Comment Letter O12

From: Lorrie J. LeLe
To: Harris, Susan
Cc: Kyle C. Jones
Subject: Comments on Draft EIR - Boulder Brush Facilities (4646)
Date: Monday, February 03, 2020 4:07:30 PM
Attachments: 4646-013j - ABJC DEIR Comment to SD County.pdf

Please find attached comments submitted on behalf of Citizens for Responsible Wind Energy and Doyle Mills on the Boulder Brush Facilities Draft Environmental Impact Report.

The original will be mailed, along with a flash drive containing the expert Scott Cashen's cite references.

O12-1

If you have any questions, please contact Kyle Jones directly.

Thank you,

Lorrie LeLe
Legal Assistant
Adams Broadwell Joseph & Cardozo
520 Capitol Mall, Suite 350
Sacramento, CA 95814
ljlele@adamsbroadwell.com | Phone: 916. 444.6201 Ext. 10 | Fax: 916.444.6209 |

ADAMS BROADWELL JOSEPH & CARDOZO

A PROFESSIONAL CORPORATION

ATTORNEYS AT LAW

520 CAPITOL MALL, SUITE 350
SACRAMENTO, CA 95814-4721

TEL: (916) 444-6201
FAX: (916) 444-6209
kjones@adamsbroadwell.com

SO. SAN FRANCISCO OFFICE

601 GATEWAY BLVD., SUITE 1000
SO. SAN FRANCISCO, CA 94080
TEL: (650) 589-1660
FAX: (650) 589-5062

DANIEL L. CARDOZO
CHRISTINA M. CARO
SARA F. DUDLEY
THOMAS A. ENSLOW
ANDREW J. GRAF
TANYA A. GULESSERIAN
KENDRA D. HARTMANN*
KYLE C. JONES
RACHAEL E. KOSS
NIRIT LOTAN
AARON M. MESSING
WILLIAM C. MUMBY
CAMILLE G. STOUGH

MARC D. JOSEPH
Of Counsel

**Admitted in Colorado*

February 03, 2020

Via U.S. Mail and Electronic Mail

Susan Harris
Planning and Development Services
County of San Diego
5510 Overland Avenue, Suite 310
San Diego, CA 92123
Email: Susan.Harris@sdcounty.ca.gov

Re: Comments on the Draft Environmental Impact Report for the Boulder Brush Facilities (SCH No. 2019029094, PDS2019-ER-19-16-001, PDS 2019-MUP-19-002)

Dear Ms. Harris:

We are writing on behalf of Citizens for Responsible Wind Energy and Doyle Mills to provide comments on the December 12, 2019 Draft Environmental Impact Report ("DEIR") prepared by DUDEK for the County of San Diego ("County"), pursuant to the California Environmental Quality Act ("CEQA"),[1] for the Boulder Brush Facilities, which include a lease agreement between the Campo Band of Diegueño and Terra-Gen Development Company LLC ("Campo Lease") for the Campo Wind Project ("Project").[2] The DEIR incorporates by reference a May 2019 Draft Environmental Impact Statement ("DEIS") prepared by the Bureau of Indian Affairs ("BIA"), pursuant to the National Environmental Policy Act. ("NEPA").

O12-2

[1] 42 U.S.C. §§ 4321 et seq.
[2] County of San Diego, Draft Environmental Impact Report for the Campo Wind Project with Boulder Brush Facilities, (December 2019), (hereafter "DEIR").

The Project includes a lease allowing Terra-Gen to develop, construct, operate and ultimately decommission a renewable energy generation facility on land within the boundary of the Campo Indian Reservation in Eastern San Diego County, California. The Campo Wind Project consists of both the Campo Wind Facilities on land within the Reservation and the Boulder Brush Facilities on adjacent private lands within the Boulder Brush Boundary. The Project includes up to 60 wind turbines, each approximately 4.2 megawatts in capacity and approximately 586 feet in total height, access roads, electrical collection and communication system, project collector substation, operations and maintenance facility, meteorological towers, water collection and septic system, temporary concrete batch plant, temporary staging areas, on-reservation portion of the generation tie line ("gen-tie line"), and boulder brush facilities, which include a portion of the gen-tie line, a high-voltage substation, a switchyard, and access roads). O12-3

As explained in these comments, the DEIR fails to comply with CEQA's basic requirement to act as an "informational document." It is devoid of meaningful details upon which the public and decisionmakers can adequately assess the Project's significant impacts. The DEIR fails to comply with the requirements of CEQA by (1) failing to include a complete project description (2) piecemealing the Campo Wind Project from the Torrey Wind Project, (3) failing to accurately describe the affected environment, (4) not disclosing, analyzing, or discussing mitigation for the Project's significant impacts, and (5) impermissibly deferring identification of mitigation for the Project's significant impacts. Because of these shortcomings, the DEIR is deficient as a matter of law and its determinations that it properly identifies and mitigates the Project's significant impacts are not supported by substantial evidence. O12-4

For each of these reasons, the County may not approve the Project until a revised environmental review document is prepared and re-circulated for public review and comment. O12-5

We reviewed the DEIR, its technical appendices, and the reference documents with the assistance of biologist Scott Cashen.[4] Mr. Cashen provides substantial evidence of potentially significant effects that have not been adequately disclosed, analyzed, or mitigated. Mr. Cashen's technical comments are attached hereto and are hereby submitted to the County, in addition to the comments in this letter. The County must respond to these consultants' comments separately and individually.[5]

O12-6

I. STATEMENT OF INTEREST

Citizens for Responsible Wind Energy is an unincorporated association of individuals and labor organizations with members who may be adversely affected by the potential public and worker health and safety hazards and environmental and public service impacts of the Project. The association includes San Diego County residents and California Unions for Reliable Energy ("CURE") and its members and families and other individuals that live, recreate and/or work in San Diego County (collectively "Citizens").

Citizens supports the development of clean, renewable energy technology, including the use of wind power generation, where properly analyzed and carefully planned to minimize impacts on public health and the environment. Wind energy projects should avoid impacts to sensitive species and habitats, water resources, and public health, and should take all feasible steps to ensure unavoidable impacts are mitigated to the maximum extent feasible. Only by maintaining the highest standards can energy supply development truly be sustainable.

O12-7

The individual members of Citizens, including Doyle Mills, and the members of the affiliated labor organizations live, work, recreate and raise their families in San Diego County. They would be directly affected by the Project's environmental and health and safety impacts. Individual members may also work constructing the Project itself. They will be first in line to be exposed to any health and safety hazards that may be present on the Project site. They each have a personal interest

[4] Scott Cashen, Letter from Scott Cashen to Kyle C. Jones, Comments on the Draft Environmental Impact Report for the Campo Wind Project with Boulder Brush Facilities (January 30, 2020) (hereafter "Cashen Comments") **Exhibit B**; Materials cited will be provided on a separate storage device in the mailing of these comments.
[5] *Appalachian Mountain Club v. Brinegar* 394 F.Supp. 105 (D.N.H. 1975).

in protecting the Project area from unnecessary, adverse environmental and public health impacts.

The organizational members of Citizens and their members also have an interest in enforcing environmental laws that encourage sustainable development and ensure a safe working environment for the members that they represent. Environmentally detrimental projects can jeopardize future jobs by making it more difficult and more expensive for industry to expand in the County, and by making it less desirable for businesses to locate and people to live and recreate in the County, including the Project vicinity. Continued degradation can, and has, caused construction moratoriums and other restrictions on growth that, in turn, reduces future employment opportunities.

O12-7 Cont.

Finally, the organizational members of Citizens are concerned with projects that can result in serious environmental harm without providing countervailing economic benefits. CEQA provides a balancing process whereby economic benefits are weighed against significant impacts to the environment. It is in this spirit we offer these comments.

II. LEGAL BACKGROUND

CEQA requires that an agency analyze the potential environmental impacts of its proposed actions in an environmental impact report ("EIR") (except in certain limited circumstances).[6] The EIR is the very heart of CEQA.[7] "The foremost principle in interpreting CEQA is that the Legislature intended the act to be read so as to afford the fullest possible protection to the environment within the reasonable scope of the statutory language."[8]

O12-8

CEQA has two primary purposes, none of which is fulfilled by the DEIR. First, CEQA is designed to inform decision makers and the public about the potential, significant environmental effects of a project.[9] "Its purpose is to inform the public and its responsible officials of the environmental consequences of their decisions before they are made. Thus, the EIR "protects not only the environment

[6] See, e.g., Pub. Resources Code § 21100.
[7] *Dunn-Edwards v. BAAQMD* (1992) 9 Cal.App.4th 644, 652.
[8] *Comtys. for a Better Env' v. Cal. Res. Agency* (2002) 103 Cal. App.4th 98, 109 ("*CBE v. CRA*").
[9] CEQA Guidelines § 15002(a)(1).

but also informed self-government."[10] The EIR has been described as "an environmental 'alarm bell' whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return."[11]

Second, CEQA requires public agencies to avoid or reduce environmental damage when "feasible" by requiring "environmentally superior" alternatives and all feasible mitigation measures.[12] The EIR serves to provide agencies and the public with information about the environmental impacts of a proposed project and to "identify ways that environmental damage can be avoided or significantly reduced."[13] If the project will have a significant effect on the environment, the agency may approve the project only if it finds that it has "eliminated or substantially lessened all significant effects on the environment where feasible" and that any unavoidable significant effects on the environment are "acceptable due to overriding concerns."[14]

O12-8 Cont.

While the courts review an EIR using an "abuse of discretion" standard, "the reviewing court is not to 'uncritically rely on every study or analysis presented by a project proponent in support of its position. *A clearly inadequate or unsupported study is entitled to no judicial deference*."[15] As the courts have explained, "a prejudicial abuse of discretion occurs "if the failure to include relevant information precludes informed decisionmaking and informed public participation, thereby thwarting the statutory goals of the EIR process."[16]

---

[10] *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal. 3d 553, 564.
[11] *Berkeley Keep Jets Over the Bay v. Bd. of Port Comm'rs*. (2001) 91 Cal. App. 4th 1344, 1354 ("*Berkeley Jets*"); *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810.
[12] CEQA Guidelines § 15002(a)(2) and (3); *see also Berkeley Jets*, 91 Cal.App.4th at 1354; *Citizens of Goleta Valley*, 52 Cal.3d at 564.
[13] CEQA Guidelines §15002(a)(2).
[14] Pub. Resources Code § 21081; CEQA Guidelines § 15092(b)(2)(A) & (B).
[15] *Berkeley Jets*, 91 Cal. App. 4th 1344, 1355 (emphasis added), *quoting, Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 391 409, fn. 12.
[16] *Berkeley Jets*, 91 Cal.App.4th at 1355; *San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 722; *Galante Vineyards v. Monterey Peninsula Water Management Dist*. (1997) 60 Cal.App.4th 1109, 1117; *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 946.

III. THE DEIR FAILS TO INCLUDE A COMPLETE PROJECT DESCRIPTION AND FAILS TO ANALYZE POTENTIALLY SIGNIFICANT IMPACTS FROM THE WHOLE PROJECT

The DEIR does not meet CEQA's requirements because it fails to include a complete project description, rendering the entire analysis inadequate. Without a complete project description, the environmental analysis under CEQA will be impermissibly narrow, thus minimizing the Project's impacts and undercutting public review.[17]

CEQA places the burden of environmental investigation on the government rather than the public. Accordingly, a lead agency may not hide behind its failure to obtain a complete and accurate project description.[18] CEQA requires that the project description contained in a CEQA document that is circulated for public review contain sufficiently detailed information to permit a meaningful evaluation and review of the potential environmental impacts of a proposed project.[19] California courts have repeatedly held that "an accurate, stable and finite project description is the sine qua non of an informative and legally sufficient [CEQA document]."[20] In contrast, an inaccurate or incomplete project description renders the analysis of environmental impacts inherently unreliable. Without a complete project description, the environmental analysis under CEQA will be impermissibly narrow, thus minimizing the project's impacts and undercutting public review.[21]

O12-9

Here, the County violates CEQA by omitting numerous aspects of the Project entirely, or merely mentioning aspects of the Project in passing without analyzing those Project component's potentially significant impacts, in in the DEIR.

A. The Campo Lease Agreement

O12-10

The Project Description notes, but does not include, the Campo Lease as part of the Project.[22] Later, the DEIR notes that the Campo Lease includes terms that

[17] *See, e.g., Laurel Heights Improvement Assn. v. Regents of the Univ. of Cal.* (1988) 47 Cal.3d 376.
[18] *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 311.
[19] CEQA Guidelines § 15124.
[20] County of Inyo v. City of Los Angeles (3d Dist. 1977) 71 Cal.App.3d 185, 193.
[21] *See, e.g., Laurel Heights Improvement Association v. Regents of the University of California* (1988) 47 Cal.3d 376.
[22] DEIR, p. 1.2.

exempt the Project from tribal regulations and land use plans. In response to our request for the lease, the regulations and the land use plans, the County responded that all of the documents were privileged and withheld the records from the public.[23] Thus, the DEIR fails to disclose the whole of the project by omitting changes in applicable tribal regulations plans and how those changes will impact the environment in violation of CEQA. The DEIR must be withdrawn and recirculated with an explanation of which regulations and land use policies would be changed, an analysis of the potentially significant impacts from these changes and a clear identification of mitigation for those significant impacts.

O12-10 Cont.

B. Roads

The DEIR contains an inconsistent description of the Project's proposed roads and how much disturbance associated with roads would occur from the Project.[24] In some areas, the DEIR mentions a six-foot wide vegetation management area around access roads, whereas in others it mentions 20-feet of fuel modification.[25] Additionally, the DEIR does not disclose or mention road alterations outside of the Project boundary needed to transport wind turbine components, such as blades, that often require multiple vehicles and modifications of vegetation and roads along the route.[26] These aspects of the proposed Project are critical to the required analysis of potentially significant permanent and temporary direct and indirect impacts from the Project's required roads.

O12-11

C. Meteorological Towers

The DEIR states that the Project will include three permanent meteorological towers including lattice structures, fencing, and lighting that have the potential to impact species.[27] The DEIR does not depict where these towers are, preventing anyone from being able to evaluate their potentially significant impacts, which will increase and increase in greater degrees the closer the towers are located near

O12-12

[23] DEIR, p. 3.1.6-6; Email from Randall Sjoblom, San Diego County to Sheila Sannadan, Adams, Broadwell, Joseph & Cardozo, RE: [Confidential: Attorney-Client Communication] FW: Extension Letter re PRAR for Campo Wind Project DEIR-referenced records (Jan. 17, 2020) **Exhibit C**.
[24] Cashen Comments, p. 2.
[25] Cashen Comments, p. 2.
[26] Cashen Comments, p. 2.
[27] Cashen Comments, pp. 2-3.

turbines.[28] The Project's proposed meteorological towers are critical to the required analysis of potentially significant permanent and temporary direct and indirect impacts from the Project. O12-12 Cont.

D. Water Line

The DEIR states that the Project's Operations and Maintenance Facility would receive water via a water line but fails to disclose the route of the line or address any impacts from installation of the water line.[29] Presumably, the water line will extend to the Project's on-reservation groundwater wells, located miles away from the turbines at the southern end of the Campo Reservation.[30] The Project's proposed water line is critical to the required analysis of potentially significant permanent and temporary direct and indirect impacts from the Project. O12-13

E. Retention Pond

The DEIR states that the Project includes a retention pond, but does not discuss its function, location, or dimensions, precluding the ability of the public to evaluate the retention pond's potentially significant impacts.[31] This description is critical to the required analysis of potentially significant permanent and temporary direct and indirect impacts from the Project's proposed retention pond. O12-14

F. Decommissioning

The DEIR describes Project decommissioning in vague terms, stating that it is subject to the terms of the Campo Lease, which was withheld from the public.[32] For example, the DEIR states that the disturbed areas around turbines would be restored, which is inconsistent with the Project description provided in the BIA's DEIS, which does not require restoration.[33] The DEIR mentions revegetation with local seed sources *if feasible*, but this is improperly in the project description, there is no analysis in the DEIS or DEIR regarding potentially significant impacts from decommission in the first place, and there is no analysis of potentially significant O12-15

[28] Cashen Comments, pp. 2-3.
[29] Cashen Comments, p. 3.
[30] DEIR, pp. 3.1.5-21-3.1.5-22, Appendix J-1, figure 9.
[31] Cashen Comments, p. 3.
[32] Cashen Comments, p. 4; **Exhibit C**.
[33] Cashen Comments, p. 4.

impacts if revegetation efforts with local seed sources is feasible and is not feasible.[34] Finally, no mitigation measure is identified to require revegetation.[35] These issues also violate CEQA by "compressing the analysis of impacts and mitigation measures into a single issue,"[36] which is discussed further below.

In sum, the DEIR fails to describe several components of the Project, which are necessary for the public and decision makers to understand, review and comment on the Project's potentially significant impacts. Therefore, the DEIR fails to serve its purpose as an informational document. The DEIR must be withdrawn and recirculated with this Project information included.

O12-15 Cont.

IV. THE DEIR IMPERMISSIBLY PIECEMEALS THE PROJECT FROM THE TORREY WIND PROJECT

CEQA prohibits a project proponent from seeking approval of a large project in a smaller pieces in order to take advantage of environmental exemptions or lesser CEQA review for smaller projects.[37] California courts have repeatedly held that "an accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient [CEQA document]."[38] CEQA requires that a project be described with enough particularity that its impacts can be assessed.[39] As articulated by the court in *County of Inyo v. City of Los Angeles*, "a curtailed, enigmatic or unstable project description draws a red herring across the path of public input."[40] Without a complete project description, the environmental analysis under CEQA is impermissibly limited, thus minimizing the project's impacts and undermining meaningful public review.[41]

O12-16

[34] Cashen Comments, p. 5.
[35] Cashen Comments, p. 5.
[36] *Lotus v. Dep't of Transp*. (2014) 223 Cal. App. 4th 645, 651-52.
[37] *Arviv Enterprises, Inc. v. South Valley Area Planning Com*., 101 Cal. App. 4th 1337, 1340 (2002).
[38] *County of Inyo v. City of Los Angeles* (3d Dist. 1977) 71 CalApp.3d 185, 193.
[39] *Id.* at 192.
[40] *Id.* at 197-198.
[41] *See, e.g., Laurel Heights Improvement Assn. v. Regents of the University of California* (1988) 47 Cal.3d 376.

CEQA prohibits such a piecemeal approach and requires review of a Project's impacts as a whole.[42] "Project" is defined as "the whole of an action," which has the potential to result in a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment.[43] CEQA mandates "that environmental considerations do not become submerged by chopping a large project into many little ones -- each with a minimal potential impact on the environment -- which cumulatively may have disastrous consequences."[44] Before undertaking a project, the lead agency must assess the environmental impacts of all reasonably foreseeable phases of a project.[45]

Courts have found improper piecemealing where a lead agency conducts separate CEQA reviews for related activities proposed by the same applicant in the same vicinity. In *Plan for Arcadia v. City Council of Arcadia*, a developer submitted two applications for developments on a 400-acre property, first a 72-acre shopping center and then a parking lot to serve a racetrack on the property.[46] A site plan showed that the owner had plans to redevelop the entire property.[47] Although both projects were exempt from CEQA because they predated CEQA's effective date, it was "clear" to the court that they were "related to each other and that in assessing their environmental impact they should be regarded as a single project under [CEQA]."[48]

In *Tuolumne County Citizens for Responsible Growth, Inc. v. City of Sonora,* the court articulated "general principles" for determining whether two actions are one CEQA project, including "how closely related the acts are to the overall objective of the project," and how closely related they are in *time*, *physical location*, and *the entity undertaking the action*.[49] The court rejected arguments that a shopping center

O12-16 Cont.

[42] 14 Cal. Code Reg. § 15378, subd. (a); *Burbank- Glendale-Pasadena Airport Authority v. Hensler* (1991) 233 Cal.App.3d 577, 592.
[43] 14 Cal. Code Reg., § 15378.
[44] *Bozung v. LAFCO* (1975) 13 Cal.3d 263, 283-84; *City of Santee v. County of San Diego*, (1989) 214 Cal.App.3d 1438, 1452.
[45] *Laurel Heights Improvement Assoc. v. Regents of the Univ. of Calif.* (1988) 47 Cal.3d 376, 396-97, 253 Cal.Rptr. 426) (EIR held inadequate for failure to assess impacts of second phase of pharmacy school's occupancy of a new medical research facility).
[46] *Plan for Arcadia v. City Council of Arcadia* (1974) 42 Cal.App.3d 712, 718, 721
[47] *Id.* at 719.
[48] *Id.* at 723, 726.
[49] *Tuolumne County Citizens for Responsible Growth, Inc. v. City of Sonora* (2007) 155 Cal.App.4th 1214, 1226-1227 ("*Tuolumne*").

and nearby road alignment were "separate and independent" projects, and held that (1) separate approvals do not sever the connections between two activities; (2) the broad definition of a CEQA "project" extends beyond situations where a future activity is "necessitated by" an earlier one (noting that when actions "actually will be taken," the appropriate inquiry is whether they are related to one another, i.e. they comprise the "whole of an action" or "coordinated endeavor"); and (3) the applicable standard is not always whether two actions "could be implemented independently of each other."[50]

Here, the DEIR notes that part of the Boulder Brush facilities would be needed to connect the Torrey Wind Project to the grid in addition or alternatively to the Campo Wind Project.[51] The Torrey Wind Project is also owned and proposed by the Applicant, Terra-Gen and located on the same parcels as the Boulder Brush facilities.[52] The Torrey Wind Project is currently undergoing CEQA review by the County at the same time.[53] Thus, this Project and the Torrey Wind Project are extremely closely related as they are undergoing permitting at the same time, in the same physical location, and being proposed by the same Applicant. The Boulder Brush facilities are also partially necessary for the Torrey Wind Project. As such, the Boulder Brush Facilities, the Torrey Wind Project and the Campo Wind Project should be considered in a single EIR, as required by CEQA to ensure the County does not undermine the public's ability to understand the impacts from these two projects.

O12-16 Cont.

V. THE DEIS FAILS TO MEET THE REQUIREMENTS OF CEQA AND CANNOT BE USED FOR THE DEIR

O12-17

CEQA allows the County to rely on an EIS, rather than requiring preparation of an EIR, only when the EIS has been prepared before the EIR would be completed

[50] *Id.* at 1228-1230 (citing 14 Cal. Code Reg. § 15378(c) and analyzing *Sierra Club v. W. Side Irr. Dist.* (2005) 128 Cal.App.4th 690, 698-700).
[51] DEIR, p. 1-5.
[52] County of San Diego, Notice of Preparation Document for Torrey Wind, (Aug. 9, 2018), pp. 1-3, *available at* https://www.sandiegocounty.gov/content/dam/sdc/pds/ceqa/TorreyWind/TWNOP/Torrey%20Wind%20NOP%20and%20Initial%20Study%20Final%208-9-18.pdf; *see also* DEIR, p. 1-99.
[53] County of San Diego, Notice of Preparation Document for Torrey Wind, (Aug. 9, 2018), *available at* https://www.sandiegocounty.gov/content/dam/sdc/pds/ceqa/TorreyWind/TWNOP/Torrey%20Wind%20NOP%20and%20Initial%20Study%20Final%208-9-18.pdf.

for the project, the EIS complies with the CEQA Guidelines.[54] Also, because NEPA does not require separate discussion of mitigation measures or growth inducing impacts, these points of analysis will need to be added, supplemented, or identified for the entire Project before the EIS can be used as an EIR.[55] Here, the County in the DEIR relies on the BIA's EIS for the portions of the Project on tribal land and, instead, incorporates by reference the DEIS. For numerous reasons, the County's reliance on the BIA's EIS rather than preparing its own draft EIR violates the CEQA Guidelines.

O12-17 Cont.

A. The DEIS Has Not Been Completed and Does Not Comply with NEPA

First, the CEQA Guidelines only allow for use of an EIS instead of an EIR where the EIS has been prepared before an EIR has been completed for a project. Here, the EIS is still in draft form, subject to changes. It has not been completed and thus any conclusions incorporated by reference in the DEIR could be changed or removed entirely. Also, as explained in Citizens' comments on the DEIS that have been submitted to the BIA and are incorporated herein, the DEIS fails to comply with NEPA and must be substantially revised and recirculated prior to being considered by the BIA.[56] The County cannot rely on the fatally flawed draft EIS, as a substitute for analysis required by CEQA.

O12-18

B. The DEIS Does Not Comply with the CEQA Guidelines

Additionally, the County cannot rely on the DEIS as a substitute for the County's required analysis of the Project, pursuant to CEQA, because the DEIS does not comply with CEQA, as required by section 15221 of the CEQA Guidelines. In many resource areas, the DEIS' discussion was limited to analyzing impacts, as required by Federal laws, and not as required by state law or county requirements. For example, the DEIS only analyzes impacts to species listed under the Endangered Species Act, whereas CEQA requires the County to analyze whether the Project would have an adverse effect on state listed species and whether the project interferes with local resource protection ordinances.[57]

O12-19

[54] CEQA Guidelines § 15221 subd. (a).
[55] CEQA Guidelines § 15221 subd. (b).
[56] *See* **Exhibit A.**
[57] CEQA Guidelines, Appendix G.

Second, the DEIS does not require mitigation for impacts from the project and instead merely recommends them. Further, the DEIR states that the County cannot ensure that these measures will be required by the BIA.[58] The DEIS and DEIR conflict with the CEQA Guidelines requirement that lead agencies eliminate or substantially lessen all significant effects on the environment before approving a project.[59] Not only is this a substantive problem, but it is procedural as well. The State has already recognized this discrepancy in its CEQA Guidelines, which state "[b]ecause NEPA does not require separate discussion of mitigation measures or growth inducing impacts, these points of analysis will need to be added, supplemented, or identified for the entire Project before the EIS can be used as an EIR.[60] Because the DEIS does not comply with the CEQA Guidelines, it cannot be used instead of the required analysis in the County's DEIR. The County must withdraw and recirculate the DEIR with the proper analysis and identification of mitigation included in the DEIR itself.

O12-19 Cont.

VI. THE DEIR FAILS TO DESCRIBE THE EXISTING ENVIRONMENTAL SETTING

The County describes the existing environmental setting incomplete, thereby skewing the County's impact analysis in the DEIR. The existing environmental setting is the starting point from which the lead agency must measure whether a proposed Project may cause a significant environmental impact.[61] CEQA defines the environmental setting as the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published, from both a local and regional perspective.[62]

O12-20

Describing the environmental setting accurately and completely for each environmental condition in the vicinity of the Project is critical to an accurate and meaningful evaluation of environmental impacts. The importance of having a stable, finite and fixed environmental setting for purposes of an environmental

[58] DEIR, pp. 8-2-8-2.
[59] CEQA Guidelines § 15092.
[60] CEQA Guidelines § 15221 subd. (b).
[61] *See, e.g.*, *Communities for a Better Env't v. S. Coast Air Quality Mgmt. Dist.* (Mar 15, 2010) 48 Cal.4th 310, 316; *Fat v. City of Sacramento* (2002) 97 Cal.App.4th 1270, 1278, *citing* Remy, et al.; Guide to the Calif. Environmental Quality Act (1999) p. 165.
[62] CEQA Guidelines §15125(a)(1); *Riverwatch v. City of San Diego* (1999) 76 Cal.App.4th 1428, 1453.

analysis was recognized decades ago.[63] Today, the courts are clear that "[b]efore the impacts of a Project can be assessed and mitigation measures considered, an [EIR] must describe the existing environment. It is only against this baseline that any significant environmental effects can be determined."[64]

An EIR must also describe the existing environmental setting in sufficient detail to enable a proper analysis of project impacts.[65] The CEQA Guidelines provide that "[k]nowledge of the regional setting is critical to the assessment of environmental impacts."[66] This level of detail is necessary to "permit the significant effects of the project to be considered in the full environmental context."[67]

O12-20 Cont.

An accurate description of the affected environment is an essential prerequisite for an adequate analysis of Project impacts. Here, however, some critical baseline information is incomplete, outdated, or was never provided.

A. The DEIR Fails to Adequately Describe the Affected Environment for Biological Resources

The DEIR fails to accurately and adequately describe the area affected for numerous biological resources. Without an accurate description of the affected environment, there is no way to determine the Project's impacts to biological resources and, therefore, no way to develop, apply and enforce appropriate mitigation for those impacts. The DEIR must be revised to include accurate and complete descriptions of baseline conditions for biological resources.

O12-21a

1. Special-Status Plants

The DEIR includes surveys for special-status plants, but Mr. Cashen notes that many of these surveys were done at times when several species were not blooming or fruiting.[68] For example, Tecate tarplant surveys were only conducted during the first three days in August 2018, which is the very edge of the time when

O12-21b

[63] *City of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185.
[64] *City of Amador v. El Dorado City Water Agency* (1999) 76 Cal.App.4th 931, 952.
[65] CEQA Guidelines § 15125; *Galante Vineyards v. Monterey Peninsula Water Mgmt. Dist.* (1997) 60 Cal.App.4th 1109, 1121-22.
[66] CEQA Guidelines § 15125(c).
[67] *Id.*
[68] Cashen Comments, p. 5.

the plant blooms.[69] Further, this survey was conducted during a drought year, limiting detection even more.[70] Thus, the DEIR lacks substantial evidence to support its description of the environmental setting for special-status plants.

O12-21b Cont.

2. Quino Checkerspot Butterfly

The DEIR lacks substantial evidence to support its description of the environmental setting for Quino Checkerspot Butterfly ("Quino"). The DEIR fails to properly explain to the public the importance of the Project site to Quino. Mr. Cashen explains that the site is a core occurrence complex of the Quino, with habitat that can support a greater number of the species than normal.[71] Further, the drier nature of the Project area compared to other Quino population areas makes the Project region more important as its populations are better able to adapt to changing climate conditions.[72] Urbanization and habitat fragmentation are the primary threats to the species in San Diego County.[73]

The DEIR also misleads the public by stating that the Quino surveys followed United States Fish and Wildlife Service ("USFWS") guidelines, which is not correct.[74] Surveys were performed too close together and were conducted too quickly.[75] Surveys were also conducted on days where weather did not meet the requirements of the USFWS guidelines.[76] The DEIR thus fails to accurately assess the Quino's use of the site and underestimates the importance of the region to the Quino.

O12-21c

3. Birds

The DEIR lacks substantial evidence to support its description of the environmental setting for bird species. The DEIR fails to include a survey report to show the data collected during point counts and, instead, only provides a list of

O12-21d

[69] Cashen Comments, p. 5.
[70] Cashen Comments, p. 5.
[71] Cashen Comments, pp. 6-7.
[72] Cashen Comments, pp. 6-7.
[73] Cashen Comments, pp. 6-7.
[74] Cashen Comments, p. 7.
[75] Cashen Comments, pp. 7-8.
[76] Cashen Comments, p. 8

birds observed.[77] This prevents the public from being able to assess the frequency of use of the Project site by bird species,[78] which is essential for evaluating the potentially significant decreases in use of the Project site by bird species or, in other words, deaths of birds.

O12-21d Cont.

4. Golden Eagle

The DEIR lacks substantial evidence to support its description of the environmental setting for golden eagles and nests. Golden eagle populations are declining through the western United States and are extremely sensitive to additional mortality because they occur at low densities, have late ages of maturity, and many juveniles do not survive until breeding age.[79] Compliance with USFWS guidance is necessary to avoid violations of the Bald and Golden Eagle [80]Protection Act.[81] This guidance requires site-specific surveys of golden eagles in order to properly ascertain population data. The DEIR does not comply with this guidance because it did not rely on surveys conducted at all of the required times or for enough time.[82] The DEIR attempts to count surveys used for small birds as indicative of existing golden eagles, which Mr. Cashen explains is ineffective because small birds have different activities than golden eagles.[83] Overall, the surveys fail to accurately document golden eagle use in the area.[84]

The DEIR also states, without substantial evidence, that there are no suitable trees for nesting in the Project's location.[85] The DEIR later notes that the site includes live oak woodland with trees up to 82 feet, which are tall enough to support golden eagle nests.[86] Despite the presence of these trees, the County did not attempt to locate golden eagle nests on site.[87] Publicly available data also shows that there was an active eagle nest within five miles of the Project site and

O12-21e

[77] Cashen Comments, p. 8.
[78] Cashen Comments, p. 8.
[79] Cashen Comments, p. 8.
[80] Cashen Comments, p. 9.
[81] Cashen Comments, p. 9.
[82] Cashen Comments, pp. 9-10.
[83] Cashen Comments, p. 9.
[84] Cashen Comments, p. 10.
[85] Cashen Comments, p. 10.
[86] Cashen Comments, p. 10.
[87] Cashen Comments, p. 10.

up to ten golden eagle nesting territories near the Project site.[88] Because golden eagle mortality from wind turbines is dependent on the proximity of nests to turbines, the County is required to obtain surveys of golden eagles that conform to USFWS guidance in order to properly establish the environmental setting for golden eagles.[89]

O12-21e Cont.

5. Bats

The DEIR relies on only one study for bats that was conducted for a separate wind project from 2011 and 2012.[90] This survey was insufficient to establish baseline information for the Project, because it involved two acoustic monitors in a single location.[91] Mr. Cashen notes that the survey for the other project does not show the behavior of bats near the Project's proposed turbine locations, nor does it show the populations of bats that will be present in the Project area.[92] Based off of this flawed data, the DEIR concludes that there are only 13 bat species present on the Project site, whereas the neighboring Tule Wind Project documented 22 species.[93] The DEIR also states that there is only one bat species with the potential to roost onsite, yet other studies in the area have documented numerous bat roosts in the Campo Corridor.[94] Therefore, the DEIR lacks substantial evidence to support its description of the existing setting for bat species.

O12-21f

The County must obtain a survey following guidelines established by USFWS, California Energy Commission, and California Department of Fish and Wildlife to accurately provide data on the existing environmental setting.[95] Then, the County must recirculate a revised DEIR with a revised description of the setting and analysis of potentially significant impacts.

[88] Cashen Comments, p. 11.
[89] Cashen Comments, p. 11.
[90] Cashen Comments, p. 13.
[91] Cashen Comments, p. 13.
[92] Cashen Comments, pp. 13-14.
[93] Cashen Comments, p. 14.
[94] Cashen Comments, p. 15.
[95] Cashen Comments, pp. 13-15.

6. California Condor

The DEIR erroneously states that the California condor has a very low chance to occur, even though the condor has been documented on the Project site in the past and is expected to expand in population within the life of the Project.[96] Therefore, the DEIR lacks substantial evidence to support its description of the existing setting for condors. As a result, the DEIR fails to discuss the condor activity at the Project site and discuss the potential for condors in the future within the time frame of Project operation.[97] The DEIR must be revised and recirculated accordingly. O12-21g

7. Wetlands

The County notes in the DEIR that the wetlands within the Campo Reservation *could* be impacted by the Project but does not bother to determine if any wetlands *actually exist* before summarily declaring the impact significant and unavoidable.[98] The County's DEIR fails to comply with CEQA, as clearly set forth by the Supreme Court in *Sierra Club v. Fresno*. CEQA requires the County to disclose the impacts, and thus a discussion of the existing environmental setting, even if an impact is found to be significant and unavoidable.[99] In order to disclose the impacts, the County must first start with accurately describing the existing environmental setting. Here, the County failed to do so for wetlands. O12-21h

8. Movement Corridors

The County states in the DEIR that the Project site is not a readily identifiable wildlife movement corridor because the Project does not constrain movement.[100] The County's statement about wildlife corridors is not supported by substantial evidence. Mr. Cashen explains that the Project site is an Essential Connectivity Area that provides connectivity between large, natural habitat blocks.[101] The County must revise the DEIR to disclose that the Project is within O12-21i

[96] Cashen Comments, p. 12.
[97] Cashen Comments, p. 12.
[98] DEIR, p. 2.3-90.
[99] *See Sierra Club v. Fresno*, (2018) 6 Cal. 5th 502, 518-521.
[100] DEIR p. 2.3-33.
[101] Cashen Comments, p. 15.

the Essential Connectivity Area as part of the existing setting and analyze the Project's potentially significant impacts on this important corridor.

In sum, the County fails to accurately and sufficiently describe the existing environmental setting, which is required for the County to conduct an adequate significant impact analysis in the DEIR. Therefore, the DEIR fails to serve its purpose as an informational document and must be withdrawn, revised and recirculated for public review.

O12-21i Cont.

VII. THE COUNTY MUST DISCLOSE, ANALYZE, AND MITIGATE ALL POTENTIALLY SIGNIFICANT PROJECT IMPACTS IN THE DEIR

The County fails to consider all of the Project's significant and foreseeable environmental impacts to biological resources, public health and groundwater resources in the DEIR. In other instances, the County's conclusions regarding impacts in the DEIR are not supported by substantial evidence. The County also failed to require mitigation for potentially significant impacts to public health and the environment. Therefore, the County has failed to comply with CEQA. The County must revise its impacts analysis and issue a substantially revised DEIR for public review and comment.

O12-22a

A. The DEIS Fails to Adequately Disclose, Analyze, and Mitigate Potentially Significant Impacts to Biological Resources

The DEIR fails to adequately analyze and mitigate the Project's potentially significant impacts to numerous species. The DEIR must be revised accordingly.

1. Special-Status Plants

Mr. Cashen found many flaws with the County's analysis of the Project's potentially significant impacts on special-status plants. First, Mr. Cashen notes that the Project will disturb 41 percent of the Boulder Brush area, leading to significant fragmentation of plant populations within the Project site.[102] Second, the DEIR notes that the Project would have indirect impacts on special-status

O12-22b

[102] Cashen Comments, pp. 17-18.

plants but does not quantify the impacts, thereby failing as an informational document.[103] State law *requires* the County to evaluate significant indirect impacts:

> Direct and indirect significant effects of the project on the environment shall be clearly identified and described, giving due consideration to both the short-term and long-term effects. The discussion should include relevant specifics of the area, the resources involved, physical changes, alterations to ecological systems, and changes induced in population distribution, population concentration...[104]

Mr. Cashen also found that the mitigation cited by the DEIR purporting to address indirect impacts to special-status plants would be unrealistic to actually mitigate impacts and that a minimum of a 200-foot buffer is required to ensure avoidance of significant impacts. Mr. Cashen concluded that the DEIR lacks substantial evidence to determine that these impacts have been mitigated to a level below significance.[105]

Finally, for County-protected plants within the Campo Corridor, the DEIR notes that they exist, but did not attempt to survey or even estimate the amount of plants that would be impacted by the Project, failing as an informational document. The DEIR also improperly labels these impacts as significant and unavoidable without even disclosing the impacts, in violation of CEQA.[106] At a minimum, Mr. Cashen states that the County could have estimated the scope of potentially significant impacts to special-status plants within the Campo Corridor and required the Applicant to provide compensatory mitigation.[107]

O12-22b Cont.

2. Quino Checkerspot Butterfly

The DEIR claims that the Project site contains almost 800 acres of Quino habitat, of which 327.6 acres would be impacted.[108] This was based on modeling that included numerous flaws and improperly excluded habitat from counting.

O12-22c

[103] Cashen Comments, p. 18.
[104] CEQA Guidelines § 15126.2, subd. (a).
[105] Cashen Comments, p. 18.
[106] *See Sierra Club v. Fresno*, (2018) 6 Cal. 5th 502, 518-521.
[107] Cashen Comments, p. 19.
[108] DEIR, p. 2.3-48.

The DEIR states that modeling was consistent with USFWS guidance, which is incorrect.[109] Mr. Cashen contacted the USFWS about the model which confirmed that it actually conflicts with USFWS guidance.[110] Thus, the model used does not provide substantial evidence to show all Quino habitat within the Project site, nor does it allow the DEIR to fulfill its role as an informational document by disclosing the scope of impacts to the species.

After developing a flawed habitat model, the DEIR excludes the area claimed to be unsuitable for habitat, based on an outdated 2010 survey.[111] However, more recent surveys detected Quino or host plants in those areas that were excluded by the older survey.[112] More recent detection of the species and habitat necessarily shows that these areas are suitable for Quino, and impacts to these areas are required to be analyzed and mitigated under State law.[113] Further, the authors of the 2010 survey found numerous flaws with their own survey, leading them to reassess the survey area in 2012 where they determined that there were 3,803 acres of Quino habitat in the Campo Corridor.[114] Mr. Cashen found that the DEIR does not explain the 2,200 acre discrepancy in habitat.[115] Therefore, the County lacks substantial evidence to support its conclusions.

The DEIR contains exclusion areas identified within a 2018 survey within the Campo Corridor, but does not define the process used to exclude areas as unsuitable.[116] The public is unable to determine whether the whole area was surveyed and how and why areas were deemed unsuitable, and thus cannot verify that significant Project impacts are adequately documented.[117] Also, the 2018 and 2019 surveys of the Boulder Brush Corridor failed to accurately document the scope of habitat on site. The County provided no map of host plants, and an accurate survey of 517 acres would have been impossible with just one biologist, as the DEIR claims.[118] The DEIR thus failed to accurately account for all Quino habitat,

O12-22c
Cont.

[109] Cashen Comments, p. 20.
[110] Cashen Comments, p. 21.
[111] Cashen Comments, p. 22.
[112] Cashen Comments, p. 23.
[113] Cashen Comments, p. 23.
[114] Cashen Comments, pp. 23-24.
[115] Cashen Comments, p. 24.
[116] Cashen Comments, p. 26.
[117] Cashen Comments, p. 26.
[118] Cashen Comments, p. 26.

excluded suitable habitat without justification and lacks substantial evidence to support its conclusions.

Mr. Cashen goes on to highlight that the assessment of impacts from the Project in the DEIR was unsupported and inconsistent with the DEIS. The scope of suitable habitat and impacts was not mapped so it cannot be verified whether all Project features were included and whether the impact estimates were correct.[119] Areas of habitat identified in the DEIS were removed in the DEIR, suggesting that either the baseline values used were changed or one of the documents is incorrect.[120]

The County's DEIR relies on the BIA's DEIS' analyses for impacts within the Boulder Brush Corridor but the BIA concluded, without any evidence, that Quino was not present within the Boulder Brush Corridor.[121] The County's DEIR actually includes detection of five Quino within the Boulder Brush Corridor in 2019, leading to the complete refutation of its assertion that Quino was absent.[122]

Additionally, the BIA's DEIS concluded that impacts to Quino would be temporary and not adverse because the area would be passively revegetated.[123] To the contrary, the DEIR – albeit summarily - concluded that impacts were permanent and potentially significant due to the lack of a revegetation plan within the DEIS even with enforceable success criteria .[124] Thus, the DEIR cannot rely on the DEIS for analysis of impacts to Quino since the County does not agree that the BIA was correct in describing the impacts as only temporary and not adverse.

The DEIR fails to accurately assess habitat and impacts from the Project on the Quino, failing as an informational document. The DEIR lacks substantial evidence to support its conclusions, whereas Mr. Cashen provides substantial evidence that impacts to the Quino would be significant and require further mitigation.

O12-22c
Cont.

[119] Cashen Comments, pp. 27-28.
[120] Cashen Comments, pp. 28-29.
[121] Cashen Comments, p. 30.
[122] Cashen Comments, pp. 30-31.
[123] Cashen Comments, p. 31.
[124] Cashen Comments, p. 31.

3. Bats

The DEIR wrongly concludes that bat use is low on the site, despite failing to conduct required studies to adequately determine bat use.[125] From there, the DEIR asserts that impacts will not be significant, despite strong evidence that bats are significantly harmed by wind turbines.[126] Mr. Cashen found that a similar "low use" determination was found at the neighboring Tule Wind Project, yet the County found impacts to be significant in that document.[127] The County thus lacks substantial evidence to determine bat use and declare impacts are less than significant. The data is available, and an analysis is feasible. The County could have relied on post-construction mortality monitoring from neighboring wind projects to properly estimate impacts and guide mitigation measures.[128]

O12-22d

4. Tricolored Blackbird

The DEIR does not discuss or analyze impacts to the tricolored blackbird, which is protected under the California Endangered Species Act and was detected on site.[129] Mr. Cashen determined that improperly sited turbines could have a significant impact on the species.[130] The DEIR is inadequate as a matter of law.

O12-22e

5. Habitat Fragmentation and Wildlife Corridors

The DEIR claims, without evidence, that habitat fragmentation is not anticipated to result from the Project, apparently based on the loss of habitat being small compared to the overall habitat in the region.[131] Mr. Cashen found that the DEIR does not adequately analyze habitat fragmentation, especially given the scope of cumulative projects in the area and the connected Torrey Wind Project.[132] The Project site is used by migratory birds and, if birds do not avoid the turbine field

O12-22f

[125] Cashen Comments, p. 32.
[126] Cashen Comments, p. 32.
[127] Cashen Comments, p. 32.
[128] Cashen Comments, p. 32.
[129] Cashen Comments, p. 33.
[130] Cashen Comments, p. 33.
[131] Cashen Comments, pp. 33-34.
[132] Cashen Comments, pp. 33-34.

from the many projects in the area, there will be a significant impact from habitat fragmentation and an inability of species to migrate through the area.[133]

The DEIR similarly claims that the Project will not impact terrestrial species, despite numerous studies showing exactly the opposite.[134]

O12-22f Cont.

6. Golden Eagle

The DEIR relies on an assumption that direct impacts to habitat of 20 percent of an eagle territory would lead to take.[135] This impact determination is not supported by substantial evidence because it ignores that habitat can be functionally lost, which the DEIR notes is likely, without direct loss.[136] Thus the DEIR fails to consider functional loss of habitat for golden eagle as an impact when concluding that impacts are less than significant. The County must revise the DEIR to account for *all* impacts to golden eagle habitat when determining whether the loss meets its established threshold.

The DEIR did not conduct a proper cumulative impacts analysis, despite eagle territories having already been mapped for the Tule Wind Project.[137] The DEIR should have used the available mapping to determine how much habitat loss would occur in the impacted area.[138] The DEIR also failed to conduct surveys on eagle nests near the Project, yet concluded, without evidence, that the Project would not impact eagle nesting.[139] The DEIR concludes that the loss of eagle *foraging habitat* within the Boulder Brush Facilities would be significant.[140] This ignores the fact that a loss of foraging habitat can lead to *nest failure*; therefore, the DEIR should have found the impact on nesting to be significant as well.[141] Finally, the DEIR conflicts with itself by finding that the loss of 69.8 acres of foraging habitat

O12-22g

[133] Cashen Comments, p. 34.
[134] Cashen Comments, p. 34
[135] DEIR, pp. 2.3-56-2.3-57.
[136] Cashen Comments, p. 34.
[137] Cashen Comments, pp. 34-35.
[138] Cashen Comments, p. 35.
[139] Cashen Comments, p. 35.
[140] DEIR, p. 2.3-107.
[141] Cashen Comments, p. 35.

within the Boulder Brush Corridor was significant but that the loss of 785.67 acres of foraging habitat within the Campo Corridor was not.[142]

Given the threats to golden eagle and its status as a fully protected species, the County must comply with CEQA by conducting the necessary studies to provide substantial evidence to support its claims and disclosing the analysis in DEIR.

