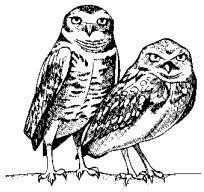

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Adverse Biological Impacts of Proposed Harvard-Westlake School Parking Garage and Rooftop Sports Field

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1 Introduction

The Harvard-Westlake School in Studio City, California proposes to construct a three-story, 750-space parking garage with a lighted athletic field on the roof, associated retaining walls, and a bridge across Coldwater Canyon Avenue. The site is zoned as minimum density residential, is a designated open space in the community plan, and is contiguous on two sides with a large block of protected open space owned by the Mountains Recreation and Conservation Authority (MRCA). This report consists of comments on the biological impacts of the proposed project as represented in a Draft Environmental Impact Report (DEIR) that has been circulated by the City of Los Angeles (City). The expert qualifications of the authors, Travis Longcore, Ph.D. and Catherine Rich, J.D., M.A., are outlined below (Section 6). Both authors have extensive experience assessing the ecological and biological impacts of development in southern California.

The proposed project would result in the destruction of a significant area of California Walnut Woodland for which no mitigation is proposed. The tree planting program proposed for compliance with the City of Los Angeles Protected Tree Ordinance cannot be fit in the area proposed and would decrease the value of existing habitat for wildlife. The findings necessary to permit removal of 129 protected trees, specifically, that those trees impede the "reasonable development" of the property, cannot be made because the property could be developed within the existing zoning. The proposed project would require numerous exceptions in terms of height, access, and setbacks that would make it inconsistent with the character of the community and existing code. The project would introduce another significant source of light and noise pollution into a low-density residential community. The DEIR is technically and legally deficient in identifying these impacts and does not propose mitigations that could reduce these impacts to a less than significant level.

2 Baseline Conditions

2.1 Surveys Not Adequate to Support Conclusions About Species Absence

The DEIR and supporting technical reports inappropriately make sweeping claims based on insufficient surveys about the presence or absence of species. The field surveys were only conducted on two days in March 2011 and the conditions during these surveys may have included more noise and disturbance than normal because of construction on Coldwater Canyon Avenue. Because survey effort and detection probability are correlated (Zonneveld et al. 2003), this meager survey effort is insufficient to assess the presence or absence of the long list of potentially present sensitive species. The DEIR dismisses the possibility of use of the site by Rufous-crowned Sparrow, even though the species has been recorded in nearby canyons (e.g., Franklin Canyon, Benedict Canyon, and Stone Canyon), as documented by reputable observers (see records in eBird). The preparers of the DEIR did not use any tools to quantify wildlife use of the site, such as camera traps, which regularly reveal that wildlife are active up to the edges of human development in the eastern Santa Monica Mountains (Albano et al. 2012).

The City could have taken advantage of valuable "citizen science" efforts that document species presence. In particular, the Cornell Lab of Ornithology maintains the eBird website where volunteer citizen scientists enter sightings of birds. There are multiple checks on the accuracy of the data and the resulting database is of sufficient quality to support scientific publication of the results (Fitzpatrick et al. 2002, Sullivan et al. 2009). These data have been relied upon in top international scientific journals (e.g., Wood et al. 2011) and the eBird approach is recommended for scientific inquiry into environmental impacts on birds (Loss et al. 2012). These data certainly meet the standards for scientific information in the environmental review process and provide a supplement to the description of sensitive species provided by the City in the DEIR.

2.2 Rare Species Not Described

The DEIR includes a list of state and federally protected species that could be present at the project site, but makes no effort to consider "rare" species, which may not enjoy any broad formal protection, but may nevertheless be considered rare within the meaning of CEQA. The CEQA Guidelines define a species as rare when:

> (A) Although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or (B) The species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in the Federal Endangered Species Act (CEQA Guideline 15380(b)(2)).

For example, a list of sensitive bird species for the County of Los Angeles is available (Allen et al. 2009). These include 32 species that are rare in Los Angeles County even though they may be more common in other parts of their range, and 38 species that are also identified as sensitive by various agencies because of their status across a wider region. Allen et al. (2009) also establish a Watchlist for Los Angeles County, which identifies species that are less threatened, but at risk of being added to the sensitive species list if impacts continue to occur (Allen et al.

2009). To comply with CEQA, the City must consider species that are locally rare and whose distributions might be adversely affected by the proposed parking garage and sports field.

In particular, in addition to those impacts already described in the DEIR, the proposed project would result in destruction of habitat for two Los Angeles County sensitive bird species (Greater Roadrunner, *Geococcyx californianus*, and Western Meadowlark, *Sturnella neglecta*) and three species on the Los Angeles County Watchlist (Golden-crowned Kinglet, *Regulus satrapa*, Ruby-crowned Kinglet, *Regulus calendula*, and California Towhee, *Melozone crissalis*).

2.3 Disturbed Land Has Higher Value to Wildlife than Described

The DEIR states that the areas that were formerly occupied by residences but now have ornamental and ruderal vegetation have "minimal habitat value for local wildlife." Such a statement fails to recognize that not all wildlife species require native plants to provide habitat. As long as the area is open space and supports plants, and is contiguous with a large open space, which this site is, then the site will provide habitat for a range of species, including birds, mammal, and insects. The DEIR incorrectly assumes that such open space with ruderal and ornamental vegetation has no habitat value, when in fact it can be habitat for some species of local conservation concern, such as Western Meadowlark and Greater Roadrunner, plus support black-tailed mule deer, coyotes, and other mammals. Rather than simply asserting that ruderal and ornamental habitats do not have value for wildlife, the City could consult the California Wildlife Habitat Relationships system, which assigns habitat values for wildlife species for different vegetation types (California Department of Fish and Game 2005). Vegetation may provide resources for foraging, cover, or reproduction, and in many instances ruderal and ornamental vegetation provides significant habitat for one or more of these activities. The DEIR should therefore describe the actual habitat values of ruderal vegetation within an oak and walnut woodland matrix for the sensitive species on the project site, and provide mitigation for the loss of these habitats as they perform in this landscape context.

