rainfall year. During many years, foredune sites support 90% fewer butterflies than good backdune sites, so a higher mitigation ratio would be advisable, in addition to in-kind mitigation.

4. **The geographic configuration of the navigational aids would increase "edge" area within the dune system** (Figure 1). Increased edge area is as deleterious as direct habitat

loss for survival of the rare species of the El Segundo dunes. According to the CEQA analysis for the project, four lights will be removed from the butterfly preserve, while eleven new lights will be installed. These new lights would installed be right through the only existing remnant of Los Angeles coastal prairie. Outside the preserve, eight structures would be removed while twelve new structures would be installed. Our previous analysis revealed that over 1,300 feet of new habitat edges will be introduced into the dunes. No analysis or mitigation of these edge effects is apparent in the proposal or Staff Report.

Light

On a separate issue, the consistency review inappropriately minimizes the effects of artificial night lighting on the ecology of the El Segundo dunes.

The consistency review does not discuss the relevant literature to develop thresholds to determine adverse impacts from lighting. Rather, it relies on the rather illogical statement by the applicants that because sensitive species are present in the dunes area with existing light levels, the light does not adversely affect these species (Staff Report, p. 34). Presence of a species in a degraded habitat does not mean that the habitat is not degraded. The conclusion of no impact from existing lighting cannot be drawn without knowing the density of sensitive species in the absence of artificial night lighting. Even using the measurements taken on a clear night for the CEQA review, artificial illumination on the dunes reaches 0.26 fc (2.8 lux), which is an order of magnitude greater than that provided by a full moon (~0.1 lux). The claim that illumination of this magnitude does not affect wildlife is untenable, given the known influences of lunar cycles on wildlife behavior. For example, scorpions stay closer to their burrows during the full moon.[5] Other animals, including snakes,[6] small mammals,[7] lagomorphs (rabbits and hares),[8] and bats,[9] similarly avoid foraging during the full moon to avoid the increased predation risk. With areas of the dunes subjected permanently to illumination brighter than that of a full moon, the conclusion that this baseline condition causes no impacts is not supported by scientific evidence. Even the dimmest illumination found in the baseline conditions at the dunes (0.004 fc = 0.043 lux) is still greater than the light of a quarter moon (0.01 lux), let alone a moonless clear night (i.e., starlight only with no light pollution; 0.001 lux), or a moonless overcast night (i.e., no starlight with no light pollution; 0.0001 lux).

5. Skutelsky, O. 1996. Predation risk and state-dependent foraging in scorpions: effects of moonlight on foraging in the scorpion *Buthus occitanus*. *Animal Behaviour* 52:49–57.
6. Clarke, J.A., J.T. Chopko, and S.P. Mackessy. 1996. The effect of moonlight on activity patterns of adult and juvenile prairie rattlesnakes (*Crotalus viridis viridis*). *Journal of Herpetology* 30(2):192–197. Klauber, L.M. 1939. *Rattlesnakes: their habits, life histories, and influence on mankind*. Second edition. Vol. 1. University of California Press, Berkeley.
7. Lima, S.L. 1998. Stress and decision making under the risk of predation: recent developments from behavioural, reproductive, and ecological perspectives. *Advances in the Study of Behavior* 27:215–290.
8. Gilbert, B.S., and S. Boutin. 1991. Effect of moonlight on winter activity of snowshoe hares. *Arctic and Alpine Research* 23:61–65.
9. Rydell, J. 1992. Exploitation of insects around streetlamps by bats in Sweden. *Functional Ecology* 6:744–750.

With these natural illumination levels in mind, it becomes evident that impacts from additional light created by the project will be significant to wildlife. The proposed project would increase illumination within the Habitat Restoration Area so that illumination would range from 0.344–0.6 fc (3.7–6.5 lux). This illumination is 37 to 65 times brighter than that of a full moon. Given that the wildlife species of the dunes evolved for hundreds of thousands of years with, and are adapted to, a natural light regime with a maximum illumination of the full moon, and some wildlife species may detect and respond to illuminations below 0.01 or even 0.0001 lux,[10] an increase of 0.34 fc (3.6 lux) constitutes a significant adverse impact.