O12-22g Cont.

7. Noise

The County acknowledges in the DEIR that noise from wind turbines can cause impacts to wildlife. However, Mr. Cashen found that the County made no attempt to analyze Project noise levels and their impact on wildlife.[143]

O12-22h

8. Other Birds

The DEIR provides virtually no analysis of the Project's collision hazard impacts on birds.[144] Despite this, the DEIR makes conclusions regarding the significance of collision hazard impacts. Unfortunately, the DEIR makes three different conclusions about the impacts, making it impossible for the public to determine or comment on the County's analysis. Mr. Cashen found four instances where impacts to birds were determined to either be less than significant, potentially significant or significant.[145] The DEIR must analyze potentially significant collision hazard impacts on birds, disclose potential mortality of birds and disclose and circulate for public review what the County's conclusion is regarding those impacts.

O12-22i

The County fails to disclose, analyze, and discuss mitigation for numerous impacts to biological resources. Where mitigation is discussed, many of these impacts remain significant after implementation of proposed mitigation. The County's assessment of the Project's impacts on biological resources violates CEQA because it is missing analysis or unsupported by substantial evidence. The County must revise the DEIR and recirculate the DEIR to the public with a legally

O12-22j

[142] Cashen Comments, p. 35.
[143] Cashen Comment, pp. 38-39.
[144] Cashen Comments, p. 37.
[145] Cashen Comments, pp. 37-38.

adequate discussion of these significant impacts prior to consideration of the Project.

O12-22j Cont.

B. The DEIR Fails to Adequately Disclose, Analyze, and Mitigate Impacts to Groundwater

The DEIR states that impacts to groundwater supplies would be less than significant.[146] The Groundwater Resources Evaluation, contradicts this claim by stating that "groundwater drawdown at off-site wells could exceed the County limit of 20 feet for fractured rock aquifers, if unmonitored and unmitigated."[147] The DEIR provides mitigation measures to address this impact in the text of the analysis, but does not adopt the mitigation as a formal mitigation measure for the Project and continues to regard groundwater impacts as impacts not significant.[148] In contrast, the investigation into other watersheds that may be used for the Project find that impacts will not likely be significant and require a Groundwater Mitigation and Monitoring Plan. CEQA requires the County to disclose the potentially significant impacts on groundwater drawdown at off-site wells in the affected watershed in the DEIR and require mitigation to reduce those impacts as formal mitigation measures in a revised and recirculated DEIR.

O12-23

C. The DEIR Fails to Adequately Disclose, Analyze, and Mitigate Impacts to Public Health

The DEIR summarily dismisses the Project's potentially significant public health impacts to the public, including worker and sensitive receptors in the Project area, from exposure of Valley Fever. The DEIR includes no feasible mitigation measures to lessen this significant impact. Valley Fever is a disease that can spread when people are exposed to spores during ground disturbance, such as this Project's construction. San Diego County is a suspected endemic area for Coccidioides (CDC, 2014b).[149] Impacts to human health are severe, including possible death, and there is no known cure. Sensitive receptors near the Project

O12-24

[146] DEIR, pp. 3.1-25-3.1-26.
[147] DEIR, Appendix J, p. 33.
[148] *See* DEIR, Appendix J, p. 33.
[149] *See* https://www.cdc.gov/fungal/diseases/coccidioidomycosis/maps.html; *see also* https://www.sandiegocounty.gov/content/dam/sdc/pds/ceqa/Soitec-Documents/Final-EIR-Files/references/rtcref/ch9.0/rtcrefaletters/O10%202014-12-19_CaliforniaDepartmentofPublicHealth2013.pdf.

site, including workers and those who live nearby are at risk from exposure from disturbed dust, both during construction and during high-wind events.

Despite this risk, the DEIR does not include any common mitigation measures to protect the public, including:

1) Reevaluating and updating the Injury and Illness Prevention Program to ensure Valley Fever safeguards are included,

2) Training all employees on Valley Fever related issues,

3) Adequately controlling dust exposure,

4) Preventing transporting deadly spores out of endemic areas, and

5) Improving medical surveillance for all employees.

The County's lack of adequate analysis of potentially significant impacts from the Project exposing people to Valley Fever and lack of feasible mitigation for Valley Fever renders the DEIR insufficient under CEQA. The County must revise and recirculate a DEIR to disclose and mitigate these serious public health impacts.

O12-24 Cont.

VIII. THE DEIR IMPROPERLY DEFERS MITIGATION OF SIGNIFICANT IMPACTS

It is generally improper to defer the formulation of mitigation measures.[150] An exception to this general rule applies when the agency has committed itself to specific performance criteria for evaluating the efficacy of the measures to be implemented in the future, and the future mitigation measures are formulated and operational before the project activity that they regulate begins.[151] As the courts have explained, deferral of mitigation may be permitted only where the lead agency: (1) undertakes a complete analysis of the significance of the environmental impact; (2) proposes potential mitigation measures early in the planning process; and (3)

O12-25

[150] 14 CCR § 15126.4(a)(1)(B); *POET v. CARB*, 218 Cal.App.4th at 735.
[151] *POET*, 218 Cal.App.4th at 738.

articulates specific performance criteria that would ensure that adequate mitigation measures were eventually implemented.[152]

Here, the DEIR defers mitigation measures for the Quino to the Section 7 consultation process.[153] While compliance with a regulatory program may be identified as mitigation, the lead agency must still identify and analyze the types of potential actions that can be feasibly achieved through the regulatory program.[154] The purpose of this requirement is to assess whether the mitigation measure itself would cause one or more significant effects in addition to those that would be caused by the project as proposed.[155] An EIR does not need to discuss the effects of the mitigation measures in the same amount of detail as the significant effects of the proposed project, but it must still complete the analysis.[156]

Here, the County failed to discuss the potential measures that may be implemented through the section 7 consultation process. This prevents the public from being able to evaluate these measures, or the lack of measures, and their significant effects and does not meet the requirements for permissibly deferred mitigation.[157] In fact, there is no evidence that mitigation is feasible, since the County identified no available land that would be necessary to compensate for the Project's significant impacts to Quino habitat.[158] The DEIR must be revised to discuss the potential measures that may be implemented through the section 7 consultation process for the Quino.

O12-25 Cont.

IX. CONCLUSION

The DEIR fails as an informational document and lacks substantial evidence to support many of its claims, in violation of CEQA. The County fails to accurately describe the affected environment, does not fully and fairly describe the proposed action, provides incomplete analyses of some Project impacts and wholly omits discussion of other potentially significant impacts, and fails to adequately mitigate

O12-26

[152] *Comtys. for a Better Env't v. City of Richmond* (2010) 184 Cal.App.4th 70, 95; *Cal. Native Plant Socy' v. City of Rancho Cordova* (2009) 172 Cal.App.4th 603, 621.
[153] Cashen Comments, p. 41.
[154] CEQA Guidelines § 15126.4(a)(1)(B).
[155] *Id.* § 15126.4(a)(1)(D).
[156] *Ibid.*
[157] Cashen Comments, pp. 41-42.
[158] Cashen Comments, pp. 41-42.

the Project's adverse impacts. The County must revise the DEIR to cure these deficiencies and must circulate the revised DEIR for public review and comment. We respectfully urge the County to do so prior to any further consideration of the Project.

O12-26 Cont.

Sincerely,

Kyle C. Jones

KCJ:ljl

Exhibits

EXHIBIT A

ADAMS BROADWELL JOSEPH & CARDOZO

A PROFESSIONAL CORPORATION

ATTORNEYS AT LAW

520 CAPITOL MALL, SUITE 350
SACRAMENTO, CA 95814-4721

TEL: (916) 444-6201
FAX: (916) 444-6209
kjones@adamsbroadwell.com

SO. SAN FRANCISCO OFFICE

601 GATEWAY BLVD., SUITE 1000
SO. SAN FRANCISCO, CA 94080

TEL: (650) 589-1660
FAX: (650) 589-5062

DANIEL L. CARDOZO
CHRISTINA M. CARO
YAIR CHAVER
SARA F. DUDLEY
THOMAS A. ENSLOW
ANDREW J. GRAF
TANYA A. GULESSERIAN
KYLE C. JONES
RACHAEL E. KOSS
NIRIT LOTAN
CAMILLE G. STOUGH

MARC D. JOSEPH
Of Counsel

July 8, 2019

Via Overnight Mail and Electronic Mail

Ms. Amy Dutschke, Regional Director
Bureau of Indian Affairs, Pacific Regional Office
2800 Cottage Way
Sacramento, CA 95825
Amy.dutschke@bia.gov

Via Electronic Mail Only

Harold Hall, Acting Chief
Division of Environmental, Cultural Resource Management and Safety
Bureau of Indian Affairs
Harold.hall@bia.gov

Re: Comments on the Draft Environmental Impact Statement for the Campo Wind Project with Boulder Brush Facilities

Dear Ms. Dutschke and Mr. Hall:

We are writing on behalf of Citizens for Responsible Wind Energy to provide comments on the May 2019 Draft Environmental Impact Statement ("DEIS") prepared by DUDEK for the Bureau of Indian Affairs ("BIA"), pursuant to the National Environmental Policy Act ("NEPA"),[1] for the lease agreement between the Campo Band of Diegueño and Terra-Gen Development Company LLC ("Campo Lease") for the Campo Wind Project with Boulder Brush Facilities ("Project").[2]

O12-27

[1] 42 U.S.C. §§ 4321 et seq.
[2] Bureau of Indian Affairs, Draft Environmental Impact Statement for the Campo Wind Project with Boulder Brush Facilities, (May 2019), p. 1 (hereafter "DEIS").

The Project proposes to develop, construct, operate and ultimately decommission a renewable energy generation facility on land within the boundary of the Campo Indian Reservation in Eastern San Diego County, California. The Campo Wind Project consists of both the Campo Wind Facilities on land within the Reservation and the Boulder Brush Facilities on adjacent private lands within the Boulder Brush Boundary. The Project includes up to 60 wind turbines, each approximately 4.2 megawatts in capacity and approximately 586 feet in total height, access roads, electrical collection and communication system, project collector substation, operations and maintenance facility, meteorological towers, water collection and septic system, temporary concrete batch plant, temporary staging areas, on-reservation portion of the generation tie line ("gen-tie line"), and boulder brush facilities, which include a portion of the gen-tie line, a high-voltage substation, a switchyard, and access roads).

As explained in these comments, the DEIS fails to comply with NEPA's basic requirement to act as an "informational document." It is devoid of meaningful details upon which the public and decisionmakers can adequately assess the Project's significant impacts. The DEIS fails by (1) segmenting the Campo Wind Project from the Boulder Brush Facilities, (2) lacking a sufficient discussion of alternatives, (3) failing to describe all Project components, (4) failing to accurately describe the affected environment, and (5) not disclosing, analyzing, or discussing mitigation for Project impacts. Because of these shortcomings, the DEIS is deficient as a matter of law and its determinations that it properly identifies and mitigates the Project's significant impacts are arbitrary and capricious, rendering the document inadequate for purposes of compliance with NEPA.

O12-27
Cont.

For each of these reasons, the BIA may not approve the Project until a revised environmental review document is prepared and re-circulated for public review and comment.

We reviewed the DEIS, its technical appendices, and the reference documents with the assistance of biologist Scott Cashen, biologist Dr. Shawn Smallwood and technical consultants from Soil Water Air Protection Enterprise ("SWAPE").[3] Mr.

[3] Scott Cashen, Letter from Scott Cashen to Kyle C. Jones, Comments on the Draft Environmental Impact Statement for the Campo Wind Project (July 3, 2019) (hereafter "Cashen Comments") **Exhibit A**; Shawn Smallwood, PhD, Letter from Shawn Smallwood to Kyle C. Jones: Campo Wind Project (July 1, 2019) (hereafter, "Smallwood Comments"), **Exhibit B**; Matt Hagemann, P.G., C.Hg and Kaitlyn Heck, Comments on the Campo Wind Project with Boulder Brush Facilities, (July 1,

Cashen, Dr. Smallwood, and SWAPE provide substantial evidence of potentially significant effects that have not been adequately disclosed, analyzed, or mitigated. Mr. Cashen's, Dr. Smallwood's, and SWAPE's technical comments are attached hereto and are hereby submitted to the BIA, in addition to the comments in this letter. The BIA must respond to these consultants' comments separately and individually.[4]

I. STATEMENT OF INTEREST

Citizens for Responsible Wind Energy is an unincorporated association of individuals and labor organizations with members who may be adversely affected by the potential public and worker health and safety hazards and environmental and public service impacts of the Project. The association includes San Diego County residents and California Unions for Reliable Energy ("CURE") and its members and families and other individuals that live, recreate and/or work in San Diego County (collectively "Citizens").

Citizens supports the development of clean, renewable energy technology, including the use of wind power generation, where properly analyzed and carefully planned to minimize impacts on public health and the environment. Wind energy projects should avoid impacts to sensitive species and habitats, water resources, and public health, and should take all feasible steps to ensure unavoidable impacts are mitigated to the maximum extent feasible. Only by maintaining the highest standards can energy supply development truly be sustainable.

O12-27
Cont.

The individual members of Citizens and the members of the affiliated labor organizations, including Mr. Doyle Mills, live, work, recreate and raise their families in San Diego County. They would be directly affected by the Project's environmental and health and safety impacts. Individual members may also work constructing the Project itself. They will be first in line to be exposed to any health and safety hazards that may be present on the Project site. Mr. Mills and other members each have a personal interest in protecting the Project area from unnecessary, adverse environmental and public health impacts.

2019) (hereafter "SWAPE Comments") **Exhibit C**. Materials cited will be provided on a separate storage device in the mailing of these comments.

[4] *Appalachian Mountain Club v. Brinegar* 394 F.Supp. 105 (D.N.H. 1975).

The organizational members of Citizens and their members also have an interest in enforcing environmental laws that encourage sustainable development and ensure a safe working environment for the members that they represent. Environmentally detrimental projects can jeopardize future jobs by making it more difficult and more expensive for industry to expand in the County, and by making it less desirable for businesses to locate and people to live and recreate in the County, including the Project vicinity. Continued degradation can, and has, caused construction moratoriums and other restrictions on growth that, in turn, reduces future employment opportunities.

Finally, the organizational members of Citizens are concerned with projects that can result in serious environmental harm without providing countervailing economic benefits. NEPA provides a balancing process whereby economic benefits are weighed against significant impacts to the environment. It is in this spirit we offer these comments.

II. THE DEIS FAILS TO SATISFY NEPA'S PURPOSE AND GOALS

NEPA requires that agencies take a "hard look" at the environmental consequences of a proposed action.[5] A hard look is defined as a "reasoned analysis containing quantitative or detailed qualitative information."[6] The level of detail must be sufficient to support reasoned conclusions by comparing the amount and the degree of the impact caused by the proposed action and the alternatives.[7] An EIS must provide a "full and fair discussion of significant environmental impacts and shall inform the decision-makers and the public of the reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human environment."[8] "General statements about 'possible' effects and 'some risk' do not constitute a 'hard look' absent a justification regarding why more definitive information could not be provided."[9] "[L]ack of knowledge does not excuse the

O12-27
Cont.

[5] *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989); *Dubois v. U.S. Dep't of Agric.*, 102 F.3d 1273, 1284 (1st. Cir. 1996); see also *South Fork Band Council Of Western Shoshone Of Nevada v. U.S. Dept. of Interior*, 588 F.3d 718, 727 (9th Cir. 2009) ["NEPA requires that a hard look be taken, if possible, *before* the environmentally harmful actions are put into effect"].
[6] BIA, Indian Affairs National Environmental Policy Act (NEPA) Guidebook, (Aug. 2012), p. 19 (hereafter "NEPA Guidebook").
[7] S*ee* 40 C.F.R. § 1502.1.
[8] 40 C.F.R. § 1502.1.
[9] *Neighbors of Cuddy Mountain v. U.S. Forest Service*, 137 F.3d 1372, 1380 (9th Cir. 1998).

preparation of an EIS; rather it requires [the agency] to do the necessary work to obtain it."[10]

NEPA review makes information on the environmental consequences of a proposed action available to the public, which may then offer its insight to assist the agency's decision-making.[11] An EIS is more than just a disclosure device, however; it is an "action-forcing device" which ensures that NEPA's requirements are infused into the ongoing programs and actions of the federal government.[12] An EIS must provide a full and fair discussion of every significant impact, as well as inform decision-makers and the public of reasonable alternatives which would avoid or minimize adverse impacts.[13] The impacts analysis must include a discussion of the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented.[14] The discussion of impacts must include both "direct and indirect effects (secondary impacts) of a proposed project."[15] The agency need not speculate about all conceivable impacts, but it must evaluate the reasonably foreseeable significant effects of the proposed action.[16] In this context, reasonable foreseeability means that "the impact is sufficiently likely to occur that a person of ordinary prudence would take it into account in reaching a decision."[17]

O12-27
Cont.

In addition to a scientifically defensible analysis of project impacts, an EIS must also include a discussion of "appropriate mitigation measures not already included in the proposed action or alternatives."[18] An EIS is not complete unless it contains "a reasonably complete discussion of possible mitigation measures."[19] Mitigation includes "avoiding the impact altogether by not taking a certain action or

---

[10] *National Parks & Conservation Association v. Babbitt,* 241 F.3d 722, 733 (9th Cir. 2001), *abrogated on other grounds by Monsanto Co. v. Geertson Seed Farms*, 2010 WL 2471057, 12 (U.S.) (U.S., 2010) [An injunction should issue only if the traditional four-factor test is satisfied].
[11] *See Robertson*, 490 U.S. at 350; *Dubois*, 102 F.3d at 1284.
[12] 40 C.F.R. § 1502.1.
[13] *Id*.
[14] *Id.* at § 1502.16.
[15] *Id.* at § 1502.16 subd. (b); *see also Sierra Club v. Marsh*, 976 F.2d 763, 767 (1st Cir. 1992).
[16] *Sierra Club v. Marsh*, 976 F.2d at 767.
[17] *Id; see also Dubois v. Dept. of Agriculture*, 102 F.3d 1273, 1286 (1st Cir. 1996).
[18] 40 C.F.R. § 1502.14 subd. (f).
[19] *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 352 (1989).

parts of an action."[20] It also includes "minimizing impacts by limiting the degree or magnitude of the action and its implementation."[21] The mandate to thoroughly evaluate all feasible mitigation measures is critical to NEPA's purposes.[22] Hence, a "perfunctory description" or a "mere listing" of possible mitigation measures is not adequate to satisfy NEPA's requirements.[23] The fact individual harms are somewhat uncertain due to limited understanding of the Project characteristics and baseline conditions does not relieve BIA of the responsibility under NEPA to discuss mitigation of reasonably likely impacts at the outset.[24]

Finally, an EIS should be "concise, clear, to the point, and supported by evidence that the agency has made the necessary environmental analyses."[25] A concise and clear EIS that is supported by evidence ensures that federal agencies are informed of environmental consequences ***before*** making decisions and that the information is available to the public.[26] As the Council on Environmental Quality ("CEQ") explains in its regulations, "[e]nvironmental impact statements shall serve as the means of assessing the environmental impact of proposed agency actions, rather than justifying decisions already made."[27]

The DEIS for the proposed Project fails to comply with these basic requirements. The DEIS inappropriately segments the Project and fails to include a robust discussion of alternatives. In addition, the BIA fails to take a hard look at all of the Project's impacts. As a result, the DEIS precludes a meaningful analysis of the Project, and the BIA must revise and recirculate the DEIS for public review and comment before making a decision.

O12-27
Cont.

III. THE DEIS FAILS AS AN INFORMATIONAL DOCUMENT

The purpose of NEPA is to ensure that every federal agency prepares an EIS for major federal actions significantly affecting the quality of the human

[20] 40 C.F.R. § 1508.20 subd. (a).
[21] *Id.* at subd. (b).
[22] *Id.* at § 1500.1 subd. (c).)
[23] *Neighbors of Cuddy Mountain*, 137 F.3d at 1380; *Idaho Sporting Cong. v. Thomas*, 137 F.3d 1146, 1151 (9th Cir. 1998).
[24] *See South Fork Band Council of Western Shoshone of Nevada*, 588 F.3d at 727, citing *National Parks,* 241 F.3d at 733.
[25] *Id.*
[26] *Inland Empire Pub. Lands Council v. U.S. Forest Serv.*, 88 F.3d 754, 758 (9th Cir. 1996).
[27] 40 C.F.R. § 1502.2 subd. (g).

environment.[28] An EIS must provide a "full and fair discussion of significant environmental impacts and shall inform the decision-makers and the public of the reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human environment."[29]

The DEIS fails to address the magnitude of the impacts that will be posed by this Project. The Project's construction and operation will cause numerous impacts to species. Many of these impacts were not identified, disclosed, analyzed, or mitigated in the DEIS.

Mr. Cashen and Dr. Smallwood note numerous instances where the DEIS and appendices reference outdated, incomplete, or inaccurate studies:

- Avian field surveys and risk assessment data was not provided,[30]
- Some avian studies are not scheduled to be completed until later this year,[31]
- Survey reports from avian field studies, vegetation studies, and raptor nest search results are not provided,[32]
- Eagle nest surveys are outdated, and results from those surveys are not provided.[33]

O12-27
Cont.

Despite claims that the DEIS considered all special-status plants and animals on the site, many special-status species were not considered in the DEIS. Dr. Smallwood notes that BIA found "western spadefoot, tricolored blackbird, merlin, American kestrel, prairie falcon, peregrine falcon, Lawrence's goldfinch, olive-sided flycatcher, willow flycatcher, Cooper's hawk, sharp-shinned hawk, osprey, turkey vulture, golden eagle, northern harrier, white-tailed kite, red-tailed hawk, Swainson's hawk, red-shouldered hawk, ferruginous hawk, Harris's hawk, broad-winged hawk, barn owl, great-horned owl, long-eared owl, western screech-owl, Costa's hummingbird, Allen's hummingbird, yellow-billed magpie, horned lark,

[28] 42 U.S.C. § 4332; 40 C.F.R. § 1501.
[29] 40 C.F.R. § 1502.1.
[30] Cashen Comments, pp. 16-18.
[31] Cashen Comments, pp. 16-18.
[32] Cashen Comments, pp. 16-18.
[33] Smallwood Comments, p. 3.

whimbrel, loggerhead shrike, bank swallow, Vaux's swift, black swift, California gull, oak titmouse, brant, common yellowthroat, yellow warbler, Nuttall's woodpecker, Lewis's woodpecker, cactus wren (if coastal variety), marsh wren (if Clark's), Bell's sparrow, rufous-crowned sparrow (if Southern California subspecies), savannah sparrow (if large-billed variety), and vesper sparrow (if Oregon subspecies)," but the DEIS does not analyze impacts to these birds.[34] Similarly, Mr. Cashen provides evidence that the special-status plants Jacumba milkvetch, desert beauty, sticky gerea, southern jewelflower, and Tecate tarplant are present in the area, but were not evaluated.[35] Mr. Cashen also found numerous special-status animals present, including western spadefoot, Blainville's horned lizard, pocketed free-tailed bat, western mastiff bat, Townsend's big-eared bat, hoary bat, western yellow bat, long-eared myotis, western small-footed myotis, fringed myotis, San Diego black-tailed jackrabbit, San Diego desert woodrat, and San Diegan tiger whiptail.[36]

The DEIS thus fails to provide all information to inform the public and decision-makers of the Project's impacts by leaving out discussions of entire species that could be impacted by its construction and operation. The DEIS must be withdrawn and recirculated with studies conducted and made publicly available that document Project impacts to all these species.

O12-27
Cont.

IV. THE DEIS MUST ACCURATELY DESCRIBE THE PROPOSED ACTION

A complete and consistent description of the proposed action is necessary for the public and decision-makers to understand the effects of the proposed action.[37] A clear description results in more focused and meaningful public input and BIA participation, a more complete identification of issues, development of reasonable alternatives, sound analysis and interpretation of effects, focused analysis, and a sound and supportable decision.[38]

---

[34] Smallwood Comments, p. 8.
[35] Cashen Comments, pp. 17-18.
[36] Cashen Comments, p. 18.
[37] *See* 40 C.F.R. § 1502.15; *see also State of Cal. v. Block*, 690 F.2d 753. 761 (9th Cir. 1982) [starting point for analysis of whether a "critical decision" with respect to site development is "to describe accurately the 'federal action' being taken"].
[38] 40 C.F.R. § 1508.14.

It follows that information in the DEIS that is incomplete and/or inaccurate will skew the environmental consequences analysis and prevent informed public input. Courts have held that "[w]here the information in the initial EIS was so incomplete or misleading that the decisionmaker and the public could not make an informed comparison of the alternatives, revision of an EIS [was] necessary to provide a reasonable, good faith, and objective presentation of the subjects required by NEPA."[39]

Finally, where mitigation measures would, themselves, cause significant environmental impacts, NEPA requires an evaluation of those secondary (indirect) impacts.[40]

A. Access Roads

The DEIS does not include a map of all the access roads that would be constructed or modified for the Project.[41] It does contain a disturbance map, which presumably contains roads, but fails to provide sufficient information for a reader to determine the impacts of road construction.[42] Existing roads would be widened but no description of the width of these existing roads exists, leaving the reader uninformed as to the amount of land that would be disturbed.[43] The DEIS is also inconsistent with descriptions of vegetation removal around roads, describing it as six feet in some areas, but noting a San Diego County requirement to manage 20 feet of vegetation elsewhere.[44] The DEIS never discloses the methods by which roads will be constructed.[45] This leaves the public unable to ascertain the full amount of land that will be disturbed and any impacts that this disturbance will create.

O12-27 Cont.

[39] *Natural Res. Def. Council v. U.S. Forest Serv.*, 421 F.3d 797, 811 (9th Cir. 2005), citing *Animal Def. Council v. Hodel*, 840 F.2d 1432, 1439 (9th Cir. 1988).
[40] 40 C.F.R. § 1502.16(h).
[41] Cashen Comments, p. 7.
[42] Cashen Comments, p. 7.
[43] Cashen Comments, p. 7.
[44] Cashen Comments, p. 7.
[45] Cashen Comments, p. 7.

B. Meteorological Towers

The DEIS states that the Project will include three permanent meteorological towers including lattice structures, fencing, and lighting that have the potential to impact species.[46] The DEIS does not depict where these towers are, preventing anyone from being able to evaluate their impacts, which may increase if located near turbines.[47] The siting of the meteorological towers also may not be consistent with United States Fish and Wildlife Service ("USFWS") recommendations since there is no reference to more than one recommendation from USFWS in the DEIS.[48]

C. Water Line

The DEIS states that the Project's Operations and Maintenance Facility would receive water via a water line but fails to disclose the route of the line or address any impacts from installation of the water line.[49]

D. Grading Plan

The DEIS fails to describe plans for excavating and dumping soils during construction, despite recognizing the need to do so.[50] The Project's plan to excavate and dump soils must be described with a description of methods included for stabilizing the soils following excavation to avoid erosion impacts and plans for dumping soils.[51]

O12-27
Cont.

E. Decommissioning

The DEIS describes Project decommissioning in vague terms, stating that it is subject to the terms of the Campo Lease, which was not provided to the public.[52] The DEIS states that the Campo Lease may include revegetation, which leaves open the possibility that it may not include revegetation at all.[53] The standards by

[46] Cashen Comments, pp.7-8.
[47] Cashen Comments, pp.7-8.
[48] Cashen Comments, pp. 7-8.
[49] Cashen Comments, p. 8.
[50] Cashen Comments, pp. 8-9.
[51] Cashen Comments, pp. 8-9
[52] Cashen Comments, p. 9.
[53] Cashen Comments, p. 9.

which revegetation would occur are not provided.[54] The DEIS requires revegetation with local seed sources if feasible but there is no identification in the DEIS as to what will happen if revegetation efforts with local seed sources is infeasible.[55] No mitigation measure is identified to require revegetation.[56]

The DEIS fails to describe several components of the Project, which is necessary for the public and decision makers to understand the effects of the Project. Therefore, the DEIS fails to serve its purpose as an informational document. The DEIS must be withdrawn and recirculated with this information included.

V. THE DEIS FAILS TO CONSIDER A REASONABLE RANGE OF ALTERNATIVES

A. The Purpose and Need Statement is Arbitrarily Narrow and Precludes a Sufficient Alternatives Analysis

An EIS must briefly describe the underlying purpose and need to which the agency is responding in proposing the alternatives, including the Proposed Action.[57] The BIA's NEPA Guidebook mandates that the EIS must address the purpose and need of the action.[58] The "need" for the action is the underlying issue the BIA is addressing with the action.[59] Clearly distinguishing the purpose and the need clarifies for the public and decision-makers why the agency is proposing to spend large amounts of taxpayers' money, while at the same time causing significant environmental impacts.[60] The Ninth Circuit explains that "an agency cannot define its objectives in unreasonably narrow terms," and other courts have found that an unreasonably narrow objective renders an EIS a foreordained formality due to a lack of robust alternatives.[61]

O12-27 Cont.

[54] Cashen Comments, p. 10.
[55] Cashen Comments, p. 9.
[56] Cashen Comments, p. 9.
[57] 40 C.F.R. § 1502.13.
[58] 40 C.F.R. § 1502.13.
[59] NEPA Guidebook, p. 18.
[60] Ronald E. Bass et al., The NEPA Book 89 (2d. ed. 2001).
[61] *National Parks & Conservation Ass'n v. Bureau of Land Management*, 606 F.3d 1058 (9th Cir. 2010), quoting *City of Carmel-By-The-Sea v. United States Dep't. of Transp.*, 123 F.3d 1142, 1155 (9th Cir. 1997); *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 198 (D.C. Cir. 1991).

While the courts have given agencies deference to define the purpose and needs of a project, that deference is not unlimited.[62] A statement of purpose and need must meet a reasonableness standard.[63] The statutory objectives of an action serve as a guide to determine reasonableness of a statement of purpose and need.[64]

a. The DEIS' Purpose and Need Statement

The DEIS states that the purpose and need of the proposed action is to authorize the lease agreement to develop the Project.[65] This arbitrarily narrow purpose and need statement prevents any alternative that is not the previously agreed to development from being discussed and promotes the developer's objectives over NEPA's requirements to inform decision-makers about a reasonable range of alternatives. By limiting purpose and need statements for leases subject to BIA approval to the existing contents of a proposed lease, the BIA distorts the EIS from an analytical tool to allow the public to weigh impacts of a proposed action into rubber-stamped document to satisfy a developer's needs. It is unreasonable to narrow the statement to one that precludes any action other than what is in the proposed lease. In doing so, the BIA is wasting taxpayer resources with nothing to gain from the analysis.

O12-27
Cont.

b. The DEIS Cannot Cite Agency Regulations to Justify an Impermissibly Narrow Purpose and Need Statement

The DEIS attempts to justify a narrow purpose and need statement by suggesting that "in reviewing a proposed lease, the BIA will defer to the landowners' determination that the lease is in their best interest to the maximum extent possible."[66] First, the BIA misstates its own lease regulations. BIA regulations identify four types of leases: agricultural, residential, business, and wind and solar leases. The regulations only allow for deference as to whether a lease is in a tribe's best interest for agricultural leases. For wind and solar leases, the BIA only defers to a tribe's determination whether the duration of the lease and compensation for the lease are in its best interest, not the overall lease generally. Thus, the DEIS misstates the BIA's regulations and impermissibly uses that

[62] *Westlands Water Dist. v. U.S. Dept. of Interior*, 376 F.3d 853, 866 (9th Cir. 2004).
[63] *Id*.
[64] *Id*.
[65] DEIS, p. 1.
[66] DEIS, p. 1.

misstatement as justification for a narrow purpose and need statement. The BIA's lease regulations do not allow it to narrowly define the purpose and need of a project for which a lease is made.

Second, a lead agency cannot cite regulations interpreting its own leasing statute as a reason for failing to abide by the separate statutory requirements of NEPA, especially since NEPA requires a lead agency to consider reasonable alternatives that are not within the jurisdiction of the lead agency.[67] The limited purpose and need statement would preclude complying with the CEQ requirements by limiting analysis to BIA jurisdiction.

c. 25 U.S.C. § 415 (a) Does Not Provide Statutory Objectives to Make a Narrow Purpose and Need Statement Reasonable

The DEIS states that the BIA must determine that adequate consideration has been given to the factors of 25 U.S.C. § 415 (a), the federal statute for leasing restricted Indian lands. This section requires that consideration be given to "the relationship between the use of the leased lands and the use of neighboring lands; the height, quality, and safety of any structures or other facilities to be constructed on such lands; the availability of police and fire protection and other services; the availability of judicial forums for all criminal and civil causes arising on the leased lands; and the effect on the environment of the uses to which the leased lands will be subject."[68] The statutory objectives include a requirement that the Secretary perform a robust analysis of a range of topics that are typically covered in an EIS. Likewise, the purpose and need statement of an EIS should be as broad as reasonably possible to ensure that adequate consideration of the factors of 25 U.S.C. § 415(a) are met, instead of the narrow statement relied on in the DEIS. By failing to do so, the BIA has failed to demonstrate compliance with the leasing statute and NEPA.

O12-27 Cont.

The DEIS' purpose and need statement is unreasonably narrow, precluding discussion of a reasonable range of alternatives, rendering the DEIS' alternatives analysis arbitrary and capricious. A revised purpose and need statement, focused on the purpose and need of a renewable energy project, is required for the DEIS to comply with NEPA.

[67] 40 C.F.R. § 1502.14 subd. (c).
[68] 25 U.S.C. § 415 subd. (a).

B. Reasonable Alternatives Omitted from Analysis

Under NEPA, federal agencies must consider alternatives to their proposed actions as well as their environmental impacts.[69] The alternatives analysis has been called the "linchpin" of the Environmental Impact Statement.[70]

An EIS must "[r]igorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated."[71] It is "absolutely essential to the NEPA process that the decisionmaker be provided with a detailed and careful analysis of the relative environmental merits and demerits of the proposed action and possible alternatives, a requirement that courts have characterized as 'the linchpin of the entire impact statement.'"[72] This is particularly true in cases where there may be "unresolved conflicts concerning alternative uses of available resources."[73]

The alternative discussion must include not only primary alternatives, *i.e.*, substitutes for the agency's proposed action that accomplish the action in another manner, but also secondary alternatives, which are means of carrying out the action in a different manner.[74] The range of alternatives to be discussed is governed by a "rule of reason." Agencies have a duty "to study all alternatives that appear reasonable and appropriate for study . . ., as well as significant alternatives suggested by other agencies or the public during the comment period."[75] Reasonable alternatives are those that may be feasibly carried out based on technical, economic, environmental, and other factors. It is well established that an alternative is not infeasible merely because the project proponent does not like it or

O12-27
Cont.

[69] 40 CFR § 1502.14.
[70] *Monroe County Conservation Council, Inc. v. Volpe* (2d Cir. 1972) 472 F.2d 693.
[71] 40 C.F.R. § 1502.14 sub.d (a).
[72] *NRDC v. Callaway*, 524 F.2d 79, 92 (2d Cir. 1975) (citation omitted); *see Silva v. Lynn*, 482 F.2d at 1285; *All Indian Pueblo Council v. United States*, 975 F.2d 1437, 1444 (10th Cir. 1992) [a thorough discussion of the alternatives is "imperative"].
[73] *See* 42 U.S.C. § 4332 subd. (2)(E); *California v. Block*, 690 F.2d 753, 766-767 (9th Cir. 1982).
[74] *See Methow Valley Citizens Council v. Regional Forester*, 833 F.2d 810 (9th Cir. 1987), *rev'd on other grounds*, 490 U.S. 332 (1989); *see also* Mandelker, *NEPA Law and Litigation* (2d ed., rel. 8, 2000).
[75] *Roosevelt Campobello Int'l Park Comm'n v. United States EPA*, 684 F.2d 1041, 1047 (1st Cir. 1982) (quotations omitted); *City of Carmel-By-The-Sea v. U.S. Dept. of Transp.*, 95 F.3d 892, 903 (9th Cir. 1996).

is not capable of implementing it.[76] "The 'existence of a viable but unexamined alternative renders an environmental impact statement inadequate.'"[77] Alternatives outside of an agency jurisdiction must still be analyzed if they are reasonable, as the EIS may serve as a basis for modifying implementing policies.[78]

If an EIS is prepared in connection with an application for a permit or other federal approval, the EIS must rigorously analyze and discuss alternatives that are "reasonable." "Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant."[79] Courts have shown little reluctance in striking down EISs that fail to include a thorough discussion of reasonable, less environmentally damaging alternatives.[80] Finally, an EIS must include a discussion of "natural or depletable resource requirements *and conservation potential of various alternatives and mitigation measures*."[81]

1. The DEIS Improperly Eliminated Primary Alternatives Due to the Impermissibly Narrow Purpose and Need Statement

The DEIS' reliance on an impermissibly narrow purpose and need statement improperly caused the BIA to dismiss numerous alternatives without completing the evaluation required by NEPA. All primary alternatives were rejected by the BIA due to claimed infeasibility.

O12-27 Cont.

First, the DEIS eliminates a mixed solar and wind alternative, suggesting that the developer would not be willing to develop solar.[82] This violates NEPA's requirement that alternatives cannot be deemed infeasible simply because the

[76] *See* CEQ, *Forty Most Asked Questions Concerning CEQ's NEPA Regulations* (1981), question No. 2(a), 46 Fed.Reg. 18026, 18027 (March 23, 1981).
[77] *Resources Ltd. v. Robertson*, 35 F.3d 1300, 1307 (9th Cir. 1993), *quoting Idaho Conservation League v. Mumma*, 956 F.2d 1508, 1519 (9th Cir. 1992); *see Grazing Fields Farm v. Goldschmidt*, 626 F.2d 1068, 1072 (1st Cir. 1980) [Even the existence of supportive studies and memoranda contained in the administrative record but not incorporated in the EIS cannot "bring into compliance with NEPA an EIS that by itself is inadequate"].
[78] *See* Forty Most Asked Questions Concerning CEQ's [NEPA] Regulations at Question 2a.
[79] Forty Most Asked Questions Concerning CEQ's [NEPA] Regulations at Question 2a.
[80] *See, e.g., Marble Mountain Audubon Society v. Rice*, 914 F.2d 179 (9th Cir. 1990); *Dubois v. U.S. Dept. of Agriculture,* 102 F.3d 1273 (1st Cir. 1996).
[81] 40 C.F.R. § 1502.16 subd. (f), emphasis added.
[82] DEIS, p. 24.

project proponent does not like it or cannot implement it.[83] The DEIS' rejection of this alternative and failure to provide further evaluation of this alternative violates NEPA.

Second, the DEIS rejects an off-reservation wind project because it cannot be subject to a lease by the tribe.[84] NEPA prohibits rejecting an alternative simply because BIA would lack jurisdiction over the alternative.[85] The DEIS violated NEPA by rejecting an off-reservation alternative.

Finally, the DEIS rejects distributed generation due to its off-reservation requirement.[86] Like the off-reservation alternative, this was improperly deemed infeasible due to a lack of BIA jurisdiction. Further, the BIA states conclusory that distributed generation does not provide benefits to the tribe, without considering the benefits that local, small-scale renewable energy generation and storage would have for the tribe.

2. The DEIS Unreasonably Considers a Limited Range of Secondary Alternatives

Alternative 1 consists of 60 turbines, whereas Alternative 2 only removes 12 of the turbines from Alternative 1.[87] Other alternatives that include a lesser number of turbines and reduced impacts were not considered.[88] Additionally, Alternative 2 is said to have been designed to reduce impacts to biological resources; however, the DEIS describes only minimal reduction in disturbed acreage and the same impacts to species as Alternative 1.[89] Therefore, there is no evidence that Alternative 2 was actually designed to reduce impacts to species.[90] NEPA requires consideration of an alternative that actually reduces impacts, guided by new studies to replace the deficient ones cited by the DEIS, in order to provide a reasonably robust alternatives analysis.

O12-27 Cont.

[83] *See* CEQ, *Forty Most Asked Questions Concerning CEQ's NEPA Regulations* (1981), question No. 2(a), 46 Fed.Reg. 18026, 18027 (March 23, 1981).
[84] DEIS, p. 24.
[85] *See* Forty Most Asked Questions Concerning CEQ's [NEPA] Regulations at Question 2a.
[86] DEIS, p. 25.
[87] DEIS, p. 23.
[88] Cashen Comments, pp. 11-14.
[89] Cashen Comments, pp. 11-14.
[90] Cashen Comments, pp. 11-14.

The DEIS includes an impermissibly narrow purpose and need statement and improperly rejects viable alternatives as infeasible in violation of NEPA. Courts have routinely rejected an EIS when it contains too few alternatives, like the one alternative in this DEIS.[91] The DEIS here improperly narrows the purpose and need statement to fit within the BIA's jurisdiction and improperly tailors secondary alternatives to the developer's interests. The DEIS must be withdrawn and recirculated with feasible alternatives that are designed to actually reduce environmental effects so that decision-makers and the public can truly evaluate the Project, as required by NEPA.

VI. THE DEIS IMPERMISSIBLY SEGMENTS THE CAMPO WIND PROJECT FROM THE BOULDER BRUSH FACILITIES

The DEIS impermissibly segments the Campo Wind Project from the off-reservation Boulder Brush Facilities by failing to fully analyze those facilities in the DEIS. Under NEPA, federal agencies must analyze and disclose the impacts of major Federal actions. Major Federal actions include not only those actions undertaken by federal agencies, but also "actions with effects that may be major and which are potentially subject to Federal control and responsibility."[92] This includes "projects and programs entirely or partly financed, assisted, conducted, regulated, or approved by federal agencies . . . ."[93] Thus, when evaluating a project's environmental impacts under NEPA, a federal agency must consider the entire project. "Proposals or parts of proposals which are related to each other closely enough to be, in effect, a single course of action shall be evaluated in a single impact statement."[94] This principle was established early in the development of NEPA law and applies even when the federal involvement is limited to approving a relatively small aspect of the project.[95]

O12-27
Cont.

[91] *Natural Resources Defense Council v. Evans* (N.D. Cal 2002) 232 F.Supp. 1003, 1039-1040.
[92] 40 C.F.R. § 1508.18.
[93] *Id.* at § 1508.18, subd. (a).
[94] *Id.* at § 1502.4, subd. (a).
[95] *E.g., Maryland Conservation Council, Inc. v. Gilchrist*, 808 F.2d 1039, 1042 (4th Cir. 1986); *Sierra Club v. Hodel*, 544 F.2d 1036, 1040-41 (9th Cir. 1976); *Cady v. Morton*, 527 F.2d 786, 795 (9th Cir. 1975).

The DEIS must address closely related "connected actions," as well as similar actions and cumulative actions.[96] Under NEPA, actions are connected if they:

(i) Automatically trigger other actions which may require environmental impact statements.
(ii) Cannot or will not proceed unless other actions are taken previously or simultaneously.
(iii) Are interdependent parts of a larger action and depend on the larger action for their justification.[97]

In requiring agencies to analyze these types of actions in the same environmental review document, the agency is prevented from segmenting the project into multiple individual actions, each of which would have an insignificant impact, but collectively would have a significant one.[98]

Multiple tests have evolved in the courts for determining whether projects were impermissibly segmented pursuant to NEPA and CEQ regulations. One test looks at whether the segments have independent utility from each other, such that it would be irrational or unwise to undertake one project without the other.[99] Another test looks at whether one segment coerces another segment.[100] A highway segment to nowhere necessarily coerces another segment, as the point of a highway is to connect to some other logical place.[101]

O12-27 Cont.

Wind turbines serve no independent utility absent supporting facilities that connect the turbines to the electrical grid. Similarly, a gen-tie line to nowhere has no purpose. It would be completely irrational to undertake either project without the other. Similarly, the presence of a wind farm necessarily coerces the development of facilities to connect that power plant to a logical place, which is the electrical grid to allow the public to use the power. Thus, under either test the wind

[96] 40 CFR §1508.25(a).
[97] *Id.* at §1508.25(a)(1).
[98] *Kentucky Coal Ass'n, Inc. v. Tennessee Valley Authority* (W.D. Ky. 2014) 68 F.Supp.3d 685, 697 (citing *Delaware Riverkeeper Network,* 753 F.3d at 1314 (citing *NRDC v. Hodel,* 865 F.2d 288, 297 (D.C.Cir.1988))
[99] *Jackson County, NC v. Federal Energy Regulatory Comm'n* (D.C. Cir. 2009) 589 F.3d 1284, 1290; *Sierra Club v. Babbitt* 69 F.Supp.2d 1202, 1230 (E. D. Cal. 1999); *Trout Unlimited v. Morton* (9th Cir. 1974) 509 F.2d 1276, 1285.
[100] *Citizens against the Destruction of Napa v. Lynn* 391 F.Supp. 1188, 1193-1194 (N.D. Cal. 1975).
[101] *Id.* at 1194.

turbines and gen-tie line and all related facilities are connected actions pursuant to NEPA and the CEQ regulations and must be considered in a single EIS.

The DEIS notes that the Project and Boulder Brush Facilities are connected actions, but the DEIS only considers the off-reservation Boulder Brush Facilities in passing and does not provide a full evaluation of their impacts. For example, the DEIS erroneously states that there are no federally listed plants or wildlife off-reservation, improperly limiting the analysis where the Boulder Brush Facilities are located.[102] A Quino Checkerspot Butterfly survey is currently being performed on the off-reservation portion of the Project; however, the survey is not complete. Therefore, the DEIS failed to evaluate the whole Project's impacts to the Quino Checkerspot Butterfly, and the DEIS' release for public review is premature.[103] The DEIS admits that it does not discuss all impacts to vegetation for the off-reservation portion of the Project.[104] The DEIS fails to properly consider the Boulder Brush Facilities, which are connected actions, and must be withdrawn and recirculated with the legally required evaluation of environmental effects from the whole Project.

VII. THE DEIS FAILS TO ADEQUATELY DESCRIBE THE AFFECTED ENVIRONMENT

O12-27 Cont.