3 Impact Analysis

3.1 Threat of Disease to Trees Overstated

The DEIR claims that most of the California Walnuts (*Juglans californica* var. *californica*) on the proposed project site are infected by the fungus *Geosmithia*, and further claims, "This condition appears to always be fatal to the trees" (DEIR, p. 3.3-2). The DEIR provides no source for this claim, nor do the technical reports upon which the section in the DEIR is based. It is known that thousand cankers disease affects *Juglans californica* and has caused some mortality near Sacramento (Utley et al. 2009). Unpublished technical reports indicate that thousand cankers disease is far less lethal in California Walnut (*Juglans californica*) than in Black Walnut (*Juglans nigra*), according to research by the author who described thousand cankers disease (see figure in http://caforestpestcouncil.org/wp-content/uploads/2010/02/hasey.pdf) and a fact sheet provided by plant pathologists, stating that, "Tentatively, it appears that northern California walnut (*Juglans hindsii*) and southern California walnut (*Juglans californica*) show degrees of intermediate susceptibility to thousand cankers disease" (http://bspm.agsci.colostate.edu/files/2013/03/Questions-and-Answers-Revision-April-2012.pdf).

3.2 Standards Not Met to Issue City of Los Angeles Permit to Remove Protected Trees

Ordinance No. 153,478 of the City of Los Angeles was established to "regulate and encourage preservation of oak trees within the City of Los Angeles." The preamble to the Ordinance establishes the ecological, historical, and aesthetic value of oak trees to the City and declares that "proper and necessary steps must be taken in order to curb the destruction of oak trees." The author of the ordinance, former Councilmember Hal Bernson, on his website while in office, listed the law as his first accomplishment, describing himself as "Author of the City's Oak Tree Preservation ordinance *which forbids the destruction of oak trees*" (emphasis added; http://www.ci.la.ca.us/COUNCIL/cd12/bernson.htm [accessed March 22, 2001]). The ordinance was subsequently amended to include other native trees, including Western Sycamore, California Walnut (also known as Southern California Black Walnut), and California Bay (LAMC § 46.01). The ordinance establishes specific conditions under which these protected trees may be removed or relocated, as follows:

> (b) **Board Authority.** The Board of Public Works may grant a permit for the relocation or removal of a protected tree, unless otherwise provided in this section or unless the tree is officially designated as an Historical Monument or as part of an Historic Preservation Overlay Zone, if the Board determines that the removal of the protected tree will not result in an undesirable, irreversible soil erosion through diversion or increased flow of surface waters, which cannot be mitigated to the satisfaction of the City; and
>
> 1. It is necessary to remove the protected tree because its continued existence at the location prevents the reasonable development of the subject property; or
>
> 2. The protected tree shows a substantial decline from a condition of normal health and vigor, and restoration, through appropriate and economically reasonable preservation procedures and practices, is not advisable; or
>
> 3. Because of an existing and irreversible adverse condition of the protected tree, the tree is in danger of falling, notwithstanding the tree having been designated an Historical Monument or as part of an Historic Preservation Overlay Zone.

The project proposes removal of 12 Coast Live Oaks and 117 California Walnut trees. Three Coast Live Oaks and 23 California Walnuts will suffer encroachments within their drip lines. These proposed removals do not meet any of the criteria for approval set forth in the Municipal Code.

Neither the DEIR nor the Protected Tree Report provides any guidance as to which section of the Protected Tree Ordinance is being invoked to justify the tree removals. Although the health of some of the trees is compromised because of infestation from thousand cankers disease, evidence is not presented to justify removal under Section 2 or 3. The only possible section is Section 1, which provides for removal if the location of the trees "prevents the reasonable development of the subject property."

If the construction of a 750-space garage with a rooftop sports field and accessory structure on land zoned as minimum density residential constitutes "reasonable development," then what would be "unreasonable"? A development that requires numerous zoning changes and variances

to side and back yard setbacks and height limits does not, on its face, constitute "reasonable development," which should, at a minimum conform with the existing zoning for a property.

The City of Los Angeles has no established standards to implement the test of "reasonableness" under the Oak Tree Ordinance. However, the City must determine if development is reasonable even when that development conforms to building and zoning requirements, so it would seem that a development that does not conform should not be considered reasonable development for the purpose of protected tree removal. Reasonableness must be a higher standard than conforming with the existing zoning, otherwise the Protected Tree Ordinance would specify that removals are to be permitted whenever the development complies with existing zoning.

From a CEQA standpoint, the proposed project conflicts on its face with the language and intent of the Los Angeles Protected Tree Ordinance, and therefore a finding of no impact after mitigation is not justified. The Protected Tree Ordinance allows mitigation only if the conditions for removal have been met, which they have not.

The intent of the original Oak Tree Ordinance, as described by its author, is to prohibit the destruction of oak [and now other native] trees. Narrow exceptions are made for certain specific conditions, but it is difficult to construe the language of the Protected Tree Ordinance to allow oak tree removal to construct a 750-space parking garage and lighted rooftop sports field on a property zoned as minimum density residential and designated as a desirable open space in the community plan.