A recently published article in *Conservation Biology* illustrates this point. Rare beach mice on coastal dunes in Florida significantly reduced foraging levels near 40-W "bug" lights and 18-W low pressure sodium vapor lamps.[11] The presumed explanation is that the mice were reducing the risk of predation by avoiding lighted areas. The increased illumination at the dunes from the proposed project would be of this same order of magnitude and consequently impair small mammal foraging ability. Because the dunes at LAX are a potential recovery site for the endangered Pacific pocket mouse, *Perognathus longimembris pacificus*, which likely exhibits the same predator avoidance behavior, the increased lighting from project would reduce probability that recovery for this species can ever be achieved.

The Commission should insist that measures are taken to eliminate the increase in illumination within the El Segundo dunes before a consistency determination or certification is made. It is not a project objective to light natural habitats, and light is easy to control, so it would be feasible to avoid all direct glare increases through careful use of technology and shielding of lights within the dune area and adjacent to it (e.g., shielding all lights associated with the new employee parking lot).

Noise

The logic of the noise analysis is also flawed. This is exemplified by the conclusion that, "Based on the analysis of existing noise levels at locations occupied by sensitive species, and the presence of sensitive species within these areas, it appears that current noise conditions do not adversely affect sensitive species at LAX" (Staff Report, p. 34). Again, as is the case with the analysis of artificial night lighting, insufficient information is available in materials before the Commission to draw this conclusion. If the density of sensitive species without elevated noise levels were known, and those densities remained the same with elevated noise, then perhaps a conclusion of no impact could be reached. But the earlier CEQA documentation does not report density of occupation by any sensitive species (except El Segundo blue butterfly) and presents no comparison to suggest that densities would be the same in the absence of the noise associated with LAX. Without these critical parts of a logical argument, the conclusion that existing noise does not affect sensitive species at LAX is unfounded.

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10. Tarano, Z. 1998. Cover and ambient light influence nesting preferences in the Tungara frog *Physalaemus pustulosus*. *Copeia* 1998(1):250–251.
11. Bird, B. L., L. C. Branch, and D. L. Miller. 2004. Effects of coastal lighting on foraging behavior of beach mice. *Conservation Biology* 18:1435–1439.

Beyond the faulty conclusion that *current* noise levels do not affect sensitive species at LAX, the Staff Report also asserts that *increased* noise would not affect sensitive species. This conclusion relies on the underlying CEQA documentation, which fails to consider reasonable thresholds for noise effects even while referencing a rather exhaustive body of literature that illustrates the adverse impacts of airport noise on vertebrates at levels far below the thresholds in CEQA documents. Chronic noise, even at low levels, is associated with elevated stress hormone levels, higher blood pressure, faster heart rates, and other physiological effects.[12] As a result, birds, mammals, and other vertebrates may show anatomical differences (e.g., smaller body size, enlarged adrenal glands) from prolonged exposure to noise.

A study of the influence of aircraft overflights on birds is cited in the CEQA documentation, noting that, "there were no major differences in the nesting productivity of the most abundant species, and the nesting success was high and similar for both the control site and the test site."[13] This reference is rather disingenuous, because it neglects to inform the reader that the Alaska study site experienced L_{max} below 70 dB(A) while the L_{max} at LAX ranges 90–140 dB(A) under the development proposed at LAX. This represents a considerable difference, because decibels are measured on a logarithmic scale — a noise that is 20 dB louder is *one hundred times* as loud.

Road noise, which is several orders of magnitude quieter than aircraft noise, has been documented to exert an adverse impact on breeding birds. Of 45 bird species investigated in woodlands in The Netherlands, 33 showed significantly depressed breeding density in response to increased noise levels near roads. All species in the small passerine families Sylviidae, Fringillidae, and Emberizidae were affected by noise.[14] Empirical measurement of the threshold value triggering decreased density in woodlands shows that for all bird species combined the threshold value is 42–52 dB(A), with individual species exhibiting thresholds as low as 36 dB(A) and as high as 58 dB(A).[15] Furthermore, years with overall low population densities showed lower threshold levels. Similar research has been conducted for grasslands. Overall, this research shows that breeding bird habitat is degraded at noise levels as low as 36 dB(A).[16]