The BIA must analyze the Project's impacts on the affected environment.[105] The DEIS must contain a description of the environment that will be affected by the Project and alternatives in order to understand their impacts.[106]

Once a project begins, the "pre-project environment" becomes a thing of the past, thereby making evaluation of the project's effect on pre-project resources impossible.[107] Without establishing the baseline conditions which exist in the vicinity of the proposed Project before it is built, there is simply no way to

[102] DEIS, p. 86.
[103] *See* DEIS, p. 86; Cashen Comments, p. 23.
[104] Cashen Comments, p. 23.
[105] NEPA Guidebook, p. 33.
[106] NEPA Guidebook, p. 33.
[107] *Half Moon Bay Fishermans' Marketing Ass'n v. Carlucci* 857 F.2d 505, 510 (9th Cir. 1988), citing *LaFlamme v. FERC,* 842 F.2d 1063, 1071 (9th Cir. 1988).

determine what effect the proposed Project will have on the environment and, consequently, no way to comply with NEPA.[108]

An accurate description of the affected environment is an essential prerequisite for an adequate analysis of Project impacts. For example, information on the type(s) and level(s) of habitat disturbance in the Project area is necessary to make inferences about the presence, abundance, and distribution of the special-status species that may be impacted by the Project. Here, however, some critical baseline information is incomplete, outdated, or was never provided.

A. The DEIS Fails to Adequately Describe the Affected Environment for Biological Resources

The DEIS fails to accurately and adequately describe the area affected for numerous biological resources. Without an accurate description of the affected environment, there is no way to determine the Project's impacts to biological resources and, therefore, no way to apply appropriate mitigation for those impacts. To comply with NEPA, the DEIS must be revised to include accurate and complete descriptions of baseline conditions.

O12-27
Cont.

1. Quino Checkerspot Butterfly

The DEIS fails to properly explain to the public the importance of the Project site to Quino Checkerspot Butterfly ("Quino"). Mr. Cashen explains that the site is a core occurrence complex of the Quino, with habitat that can support a greater number of the species than normal.[109] Further, the drier nature of the Project area compared to other Quino population areas makes the Project region more important as its populations are better able to adapt to changing climate conditions.[110] Urbanization and habitat fragmentation are the primary threats to the species in San Diego County.[111]

---

[108] *Id.*
[109] Cashen Comments, pp. 20-30.
[110] Cashen Comments, pp. 20-30.
[111] Cashen Comments, pp. 20-30.

To ascertain impacts to the Quino, BIA relied on a habitat assessment to determine loss to the species. Mr. Cashen's evaluation of the assessment finds that it is flawed and does not accurately estimate the amount of Quino habitat.[112] USFWS guidance suggests that one kilometer is the appropriate habitat buffer size for the Quino, but BIA relied on a habitat buffer around locations, plants, hilltops, and ridgelines of 200 meters.[113] The USFWS also rejected BIA's reliance on significant plant populations as a basis for establishing habitat since it is not possible to rely on plant populations to establish habitat.[114] Finally, BIA relied on an assessment that excludes some ridgelines that would be Quino habitat, and leaves out other topographical features that Quino use, such as woods.[115] The BIA relied on a habitat assessment that fails to accurately describe the affected environment for the Quino Checkerspot Butterfly.

After creating a misleadingly small assessment of available habitat on site, BIA proceeded to exclude areas from that habitat assessment as unsuitable for the Quino by creating 2010 and 2018 exclusion areas.[116] The DEIS fails to describe the process used to exclude habitat in the 2018 exclusion areas, and even excludes areas as unsuitable for habitat that are deemed suitable for habitat elsewhere in the DEIS.[117] The DEIS presents no evidence to support the 2018 exclusion areas.

O12-27
Cont.

The 2010 exclusion areas removed areas where the Quino were previously identified, labeling areas suitable as habitat as unsuitable without evidence.[118] This is based off of the 2010 AECOM survey, which had numerous errors, causing AECOM to reassess the site in 2012.[119] Based on that same data, AECOM concluded that there are 3,803 acres of Quino habitat, whereas BIA relied on an assessment from DUDEK that only found 674 acres of Quino habitat.[120] The DEIS fails to explain this discrepancy with any evidence.[121]

[112] Cashen Comments, pp. 20-30.
[113] Cashen Comments, pp. 20-30.
[114] Cashen Comments, pp. 20-30.
[115] Cashen Comments, pp. 20-30.
[116] Cashen Comments, pp. 20-30.
[117] Cashen Comments, pp. 20-30.
[118] Cashen Comments, pp. 20-30.
[119] Cashen Comments, pp. 20-30.
[120] Cashen Comments, pp. 20-30.
[121] Cashen Comments, pp. 20-30.

BIA's assessment to identify Quino habitat was flawed at the outset by failing to meet USFWS guidelines. The assessment then excluded suitable habitat, without evidence, for the Quino. The result is a drastic underestimation of affected Quino Checkerspot Butterfly habitat by the Project, which is arbitrary and capricious in violation of NEPA. New studies that follow USFWS guidance and do not improperly exclude suitable habitat are required to provide an accurate assessment of the affected environment for the public and decision-makers.

2. Golden Eagle

The DEIS and appendices conclude that the Project site does not contain suitable Golden Eagle nesting sites and that the Project site appears at the fringe of individual Golden Eagle ranges.[122] Dr. Smallwood evaluated the flight time point counts. Dr. Smallwood found that the use of a mile as a survey radius presents a high likelihood of misidentification and that there is a weak correlation between eagle flight times and fatalities.[123] Dr. Smallwood also notes that the telemetry data gathered in the DEIS is of little use for predicting impacts since the data is two-dimensional, whereas the concern should be whether eagles are present at elevations where turbine blades are spinning.[124] Dr. Smallwood's experience at the Altamont Pass leads him to conclude that this telemetry data needs serious adjustments before it could be useful.[125] The data was presented as a straight line, from 15-minute points, which ignores that eagles do not fly in straight lines.[126] The surveys also failed to identify avian use in relation to proposed turbines.[127] Mr. Cashen also notes that the data collected was from Golden Eagles fitted with transmitters, which excludes many eagles and that the main prey of Golden Eagles is present on the Project site.[128] Despite a yearly variation in eagle populations, eagles have been observed onsite in 2010, 2011, 2015, 2016, 2017, and 2018 surveys.[129] Contrary to the assertions in the DEIS, the Project site shows sustained Golden Eagle use. NEPA requires the BIA to conduct an analysis to determine the

O12-27
Cont.

[122] DEIS, Biological Technical Report (hereafter "BTR"), p. 63.
[123] Smallwood Comments, p. 4.
[124] Smallwood Comments, p. 5.
[125] Smallwood Comments, p. 5.
[126] Smallwood Comments, p. 6.
[127] Smallwood Comments, p. 8.
[128] Cashen Comments, pp. 33-34.
[129] Cashen Comments, pp. 33-34.

frequency of that use in the affected environment based on actual, available information.

3. Bats

The DEIS and appendices rely on an acoustic study and other reports from 2010-2012 to determine that bats are not present on-reservation.[130] Dr. Smallwood found that these studies are too old and limited to be useful as bat abundance varies between years.[131] Mr. Cashen states that the acoustic study does not provide evidence that bats are not present, as it only contained one acoustic detector on the eastern portion of the Boulder Brush Facilities.[132] The DEIS also assumes, without justification, that all bat foraging would occur off-reservation and the DEIS never addresses roosting.[133] This conflicts with the 2012 AECOM report, which was cited but not provided, that identifies roosts on the on-reservation portion of the Project site.[134] Accurate studies to properly assess bat roosting and foraging habitat is needed to properly ascertain bat use of the affected environment, which includes the Project site, and in order to evaluate Project impacts to bats.

4. California Condor

O12-27
Cont.

The DEIS and appendices determine that there is very-low potential for the California Condor to be present on site.[135] Mr. Cashen notes that the citation for the DEIS is broken, so he was unable to verify the data, but that recent 2012 studies have identified a California Condor only 4.7 miles away from the on-reservation portion of the Project and possibly over the off-reservation portion.[136] Further, Mr. Cashen concludes, based on the 2012 study, that with condor reintroduction and numerous suitable foraging and nesting sites on the Project site, it is highly probably that California Condor will pass through and be potentially impacted by the Project.[137] Thus, Mr. Cashen provides evidence that California Condor will use the site, whereas the DEIS has no evidence to support its

[130] Cashen Comments, pp. 30-31.
[131] Cashen Comments, pp. 30-31.
[132] Cashen Comments, pp. 30-31.
[133] Cashen Comments, pp. 30-31.
[134] Cashen Comments, pp. 30-31.
[135] DEIS, BTR, p. 59.
[136] Cashen Comments, p. 31.
[137] Cashen Comments, p. 31.

conclusion that they will not. The DEIS must be withdrawn and recirculated to include an assessment of the Project site for California Condor use in the affected environment.

5. Jurisdictional Waters

The DEIS contains inconsistent accountings of jurisdictional waters, without supporting analysis that addresses the discrepancy.[138] The DEIS must include a consistent accounting of jurisdictional waters in the affected environment in order to properly determine the Project's impacts.

6. Movement Corridors

The DEIS and appendices note that the Project site includes a series of valleys and north-south oriented ridges, which are ideal for species migrating north, such as birds on the migrations from Mexico to as far north as Alaska.[139] The DEIS and appendices conclude, without evidence, that the Project will not be within migratory routes.[140] This is especially concerning since BIA has been conducting avian use surveys of the site since 2017, but failed to make this data, which may show the Project site's suitability as a migratory corridor, available to decision-makers or the public.[141] The DEIS also determines, without evidence, that more birds fly at night and at higher elevations than the Project could impact.[142] Mr. Cashen notes that many birds utilize wind patterns in valleys to effortlessly gain elevation through flying closer to the surface and ridgelines, putting them near turbines.[143] The DEIS also fails to account for the effects of inclement weather, which forces many species to migrate closer to the ground.[144] The DEIS lacks evidence to support its determination that the Project site is not a migratory

O12-27
Cont.

[138] Cashen Comments, p. 34.
[139] Cashen Comments, p. 34-35.
[140] Cashen Comments, p. 34-35.
[141] Cashen Comments, p. 34-35.
[142] Cashen Comments, p. 34-35.
[143] Cashen Comments, p. 34-35.
[144] Cashen Comments, p. 34-35.

movement corridor and must be recirculated to include analysis description of the migratory corridor as part of the affected environment.

7. Other Special-Status Birds, Plants, and Animals

As stated above, the DEIS fails to disclose the Project site use by numerous special-status birds, plants, and animals. The DEIS must be withdrawn and recirculated with this information included as part of the affected environment.

VIII. THE DEIS MUST DISCLOSE, ANALYZE, AND MITIGATE ALL PROJECT IMPACTS

The environmental consequences of a proposed action must be described in the DEIS. NEPA regulations require that this section of an EIS describe any direct, indirect and cumulative adverse environmental effects which cannot be avoided should the proposal be implemented; the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented.[145] The DEIS must also describe possible conflicts between the proposed action and the objectives of Federal, regional, State, and local land use plans, policies and controls for the area concerned.[146] An agency fails to meet its hard look obligation when it relies on incorrect assumptions or data when drafting an EIS or when it presents information so incomplete as to be misleading.[147]

O12-27 Cont.

The DEIS does not consider all of the Project's significant and foreseeable environmental impacts to biological resources and public health, among others. The BIA's failure to take a hard look at the Project's impacts violates the basic requirements of NEPA. The BIA must revise its impacts analysis and issue a substantially revised DEIS for public review and comment.

[145] 40 C.F.R. § 1502.16.
[146] *Id.*
[147] *Native Ecosystems Council v. Marten* 883 F.3d 783, 795 (9th Cir. 2018).

A. The DEIS Fails to Adequately Disclose, Analyze, and Mitigate Impacts to Biological Resources

The DEIS fails to adequately analyze and mitigate the Project's impacts to numerous species. The DEIS must be revised accordingly.

1. Quino Checkerspot Butterfly

The BIA's conclusion that impacts to the Quino would not be adverse through mitigation measures MM-BIO-1 and MM-BIO 3, despite permanently removing over 200 acres of habitat for the imperiled species, is unsupported.[148] The BIA in MM-BIO-1 states that it would try to avoid impacts to Quino habitat; however both Project alternatives still destroy large swaths of important habitat.[149] There is no evidence that the BIA sought assistance in siting the Project in a way to minimize impacts.[150] BIA suggests in MM-BIO-3 that Section 7 Consultation with the USFWS will guarantee that impacts will not be adverse, which has no basis in law or fact. As the BIA well knows, the USFWS could instead find that the Project will adversely affect the species in violation of the Endangered Species Act's prohibition on jeopardy.[151] BIA also suggests in MM-BIO-3 that compensatory habitat would reduce impacts, which is unsupported by any evidence. Mr. Cashen explains that the Project may reduce the resiliency of the entire Campo Core population.[152] The BIA must first determine whether or not proposed compensation land could reduce impacts and by how much before the BIA can conclude that habitat compensation is feasible and effective for Quino recovery.[153] Finally, BIA requires in MM-BIO-3 construction fencing adjacent to Quino habitat. While Mr. Cashen states fencing around habitat could be effective, Mr. Cashen explains that the DEIS failed to accurately measure and map Quino habitat,[154] making the mitigation measure meaningless.

O12-27
Cont.

[148] Cashen Comments, p. 49-59.
[149] Cashen Comments, p. 49-59.
[150] Cashen Comments, p. 49-59.
[151] Cashen Comments, p. 49-59.
[152] Cashen Comments, p. 49-59.
[153] Cashen Comments, p. 49-59.
[154] Cashen Comments, p. 49-59.

The DEIS states that indirect impacts from conversion of vegetation, fugitive dust, chemical pollutants, erosion, altered hydrology, light pollution, invasive species, habitat fragmentation, and wildfire to Quino would remain adverse despite mitigation.[155] Mr. Cashen found that impacts would be even more adverse than disclosed in the DEIS.[156] The DEIS fails to include detailed, proactive, and aggressive measures to control invasive weeds, as would be required for a successful program.[157] The DEIS states that human access would be controlled and limited, despite evidence of off road vehicle use at the nearby Kumeyaay wind farm.[158]

The DEIS makes a conclusory determination that there will not be fragmentation of Quino habitat.[159] Mr. Cashen notes that while there are no physical barriers for the species, this analysis is too rudimentary for an endangered species.[160] Mr. Cashen describes the larval stage of Quino, concluding that preventing movement of larvae between host plants, as the Project does, will have an adverse effect on larval survival rates.[161] Mr. Cashen also describes the life of adult Quino, who must feed, mate, and lay eggs within a 10-14 day lifespan.[162] Individuals tend to not travel beyond 200 meters from where they are born, thus limiting their ranges.[163] Roads and their required vegetation clearance would create patches of habitat from which Quino are unlikely to leave, significantly fragmenting habitat.[164]

O12-27
Cont.

Finally, Mr. Cashen found that the DEIS does not include requirements to restore the site following decommissioning. As a result, the BIA's declaration that decommissioning will not have impacts is unfounded.[165]

[155] DEIS, p. 83.
[156] Cashen Comments, p. 49-59.
[157] Cashen Comments, p. 49-59.
[158] Cashen Comments, p. 49-59.
[159] Cashen Comments, p. 49-59.
[160] Cashen Comments, p. 49-59.
[161] Cashen Comments, p. 49-59.
[162] Cashen Comments, p. 49-59.
[163] Cashen Comments, p. 49-59.
[164] Cashen Comments, p. 49-59.
[165] Cashen Comments, p. 49-59.

2. Golden Eagle

The BIA's conclusion that the Project will not have adverse effects on Golden Eagles because their use of the site is low is unsupported.[166] As noted above, the notion that eagle use of the Project site is low is unsupported, because the BIA fails to accurately describe the affected environment in the DEIS. Dr. Smallwood cites national average wind turbine fatality rates showing a Golden Eagle fatality rate of 29 eagles annually.[167] While he cautions that this figure is not based on site data, the BIA never provided data on the eagle use of the Project site in order for the public and decision-makers to assess foreseeable impacts to the species.[168] He notes that because the DEIS improperly concludes that Golden Eagles are not present, the BIA never conducted a collision risk assessment or determined impacts from displacement.[169] The DEIS lacks any evidence to support its conclusion that the Project would not result in adverse effects on Golden Eagles.

3. Vegetation

The BIA's conclusion that the Project will not have permanent impacts to vegetation communities is unsupported. Mr. Cashen finds numerous flaws in the BIA's analysis. First, the BIA states, without evidence, that the Project is small and will not permanently fragment habitats, which Mr. Cashen shows is unsupported and contradicted by substantial evidence.[170] The Project would impact almost 1,000 acres of land and would by definition fragment habitat.[171] These impacts will be exacerbated cumulatively with the existing Kumeyaay wind power plant and proposed Torrey wind power plant.

O12-27
Cont.

The BIA states that indirect impacts would be temporary and addressed through mitigation measure MM-BIO-1, which Mr. Cashen also shows is unsupported and contradicted by substantial evidence.[172] The indirect effects identified include fugitive dust, altered hydrology, and increased erosion. These effects would not be merely temporary since some access roads to the Project will be

[166] DEIS, p. 86.
[167] Smallwood Comments, p. 9.
[168] Smallwood Comments, p. 9.
[169] Smallwood Comments, p. 9.
[170] Cashen Comments, pp. 37-48.
[171] Cashen Comments, pp. 37-48.
[172] Cashen Comments, pp. 37-48.

permanent.[173] MM-BIO-1 consists of a series of unformulated plans and measures without performance standards or other measures to ensure successful implementation.[174] The DEIS states that invasive weeds will be controlled by not planting invasive weeds, which ignores the scope of the problem associated with construction and operational activities causing invasive weeds to flourish.[175] Further, the DEIS ignores trampling of vegetation through increased human activity, such as that Mr. Cashen identified occurring near the Kumeyaay wind power plant.[176] Finally, the DEIS does not include requirements for site restoration following decommissioning; so, the BIA's determination that decommissioning impacts are merely temporary lacks support.[177]

4. Jurisdictional Waters

The BIA's conclusion that there will not be adverse impacts to jurisdictional waters following implementation of MM-BIO-1 and MM-BIO-2 is unsupported.[178] Mr. Cashen notes that the DEIS does not identify all foreseeable potential impacts since it excludes roads at grade, without providing evidence that roads at grade do not have impacts.[179] Conversely, compacting the road base and numerous truck trips would have impacts.[180] Mitigation measure MM-BIO-2 also fails to reduce impacts. It merely requires revegetation of impacted waters, without any guidance on revegetation and without identifying a party responsible for revegetation.[181]

O12-27
Cont.

5. Other Avian Species and Bats

Like with Golden Eagles, the BIA never provided estimates of collision risk for other birds and bats. Dr. Smallwood estimates that the Project could cause over 4,000 bird fatalities annually and 549 fatalities for the Hoary Bat alone.[182] Mitigation measure MM-BIO-4 only seeks to monitor and collect information about

[173] Cashen Comments, pp. 37-48.
[174] Cashen Comments, pp. 37-48.
[175] Cashen Comments, pp. 37-48.
[176] Cashen Comments, pp. 37-48.
[177] Cashen Comments, pp. 37-48.
[178] DEIS, p. 83.
[179] Cashen Comments, p. 48.
[180] Cashen Comments, p. 48.
[181] Cashen Comments, p. 48.
[182] Smallwood Comments, p. 9.

fatalities, rather than actually take affirmative steps to reduce fatalities.[183] The BIA failed to take a hard look at the Project's impacts on avian species and bats.[184]

6. Special-Status Plants

As noted above, numerous special-status plants found in the area were not disclosed in the DEIS. The impacts on these plants were never analyzed, thus the BIA failed to take a hard look at the Project's impacts on special-status plants.

7. Wildlife Corridors and Habitat Connectivity

The DEIS concludes, without support, that the Project will not impact migratory bird or fragment other habitats.[185] Mr. Cashen notes that the Project site is used by migratory birds and, if birds do not avoid the turbine field, there will be an adverse effect.[186] The DEIS also concludes, without citing evidence, that the Project will not impact terrestrial species, despite numerous studies showing exactly the opposite.[187] The DEIS also states that Project construction and operation noise will not impact species, despite ample evidence to the contrary.[188] The BIA failed to take a hard look at the Project's impacts on wildlife corridors and habitat connectivity.[189]

O12-27
Cont.

8. Cumulative Effects

The DEIS contradicts cited appendices on cumulative effects of the Project.[190] Mr. Cashen also found that other relevant wind projects were excluded from

[183] Smallwood Comments, pp. 9-11.
[184] *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989); *Dubois v. U.S. Dep't of Agric.*, 102 F.3d 1273, 1284 (1st. Cir. 1996); see also *South Fork Band Council Of Western Shoshone Of Nevada v. U.S. Dept. of Interior*, 588 F.3d 718, 727 (9th Cir. 2009) ["NEPA requires that a hard look be taken, if possible, *before* the environmentally harmful actions are put into effect"].
[185] Cashen Comments, pp. 61-65.
[186] Cashen Comments, pp. 61-65.
[187] Cashen Comments, pp. 61-65.
[188] Cashen Comments, pp. 61-65.
[189] *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989); *Dubois v. U.S. Dep't of Agric.*, 102 F.3d 1273, 1284 (1st. Cir. 1996); see also *South Fork Band Council Of Western Shoshone Of Nevada v. U.S. Dept. of Interior*, 588 F.3d 718, 727 (9th Cir. 2009) ["NEPA requires that a hard look be taken, if possible, *before* the environmentally harmful actions are put into effect"].
[190] Cashen Comments, pp. 65-68.

analysis, thus improperly lowering any estimate of cumulatively adverse effects from these projects.[191] The DEIS' analysis is also limited from its failure to analyze so many species that would be impacted by this Project and other projects cumulatively. The BIA clearly failed to take a hard look at the Project's cumulative impacts on biological resources.

9. Additional Mitigation Issues

Mr. Cashen finds that many mitigation measures are lacking by not including measurable performance standards, clear monitoring and reporting requirements, no defined timing, and no enforcement.[192] While CEQ Guidelines require identification of all feasible mitigation measures, Mr. Cashen found several missing, including:

- Development of an Eagle Conservation Plan,
- Painting the turbines to make them less attractive to insects, birds, and bats,
- Implementation of the IdentiFlight detection system,
- Micrositing of turbines,
- Curtailment of turbines when species are present,
- Adaptive management, and
- Compensatory mitigation.

O12-27
Cont.

The BIA fails to disclose, analyze, and discuss mitigation for impacts to biological resources. Many of these impacts remain highly adverse, even with proposed mitigation measures in the DEIS. The BIA's assessment of the Project's impacts on biological resources violates NEPA. The BIA must revise the DEIS and recirculate the DEIS to the public with a proper discussion of these impacts prior to consideration of the Project.

[191] Cashen Comments, pp. 65-68.
[192] Cashen Comments, pp. 68-75.

B. The DEIS Fails to Adequately Disclose, Analyze, and Mitigate Impacts to Public Health

The DEIS fails to include an adequate discussion of impacts to public health from the construction of the Project exposing workers and sensitive receptors in the Project area to Valley Fever spores.[193] The DEIS also lacks any mitigation measures to lessen this potentially significant impact.[194] Valley Fever is a disease that can infect people when they are exposed to fungal spores during ground disturbance, such as this Project's construction.[195]

SWAPE provides evidence that Valley Fever spores are endemic to San Diego County and that Project construction will disturb soils that can lead to exposure.[196] SWAPE notes that there are no dust control mitigation measures in the DEIS that would address Valley Fever spores, but provides recommended mitigation including:

- Encouraging the reporting of respiratory symptoms,
- Suspending work during wind and dusts storms,
- Keeping vehicle windows closed and equipping them with high efficiency particulate air filters,
- Positioning workers upwind of soil-disturbing activities,
- Providing respiratory protection to workers, and
- Conducting soil testing.[197]

O12-27
Cont.

[193] SWAPE Comments, p. 1.
[194] SWAPE Comments, p. 4.
[195] SWAPE Comments, pp. 1-3.
[196] SWAPE Comments, p. 1.
[197] SWAPE Comments, pp. 4-6.

The BIA fails to evaluate impacts to public health from exposure to Valley Fever, while SWAPE provides substantial evidence that the Project will create this exposure. The BIA's failure to include this evaluation means its conclusion that there are not impacts on public health is arbitrary and capricious. The DEIS must be withdrawn and revised with an adequate assessment of the Project's impacts to public health from exposure to Valley Fever.

IX. THE PROJECT CONFLICTS WITH LOCAL LAND USE PLANS

NEPA requires that the BIA discuss possible conflicts with applicable land use plans in the DEIS.[198] The BIA states that the Project was designed to be consistent with local land use plans, but Mr. Cashen notes several conflicts that were not discussed.[199] First, the Project will develop in areas that were designated as wilderness areas in the Campo Band Land Use Plan, but this is not mentioned in the DEIS.[200] Second, the off-reservation portion of the Project would occur within the East County Multiple Species Plan.[201] While this plan is still in draft form, potential conflicts should have been discussed.[202] Finally, the DEIS states that the Project is consistent with San Diego County's Resource Protection Ordinance, which mandates that projects take all feasible measures necessary to protect sensitive habitat.[203] As stated above, the BIA fails to require all feasible measures necessary to protect sensitive habitats. By failing to discuss these local land use plan conflicts, the BIA's DEIS fails to meet the requirements of NEPA and must be withdrawn.

O12-27
Cont.

X. CONCLUSION

The DEIS fails as an informational document and violates NEPA. The BIA fails to accurately describe the affected environment, does not fully and fairly describe the proposed action, provides incomplete analyses of some Project impacts and wholly omits discussion of other potentially significant adverse effects, and fails to adequately mitigate the Project's adverse impacts. The BIA's consideration of the Project based on the DEIS would be arbitrary and capricious. The BIA must revise

[198] 40 C.F.R. § 1502.16.
[199] DEIS, p. 143; Cashen Comments, pp. 4-6.
[200] Cashen Comments, pp. 4-5.
[201] Cashen Comments, p. 5.
[202] Cashen Comments, pp. 5-6.
[203] Cashen Comments, p. 6.

the DEIS to cure these deficiencies and must circulate the revised DEIS for public review and comment. We respectfully urge the BIA to do so prior to any further consideration of the Project.

Sincerely,

Kyle C. Jones

KCJ:ljl

Exhibits

O12-27
Cont.

4646-009j

EXHIBIT A

Scott Cashen, M.S.—Independent Biological Resources Consultant

July 3, 2019

Mr. Kyle C. Jones
Adams Broadwell Joseph & Cardozo
520 Capitol Mall, Suite 350
Sacramento, CA 95814

Subject: Comments on the Draft Environmental Impact Statement for the Campo Wind Project

Dear Mr. Jones:

This letter contains my comments on the draft environmental impact statement ("DEIS") that was prepared by Dudek for the Campo Wind Project ("Project"). Terra-Gen Development Company LLC ("Developer") plans to construct and operate a 252 MW (Alternative 1) or 202 MW (Alternative 2) wind energy facility for 25 years on the Campo Indian Reservation ("Reservation"). Both Project alternatives involve the construction of a substation, switchyard, gen-tie line, and access roads off the Reservation. The DEIS refers to these Off-Reservation features of the Project as the "Boulder Brush Facilities."

I am an environmental biologist with 26 years of professional experience in wildlife ecology and natural resources management. I have served as a biological resources expert for over 125 projects, the majority of which have been renewable energy facilities in California. My experience and scope of work in this regard has included assisting various clients with evaluations of biological resource issues, reviewing environmental compliance documents prepared pursuant to the California Environmental Quality Act ("CEQA") and the National Environmental Policy Act ("NEPA"), and submitting written comments in response to CEQA and NEPA documents. My work has included the preparation of written and oral testimony for the California Energy Commission, California Public Utilities Commission, and Federal courts. My educational background includes a B.S. in Resource Management from the University of California at Berkeley, and a M.S. in Wildlife and Fisheries Science from the Pennsylvania State University. A true and correct copy of my current curriculum vitae is attached hereto.

O12-28

The comments herein are based on my review of the environmental documents prepared for the Project, a review of scientific literature pertaining to biological resources known to occur in the Project area, consultations with other biological resource experts, and the knowledge and experience I have acquired during my 26-year career in the field of natural resources management.

Introduction

I believe members of the Campo Band of Diegueño Mission Indians have deep respect for the natural environment. I do not know who retained the services of Dudek, the consultant that prepared the DEIS, and that was responsible for disclosing and analyzing Project impacts to biological resources. However, I am concerned that Dudek has deceived members of the Tribe into believing that impacts to golden eagles, and other species of special significance to tribal traditions and culture, will be insignificant. Before the Bureau of Indian Affairs ("BIA") approves the tentative lease agreement for the Project, I want to make sure it and the Tribe understand that Dudek has not provided an accurate assessment of impacts to biological resources. Quite simply, Dudek's data do not support its conclusions, or conclusions that would be made by objective scientists. Dudek has violated standards for scientific integrity, and it has made numerous false statements and critical omissions. In several instances, there is no plausible explanation for these errors and omissions, other than they were done intentionally. The subsequent comments discuss the numerous critical flaws with Dudek's assessment of impacts to biological resources.

Scoping Comments (DEIS Appendix A)

Appendix A to the DEIS provides the Scoping Report. According to the Scoping Report: "[t]he BIA has formally invited the Tribe's Campo Environmental Protection Agency ("CEPA") and the County of San Diego ("County") to participate in the EIS as cooperating agencies."[1] Although the BIA has "formally invited" the CEPA and County to participate in the EIS, it is unclear whether either of those agencies accepted the BIA's invitation. Cooperating agencies have the responsibility and obligation under the Council on Environmental Quality ("CEQ") regulations to participate in the scoping process.[2] The DEIS fails to discuss how the CEPA and the County participated in the scoping process, and based on the information provided in Appendix A, it appears those agencies either did not participate (e.g., neither submitted scoping process), or their involvement was minimal.

O12-28
Cont.

Although there are no scoping comments from the CEPA or County, several agencies, organizations, and individuals provided scoping comments. I reviewed the scoping comments pertaining to biological resources. Commenters identified numerous environmental issues deserving of study, and they provided substantial evidence that the issues may be significant. The DEIS does not address many of the issues raised in scoping comments, nor does it provide evidence that those issues are insignificant.[3]

For example, several commenters raised the issue that the Project could have significant impacts on bats. Appendix A acknowledges that scoping comments asked the BIA to: "[d]iscuss impacts to bat populations resulting from collisions and barotrauma."[4] However, the DEIS provides no such discussion. Indeed, there is no mention of bats whatsoever in the DEIS, and although the

[1] DEIS, Appendix A, p.1.
[2] 48 Fed. Reg. 34263 (1983).
[3] *See* 43 FR 55990, Sec. 1501.7 and Sec. 1508.25.
[4] DEIS, Appendix A, p. 7.

Biological Technical Report ("BTR") acknowledges presence of bats at the Project site, it provides no analysis of Project impacts to bats.

Appendix A further acknowledges that the BIA should: "[d]iscuss impacts to the wide range of general plant and animal species as well as sensitive species, while addressing ecosystem-level impacts. Include bat mortality rates."[5] The DEIS provides no information on bird and bat mortality rates associated with wind energy projects, and its discussion of special-status plants and animals is limited to the Quino checkerspot butterfly and eagles. The DEIS fails to disclose, analyze, or provide mitigation for the numerous other special-status species that occur (or may occur) in the Project area. These include species listed under the California Endangered Species Act ("CESA"), and taxa that meet the criteria for listing under CESA or the Endangered Species Act ("ESA"), even if not currently included on any list. They also include taxa listed by the California Department of Fish and Wildlife ("CDFW") as *Species of Special Concern*, by the USFWS as *Birds of Conservation Concern*, and plants listed in the California Native Plant Society's *Inventory of Rare and Endangered Plants of California*.

Numerous migratory species were detected on the Project site. In addition, some of the resident species detected on the Project site undoubtedly have home ranges that extend beyond tribal boundaries. As a result, it is standard practice that the lead agency for a federal project discloses all special-status species that may be affected by the proposed action.

Numerous special-status plant and animal species have been detected within the On-Reservation and Off-Reservation portions of the Project site.[6] The DEIS fails to disclose this information, and the only information provided in the BTR is that 22 special-status animal species were observed in the Off-Reservation portion of the Project site.[7] The BTR does not identify these 22 species, nor does it provide information on the special-status animal species that have been detected within the On-Reservation portion of the Project site. The BTR provides no information whatsoever on the special-status plant species that have been detected on the Project site. Whereas appendices to the BTR provide lists of species that have been detected on the Project site, the lists do not identify the species that are considered special-status.

O12-28
Cont.

The BTR concluded: "[t]he Project would result in potentially significant direct impacts to special-status wildlife species habitat."[8] The BTR, however, fails to identify the species that would be impacted (except the Quino checkerspot butterfly). This issue is exacerbated by the BTR's references to analyses that were never conducted, and to documents that do not exist.[9]

The omissions described above leave the public entirely uninformed of the special-status species that could be significantly impacted by the Project.

---

[5] *Ibid.*
[6] BTR, Appendixes E-1, E-2, F-1, and F-2.
[7] BTR, p. 56.
[8] BTR, p. ix.
[9] *For example, see* BTR, pp. 80, 82, and 85, which refer to additional analysis in "Dudek 2019" and "County of San Diego 2019." Dudek 2019 is the BTR (*see* BTR, p. 116). Thus, the BTR cites itself as the document containing the analysis that the BTR omits. The references section of the BTR does not provide a citation for County of San Diego 2019. However, I presume it is the unpublished DEIR for the Torrey Wind Project.

Regulatory Setting (DEIS Appendix C)

Appendix C to the DEIS discusses the regulatory setting. According to Appendix C:

> The Project will be developed in accordance with the Resource Development Plan approved by the BIA as part of the lease approval process. Federal laws and regulations applicable to the Project that are listed below include BIA lease regulations; National Environmental Policy Act (NEPA); the Endangered Species Act (ESA); the U.S. Fish and Wildlife Service (USFWS) Land-Based Wind Energy Guidelines (USFWS 2012a); the Migratory Bird Treaty Act (MBTA); the Bald Eagle and Golden Eagle Protection Act (BGEPA); the Clean Water Act (CWA); the Clean Air Act (CAA); the National Historic Preservation Act (NHPA); the Archaeological Resources Protection Act (ARPA); the Antiquities Act of 1906; the Native American Graves Protection and Repatriation Act (NAGPRA); the Noise Control Act; and Executive Orders (EOs) 11988, 11990, and 13112.[10]

I have three comments about the information provided in Appendix C:

First, the Project fails to comply with the Land-Based Wind Energy Guidelines.[11] This needs to be articulated in the FEIS.

Second, if the Land-Based Wind Energy Guidelines are applicable to the Project, so is the Eagle Conservation Plan Guidance.[12] The Project fails to comply with the Eagle Conservation Plan Guidance, which is designed to ensure compliance with the Bald Eagle and Golden Eagle Protection Act.

Third, Appendix C makes numerous references to the Project being: "developed in accordance with the Resource Development Plan approved by the BIA as part of the lease approval process." However, the DEIS does not provide a copy of the Resource Development Plan or describe the contents therein.

O12-28 Cont.

<u>Campo Band Land Use Plan</u>

The DEIS cites the December 2010 version of the Tribe's Land Use Plan. According to the 2010 version of the Land Use Plan,[13] the Campo Band has set aside a portion of the Reservation for preservation as a wilderness area to protect the native vegetation and wildlife habitat.[14] The wilderness area is important to the conservation of the Quino checkerspot butterfly and

[10] DEIS, Appendix C, p. C-1.
[11] For example, see the Guideline's recommendations for bat surveys. The instances of non-compliance with the Guidelines are too numerous to list. The ways in which Dudek failed to comply with the Guidelines should be readily apparent to anyone who reviews the Guidelines.
[12] U.S. Fish and Wildlife Service. 2013 Apr. Eagle Conservation Plan Guidance: Module 1—Land-based Wind Energy, Ver 2.
[13] I found (online) a PowerPoint presentation from the Tribe that suggests the Land Use Plan was updated in 2011. However, I was unable to verify that information, nor was I able to locate any versions of the Land Use Plan other than the one cited in the DEIS.
[14] Campo Band of Mission Indians. 1978 (Revised and Adopted December 2010). Land Use Plan, p. 11.

numerous other species associated with coastal scrub and chaparral habitats.[15] It also provides essential landscape-level connectivity and wildlife corridors.[16]

Portions of the proposed Project are located within areas designated as wilderness by the Tribe. According to the Tribe's Land Use Plan: "[n]o development is to take place in this [wilderness] area; it is to remain in its natural state to the maximum extent feasible…[s]ignificant physical disturbance of wilderness areas is not permitted."[17] The Project would result in significant physical disturbance of the designated wilderness area, and thus, it would conflict with the Tribe's Land Use Plan. The DEIS provides no discussion of this conflict.

East County Multiple Species Conservation Program Plan

The BTR provides the following discussion of the East County Multiple Species Conservation Program Plan ("MSCP Plan"):

> The Project Site is located within the draft East County MSCP Plan area (Figure 2-2, Regional Planning). Projects in this area are subject to the Planning Agreement for the East County MSCP (County of San Diego 2014), which is intended to determine if project approval would have an effect on the preparation and approval of the draft East County MSCP. A Preliminary Planning Map has been completed for the East County MSCP. According to this map, the Project Site falls partially within a preliminarily delineated Focused Conservation Area of the East County MSCP Planning area, which suggests that the area has regional conservation value (Figure 2-2).
>
> Until the East County MSCP Plan is drafted and approved, the Planning Agreement between the County and the Resource Agencies (County of San Diego 2014) remains in place and applies to the Project. The Planning Agreement outlines Preliminary Conservation Objectives for the East County MSCP (County of San Diego 2014). In addition to the preliminary conservation objectives, the Planning Agreement for the draft East County MSCP Plan identifies an interim project review process, including a set of preserve design principles that interim projects are evaluated against during the period when the East County MSCP Plan is in preparation.[18]

O12-28 Cont.

I understand that Tribal lands will be excluded from the East County MSCP Plan. However, a portion of the Project occurs outside of Tribal lands. Thus, based on the information provided in the BTR, the DEIS needed to:

---

[15] CalPIF (California Partners in Flight). 2004. Version 2.0. The Coastal Scrub and Chaparral Bird Conservation Plan: a Strategy for Protecting and Managing Coastal Scrub and Chaparral Habitats and Associated Birds in California (J. Lovio, lead author). PRBO Conservation Science, Stinson Beach, CA. http://www.prbo.org/calpif/plans.html. *See also* U.S. Fish and Wildlife Service. 2009. Revised Designation of Critical Habitat for the Quino Checkerspot butterfly (*Euphydryas editha quino*). 74 FR 28776 28862.

[16] Spencer, W.D., P. Beier, K. Penrod, K. Winters, C. Paulman, H. Rustigian-Romsos, J. Strittholt, M. Parisi, and A. Pettler. 2010. California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California. Prepared for California Department of Transportation, California Department of Fish and Game, and Federal Highways Administration. *See also* California Department of Fish and Wildlife. 2018. Terrestrial Connectivity, Areas of Conservation Emphasis (ACE), version 3.0 [ds2734]. Calif. Dept. of Fish and Wildlife. Biogeographic Information and Observation System (BIOS). Retrieved June 28, 2019 from: <http://bios.dfg.ca.gov>.

[17] Campo Band of Mission Indians. 1978 (Revised and Adopted December 2010). Land Use Plan, pp. 11 and 12.

[18] BTR, p. 12.

1. assess how Project approval would affect preparation and approval of the East County MSCP.
2. address the requirements of the Planning Agreement between the County and the Resource Agencies.

The DEIS provides no discussion or analysis of how approval of the Project might affect the East County MSCP Plan. It also fails to address the requirements of the Planning Agreement.

County Resource Protection Ordinance

The BTR states the following with respect to the County's Resource Protection Ordinance: "[i]mpacts to sensitive habitat lands may be allowed 'when all feasible measures necessary to protect and preserve the sensitive habitat lands are required as a condition of permit approval and where mitigation provides an equal or greater benefit to the affected species' (County of San Diego 2012)."[19]

The DEIS fails to demonstrate that the Developer has implemented all feasible measures necessary to protect and preserve the sensitive habitat lands located within the Off-Reservation portion of the Project site. For example, the maps provided in the DEIS suggest the Off-Reservation portion of the Project has not been designed to minimize: (a) redundancy of roads, or (b) impacts to wetlands in McCain Valley.[20]

Several special-status species are known to occur in the Off-Reservation portion of the Project site.[21] The DEIS does not address impacts to those species, nor does it incorporate a mechanism that ensures the Developer would provide compensatory mitigation of equal or greater benefit to the species that would be adversely affected by the Project.

O12-28 Cont.

Project Description

The Project contains many individual components, including wind turbines and pads, new roads, meteorological ("met") towers, a gen-tie line, a collector substation, and an O&M facility, among others. The DEIS quantifies impacts for some of these features. For example, the DEIS states that approximately three acres would be cleared and graded for the collector substation. However, the DEIS does quantify impacts for all Project components, nor does it provide the information the public would need to independently quantify the impacts. Because the DEIS does not provide a breakdown of impacts (permanent and temporary), by Project component, it is impossible to determine how accurately the DEIS estimates impacts to various biological resources (e.g., 222 acres of permanent impacts to Quino checkerspot butterfly habitat), and whether all Project components have been considered in those estimates.

[19] BTR, p. 13.
[20] *See* BTR, Figure 8h, which suggests the gen-tie route could be shifted slightly north or south to minimize (or avoid entirely) impacts to wetlands.
[21] BTR, Appendixes E-2 and F-2.

Roads

The maps in the DEIS show "disturbance limits," which encompass all disturbance caused by the Project. One can infer that the "disturbance limits" that appear as linear features on the maps are roads. However, no maps depict the roads that would be constructed for the Project, versus the existing roads that would be widened. This precludes the ability to evaluate impacts, because impacts associated with creating a new road are generally more severe than those associated with widening an existing road.

The DEIS states: "[i]t is anticipated that approximately 15 miles of existing roads on the Reservation would need to be widened up to 40 feet during construction and reduced to 24 feet after construction."[22] The DEIS fails to provide the width(s) of existing roads, thus precluding knowledge of how much grading and vegetation removal would be required to make those roads wide enough for Project use.

The DEIS further states: "[a]long both sides of new access roads, a 6-foot-wide vegetation management area would be maintained. Access roads would be constructed of native soils with decomposed granite and gravel, or similar suitable materials, to provide access in nearly all weather conditions. All roads would be constructed or upgraded in accordance with industry standards."[23] The DEIS fails to provide a citation to the "industry standards." In addition, the DEIS's statement that new access roads would have a 6-foot-wide vegetation management area appears to conflict with its description of the Fuel Modification Zones. Specifically, page 13 of the DEIS suggests that the Off-Reservation access roads would have a 20-foot-wide vegetation management area in accordance with the County's Fire Code.

O12-28
Cont.

Met Towers

The Project includes the installation of three permanent and six temporary met towers. The DEIS states:

> Up to three, permanent meteorological (Met) towers would be constructed within the Campo Corridor on the Reservation to monitor and record weather conditions and to perform power performance testing of the wind turbines. The height of these Met towers would equal the hub height of the wind turbines to be installed. They would be un-guyed, self-supporting, lattice structures mounted on an approximately 26 feet by 26 feet concrete foundation. The Met towers would be enclosed within an approximately 50 feet by 50 feet perimeter by an 8-foot-tall chain-link fence with locked gates. Lighting for the Met towers would consist of marker lighting pursuant to FAA requirements, and would employ strobed, minimum-intensity lights as recommended by the U.S. Fish and Wildlife Service (USFWS 2016).[24]

The lattice structures, fences, and lights associated with the met towers have the potential to increase bird and bat collisions with the Project's wind turbines, especially if the towers are

[22] DEIS, p. 7.
[23] DEIS, p. 7.
[24] DEIS, p. 9.

located near the turbines.[25] None of the maps in the DEIS depict where the permanent met towers would be located. This precludes the ability to evaluate whether the met towers will increase bird and bat collisions with the Project's wind turbines.

The DEIS indicates that the lighting associated with the met towers would adhere to USFWS recommendations. However, it fails to discuss consistency with the USFWS's other 11 recommendations for tower siting, construction, operation, and decommissioning.[26] At a minimum, the DEIS fails to comply with recommendation #3: "[i]f constructing multiple towers, providers should consider the cumulative impacts of all of those towers to migratory birds and threatened and endangered species as well as the impacts of each individual tower."[27] I cannot evaluate compliance with many of the remaining recommendations because the DEIS fails to provide the necessary information.

The DEIS states: "[a] dedicated road would provide access to each permanent Met tower from the nearest Project road access point." It is unclear whether the DEIS's estimates of impacts account for these roads, especially because the met towers and associated access roads are not depicted on any maps.

Water Line

According to the DEIS: "[t]he approximately 210 gpd O&M facility water demand during the Project's operations would be serviced via connection to existing On-Reservation facilities in the vicinity, generally consistent with the connection and sizing necessary for a single-family home."[28] This description is too vague to understand the environmental impacts associated with the new water line. Moreover, the DEIS does not analyze or quantify impacts associated the new water line, nor does it depict the water line on any maps.

O12-28 Cont.

Grading Plan

The DEIS does not provide a grading plan, although it states:

1. "The cut and fill required for the access roads would be balanced on site."[29]
2. "Depending on the soil subsurface, surface soils may need to be excavated and replaced with gravel and/or sand to sufficiently establish a stable road base."[30]
3. "Exact locations of cut and fill, grading, and culvert locations would be developed and provided as part of the Project's Grading Plans."[31]

[25] National Academy of Sciences. 2007. Environmental impacts of wind-energy projects. The National Academies Press, Washington, DC.
[26] The DEIS provides the URL to USFWS 2016. I could not obtain that document because the URL provided in the DEIS is no longer active. However, I obtained the current (updated 2019 May 20) at: <https://www.fws.gov/midwest/endangered/section7/telecomguidance.html>
[27] *Ibid*.
[28] DEIS, p. 10.
[29] DEIS, p. B-16.
[30] DEIS, p. B-21.
[31] DEIS, p. B-21.

The DEIS does not identify whether the cut and fill required for other Project components (i.e., besides the access roads) would be balanced. Furthermore, if surface soils may need to be excavated and replaced, they will need to be dumped somewhere. The DEIS fails to identify where grading spoils will be dumped (which could cause additional impacts), and how they will be stabilized to prevent sediment transfer.