3.3 Fails to Recognize California Walnut Woodland as State-designated Special Status Natural Community

A particularly egregious error in the analysis of biological impacts in the DEIR is the failure to recognize that California Walnut Woodland (*Juglans californica* Alliance) is itself a rare vegetation type, the removal of which is a considered significant impact independent of the City's Protected Tree Ordinance. Table 3.3-2 of the DEIR should identify that California Walnut Woodland is recognized as having Global 3 and State 2.1 rarity with a high priority for inventory as a rare natural community (marked with an asterisk on the list of natural communities; see https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=24716&inline=1). To quote the California Department of Fish and Wildlife, "For alliances with State ranks of S1–S3, all associations within them are also considered to be highly imperiled." Incidentally, Table 3.3-2 in the DEIR is missing the rarity designations for all of the natural communities listed (called "habitats").

Presence of a special status natural community should have prompted specific surveys and analysis in the DEIR. Because of the presence of a special status vegetation type, the DEIR must follow specific protocols to map the vegetation and to assess the impacts to it (Department of Fish and Game 2009). These protocols require that the project proponent conduct surveys that satisfy the following requirements:

> Record the following information for locations of each special status plant or natural community detected during a field survey of a project site.

- A detailed map (1:24,000 or larger) showing locations and boundaries of each special status species occurrence or natural community found as related to the proposed project. Mark occurrences and boundaries as accurately as possible. Locations documented by use of global positioning system (GPS) coordinates must include the datum18 in which they were collected;
- The site-specific characteristics of occurrences, such as associated species, habitat and microhabitat, structure of vegetation, topographic features, soil type, texture, and soil parent material. If the species is associated with a wetland, provide a description of the direction of flow and integrity of surface or subsurface hydrology and adjacent off-site hydrological influences as appropriate;
- The number of individuals in each special status plant population as counted (if population is small) or estimated (if population is large);
- If applicable, information about the percentage of individuals in each life stage such as seedlings vs. reproductive individuals;
- The number of individuals of the species per unit area, identifying areas of relatively high, medium and low density of the species over the project site; and
- Digital images of the target species and representative habitats to support information and descriptions.

The botanical surveys fail to meet these guidelines but instead are geared toward compliance with the City's Protected Tree Ordinance.

The assessment of impacts on State-recognized special status natural communities is also lacking. Protocols require the following discussion of the impacts to special status communities such as California Walnut Woodland (Department of Fish and Game 2009):

- A discussion of the significance of special status plant populations in the project area considering nearby populations and total species distribution;
- A discussion of the significance of special status natural communities in the project area considering nearby occurrences and natural community distribution;
- A discussion of direct, indirect, and cumulative impacts to the plants and natural communities;
- A discussion of threats, including those from invasive species, to the plants and natural communities;
- A discussion of the degree of impact, if any, of the proposed project on unoccupied, potential habitat of the species;
- A discussion of the immediacy of potential impacts; and,
- Recommended measures to avoid, minimize, or mitigate impacts.

Because the DEIR fails to recognize the presence of a State-designated natural community, to conduct the appropriate protocol-level surveys of that community, and to provide the required impact analysis for loss of that community, the DEIR is fatally flawed and must be revised and recirculated when the required surveys and impact analysis has been completed.

3.4 Fails to Describe Compliance with County Oak Woodland Protection Laws

The DEIR notes in two places that oak woodlands are protected by County laws. First, it notes that under the California Oak Woodland Protection Act:

> 'A county ... shall determine whether a project within its jurisdiction may result in a conversion of oak woodlands that will have a significant effect on the environment.' Once a determination has been made, counties have the option to 1) evaluate the utility of conservation easements as a vehicle for conservation; 2) enforce mitigation planting; 3) make a [*sic*] in-lieu contribution to the Oak Woodlands Conservation Fund (established in 2001 under the administration of the Wildlife Conservation Board), or implement other mitigation actions as outlined by the county (DEIR, p. 3.3-3).

Elsewhere, the DEIR states that Southern Coast Live Oak Riparian Forest is "protected by County Ordinance (all oak species) (p. 3.3-6). Despite two mentions of County ordinances protecting oak woodlands, the DEIR does not include compliance with Los Angeles County ordinances in either its "Regulatory Framework" section (pp. 3.3-9–3.3-14) or in the impact assessment itself. The DEIR must be revised to indicate how the project will comply with any applicable County ordinances pertaining to the protection of oak woodlands and recirculated for public comment.

3.5 Impacts to Rare Species Not Assessed

As discussed above, the DEIR does not recognize the importance of species that are rare in Los Angeles County, and it therefore does not assess the impacts of the project on these species. In particular, by removing open land habitat in a California Walnut Woodland, the proposed project would remove habitat for Greater Roadrunner and Western Meadowlark, two Los Angeles County Sensitive Species that the DEIR indicates would be present on the project site.

3.6 Lighting Analysis Is Flawed

Illumination is important to understand because it has biological effects. Small mammals respond to illumination in their foraging activities. For example, artificial light of 0.3 and 0.1 lux reduced the activity, movement, or food consumption of a cross-section of rodent species (Clarke 1983, Brillhart and Kaufman 1991, Vasquez 1994, Falkenberg and Clarke 1998, Kramer and Birney 2001). This phenomenon also has been shown in natural (in addition to laboratory) conditions (Kotler 1984). One lux is roughly 0.1 footcandles, so the amounts of light in these studies were ten times lower than the resolution of the illumination diagrams in the DEIR.