Mammals (including humans) are likewise vulnerable to impacts from chronic airport noise:

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12. Manci, K.M., D.N. Gladwin, R. Villella, and M.G. Cavendish. 1988. *Effects of aircraft noise and sonic booms on domestic animals and wildlife: a literature synthesis*. U.S. Fish and Wildlife Service National Ecology Research Center, Ft. Collins, Colorado. NERC-88/29. 88 pp.
13. Rozell, K.B. 2001. *Effects of military overflights on nesting neotropical migrant birds*. Alaska Bird Observatory, Fairbanks.
14. Reijnen, R., R. Foppen, and G. Veenbaas. 1997. Disturbance by traffic of breeding birds: evaluation of the effect and considerations in planning and managing road corridors. *Biodiversity and Conservation* 6:567–581.
15. Reijnen, R., R. Foppen, C. ter Braak, and J. Thissen. 1995. The effects of car traffic on breeding bird populations in woodland. III. Reduction of density in relation to the proximity of main roads. *Journal of Applied Ecology* 32:187–202. Reijnen, R., and R. Foppen. 1995. The effects of car traffic on breeding bird populations in woodland. IV. Influence of population size on the reduction of density close to a highway. *Journal of Applied Ecology* 32:481–491. Reijnen, R., R. Foppen, and H. Meeuwsen. 1996. The effects of traffic on the density of breeding birds in Dutch agricultural grasslands. *Biological Conservation* 75:255–260.
16. Reijnen, R., R. Foppen, and H. Meeuwsen. 1996. The effects of traffic on the density of breeding birds in Dutch agricultural grasslands. *Biological Conservation* 75:255–260. Reijnen, R., R. Foppen, and G. Veenbaas. 1997. Disturbance by traffic of breeding birds: evaluation of the effect and considerations in planning and managing road corridors. *Biodiversity and Conservation* 6:567–581.

> Only a few studies of the physiological effects of noise on rodents have involved wild animals. A field study by Chesser et al. (1975) involved two populations of house mice near the end of a runway at Memphis International Airport. Adult mice also were collected from a rural field 2.0 km from the airport field. Background noise levels at both fields were 80–85 dB. Noise levels of incoming and outgoing aircraft at the airport field averaged 110 dB, with the highest reading reaching 120 dB. Total body weights and adrenal gland weights of mice from the fields were measured. Additional mice were captured from the rural field, placed in the laboratory, and exposed to 1 minute of 105-dB recorded jet aircraft noise every 6 minutes to determine if noise was the causative factor. Control mice were not subjected to noise. After 2 weeks, the adrenals were removed and weighed. Adrenal gland weights of male and female mice from the airport field were significantly greater than those of mice from the rural field. The noise-exposed mice in the laboratory study had significantly greater adrenal gland weights than the control mice. After ruling out stress factors, such as population density, Chesser et al. (1975) concluded that noise was the dominant stressful factor causing the adrenal weight differences between the two feral populations.[17]

While house mouse is not of regulatory concern, native small mammal species on the El Segundo dunes include harvest mouse, *Reithrodontomys megalotis*, and desert wood rat, *Neotoma lepida*, which are locally significant, and Pacific pocket mouse, which could be reintroduced at the site. The cursory review of noise issues in the Staff Report does not provide adequate information for the Commission to make a decision, and it errs in accepting faulty logic and inadequate science from the applicant.

We ask that the Commission reject both the consistency determination and the consistency certification until the issues here have been resolved in such a manner that sensitive coastal resources are protected. The current staff analysis contains numerous flaws in logic and interpretation of the scientific literature, which would make it difficult to defend under expert scrutiny.

Sincerely,

Travis Longcore, Ph.D.
Science Director

cc: Peter Douglas, Executive Director

17. Manci, K.M., D.N. Gladwin, R. Villella, and M.G. Cavendish. 1988. *Effects of aircraft noise and sonic booms on domestic animals and wildlife: a literature synthesis*. U.S. Fish and Wildlife Service National Ecology Research Center, Ft. Collins, Colorado. NERC-88/29. 88 pp.