Decommissioning

The DEIS provides the following discussion of Project decommissioning:

> Reclamation of the Campo Corridor following decommissioning would be based on the terms of the Campo Lease and may include regrading, replacement of topsoil, and revegetation. Decommissioning of the Campo Wind Facilities would minimize new site disturbance and removal of native vegetation to the extent practicable. To the extent practicable, topsoil removed during decommissioning would be stockpiled and used as topsoil during restoration efforts. Soil would be stabilized and revegetated with plant species characteristic of native species within adjacent habitats. Local seed sources would be used where feasible.[32]

I have the following comments in response to these statements:

1. The DEIS's statements are vague, and thus, preclude the ability to evaluate impacts associated with decommissioning of the Project. This issue is compounded by the DEIS's failure to identify the "terms of the Campo Lease."
2. The DEIS's statement that the terms of the Campo Lease *may* include revegetation suggests the lease *may not* include terms for revegetation. The DEIS does not incorporate a mitigation measure (or other enforcement mechanism) that requires revegetation of disturbed areas following decommissioning. As discussed further below, active revegetation efforts are required to minimize invasive plants, which would undoubtedly colonize areas disturbed by decommissioning activities.
3. The DEIS's reference to "plant species characteristic of native species within adjacent habitats" is too vague to understand the environmental implications. For example, would the plants used for revegetation be the same species as those that occur in adjacent habitats, or would they simply be plants that have the same physical characteristics (e.g., size and shape)?
4. The DEIS fails to identify what would make use of local seed sources not "feasible." The Project is expected to operate for at least 25 years, which is ample time to collect and store seeds from native plants that occur at the Project site. As a result, use of seeds from native plants that occur at the Project site should be incorporated as required mitigation.
5. The DEIS fails to identify what would occur if it is *not* feasible to use local seed sources. Use of seeds from non-local ecotypes can cause significant impacts on ecological systems.[33] The DEIS fails to disclose or evaluate those impacts.

O12-28 Cont.

[32] DEIS, p. B-32.

[33] Longcore T, R Mattoni, G Pratt, C Rich. 2000. On the perils of ecological restoration: Lessons from the El Segundo blue butterfly. Pages 281-286 *in* JE Keeley, M Baer-Keeley, CJ Fotheringham, editors. 2nd Interface Between Ecology and Land Development in California. U.S. Geological Survey Open-file Report 00-62. U.S. Geological Survey, Sacramento, CA.

6. The DEIS fails to incorporate any performance standards for site conditions following decommissioning.

Project Alternatives

Several parties submitted scoping comments that recommended the BIA consider Project alternatives that would reduce environmental impacts. The EPA's scoping comments state:

> The alternatives analysis is the heart of the Environmental Impact Statement (40 CFR 1502.14). We recommend evaluating a reasonable range of alternatives, including options for reducing significant environmental impacts and additional mitigation not already included in the proposed action (40 CFR 1502.14 (f)). Reasonable alternatives could include: alternative project sites within the reservation; alternative configurations, capacities, and turbine types, sizes, and technologies; and alternative locations for facilities (office, operations and maintenance buildings) and material laydown areas. We recommend locating facilities on existing disturbed land, if applicable. Discuss the reasons for eliminating alternatives that are not evaluated, and describe the criteria used to determine the minimum project size that would be considered feasible for meeting the purpose and need.

The DEIS eliminates all alternatives that would occur Off-Reservation, because those alternatives would not provide benefits to the Tribe and would be outside of the Tribal governance. However, the EPA provided broad recommendations, which provided the BIA with considerable flexibility in developing On-Reservation alternatives that would reduce significant environmental impacts. As summarized below, the DEIS ignored most of the EPA's recommendations:

O12-28 Cont.

EPA Recommendation	Considered in DEIS?	Reason for eliminating
Project sites within the reservation	*No* – Both Project alternatives are in the same narrow study area.	*None provided*
Configurations	*Slighty* – Alternative 2 would eliminate 5 turbines from one area and 2 turbines from another area.	Explanation for configurations not supported.
Capacities	63 MW considered.	*Lack of economic feasibility.*
Turbine types	*No*	*None provided*
Turbine sizes	2.5 MW turbines considered	*Reduced overall capacity provided by smaller turbines.*
Turbine technologies	*No*	*None provided*
Location for facilities	*No*	*None provided*
Location for material laydown areas	*No*	*None provided*
Existing disturbed land	*No*	*None provided*

The DEIS proposes two Project alternatives: (1) Alternative 1 (252 MW), and (2) Alternative 2 (202 MW). Both alternatives would entail 4.2 MW wind turbines. Alternative 2 would have 12 less turbines, but it is otherwise almost identical to Alternative 1.

- The DEIS eliminates the *Mixed Renewable Generation (Wind and Solar) Alternative* because the Campo Lease does not allow the use of solar panels as one of the approved forms of renewable electrical generation.

- The DEIS eliminates the *Off-Reservation Location Alternative* because it would not provide benefits to the Tribe and would be outside of the Tribal governance.

- The DEIS eliminates the *Distributed General Alternative* because it would not provide benefits to the Tribe and would be outside of the Tribal governance (among other reasons provided).

- The DEIS eliminates the *Minimal Build-Out Alternative* (15 4.2 MW turbines) due to lack of economic feasibility of a 63 MW project.

- Finally, the DEIS eliminates the *Reduced Capacity Turbines Alternative* (60 2.5 MW turbines) because the 60 turbines would have the same disturbance footprint as Alternative 1 (i.e., environmental impacts would be the same).

Thus, the Project constraints appear to be: (1) it must be a wind energy project, (2) it must be on Tribal lands, (3) it must have nameplate generating capacity greater than 63 MW, and (4) environmental impacts must be no greater than Alternative 1. This provided the BIA with considerable flexibility in developing a project alternative that would reduce significant environmental impacts. However, the BIA failed to consider any alternatives within these constraints other than Alternative 1 and Alternative 2. Instead, the analysis was skewed towards the extremes. Specially, the DEIS only considered an alternative with a large number of small turbines (*Reduced Capacity Turbines Alternative*), or a small number of large turbines (*Minimal Build-Out Alternative*). There was no consideration of anything in the middle (e.g., 30 4.2 MW turbines), which would undoubtedly reduce the Project's footprint and environmental impacts.

O12-28 Cont.

<u>Proposed Project Alternatives</u>

The DEIS provides the following rationale for developing Alternative 2:

> The 12 turbines eliminated relative to Alternative 1 would be those in areas having the potential to affect sensitive resources, specifically biological resources, and certain locations close to sensitive tribal receptors. This would reduce the impact of the Campo Wind Facilities on sensitive tribal resources and receptors and would reduce the amount of energy produced as a whole. Alternative 2 construction and operational characteristics would otherwise be the same as Alternative 1.[34]

The DEIS does not identify the specific biological resources that would be avoided by Alternative 2, nor does it discuss how Alternative 2 would reduce impacts to those resources.

[34] DEIS, p. 23.

The DEIS identified four biological resource impacts (termed BIO-1 through BIO-4 in the DEIS). In the subsequent section I address those four impacts as they pertain to the two Project alternatives. Specifically, I summarize the DEIS's "analysis" of each alternative, and I provide evidence that refutes the DEIS's claim that Alternative 2 was developed to reduce impacts to sensitive biological resources.

1. *Riparian Habitats* (*Impact BIO-1*)

The DEIS classifies "unvegetated stream channel" as riparian habitat. Alternative 2 would reduce impacts to unvegetated stream channel by 0.17 acre.[35,36] However, the DEIS provides no reason to believe that Alternative 2 was developed to minimize impacts to unvegetated stream channel. Similarly, it is not plausible to believe that 12 turbines were eliminated from the Project to avoid impacting 0.17-acre of unvegetated stream channel.

2. *Wetlands and other Jurisdictional Waters* (*Impact BIO-2*)

The DEIS directs the reader to Table 4.5-2 for information on impacts to federally jurisdictional wetlands and other waters.[37] Table 4.4-2 (which I presume was incorrectly numbered) provides the impact calculations. However, the table does not provide calculations for each alternative.

According to Table 9a and 9b in the BTR, Alternative 2 would result in a 0.14-acre reduction in impacts to non-wetland waters.[38] The unvegetated stream channels that provide "riparian habitat" (discussed above) are jurisdictional waters.[39] Therefore, the 0.14 acre of jurisdictional waters avoided by Alternative 2 are the same features as the 0.17 acre of "riparian habitat" that would be avoided by Alternative 2 (the slight discrepancy between these two values appears to be due to rounding,[40] or an error).[41] Again, the DEIS provides no reason to believe that Alternative 2 was developed to avoid impacts to 0.14 acre (or 0.17 acre) of jurisdictional waters.

O12-28
Cont.

3. *Species protected under Federal law (Impact BIO-3) – Quino checkerspot butterfly*

Based on Figures 2-1A and 2-1B in the DEIS, Alternative 2 would eliminate: (a) a string of five turbines between Tusil Road and Williams Road in the northern portion of the Project area, and (b) a string of two turbines along an unnamed road in the southern portion of the Project area (hereafter referred to as the "northern string area" and "southern string area"). Five additional turbines would be removed from strings that would remain under Alternative 2 (i.e., some strings

[35] DEIS, Tables 4.5-1a and -1b.
[36] The *Riparian and Bottomland Habitat* subtotal provided in Table 4.5-1a is incorrect. Examining the individual vegetation communities that comprise this subtotal reveals that the only difference between Table 4.5-1a and -1b is impacts to unvegetated stream channel.
[37] DEIS, pp. 84 and 85.
[38] BTR, Tables 9a and 9b
[39] *See* DEIS, Table 4.4-2 and BTR, Tables 9a and 9b.
[40] *See footnote a to* DEIS, Table 4.4-2.
[41] *For example* BTR Table 3 indicates 7 total acres (5.5 On-Reservation) of Waters of the U.S. However, BTR Table 6 indicates 10.78 acres.

would have less turbines than proposed under Alternative 1).[42] Figure 1 (below) depicts the two turbine strings that would be removed under Alternative 2.

There have not been any surveys for Quino checkerspot butterflies in the northern string area, and Dudek classified the southern string area as an "Exclusion Area."[43] Furthermore, according to the DEIS, Alternative 1 would not impact Quino checkerspot butterfly habitat in either area.[44] Therefore, Alternative 2 could not have been designed to reduce impacts to the Quino checkerspot butterfly.

4. *Species protected under Federal law (Impact BIO-3) – Eagles*

The DEIS concluded Alternative 1 would have no adverse effects on eagles.[45] Therefore, Alternative 2 could not have been designed to reduce adverse effects to eagles.

5. *Species protected under Federal law (Impact BIO-3) – Other migratory birds*

According to the DEIS:

> The impacts from Alternative 2 would be similar to those under Alternative 1, although reduced (approximately 191.58 acres of potentially occupied Quino checkerspot butterfly habitat) because fewer turbines would involve a smaller footprint and thus less disturbance. Direct and indirect impacts from Alternative 2 would be reduced to less than adverse with implementation of MM-BIO-1 and MM-BIO-4 (Avian-Specific Avoidance, Minimization, and Mitigation Measures).[46]

O12-28 Cont.

The DEIS's reference to the reduction in impacts to "potentially occupied Quino checkerspot butterfly habitat" does not justify its conclusion that Alternative 2 would reduce impacts migratory *birds*. The DEIS provides no additional data or analysis. Therefore, there is no evidence to suggest that Alternative 2 was designed to reduce impacts to migratory birds.

6. *Wildlife movement corridors (Impact BIO-4)*:

The DEIS concluded Alternative 1 would have no adverse effects on wildlife movement, corridors, or habitat connectivity. Therefore, Alternative 2 could not have been designed to reduce effects on wildlife movement, corridors, or habitat connectivity.

In summary, the data and analyses provided in the DEIS *do not* support the claim that Alternative 2 was developed to reduce impacts to sensitive biological resources.

[42] Figures 2-1A depicts 75 turbines, which makes it impossible to determine the five additional turbines that would be eliminated.
[43] BTR, Figures 4 and 10.
[44] *See* BTR, Figure 15.
[45] DEIS, p. 86.
[46] DEIS, p. 87.

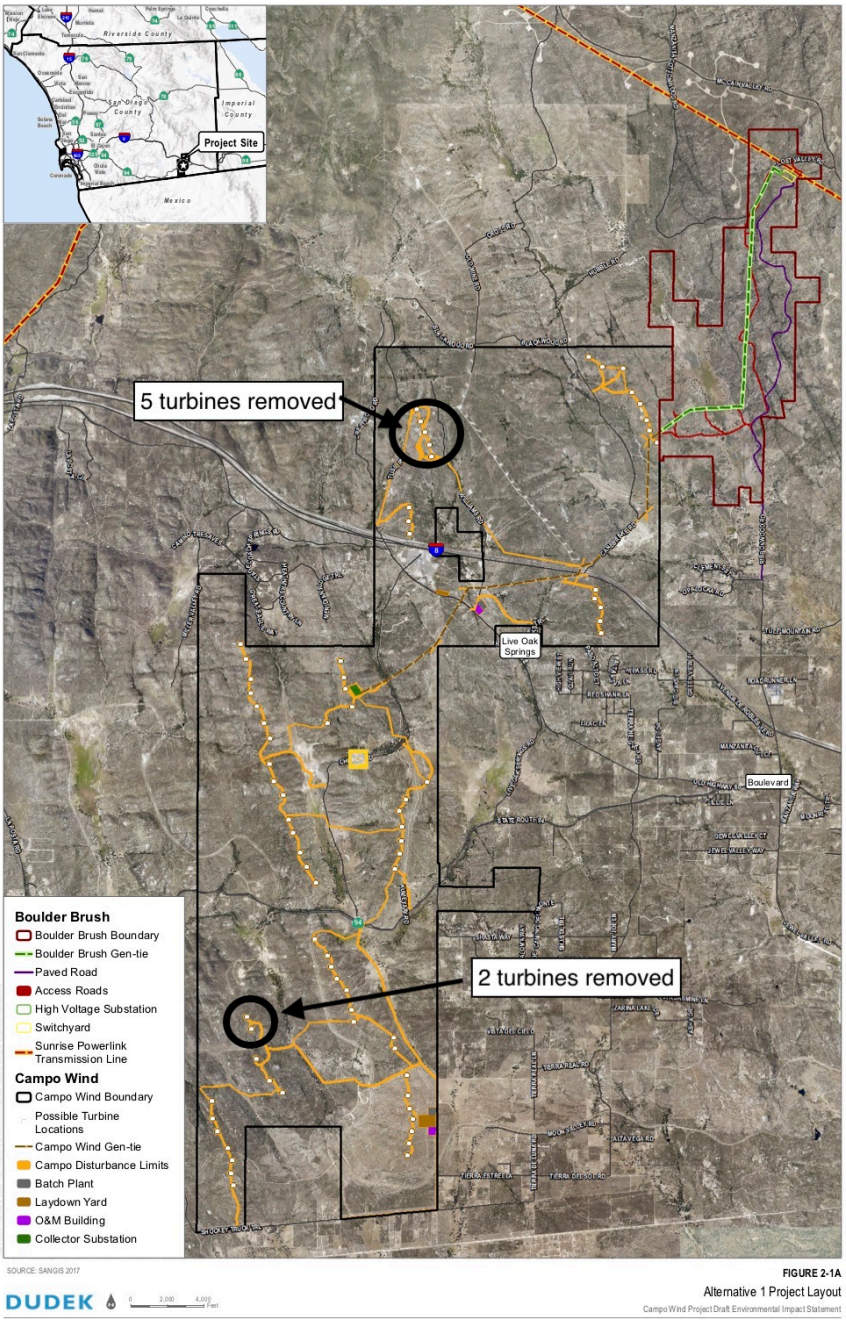


Figure 1. Turbine strings removed in Project Alternative 2.

O12-28
Cont.

NEPA Guidelines

The DEIS fails to comply with numerous NEPA requirements beyond those for alternatives analysis (Sec. 1502.14). I address two requirements that are especially relevant to the biological resources analyses provided in the DEIS.

List of preparers (40 CFR Sec. 1502.17)

40 CFR Sec. 1502.17 states:

> The environmental impact statement shall list the names, together with their qualifications (expertise, experience, professional disciplines), of the persons who were primarily responsible for preparing the environmental impact statement or significant background papers, including basic components of the statement (Secs. 1502.6 and 1502.8). Where possible the persons who are responsible for a particular analysis, including analyses in background papers, shall be identified.[47]

The DEIS fails to provide the qualifications of the persons who were responsible for preparing the biological resources component of the DEIS. Based on the content of the DEIS, those individuals either: (a) lack understanding of fundamental principles of botany, wildlife biology, and ecology; or (b) they lack appropriate standards of objectivity, utility, and scientific integrity as required by the Indian Affairs Manual.[48]

Methodology and Scientific Accuracy (40 CFR Sec. 1502.24)

O12-28 Cont.

40 CFR 1502.24 states: "[a]gencies shall insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements. They shall identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement."

The DEIS's conclusions about environmental effects are not accompanied by analyses that support those conclusions. In a few instances the DEIS cites the BTR as the source of the DEIS's conclusion. However, the BTR does not provide the analysis either; it simply states there will be no adverse effects.

The BTR cites several scientific publications to establish the adverse effects that could be caused by the Project. This is appropriate. However, when it comes to the BTR's actual analysis of Project impacts, the BTR cites no scientific publications (or additional analysis) that support the effects determinations. That said, there are a few select instances where the BTR cites scientific publications that purportedly support the BTR's conclusion. However, if one reviews those publications, it is clear they *do not* support the BTR's conclusion. Indeed, most lead to the opposite conclusion.

[47] Bureau of Indian Affairs. 2012. Indian Affairs National Environmental Policy Act (NEPA) Guidebook. 59 IAM 3-H. Sec. 1502.17.
[48] *See* Indian Affairs Manual, Part 10, Chapters 2 through 4.

For example, the BTR cites Lopucki et al. (2017) to support its conclusion that wind farms do not impact wildlife movement, habitat connectivity, or wildlife corridors. Lopucki et al. (2017) examined the effect of wind farms on four species associated with agricultural (i.e., human modified) landscapes in Poland. Of these four species, two had a negative response to the wind farms, one had a neutral response, and one had a positive response. Thus, only 50% of the species studied had a negative response. According to the BTR, this means: "construction and operation of the Project is not expected to have an adverse effect on wildlife movement, habitat connectivity, or wildlife corridors."[49] There is no way that a trained biologist with professional integrity would make that conclusion. Indeed, the biologists that conducted the study concluded: "*our study showed that wind farms can significantly alter habitat use of terrestrial animals not only during the construction phase (Helldin et al. 2012), but also during the operational phase*."

Not only do the results of the study fail to support the BTR's conclusion, but they provide evidence of an adverse effect that was not contemplated in the BTR or DEIS. Specifically, the one species that exhibited a positive response (common pheasant) is a non-native, over-abundant game species in Poland.[50] One would expect non-native species associated with human modified landscapes to benefit from additional modifications to the landscape (i.e., as a result of the wind farms). Therefore, based on the results of Lopucki et al. (2017), the proper scientific conclusions would be that: (a) the Project would have adverse effects on some species, and (b) the Project will benefit non-native species associated with human modified landscapes.

SURVEYS

O12-28 Cont.

Information on the biological resource surveys that were conducted for the Project is provided in the methods section of the BTR. The subsequent comments address some of the statements (*in italics*) that were made in that section of the BTR.

"*The data gathered from the avian field surveys and avian risk assessment are a separate document from this report; therefore, these surveys are not discussed further*."[51]

- The data and risk assessment are not provided in any of the appendices to the DEIS or BTR. In addition, the BTR fails to cite where this "separate document" is located or how it can be reviewed.

"*Some of the avian studies will continue into 2019*."

- The BTR fails to identify the purpose of these additional studies, or how they would affect:
    - the information, analyses, and conclusions presented in the DEIS.
    - the two Project alternatives provided in the DEIS.

[49] BTR, pp. 90 and 92.
[50] CABI. 2019. Invasive Species Compendium. Datasheet for *Phasianus colchicus* (common pheasant). Available at: <https://www.cabi.org/isc/datasheet/70470>
[51] BTR, p. 15.

- Releasing the DEIS before studies have been completed precludes the public from having a thorough understanding of the Project's environmental setting and impacts, and thus, the efficacy of the proposed mitigation.
- The DEIS does not explain how the information gained from the avian studies will be disseminated to the public for meaningful input during NEPA review.

"*Between 2017 and 2018, Dudek conducted a Quino checkerspot butterfly habitat assessment and focused surveys, avian field surveys (including raptor nest searches, 30-minute point counts, and all-day eagle point counts), vegetation mapping, and a jurisdictional delineation of waters and wetlands within the study area in support of the Project*."

- The BTR fails to provide survey reports for the avian field surveys and vegetation mapping surveys. This precludes the ability to verify the information provided in the BTR, including claims pertaining to survey methods and results. The BTR provides none of the bird survey data.
- The BTR provides no further discussion of the raptor nest searches, including the methods and results. Tables 2a and 2b in the BTR do not identify raptor nest searches as an activity that Dudek conducted for the Project. As a result, the claim that raptor nest searches were conducted for the Project appears to be false.
- No surveys were conducted for special-status plants or bats (and their roosts) within the On-Reservation portion of the Project site.
- There have not been any focused surveys for the least Bell's vireo and southwestern willow flycatcher within the On-Reservation portion of the Project site since 2010. The BTR states that updated surveys for the least Bell's vireo and southwestern willow flycatcher were not performed in 2018 due to "prior negative surveys within the Reservation Boundary in 2010" (among other reasons). This information is false. Four willow flycatchers and one "Traill's" flycatcher (willow flycatcher or alder flycatcher) were detected on the Project site between 2010 and 2011.[52] Two of these birds were detected during the breeding season.[53] The surveyor could not confirm that either bird was nesting at the Project site; however, this does not equate to "negative surveys."

O12-28
Cont.

"*Any special-status species observed during these surveys are included in the biological analysis of this report*."

- This statement is false. Dudek detected numerous special-status plant and animal species during its surveys.[54] Additional special-status species were detected by AECOM in 2010 and 2011. The only special-status species "analyzed" in the BTR are the Quino checkerspot butterfly and golden eagle.

[52] AECOM. 2012. Biological Technical Report, Shu'luuk Wind Project. p. 3-28.
[53] *Ibid. See also* Sogge, M.K., Ahlers, Darrell, and Sferra, S.J., 2010, A natural history summary and survey protocol for the Southwestern Willow Flycatcher: U.S. Geological Survey Techniques and Methods 2A-10. p. 20.
[54] BTR, Appendixes E-1, E-2, F-1, and F-2.

Dr. Shawn Smallwood's comment letter lists the special-status bird species that Dudek failed to disclose or analyze. Additional special-status species that Dudek failed to disclose or analyze include:

Plants[55]

Astragalus douglasii var perstrictus (Jacumba milk-vetch) (CRPR 1B.2)
Linanthus bellus (desert beauty) (CRPR 2B.1)
Geraea viscida (sticky geraea) (CRPR 2B.2)
Streptanthus campestris (southern jewelflower) (CRPR 1B.3)
Deinandra floribunda (Tecate tarplant) (CRPR 1B.2)

Animals[56]

Western spadefoot (SSC)
Blainville's horned lizard (SSC)
Pocketed free-tailed bat (SSC)
Big free-tailed bat (SSC)
Western mastiff bat (SSC)
Pallid bat (SSC)
Townsend's big-eared bat (SSC)
Hoary bat (WBWG:M)
Western yellow bat (SSC)
Long-eared myotis (WBWG:M)
Western small-footed myotis (WBWG:M)
Fringed myotis (WBWG:H)
San Diego black-tailed jackrabbit (SSC)
San Diego desert woodrat (SSC)
San Diegan tiger whiptail (SSC)

O12-28
Cont.

Off-Reservation Surveys

The BTR (p. 26 and Table 2b) provides a list of surveys that Dudek claims to have conducted between 2017 and 2019 for the Off-Reservation portion of the Project.

- No survey reports are provided for many of the resources Dudek claims to have surveyed (e.g., rare plants, bats, birds, eagles, bighorn).
- Based on the dates in Table 2b, the Quino checkerspot butterfly surveys did not adhere to the USFWS survey protocol.
- Table 2b has three footnotes (a, b, c). The BTR fails to identify what these footnotes mean.

[55] *See* California Department of Fish and Wildlife, California Natural Diversity Database. 2019 Mar. Special Vascular Plants, Bryophytes, and Lichens List.
[56] *See* California Department of Fish and Wildlife, California Natural Diversity Database. 2018 Nov. Special Animals List.

- Bighorn sheep surveys were conducted three days apart on two days in July (10 hours total).[57] Dudek did not provide a survey report that describes the survey methods. However, 10 hours of survey effort would have been incapable of providing reliable information on bighorn sheep use of 2,000 acres (Off-Reservation) or 500 acres (Boulder Brush Corridor). In addition, limiting the surveys to two days in late July fails to account for seasonal variation, including bighorn use of lower slopes and valleys during the spring.

Golden Eagles / Birds

"*Surveys were conducted within the study area from October through December 2017, and in January 2018 to present (Figure 7, 2018 Eagle Point Count Surveys). These surveys follow the techniques outlined in the USFWS Land-Based Wind Energy Guidelines (USFWS 2012) and the California Guidelines (CEC and CDFG 2007)…Surveys are performed during the spring and fall periods and included three surveys each week at each point*."[58]

- These statements are intentionally misleading and conflict with information provided in Table 2a.
- Eagle count surveys were conducted 10/2/17 through 12/1/17, and from 10/2/18 through 10/29/18. There were "avian point count" surveys during some of the intervening periods; however, there was only one survey by one person (on 2/9/18) between 1/4/18 and 7/11/18. This is a critical flaw for two reasons. First, because many birds migrate north along the eastern side of the mountains in San Diego County during the spring. Second, because there were virtually no surveys during the time of year when golden eagles are most mobile and conspicuous (i.e., during courtship).[59]
- The surveys did not adhere to the minimum levels of effort recommended in the Land-Based Wind Energy Guidelines and Eagle Conservation Plan Guidance ("ECP Guidance").[60] Those documents recommend:
    - Minimum of two years of surveys across all seasons.
    - The ECP recommends 20 hours per turbine per year for risk assessments.[61] This equates to 2,400 hours for Project Alternative 1. Dudek conducted 333 hours (13.9% of the level recommended).[62]

O12-28 Cont.

[57] BTR, Table 2b.
[58] BTR, p. 38.
[59] Pagel JE, DM Whittington, GT Allen. 2010 Feb. Interim Golden Eagle inventory and monitoring protocols; and other recommendations. Division of Migratory Birds, United States Fish and Wildlife Service.
[60] The Land-Based Wind Energy Guidelines (p. 3) state: "If eagles are identified as a potential risk at a project site, developers are strongly encouraged to refer to the ECP Guidance."
[61] U.S. Fish and Wildlife Service. 2013 Apr. Eagle Conservation Plan Guidance: Module 1—Land-based Wind Energy, Ver 2. Appendix C.
[62] BTR, p. 63.

- Surveys for eagle nests within 10 miles of the Project footprint for no less than two breeding seasons prior to construction.[63] No eagle nest searches have been conducted for the Project since 2010 or 2011.

- Dudek's claim that they conducted three surveys each week at each point cannot be substantiated by the information provided in Table 2a. At a minimum, there were no surveys within the On-Reservation portion of the Project site (where wind turbines will be located) during the spring and early summer.
- The survey methods and results cannot be validated because no survey reports were provided. Page 39 of the BTR identifies all the survey data that were supposedly collected, but none of the data are provided. This precludes the ability to assess risk to eagles and other birds.

ENVIRONMENTAL SETTING

Quino Checkerspot Butterfly

The DEIS (and BTR) identifies the Quino checkerspot butterfly as an endangered subspecies. However, it provides no other contextual information for the public to understand the relative importance of the Project area to the persistence and recovery of the subspecies.[64]

There are currently 10 "core occurrence complexes" of the Quino checkerspot butterfly.[65] These occurrence complexes are considered likely centers of population density based on characteristics including geographic size, number of reported individuals, documented reproduction, and repeated observations. Such population density centers are likely to contain habitat supporting local "source" populations for a metapopulation (or even for megapopulations).[66] The Project site coincides with the Campo Core Occurrence Complex ("Campo Core").[67] Most of the Quino checkerspot butterflies that comprise the Campo Core were detected on the Project site.[68]

O12-28 Cont.

The prediction that drought conditions are likely to continue into the near future highlights the importance of conserving populations locally adapted to drier climates and diverse habitat types.[69] Habitats in the Campo Core and Jacumba Core occurrence complexes are warmer and drier than other core occurrence complexes and differ substantially in other habitat

[63] U.S. Fish and Wildlife Service. 2013 Apr. Eagle Conservation Plan Guidance: Module 1—Land-based Wind Energy, Ver 2. Appendix C.
[64] *See* 43 FR 55990 Sec.1500.1
[65] U.S. Fish and Wildlife Service. 2009. Quino Checkerspot Butterfly (*Euphydryas editha quino*), 5-Year Review: Summary and Evaluation. p. 14.
[66] *Ibid*, p. 5.
[67] *Ibid*, Figure 1.
[68] CFWO GIS Coordinator, Carlsbad Fish and Wildlife Office. Species Occurrence Data [GIS data]. Available at: <https://www.fws.gov/carlsbad/GIS/CFWOGIS.html>. (Accessed 2019 Jun 26).
[69] U.S. Fish and Wildlife Service. 2009. Revised Designation of Critical Habitat for the Quino Checkerspot butterfly (*Euphydryas editha quino*). 74 FR 28776 28862. *See also* U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). Portland, Oregon. p. 76.

characteristics.[70] Therefore, the USFWS has concluded that the maintenance of these core occurrence complexes is essential for recovery and survival of the Quino checkerspot butterfly in San Diego County because Quino populations associated with these cores are locally adapted to drier climates and diverse habitat types.[71] The USFWS has further concluded that the Campo and Jacumba Core Occurrence Complexes contribute significantly to reducing the subspecies' extinction probability.[72] This is consistent with research conducted by Preston et al. (2008, 2012). They reported:

> The eastern edge of Quino checkerspot's range supports large and robust butterfly populations, abundant and diverse larval host plants and nectar sources, and relatively low levels of development and intensive agriculture. These areas may provide climate refugia that Quino checkerspot will require under future predicted scenarios of climate change (Preston et al., 2008).[73]

Since completion of the Recovery Plan in 2003, the loss and modification of Quino habitat continue to be the primary threat to the subspecies, especially in southeast San Diego County.[74] In areas where habitat is protected, urbanization of surrounding lands may result in the fragmentation of protected habitats, which could prevent movement of the subspecies between habitat areas.[75]

This information is fundamental to an accurate depiction of the affected environment, and to the public and decision's makers' understanding of the potential consequences of the Project on the Quino checkerspot butterfly.

O12-28 Cont.

2018 Quino Checkerspot Butterfly Surveys

According to the BTR: "[t]he 2010 USFWS protocol surveys conducted by AECOM overlapped with a large portion (63%) of the current study area."[76] The BTR does not define the "current study area," and it is unclear whether it refers to: (a) the overall Project study area (i.e., 2,200-acre On-Reservation portion of the Project site), or (b) the 699-acre study area referred to in Dudek's 2018 survey report.[77] Furthermore, there are no maps in the DEIS or BTR that depict the 2010 and 2018 survey areas in relation to the Project footprint. This makes it impossible to: (a) determine whether all potential Quino checkerspot butterfly habitat has been surveyed, and (b) evaluate the extent of significant indirect impacts to Quino checkerspot butterfly habitat (which were not quantified in the DEIS or BTR).

---

[70] *Ibid*.
[71] *Ibid.*
[72] *Ibid.*
[73] Preston KL, RA Redak, MF Allen, JT Rotenberry. 2012. Changing distribution patterns of an endangered butterfly: Linking local extinction patterns and variable habitat relationships. Biological Conservation 152: 280-290. *See also* Preston KL, JT Rotenberry, RA Redak, MF Allen. 2008. Habitat shifts of endangered species under altered climate conditions: importance of biotic interactions. Global Change Biology 14: 2501-2515.
[74] U.S. Fish and Wildlife Service. 2009. Quino Checkerspot Butterfly (*Euphydryas editha quino*), 5-Year Review: Summary and Evaluation. p. 13.
[75] *Ibid.*
[76] BTR, p. 31.
[77] BTR, Appendix C-1, p. 5.

The BTR states: "[f]ocused Quino checkerspot butterfly surveys were conducted over 10 visits between March 3, 2018, and May 15, 2018, per the Quino checkerspot butterfly survey guidelines published on December 15, 2014 (USFWS 2014)." This statement is inconsistent with the survey guidelines. For example:

1. The survey guidelines state: "[s]urveys shall be conducted weekly and spaced no closer than 4 days apart." Many of Dudek's surveys were only two or three days apart. Survey passes 1 and 2 in Area 10 were only one day apart, and passes 5 and 6 were conducted on the same day.[78]
2. The survey guidelines state: "[s]urveys should be conducted at a rate of approximately 5-10 acres (2-4 hectares) per person-hour." Many of Dudek's surveys exceeded this rate. For example, survey pass 9 in Area 1 (73 acres) was conducted in 3 hours and 25 minutes.[79] This is equivalent to a rate of over 21 acres per hour (assuming the surveyor did not take any breaks). Although the survey guidelines acknowledge the survey rate can depend on topography and other physical factors, most of Dudek's survey routes had moderate topographic relief, and thus, do not appear to qualify as routes that can be surveyed at a rate greater than 10 acres per person-hour.[80]
3. The survey guidelines state that surveys will not be conducted when temperature in the shade at ground level is less than 60° F on a clear, sunny day with less than 50 percent cloud cover, or less than 70° F on days with 50 percent or more cloud cover. Several of Dudek's surveys violated this requirement.[81]

The BTR states: "[a]pproximately 1,216 acres were considered potential suitable habitat within the Project Site (Figure 4)."[82] Although the 2018 survey report (an appendix to the BTR) provides maps of the survey areas, there are no maps that clearly depict the portions of those areas that provide suitable habitat for the Quino checkerspot butterfly. As a result, it is unclear how the results of the surveys affected: (a) Dudek's habitat model (and vice versa), and (b) the information presented in the BTR.

O12-28 Cont.

The BTR subsequently states that there are 674.1 acres of "potentially occupied habitat mapped within the On-Reservation portion of the Project Site."[83] This value was derived from Dudek's habitat model (discussed in more detail below), thus completely ignoring the field assessment, which had led to the conclusion that there are approximately 1,216 acres of potentially suitable habitat within the Project Site. Dudek's use of the model (only) to estimate acres of potentially occupied habitat within the Project site is inherently flawed because the model output (i.e., acres of potentially occupied (or "suitable") habitat is dependent on the 2010 survey data, and 37% of the Project site was not surveyed in 2010.[84] Specifically, the model output was dependent on two key input variables: (1) acres within 200 meters of Quino checkerspot butterfly locations in 2010, and (2) acres within 200 meters of "significant" host plant populations in 2010. Therefore,

[78] BTR, Appendix C-1, Table 1.
[79] *Ibid.*
[80] *Ibid*, Figures 2 through 6.
[81] BTR, Appendix C-1, Table 1.
[82] BTR, p. 61.
[83] BTR, p. 62.
[84] BTR, pp. 31 and 61.

if an area had not been surveyed in 2010, these input variables would be zero acres, and thus, the output variable would also be zero acres.[85]

This issue is compounded by Dudek's failure to collect the data needed to update the model. Specifically, Dudek did not map host plants (i.e., input variable #2) within areas that were not surveyed in 2010. According to Dudek's report: "[s]urveys also focused on identifying Quino host plants; however, only dried host plants from last year were observed. Therefore, no host plants were mapped on site."[86] Host plant density, distribution, and phenology change over time for a variety of reasons, and Quino checkerspot butterfly populations have evolved to respond to shifting habitat patch suitability in space and time.[87] For example, environmental conditions (e.g., low rainfall) may result in a low germination rate of host plants one year, but abundant germination the next year.[88] As a result, the presence of host plants in habitat that otherwise appears suitable is an indicator of habitat suitability, regardless of the phenology of the host plants.[89] Dudek's failure to map host plants within the survey areas precludes its ability to use the model to make estimates on the amount of suitable Quino checkerspot butterfly habitat within the Project site (footprint). This is exacerbated by false information presented in the BTR. It states: "[n]o Quino checkerspot butterfly or their host plants were observed during the 2018 focused surveys within the Project Site."[90]

Boulder Brush

According to the DEIS: "[p]rotocol surveys for 2019 within the Boulder Brush Corridor were underway at the time of preparing this document."[91] The DEIS fails to discuss how the results of those surveys may affect the Project, including the information, analyses, and conclusions presented in the DEIS. Environmental impact statements are intended to serve as the means of assessing the environmental impact of proposed agency actions, rather than justifying decisions already made.[92] If protocol surveys had not been completed, the DEIS had no basis for stating: "[t]he Off-Reservation portion of the Project would not adversely affect any federally listed plants or wildlife, because none are present."[93]

O12-28 Cont.

Furthermore, Dudek detected five Quino checkerspot butterflies in the Boulder Brush Corridor on April 10, 2019—six weeks prior to release of the DEIS and BTR (Figure 2, below).[94] *This information was not disclosed in the DEIS or BTR*, and it is critical to assessing the Project's impact on recovery of the subspecies. Specifically, the Recovery Plan for the Quino

[85] The model also included an undisclosed amount of area around hilltops, and area within 100 feet of ridgelines. Figure 11 in the BTR shows modeled habitat around hilltops, but not ridgelines.
[86] BTR, Appendix C-1, p. 5.
[87] U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). Portland, Oregon. p. 19.
[88] *Ibid.*
[89] U.S. Fish and Wildlife Service. 2009. Quino Checkerspot Butterfly (*Euphydryas editha quino*), 5-Year Review: Summary and Evaluation. p. 10.
[90] BTR, p. 61.
[91] DEIS, p. 37.
[92] *See* 43 FR 55990 Sec. 1502.2
[93] DEIS, p. 86.
[94] CFWO GIS Coordinator, Carlsbad Fish and Wildlife Office. Species Occurrence Data [GIS data]. Available at: <https://www.fws.gov/carlsbad/GIS/CFWOGIS.html>. (Accessed 2019 Jun 26).

Checkerspot Butterfly stresses the importance of population resilience in recovery of the subspecies. Detection of the subspecies at the Project site between 2005 and 2009 (by Pacific Southwest Biological Services), in 2010 (by AECOM), and now in 2019 (by Dudek) may be an indication of population resiliency. However, this cannot be properly evaluated without data on the number of occupied habitat patches, and thus, until Dudek: (a) completes the 2019 surveys, and (b) discloses the survey results to the public.

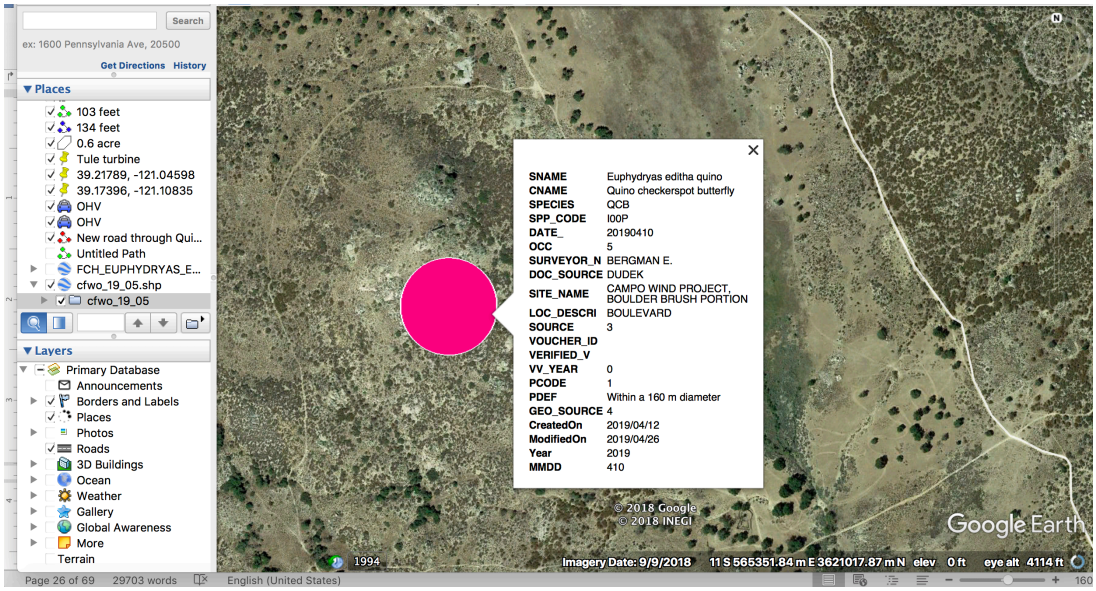


Figure 2. April 10, 2019, record of Dudek detecting Quino checkerspot butterflies on Boulder Brush portion of the Project site.

O12-28 Cont.

Dudek's Habitat Model

The DEIS states that Alternative 1 would "permanently remove 222.1 acres of suitable Quino checkerspot habitat," whereas Alternative 2 would impact "approximately 191.58 acres of potentially occupied Quino checkerspot butterfly habitat."[95] The DEIS cites the BTR as the source of this information. The BTR calculated impacts to Quino checkerspot butterfly habitat through the following process:

First, Dudek modeled habitat in order to estimate potentially occupied areas on site.[96] According to the BTR: "[t]he habitat model is created from the following parameters based on general industry guidance from USFWS for other projects:

- 200-meter buffer around Quino checkerspot butterfly locations
- 200-meter buffer around "significant" plant populations (i.e., >20 individuals)
- Hilltops

[95] DEIS, pp. 86 and 87.
[96] BTR, p. 85.

- Ridgelines (centerline with 100-foot (31.2-meter) buffer)."[97]

Dudek then excluded areas from the habitat model. The BTR reports:

> The 2010 and 2018 Quino checkerspot butterfly exclusion areas were removed from the model, because those areas were determined to be unsuitable for this species. This model resulted in approximately 674.1 acres of potentially occupied habitat mapped within the On-Reservation portion of the Project Site (i.e., Campo Corridor). Figure 11, Quino Checkerspot Butterfly Modeled Habitat, shows the model and estimated occupied habitat.[98]

Finally, Dudek concluded: "[t]here would be impacts to 222.98 acres of potentially occupied Quino checkerspot butterfly habitat (Figure 15, Impacts on Potentially Occupied Quino Checkerspot Butterfly Habitat)."[99]

As described below, there are flaws with all three steps Dudek implemented to estimate Project impacts to Quino checkerspot butterfly habitat.

Step 1: Habitat Model

Dudek's model incorporated four parameters that the BTR claims are: "based on general industry guidance from USFWS for other projects." The BTR's claim is not supported by evidence and is inconsistent with information provided by the USFWS. For example:

1. The USFWS considers all suitable habitat within one kilometer (*not 200 meters*) of a Quino checkerspot butterfly sighting to be occupied habitat.[100] According to the Recovery Plan: "[t]his distance delineates the area within which we would expect to find the habitat associated with the observed butterfly."[101]
2. There is no scientific basis for using "significant plant populations" as a model parameter. According to the USFWS: "[i]t is not possible to determine habitat suitability based on standing host plant densities."[102]
3. One of the primary constituent elements for the Quino checkerspot butterfly is: "[p]rominent topographic features, such as hills and/or ridges, with an open woody or herbaceous canopy at the top."[103] However, Quino checkerspot butterflies are not limited

O12-28 Cont.

[97] BTR, p. 61.
[98] BTR, p. 62.
[99] BTR, p. 85.
[100] U.S. Fish and Wildlife Service. 2011 Sep 1. Formal Section 7 Consultation for the Proposed East County Substation and Transmission Line Project, San Diego County, California. p. 4. *See also* U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). Portland, Oregon. pp. v, 35, and 164. *See also* U.S. Fish and Wildlife Service. 2009. Quino Checkerspot Butterfly (*Euphydryas editha quino*), 5-Year Review: Summary and Evaluation. pp. 5, 14, 26.
[101] U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). Portland, Oregon. p. 35.
[102] U.S. Fish and Wildlife Service. 2009. Quino Checkerspot Butterfly (*Euphydryas editha quino*), 5-Year Review: Summary and Evaluation. p. 10.
[103] U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). Portland, Oregon. p. 67.

to hilltops and ridgelines.[104] As reported in the Recovery Plan: "[p]rominence should be determined relative to other local topographic features."[105] Dudek's model failed to consider other local topographic features. Furthermore, the figure that the BTR provides to "show the model" does not depict the ridgelines within the Project site.[106]

Nevertheless, I contacted Eric Porter and Alison Anderson at the Carlsbad Fish and Wildlife Office to determine whether Dudek's habitat model was indeed "based on general industry guidance from USFWS for other projects." Both individuals stated that Dudek's model *is not* based on (and conflicts with) guidance from the USFWS.[107]

This issue is exacerbated because Figure 11, which the BTR claims shows "approximately 674.1 acres of potentially occupied habitat mapped within the On-Reservation portion of the Project Site (i.e., Campo Corridor)," does not depict the Campo Corridor. This makes it impossible to: (a) understand where Project impacts would occur in relation to the modeled habitat, and (b) validate the statement that there are 674 acres of potentially occupied habitat within the Campo Corridor.

Step 2: Exclusion Areas

The BTR states that the 2010 and 2018 Quino checkerspot butterfly exclusion areas were removed from the model because those areas were determined to be unsuitable for the species. This statement contradicts information provided in the BTR's figures and data from the 2010 surveys.

O12-28 Cont.

2018 Exclusion Areas-

The BTR fails to clearly define the process that was implemented to exclude areas in 2018, although it claims those areas are unsuitable for the butterfly. Figure 4 in the BTR depicts the 2018 exclusion areas, which are labeled: "Survey Areas Excluded per Habitat Assessment." However, this is inconsistent with the information provided in Figures 10 and 11, which depict presence of suitable habitat throughout large portions of the 2018 exclusion areas. The 2018 survey report does not provide any data or photographs to validate the exclusion process, and no additional information is provided in the BTR. As a result, it is impossible to determine: (a) whether all potential habitat has been surveyed (in 2010, 2018, or both), (b) what areas were excluded based on *a priori* assumptions about habitat suitability, versus actual survey data, and thus, (c) the extent to which the BTR accurately reports Project impacts to potential habitat.

[104] Mattoni R, GF Pratt, TR Longcore, JF Emmel, JN George. 1997. The endangered quino checkerspot butterfly, *Euphydryas editha quino* (Lepidoptera: Nymphalidae). Journal of Research on the Lepidoptera 34:99-118. p. 110.
[105] U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). Portland, Oregon. p. 67.
[106] BTR, p. 62 and Figure 11.
[107] Personal communication with Alison Anderson on June 21, 2019, and Eric Porter on June 25, 2019.