Birds can be extremely sensitive to illumination, and extended foraging by species under artificial lights is documented in the literature (Goertz et al. 1980, Sick and Teixeira 1981, Frey 1993, Rohweder and Baverstock 1996). Effects of increased illumination on bird behavior also include changes in singing times (Derrickson 1988, Miller 2006, Kempenaers et al. 2010, Longcore 2010). Those birds that sing earliest are responding to increases in illumination so faint that they are undetectable by humans (Thomas et al. 2002), and well below the resolution of the illumination diagrams in the DEIR, which ignore reflected and scattered light. Research has not yet been published on the energetic costs of singing in the middle of the night, but it is likely not to be beneficial to the individual.

Luminance, and the visibility of lights themselves (whether or not they increase *illuminance*, the measure of illumination) also affects wildlife species. Even if illumination is not appreciably increased, merely seeing the light from the project can influence animal behavior. The DEIR completely ignores this impact.

One example where luminance probably is as or more important than illumination is that of breeding bird density and lights. The one experimental study of the effect of streetlights on breeding bird density shows a negative impact from lights much dimmer than those proposed for the sports fields (De Molenaar et al. 2006). The streetlights in De Molnenaar et al.'s study created a maximum illumination of 20 lux (1.8 footcandles; compared with 30 footcandles on the field on the proposed parking garage). The adverse effects of these lights (decreased density of Black-tailed Godwit nests) were experienced up to 300 m (984 ft) from these lights, extending into areas with negligible increased illumination. The adverse impact, therefore, results from the light being visible, rather than the amount of light incident on the sensitive receptor.

Luminance also presumably is the mechanism that attracts birds and insects to lights. Many families of insects are attracted to lights, including moths, lacewings, beetles, bugs, caddisflies, crane flies, midges, hoverflies, wasps, and bush crickets (Sustek 1999, Kolligs 2000, Eisenbeis 2006, Frank 2006). The metal halide lamps that would most likely be installed would generate significant emissions in the ultraviolet (UV) spectrum, which would make them very attractive to insects (Eisenbeis 2006, Frank 2006, Eisenbeis and Eick 2011, van Langevelde et al. 2011, Barghini and de Medeiros 2012). The lights from the proposed project will act like a "vacuum cleaner," sucking insects out of the adjacent natural open space (Eisenbeis 2006, Eisenbeis and Hänel 2009, Eisenbeis and Eick 2011). Insects attracted to lights are subject to increased predation from a variety of predators, including bats, birds, skunks, toads, and spiders (Blake et al. 1994, Frank 2006). Even streetlights significantly alter insect communities around them (Davies et al. 2012, Meyer and Sullivan 2013), let alone sports fields that are lit orders of magnitude brighter.

The main argument in the project proposal and environmental assessment is that all of that light will be directed downward and consequently will not affect the surroundings. This characterization is not accurate. The DEIR neglects to properly account for scattering and reflection of light, the effects of which are readily observable at the other lighted sports field already in operation on the school site.

3.6.1 Reflectivity of Turf

The angle that light shines on a surface affects the amount of light that is reflected by that surface. Research on the reflectivity of artificial turf within the visual spectrum of light (390–700 nm) is not readily available, so for the purpose of analysis, we assume that artificial turf has similar properties to and is at least as reflective as natural turf. When light shines straight down on turf, roughly 55% of the light is reflected back upward. When the light is at a 60º angle, as little as 12% of the light is reflected upward. The average amount of light reflected upward from light shining on turf at angles of 60–90º is 20–25% (from figures produced by Dr. C. Baddiley, scientific advisor to the British Astronomical Association Campaign for Dark Skies). Although the DEIR calls this "diffuse reflection" and asserts that it does not create direct glare, such reflection does create light spillover and glare conditions around the project site that will be bright enough to affect the behavior, orientation, and circadian rhythms of wildlife species.

3.6.2 Light Scattering by Aerosols

Light is scattered by aerosols in the air. These can be dust, pollen, or droplets of water. The DEIR fails to account for the scattering of light from fog and clouds or other aerosols that will take place in the space between the lamps and the ground, or the exacerbating effect of fog and clouds on the light that is reflected from the turf itself.

Fog is extremely efficient at reflecting light and recent research has shown that foggy conditions result in a sixfold increase in night sky brightness (a measure of light pollution) (Ścięžor et al. 2012). Furthermore, clouds reflect light downward, so even if it were only cloudy (and not also foggy), the light reflected downward would be substantially greater than that under a clear sky (Kyba et al. 2011, Ścięžor et al. 2012). The environmental documentation for the project does not account for either scattering of light by fog or reflection by clouds.

3.6.3 Light Scattering by Air

An assessment of light pollution from the proposed sports field lighting should also consider scattering from molecules in the air, which is known as Rayleigh scattering. This type of scattering increases with shorter wavelengths of light. It is for this reason that full-spectrum lamps (such as metal halide and LED lamps) will cause 10–20% more light pollution than high-pressure sodium lamps of the same luminous output (Bierman 2012).