2010 Exclusion Areas-

Habitat, by definition, is defined by presence of the species.[108] Therefore, areas where butterflies have been detected contain habitat for the species, regardless of *a priori* assumptions about habitat suitability prior to butterfly detection. Dudek removed the 2010 exclusion areas from consideration because it determined those areas were unsuitable for the species. However, that determination is inconsistent with the 2010 data. Specifically, Dudek removed areas where Quino checkerspot butterflies (and host plants) were detected (Figure 3, below).[109] This includes both areas where the number of Quino observations "clearly established presence of the species."[110] As a result, those areas should not have been removed from the model, and they need to be incorporated in a revised estimate of the amount of Quino checkerspot butterfly habitat within the Project area.

Moreover, AECOM (2010) reported several problems with their process for excluding habitat. This included misinterpretation of the protocol definition of dense chaparral, which resulted in a narrowing of habitat to be surveyed.[111] As a result, AECOM reassessed the habitat and the survey area was expanded to 1,806 acres. However, the problems continued. The survey report states:

> As the focused adult surveys ensued, some surveyors observed patches of open habitat in the dense chaparral they deemed suitable for the species. Starting in survey week 2, Quino observations were made outside of the original survey area (Figure 3). The survey area was expanded during survey week 2 to include additional trails and narrow openings in the chaparral that were not easily visible during habitat assessments. The expanded survey area is depicted in Figure 3 and constitutes approximately 541 additional acres.[112]

O12-28 Cont.

After conclusion of the field season the biologists held a meeting to discuss the results. According to the survey report:

> *The total area surveyed, including the original and expanded survey areas (2,347 acres), represents what is considered the optimal habitat for Quino on-site*. Of the areas surveyed, Quino were observed in a small percentage of the total survey area. The Quino is known to undergo population fluctuations with extirpation of local populations and recolonization of new areas in a fashion characteristic of metapopulation dynamics (Osborne 1998). *Thus, the participants of the June 24 meeting concluded that a larger area of suitable habitat totaling 3,456 acres is potentially supporting the persistence of the species. Much of this area was excluded from surveys* based on the presence of dense chaparral. However, the larger area of suitable habitat defined in Figure 5 includes all chaparral with host plants and occasional openings (>1 acre). This area of suitable habitat is most relevant for discussing the larger patterns of species distribution through space and time (Figure 5).[113]

---

[108] *See* Hall L, P Krausman, M Morrison. 1997. The Habitat Concept and a Plea for Standard Terminology. Wildlife Society Bulletin 25(1):173-182.
[109] BTR, Figure 10.
[110] BTR, Appendix B-1 (AECOM 2010). p. 8.
[111] *Ibid*, p. 4.
[112] *Ibid*, p. 5.
[113] *Ibid*, pp. 11 and 12. [emphasis added].

A subsequent habitat assessment was conducted in 2012, which caused AECOM to conclude that there was approximately 3,803 acres of suitable Quino habitat within the Biological Study Area ("BSA").[114] This does not comport with Dudek's conclusion that there are only 674 acres of Quino habitat within the On-Reservation portion of the Project site[115]—especially because Dudek and AECOM analyzed the same data.[116]

As a rough metric, I compared how much of the BSA AECOM considered to be suitable habitat against how much of the On-Reservation portion of Project site Dudek considered to be suitable habitat:

1. AECOM concluded 3,803 acres (80%) of the 4,739-acre BSA provide suitable habitat for the Quino checkerspot butterfly.[117]
2. Dudek concluded 674 acres (30.6%) of the 2,200-acre On-Reservation portion of the Project site provide potentially occupied (or "suitable") habitat or the Quino checkerspot butterfly.[118]

There is no obvious reason for this substantial discrepancy, especially because the 2,200-acre On-Reservation portion of the Project site lies largely within the BSA.[119] Indeed, the only logical explanation is that Dudek, by applying the artificial constraints of its habitat model, excluded areas that AECOM concluded were suitable habitat. As discussed previously, this includes areas where AECOM had detected Quino checkerspot butterflies and their host plants.

O12-28
Cont.

[114] AECOM. 2012. Biological Technical Report Shu'luuk Wind Project Campo Indian Reservation San Diego, California. p. 3-21.
[115] BTR, pp. 1 and 62.
[116] *See* BTR, p. 61: "*potentially occupied habitat was modeled based on Quino checkerspot butterfly records and host plants observed in 2010*."
[117] AECOM. 2012. Biological Technical Report Shu'luuk Wind Project Campo Indian Reservation San Diego, California. p. 2-1 and Table 3-5.
[118] BTR, p. 62.
[119] DEIS, Figure 2-1. *See also* AECOM. 2012. Biological Technical Report Shu'luuk Wind Project Campo Indian Reservation San Diego, California. Figures 3 and 7.

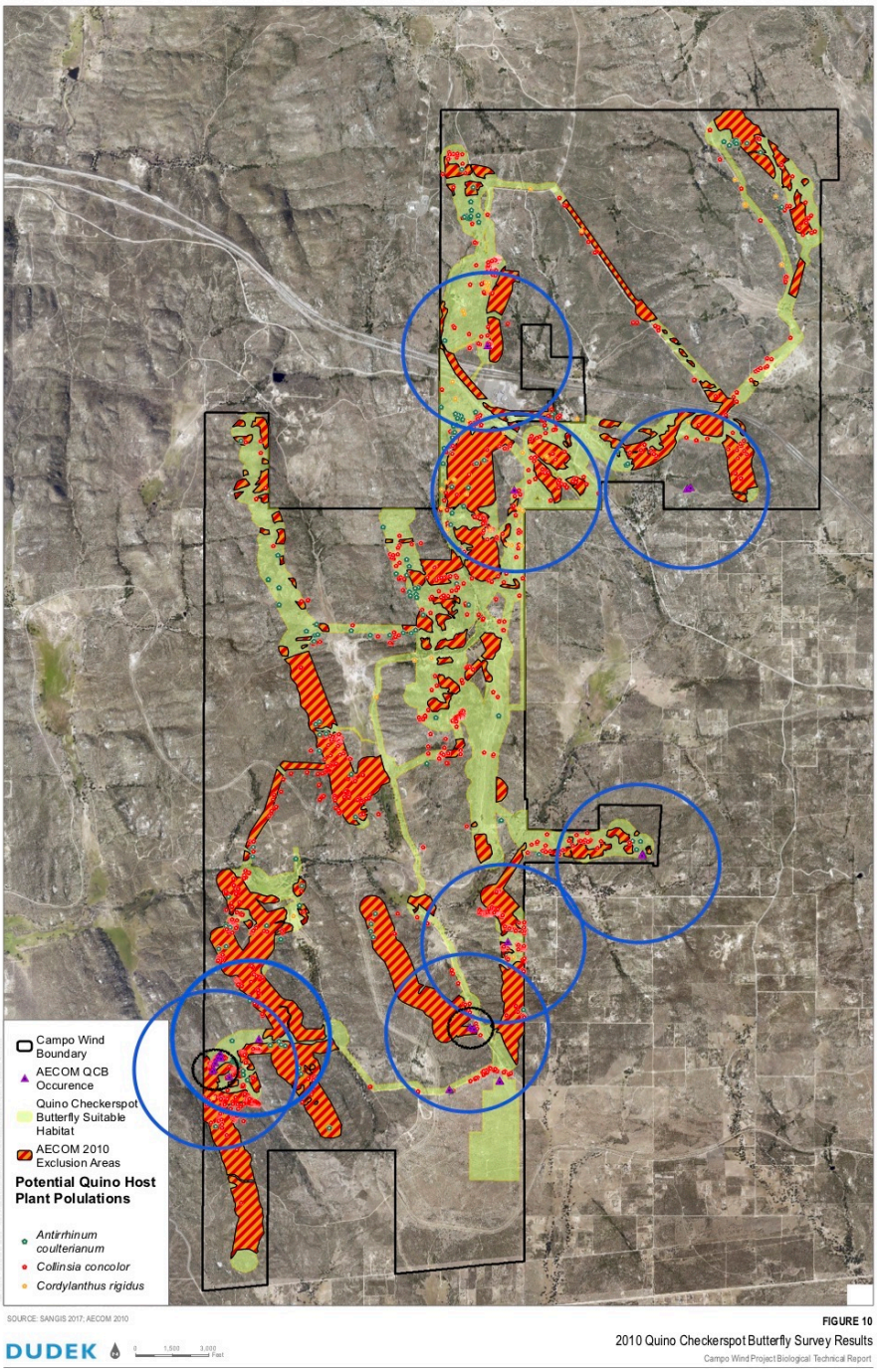


Figure 3. Quino checkerspot butterfly occurrences, host plant populations, and exclusion areas. Small black circles depict butterfly occurrences within exclusion areas. Large blue circles depict areas within approximately 1 km of butterfly occurrences and show exclusion areas with potential habitat (host plants).

O12-28
Cont.

Step 3: Calculation of Impacts

The BTR concludes:

1. "There would be impacts to 222.98[120] acres of potentially occupied Quino checkerspot butterfly habitat (Figure 15, Impacts on Potentially Occupied Quino Checkerspot Butterfly Habitat)."[121]
2. "Alternative 2 would result in direct impacts to 191.58 acres of potentially occupied Quino checkerspot butterfly habitat."[122]

Presumably these estimates were derived by overlaying the Project footprint onto the map of modeled habitat, after the exclusion areas had been removed. However, the BTR does not articulate how Dudek derived its estimates. Furthermore, although Figure 15 depicts "QCB Modeled Habitat Impacted by Project Footprint," it does not depict the Project footprint. This precludes the ability to understand: (a) which Project features were included in the impact calculations, and (b) whether the fire management zones were included in the impact calculations. This, in turn, precludes the ability to validate the impact estimates provided in the BTR and DEIS.

Bats

"*Acoustical bat surveys were conducted in 2011 for the Jewell Wind Project previously proposed by a different applicant. The surveys resulted in the detection of 13 bat species in the vicinity of the broadband acoustic detectors, which were located along the eastern edge of the Off-Reservation portion of the study area. It is assumed that all bat species recorded during the surveys would use suitable habitat in the Off-Reservation portion of the Project Site for foraging.*"

- The BTR has no basis for suggesting multiple detectors were located along the eastern edge of the Off-Reservation portion of the study area. The Off-Reservation bat survey was conducted between 2011 and 2012, and consisted of one acoustic detector on the eastern boundary of the Boulder Brush site.[123] No survey report was provided. Nevertheless, data that were collected seven years ago from one acoustic detector does not provide adequate information on the environmental setting, especially for the entire Project site.
- BTR Appendix F-2 provides the Wildlife Compendium for Torrey Wind. Thirteen bat species are listed. The BTR assumes these bat species would use suitable habitat in the Off-Reservation portion of the Project Site for foraging. The BTR does not explain why use would be limited to foraging (and not also roosting). In addition, the BTR fails to

O12-28 Cont.

[120] The DEIS reports 222.1 acres for Alternative 1.
[121] BTR, p. 85.
[122] BTR, p. 89.
[123] BTR, p. 41 and Figure 5.

identify the species that occur, or may occur, within the On-Reservation portion of the Project site.

- Multiple bat roosts (or potential roosts) were detected at the Project site in 2010 and 2011.[124] The DEIS and BTR fail to disclose this information or analyze impacts to bat roosts.

"*The impacts analysis for this report relied on the data collected for and documented in the 2012 AECOM report*."

- This statement is confusing because there is no impacts analysis (for bats) in the BTR or DEIS.
- The AECOM report was not provided with the BTR or DEIS. I have a copy of the report because I reviewed the DEIS for the Shu'luuk Wind Project; however, I suspect most other members of the public do not have access to the report.

California Condor

The BTR's discussion of the California condor is limited to the following statements in Table 4:

> Very Low potential to forage and not expected to nest. There is potential foraging habitat; however, no suitable nesting vegetation present and the only records are at least 15 miles away from the site from 2017 (other years are further from the site) (USFWS 2018).

This information is misleading and conflicts with the information provided in AECOM (2012). Figure 16 in AECOM (2012) shows that in 2007 a condor flew within approximately 4.7 miles of the northeast corner of the On-Reservation portion of the Project site, and extremely close to (if not directly over) the Off-Reservation portion. I was unable to evaluate whether there have been more recent flights near the Project site because the URL cited in the BTR (i.e., USFWS 2018) does not lead to the data. This is important because AECOM (2012) concluded:

O12-28 Cont.

1. "It is estimated that, given the current rate of population increase from reintroductions and wild-hatched condors, the range of the condor population in Baja California will extend across the International Border within 10 years (San Diego Zoo ICR 2012). Similar range expansions of reintroduced populations have been observed in the Los Angeles basin and Big Sur condor populations (USFWS 2011c)."[125]
2. "suitable [condor] nesting and roosting sites are available along mountain cliffs within the vicinity of the Reservation. Suitable foraging habitat is present within the BSA in the form of big sagebrush scrub, nonnative grassland, upper Sonoran subshrub scrub, and wildflower field."[126]

Based on this information, it appears highly probable that condors will pass through the Project site during the 25-year life of the Project. The DEIS fails to assess Project impacts to the California condor, including the potential for a condor to collide with a wind turbine.

[124] AECOM. 2012. Biological Technical Report, Shu'luuk Wind Project. Figure 21.
[125] *Ibid*, p. 3-34.
[126] *Ibid*, p. 3-32.

Sensitive Plants

The BTR states: "*No sensitive plant species were detected within the On-Reservation portion of the Project Site during the 2010–2011 rare plant surveys…Given that no sensitive plant species are expected to occur in the Project Area, sensitive plant species are not discussed further in this report.*"[127]

The only explanation for these statements is that they were specifically designed to mislead the public and decision makers. Dudek uses the terms "sensitive,"[128] "rare,"[129] and "special-status"[130] interchangeably throughout the BTR when referring to plants of conservation concern. Therefore, Dudek's statements regarding absence of sensitive plant species are not due to a unique definition of the term "sensitive."

Numerous sensitive plant species have been detected on the Project site.[131] Some of these plants are as imperiled as *Poa atropurpurea* (San Bernardino bluegrass), which is the only sensitive plant species considered in the BTR and DEIS. These include:

- *Astragalus douglasii var perstrictus* (Jacumba milk-vetch) (S2S3, G5T3?)[132]
- *Linanthus bellus* (desert beauty) (S2, G2G3)[133]
- *Geraea viscida* (sticky geraea) (S2, G2G3)[134]
- *Streptanthus campestris* (southern jewel-flower) (S3 G3)[135]
- *Deinandra floribunda* (Tecate tarplant) (S2 G2)[136]

O12-28 Cont.

San Bernardino bluegrass has a Heritage Rank of S2 G2.[137,138] This means it is considered *Imperiled* in California ("S") and globally ("G").[139] *Imperiled* plants are: "At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors."[140] Tecate tarplant has the same state rank and global rank as San Bernardino

[127] BTR, p. 59.
[128] BTR, p. 56 reference to Dudek's *sensitive plant surveys*.
[129] *See* BTR, p. 26 and Tables 2a and 2b.
[130] *See* BTR, pp. 85.
[131] BTR, Appendixes E-1, E-2, F-1, and F-2.
[132] AECOM. 2012. Biological Technical Report, Shu'luuk Wind Project. Appendix F.
[133] *Ibid.*
[134] *Ibid.*
[135] *Ibid.*
[136] DEIS, Appendix H, part 14.
[137] California Department of Fish and Wildlife, California Natural Diversity Database. 2019 Mar. Special Vascular Plants, Bryophytes, and Lichens List. Available at: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109383&inline>
[138] All Heritage Programs, such as the California Natural Diversity Database (CNDDB) use the same ranking methodology, originally developed by The Nature Conservancy and now maintained and recently revised by NatureServe. It includes a Global rank (G rank), describing the rank for a given taxon over its entire distribution and a State rank (S rank), describing the rank for the taxon over its state distribution. For subspecies and varieties, there is also a "T" rank describing the global rank for the subspecies.
[139] *See* California Department of Fish and Wildlife, California Natural Diversity Database. 2019 Mar. Special Vascular Plants, Bryophytes, and Lichens List.
[140] *Ibid.*

bluegrass. Desert beauty and sticky geraea have the same state rank as San Bernardino bluegrass, and nearly the same global rank as San Bernardino bluegrass (uncertainty about a plant's rank can be expressed by a range rank, with G2G3 meaning the rank is somewhere between G2 and G3).[141]

Golden Eagle

"*There are no suitable large trees or cliffs present for nesting; therefore, this species is not expected to nest on site.*"[142]

This conclusion is not supported by evidence. According to page 47 of the BTR: "Coast live oak woodland [at the Project site] is dominated by a single evergreen species: coast live oak with a canopy height reaching 32.8 to 82.0 feet (10 to 25 meters)." Trees in this size range are tall enough to support golden eagle nests.[143] An 82-foot-tall coast live oak is massive and is definitely large enough to support an eagle nest. Nevertheless, Dudek made no attempt to locate eagle nests on the Project site.

"*Although golden eagles have been documented within the 10-mile area, including a few brief incursions over the Project Site, these are very minor when compared to their overall use areas and geographic range. As shown in the figures, Table 5, and the discussion below, the Project Site appears to be at the very fringe of their individual territories or use areas, and likely mostly represent brief exploratory searches. The Figure 13 series show this information.*"

- As the BTR reports: "Lagomorphs (rabbits and hares) and ground squirrels are of primary importance in the diet of most golden eagles, including in San Diego County." Lagomorphs (especially jackrabbits) are very abundant at the Project site.[144] Therefore, the eagles were probably foraging. The BTR provides no basis for the conclusion that the eagle flights over the Project site were "brief exploratory searches," or that "searches" are an insignificant activity.
- The Figure 13 series referenced in the BTR shows eight different eagles crossing through the Project site. A couple of the birds did so on numerous occasions (F07 and M07 in 2016). Table 5 in the BTR does not accurately report golden eagle occurrences at Project site.
- The BTR fails to report how many birds had working transmitters. However, according to the USGS report cited in the BTR: "[a]s of February 23, 2016…we have 15 eagles with active transmitters." The subsequent year the USGS reported: "[f]rom Feb 2016 to Feb 2017 there were 18 eagles with active transmitters." Therefore, it appears that a relatively high proportion of the birds with working transmitters moved through the Project site.

O12-28
Cont.

[141] *Ibid.*
[142] BTR, p. 63.
[143] Menkens GE JR, SH Anderson. 1987. Nest site characteristics of a predominantly tree-nesting population of golden eagles. J. Field Ornithol. 58:22-25.
[144] Personal communication with Peter Bloom on 2019 Jun 19.

- In addition, only adult floaters and territory holder birds were fitted with transmitters. According to the 2017 report: "[d]epending on the season, the population of golden eagles in California is typically comprised of resident adult territorial breeders, adult floaters, locally fledged juvenile and subadults, as well as migrants with origins from more northerly or southerly latitudes." Thus, there were no data on juveniles, subadults, or migrants that may have been using the Project site.
- The data collected by the USGS were generally limited to a year or two (or less). Eagle use of the landscape is dynamic (e.g., in response to prey abundance). Therefore, data from one or two years is insufficient to establish "low" use of the Project site.
- AECOM detected golden eagles at the Project site during surveys conducted in 2010 and 2011.[145] The USGS detected golden eagles at the Project site in 2015 and 2016. Dudek detected golden eagles at the Project site during surveys conducted in 2017 and 2018.[146] Collectively, these data establish sustained use of the Project site by golden eagles, including use during each year of data collection. Golden eagles are highly susceptible to collisions with wind turbines. The existing data indicate the Project is likely to kill golden eagles.

Other Raptors

An extremely high abundance of raptor nests associated with numerous species have been detected at the Project site.[147] The DEIS and BTR fail to disclose this information or analyze the Project's adverse effects on raptors.

O12-28 Cont.

Jurisdictional Waters

Table 3 in the BTR indicates there are 7 total acres of Waters of the U.S at the Project site (5.5 acres On-Reservation). However, Table 6 in the BTR indicates 10.78 acres. The numbers provided in Table 3 do not add up to the numbers provided in Table 6, so it is impossible to figure out the discrepancy.

BTR Table 8a has the following footnote: "[i]mpacts to approximately 0.21 acres of emergent wetland and 0.12 acres of unvegetated channel are from a construction-related, temporarily cleared road that will be revegetated once construction is complete." More information is needed to understand these impacts, which have been classified as temporary. For example, would the road be permanent or temporary, would it be subject to fuel clearance requirements, and how would revegetating an *unvegetated* channel mitigate the impacts?

Movement Corridors

"*Many birds migrating from their winter range in western mainland Mexico to their breeding range in Northern California, the Pacific Northwest, or Alaska use San Diego County as a corridor for crossing from the desert to the coastal slope (Unitt 2007, as cited in AECOM 2012).*

[145] AECOM. 2012. Biological Technical Report, Shu'luuk Wind Project. Figure 15.
[146] BTR, p. 63.
[147] AECOM. 2012. Biological Technical Report, Shu'luuk Wind Project.

However, this migration happens along the east side of San Diego County's mountains and is most concentrated in the canyons and valleys that lead from southeast to northwest (Unitt 2007, as cited in AECOM 2012). Therefore, the Project Area is not located within this northward migration route."

The BTR makes the conclusory statement that the Project is not "within this northward migration route" after providing evidence that it may indeed be within that route. Specifically, the Project is located on the *east side of San Diego County's mountains*, and it has valleys *that lead from southeast to northwest*. The BTR provides the following description of the Project area:

1. "A series of north–south-oriented ridges separated by the occasional broad valley or narrow drainages dominate the topography."[148]
2. "The terrain in the area ranges from valley bottoms to house-sized boulder-covered ridgelines."[149]

Thus, the Project site has valleys, and the north-south ridges provide ideal terrain features for migrating raptors (which use updrafts created by ridges).

It's especially incredulous that Dudek would assert that the Project area is not within a northward migration route without providing any data to support that assertion. According to the BTR, Dudek has been conducting bird surveys at the Project site since 2017. This included surveys at each point count station three times a week during the spring and fall migration periods.[150] If those claims are correct, Dudek has data that can be analyzed to determine the Project site's function as a migration corridor.

O12-28 Cont.

"*Based on the avian data collected for the Project and the site's location, habitat, and topography, large concentrations of migrating birds do not regularly pass through the Project Area. Additionally, radar shows migrating species travel at much higher altitudes than the proposed wind turbines will reach*."

The BTR does not provide or cite any data to support these claims. Many diurnal migrants do not migrate at high altitudes.[151] Most raptors in particular do not migrate at high altitudes because they use thermals and updrafts to save energy. Deflective lift is produced when wind hits the vertical surface of a hill or ridge. Because the air can't go through the hill or ridge, it has to go up, creating updrafts. Air deflected in this way allows birds to ride effortlessly on the updraft. In addition, although many types of birds do indeed migrate at high altitudes, inclement weather can cause them to fly lower, and potentially within the rotor area of the Project's 4.2-MW turbines.

[148] BTR, p. 43.
[149] BTR, p. 44.
[150] BTR, p. 38.
[151] U.S. Fish and Wildlife Service. 1998. Migration of Birds. Circular 16.

PROJECT IMPACTS

I have the following initial comments regarding the DEIS's assessment of Project impacts to biological resources:

1. The DEIS does not even attempt to follow the process outlined in the Land-Based Wind Energy Guidelines, which describe the process for: (a) evaluating a site's suitability for wind energy development; (b) assessing impacts; (c) avoiding, minimizing, and mitigating impacts; (d) assessing consequences of the project once it is operational.
2. The DEIS fails to provide a golden eagle risk assessment in accordance with the USFWS's Eagle Conservation Plan Guidance. Indeed, the DEIS provides no risk assessments.
3. The DEIS fails to disclose and analyze the impacts associated with wind turbine collisions, including the cumulative effects of wind turbine collisions on population stability. The measures proposed in the DEIS do absolutely nothing to mitigate bird and bat collisions.
4. The DEIS provides no analysis whatsoever of impacts to bats. This includes impacts to roost sites, and to individual bats that will collide with the Project's wind turbines.
5. The DEIS provides no analysis of impacts to insects. Wind turbines kill a substantial number of insects, and the magnitude of insect kills at wind farms may affect insect population stability.[152] This can lead to cascading impacts on ecosystems across trophic levels (e.g., cause impacts on plants that depend on insects for pollination).
6. There are several other wind energy facilities operating in the region. This includes the Kumeyaay Wind Project, which is located in the immediate vicinity of the two Project alternatives. Data from other wind projects in the region are essential components to: (a) understanding the Project's potential impacts, and (b) validating the DEIS's conclusions. The DEIS fails to provide or discuss monitoring data associated with projects in the region, or *any* other wind energy projects.
7. The Project involves a substantial amount of rock blasting. The DEIS provides no analysis of impacts associated with blasting.
8. The Project is proposed to be connected to the Torrey Wind Project. Indeed, several of the survey reports that are provided as appendices to the BTR have the words "Torrey Wind Project" in the title. The DEIS fails to consider the combined effects of Torrey Wind, Campo Wind, and Boulder Brush on the environment (including sensitive biological resources). This issue is exacerbated by the DEIS's failure to provide detailed (and accurate) information on the Torrey Wind Project. None of the maps provided in the DEIS depict Torrey Wind, except the cumulative impacts map, which is at such a large scale that it is useless for analysis. Information on the configuration of the Torrey Wind turbines (and other features) is essential to evaluating Project impacts and the DEIS's conclusions.

O12-28
Cont.

[152] Trieb F. 2018. Interference of Flying Insects and Wind Parks. Deutsches Zentrum für Luft- und Raumfahrt. 30 pp.

9. The DEIS states: "[a]n approximately 1-mile segment of Ribbonwood Road (outside of the Boulder Brush Boundary) from Opalocka Road/Ribbonwood Road to the Boulder Brush Facilities site entrance off Ribbonwood Road would be improved. The existing 1-mile unpaved road segment ranges from 12 feet wide to 40 feet wide, and would be widened to 30 feet and paved, to allow sufficient access."[153] No further information or analysis is provided anywhere in the DEIS. For example, there is no discussion or analysis of the sensitive biological resources that could be affected by the road widening.
10. The DEIS claims: "environmental impacts relating to the Boulder Brush Facilities are evaluated in this EIS." This claim is absolutely false. The DEIS provides no specific analysis of biological resource impacts relating to the Boulder Brush Facilities. The BTR does not rectify this issue; for many of the resources it simply states the impacts will be evaluated by the County.[154]
11. The information and analyses pertaining to the Boulder Brush facilities are so incomplete and flawed that there is no way the public can understand (or independently analyze) how the Project as a whole will directly, indirectly, and cumulatively affect biological resources.

VEGETATION (IMPACT BIO-1)

Temporary Impacts

"*Preparation and implementation of a Project-specific SWPPP and compliance with the CWA are expected to minimize temporary construction-related impacts with respect to erosion/runoff and altered hydrology, and potential impacts from chemical pollutants, such that impacts would not be significant.*"

- A Project-specific SWPPP and compliance with the CWA may help reduce impacts, but they do not ensure impacts would not be significant. Transfer of sediment (and other material) to streams is an inevitable consequence of roads and their construction.[155] Hydrologic effects are likely to persist as long as the road remains a physical feature altering flow routing, even long after abandonment and revegetation of the road surface.[156]
- The DEIS needs to discuss the likelihood that the proposed mitigation measures will be successful, and enforced. Google Earth imagery shows erosion at turbine pads associated with the Kumeyaay Wind Project (Figure 4). Construction monitoring reports from the Tule Wind Project describe numerous ongoing instances of the SWPPP and BMPs failing to prevent erosion.

O12-28 Cont.

[153] DEIS, P. 13.
[154] *For example, see* BTR, pp. 80, 82, and 85.
[155] Spellerberg IF. 1998. Ecological effects of roads and traffic: a literature review. Global Ecology and Biogeography Letters 7:317–333.
[156] Trombulak SC, CA Frissell. 2000. Review of ecological effects of roads on terrestrial and aquatic communities. Conservation Biology 14:18–30.

- A Project-specific SWPPP provides no guarantee that impacts would not be significant.[157] As stated in EPA's comments on the DEIS that was prepared for the Shu'luuk Wind Project:

  The DEIS states that preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) will ensure that project construction activities would not result in adverse direct or indirect effects (p. 4.1-4). While implementation of a SWPPP can help reduce impacts, it should be noted that effectiveness of stormwater best management practices (BMPs) varies. A 2006 review of stormwater Best Management Practices (BMPs) at large construction sites revealed that effectiveness of erosion control and sediment control varied by site, with failures of all BMP types observed. The primary factor influencing effectiveness appeared to be regular inspections and maintenance, including reinstallation or application of the BMP if necessary. Many of the sediment control BMPs observed in the study were in disrepair and showed signs of recent failure from heavy rainfall. Maintenance problems included inadequate removal of sediment from behind the BMP and failure to replace the BMP when damaged. Since the DEIS indicates that soils on the project site have a moderate erosion hazard (p. 3.1-4), it is important that inspection and maintenance be included to increase BMP effectiveness.[158]

O12-28
Cont.

[157] DEIS, Appendix A, EPA scoping comments, p. 4.
[158] U.S. Environmental Protection Agency. 2013 Mar 4. Draft Environmental Impact Statement (DEIS), Shu'luuk Wind Project, Campo Indian Reservation, San Diego County, California (CEQ # 20130001). Comments submitted to Robert Eben, Superintendent, Bureau of Indian Affairs.

Figure 4. Erosion at Kumeyaay Wind Farm turbine pad from above (top image) and street view (bottom image).

O12-28
Cont.

Permanent Impacts

The BTR states:

> Habitat fragmentation and isolation of plant populations can lead to extinction of local populations as a result of reduction in total habitat area, which reduces effective population sizes, and insularization of local populations, which affects dispersal rates (Wilcove et al. 1986; Wilcox and Murphy 1985). Although these effects are more readily observable in wildlife, there are potential ecological effects, such as changes in pollinator populations, which can result in altered plant community composition and thus adversely affect vegetation communities. The permanent impact footprint is relatively small and primarily associated with the turbine pads, which are spread out within the Project Site. Therefore, the Project is not expected to increase habitat fragmentation or isolation of plant populations.

The BTR's analysis begins by describing how habitat fragmentation can affect plant populations, and it cites two scientific publications. The BTR then claims the Project is "relatively small," without citations to any literature that might support that claim, and without any context to the two publications previous cited. Finally, the BTR concludes the Project is *not expected* to increase habitat fragmentation or isolation of plant populations, again without citations to any scientific publications or analysis. I have the following comments:

- This is not a "small" project; it would impact almost 1,000 acres of land.[159] As a frame of reference, the fragmentation caused by the Kumeyaay Wind Project can be clearly seen from an altitude of 50,000 feet (Figure 5, below), and 13 years after turbines were installed (Figure 6, below).
- The Project (including Boulder Brush Facilities), in conjunction with the Kumeyaay Wind Project, Torrey Wind Project, and Tule Wind Project will cover the entire landscape with industrial-scale wind development. This will result in extensive fragmentation of the landscape.
- By definition, the Project will cause habitat fragmentation.[160] The effects of that fragmentation on plant populations remains unknown because Dudek did not attempt to conduct any analysis.

O12-28
Cont.

[159] BTR, p. ix.
[160] *See* Forman RTT. 1995. Land Mosaics: The ecology of landscapes and regions. Cambridge University Press, Cambridge (UK). Chapter 12: Land transformation and fragmentation. pp. 405-415.

Figure 5. Kumeyaay Wind Project as seen from an altitude of 50,000 feet.

Figure 6. Kumeyaay Wind Farm on 2018 Sep 9. Habitat fragmentation remains evident approximately 13 years after turbines were installed.

O12-28
Cont.

Indirect Effects Determination

The BTR provides the following effects determination:

> Temporary indirect impacts from fugitive dust, altered hydrology, and increased erosion could adversely affect adjacent vegetation communities (Impact BIO-2). Permanent indirect impacts from invasive plant species on adjacent vegetation communities and land covers (e.g., unvegetated channel) and increased fire regime would result in a potential adverse effect (Impact BIO-3). These impacts would not be adverse through implementation of recommended MM-BIO-1 (General Avoidance and Minimization Measures), which would help reduce temporary and permanent indirect impacts through biological monitoring, environmental training to reduce impacts to resources outside of the limits of disturbance, implementation of a SWPPP to reduce impacts to jurisdictional aquatic resources outside of the limits of disturbance and avoid planting any invasive species, implementation of a fugitive dust control plan, implementation of erosion and runoff control plan, weed management, and implementation of the Campo Wind Project Fire Protection Plan.

I have the following comments in response to the BTR's effects determination:

- There is no basis for concluding impacts associated with fugitive dust, altered hydrology, and increased erosion would be "temporary." All three impacts are ongoing issues associated with roads, which will be permanent.
- There is no basis for concluding: "these impacts would not be adverse through implementation of recommended MM-BIO-1." The "plans" required under MM-BIO-1 have not been formulated, thus precluding public input. The DEIS does not even provide basic information needed to evaluate the plans, such as how long they will be implemented, the party responsible for plan implementation, how implementation of the plan will be enforced, and how performance will be monitored. As a result, it is essential that any "plans" that are being used to support effects determinations be vetted by the public, resource agencies, and scientific community during NEPA review.
- The DEIS does not incorporate performance standards for MM-BIO-1 (or the subcomponents therein). Furthermore, plans and attempts to minimize impacts are not always successful. For example, a fire could start at a turbine and quickly become out of control despite a rigorous Project Fire Protect Plan. In accordance with CEQ guidelines, the EIS must discuss the efficacy of the plans and the likelihood that they will prevent significant impacts.
- Many of the DEIS's conclusions regarding insignificance of impacts are based on unformulated plans, including the: SWPPP, Fugitive Dust Control Plan, Weed Management Plan, Fire Protection Plan, and Avian Monitoring Plan. The DEIS claims these plans would cause the Project to have no adverse effects.[161] However, it provides no evidence to substantiate that claim. To demonstrate efficacy of the plans, the FEIS should provide evidence that comparable plans effectively mitigated impacts at the Kumeyaay Wind Project site, which is on the Reservation, and which has been in

O12-28 Cont.

[161] DEIS, pp. 83 through 88.

operation long enough to evaluate impacts. Furthermore, for the public to understand the content of the deferred plans, the FEIS should include copies of the plans that were prepared for the Kumeyaay Wind Project.

- The invasive weed problem is not limited to "planting any invasive species."
- The BTR fails to provide effects determinations for increased human use and trampling of vegetation.[162] Because the DEIS does not provide any additional analysis beyond what is provided in the BTR, it does not have the basis for concluding those effects would not be adverse. Google Earth imagery provides evidence of damage to vegetation caused by off-road vehicles traveling to and from the Kumeyaay Wind turbines after they were installed (Figures 7 through 9, below).

"*Additional Off-Reservation impacts may occur on state and County resources as analyzed in the County EIR (County of San Diego 2019).*"

- This statement contradicts the DEIS's claim that: "environmental impacts relating to the Boulder Brush Facilities are evaluated in this EIS."
- No citation is provided for County of San Diego 2019 (probably because this document does not exist).

"*Decommissioning activities associated with Alternative 1 would result in direct and indirect adverse effects to vegetation communities similar in nature, but involving less acreage, to those described above for construction. Direct and indirect adverse effects associated with decommissioning would be temporary because the Project Site would be restored to pre-Project conditions at the completion of decommissioning. Therefore, decommissioning would not have adverse effects on vegetation communities.*"[163]

O12-28
Cont.

- This conclusion is not supported by evidence because the DEIS does not incorporate any requirements for restoration of the site after Project decommissioning.
- The FEIS needs to clearly define what the BIA considers "restored." The DEIS's definition of restoration appears to differ significantly from the scientific definition.[164]

[162] *See* BTR pp. 78 and 79.
[163] DEIS, p. 83.
[164] *See* Longcore T, R Mattoni, G Pratt, C Rich. 2000. On the perils of ecological restoration: Lessons from the El Segundo blue butterfly. Pages 281-286 *in* JE Keeley, M Baer-Keeley, CJ Fotheringham, editors. 2nd Interface Between Ecology and Land Development in California. U.S. Geological Survey Open-file Report 00-62. U.S. Geological Survey, Sacramento, CA.

Figure 7. Landscape before (top image) and after (bottom image) construction of the Kumeyaay Wind Farm. Damage caused by off-road vehicle travel to turbine is evident in bottom image. For comparison, black circle depicts same rock feature in both images.

O12-28
Cont.

Figure 8. Landscape in 2010 (top image) and 2018 (bottom image) at Kumeyaay Wind Farm. Extensive off-road vehicle damage is evident in the bottom image.

O12-28
Cont.

Figure 9. Kumeyaay Wind Farm on 2018 Sep 9. Damage caused by vehicles taking short-cut between turbine pads is evident.

O12-28 Cont.

Soil Stabilizers

The Project involves the use of magnesium chloride (a salt) as a dust suppressant.[165] The DEIS fails to disclose or analyze the effects magnesium chloride can have on the environment. It also fails to discuss the efficacy of magnesium chloride as a dust suppressant. As reported by Heffner (1997) and the EPA (2004):

1. "With rainfalls of higher duration or intensity, or in areas with exceptionally high drainage rates (rapid change in topographical elevation, impervious soil, or low cation binding capacity soil), calcium and magnesium chloride can move considerable distances either as surface runoff or as soil leachate. Surface runoff typically drains into streams, rivers, ponds, or lakes, whereas leachates feed groundwater aquifers."[166]
2. "The Ca2+ and Mg2+ ions are readily adsorbed by soil particles that usually carry a net negative charge on their surface… As a result, chlorides will tend to remain in solution

[165] DEIS, p, B-18.
[166] Heffner K. 1997. Water quality effects of three dust-abatement compounds. Eng. Field Notes 29:35-43.

and can potentially infiltrate and enter the groundwater or drain as runoff into surface waters."[167]

3. "Therefore, the quantity of soluble salts that may enter a shallow water table (less than 25 feet) beneath the area of application after years of repeated treatment may be significant (Martin 1989)."[168]
4. "Chloride is a common component of many dust suppressants and road de-icers. Numerous studies have been documented about chloride groundwater pollution, mainly in the northeastern United States."[169]
5. "The potential toxicity to plants from the use of salts is based on the type of plant and on the amount of exposure to the salt solution. Exposure could occur through direct contact to leaves and stems or by indirect contact via the plant root zone. Direct contact of plant leaves with the salt has an adverse affect by creating an osmotic imbalance. The subsequent dehydration ultimately results in defoliation of the plant. Indirect contact could also result in chloride toxicities. Excessive levels of chloride in plant tissues may lead to necrosis, burn of leaf tips and margins, and eventual death."[170]
6. "Based on the literature review, it was recognized that calcium and magnesium chloride have some harmful environmental effects, especially to roadside vegetation. That possible damages can occur on a yearly and cumulative basis is also recognized."[171]
7. "The effectiveness of salts to control dust significantly decreases with time. The dust abatement properties of magnesium chloride have been found to last about 12 weeks (Monlux, 1993). Another problem with salts is that they migrate readily in the environment. DeCastro *et al.* (1996) modeled the movement of road stabilization additives of road surface to determine how long the additives remained effective. They found that calcium and magnesium chlorides are easily carried from the soil."[172]
8. "Magnesium chloride is not effective, even with product reapplication, for periods of more than one year."[173]

O12-28 Cont.

In addition to its adverse effects on vegetation and water quality, magnesium chloride can have significant impacts on wildlife. The western spadefoot toad is a California Species of Special Concern. The USFWS is currently conducting a status review to determine whether the species warrants listing under the Endangered Species Act. The western spadefoot is known to occur at the Project site.[174] Amphibians are particularly sensitive to chloride solutions due to their permeable skin and because they are incapable of flushing chlorides out of their bodies. Early life stages (embryos and larvae) of amphibians are susceptible to malformations and mortality

[167] *Ibid.*
[168] *Ibid.*
[169] *Ibid.*
[170] *Ibid.*
[171] *Ibid.*
[172] U.S. Environmental Protection Agency. 2004 Mar. Potential Environmental Impacts of Dust Suppressants: Avoiding another Times Beach. In: An Expert Panel Summary, May 30-31, 2002, Las Vegas, Nevada.
[173] *Ibid.*
[174] BTR, Appendix F-1.

when $MgCl_2$ (magnesium chloride) is dissolved in breeding ponds.[175] Toads in particular are susceptible. Lewis (1999) tested the effects of various magnesium chloride concentrations on boreal toad (*Anaxyrus boreas boreas*) tadpoles. The tadpoles experienced 100% mortality when exposed to a 2% solution of magnesium chloride.[176]

JURISDICTIONAL AQUATIC RESOURCES (IMPACT BIO-2)

"*Construction of permanent, unpaved roads across ephemeral drainage features will be at grade to allow for water to continue flowing downstream unimpeded. Therefore, they would not adversely affect the overall functions (e.g., volume, velocity, and historical direction of surface water) or values (e.g., aesthetics, flood control, and water quality) of these features. Additional Off-Reservation impacts may occur on state and County resources as analyzed in the Draft EIS (Dudek 2019).*"

- The BTR fails to cite any scientific information to support the conclusion that permanent roads have no adverse effects if they are constructed at grade. Compacting the road base and hundreds (or thousands) of truck trips during construction would definitely have adverse effects on functions.
- "Dudek 2019" is the BTR. Thus, the BTR is citing itself for the additional analysis, which is not provided in the BTR (or elsewhere).

Direct Effects Determination

"*These impacts will not be adverse through implementation of recommended MM-BIO-2 (Jurisdictional Waters and Wetlands-Specific Avoidance, Minimization, and Mitigation Measures). This measure requires that all temporary impacts to federally regulated jurisdictional aquatic resources be restored in place to pre-activity functions and permanent impacts be permitted through the ACOE.*"

O12-28 Cont.

- MM-BIO-2 requires restoration of temporary impacts. However, no further information is provided, including the restoration methods, timing, and evaluation procedures. In addition, there are no performance standards for the restoration, and there does not appear to be an enforcement mechanism that would ensure restoration success.
- The DEIS does not identify the party responsible for ensuring temporary impacts to federally regulated jurisdictional aquatic resources would be restored in place to pre-activity functions.

[175] Karraker NE, JP Gibbs, JR Vonesh. 2008. Impacts of road deicing salt on the demography of vernal pool-breeding amphibians. Ecological Applications 18(3): 724-734. *See also* Hopkins GR, SS French, ED Brodie. 2013. Increased frequency and severity of developmental deformities in rough-skinned newt (*Taricha granulosa*) embryos exposed to road deicing salts (NaCl & $MgCl_2$). Environmental Pollution 173:264-269.

[176] Lewis WM. 1999. Studies of Environmental Effects of Magnesium Chloride Deicer in Colorado. Colorado Department of Transportation Research Branch Report No. CDOT-DTD-R-99-10. pp. 21-27.

SPECIAL-STATUS WILDLIFE SPECIES (IMPACT BIO-3)

Quino Checkerspot Butterfly

Effects Determination - Direct

The DEIS concludes: "[t]he Project would be required to complete a Section 7 consultation process with the U.S. Fish and Wildlife Service (USFWS) and would require the issuance of a Biological Opinion from the USFWS with identified terms and conditions. Adverse effects on the Quino checkerspot and its habitat would be reduced to less than adverse with implementation of recommended MM-BIO-1 and MM-BIO-3."[177]

As discussed below, the conclusion that impacts would be reduced to less than adverse with implementation of MM-BIO-1 and MM-BIO-3 is not supported by evidence or analysis.

MM-BIO-1

MM-BIO-1 provides "*General Avoidance and Minimization Measures,*" which primarily consist of unformulated plans with unknown content, and thus, efficacy. Whereas these measures *may* help reduce the severity of some indirect impacts, the Project would still result in the taking of Quino checkerspot butterflies and the permanent removal of 222.1 acres of Quino checkerspot butterfly habitat. This is a substantial adverse effect, given: (a) the restricted range, localized distribution, and small population sizes of the subspecies[178], (b) more than 90 percent of the subspecies' historic range has been lost due to habitat degradation or destruction,[179] and (c) the Project site contains butterflies and habitat that are part of a core occurrence complex.

O12-28 Cont.

The DEIS fails to provide any evidence that the BIA has sought assistance from the USFWS or otherwise attempted to develop a Project alternative that would avoid and minimize Project impacts to the Quino checkerspot butterfly (and its habitat) to the maximum practicable extent. Indeed, both Alternative 1 and Alternative 2 include Project features in the portion of the Project site containing the highest concentration of Quino checkerspot butterfly occurrences (Figure 10, below).

[177] DEIS, p. 86.
[178] U.S. Fish and Wildlife Service. 2009. Quino Checkerspot Butterfly (*Euphydryas editha quino*), 5-Year Review: Summary and Evaluation. p. 25.
[179] U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). Portland, Oregon. p. 56.

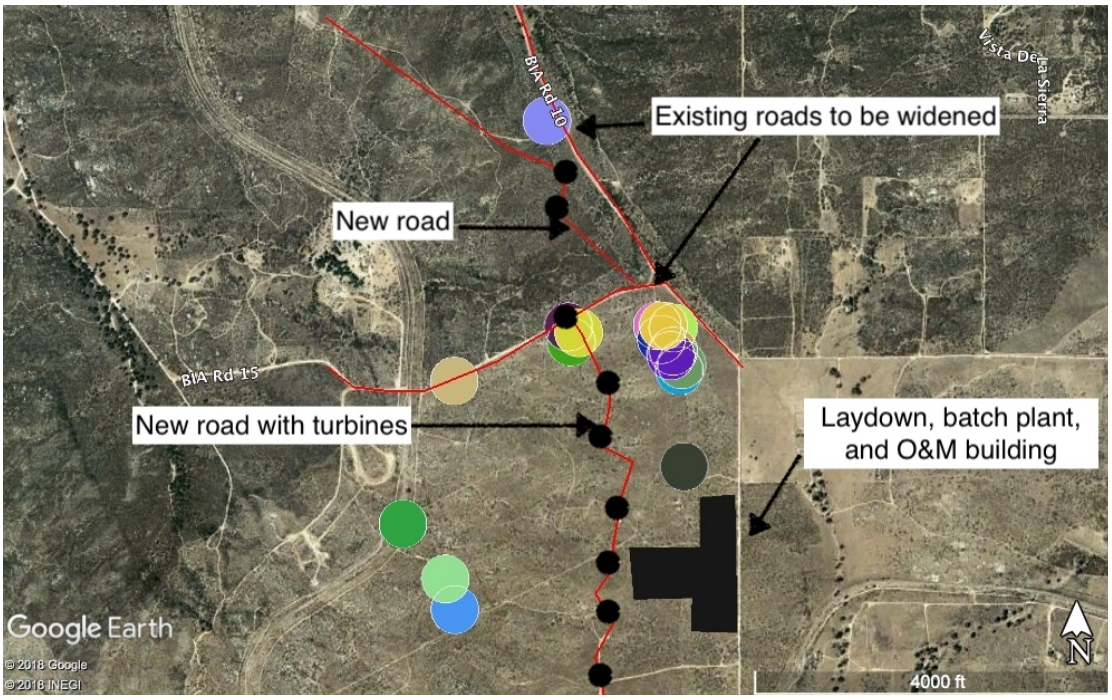


Figure 10. Project features in relation to Quino checkerspot butterfly occurrence records (colored circles). Turbines and roads are not to scale (disturbance will be more extensive than depicted). Extensive construction will occur in an area with high concentration of butterfly occurrences.

O12-28 Cont.

MM-BIO-3

Section 7 consultation and issuance of a Biological Opinion provides no guarantees that adverse effects on the Quino checkerspot and its habitat would be reduced to less than adverse levels.[180] For example, the Government Accountability Office concluded that the USFWS: "has done limited monitoring to ensure [mitigation] fees are used as intended and desired mitigation results are achieved."[181] Furthermore, the terms and conditions of the Biological Opinion have not been developed. Therefore, the BIA has no ability to conclude those terms and conditions would reduce Project impacts to less than adverse levels. Indeed, the BIA has no basis for concluding Project impacts would be less than adverse until the USFWS issues its decision on whether the proposed action will violate the Endangered Species Act prohibitions on jeopardy.

MM-BIO-3 suggests the Developer will provide habitat compensation for permanent impacts to Quino habitat. However, the USFWS has concluded:

[180] U.S. Government Accountability Office. 2001. Endangered Species Act: Fee-Based Mitigation Arrangements. 16 pp. *See also* U.S. Government Accountability Office. 2016. Endangered Species Act: U.S. Fish and Wildlife Service's American Burying Beetle Conservation Efforts. 72 pp.
[181] *Ibid*, p. 3.

> Acquisitions of land and conservation easements have resulted in preservation of much habitat for the subspecies. We do not yet know how much local Quino abundance, distribution, and habitat availability can be reduced without critically compromising population resiliency.[182]

Before the BIA can conclude in sufficient detail that habitat compensation would contribute to reducing adverse effects to a level below significance, it must first demonstrate that Project impacts would not compromise the resiliency of the Campo Core population. Then it must demonstrate that the habitat compensation provided through MM-BIO-3 is feasible and would contribute to one or more of the recovery criteria established in the Recovery Plan.[183]

MM-BIO-3(a) states:

> Construction fencing and/or signage shall be installed when construction of the Project occurs immediately adjacent to mapped occupied Quino checkerspot butterfly habitat to prevent unnecessary intrusion into occupied Quino checkerspot butterfly habitat. Signage shall be installed where high-use areas of the lease area border suitable Quino checkerspot butterfly habitat to prevent intrusion into sensitive habitat and remind personnel of restrictions regarding activities within these areas.

O12-28 Cont.

Fencing adjacent to "mapped occupied Quino checkerspot butterfly habitat" would help minimize unnecessary impacts to habitat if that habitat was accurately mapped. However, as discussed above, the DEIS does not accurately map occupied habitat, nor does Dudek appear to understand what should be considered occupied habitat. As a result, the FEIS needs to provide an accurate map of occupied habitat. The USFWS considers all suitable habitat within one kilometer of a Quino checkerspot butterfly sighting to be occupied habitat.[184]

In addition, the FEIS needs to discuss the likelihood that the measures proposed in MM-BIO-3(a) would be implemented, enforced, and successful. Construction of the Tule Wind Energy Project was suspended due to numerous violations associated with unauthorized ground disturbing activities. These violations included clearing vegetation beyond the disturbance limits at four different locations within the first six weeks of construction.[185]

MM-BIO-3(b) states:

> To the extent practicable, all construction clearing and grubbing in mapped suitable Quino checkerspot butterfly habitat associated with construction of the Project shall occur when adult and larval activity is reduced and host plants are not generally

---

[182] *Ibid*, p. 13.

[183] It is my understanding that the USFWS has issued an addendum to the Recovery Plan, and that the addendum contains additional (or modified) recovery criteria. Personal communication with Alison Anderson, Carlsbad Fish and Wildlife Office, on 2019 Jun 21 and 22.

[184] U.S. Fish and Wildlife Service. 2011 Sep 1. Formal Section 7 Consultation for the Proposed East County Substation and Transmission Line Project, San Diego County, California. p. 4. *See also* U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). Portland, Oregon. pp. v, 35, and 164. *See also* U.S. Fish and Wildlife Service. 2009. Quino Checkerspot Butterfly (*Euphydryas editha quino*), 5-Year Review: Summary and Evaluation. pp. 5, 14, 26.

[185] Dudek. 2017 Jun. 2017 Quarterly Compliance Report (Q1) for the Tule Wind Energy Project. Appendix B (Bureau of Land Management Notice of Temporary Suspension). Available at: <http://www.tulewindeccmp.com/Monitoring.htm>.

> flowering or germinating, as determined by the USFWS. Vegetation management during the operation and maintenance phase of the Project shall also occur when adult and larval activity is reduced and host plants are not generally flowering or germinating, to the extent practicable.

The FEIS needs to discuss the likelihood that these measures would be implemented, enforced, and successful (i.e., how "practicable" they are).

Effects Determination-Indirect

The DEIS and BTR identify multiple indirect impacts that may be caused by the Project. They include impacts caused by fugitive dust, chemical pollutants, erosion, altered hydrology, light pollution, introduction of non-native species, habitat fragmentation, an increased fire regime, and habitat destruction caused by increased human presence. These indirect impacts would exacerbate the Project's direct impacts on Quino checkerspot butterflies and their habitat. The Recovery Plan states:

> Conversion from native vegetation to nonnative annual grassland will be the greatest threat to Quino checkerspot butterfly reserves, based on observations of large-scale invasions throughout the range (Freudenberger et al. 1984, Minnich and Dezzani 1998, Stylinski and Allen 1999). The increased dominance of nonnative species may reduce the abundance of Quino checkerspot butterfly food sources (Koide et al. 1987), and habitat fragmentation exacerbates vegetation type conversion because ground disturbance and edge effects in fragments with large edge-to-area ratios experience higher rates of invasion. Corridors of human activity through unfragmented natural areas such as unpaved roads, trails, and pipelines are also conduits of nonnative seed dispersal (Zink et al. 1995). Other causes of vegetation type conversion include fire, grazing, off-road vehicle activity, and increased nitrogen deposition (Allen et al. 2000).[186]

O12-28 Cont.

The DEIS concludes: "[t]he Project includes standard BMPs to reduce these potential effects, but indirect effects would remain adverse. Due to the placement of the proposed structures spread out through the Project Site and infrequent use of access roads, the Project would not result in habitat fragmentation."[187] The BTR concurs that habitat fragmentation is not an adverse effect. However, it provides a different conclusion regarding the other indirect impacts; it states: "[t]hese indirect impacts would not be adverse through implementation of recommended MM-BIO-1 and MM-BIO-4."[188]

I concur with the DEIS that all indirect impacts would remain adverse. The DEIS, however, fails to disclose or contemplate mitigation that could reduce adverse indirect impacts. In the subsequent sections I briefly discuss several of the indirect impacts that are likely to remain adverse, even after implementation of the proposed BMPs, MM-BIO-1, and MM-BIO-4.

[186] U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). Portland, Oregon. p. 58.
[187] DEIS, p. 83.
[188] BTR, p. 88.

Non-Native Plants

The DEIS does not incorporate BMPs for the colonization, and spread of, non-native plants ("invasive plants" or "weeds"). The California Invasive Plant Council has published guidelines for preventing the spread of invasive plants.[189] The BMPs described therein are feasible and they should be discussed as a method to minimize Project impacts on habitat for the Quino checkerspot butterfly and other species that occur in the Project area.

The BTR argues indirect impacts (including weeds) would not be adverse through implementation of MM-BIO-1 and MM-BIO-4.[190] MM-BIO-1(f) requires a weed management plan that is approved by the Tribe prior to commencement of construction activities. However, the DEIS fails to provide information fundamental to evaluating the likelihood that the weed management plan would be enforced, or that it would provide any measurable reduction in indirect impacts associated with weeds. Specifically, the DEIS fails to identify:

1. the specific weed species that would be subject to weed management measures.
2. the management objectives for each species (e.g., eradication versus control).
3. the specific measures that would be taken to minimize weed introductions (e.g., vehicle wash stations), and to manage weeds after they colonize Project areas.
4. the duration of weed monitoring and management measures, including how long they would extend past Project construction and decommissioning.
5. the spatial extent of the weed monitoring and management measures, including the extent to which these measures would extend beyond the direct footprint of the Project.
6. performance standards for the weed management plan.
7. the monitoring and reporting requirements, including the variables that shall be monitored, the monitoring methods, and the frequency and duration of monitoring.
8. a mechanism (e.g., performance security) for ensuring implementation, enforcement, and success of the weed management plan.

O12-28 Cont.

This issue is compounded by the DEIS's failure to understand that, to be successful, weed management requires proactive and aggressive actions. The BTR states: "the areas beyond the turbine pads would be allowed to passively revegetate."[191] This would undoubtedly result in the colonization and spread of invasive plants. As reported in the Recovery Plan:

> Once invasion by nonnatives has occurred, natural succession likely will not allow for the complete recovery of the site to a pre-disturbance state. For example, after surveying 25 coastal sage scrub and chaparral sites disturbed up to 70 years ago in San Diego County, Stylinski and Allen (1999) concluded that all the original plant communities were significantly altered by nonnative plant invasion. These sites were primarily disturbed by

[189] Cal-IPC. 2012. Preventing the Spread of Invasive Plants: Best Management Practices for Land Managers (3rd ed.). Cal-IPC Publication 2012-03. California Invasive Plant Council, Berkeley, CA. Available at: <https://www.cal-ipc.org/docs/bmps/dd9jwo1ml8vttq9527zjhek99qr/BMPLandManager.pdf>
[190] BTR, p. 88.
[191] BTR, p. 89.

> mechanical means such as agriculture, landfills, and grading, but sites that have been subject to disturbances that remove vegetation without disrupting the soil, such as frequent fire, also contain persistent stands of nonnative vegetation (Freudenberger et al. 1984, Minnich and Dezzani 1998). These kinds of studies indicate that active restoration will be required to control nonnative annuals and reestablish native vegetation.[192]

Habitat Destruction Caused by Increased Human Presence

The BTR argues: "access within the Reservation would be limited to residents and personnel with permission only, and access roads would be controlled…Therefore, the roads would not increase off-road vehicle use on the Project site."[193] This argument is inconsistent with Google Earth imagery, which shows new off-road vehicle trails shortly after completion of the Kumeyaay Wind Project on the Campo Reservation (Figures 7 through 9, above).

Increased Fire Regime

The BTR states: "[i]ncreased fire regime as a result of fire suppression could result in potential adverse effects (Impact BIO-10). Implementation of recommended MM-BIO-1 would reduce potential impacts from fire because it requires implementation of the Campo Wind Project Fire Protection Plan."[194] This statement is confusing for two reasons. First, it suggests the adverse effects would remain adverse even with implementation of MM-BIO-1. This conflicts with the BTR's previous conclusion that the effects would be not be adverse.[195] Second, the Fire Protection Plan prescribed under MM-BIO-1 is designed to: "minimize the potential exposure of the Project to fire hazards."[196] Therefore, it appears to be designed to suppress fires, in which case, it would not reduce impacts due to: "increased fire regime as a result of fire suppression."

O12-28 Cont.

Moreover, the DEIS fails to provide the information needed to evaluate the efficacy of the Fire Protection Plan. MM-BIO-1(g) simply states: "[t]o minimize the potential exposure of the Project to fire hazards, a Campo Wind Project Fire Protection Plan shall be prepared and implemented in conjunction with development of the Project."[197] The DEIS does not:

1. identify the party responsible for implementing the Fire Protection Plan.
2. the mechanism(s) that would ensure proper funding for, and implementation of, the provisions of the Fire Protection Plan.

This precludes the public from being able to assess the likelihood that MM-BIO-1(g) would reduce Impacts BIO-1, BIO-2, and BIO-3.[198]

---

[192] U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). Portland, Oregon. p. 58.
[193] BTR, pp. 88 and 89.
[194] BTR, p. 89.
[195] BTR, p. 88.
[196] DEIS, Appendix P.
[197] *Ibid.*
[198] *Ibid.*

Habitat Fragmentation

The DEIS's analysis of habitat fragmentation is limited to the conclusory statement that the Project would not result in habitat fragmentation of any riparian habitat or other sensitive natural community regulated or protected under federal law or regulation "due to the placement of the proposed structures spread out through the Project Site and infrequent use of access roads."[199] The DEIS's conclusion contradicts scientific evidence. Roads can fragment habitat regardless of how frequently they are used.[200]

The DEIS provides no additional analysis of habitat fragmentation. However, the BTR argues: "[h]abitat fragmentation is not an adverse effect of the Project because the individual wind turbine pads are small (20 feet by 20 feet) and the roads and the gen-tie line would not be fenced; therefore, wildlife would be able to continue moving freely through these areas (see Section 5.6, Impacts on Wildlife Corridors and Habitat Connectivity)."[201] The BTR's rationale is inconsistent with evidence, including evidence provided in the BTR itself. For example, the BTR reports: "[s]maller roads can be significant barriers to less-mobile species."[202]

Furthermore, fragmentation associated with the turbine pads would not be limited to a 20-foot by 20-foot area, as the BTR claims. According to the DEIS: "[e]ach turbine would be mounted on a concrete pedestal (approximately 20 feet in diameter and 6 inches above grade) supported by a permanent concrete foundation (approximately 70 feet in diameter and 10 feet deep)."[203] Thus, the concrete foundation alone would be 70 feet in diameter. However, additional area around each turbine would be graded, compacted, and cleared of all vegetation. The DEIS does not provide a grading plan, nor does it provide a clear description of how much area around each turbine would be cleared of vegetation. However, one can assume grading and vegetation clearance for the Project's 4.2-MW turbines will be at least as extensive as was required for Tule Wind's 2.3-MW turbines.[204] There is no vegetation within approximately 175 feet of the turbines at Tule Wind (Figure 11, below). This is consistent with the DEIS's statements that: (a) there would be a fire management zone associated with each wind turbine, and (b) MM-BIO-2 "would also ensure that disturbed areas that would be included in the long-term maintenance of the fire management zones would not be revegetated, specifying that any plants that establish in these areas be removed on an ongoing (i.e., annual) basis."[205] Even if one assumes the Project will result in conditions comparable to those associated with the Kumeyaay Wind Project (which has much smaller turbines),[206] vegetation clearance will far exceed the BTR's claim that it will be limited to a 20-foot by 20-foot area (Figure 12, below).

O12-28
Cont.

[199] DEIS, p. 83.
[200] Trombulak SC, CA Frissell. 2000. Review of ecological effects of roads on terrestrial and aquatic communities. Conservation Biology 14:18–30. *See also* Spellerberg IF. 1998. Ecological effects of roads and traffic: a literature review. Global Ecology and Biogeography Letters 7:317–333.
[201] BTR, p. 88.
[202] BTR, p. 69.
[203] DEIS, p. B-2.
[204] Turbine size obtained from: <https://www.awea.org/Awea/media/Resources/Publications%20and%20Reports/Market%20Reports/3Q-2018-AWEA-Market-Report-Public-Version.pdf>
[205] DEIS, p. 130.
[206] The Kumeyaay Wind Project has 2.0-MW turbines with hub height of 220 feet.

Since it refers to habitat, fragmentation is necessarily a species-specific condition.[207] The BTR does not analyze the specific effects habitat fragmentation would have on the Quino checkerspot butterfly. Nevertheless, the BTR concludes habitat fragmentation associated with the Project would not affect any wildlife. It states:

> Although the Project would involve placement of structures and wind turbines within the landscape, the site is unfenced and the features are not considered barriers that would interfere with the movement of wildlife through the surrounding undeveloped landscapes. Therefore, the Project would not constrain wildlife movement.[208]

I agree that habitat fragmentation caused by the Project would not present a physical barrier to the movement of adult Quino checkerspot butterflies (unless they are struck by vehicles). However, this rudimentary level of analysis is insufficient, especially for an endangered species.

The Quino checkerspot butterfly exhibits a metapopulation structure.[209,210] Therefore, assessing Project impacts to the subspecies requires analysis at three spatial scales: (1) within habitat micro-patches, (2) within and between habitat patches, and (3) among the populations that comprise the metapopulation.[211] The habitat micro-patch occurs at the scale of centimeters to meters; the habitat patch occurs at the scale of approximately one kilometer;[212] and the populations that comprise the metapopulation occur at a scale of several kilometers.[213]

The Quino checkerspot butterfly population has two life stages: (a) the larval stage, and (b) the adult stage. A normally robust population may generate no adults at all in a given year if poor environmental conditions preclude an adult flight period.[214] Consequently, a viable population of larvae is essential to persistence of the species. Therefore, assessing Project impacts to the subspecies requires analysis of impacts to both: (1) larvae, and (2) adults.

O12-28 Cont.

The BTR fails to consider the effects of habitat fragmentation on both life stages, and at all three spatial scales. As discussed below, the habitat fragmentation caused by the Project may have very significant impacts on the Quino checkerspot butterfly, especially at the micro-patch level.

---

[207] Morrison ML, BG Marcot, and RW Mannan. 2006. Wildlife-Habitat Relationships: Concepts and Applications. 3rd ed. Washington (DC): Island Press. p. 264.
[208] BTR, p. 90.
[209] A metapopulation is composed of a number of spatially discrete, local populations. Individuals interact among local populations within a metapopulation just enough to reduce the extinction probability of the metapopulation compared to the extinction probability of any local population. *See* U.S. Fish and Wildlife Service. 2009. Quino Checkerspot Butterfly (*Euphydryas editha quino*), 5-Year Review: Summary and Evaluation. p. 1.
[210] U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). Portland, Oregon. pp. 21 through 31.
[211] Morrison ML, BG Marcot, and RW Mannan. 2006. Wildlife-Habitat Relationships: Concepts and Applications. 3rd ed. Washington (DC): Island Press. p. 112. *See also* U.S. Fish and Wildlife Service. 2009. Quino Checkerspot Butterfly (*Euphydryas editha quino*), 5-Year Review: Summary and Evaluation. *See also* U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). Portland, Oregon.
[212] U.S. Fish and Wildlife Service. 2009. Quino Checkerspot Butterfly (*Euphydryas editha quino*), 5-Year Review: Summary and Evaluation. p. 5.
[213] U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). Portland, Oregon.
[214] *Ibid*, p. 9.

Impacts to Larvae

Female checkerspot butterflies deposit eggs on specific host plants. After the eggs hatch (10 to 14 days later), the larvae feed on the host plant. During larval development, the host plants age, eventually drying out and becoming inedible (senescence). At the time of host plant senescence, if larvae are old enough and have accumulated sufficient reserves, they are able to enter diapause (a resting state that enables larvae to maintain a low metabolic rate and may occur during periods when host plants are not available).[215]

The periods between molts (shedding skin) are called instars. Larvae that hatch from eggs are in the first instar, and may subsequently undergo as many as 7 instars prior to pupation. During the first two instars, pre-diapause larvae cannot move more than a few centimeters and are usually restricted to the plant on which eggs were laid.[216] By mid-third instar, larvae can travel up to 1 meter (3.3 feet) to find host plants.[217]

Sufficient rainfall, usually during November or December, apparently causes larvae to break diapause. Post-diapause larvae may move in search of food; however, movement remains limited to the habitat micro-patch level. The Recovery Plan reports:

> Post-diapause bay checkerspot butterfly larval dispersal has been documented; larvae have been observed to travel up to 3.5 meters (11.5 feet) during a 4-day period (Weiss et al. 1987). Greater larval dispersal distances were rare, but movement up to 10 meters (33 feet) per day has been recorded (Weiss et al. 1988). During one study of Quino checkerspot butterfly larvae at Lake Skinner, Riverside County, post-diapause larvae were observed to typically move 0.5 to 1 meter (20 to 40 inches) per hour while grazing, many moving up to 30 to 40 meters (100 to 130 feet) during the course of development (K Osborne, pers. comm.).[218]

O12-28 Cont.

Post-diapause larvae undergo three to as many as six molts prior to pupating.[219] Larval survival rates during this stage are dependent on the density of host plants within the micro-patch (i.e., travel distance of a few meters).[220] Post-diapause larvae may return to diapause if host plants are unusually dry or developmentally advanced. Ultimately, however, post-diapause larvae will die if they are unable to procure the food resources needed to pupate.

Based on this information, the Project would have an adverse impact on the Quino checkerspot butterfly population if it prevented or impeded movement of larvae between and among host plants. Because this movement occurs at the scale of centimeters (first two instars) and meters (subsequent instars), Project features, which occur at a larger scale (e.g., several meters), would have a negative impact on larval movements.

---

[215] U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). Portland, Oregon.
[216] *Ibid*.
[217] *Ibid*.
[218] *Ibid*, pp. 9 and 10.
[219] *Ibid*, p. 10.
[220] *Ibid*, p. 18.

The potential for the Project to have an adverse impact on larval survival rates depends on the distribution of host plants in relation to Project features (e.g., roads and turbines). Dudek did not conduct this analysis, nor did it map host plants during its 2018 surveys. However, based on the maps provided in the BTR, the Project would eliminate multiple patches of host plants in areas where butterflies have been detected.[221] This would undoubtedly affect larval movements and survival rates.

Impacts to Adults

Adult Quino checkerspot butterflies live for 10 to 14 days.[222] During this time they must feed, mate, and locate host plants suitable for egg deposition. All three activities are essential to reproduction, and thus, population persistence. Although checkerspot butterflies are capable of long-distance movements, they are typically sedentary, and long-distance movements by individuals are not common.[223] Most bay checkerspot recaptures have occurred within 100 to 200 meters (328 to 656 feet) of capture sites.[224] In addition, nectar sources greater than 200 meters (656 feet) from larval host plants are not likely used by the Quino checkerspot butterfly.[225] Thus, persistence of the population depends on movements within and between habitat patches, and persistence of the metapopulation depends on movements (albeit infrequent) between populations. The BTR's conclusion that the Project would not introduce any barriers to movement only contemplates the latter; there is no analysis of how the Project would affect movement within and between habitat patches.

O12-28 Cont.

The Project includes 15 miles of new roads that would be 40 feet wide.[226] It also includes: (a) widening 15 miles of existing roads, and (b) a fuel modification zone of 100 feet (50 feet each side, including a 16-foot-wide road on one side) along the 8.5-mile gen-tie line. Other non-linear Project features (e.g., buildings and turbine pads) would perforate habitat patches. These features will cause significant fragmentation of habitat patches used by adult butterflies (i.e., habitat within 656 feet of natal host plants).

The Project's indirect impacts will exacerbate direct impacts to habitat patches. Most notably, the Project includes features (e.g., roads) and activities (e.g., routine ground disturbance) that will provide ongoing conduits for weed invasion. As discussed previously, the DEIS fails to incorporate mitigation that would minimize the impact of weeds on Quino checkerspot butterfly habitat. Collectively, the Project's direct and indirect impacts threaten the viability of the Campo Core population of Quino checkerspot butterflies.

[221] *See* BTR, Figures 10 and 15.
[222] U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). Portland, Oregon.
[223] *Ibid.*
[224] *Ibid.*
[225] U.S. Fish and Wildlife Service. 2009. Quino Checkerspot Butterfly (*Euphydryas editha quino*), 5-Year Review: Summary and Evaluation. p. 10.
[226] Although the DEIS indicates the roads would subsequently be reduced to 24 feet, there are no plans to restore Quino checkerspot butterfly resources (e.g., host plants and nectar plants) that are eliminated by road construction or widening.

Figure 11. Vegetation clearance associated with turbine pads at Tule Wind.

Figure 12. Vegetation clearance associated with turbine pad at Kumeyaay Wind.

O12-28
Cont.

Effects Determination-Decommissioning

According to the DEIS: "[d]ecommissioning activities associated with Alternative 1 would result in temporary direct and indirect adverse effects on Quino checkerspot butterfly similar in nature to those described for Project construction. Because decommissioning would include restoration of the area to pre-Project conditions, it would ultimately not result in adverse effects on Quino checkerspot butterfly."[227] This conclusion is not supported by evidence because the DEIS does not incorporate any mitigation measures that require "restoration of the area to pre-Project conditions."

Golden Eagle

Unitt (2004) estimated approximately 50 to 55 pairs of golden eagles nested within San Diego County from 1997 to 2001.[228] Survey data indicate the golden eagle population in San Diego County has experienced a "precipitous" decline.[229] Wildlife Research Institute estimates that the County's eagle population may decline by an additional 50 percent by the year 2030.[230] The proposed Project has the potential to exacerbate this decline in two ways: through habitat loss and degradation, and through direct mortality to eagles that collide with wind turbines and other Project features.[231]

Incredibly, the DEIS's analysis of Project impacts to golden eagles is limited to three sentences:

> The infrequent sightings during the eagle point surveys and U.S. Geological Survey biotelemetry data suggests that the Project Site and surrounding area receives little use by golden or bald eagles and is not the core territory of any eagles. Eagle use on site is infrequent and the chance for collisions is low; therefore, there would be no adverse effects on eagles. The Project would be consistent with the USFWS guidance for golden eagles.[232]

O12-28 Cont.

Eagles have the potential to collide with the Project's wind turbines, transmission line, met towers, and vehicles. Even if eagle use is infrequent, and the chance of collision is low for any one eagle, there will be eagle fatalities due to the size and duration of the Project. Due to the current status of golden eagles in the West, and especially in San Diego County, any golden eagle fatalities would have an adverse effect on stability of the population.

The DEIS provides no analysis of how habitat loss and degradation associated with the Project would affect golden eagles.

---

[227] DEIS, p. 86.
[228] Unitt PA. 2004. San Diego County Bird Atlas. Proceedings of the San Diego Society of Natural History, No. 39.
[229] *Ibid.*
[230] *Ibid.*
[231] United States Fish and Wildlife Service. 2009. Final Environment Assessment – Proposal to Take Provided Under the Bald and Golden Eagle Protection Act. Prepared by the Branch of Policy, Permits and Regulations: Division of Migratory Bird Management. Access: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/BaldEagle/FEA_EagleTakePermit_Final.pdf>.
[232] DEIS, p. 86.

EFFECTS ON WILDLIFE CORRIDORS AND HABITAT CONNECTIVITY (IMPACT BIO-4)

The DEIS's discussion of Project impacts to wildlife corridors is comprised entirely of conclusory statements and unsubstantiated conclusions.[233] For example, the DEIS states: "[t]he presence of turbines would not preclude the use of the Pacific Flyway for avian species, nor would it artificially constrain avian species to a modified or 'unnatural' movement corridor. No adverse direct impact to wildlife movement or corridors would occur." The DEIS does not provide or cite any scientific analysis to support its conclusion. However, birds are known to migrate through the Project site, and at least some of those birds pass through areas that will be occupied by the Project's wind turbines. Therefore, if the birds avoid the turbine field (which will extend approximately 5 miles x 10 miles), their behavior will be modified, and if they do not avoid the turbine field, there will be collisions.[234] Fatalities caused by the Project's wind turbines qualifies as an adverse impact on wildlife movement.

Because the DEIS does not provide or cite any scientific analysis, my subsequent comments address the BTR, which cites five studies. The BTR states:

> Finally, a number of studies have determined that a variety of terrestrial wildlife were not adversely affected by wind power development (Agha et al. 2015; American Wind Wildlife Institute 2017; Lopucki et al. 2017; Walter et al. 2006; Wyoming Game and Fish Commission 2010). Based on the results of these studies, implementation of the Project is not expected to impact wildlife movement, habitat connectivity, or wildlife corridors.[235]

O12-28 Cont.

The assertion that implementation of the Project will not impact wildlife movement, habitat connectivity, or wildlife corridors is largely unsupported by the studies cited in the BTR, and other studies conducted on the subject that were not cited. The existing body of literature, including several of the studies cited in the BTR, is nearly universal in stating that there is insufficient data to determine the effects of wind energy generation on the movements of terrestrial wildlife (Łopucki et al 2017; Lovich and Ennen 2013, 2017; Wyoming Game and Fish Commission 2010). However, these studies apply to the displacement effects of wind energy projects, not the effects of a project's individual components. For example, the scientific literature unequivocally demonstrates that roads have effects on wildlife movement and habitat connectivity.[236] These effects are generally negative, although they can be neutral or even positive, depending on the species.

The BTR cites Agha et al. (2015), who found significantly higher survival rates of Mohave desert tortoises (*Gopherus agassizii*) within a wind energy generation area known as Mesa when compared to those in a nearby natural area. The relevance of this study to the current project is

[233] DEIS, pp. 87 and 88.
[234] Fatalities of birds and bats have been recorded at all wind energy facilities for which records are publicly available. *See* American Wind Wildlife Institute. 2019. Wind turbine interactions with wildlife and their habitats: a summary of research results and priority questions. Available at: <https://awwi.org/resources/summary-of-wind-power-interactions-with-wildlife/>.
[235] BTR, p. 90.
[236] Trombulak SC, CA Frissell. 2000. Review of ecological effects of roads on terrestrial and aquatic communities. Conservation Biology 14:18–30. *See also* Spellerberg IF. 1998. Ecological effects of roads and traffic: a literature review. Global Ecology and Biogeography Letters 7:317–333.

tenuous at best because the Campo Wind Project is far outside of the known range of the Mohave desert tortoise, and there is no potential for the species to occur on site. In addition, Lovich and Ennen (who were co-authors of the publication) caution that conclusions drawn from Mesa may not be applicable to other wind farms.[237] Furthermore, after Agha et al. (2015) was published, Lovich and Ennen (2017) analyzed additional data and concluded that: "tortoises now appear to avoid the areas of greatest turbine concentration."[238]

Lovich and Ennen (2017) discuss the numerous adverse effects that wind energy projects can have on reptiles and amphibians (herpetofauna). The only study that has been designed to test cause-and-effect relationships of wind farms on herpetofauna showed that vertebrate species richness (including herpetofauna) declined by almost 20% after the installation of only two large monopole turbines per 250 x 250 m plot.[239]

Walter et al. (2006), cited by the BTR as an example showing no adverse impact of wind energy generation to terrestrial wildlife, cautions: "[a]lthough location of wind turbines is dictated by topography and wind speed, secondary structures such as access roads, power lines, storage platforms and business facilities should be constructed in areas that do not remove critical habitat or impact corridors vital to resident wildlife." The BTR states that the Project may contain such wildlife corridors, but makes no attempt to identify them or map their locations relative to turbines and secondary infrastructure. There is therefore no basis for stating that wildlife corridors will not be affected.

O12-28 Cont.

The BTR's summary of American Wind Wildlife Institute (2017) is confusing, although it appears to suggest a wind energy facility in Arizona had no effect on pronghorn. As a result, I reviewed American Wind Wildlife Institute (2019), which states: "[i]t is unknown whether wind energy facilities decrease habitat quality or act as barriers to landscape-level movements by big game and other large terrestrial vertebrates."[240]

The BTR's summary of Wyoming Game and Fish Commission (2010) is equally confusing. According to the BTR:

> The Wyoming Game and Fish Commission (2010) concluded that elk (*Cervus canadensis*) were displaced from wind development activities during construction, but following the completion of construction, less displacement was noted. The network of roads constructed for wind projects could displace elk depending on the amount of human activity. Increased human activity can displace elk and result in increased movements (Rumble et al. 2005).[241]

The results of this study appear to indicate that wind farms do indeed displace elk, and that the associated roads could cause additional displacement.

---

[237] Lovich JE, JR Ennen. 2017. Reptile and Amphibians. Chapter 6 *in* M. Perrow, Ed., Wildlife and Wind Farms - Conflicts and Solutions, Volume 1 – Onshore: Potential Effects. Pelagic Publishing, Exeter, United Kingdom.
[238] *Ibid.*
[239] *Ibid.*
[240] American Wind Wildlife Institute. 2019. Wind turbine interactions with wildlife and their habitats: a summary of research results and priority questions. Available at: <https://awwi.org/resources/summary-of-wind-power-interactions-with-wildlife/>.
[241] BTR, p. 90.

The fifth study cited by the BTR is Lopucki et al. (2017), which examined the effects of wind farms on four terrestrial animal species in agricultural landscapes in Poland. The authors concluded: "[w]ind farm operations may affect terrestrial animals both in wind farm interiors and in a 700-m buffer zone around the edge of turbines." However, as noted in the BTR, the reaction was negative for two species, neutral of one species, and positive for one species. All four of the species are associated with human-modified landscapes and are classified as "Least Concern" by the IUCN Red List because they are abundant (or overabundant) in Europe. The species that exhibited the positive response (i.e., the common pheasant) is a non-native game species that readily breeds in captivity, and that is intensively farmed and released for hunting. Lopucki et al. (2017) hypothesized that the positive response was due to: (a) the fact that wind farms may reduce the presence of birds of prey both through direct mortality due to collisions and because they avoid foraging near wind turbines, or (b) the availability of grit near turbines. Nevertheless, a study that showed wind farms promoted a positive response of a non-native, over-abundant game species is not evidence that the Project would have no impact on the many native (and in some cases rare) wildlife taxa that occur at the Project site. The BTR's reference to Lopucki et al. (2017) as evidence that wind farms do not impact wildlife movement is equivalent to saying wind farms do not impact vegetation because they continue to allow weeds. The DEIS needs to provide legitimate analysis of Project impacts to wildlife movement, habitat connectivity, and wildlife corridors.

Indirect Effects of Noise

O12-28 Cont.

The BTR's analysis of Project impacts to wildlife movement includes several conclusory statements about the effects of noise. First, the BTR makes the following statements pertaining to temporary noise impacts:

> Noise would most likely only be a disturbance to those species that are active during the day, since noise levels are less at night because construction activities would not take place at night (see Table 1). Most wildlife species, such as cougars and bobcats (Lynx rufus), that would use the area as a habitat corridor or territory are nocturnal and therefore would not be impacted by Project construction while foraging and moving at night. Noise from Project construction is not anticipated to hamper breeding and nesting activities of any special-status species.[242]

I have the following responses to these statements:

1. The BTR's conclusions are conclusory in nature and are not supported by scientific evidence or analysis.
2. The BTR does not identify the species that may use the Project site as a movement corridor. The two examples provided (cougar and bobcat) are closely related and are not representative of all the species that may be impacted by the Project.
3. Because the BTR's "analysis" is limited to a single sentence about two closely related non-special-status species, it has no basis for the conclusion that noise would not affect "any special-status species." Indeed, nowhere does the BTR even identify the special-status species that occur at the Project site.

[242] BTR, p. 91.

4. The avoidance buffers proposed in MM-BIO-4 apply to nesting birds only, and thus, they would not mitigate noise impacts to all other taxa that are "breeding and nesting."
5. The rationale that noise would not impact wildlife because construction noise would occur during the day is unfounded. If most wildlife species that would use the Project area as a habitat corridor (or territory) are nocturnal, then disturbing those species during the day could cause adverse physiological responses that are more severe than impacts that disrupt "foraging and moving at night." Many species are nocturnal because they are prey. Noise that causes these species to flee cover heightens their susceptibility to predation, *especially* if during the daytime when they are unaccustomed to movement.

Permanent Effects of Noise

The BTR then makes two conclusory statements pertaining to permanent noise impacts: "[n]oise associated with O&M activities is not anticipated to hamper breeding or use of the surrounding area by any common or special-status species. Wildlife species are expected to acclimate to the new facilities and equipment."[243] Neither conclusion is supported by scientific evidence or analysis. Moreover, the BTR's analysis of special-status species is limited to the golden eagle and Quino checkerspot butterfly. Therefore, it has no basis for concluding noise would not affect "any special-status species."

Studies have shown that some wildlife species never habituate to anthropogenic sources of noise.[244] Francis and Barber (2013) reported: "we have shown how behavioral modifications among individuals confronted with noise – even those individuals that outwardly appear to habituate – can lead to decreased fitness."[245]

O12-28 Cont.

Golden eagles are known to be highly sensitive to noise and other types of disturbance.[246] I am unaware of any studies that have examined the effects of noise on the Quino checkerspot butterfly. However, studies have shown that noise can have negative effects on other insects, especially low-frequency noise, such as the type that would be generated by the Project's wind turbines.[247]

[243] BTR, p. 91.
[244] Manci KM, DN Gladwin, R Villella, MG Cavendish. 1988. Effects of aircraft noise and sonic booms on domestic animals and wildlife: a literature synthesis. National Ecology Research Center Report # NERC-88/29. *See also* Wright MD, P Goodman, TC Cameron. 2010. Exploring behavioural responses of shorebirds to impulsive noise. Wildfowl 60:150-167.
[245] Francis CD, JR Barber. 2013. A framework for understanding noise impacts on wildlife: an urgent conservation priority. Frontiers in Ecology and the Environment 11:305-313.
[246] Ruddock M, DP Whitfield. 2007. A Review of Disturbance Distances in Selected Bird Species. A report from Natural Research (Projects) Ltd to Scottish Natural Heritage. 181 pp. *See also* Steenhof K, JL Brown, MN Kochert. 2014. Temporal and Spatial Changes in Golden Eagle Reproduction in Relation to Increased Off Highway Vehicle Activity. Wildlife Society Bulletin 38(4):682–688. *See also* Suter GW III, JL Joness. 1981. Criteria for Golden Eagle, Ferruginous Hawk and Prairie Falcon Nest Site Protection. Raptor Research 15(1):12-18.
[247] *See studies cited in* Manci KM, DN Gladwin, R Villella, MG Cavendish. 1988. Effects of aircraft noise and sonic booms on domestic animals and wildlife: a literature synthesis. National Ecology Research Center Report # NERC-88/29.

Neither the BTR nor the DEIS analyzes how turbine noise could affect wildlife. Wind turbine blades at normal operating speeds can generate significant levels of noise.[248] However, wind turbine noise does not have to be loud to have negative effects on wildlife.[249] Wind turbines also produce very low-frequency sounds (infrasounds), which can have significant negative impacts on taxa (e.g., birds and bats) that hear and communicate at low-frequency sound levels.[250]

CUMULATIVE EFFECTS

The DEIS and BTR are both dated May 2019. However, the cumulative impacts information provided in the DEIS (Appendix N) is not consistent with the information provided in the BTR. For example:

- The DEIS indicates the Torrey Wind Project is on 1,000 acres; the BTR indicates it is on 300 acres (neither of which is correct).[251]
- The DEIS includes the Ocotillo Express Project; the BTR does not.
- The DEIS includes the Kumeyaay Wind Project; the BTR does not.

The DEIS does not provide or cite any scientific analysis that supports its conclusions pertaining to cumulative impacts. However, most of the conclusions appear to have been derived from the BTR, which failed to consider two large wind projects (Ocotillo Express and Kumeyaay Wind) and the actual size of another wind project (Torrey Wind).

The Kumeyaay Wind Project is especially relevant to cumulative impacts because it is in the immediate vicinity of the turbines proposed under both Project alternatives ("On-Reservation"). Thus, the Project will increase the density of turbines On-Reservation, which affects cumulative impacts in a way that was ignored in the DEIS. For example, the potential for bird and bat fatalities due to collisions with wind turbines will increase due to the higher density of turbines on the landscape.

O12-28 Cont.

The DEIS provides absolutely no discussion or analysis of cumulative impacts to birds and bats due to collisions with wind turbines. Several scientists have concluded that, cumulatively, bird and bat fatalities caused by wind energy facilities may have population-level impacts on some species.[252] Thaxter et al. (2017) conducted a meta-analysis of bird and bat collision rates reported by 93 and 134 wind farms, respectively.[253] They concluded: "[o]verall, these findings

[248] U.S. Fish and Wildlife Service, Wind Energy Development Information [web site]. n.d. The Effects of Noise on Wildlife. 5 pp.
[249] *Ibid.*
[250] *Ibid. See also* Ortega CP. 2012. Effects of Noise Pollution on Birds: A Brief Review of Our Knowledge. Ornithological Monographs 74:6-22. *See also* Bunkley JP, CJ McClure, NJ Kleist, CD Francis, JR Barber. 2015. Anthropogenic noise alters bat activity levels and echolocation calls. Global Ecology and Conservation 3:62–71.
[251] According to San Diego County's Notice of Preparation and Initial Study, the Torrey Wind Project site is located on approximately 2,041 acres.
[252] American Wind Wildlife Institute (and sources cited therein). 2019. Wind turbine interactions with wildlife and their habitats: a summary of research results and priority questions.
[253] Thaxter CB, GM Buchanan, J Carr, J., SH Butchart, T Newbold, R Green, JA Tobias, et al. 2017. Bird and bat species' global vulnerability to collision mortality at wind farms revealed through a trait-based assessment. Proc. R. Soc. B 284: 20170829.

emphasize the need to consider cumulative impacts of wind farms on populations, particularly for migrants and wide-ranging species."[254]

The cumulative threat that wind projects pose to bats is especially significant in light of accumulating evidence that wind farms may impact population viability of migratory bats. For example, Frick et al. (2017) showed that current mortality from wind turbines could result in rapid and severe declines of bat populations within 50 years and increased risk of extinction in 100 years.[255] Brown (2007) concluded that wind turbines could be the "nail in the coffin" for some migratory bat species.[256]

Cumulative Impacts Analysis in DEIS Appendix N

The DEIS states: "[t]he total estimated area of disturbance to similar native vegetation communities as the Project for reasonably foreseeable cumulative projects in the biological cumulative analysis study area was determined to be approximately 2,893 acres." This information is inconsistent with the information provided in Table 1 (*Cumulative Projects*), and that has been provided in environmental documents associated with the projects listed in Table 1. The DEIS needs to provide a detailed account of how the BIA calculated 2,893 acres of cumulative impacts to "similar native vegetation communities."

O12-28 Cont.

Furthermore, it is inappropriate for the DEIS to lump all vegetation communities into a single category because it precludes the ability to understand cumulative impacts to species associated with specific vegetation communities (or habitat types). For example, the DEIS's map of cumulative projects suggests there may be a cumulatively significant impact to grasslands, especially in eastern half of analysis area.[257] The DEIS does not disclose or analyze cumulative impacts to grasslands, nor does it analyze cumulative impacts to special-status species that depend on grasslands for habitat.

The DEIS states:

> In order for a cumulative impact to special-status plant species to occur, the cumulative projects would have to result in the loss of the same special-status plant species or their habitat as the Project (under either build alternative) such that those species become more limited in their distribution, population size, or available suitable habitat within the cumulative analysis area. With the implementation of mitigation measures recommended in Section 4.5, Biological Resources, of the EIS, impacts to sensitive and special-status vegetation species from the combination of the Project and reasonably foreseeable future actions would not be adverse.

[254] *Ibid.* p. 7.
[255] Frick WF, Baerwald EF, Pollock JF, Barclay RMR, Szymanski JA, Weller TJ, Russell AL, Loeb SC, Medellin RA, and McGuire LP. 2017. Fatalities at wind turbines may threaten population viability of a migratory bat. Biological Conservation 209:172-177.
[256] Brown P. 2007 Sep 25. Letter to the California Energy Commission regarding California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development. Docket nr. 06-011-1. 2 pp.
[257] *See* DEIS, p. N-8, which references BTR, Figure 16 as the map of cumulative projects.

The DEIS has no basis for this conclusion because its analysis was limited to one federally listed plant species, which the DEIS concluded "is not expected to occur on site." The DEIS did not analyze impacts to any other special-status plants (which are known to occur on the Project site), and despite the DEIS's claim, the DEIS does not incorporate mitigation for Project impacts to special-status plants.

The DEIS states: "[t]he Project and relevant cumulative projects are located in a rural area and adjacent properties provide undeveloped areas for golden eagle (*Aquila chrysaetos*) to forage and available habitat for Quino checkerspot butterfly (*Euphydryas editha quino*) host plants." This statement is an oversimplification of habitat requirements of the golden eagle and Quino checkerspot butterfly. The author appears to believe that all "undeveloped areas" provide habitat for these two species, *which they do not*.[258] Based on the DEIS's map, several of the "adjacent properties" that the DEIS claims provide habitat are proposed for development. In essence, the DEIS is claiming the Project would not contribute to cumulative impacts to either species because those species occur on other properties, which will also be developed. This circumvents the purpose of cumulative impacts analysis, which is to determine how all projects, when combined, might affect the resource of interest (e.g., Quino checkerspot butterfly).

Based on my review of the scientific data and analysis cited herein, there is no doubt that there will be significant cumulative impacts to the golden eagle and Quino checkerspot butterfly (Campo Core and Jacumba Core populations). The BIA needs to conduct cumulative impacts analysis that adheres to CEQ guidance. As mentioned in the EPA's scoping comments, it has prepared a guidance document that can be used to facilitate the BIA's analysis.[259]

O12-28 Cont.

The DEIS's "analysis" of cumulative impacts concludes with the following statements:

> However, with implementation of the mitigation measures recommended for the Project (under either build alternative), along with the minimization and mitigation measures for the cumulative projects, these impacts would not be cumulatively adverse. Additionally, there is suitable habitat available for wildlife species, including federally protected species, on portions of the Project site and throughout the biological cumulative analysis study area.

I have the following comments pertaining to these statements:

1. The DEIS's conclusion that impacts would not be cumulatively adverse is not supported by evidence or analysis. The DEIS's "analysis" fails to comply with CEQ guidelines for cumulative effects analysis.
2. The DEIS provides no information on the "minimization and mitigation measures for the cumulative projects." Even if other projects implemented mitigation, there is no evidence that the mitigation was successful. Many mitigation projects do not achieve conservation

[258] Hall L, P Krausman, M Morrison. 1997. The Habitat Concept and a Plea for Standard Terminology. Wildlife Society Bulletin 25(1):173-182.
[259] DEIS, Appendix A, EPA scoping comments, p. 8.

objectives,[260] or fail entirely.[261] Even when mitigation projects are successful, there are often residual effects, that when combined, are significant.