3.6.4 Lighting Assessment Does Not Measure Light at Biologically Relevant Levels

The figures for the lighting assessment (e.g, DEIR, Appendix I) were prepared from the perspective of a lighting designer and measure only the direct illumination from the fixtures in question. They do not incorporate light scattering or reflection, which, as discussed above, can be significant. Furthermore, the figures are prepared in footcandles with a resolution of 0.1 footcandles. This information is inadequate because many animals respond to far lower illumination levels than the 0.1 footcandles provided in the maps. Light from a full moon is at most 0.03 footcandles. Therefore locations identified as 0.1 footcandles on the applicant's lighting plan would be subjected to illumination more than three times greater than that of a full moon, and that does not even take into account scattering and reflection of light. Because many species exhibit lunar cycles in behavior, the illuminations of the full moon, half moon, and new moon are biologically relevant. Experimental studies have shown animal behavior linked to illumination levels several orders of magnitude below 0.1 footcandles (Rich and Longcore 2006).

A proper analysis of the impacts of the sports field lighting would include legitimate depictions of the conditions during fog, low cloud cover, and clear sky conditions. As provided, only clear sky conditions are analyzed.

3.6.5 Lighting Impact Analysis Does Not Consider Natural Areas to Be Sensitive Receptors

The entire lighting analysis centers on impacts to residences surrounding the project site. Because of this focus, the lighting documentation does not provide the information necessary to evaluate the impacts on natural habitats that would be found directly adjacent to the project site. Were this analysis to be done, it would certainly show that these habitats would be severely

degraded by night lighting during those times when the sports field lights are on. Even though the DEIR claims that impacts from lighting will be less than significant (DEIR, p. 3.3-20), this claim is based on a flawed lighting analysis that does not even map levels of light that are biologically relevant (i.e., minimum unit is 0.1 footcandles, while wildlife species are sensitive to light as dim as 0.00001 footcandles) and does not take into account luminance as an adverse impact as is well-documented in the scientific literature.

3.6.6 Spectrum of Lights Proposed Increases Biological Impacts

The environmental analysis for the project does not incorporate any of the voluminous research that shows the differential effects of different wavelengths of light on biological systems (see reviews in Rich and Longcore 2006, Gaston et al. 2012). Neither the aesthetics analysis nor the biological resources analysis takes into account the wavelengths of light that would be produced by the proposed project. This light, which would be produced by the metal halide lamps typically used by Musco (the firm providing the field lighting system), would be much "whiter" than existing lights in the vicinity of the project. As a typical sports field installation, the color temperature of the lights proposed for the project would be 5,000–8,000 K, which is a very "cold" blue light. By contrast, incandescent bulbs produce much "warmer" light that does not have emissions in the shorter wavelengths (blue, violet, and ultraviolet) that are present in light from metal halide lamps. A high color temperature appears whiter while a low color temperature appears yellower.

The conclusion from a number of studies on humans and wildlife is that whiter light (that is, full-spectrum light with blue and violet light included) has more adverse impacts (Pauley 2004, Rich and Longcore 2006, van Langevelde et al. 2011, Gaston et al. 2012, Stone et al. 2012).

The blue-heavy spectral character of the metal halide lamps has the potential to affect human health because blue light gives a physiological signal to humans (and other organisms) that it is daytime, disrupting circadian rhythms (Pauley 2004). The wavelengths of light that we see as blue are 500 nanometers (nm) and shorter. Light of these wavelengths, when sufficiently bright, suppresses the production of the hormone melatonin in humans and other animals. This can occur at levels previously thought to be too dim to have any effect (< 1 lux, while a streetlight illuminates to 15–100 lux) (Brainard et al. 2001). For humans, melatonin provides many health benefits, including playing a role in preventing breast and prostate cancer (Davis et al. 2001). Scientists have shown that regions of the world with high levels of outdoor lighting have higher breast and prostate cancer rates. For example, studies have shown:

- Breast cancer tumors that are grafted onto rats grow much faster when nourished by blood from women exposed to light at night (i.e., low melatonin) than do tumors nourished by blood taken from women who were in darkness before the blood draw (i.e., high melatonin) (Blask et al. 2005);
- Women who report having more light in their bedrooms are at significantly greater risk of breast cancer than women who report that their bedrooms are dark (Kloog et al. 2011);
- Globally, breast cancer risk in countries with the brightest outdoor lighting is 30–50% greater than countries with the lowest outdoor lighting, even when accounting for other demographic differences (Kloog et al. 2010);

- Within a country (Israel), the level of outdoor lighting was significantly associated with breast cancer risk after all other demographic and ethnic variables were controlled (Kloog et al. 2008); and
- Risk of prostate cancer was found to be significantly greater for men living in areas of the world that have the most outdoor lighting, when all other factors were controlled (Kloog et al. 2009).

Exposure to light at night and associated sleep disruptions, which can be caused by bright streetlights outside houses and apartments, is also associated with depression, insomnia, mood disruptions, weight gain, and metabolic disruption (Chepesiuk 2009, Fonken and Nelson 2011).

In sum, the DEIR and its technical reports make no reference to any of the scientific literature surrounding the adverse biological or ecological impacts of artificial night lighting, leaving the conclusions drawn about these topics without any evidence. The light produced by the sports field would cause light pollution. Indeed, sports fields are the second biggest contributor to light pollution in cities, after commercial districts, and contribute far more to light pollution relative to their area than any other feature (Luginbuhl et al. 2009). This amount of light will significantly degrade the usefulness of the surrounding area, which includes protected lands and parks, as habitat for wildlife, in addition to causing a significant aesthetic impact.