3. The DEIS fails to incorporate performance standards for the "mitigation measures recommended for the Project." This precludes the conclusion that those measures would be effective, and that residual effects would not be cumulatively adverse.
4. The cumulative impacts summary table provided in the DEIS identifies several direct and indirect cumulative impacts that would be adverse, and thus: "mitigation recommend."[262] However, the mitigation recommended in the DEIS does not address many of the impacts identified in the table (e.g., "direct loss of special-status plant or wildlife species, resulting in reduction in distribution and population size"). Thus, by default, the impacts remain adverse. This contradicts the text in the DEIS.
5. The DEIS does not require compensatory mitigation for the vast majority of the species that would be adversely affected by habitat loss, fragmentation, and degradation caused by the Project. The DEIS suggests permits required by other agencies may incorporate compensatory mitigation for Project impacts to wetlands and the Quino checkerspot butterfly. However, there is no evidence that any compensatory mitigation required by other agencies would address the cumulative impact (e.g., require compensatory habitat within the cumulative analysis study area).
6. It's unclear how the last sentence in the DEIS's analysis supports the conclusion that impacts would not be cumulatively adverse. If there is habitat for protected species on the Project site, those species will be subject to Project impacts, and thus potentially, cumulative impacts.

O12-28 Cont.

MITIGATION MEASURES

Overarching Issues

1. The EIS needs to incorporate measurable performance standards for each mitigation measure.
2. The EIS needs to clearly define the monitoring requirements for each mitigation measure. This includes: (a) monitoring area, duration, and frequency; and (b) variables that will be monitored.
3. The EIS needs to incorporate reporting requirements. All monitoring reports need to be made available to the public.

---

[260] National Research Council. 2001. Compensating for wetland losses under the Clean Water Act. National Research Committee on Mitigating Wetland Losses. National Academy Press, Washington DC, USA. *See also* Environmental Law Institute. 2004. Measuring Mitigation: A Review of the Science for Compensatory Mitigation Performance Standards. Report prepared for the US Environmental Protection Agency. 271 pp. *See also* Kihslinger RL. 2008. Success of Wetland Mitigation Projects. 2008. National Wetlands Newsletter 30(2):14-16.

[261] Fiedler PL. 1991. Mitigation-related transplantation, relocation and reintroduction projects involving endangered and threatened, and rare plant species in California. Final Report.

[262] DEIS, p. 138.

4. The EIS needs to clearly define the mitigation measures that are required prior to, during, and after decommissioning. As written, the DEIS suggests the measures would only be required during "construction."
5. The EIS needs to clearly articulate the enforcement mechanism for each measure. This includes: (a) party responsible for enforcement, (b) the mechanism that will ensure compliance, and (c) remedial actions that will be implemented for all incidents of non-compliance.
6. The EIS need to comply with NEPA requirements. CEQ guidance states that all relevant, reasonable mitigation measures that could improve the project are to be identified, including those outside the agency's jurisdiction. An agency is not limited to considering mitigation only for significant impacts. It should identify feasible measures for *any* adverse environmental impacts, even those that are not considered significant. If an agency does not adopt a feasible mitigation measure in an EIS, it must justify its decision. If it does adopt mitigation measures, then it must put in place a mitigation monitoring and enforcement program.

MM-BIO-1: General Avoidance and Minimization Measures

BIO-1(d): Dust Control

MM-BIO-1(d) states: "disturbed areas shall be revegetated or stabilized using soil binders that can be determined to be as efficient, or more efficient, for fugitive dust control than California Air Resources Board-approved soil stabilizers, as soon as possible after disturbance and shall not increase any other environmental impacts including loss of vegetation."

O12-28 Cont.

1. The DEIS does not incorporate performance standards for MM-BIO-1(d).
2. The DEIS does not incorporate monitoring and reporting requirements for MM-BIO-1(d).
3. The DEIS does not incorporate an enforcement mechanism for MM-BIO-1(d)
4. The DEIS states magnesium chloride would be used as a soil binder. However, MM-BIO-1(d) suggests other, and potentially non-approved, soil binders might be used. Most soil binders, including varieties that are "non-toxic" to humans, can have adverse effects on the environment.[263] As a result, the DEIS must identify the specific products that would be used at the Project site, and it must disclose and analyze environmental impacts associated with those products.
5. The text in MM-BIO-1 suggests there would be no revegetation requirements if soil binders are applied. This is consistent with the BTR's statement that disturbed areas would be allowed to "passively revegetate."[264] Magnesium chloride and other chlorides that are used for dust suppression are salts, which inhibit native plant growth and promote conditions conducive to the colonization of weeds. Based on the information provided in the DEIS and BTR, the Developer would spray magnesium chloride over disturbed areas until they are passively revegetated by weeds. These weeds may become permanently

[263] US Army Corps of Engineers. 2007. Environmental Evaluation of Dust Stabilizer Products. Vicksburg, Miss: US Army Corps of Engineers, Engineer Research and Development Center, Environmental Laboratory. 58 pp.

[264] BTR, p. 89.

established because the DEIS does not incorporate performance standards or an enforcement mechanism for the weed management plan.

6. The DEIS does not require revegetation efforts to include plants that provide habitat for the Quino checkerspot butterfly (i.e., host plants and nectar plants). Therefore, MM-BIO-1 does not mitigate impacts to the subspecies, as the DEIS claims.

MM-BIO-2: Jurisdictional Waters and Wetlands Compensation

MM-BIO-2 states: "[t]emporary impacts shall be restored in place to pre-activity functions." The DEIS fails to incorporate performance standards for this mitigation.

The DEIS defers all other aspects of the jurisdictional waters and wetlands compensation to the Clean Water Act permit conditions (which have not been formulated). Compliance with regulatory permits provides no assurances that Project impacts to jurisdictional waters and wetlands would be less-than-significant. To the contrary, numerous studies have demonstrated that many compensatory mitigation projects permitted under Sections 401 and 404 of the Clean Water Act are not achieving the goal of "no overall net loss" of wetland acres and functions.[265] For example, the National Academy of Sciences (2001) conducted a comprehensive review of compensatory wetland mitigation projects in the U.S. and found that the national "no net loss" goal is not being met because: (a) there is little monitoring of permit compliance, and (b) the permit conditions commonly used to establish mitigation success do not assure the establishment of wetland functions.[266] Several other studies have shown that the regulatory agencies are not ensuring the success of wetland mitigation projects.[267] Most notably, a 2005 report issued by the United States Government Accountability Office concluded that: "the Corps of Engineers does not have an effective oversight approach to ensure that compensatory mitigation is occurring."[268] For these reasons, MM-BIO-2 provides no assurances that the Project's impacts to wetlands and other jurisdictional waters would be mitigated to less-than-significant levels.

O12-28 Cont.

[265] National Research Council. 2001. Compensating for wetland losses under the Clean Water Act. National Research Committee on Mitigating Wetland Losses. National Academy Press, Washington DC, USA. *See also* Environmental Law Institute. 2004. Measuring Mitigation: A Review of the Science for Compensatory Mitigation Performance Standards. Report prepared for the US Environmental Protection Agency. 271 pp. *See also* Kihslinger RL. 2008. Success of Wetland Mitigation Projects. 2008. National Wetlands Newsletter 30(2):14-16.
[266] National Research Council. 2001. Compensating for wetland losses under the Clean Water Act. National Research Committee on Mitigating Wetland Losses. National Academy Press, Washington DC, USA.
[267] Kihslinger RL. 2008. Success of Wetland Mitigation Projects. 2008. National Wetlands Newsletter 30(2):14-16. *See also* Environmental Law Institute. 2004. Measuring Mitigation: A Review of the Science for Compensatory Mitigation Performance Standards. Report prepared for the US Environmental Protection Agency. 271 pp.
[268] United States Government Accountability Office. 2005. Corps of Engineers Does Not Have an Effective Oversight Approach to Ensure That Compensatory Mitigation Is Occurring. Report to the Ranking Democratic Member, Committee on Transportation and Infrastructure, House of Representatives. GAO-05-898 Wetlands Protection. Available at: <http://www.gao.gov/assets/250/247675.pdf>.

MM-BIO-4: Avian-Specific Avoidance, Minimization, and Mitigation Measures

Seasonal Avoidance

MM-BIO-4 requires a 300-foot buffer around passerine nests, and a 500-foot buffer around raptor nests. The DEIS fails to provide evidence that those would be sufficient. Many experts recommend larger buffers, especially for raptors.[269] The Project involves a considerable amount of rock blasting.[270] To avoid "take" of golden eagles, the USFWS recommends a two-mile buffer for blasting and other loud non-regular noise, and a one-mile buffer for all other activities.[271]

Avian Monitoring Plan

The Avian Monitoring Plan described in MM-BIO-4(c) does not mitigate Project impacts in any way. Even if incidental data collected by workers was an acceptable approach, determining fatality rates requires knowledge of: (a) carcass removal rates, and (b) searcher efficiency (i.e., how many dead animals are not seen). Determining these two variables requires site-specific studies, which the DEIS does not incorporate. It also requires statistical analyses, which the DEIS does not require. Moreover, the DEIS does not incorporate any remedial actions (e.g., turbine curtailment) that would be triggered if monitoring reveals unacceptably high levels of mortality to birds or bats. I recommend the BIA review the scientific literature and work with the USFWS to develop a valid Avian Monitoring Plan. If the BIA is unwilling to modify the Avian Monitoring Plan described in MM-BIO-4(c), it should be abandoned, and the money that would have been spent on this task should be donated to a wildlife hospital that treats birds and bats injured by wind energy facilities.

O12-28 Cont.

The second bullet point under MM-BIO-4(c) states:

> In accordance with the WRRS, during construction, site personnel shall notify the Project biologist to collect the following data on the incidentally detected avian and bat wildlife: species, date, time, location (e.g., nearest Project structure), and how the animal died, if known. Results shall be reported to the Tribe and Terra-Gen on a quarterly basis unless listed species are involved. During operations, a procedure shall be developed for site personnel to collect the same data, take photographs, and notify the Project's environmental manager, who shall then notify the Tribe and Terra-Gen unless listed species are involved, in which case USFWS shall be notified within 48 hours. In the event of an injury to listed species, USFWS shall be contacted for instruction on how to handle the situation.

Reporting the results only to the Tribe and Terra-Gen presents a conflict of interest. The reports must be provided to the BIA, USFWS, and other agencies responsible for managing public resources. They also need to be made available to the public so the research community has an

[269] Suter GW III, JL Joness. 1981. Criteria for Golden Eagle, Ferruginous Hawk and Prairie Falcon Nest Site Protection. Raptor Research 15(1):12-18.
[270] DEIS, Appendix K, Table 20.
[271] U.S. Fish and Wildlife Service, Pacific Southwest Region, Migratory Bird Division. 2017 Dec. Recommended Buffer Zones for Ground-based Human Activities around Nesting Sites of Golden Eagles in California and Nevada. Available at: <https://www.fws.gov/cno/conservation/MigratoryBirds/EaglePermits.html>.

opportunity to assess the data. Data analysis is critical to understanding the environmental effects of modern wind energy facilities, and thus, reducing the effects of future facilities.

MM-BIO-4(c) states the USFWS shall be contacted for instruction on how to handle injury to a listed species. This measure needs to be clarified to avoid ambiguity on what actions are required under MM-BIO-4(c). The FEIS needs to clearly define what the BIA considers a "listed species." For example, does this include: (a) state-listed species, (b) eagles (which are protected under the Eagle Act but are not "listed" under the ESA), and (c) species on other lists, such as the California Department of Fish and Wildlife's list of Species of Special Concern? In addition, the FEIS needs to clarify the timeline for contacting the USFWS for instructions. Waiting up to 48 hours to contact the USFWS is likely to result in death of the animal.

MM-BIO-4(c) suggests there will be no attempts to assist the numerous "non-listed" species that will be injured by the Project. MM-BIO-4(d) requires carcass removal to minimize attraction of carrion-consuming birds of prey. Most injured animals: (a) attempt to vacate the area where the injury occurred, and/or (b) seek cover before dying. Therefore, if no care will be provided to "non-listed" animals that are injured, the DEIS should require site personnel or the Project biologist to kill those animals and dispose of them before they disappear to places where carcasses will not be located.

The DEIS Fails to Disclose and Analyze All Feasible Mitigation Measures

Utility-scale wind energy facilities kill a substantial number of birds and bats.[272] Raptors and bats are particularly vulnerable to collision with wind turbines. Approximately 52.6% of avian fatalities at wind energy facilities in California have been diurnal raptors and owls (41.5% and 11.1%, respectively).[273] It is guaranteed that a project consisting of 48 or 60 (4.2 MW) turbines dispersed across the landscape will kill birds and bats. Feasible mitigation includes:

O12-28 Cont.

- Development and implementation of: (a) an Eagle Conservation Plan, and (b) a Bird and Bat Conservation Strategy,[274] which would include:
    - A scientifically defensible fatality monitoring program with triggers for adaptive management and remedial action measures.
    - An Eagle Take Permit from the USFWS
    - Compensatory mitigation requirements based on analysis the Project's risk assessments and monitoring results.

[272] Kuvlesky WP Jr, LA Brennan, ML Morrison, KK Boydston, BM Ballard, FC Bryant. 2007. Wind energy development and wildlife conservation: challenges and opportunities. Journal of Wildlife Management 71: 2487–2498. *See also* Kunz TH, EB Arnett, WP Erickson, AR Hoar, GD Johnson, RP Larkin, MD Strickland, RW Thresher, MD Tuttle. 2007. Ecological Impacts of Wind Energy Development on Bats: Questions, Research Needs, and Hypotheses. Frontiers in Ecology and the Environment 5(6): 315-324. *See also* Committee on Environmental Impacts of Wind Energy Projects, National Research Council. 2007. Environmental Impacts of Wind-Energy Projects. National Academies Press, Washington (DC). 394 pp.

[273] Erickson, W. P., G. D. Johnson, M. D. Strickland, D. P. Young, K. J. Sernka, and R. E. Good. 2001. Avian collisions with wind turbines: a summary of existing studies and comparisons to other sources of avian collision mortality in the United States. Prepared for the National Wind Coordinating Committee. Western Ecosystems Technology, Cheyenne, Wyoming, USA.

[274] *See* U.S. Fish and Wildlife Service. 2012. Land-Based Wind Energy Guidelines. Chapter 9.

- Painting the wind turbines purple, which may make them less attractive to insects, and thus, to birds and bats that eat insects.[275]
- Implementation of the IdentiFlight detection system to inform turbine curtailment.[276]
- Installation of transmitters on juvenile and subadult eagles to learn more about natal dispersal and habitat use patterns in eastern San Diego County.

Micrositing

Birds and bats preferentially select features on the landscape. For example, bats frequently travel along ridgelines, and some raptor species occur most frequently where they can capitalize on thermals or where there are dense prey populations. As a result, the micrositing of turbines appears to be an important factor in the magnitude of impacts to birds and bats. Indeed, besides curtailment, micro-siting is the single most effective means of reducing bird and bat fatalities at wind energy facilities.[277] The Avian and Bat Protection Plan that was prepared for the nearby Tule Reduced Ridgeline Project states: "micro siting decisions based on eagle behavior…are probably the best means of avoiding and minimizing take."[278] That plan was submitted to the BIA for review, and presumably the BIA was aware of its contents prior to releasing the DEIS for the Campo Wind Project.

To enable micrositing, biologists collect data on bird and bat abundance and behavior in relation to landscape features (e.g., topography and vegetation) and environmental conditions (e.g., wind speed and direction).[279] These data are then incorporated into a model that can be used to predict fatality risk in relation to site-specific conditions (i.e., at the micro-site level). For example, the biologists may notice that prevailing winds cause soaring raptors to be deflected to the top of a particular ridge or trough. These observations can then be used to inform the model such that turbines are setback from locations that pose the greatest risk.

O12-28 Cont.

A model that incorporated turbine and landscape attributes correctly predicted 71% of burrowing owl fatalities in the Altamont Pass Wind Resource Area ("APWRA").[280] In their report for the California Energy Commission, Smallwood and Thelander (2004) hypothesized that micrositing of turbines could contribute more to reducing avian fatality than any of the 16 other mitigation measures evaluated.[281]

[275] Long CV, JA Flint, PA Lepper. 2010. Insect attraction to wind turbines: does colour play a role? European Journal of Wildlife Research 57(2):323-331.
[276] McClure, C. J. W., L. Martinson, and T. D. Allison. 2018. Automated monitoring for birds inflight: Proof of concept with eagles at a wind power facility. Biological Conservation 224:26-33.
[277] *Ibid.*
[278] Tule Wind LLC. 2012 Jan 9 (Revised 2012 Aug 17). Project Specific Avian and Bat Protection Plan, p. 3-27. Access: <http://www.biawind.com/>.
[279] *See* Smallwood KS. 2013 Mar 15. Comments on FEIS prepared for Alta East Wind Project. Letter submitted to C. Symons, Bureau of Land Management, Ridgecrest Field Office, Ridgecrest, California. 23 pp.
[280] Smallwood KS, L Neher, DA Bell. 2009. Map-Based Repowering and Reorganization of a Wind Resource Area to Minimize Burrowing Owl and Other Bird Fatalities. Energies. 2: 915-943.
[281] Smallwood KS, C Thelander. 2004. Developing Methods to Reduce Bird Mortality in the Altamont Pass Wind Resource Area. Prepared by BioResource Consultants for the California Energy Commission Public Interest Energy Research (PIER) Program, Report #500-04-052.

AECOM (2012), and in a few instances, Dudek, collected data on several attributes that are likely to be predictors of fatality risk. These include:

1. The locations of bat roosts.
2. The locations of raptor nest sites.
3. The locations of riparian and aquatic habitats.
4. The composition and relative abundance of bird and bat species, by habitat and season.
5. The characteristics of vegetation (or habitat) across the Project site.
6. Site topography.
7. Meteorological conditions.

Despite having access to these data, Dudek and the BIA made no attempt to microsite turbines (and other Project features) such that the risk to birds and bats would be minimized.

Micrositing studies that incorporate behavioral ecology, landscape attributes, and risk modeling are a standard requirement for wind-energy projects in the Altamont Pass Wind Resource Area. They are also recommended in wind-energy guidance documents issued by the State of California and the USFWS.[282] To avoid, minimize, and mitigate Project impacts to birds and bats, the BIA must: a) require rigorous micrositing analysis; and b) demonstrate that the analysis was used in the micrositing of individual turbines.

The modeling described above is more accurate if it is based on site-specific behavior data. However, even if the BIA determines it is infeasible for the Developer to conduct additional avian and bat surveys, it is feasible for the Developer and BIA to use existing survey data and data from other studies to develop micrositing requirements for the Project. Indeed, biologists have already developed general guidelines for the micrositing of wind turbines.[283] These guidelines could easily be applied to the Project.

O12-28 Cont.

Curtailment

Curtailment entails "turning off" turbines during certain times to avoid impacts to birds and bats. In 2015 the American Wind Energy Association established a voluntary operating protocol that would limit blade movement in low wind speeds.[284] Such operational curtailment can reduce bat

[282] U.S. Fish and Wildlife Service. 2012 Mar 23. Land-Based Wind Energy Guidelines. *See also* California Energy Commission and California Department of Fish and Game. 2007. California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development. Commission Final Report. California Energy Commission, Renewables Committee, and Energy Facilities Siting Division, and California Department of Fish and Game, Resources Management and Policy Division. CEC-700-2007-008-CMF.
[283] *See* Scientific Review Committee for the Altamont Pass Wind Resource Area. 2010 May 23. Guidelines for siting wind turbines recommended for relocation to minimize potential collision-related mortality of four focal raptor species in the Altamont Pass Wind Resource Area. Available at: <http://altamontsrcarchive.org/alt_doc/p70_src_relocation_guidelines.pdf>.
[284] *See* <https://www.windpowerengineering.com/projects/environmental/wind-energy-industry-announces-new-voluntary-practices-to-reduce-overall-impacts-on-bats-by-30/>.

fatalities by 44% to 93% with minimal impact on power generation.[285] The BIA should require implementation of the American Wind Energy Association's operating protocol to limit blade movement in low wind speeds. If that protocol will not be implemented, the BIA must provide evidence that implementing the protocol is an infeasible mitigation strategy.

Adaptive Management

There is consensus among the scientific community that it is essential for post-construction monitoring programs to incorporate an adaptive management approach. In summary, an adaptive management approach is one in which management actions are guided by site-specific monitoring results, new scientific information, stakeholder input, and the scientific method.[286] Adaptive management is a feasible mitigation strategy that would reduce Project impacts to birds and bats. As a result, the FEIS must require the Developer to implement a comprehensive adaptive management program for the life of the Project.

Compensation

Unavoidable impacts to birds and bats could be compensated through habitat protections.[287] Feasible habitat protection measures that would benefit birds and bats include retiring any existing wind rights held by the Developer, the acquisition of priority conservation sites, and habitat enhancement measures that benefit the regional population(s) of the affected species (among other potential measures).

CONCLUSION

O12-28 Cont.

During the course of preparing this letter, I spent countless hours trying to understand the information, analyses, and conclusions presented in the DEIS and BTR—because from a scientific standpoint—they make no sense. I reviewed scientific literature, examined databases, and consulted with other biologists (including biologists at the USFWS). Through this process, I discovered countless instances of conclusions that contradict scientific reasoning, or that are inconsistent with the data. In several instances, the authors of the DEIS and BTR have made statements that are so clearly false, that the only plausible explanation is that were made in a deliberate attempt to mislead the reader.

In addition to conducting my own analyses, I spent a considerable amount of time reviewing NEPA requirements. I reviewed the CEQ guidelines, the Indian Affairs NEPA Handbook, and the Indian Affairs Manual. Of the many issues I noticed, one in particular stood out. Section 1502.9 of Title 40 states:

> Draft environmental impact statements shall be prepared in accordance with the scope decided upon in the scoping process. The lead agency shall work with the cooperating

[285] Arnett EB, Huso MMP, Schirmacher MR, and Hayes JP. 2011. Altering turbine speed reduces bat mortality at wind-energy facilities. Frontiers in Ecology and the Environment 9:209-214.
[286] *See* Williams, B.K., R.C. Szaro, and C.D. Shapiro. 2009 Adaptive Management: The U.S. Department of the Interior Technical Guide. Adaptive Management Working Group, U.S. Department of the Interior, Washington, DC.
[287] Smallwood KS, C Thelander. 2004. Developing Methods to Reduce Bird Mortality in the Altamont Pass Wind Resource Area. Prepared by BioResource Consultants for the California Energy Commission Public Interest Energy Research (PIER) Program, Report #500-04-052.

> agencies and shall obtain comments as required in part 1503 of this chapter. The draft statement must fulfill and satisfy to the fullest extent possible the requirements established for final statements in section 102(2)(C) of the Act. **If a draft statement is so inadequate as to preclude meaningful analysis, the agency shall prepare and circulate a revised draft of the appropriate portion**. The agency shall make every effort to disclose and discuss at appropriate points in the draft statement all major points of view on the environmental impacts of the alternatives including the proposed action.[288]

O12-28
Cont.

In my professional opinion, and for the reasons described in this letter, the DEIS is clearly inadequate for meaningful analysis, and thus, needs to be revised and recirculated in draft form after the numerous deficiencies have been rectified.

This concludes my comments on the DEIS.

Sincerely,

Scott Cashen, M.S.
Senior Biologist

[288] [Emphasis added].

Scott Cashen, M.S.
Senior Wildlife Ecologist

Scott Cashen has 25 years of professional experience in natural resources management. During that time he has worked as a field biologist, forester, environmental consultant, and instructor of Wildlife Management. Mr. Cashen focuses on CEQA/NEPA compliance issues, endangered species, scientific field studies, and other topics that require a high level of scientific expertise.

Mr. Cashen has knowledge and experience with numerous taxa, ecoregions, biological resource issues, and environmental regulations. As a biological resources expert, Mr. Cashen is knowledgeable of the various agency-promulgated guidelines for field surveys, impact assessments, and mitigation. Mr. Cashen has led field investigations on several special-status species, including ones focusing on the yellow-legged frog, red-legged frog, desert tortoise, steelhead, burrowing owl, California spotted owl, northern goshawk, willow flycatcher, Peninsular bighorn sheep, red panda, and various forest carnivores.

Mr. Cashen is a recognized expert on the environmental impacts of renewable energy development. He has been involved in the environmental review process of over 80 solar, wind, biomass, and geothermal energy projects. Mr. Cashen's role in this capacity has encompassed all stages of the environmental review process, from initial document review through litigation support. Mr. Cashen has provided expert witness testimony on several of the Department of the Interior's "fast-tracked" renewable energy projects. His testimony on those projects helped lead agencies develop project alternatives and mitigation measures to reduce environmental impacts associated with the projects.

Mr. Cashen was a member of the independent scientific review panel for the Quincy Library Group project, the largest community forestry project in the United States. As a member of the panel, Mr. Cashen was responsible for advising the U.S. Forest Service on its scientific monitoring program, and for preparing a final report to Congress describing the effectiveness of the Herger-Feinstein Forest Recovery Act of 1998.

AREAS OF EXPERTISE

- CEQA, NEPA, and Endangered Species Act compliance issues
- Comprehensive biological resource assessments
- Endangered species management
- Renewable energy development
- Scientific field studies, grant writing and technical editing

EDUCATION

M.S. Wildlife and Fisheries Science - The Pennsylvania State University (1998)
Thesis: *Avain Use of Restored Wetlands in Pennsylvania*
B.S. Resource Management - The University of California, Berkeley (1992)

PROFESSIONAL EXPERIENCE

Litigation Support / Expert Witness

Mr. Cashen has served as a biological resources expert for over 100 projects subject to environmental review under the California Environmental Quality Act (CEQA) and/or the National Environmental Policy Act (NEPA). As a biological resources expert, Mr. Cashen reviews CEQA/NEPA documents and provides his clients with an assessment of biological resource issues. He then submits formal comments on the scientific and legal adequacy of the project's environmental documents (e.g., Environmental Impact Statement). If needed, Mr. Cashen conducts field studies to generate evidence for legal testimony, or he can obtain supplemental testimony from his deep network of species-specific experts. Mr. Cashen has provided written and oral testimony to the California Energy Commission, California Public Utilities Commission, and U.S. district courts. His clients have included law firms, non-profit organizations, and citizen groups.

REPRESENTATIVE EXPERIENCE

Solar Energy

- Abengoa Mojave Solar Project
- Avenal Energy Power Plant
- Beacon Solar Energy Project
- Blythe Solar Power Project
- Calico Solar Project
- California Flats Solar Project
- Calipatria Solar Farm II
- Carrizo Energy Solar Farm
- Catalina Renewable Energy Project
- Fink Road Solar Farm
- Genesis Solar Energy Project
- Heber Solar Energy Facility
- Imperial Valley Solar Project
- Ivanpah Solar Electric Generating
- Maricopa Sun Solar Complex
- McCoy Solar Project
- Mt. Signal and Calexico Solar
- Panoche Valley Solar
- San Joaquin Solar I & II
- San Luis Solar Project
- Stateline Solar Project
- Solar Gen II Projects
- SR Solis Oro Loma
- Vestal Solar Facilities
- Victorville 2 Power Project
- Willow Springs Solar

Geothermal Energy

- Casa Diablo IV Geothermal Project
- East Brawley Geothermal
- Mammoth Pacific 1 Replacement
- Orni 21 Geothermal Project
- Western GeoPower Plant

Wind Energy

- Catalina Renewable Energy Project
- Ocotillo Wind Energy Project
- SD County Wind Energy Ordinance
- Searchlight Wind Project
- Shu'luuk Wind Project
- Tres Vaqueros Repowering Project
- Tule Wind Project
- Vasco Winds Relicensing Project

Biomass Facilities

- CA Ethanol Project
- Colusa Biomass Project
- Tracy Green Energy Project

Other

- DRECP
- Carnegie SVRA Expansion Project
- Lakeview Substation Project
- Monterey Bay Shores Ecoresort
- Phillips 66 Rail Spur
- Valero Benecia Crude By Rail
- World Logistics Center

Project Management

Mr. Cashen has managed several large-scale wildlife, forestry, and natural resource management projects. Many of the projects have required hiring and training field crews, coordinating with other professionals, and communicating with project stakeholders. Mr. Cashen's experience in study design, data collection, and scientific writing make him an effective project manager, and his background in several different natural resource disciplines enable him to address the many facets of contemporary land management in a cost-effective manner.

REPRESENTATIVE EXPERIENCE

Wildlife Studies

- Peninsular Bighorn Sheep Resource Use and Behavior Study: (*CA State Parks*)
- "KV" Spotted Owl and Northern Goshawk Inventory: (*USFS, Plumas NF*)
- Amphibian Inventory Project: (*USFS, Plumas NF*)
- San Mateo Creek Steelhead Restoration Project: (*Trout Unlimited and CA Coastal Conservancy, Orange County*)
- Delta Meadows State Park Special-Status Species Inventory: (*CA State Parks, Locke*)

Natural Resources Management

- Mather Lake Resource Management Study and Plan – (*Sacramento County*)
- Placer County Vernal Pool Study – (*Placer County*)
- Weidemann Ranch Mitigation Project – (*Toll Brothers, Inc., San Ramon*)
- Ion Communities Biological Resource Assessments – (*Ion Communities, Riverside and San Bernardino Counties*)
- Del Rio Hills Biological Resource Assessment – (*The Wyro Company, Rio Vista*)

Forestry

- Forest Health Improvement Projects – (*CalFire, SD and Riverside Counties*)
- San Diego Bark Beetle Tree Removal Project – (*SDG&E, San Diego Co.*)
- San Diego Bark Beetle Tree Removal Project – (*San Diego County/NRCS*)
- Hillslope Monitoring Project – (*CalFire, throughout California*)

Biological Resources

Mr. Cashen has a diverse background with biological resources. He has conducted comprehensive biological resource assessments, habitat evaluations, species inventories, and scientific peer review. Mr. Cashen has led investigations on several special-status species, including ones focusing on the foothill yellow-legged frog, mountain yellow-legged frog, desert tortoise, steelhead, burrowing owl, California spotted owl, northern goshawk, willow flycatcher, Peninsular bighorn sheep, red panda, and forest carnivores.

REPRESENTATIVE EXPERIENCE

Biological Assessments/Biological Evaluations ("BA/BE")

- Aquatic Species BA/BE – Reliable Power Project (*SF Public Utilities Commission*)
- Terrestrial Species BA/BE – Reliable Power Project (*SF Public Utilities Commission*)
- Management Indicator Species Report – Reliable Power Project (*SF Public Utilities Commission*)
- Migratory Bird Report – Reliable Power Project (*SF Public Utilities Commission*)
- Terrestrial and Aquatic Species BA – Lower Cherry Aqueduct (*SF Public Utilities Commission*)
- Terrestrial and Aquatic Species BE – Lower Cherry Aqueduct (*SF Public Utilities Commission*)
- Terrestrial and Aquatic Species BA/BE – Public Lands Lease Application (*Society for the Conservation of Bighorn Sheep*)
- Terrestrial and Aquatic Species BA/BE – Simon Newman Ranch (*The Nature Conservancy*)

Avian

- Study design and Lead Investigator - Delta Meadows State Park Special-Status Species Inventory *(CA State Parks: Locke)*
- Study design and lead bird surveyor - Placer County Vernal Pool Study *(Placer County: throughout Placer County)*
- Surveyor - Willow flycatcher habitat mapping *(USFS: Plumas NF)*
- Independent surveyor - Tolay Creek, Cullinan Ranch, and Guadacanal Village restoration projects *(Ducks Unlimited/USGS: San Pablo Bay)*
- Study design and Lead Investigator - Bird use of restored wetlands research *(Pennsylvania Game Commission: throughout Pennsylvania)*
- Study design and surveyor - Baseline inventory of bird species at a 400-acre site in Napa County *(HCV Associates: Napa)*

- Surveyor - Baseline inventory of bird abundance following diesel spill *(LFR Levine-Fricke: Suisun Bay)*
- Study design and lead bird surveyor - Green Valley Creek Riparian Restoration Site *(City of Fairfield: Fairfield, CA)*
- Surveyor - Burrowing owl relocation and monitoring *(US Navy: Dixon, CA)*
- Surveyor - Pre-construction burrowing owl surveys *(various clients: Livermore, San Ramon, Rio Vista, Napa, Victorville, Imperial County, San Diego County)*
- Surveyor - Backcountry bird inventory *(National Park Service: Eagle, Alaska)*
- Lead surveyor - Tidal salt marsh bird surveys (*Point Reyes Bird Observatory: throughout Bay Area*)
- Surveyor – Pre-construction surveys for nesting birds (*various clients and locations)*

Amphibian

- Crew Leader - Red-legged frog, foothill yellow-legged frog, and mountain yellow-legged frog surveys *(USFS: Plumas NF)*
- Surveyor - Foothill yellow-legged frog surveys *(PG&E: North Fork Feather River)*
- Surveyor - Mountain yellow-legged frog surveys *(El Dorado Irrigation District: Desolation Wilderness)*
- Crew Leader - Bullfrog eradication *(Trout Unlimited: Cleveland NF)*

Fish and Aquatic Resources

- Surveyor - Hardhead minnow and other fish surveys *(USFS: Plumas NF)*
- Surveyor - Weber Creek aquatic habitat mapping (*El Dorado Irrigation District: Placerville, CA*)
- Surveyor - Green Valley Creek aquatic habitat mapping *(City of Fairfield: Fairfield, CA)*
- GPS Specialist - Salmonid spawning habitat mapping *(CDFG: Sacramento River)*
- Surveyor - Fish composition and abundance study (*PG&E: Upper North Fork Feather River and Lake Almanor*)
- Crew Leader - Surveys of steelhead abundance and habitat use *(CA Coastal Conservancy: Gualala River estuary)*
- Crew Leader - Exotic species identification and eradication *(Trout Unlimited: Cleveland NF)*

Mammals

- Principal Investigator – Peninsular bighorn sheep resource use and behavior study (*California State Parks: Freeman Properties*)
- Scientific Advisor –Study on red panda occupancy and abundance in eastern Nepal *(The Red Panda Network: CA and Nepal)*
- Surveyor - Forest carnivore surveys *(University of CA: Tahoe NF)*
- Surveyor - Relocation and monitoring of salt marsh harvest mice and other small mammals *(US Navy: Skagg's Island, CA)*
- Surveyor – Surveys for Monterey dusky-footed woodrat. Relocation of woodrat houses (*Touré Associates: Prunedale*)

Natural Resource Investigations / Multiple Species Studies

- Scientific Review Team Member – Member of the scientific review team assessing the effectiveness of the US Forest Service's implementation of the Herger-Feinstein Quincy Library Group Act.
- Lead Consultant - Baseline biological resource assessments and habitat mapping for CDF management units *(CDF: San Diego, San Bernardino, and Riverside Counties)*
- Biological Resources Expert – Peer review of CEQA/NEPA documents (*various law firms, non-profit organizations, and citizen groups)*
- Lead Consultant - Pre- and post-harvest biological resource assessments of tree removal sites *(SDG&E: San Diego County)*
- Crew Leader - T&E species habitat evaluations for Biological Assessment in support of a steelhead restoration plan *(Trout Unlimited: Cleveland NF)*
- Lead Investigator - Resource Management Study and Plan for Mather Lake Regional Park *(County of Sacramento: Sacramento, CA)*
- Lead Investigator - Biological Resources Assessment for 1,070-acre Alfaro Ranch property *(Yuba County, CA)*
- Lead Investigator - Wildlife Strike Hazard Management Plan *(HCV Associates: Napa)*
- Lead Investigator - Del Rio Hills Biological Resource Assessment *(The Wyro Company: Rio Vista, CA)*
- Lead Investigator – Ion Communities project sites (*Ion Communities: Riverside and San Bernardino Counties*)
- Surveyor – Tahoe Pilot Project: Validation of California's Wildlife Habitat Relationships (CWHR) Model *(University of California: Tahoe NF)*

Forestry

Mr. Cashen has five years of experience working as a consulting forester on projects throughout California. Mr. Cashen has consulted with landowners and timber operators on forest management practices; and he has worked on a variety of forestry tasks including selective tree marking, forest inventory, harvest layout, erosion control, and supervision of logging operations. Mr. Cashen's experience with many different natural resources enable him to provide a holistic approach to forest management, rather than just management of timber resources.

REPRESENTATIVE EXPERIENCE

- Lead Consultant - CalFire fuels treatment projects *(SD and Riverside Counties)*
- Lead Consultant and supervisor of harvest activities – San Diego Gas and Electric Bark Beetle Tree Removal Project *(San Diego)*
- Crew Leader - Hillslope Monitoring Program *(CalFire: throughout California)*
- Consulting Forester – Forest inventories and timber harvest projects *(various clients throughout California)*

Grant Writing and Technical Editing

Mr. Cashen has prepared and submitted over 50 proposals and grant applications. Many of the projects listed herein were acquired through proposals he wrote. Mr. Cashen's clients and colleagues have recognized his strong scientific writing skills and ability to generate technically superior proposal packages. Consequently, he routinely prepares funding applications and conducts technical editing for various clients.

PERMITS

U.S. Fish and Wildlife Service Section 10(a)(1)(A) Recovery Permit for the Peninsular bighorn sheep

PROFESSIONAL ORGANIZATIONS / ASSOCIATIONS

The Wildlife Society
Cal Alumni Foresters
Mt. Diablo Audubon Society

OTHER AFFILIATIONS

Scientific Advisor and Grant Writer – *The Red Panda Network*
Scientific Advisor – *Mt. Diablo Audubon Society*
Grant Writer – *American Conservation Experience*

TEACHING EXPERIENCE

Instructor: Wildlife Management - The Pennsylvania State University, 1998

Teaching Assistant: Ornithology - The Pennsylvania State University, 1996-1997

PUBLICATIONS

Gutiérrez RJ, AS Cheng, DR Becker, S Cashen, et al. 2015. Legislated collaboration in a conservation conflict: a case study of the Quincy Library group in California, USA. Chapter 19 *in*: Redpath SR, et al. (eds). Conflicts in Conservation: Navigating Towards Solutions. Cambridge Univ. Press, Cambridge, UK.

Cheng AS, RJ Gutiérrez RJ, S Cashen, et al. 2016. Is There a Place for Legislating Place-Based Collaborative Forestry Proposals?: Examining the Herger-Feinstein Quincy Library Group Forest Recovery Act Pilot Project. Journal of Forestry.

EXHIBIT B

Shawn Smallwood, PhD
3108 Finch Street
Davis, CA 95616

Mr. Kyle C. Jones
Adams Broadwell Joseph & Cardozo
520 Capitol Mall, Suite 350
Sacramento, CA 95814

1 July 2019

Re: Campo Wind Project

Dear Mr. Jones,

I write to comment on a Draft Environmental Impact Statement (Bureau of Indian Affairs 2019) and its supporting Biological Technical Report on the proposed Campo Wind Project (Dudek 2019), which I understand would include up to 60 wind turbines totaling between 202 MW and 252 MW of rated capacity on 992.79 acres of permanent impacts on a larger project area of 2,700 acres.

My qualifications for preparing these comments as expert comments are the following. I earned a Ph.D. degree in Ecology from the University of California at Davis in 1990. My research has been on animal density and distribution, habitat selection, habitat restoration, interactions between wildlife and human infrastructure and activities, conservation of rare and endangered species, and on the ecology of invading species. I have performed research and monitoring on renewable energy projects for 20 years, and I have authored many peer-reviewed reports, papers, and book chapters on fatality monitoring, fatality rate estimation, mitigation, micro-siting, and other issues related to biological impacts of wind energy generation. I served for five years on the Alameda County Scientific Review Committee that was charged with overseeing the fatality monitoring and mitigation measures in the Altamont Pass Wind Resource Area (APWRA), and I prepared many comment letters on proposed renewable energy projects. I collaborate with colleagues worldwide on the underlying science and policy issues related to renewable energy impacts on wildlife.

O12-29

Most of my wind energy work has been in the APWRA, which is where much of the research funding has been directed to understanding factors related to wildlife-wind turbine collisions and to finding solutions. The APWRA is the longest-monitored wind resource area in the world for collision fatalities and relative abundance and behaviors of affected species. It is the wind resource area with by far the largest number of documented golden eagle fatalities. There is no other place where more could have been learned about how and why eagles collide with wind turbines and what can be done to mitigate the impacts. In the APWRA I have performed research on behavior, relative abundance (use rates), fatality rates, fatality detection trials, nocturnal activities of bats, owls and other wildlife, and research on spatial patterns of raptor prey species. I am participating with a GPS/GSM telemetry study of golden eagles within and beyond the APWRA. I have manipulated livestock grazing as a mitigation measure, and I have participated with mitigation involving power pole retrofits, hazardous turbine removals,

winter shutdowns of wind turbines, and repowering of wind projects based on careful siting. I have also opportunistically documented wildlife responses to wildfires in the APWRA. I have personally discovered too many golden eagle fatalities and one bald eagle fatality in the APWRA, including mortally wounded eagles that were later euthanized. I personally witnessed hundreds of near misses that golden eagles and other raptor species have experienced at wind turbines, transmission lines and electric distribution lines in the APWRA. I have been involved with renewable energy impacts on all fronts – study design, fieldwork on fatalities and use and behavior and ecological relationships, study administration, hypothesis-testing, report writing, presentations at meetings, formulation of mitigation, micro-siting, study review, policy review and decision-making, and public outreach. My CV is attached.

PROJECT DESCRIPTION

The DEIS provides maps of the two project alternatives. However, the map of Alternative 1 (Figure 2-1A) depicts 75 turbines, thus precluding knowledge of where the 60 turbines proposed under Alternative 1 would actually be located. As has been learned at other wind projects, wind turbine size and model relate to wildlife impacts, as does the grading plan, wind conditions, and weather patterns. Below is a list of project attributes that need to be described in the EIS in order for decision-makers and the public to assess potential project impacts on wildlife:

- The wind turbine dimensions, including cut-in and cut-out speeds;
- The specific locations where wind turbines would be located for each alternative;
- The project site's wind profile, including average wind speeds at various heights above ground, prevailing wind direction(s), and seasonality;
- Frequency and seasonality of fog and cloud cover, along with an explanation of the degree to which wind turbines would operate in foggy or cloudy conditions; and,
- The grading plan, including details about any berms or cut slopes to be left in place around each turbine.

O12-29
Cont.

As has been learned elsewhere, terrain features, including features created or transformed by grading for access roads and turbine pads, relate to collision fatality rates at individual wind turbines. The EIS needs to inform decision-makers and the public about exactly where the turbines are planned. It needs to characterize the anticipated changes to the terrain surrounding each wind turbine that will be made for pads and access roads. And it needs to characterize vegetation cover around each wind turbine site, including how the vegetation cover would be altered by the project.

BASELINE STUDIES

Preconstruction studies are of paramount importance in the environmental review of a wind project, because based on the evidence to date, once the project is built there is little that can be done to reduce project impacts (Smallwood 2008, 2009; Smallwood et al. 2017). Other than operational curtailment for reducing bat impacts (Arnett et al. 2011, 2013; Behr et al. 2017), the only post-construction measure with any documented efficacy is the removal of wind turbines known to kill disproportionate numbers of birds (Smallwood 2010). It is therefore critically important to perform baseline studies that facilitate the prediction of the project's impacts and that contribute towards a turbine layout that minimizes impacts.

Dudek (2019) reports that golden eagle nest site surveys were performed in 2010-2011. Too much time had passed since these surveys were performed. Where I work, in the Altamont Pass Wind Resource Area, golden eagles nested in multiple locations this year where no golden eagles nested in 2010-2011. I even documented the nesting of bald eagles in the APWRA this year – the first such nesting of bald eagles in the APWRA. But not only did Dudek (2019) report on nest surveys performed 8 and 9 years earlier, which was too long ago for predicting project impacts on eagles, Dudek also neglected to interpret the results of the surveys. What was learned from the surveys? How did the spatial distribution of nest sites contribute to a predicted project impact or to the turbine layout?

Dudek (2019) reports having performed 30-minute avian point counts, which their Figure 7 indicates were at 27 stations with 100-m and 800-m maximum survey radii for small birds and large birds, respectively. From these surveys, Dudek (2019) presents no data, no summary of data, no results, and no interpretation of results. The surveys are of no value to the EIS review process if the data have not been analyzed for decision makers, and if the survey reports have not been made available to the public. Furthermore, the surveys are of no value until metrics are derived from them and compared to the same metrics measured from similar surveys at other wind projects where post-construction fatality rates were estimated from scientific monitoring. The EIS either needs to present the results of the avian point counts, or it needs to explain how data from use surveys were interpreted to inform project site suitability and project layout.

O12-29 Cont.

Golden eagle flight paths are depicted in Figures 8ar to 8ca and Figure 12, but no information is provided about the origin or attributes of these flight paths. From what type of survey were they recorded? How high was the observed eagle(s) flying? What were the eagles doing? (The answer, 'Flying,' would be insufficiently informative.)

Flight behaviors have been found to be more predictive of wind turbine collisions (Smallwood et al. 2009, 2017b), and are used to guide turbine siting decisions in other projects (Smallwood et al. 2017). The EIS needs to explain whether and how site-specific data on bird behaviors were used to make turbine siting decisions for the two project alternatives. I saw no discussion in Dudek (2019) of flight behavior patterns observed during avian point counts. Again, what was the purpose of the surveys if not to

understand relative abundance of birds on the project site and how the species use the air space?

Dudek (2019) reports having performed all-day eagle counts with a radius of 1 km, but there are no 1-km buffers depicted in Dudek's Figure 7. Figure 7 depicts 1-mile buffers, which are much larger than 1-km buffers, and which would have come with a much larger error rate in identifying birds, including eagles. The EIS needs to clarify whether 1-km or 1-mile buffers were used, and if the latter, then it needs to explain how such a distance was justifiable in the face of a very high error rate (see below). The EIS also needs to present the results of the all-day eagle counts.

McClure et al. (2018) compared human detections of eagles to automated detections out to 1,000 m and found through photo documentation that the biologists misidentified 32% of large birds as eagles. Human misidentification of large birds as eagles increased 26% for every 100 m added distance from the observer, and the median distance of bird detections was <400 m (McClure et al. 2018). If the error rate reported by McClure et al. (2018) remains linear to the mile distance Dudek (2019) reports having used for its eagle point counts, then their biologists would have misidentified 59% of large birds as eagles. Such a misidentification error qualifies the all-day eagle counts to a one-mile radius as highly unreliable. Additional errors at long distances include estimation of the bird's height above ground (Stanek 2013) and determining whether the bird is within or outside the maximum search radius or even the project site. Using maximum survey radii >400 m hurts any micro- or macro-siting model development more than it helps due to the large error rates.

O12-29 Cont.