3.7 Noise

Noise has adverse impacts on wildlife, but this impact is not discussed in any detail. The noise analysis in the DEIR is geared only to human receptors and does not enumerate or describe the impacts to wildlife from increased noise, both from construction and from operations of the new sports field. A significant scientific literature can be found to document that noise has a range of adverse impacts on wildlife (see e.g., Slabbekoorn and Ripmeester 2008), including interference with communication of songbirds, distraction of prey species (making them more susceptible to predation), and a whole range of other adverse impacts (Chan et al. 2010, Laiolo 2010). The DEIR does not contain any analysis that would support the assertion that these impacts would be reduced to a less than significant level through limiting noise to daytime hours.

Excess noise results in a series of adverse health effects in humans, including increased blood pressure and associated risk of cardiovascular disease, hypertension, stress, sleep disruption, and other adverse effects (Öhrstrom et al. 2006, Goines and Hagler 2007, Bodin et al. 2009). Some of these effects are reversible after the noise stops, but some are not; noise exposure can cause a permanent increase in risk of cardiovascular disease (see references in Goines and Hagler 2007). The DEIR neither acknowledges that a significant medical literature exists that could be used to describe the health impacts of noise, nor uses it in determining whether the impacts of the proposed project could be mitigated.

4 Mitigation Measures Are Inadequate to Offset Significant Impacts

4.1 Regulatory Compliance

The DEIR proposes that the City of Los Angeles Protected Tree Ordinance can be satisfied by mitigating the loss of 12 Coast Live Oaks and 117 California Walnuts by planting at a 4:1

mitigation ratio on site. Even a cursory investigation of the project site confirms that the area remaining on the project site is inadequate to plant 516 trees, except at densities that would be ecologically and arboriculturally inappropriate.

To illustrate that the mitigation site does not have enough room to implement the tree planting program, we placed circles representing the typical tree canopy of a California Walnut or Coast Live Oak on the conceptual mitigation planting plan. This plan, which does not show specific locations for trees, indicates the canopies of existing trees that are to remain on the project site. Upon inspection, it quickly becomes evident why the planting plan does not indicate the specific location of the trees to be planted: they would have to be planted too close to each other, which would be immediately noticeable upon inspection by any informed observer. We assumed that mature tree canopies would be 40 feet across, which is consistent with the sizes of the mature trees currently on the site. Setting aside all limitations of the site in terms of slope, soils, aspect, and ecological appropriateness, the areas designated as planting areas can only fit at most 55 additional trees at maturity. To do even this would be ecologically inappropriate, because the distribution of the species on the site should be taken into account. For example, the slopes facing north should be treed, while those facing south probably should not.

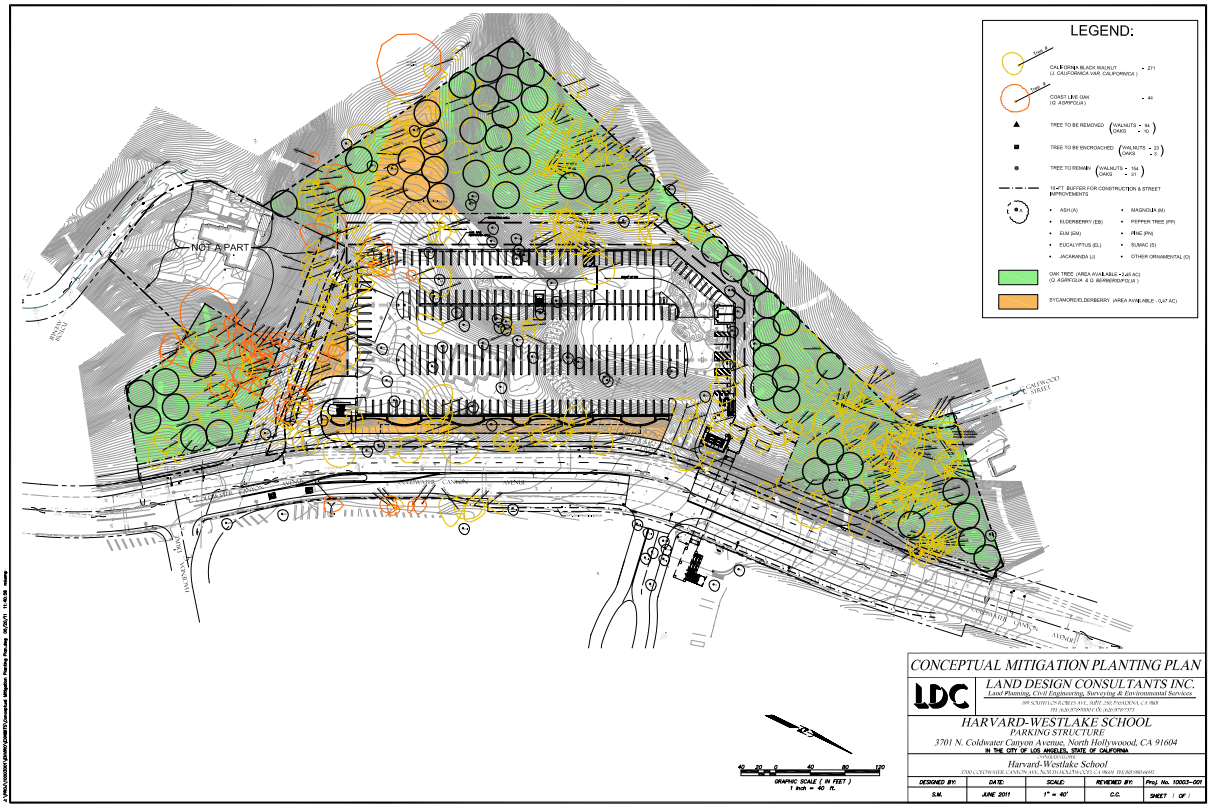

Figure 1. Project proponent's conceptual mitigation planting plan with annotations (black circles) noting locations that could conceivably accommodate a mature Coast Live Oak or California Walnut with a 40-foot diameter canopy (54 locations). The DEIR proposes planting 516 trees in this area, which is far too dense and those "mitigation" trees would not survive to maturity.

Furthermore the protected tree mitigation is proposed out of kind (Scrub Oak, Western Sycamores, and Mexican Elderberries for Coast Live Oaks and California Walnuts). We disagree strongly with this approach for several reasons. First, the DEIR proposed to remove 117 California Walnut trees but not to replace any of them because of the presence of thousand cankers disease on the site. As documented above, thousand cankers disease is not as damaging to California Walnut as to Black Walnut and this drastic measure is not necessary. The DEIR presents no evidence documenting the fatality rate for California Walnuts that would support this extreme decision. By failing to replace California Walnuts in kind, the ecological impacts will not be mitigated, because the habitat type will be changed entirely (Longcore et al. 2000). Second, the proposed inclusion of Western Sycamores is completely inappropriate relative to the water availability on the site. This species requires more water than is available at this location on a hillslope and the specimens will only survive if given supplemental water, which itself would have significant adverse impacts on biological resources. Third, the density of Mexican Elderberry that is implied by the planting plan is completely inappropriate from an ecological perspective. This species simply does not occur naturally on the landscape in extensive monocultures as would be necessary to achieve the mitigation density proposed in the DEIR. Finally, to plant the remaining 2.19 acres of habitat on the project site at the density necessary for this mitigation measure would cause adverse impacts on the habitat already existing. The disturbance of planting would have adverse impacts on the understory plants existing there; any water used for plantings would have adverse impacts on existing trees and native invertebrate communities; and the access and maintenance activity would disturb wildlife.

Compliance with the plantings necessary for the Protected Tree Ordinance cannot be achieved within boundaries of the project site as is proposed and to do so would itself cause significant adverse impacts. The project proponents apparently have not engaged the services of a qualified restoration ecologist, who would have noticed this significant flaw in the tree mitigation scheme.

4.2 Project Design Feature

The "Project Design Feature" PDF-BIO-1 states that by allowing 2.19 acres of the project site to remain it will "function as a component of the natural ecology of the area except in the immediate vicinity of the new development." Although the DEIR does not claim that this offsets any particular impact, it should not even be listed as a mitigation measure. First, the site will be subject to significant disturbance by implementation of program to plant and maintain 516 new trees in this area. Second, the remaining natural habitat will be subject to significant light and noise pollution from the proposed parking garage. Third, the remaining natural habitat will be subject to significant light and noise pollution from the proposed sports field. Although the remaining habitat would still provide some natural values, it would be turned into a tree farm, albeit a native tree farm, with little accounting for the natural distribution of native trees on the landscape and cumulatively would provide less natural habitat than before the project.

4.3 Mitigation Measures

MM-BIO-1 consists of several parts.

1. Fences to protect habitat during construction. This measure seems reasonable, but is not linked with any particular impact described in the DEIR.

2. Development of a plan for the 2.19 acres of habitat to remain on site with goal of enhancing it for wildlife. Unfortunately this will be made impossible by the dense planting that would be required to mitigate the loss of protected tree species on site.

3. Salvage of seeds from trees removed on site. This measure does not reduce any identified impact and obscures the utter failure to recognize that California Walnut Woodland is a sensitive habitat type, the loss of which must be mitigated by means other than the proposed tree-planting scheme (e.g., through off-site acquisition of mitigation lands).

4. Specifies that no material will be removed from "laurel sumac, elderberry, oak, toyon, walnut, and sugar bush" during fuel modification. This is highly unlikely to be able to be implemented because it is at the discretion of the City of Los Angeles Fire Department. Laurel Sumac and Sugar Bush are almost always trimmed during fuel modification activities. It is improper to assume that the project proponents will be able to keep the site free from the influences of fuel modification requirements.

5. Posting signs to discourage trespassing on the native habitat area. This seems like a good idea but does not mitigate any identified impact in the DEIR.

MM-BIO-2 specifies construction of a fence to keep wildlife from falling down over the retaining walls. Such protection from a steep drop-off would be important, but does not mitigate for any identified impact in the DEIR. Animals plunging to their deaths over the retaining walls should be disclosed in the biological resources impact assessment. The aesthetic impacts of this fence should be disclosed and it should be included in all of the diagrams and rendering of the project site, including in the project description.

MM-BIO-3 prohibits use of invasive exotic plant species on the site. Although invasive exotic plant species are more problematic than noninvasive exotic species, the entire planting plan could be native species. Given that the project will result in a significant decrease in native habitat, every opportunity should be taken to use native grasses, annuals, and shrubs on the site.

MM-BIO-4 gives limits on lighting as follows:

> Shielded directional lighting, including, as appropriate, internal silvering of the globe or external opaque reflectors to direct light away from natural areas, and motion sensing technology that cause lights to only be on when required by the presence of people. All lighting adjacent to natural areas shall be low luminescence, directed downwards or towards the structure and shall include shielding to the extent necessary to prevent direct artificial illumination of natural areas and to protect nocturnal biological resources, as determined to be appropriate by a qualified biologist.

This mitigation measure is far too vague to assess (e.g., what is "low luminescence"?) but if the rest of the impact assessment is a guide, it will not be adequate to reduce impacts from lighting to a less than significant level. Will all of the lights inside the parking garage — the light from which would be visible from outside the parking garage — be extinguished at night? At what time? The DEIR does not provide an evaluation of lighting impacts at biologically relevant levels (e.g., 0.01–0.001 lux [0.001–0.0001 footcandles]) and major impacts of artificial night

lighting on wildlife are not even discussed in the DEIR. It is not therefore credible to assert that the project proponents have the expertise available to "protect nocturnal biological resources."

MM-BIO-5 directs the project proponent to conduct surveys for Plummer's Mariposa Lily before construction and to relocate any individuals found. This mitigation measure is only made necessary by the inadequate surveys conducted for the project. The project proponents should already know if Plummer's Mariposa Lily is present on site and have an actual (not speculative) plan to mitigate for any impacts.

MM-BIO-6 proposes to "salvage" wildlife from the site before construction by relocating it to "one of the local designated open space preserves." It is illegal to relocate wildlife under California Fish and Game law. This constitutes harassment of birds and mammals under Section 551.1 of the California Fish and Game Code. The project proponent should provide proof of permits to relocate wildlife in this manner. Relocation of birds would also violate the Migratory Bird Treaty Act.

It is not a generally accepted mitigation measure to relocate native wildlife. Relocation is usually acceptable because of the interactions between animals at the recipient site. California Meadow Vole provides an example of a small mammal species that could potentially be relocated under such an unwise scheme. Male California Meadow Voles maintain territories and are aggressive to interlopers, which is especially true during breeding (Ostfeld 1985a, Ostfeld 1985b). Female voles are aggressive toward unfamiliar females (Ostfeld 1986). As a result, relocation is a wholly inappropriate mitigation measure. Any recipient site for relocated individuals would have to already be unoccupied by the species (to avoid intraspecific interactions), and the density of the relocated individuals could not exceed the capacity of the habitat to support them. The DEIR provides no information about what species would be relocated, where (exactly) they would be relocated, how such relocations would comply with state and federal law, and what the status of the species at the recipient site would be at the time of relocation to avoid adverse interaction. Consequently, relocation should not be accepted as a mitigation measure.

Furthermore, it is not likely that any of the surrounding "open space preserves" will want to accept wildlife salvaged from the site. The project proponents should disclose what wildlife they intend to release where and show permission of both the landowners and the California Department of Fish and Wildlife for doing so. Even then, this mitigation measure does not actually offset adverse impacts to wildlife, because the habitat for them is still lost.

BIO-MM-7 limits vegetation removal to the period September 1 to February 15 to avoid disruption of breeding birds. The DEIR does not provide any information about the breeding period of the birds that might be present on the project site and therefore lacks the logical reasoning to conclude that this measure would be effective. Some bird species begin nesting and breeding behavior before February 15 in the spring. For example, Great Horned Owl may start nesting in late January and early February in Los Angeles County, while Anna's Hummingbird and Allen's Hummingbird routinely nest starting in December and extending through July. Nesting of Anna's Hummingbird in the Los Angeles Basin has been recorded as early as December 11 (Allen 1942), and certainly can be well underway in January (Pitelka 1951). This

measure therefore will not be effective at ensuring compliance with the Migratory Bird Treaty Act and a thorough site survey for nests (especially hummingbird nests) must be undertaken before any vegetation removal.

The DEIR should also note that killing a "song bird" or "robbing" its nest is a violation of Los Angeles Municipal Code Section 53.48. This ordinance is still applicable beyond the dates of nesting listed in the DEIR and so any construction, tree removal, or grading on the project site should be supervised by a consulting biologist to avoid harming birds and their nests.

The DEIR requires that construction activities must be avoided within 200 feet of any active nest for native birds and 500 feet for any raptors. The project site is immediately adjacent to native vegetation so it is extremely likely that there will be nesting birds within 200 feet of the proposed construction site. The applicant should make arrangements to survey these areas and the City should be prepared to halt development any time of the year to avoid impacts to these species.

5 Conclusion

The deficiencies in the DEIR for impacts to biological resources are so great that they must be remedied and a revised DEIR circulated for public comment. Fundamental errors in identifying special status habitat types, failure to consider relevant scientific literature, and grossly inept mitigation proposals render the DEIR wholly inadequate to comply with CEQA.

6 About the Authors

Dr. Travis Longcore and Catherine Rich are the principals of Land Protection Partners. Dr. Longcore is Associate Professor (Research) at the USC Spatial Sciences Institute and Associate Adjunct Professor at the UCLA Institute of the Environment and Sustainability where he has taught, among other courses, Bioresource Management, Environmental Impact Analysis, Field Ecology, and the Environmental Science Practicum. He was graduated *summa cum laude* from the University of Delaware with an Honors B.A. in Geography, holds an M.A. and a Ph.D. in Geography from UCLA, and is professionally certified as a Senior Ecologist by the Ecological Society of America. Catherine Rich holds an A.B. with honors from the University of California, Berkeley, a J.D. from the UCLA School of Law, and an M.A. in Geography from UCLA. She is Executive Officer of The Urban Wildlands Group and lead editor of *Ecological Consequences of Artificial Night Lighting* (Island Press, 2006) with Dr. Longcore. Longcore and Rich have authored or co-authored over 25 scientific papers in top peer-reviewed journals such as *Conservation Biology*, *Biological Conservation*, *Current Biology*, *Environmental Management*, and *Frontiers in Ecology and the Environment*. Land Protection Partners has provided scientific review of environmental compliance documents and analysis of complex environmental issues for local, regional, and national clients for 16 years.

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