Dudek (2019:63) reports that golden eagle point counts yielded only 20 minutes of eagle observation time out of 20,000 minutes of survey time, although it is unclear whether Dudek refers to all point counts or only the all-day counts dedicated to eagles. Regardless, it only takes a second for an eagle to get killed by a wind turbine, and the risk of a collision depends greatly on what the eagle is doing. In my hundreds of hours of eagle surveys in the Altamont Pass, I averaged about 1.18 golden eagles per hour. I have seen an eagle in the air during <5% of my survey time, which is also nearly 5 times more often than that reported by Dudek (2019) at Campo Wind. If fatality rates were proportional to flying-time use rates, then what I quantified in the APWRA would predict 6 golden eagle fatalities per year at Campo Wind. But, so far, I have also found nothing more than very weak correlation between eagle fatalities and eagle flight time among survey plots and across years (Smallwood 2017b, Smallwood and Neher 2017). Additionally, if the survey radius was truly one mile, then the species misidentification rate was so high as to disqualify Dudek's conclusion that point counts yielded only 20 minutes of eagle time in the study area.

Dudek (2019) reports having performed bat surveys in 2010-2011. Having performed 8 years of thermal-imaging surveys for bats in a wind resource area, I can assure Bureau of Indian Affairs that relative abundance of bats varies widely between years. Surveys performed 8 and 9 years ago cannot be relied upon for informing species occurrences, relative abundance, or flight behavior patterns today.

According to Dudek (2019:41), "The *impacts analysis* [regarding bats] *for this report relied on the data collected for and documented in the 2012 AECOM report*." But my larger question is, 'What analysis?' Dudek (2019) presents no data, no analysis of data, and no interpretation of any survey results. What was the purpose of the bat surveys?

Dudek (2019:63) also describes telemetry data collected by USGS for 12 eagles captured within a 10-mile buffer of the project area since 2014. Dudek's (2019) Appendix G includes a list of about 19,300 telemetry positions, which could have been useful had they been related to a GIS coverage of the local terrain for development of a spatial model of eagle flight patterns, as we did in the APWRA (Smallwood et al. 2017). But nothing analytical appears to have been done with the telemetry positions in App. G. What is the point of App. G?

In addition to lacking any analytical application, the telemetry positions in App. G lack elevation data. The data are two-dimensional when the issue at hand is three-dimensional. Golden eagles are at more or less risk of collision with wind turbines based on their flight heights above ground. This means that the telemetry positions need to be adjusted for the local terrain's height above the Geoid, which is the theoretical average surface elevation of the Earth and to which GPS telemetry data are referenced. In reality, the Earth's surface varies considerably from the Geoid. As a result, GPS telemetry positions that are not adjusted for this variation can falsely depict telemetered eagles as flying much higher above ground than they did, or even below ground. The error can be serious when trying to relate eagle flight heights to the anticipated height above ground of the proposed wind turbine rotors. In the APWRA, for example, I found that the average GPS telemetry position taken at ground level across many locations in the APWRA averaged 9 meters below ground. (To quantify this bias, I placed telemetry units next to a Trimble GPS with sub-meter accuracy on my truck bed and drove them around the APWRA for months.) I had to add these 9 meters to all GPS telemetry data before I could even begin an analysis leading towards spatial models of eagle flight patterns and how those patterns might relate to collision risk. Dudek (2019) fails to provide information on how high the telemetered eagles flew, which is critical to evaluating the likelihood of collisions with the project's wind turbines.

O12-29 Cont.

Dudek's Figures 8 and 13 series depict flight paths and positions recorded from telemetered eagles, but the Figure 13 series includes little discussion of the meaning of the flight paths, including heights above ground. There is no analysis of the data. It remains unclear what meaning Dudek expects the reader to take away from these figures, or how these data contributed to a project impact prediction or a turbine layout intended to minimize collision risk to eagles.

Dudek claims the eagle telemetry data set is the largest data set of its kind, but Doug Bell and I, along with several other colleagues, have collected telemetry data from 34 golden eagles captured within 10 miles of the APWRA since 2013. Most of our data have been collected at 30-sec and 6-sec intervals, although we started with the same 15-min interval data as did USGS. Telemetry data can be very useful, but they also need careful interpretation. Dudek (2019:64) reports that few of the USGS-telemetered eagles

ventured into the project area. However, Dudek does not consider that each eagle typically flies most of the time within a territory that is partly defined by adjacent territory-holders, not all of which might be monitored via USGS telemetry. Non-monitored eagles within the Campo Wind study area would likely keep the monitored eagles from entering the study area. I can point to specific portions of the APWRA and say that none of the golden eagles we monitored via GPS telemetry ventured into that area, but I can also say that golden eagles have used all portions of the APWRA, the vast majority of them carrying no GPS transmitters. The same is likely true of the Campo Wind study area – many more eagles use the study area than were captured by USGS and fit with telemetry.

Neither does Dudek (2019) consider the uncertainty in flight paths depicted by positions collected at 15-min intervals. The figures produced by Dudek depict straight-line flight paths between 15-min positions, some of which briefly cross over wind-right buffers. What is not reported by Dudek is that eagles rarely fly straight lines such as those depicted. During a 15-minute interval, an eagle can fly far outside the depicted flight path, following a sinuous route or a zigzag route or multiple other types of complex flight paths, and all of that complexity in the flight path is hidden by the straight lines drawn between 15-min position intervals (see Figure 1). And what none of the telemetry data can reveal are the specific flight behaviors performed by the eagles nor the interactions with other birds that bear on collision risk (Smallwood and Neher 2017, Smallwood et al. 2017).

O12-29
Cont.

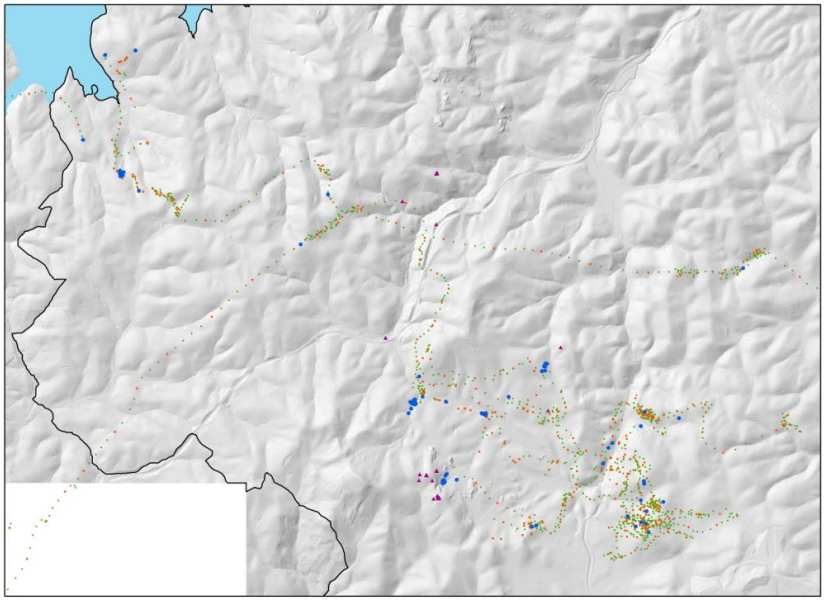


Figure 1. *The 23rd golden eagle we fit with GPS-GSM telemetry, where positions are shown at average intervals of 15 minutes (blue), 30 seconds (orange), and 6 seconds (green). Zooming in and connecting dots to visualize flight paths (below) leads to sufficient accuracy at 6 second intervals to see how the eagle reacted to slope-deflected updrafts and terrain, and how much detail is lost when relying on 15-min interval data.*

O12-29
Cont.

None of the studies described in Dudek (2019) result in any metrics, such as: eagles per hour, small birds per hour, bats per hour, species richness, or species diversity. No comparisons are made of relative abundance or passage rates among stations or by season or with other wind projects. It is not enough to report surveys were performed; the EIS needs to provide the survey data and discuss how those data were analyzed to formulate conclusions on the environmental effects of each project alternative.

The EIS needs to explain how variation in species composition was interpreted in light of decisions over project suitability and project layout. There is no analysis of species composition varying annually, seasonally or spatially, nor is there any comparison of species composition at Campo Wind to species composition at other wind project sites with documented post-construction impacts.

The EIS needs to explain how variation in relative abundance was interpreted for the purpose of deciding whether the project site and layout are appropriate. The EIS needs to explain how the number of birds or bats per survey were interpreted for project planning.

The EIS needs to report how any measured metrics from the baseline studies related to attribute data including survey date, start time, wind speed, wind direction, temperature, visibility, cloud cover, precipitation, time into the survey session, distance

from the observer, flight height, behavior, flight direction, and vegetation cover. Assuming these data were collected to test hypotheses, then the EIS needs to report the results of the hypothesis tests. The EIS reports no such tests, so again, what was the point of the surveys?

Survey coverage is another issue that needs to be addressed by the EIS. How many of the planned wind turbine locations were within 100 meters of the point count stations? How many were within 800 m? How many of the wind turbine locations were within the survey buffers of the all-day eagle counts? How many of the planned wind turbine locations were within 100 m of the bat acoustic detector stations? In other words, how well did the baseline studies represent avian and bat flight patterns at locations where wind turbines are planned?

According to Dudek (2019:56), "*A total of 159 species were observed in the Off-Reservation portion of the Project Site (i.e., Campo Corridor) during surveys conducted for the site. Of the total species observed, 22 of these are considered special status*." This conclusion is incorrect. Dudek (2019) reports having detected the following species, all of which have special-status under state and federal statutes: western spadefoot, tricolored blackbird, merlin, American kestrel, prairie falcon, peregrine falcon, Lawrence's goldfinch, olive-sided flycatcher, willow flycatcher, Cooper's hawk, sharp-shinned hawk, osprey, turkey vulture, golden eagle, northern harrier, white-tailed kite, red-tailed hawk, Swainson's hawk, red-shouldered hawk, ferruginous hawk, Harris's hawk, broad-winged hawk, barn owl, great-horned owl, long-eared owl, western screech-owl, Costa's hummingbird, Allen's hummingbird, yellow-billed magpie, horned lark, whimbrel, loggerhead shrike, bank swallow, Vaux's swift, black swift, California gull, oak titmouse, brant, common yellowthroat, yellow warbler, Nuttall's woodpecker, Lewis's woodpecker, cactus wren (if coastal variety), marsh wren (if Clark's), Bell's sparrow, rufous-crowned sparrow (if Southern California subspecies), savannah sparrow (if large-billed variety), and vesper sparrow (if Oregon subspecies). The number of special-status species of vertebrate wildlife alone totals 48, not 22. But I would take another look at the yellow-billed magpie sighting, as this species does not occur in the project area. There might be additional mistakes. Mistakes aside, this list of detected special-status species is much longer than the list representing the Altamont Pass Wind Resource Area, where wind energy impacts on wildlife has been disastrous. The EIS needs to explain whether and why impacts at Campo Wind would be lower than observed in the Altamont Pass or elsewhere.

O12-29
Cont.

Given the richness of special-status species in the study area, an analysis of potential displacement impacts caused by the wind turbines is glaringly missing from the EIS. Installing large, noisy machines with moving parts onto a species' habitat, along with the project's maintenance traffic, has too often resulted in displacement impacts (Leddy et al. 1999, Whitfield and Madders 2006, Pearce-Higgins et al. 2009, Garvin et al. 2011, Langston 2013), which qualifies as habitat loss. As examples of displacement effects, white-tailed eagle breeding success declined near a Norwegian wind project because breeding territories within 500 m of wind turbines were vacated (Dahl et al. 2012). Tasmanian wedge-tailed eagles (*Aquila audax fleayi*) and white-bellied sea-eagles (*Haliaeetus leucogaster*) flew through wind projects along flight paths that maximized

their distances from wind turbines (Hull and Muir 2013). Telemetered golden eagles were found to increase flight heights while passing over wind projects (Johnston et al. 2014). Nesting birds in grasslands were reduced within 80 m of wind turbines (Leddy et al. 1999). In my own studies I have seen ample evidence of displacement impacts on wildlife as old-generation wind turbines were removed and modern wind turbines were installed; for example, golden eagle activity became concentrated in turbine-free islands of the APWRA (while those islands lasted). The EIS needs to address this potential impact, and it needs to do so for 48 special-status species of vertebrate wildlife.

Wind Turbine Collision Impacts

The EIS presents no predictions of collision impacts to birds or bats, but it needs to do so. Although existing collision impact estimates are fraught with biases and error (Smallwood 2013, Smallwood et al. 2018), there exists sufficient reporting of collision impacts to provide ranges of collision fatality rates that can be anticipated for particular species at the proposed wind turbines. Such predictions are readily feasible and of high importance to any decision over whether the project would be prudent or additional mitigation and planning measures are warranted.

Using national average fatality rates in Smallwood and Neher (2017), I predicted fatality rates at Campo Wind assuming a 202-MW project and no effort to carefully site the turbines to minimize collision impacts. Based on fatality monitoring at projects where the search interval was less than 10 days, the mean annual bat fatalities would number 7,920 (90% CI: 4,343-9,438) at Campo Wind. Perhaps the fatality rate would be lower or higher, but the data have yet to be collected and the analysis yet to be performed to have any idea whether the bat fatality rate will vary from the national average.

O12-29 Cont.

For hoary bat alone, the national average in Smallwood and Neher (2017) would predict 549 (90% CI: 94-666) fatalities annually at Campo Wind. This number of fatalities of hoary bats would qualify as a significant impact, especially given research indicating wind turbines pose a threat to the viability of this and other migratory bat species (Frick et al. 2017).

The national average golden eagle fatality rate (Smallwood and Neher 2017) applied to Campo Wind would predict 2.6 (90% CI: 0.69-4.44) fatalities annually. However, this estimate was undoubtedly diluted by the majority of wind projects occurring outside areas often used by golden eagles. I would predict a fatality rate at least 3 times higher. If it turns out that project impacts are similar to the APWRA, than I would expect 29 golden eagle fatalities per year.

The national average fatality rates reported in Smallwood and Neher (2017) would also predict 1,760 bird fatalities at Campo Wind, with a 90% upper bound estimate of 2,977 fatalities per year. However, if the Campo Wind project causes APWRA-level impacts, then the annual bird toll could be about 4,000 collision fatalities.

Without knowing the impacts, and without having attempted to predict the impacts based on what has been documented at other wind projects, Dudek (2019:88) concludes

that operational impacts of wind turbines will be less than significant with implementation of mitigation measures, which include the appointment of a designated biologist, preconstruction surveys for special-status plants and bird nests, and post-construction fatality monitoring and the cleanup of carcasses deposited by the wind turbines. I must point out that appointing a designated biologist will prevent not a single collision fatality, nor will the appointment reduce collision fatalities in any way. The same would be true for preconstruction surveys for plants and bird nests – such surveys would neither prevent nor reduce collision fatalities.

The proposed fatality monitoring would consist of Wildlife Response and Reporting System (WRRS), of which I am personally familiar. I analyzed WRRS data in the APWRA and compared them to scientific fatality monitoring where both types of monitoring data overlapped across several fatality monitoring studies from 1989 through 2002 (Smallwood and Thelander 2004:App. B). WRRS is not scientific monitoring, and will detect only a fraction of large-bodied birds; it would detect nearly none of the small-bodied birds or bats. Over my 20 years of fatality monitoring in the APWRA, only once did wind company personnel find and report bat fatalities via WRRS, and that was one morning after 6 bats fell onto a turbine pad, right in front of the door to the turbine tower.

Compared to the findings of Smallwood and Thelander (2004), which averaged 48 days between fatality searches (a long interval, in other words), WRRS failed to report 74% to 82% of the red-tailed hawks we found, and it failed to report 59% to 74% of the golden eagles we found. Adding to this intolerable error were the findings of Smallwood (2017a), who reported that the Alameda County fatality monitor, who averaged 39 days between searches, found 29% of the wind-turbine caused fatalities that were found by a second team of searchers, who averaged 5 days between searches at the same turbines over a 30-month period. Both teams used the same methods, and neither removed found carcasses so that the other team would have an opportunity to find them. The Alameda County Monitor also failed to find 62.5% of the species identified as collision victims by the team implementing the shorter search interval (Smallwood 2017a). In another study using scent-detection dogs at turbines that were also searched by humans, and in which all other fatality monitoring methods were equal, the human searchers found 1 bat fatality while the dogs found 71, and the human searchers found only 17% of the bird fatalities that had been found by the dogs (Smallwood et al.in review). Scientific monitoring using scent-detection dogs can detect many more of the available wind turbine collision victims than it can when using human searchers, and using any form scientific monitoring can find many more of the available collision victims than can WRRS. WRRS is entirely unsuitable as a fatality monitoring method. I am surprised to see Dudek (2019) promoting use of the WRRS after all that has been learned about fatality monitoring at wind projects over the past 30 years.

O12-29 Cont.

WRRS would fail to detect nearly all small birds and bats killed by wind turbines, as well as the majority of large birds. Therefore, MM-BIO-4(d) – picking up carcasses that are incidentally found during routine operation and maintenance activities – stands no chance of minimizing additional collision fatalities. Furthermore, picking up carcasses would fail to prevent collision fatalities of species that are not looking for those

carcasses, such as bats and nocturnally migrating songbirds. Nor is there evidence, anywhere, that picking up carcasses has reduced raptor fatalities at wind turbines. Discovered raptor carcasses have been picked up from around wind turbines in the APWRA for 30 years, and still the disastrous collision rates continued without any evidence of having been affected by the thousands of collision victims that were picked up. Unless Dudek (2019) can cite evidence of the efficacy of picking up carcasses to reduce or minimize wind turbine-caused fatalities, their proposed measure lacks credibility.

SUMMARY

Dudek (2019) and Bureau of Indian Affairs (2019) attempt to downplay the potential impacts of Campo Wind, but the evidence of species richness and the particular species composing that richness suggest potentially devastating impacts. Dudek (2019) does not present the data nor the analysis typical of baseline studies prepared for other wind projects, nor does Dudek follow the recommendations in available state and federal guidelines (CEC & CDFW 2007, USFWS 2012). In fact, Dudek (2019) qualifies as one of the least informative environmental review documents I have seen prepared for a wind project. The project needs updated surveys by professional biologists who are qualified to collect and interpret the data.

O12-29 Cont.

Mitigation for the project's collision and displacement impacts is nonexistent. The measures that are proposed will do nothing to prevent, minimize or reduce project impacts. Appropriate baseline studies are needed, as well as careful siting of wind turbines to minimize impacts. The EIS needs to present an operational curtailment strategy to minimize bat impacts, as well as fatality thresholds that would trigger the removal of wind turbines causing disproportionate fatalities of golden eagles or other special-status species. The EIS needs to present a plan for scientific post-construction fatality monitoring to accurately estimate impacts, and it should plan on using scent-detection dogs for fatality monitoring. The EIS should also present a compensatory mitigation plan for offsetting those impacts that are unavoidable and measured in post-construction monitoring.

Thank you for your attention,

Shawn Smallwood, Ph.D.

REFERENCES CITED

Arnett, E. B., M. M. P. Huso, M. R. Schirmacher, and J. P. Hayes. 2011. Altering turbine speed reduces bat mortality at wind-energy facilities. Frontiers in Ecology and the Environment 9:209-214. DOI:10.1890/100103

Arnett, E. B., G. D. Johnson, W. P. Erickson, and C. D. Hein. 2013. A synthesis of operational mitigation studies to reduce bat fatalities at wind energy facilities in North America. Report to The National Renewable Energy Laboratory, Golden, Colorado.

Behr, O., R. Brinkmann, K. Hochradel, J. Mages, F. Korner-Nievergelt, I. Niermann, M. Reich, R. Simon, N. Weber and M. Nagy. 2017. Mitigating Bat Mortality with Turbine-Specific Curtailment Algorithms: A Model Based Approach. Pages 135-160 in Köppel, J., Editor, Wind Energy and Wildlife Impacts: Proceedings from the CWW2015 Conference. Springer. Cham, Switzerland.

Bureau of Indian Affairs. 2019. Draft Environmental Impact Statement for the Campo Wind Project with Boulder Brush Facilities. Bureau of Indian Affairs Pacific Region, Sacramento, California.

CEC & CDFW (California Energy Commission and California Department of Fish and Wildlife). 2007. California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development. Draft Staff Report CEC-700-2007-008-SD, Sacramento, California.

Dahl, E.L., Bevanger, K., Nygård, T., Røskaft, E. & Stokke, B.G. 2012. Reduced breeding success in white-tailed eagles at Smøla windfarm, western Norway, is caused by mortality and displacement. *Biological Conservation* 145:79-85.

Dudek. 2019. Draft Campo Wind Project with Boulder Brush Facilities Biological Technical Report. Report to Bureau of Indian Affairs Pacific Region, Sacramento, California.

Frick, W. F, E. F. Baerwald, J. F. Pollock, R. M. R. Barclay, J. A. Szymanski, T. J. Weller, A. L. Russell, S. C. Loeb, R. A. Medellin, and L. P. McGuire. 2017. Fatalities at wind turbines may threaten population viability of a migratory bat. Biological Conservation 209:172-177.

Garvin, J. C., C. S. Jennelle, D. Drake and S. M. Grodsky. 2011. Response of raptors to a windfarm. Journal of Applied Ecology 48:199-209.

Hull, C. L., and S. Muir. 2013. Behavior and turbine avoidance rates of eagles at two wind farms in Tasmania, Australia. Wildlife Society Bulletin 37:49-58.

Johnston, N.N., Bradley, J.E. and Otter, K.A. 2014. Increased flight altitudes among migrating Golden Eagles suggest turbine avoidance at a Rocky Mountain wind installation. *PLoS ONE* 9(3): e93030. doi:10.1371/journal.pone.0093030.

Langston, R. H. W. 2013. Birds and wind projects across the pond: A UK perspective. Wildlife Society Bulletin 37:5-18.

Leddy, K. L., K. F. Higgins, and D. E. Naugle. 1999. Effects of wind turbines on upland nesting birds in Conservation Reserve Program Grasslands. Wilson Bulletin 111:100-104.

Loesch, C.R., Walker J.A., Reynolds R.E., Gleason J.S., Niemuth N.D., Stephens S.E. & Erickson M.A. 2012. Effect of wind energy development on breeding duck densities in the Prairie Pothole Region. *Journal of Wildlife Management* 77:587-598. DOI: 10.1002/jwmg.583.

McClure, C. J. W., L. Martinson, and T. D. Allison. 2018. Automated monitoring for birds inflight: Proof of concept with eagles at a wind power facility. Biological Conservation 224:26-33.

Pearce-Higgins, J.W., Stephen, L., Langston, R.H.W., Bainbridge, I.P. & Bullman, R. 2009. The distribution of breeding birds around upland wind Farms. *Journal of Applied Ecology* 36:1323-1331.

Pearce-Higgins, J.W., Stephen, L., Langston, R.H.W., Bainbridge, I.P. & Bullman, R. 2009. The distribution of breeding birds around upland wind Farms. *Journal of Applied Ecology* 36:1323-1331.

Sinclair, K. and E. DeGeorge. 2016. Framework for Testing the Effectiveness of Bat and Eagle Impact-Reduction Strategies at Wind Energy Projects. S. Smallwood, M. Schirmacher, and M. Morrison, eds., Technical Report NREL/TP-5000-65624, National Renewable Energy Laboratory, Golden, Colorado.

Smallwood, K.S. 2002. Habitat models based on numerical comparisons. Pages 83-95 *in* Predicting species occurrences: Issues of scale and accuracy, J. M. Scott, P. J. Heglund, M. Morrison, M. Raphael, J. Haufler, and B. Wall, editors. Island Press, Covello, California.

Smallwood, K. S. 2007. Estimating wind turbine-caused bird mortality. Journal of Wildlife Management 71:2781-2791.

Smallwood, K. S. 2008. Wind power company compliance with mitigation plans in the Altamont Pass Wind Resource Area. Environmental & Energy Law Policy Journal 2(2):229-285.

Smallwood, K. S. 2009. Mitigation in U.S. Wind Farms. Pages 68-76 in H. Hötker (Ed.), Birds of Prey and Wind Farms. Documentation of an International Workshop in Berlin, 21st and 22nd October 2008. http://bergenhusen.nabu.de/forschung/greifvoegel/ .

Smallwood, K. S. 2010. Inter-turbine Comparisons of Fatality Rates in the Altamont Pass Wind Resource Area. Report P189, Alameda County Scientific Review Committee, Hayward, California.

Smallwood, K. S. 2013. Comparing bird and bat fatality-rate estimates among North American wind-energy projects. Wildlife Society Bulletin 37:19-33. + Online Supplemental Material.

Smallwood, K. S. 2017a. Long search intervals under-estimate bird and bat fatalities caused by wind turbines. Wildlife Society Bulletin 41:224-230.

Smallwood, K. S. 2017b. Monitoring birds. M. Perrow, Ed., Wildlife and Wind Farms - Conflicts and Solutions, Volume 2. Pelagic Publishing, Exeter, United Kingdom. www.bit.ly/2v3cR9Q

Smallwood, K. S., and L. Neher. 2017. Comparing bird and bat use data for siting new wind power generation. Report CEC-500-2017-019, California Energy Commission Public Interest Energy Research program, Sacramento, California. http://www.energy.ca.gov/2017publications/CEC-500-2017-019/CEC-500-2017-019.pdf and http://www.energy.ca.gov/2017publications/CEC-500-2017-019/CEC-500-2017-019-APA-F.pdf

Smallwood, K. S. and C. Thelander. 2004. Developing methods to reduce bird mortality in the Altamont Pass Wind Resource Area. Final Report to the California Energy Commission, Public Interest Energy Research – Environmental Area, Contract No. 500-01-019. Sacramento, California.

Smallwood, K. S., L. Rugge, and M. L. Morrison. 2009. Influence of Behavior on Bird Mortality in Wind Energy Developments: The Altamont Pass Wind Resource Area, California. Journal of Wildlife Management 73:1082-1098.

Smallwood, K. S., L. Neher, and D. A. Bell. 2017. Siting to Minimize Raptor Collisions: an example from the Repowering Altamont Pass Wind Resource Area. M. Perrow, Ed., Wildlife and Wind Farms - Conflicts and Solutions, Volume 2. Pelagic Publishing, Exeter, United Kingdom. www.bit.ly/2v3cR9Q

Smallwood, K. S., D. A. Bell, E. L. Walther, E. Leyvas, S. Standish, J. Mount, B. Karas. 2018. Estimating wind turbine fatalities using integrated detection trials. Journal of Wildlife Management 82:1169-1184.

Stanek, N. 2013. Dicing with Death? An evaluation of Hen Harrier (*Circus cyaneus*) flights and associated collision risk with wind turbines, using a new methodology. M.S. Thesis, Imperial College London.

U.S. Fish and Wildlife Service. 2012. U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines. OMB Control No, 1018-0148. Arlington, Virginia.

Whitfield, D. P., and M. Madders. 2006. A review of the impacts of wind farms on hen harriers *Circus cyaneus* and an estimation of collision avoidance rates. Natural Research Information Note 1 (revised). Natural Research Ltd., Banchory, United Kingdom.

Kenneth Shawn Smallwood
Curriculum Vitae

3108 Finch Street
Davis, CA 95616
Phone (530) 756-4598
Cell (530) 601-6857
puma@dcn.org

Born May 3, 1963 in
Sacramento, California.
Married, father of two.

Ecologist

Expertise

- Finding solutions to controversial problems related to wildlife interactions with human industry, infrastructure, and activities;
- Wildlife monitoring and field study using GPS, thermal imaging, behavior surveys;
- Using systems analysis and experimental design principles to identify meaningful ecological patterns that inform management decisions.

Education

Ph.D. Ecology, University of California, Davis. September 1990.
M.S. Ecology, University of California, Davis. June 1987.
B.S. Anthropology, University of California, Davis. June 1985.
Corcoran High School, Corcoran, California. June 1981.

Experience

- 480 professional publications, including:
- 83 peer reviewed publications
- 24 in non-reviewed proceedings
- 371 reports, declarations, posters and book reviews
- 8 in mass media outlets
- 87 public presentations of research results

Editing for scientific journals: Guest Editor, *Wildlife Society Bulletin*, 2012-2013, of invited papers representing international views on the impacts of wind energy on wildlife and how to mitigate the impacts. Associate Editor, *Journal of Wildlife Management*, March 2004 to 30 June 2007. Editorial Board Member, *Environmental Management*, 10/1999 to 8/2004. Associate Editor, *Biological Conservation*, 9/1994 to 9/1995.

Member, Alameda County Scientific Review Committee (SRC), August 2006 to April 2011. The five-member committee investigated causes of bird and bat collisions in the Altamont Pass Wind Resource Area, and recommended mitigation and monitoring measures. The SRC

reviewed the science underlying the Alameda County Avian Protection Program, and advised the County on how to reduce wildlife fatalities.

Consulting Ecologist, 2004-2007, California Energy Commission (CEC). Provided consulting services as needed to the CEC on renewable energy impacts, monitoring and research, and produced several reports. Also collaborated with Lawrence-Livermore National Lab on research to understand and reduce wind turbine impacts on wildlife.

Consulting Ecologist, 1999-2013, U.S. Navy. Performed endangered species surveys, hazardous waste site monitoring, and habitat restoration for the endangered San Joaquin kangaroo rat, California tiger salamander, California red-legged frog, California clapper rail, western burrowing owl, salt marsh harvest mouse, and other species at Naval Air Station Lemoore; Naval Weapons Station, Seal Beach, Detachment Concord; Naval Security Group Activity, Skaggs Island; National Radio Transmitter Facility, Dixon; and, Naval Outlying Landing Field Imperial Beach.

Part-time Lecturer, 1998-2005, California State University, Sacramento. Instructed Mammalogy, Behavioral Ecology, and Ornithology Lab, Contemporary Environmental Issues, Natural Resources Conservation.

Senior Ecologist, 1999-2005, BioResource Consultants. Designed and implemented research and monitoring studies related to avian fatalities at wind turbines, avian electrocutions on electric distribution poles across California, and avian fatalities at transmission lines.

Chairman, Conservation Affairs Committee, The Wildlife Society--Western Section, 1999-2001. Prepared position statements and led efforts directed toward conservation issues, including travel to Washington, D.C. to lobby Congress for more wildlife conservation funding.

Systems Ecologist, 1995-2000, Institute for Sustainable Development. Headed ISD's program on integrated resources management. Developed indicators of ecological integrity for large areas, using remotely sensed data, local community involvement and GIS.

Associate, 1997-1998, Department of Agronomy and Range Science, University of California, Davis. Worked with Shu Geng and Mingua Zhang on several studies related to wildlife interactions with agriculture and patterns of fertilizer and pesticide residues in groundwater across a large landscape.

Lead Scientist, 1996-1999, National Endangered Species Network. Informed academic scientists and environmental activists about emerging issues regarding the Endangered Species Act and other environmental laws. Testified at public hearings on endangered species issues.

Ecologist, 1997-1998, Western Foundation of Vertebrate Zoology. Conducted field research to determine the impact of past mercury mining on the status of California red-legged frogs in Santa Clara County, California.

Senior Systems Ecologist, 1994-1995, EIP Associates, Sacramento, California. Provided consulting services in environmental planning, and quantitative assessment of land units for their

conservation and restoration opportunities basedon ecological resource requirements of 29 special-status species. Developed ecological indicators for prioritizing areas within Yolo County to receive mitigation funds for habitat easements and restoration.

Post-Graduate Researcher, 1990-1994, Department of Agronomy and Range Science*, U.C. Davis*. Under Dr. Shu Geng's mentorship, studied landscape and management effects on temporal and spatial patterns of abundance among pocket gophers and species of Falconiformes and Carnivora in the Sacramento Valley. Managed and analyzed a data base of energy use in California agriculture. Assisted with landscape (GIS) study of groundwater contamination across Tulare County, California.

Work experience in graduate school: Co-taught Conservation Biology with Dr. Christine Schonewald, 1991 & 1993, UC Davis Graduate Group in Ecology; Reader for Dr. Richard Coss's course on Psychobiology in 1990, UC Davis Department of Psychology; Research Assistant to Dr. Walter E. Howard, 1988-1990, UC Davis Department of Wildlife and Fisheries Biology, testing durable baits for pocket gopher management in forest clearcuts; Research Assistant to Dr. Terrell P. Salmon, 1987-1988, UC Wildlife Extension, Department of Wildlife and Fisheries Biology, developing empirical models of mammal and bird invasions in North America, and a rating system for priority research and control of exotic species based on economic, environmental and human health hazards in California. Student Assistant to Dr. E. Lee Fitzhugh, 1985-1987, UC Cooperative Extension, Department of Wildlife and Fisheries Biology, developing and implementing statewide mountain lion track count for long-term monitoring.

Fulbright Research Fellow, Indonesia, 1988. Tested use of new sampling methods for numerical monitoring of Sumatran tiger and six other species of endemic felids, and evaluated methods used by other researchers.

Projects

Repowering wind energy projects through careful siting of new wind turbines using map-based collision hazard models to minimize impacts to volant wildlife. Funded by wind companies (principally NextEra Renewable Energy, Inc.), California Energy Commission and East Bay Regional Park District, I have collaborated with a GIS analyst and managed a crew of five field biologists performing golden eagle behavior surveys and nocturnal surveys on bats and owls. The goal is to quantify flight patterns for development of predictive models to more carefully site new wind turbines in repowering projects. Focused behavior surveys began May 2012 and continue. Collision hazard models have been prepared for seven wind projects, three of which were built. Planning for additional repowering projects is underway.

Test avian safety of new mixer-ejector wind turbine (MEWT). Designed and implemented a before-after, control-impact experimental design to test the avian safety of a new, shrouded wind turbine developed by Ogin Inc. (formerly known as FloDesign Wind Turbine Corporation). Supported by a $718,000 grant from the California Energy Commission's Public Interest Energy Research program and a 20% match share contribution from Ogin, I managed a crew of seven field biologists who performed periodic fatality searches and behavior surveys, carcass detection trials, nocturnal behavior surveys using a thermal camera, and spatial analyses with the collaboration of a GIS

analyst. Field work began 1 April 2012 and ended 30 March 2015 without Ogin installing its MEWTs, but we still achieved multiple important scientific advances.

Reduce avian mortality due to wind turbines at Altamont Pass. Studied wildlife impacts caused by 5,400 wind turbines at the world's most notorious wind resource area. Studied how impacts are perceived by monitoring and how they are affected by terrain, wind patterns, food resources, range management practices, wind turbine operations, seasonal patterns, population cycles, infrastructure management such as electric distribution, animal behavior and social interactions.

Reduce avian mortality on electric distribution poles. Directed research toward reducing bird electrocutions on electric distribution poles, 2000-2007. Oversaw 5 founds of fatality searches at 10,000 poles from Orange County to Glenn County, California, and produced two large reports.

Cook *et al*. v. Rockwell International *et al*., No. 90-K-181 (D. Colorado). Provided expert testimony on the role of burrowing animals in affecting the fate of buried and surface-deposited radioactive and hazardous chemical wastes at the Rocky Flats Plant, Colorado. Provided expert reports based on four site visits and an extensive document review of burrowing animals. Conducted transect surveys for evidence of burrowing animals and other wildlife on and around waste facilities. Discovered substantial intrusion of waste structures by burrowing animals. I testified in federal court in November 2005, and my clients were subsequently awarded a $553,000,000 judgment by a jury. After appeals the award was increased to two billion dollars.

Hanford Nuclear Reservation Litigation. Provided expert testimony on the role of burrowing animals in affecting the fate of buried radioactive wastes at the Hanford Nuclear Reservation, Washington. Provided three expert reports based on three site visits and extensive document review. Predicted and verified a certain population density of pocket gophers on buried waste structures, as well as incidence of radionuclide contamination in body tissue. Conducted transect surveys for evidence of burrowing animals and other wildlife on and around waste facilities. Discovered substantial intrusion of waste structures by burrowing animals.

Expert testimony and declarations on proposed residential and commercial developments, gas-fired power plants, wind, solar and geothermal projects, water transfers and water transfer delivery systems, endangered species recovery plans, Habitat Conservation Plans and Natural Communities Conservation Programs. Testified before multiple government agencies, Tribunals, Boards of Supervisors and City Councils, and participated with press conferences and depositions. Prepared expert witness reports and court declarations, which are summarized under Reports (below).

Protocol-level surveys for special-status species. Used California Department of Fish and Wildlife and US Fish and Wildlife Service protocols to search for California red-legged frog, California tiger salamander, arroyo southwestern toad, blunt-nosed leopard lizard, western pond turtle, giant kangaroo rat, San Joaquin kangaroo rat, San Joaquin kit fox, western burrowing owl, Swainson's hawk, Valley elderberry longhorn beetle and other special-status species.

Conservation of San Joaquin kangaroo rat. Performed research to identify factors responsible for the decline of this endangered species at Lemoore Naval Air Station, 2000-2013, and implemented habitat enhancements designed to reverse the trend and expand the population.

Impact of West Nile Virus on yellow-billed magpies. Funded by Sacramento-Yolo Mosquito and Vector Control District, 2005-2008, compared survey results pre- and post-West Nile Virus epidemic for multiple bird species in the Sacramento Valley, particularly on yellow-billed magpie and American crow due to susceptibility to WNV.

Workshops on HCPs. Assisted Dr. Michael Morrison with organizing and conducting a 2-day workshop on Habitat Conservation Plans, sponsored by Southern California Edison, and another 1-day workshop sponsored by PG&E. These Workshops were attended by academics, attorneys, and consultants with HCP experience. We guest-edited a Proceedings published in Environmental Management.

Mapping of biological resources along Highways 101, 46 and 41. Used GPS and GIS to delineate vegetation complexes and locations of special-status species along 26 miles of highway in San Luis Obispo County, 14 miles of highway and roadway in Monterey County, and in a large area north of Fresno, including within reclaimed gravel mining pits.

GPS mapping and monitoring at restoration sites and at Caltrans mitigation sites. Monitored the success of elderberry shrubs at one location, the success of willows at another location, and the response of wildlife to the succession of vegetation at both sites. Also used GPS to monitor the response of fossorial animals to yellow star-thistle eradication and natural grassland restoration efforts at Bear Valley in Colusa County and at the decommissioned Mather Air Force Base in Sacramento County.

Mercury effects on Red-legged Frog. Assisted Dr. Michael Morrison and US Fish and Wildlife Service in assessing the possible impacts of historical mercury mining on the federally listed California red-legged frog in Santa Clara County. Also measured habitat variables in streams.

Opposition to proposed No Surprises rule. Wrote a white paper and summary letter explaining scientific grounds for opposing the incidental take permit (ITP) rules providing ITP applicants and holders with general assurances they will be free of compliance with the Endangered Species Act once they adhere to the terms of a "properly functioning HCP." Submitted 188 signatures of scientists and environmental professionals concerned about No Surprises rule US Fish and Wildlife Service, National Marine Fisheries Service, all US Senators.

Natomas Basin Habitat Conservation Plan alternative. Designed narrow channel marsh to increase the likelihood of survival and recovery in the wild of giant garter snake, Swainson's hawk and Valley Elderberry Longhorn Beetle. The design included replication and interspersion of treatments for experimental testing of critical habitat elements. I provided a report to Northern Territories, Inc.

Assessments of agricultural production system and environmental technology transfer to China. Twice visited China and interviewed scientists, industrialists, agriculturalists, and the Directors of the Chinese Environmental Protection Agency and the Department of Agriculture to assess the need and possible pathways for environmental clean-up technologies and trade opportunities between the US and China.

Yolo County Habitat Conservation Plan. Conducted landscape ecology study of Yolo County to spatially prioritize allocation of mitigation efforts to improve ecosystem functionality within the

County from the perspective of 29 special-status species of wildlife and plants. Used a hierarchically structured indicators approach to apply principles of landscape and ecosystem ecology, conservation biology, and local values in rating land units. Derived GIS maps to help guide the conservation area design, and then developed implementation strategies.

Mountain lion track count. Developed and conducted a carnivore monitoring program throughout California since 1985. Species counted include mountain lion, bobcat, black bear, coyote, red and gray fox, raccoon, striped skunk, badger, and black-tailed deer. Vegetation and land use are also monitored. Track survey transect was established on dusty, dirt roads within randomly selected quadrats.

Sumatran tiger and other felids. Upon award of Fulbright Research Fellowship, I designed and initiated track counts for seven species of wild cats in Sumatra, including Sumatran tiger, fishing cat, and golden cat. Spent four months on Sumatra and Java in 1988, and learned Bahasa Indonesia, the official Indonesian language.

Wildlife in agriculture. Beginning as post-graduate research, I studied pocket gophers and other wildlife in 40 alfalfa fields throughout the Sacramento Valley, and I surveyed for wildlife along a 200 mile road transect since 1989 with a hiatus of 1996-2004. The data are analyzed using GIS and methods from landscape ecology, and the results published and presented orally to farming groups in California and elsewhere. I also conducted the first study of wildlife in cover crops used on vineyards and orchards.

Agricultural energy use and Tulare County groundwater study. Developed and analyzed a data base of energy use in California agriculture, and collaborated on a landscape (GIS) study of groundwater contamination across Tulare County, California.

Pocket gopher damage in forest clear-cuts. Developed gopher sampling methods and tested various poison baits and baiting regimes in the largest-ever field study of pocket gopher management in forest plantations, involving 68 research plots in 55 clear-cuts among 6 National Forests in northern California.

Risk assessment of exotic species in North America. Developed empirical models of mammal and bird species invasions in North America, as well as a rating system for assigning priority research and control to exotic species in California, based on economic, environmental, and human health hazards.

Peer Reviewed Publications

Smallwood, K. S. and M. L. Morrison. 2018. Nest-site selection in a high-density colony of burrowing owls. Journal of Raptor Research 52:454-470.

Smallwood, K. S., D. A. Bell, E. L. Walther, E. Leyvas, S. Standish, J. Mount, B. Karas. 2018. Estimating wind turbine fatalities using integrated detection trials. Journal of Wildlife Management 82:1169-1184.

Smallwood, K. S. 2017. Long search intervals under-estimate bird and bat fatalities caused by

wind turbines. Wildlife Society Bulletin 41:224-230.

Smallwood, K. S. 2017. The challenges of addressing wildlife impacts when repowering wind energy projects. Pages 175-187 in Köppel, J., Editor, Wind Energy and Wildlife Impacts: Proceedings from the CWW2015 Conference. Springer. Cham, Switzerland.

May, R., Gill, A. B., Köppel, J. Langston, R. H.W., Reichenbach, M., Scheidat, M., Smallwood, S., Voigt, C. C., Hüppop, O., and Portman, M. 2017. Future research directions to reconcile wind turbine–wildlife interactions. Pages 255-276 in Köppel, J., Editor, Wind Energy and Wildlife Impacts: Proceedings from the CWW2015 Conference. Springer. Cham, Switzerland.

Smallwood, K. S. 2017. Monitoring birds. M. Perrow, Ed., Wildlife and Wind Farms - Conflicts and Solutions, Volume 2. Pelagic Publishing, Exeter, United Kingdom. www.bit.ly/2v3cR9Q

Smallwood, K. S., L. Neher, and D. A. Bell. 2017. Siting to Minimize Raptor Collisions: an example from the Repowering Altamont Pass Wind Resource Area. M. Perrow, Ed., Wildlife and Wind Farms - Conflicts and Solutions, Volume 2. Pelagic Publishing, Exeter, United Kingdom. www.bit.ly/2v3cR9Q

Johnson, D. H., S. R. Loss, K. S. Smallwood, W. P. Erickson. 2016. Avian fatalities at wind energy facilities in North America: A comparison of recent approaches. Human–Wildlife Interactions 10(1):7-18.

Sadar, M. J., D. S.-M. Guzman, A. Mete, J. Foley, N. Stephenson, K. H. Rogers, C. Grosset, K. S. Smallwood, J. Shipman, A. Wells, S. D. White, D. A. Bell, and M. G. Hawkins. 2015. Mange Caused by a novel Micnemidocoptes mite in a Golden Eagle (*Aquila chrysaetos*). Journal of Avian Medicine and Surgery 29(3):231-237.

Smallwood, K. S. 2015. Habitat fragmentation and corridors. Pages 84-101 in M. L. Morrison and H. A. Mathewson, Eds., Wildlife habitat conservation: concepts, challenges, and solutions. John Hopkins University Press, Baltimore, Maryland, USA.

Mete, A., N. Stephenson, K. Rogers, M. G. Hawkins, M. Sadar, D. Guzman, D. A. Bell, J. Shipman, A. Wells, K. S. Smallwood, and J. Foley. 2014. Emergence of Knemidocoptic mange in wild Golden Eagles (Aquila chrysaetos) in California. Emerging Infectious Diseases 20(10):1716-1718.

Smallwood, K. S. 2013. Introduction: Wind-energy development and wildlife conservation. Wildlife Society Bulletin 37: 3-4.

Smallwood, K. S. 2013. Comparing bird and bat fatality-rate estimates among North American wind-energy projects. Wildlife Society Bulletin 37:19-33. + Online Supplemental Material.

Smallwood, K. S., L. Neher, J. Mount, and R. C. E. Culver. 2013. Nesting Burrowing Owl Abundance in the Altamont Pass Wind Resource Area, California. Wildlife Society Bulletin: 37:787-795.

Smallwood, K. S., D. A. Bell, B. Karas, and S. A. Snyder. 2013. Response to Huso and Erickson Comments on Novel Scavenger Removal Trials. Journal of Wildlife Management 77: 216-225.

Bell, D. A., and K. S. Smallwood. 2010. Birds of prey remain at risk. Science 330:913.

Smallwood, K. S., D. A. Bell, S. A. Snyder, and J. E. DiDonato. 2010. Novel scavenger removal trials increase estimates of wind turbine-caused avian fatality rates. Journal of Wildlife Management 74: 1089-1097 + Online Supplemental Material.

Smallwood, K. S., L. Neher, and D. A. Bell. 2009. Map-based repowering and reorganization of a wind resource area to minimize burrowing owl and other bird fatalities. Energies 2009(2):915-943. http://www.mdpi.com/1996-1073/2/4/915

Smallwood, K. S. and B. Nakamoto. 2009. Impacts of West Nile Virus Epizootic on Yellow-Billed Magpie, American Crow, and other Birds in the Sacramento Valley, California. The Condor 111:247-254.

Smallwood, K. S., L. Rugge, and M. L. Morrison. 2009. Influence of Behavior on Bird Mortality in Wind Energy Developments: The Altamont Pass Wind Resource Area, California. Journal of Wildlife Management 73:1082-1098.

Smallwood, K. S. and B. Karas. 2009. Avian and Bat Fatality Rates at Old-Generation and Repowered Wind Turbines in California. Journal of Wildlife Management 73:1062-1071.

Smallwood, K. S. 2008. Wind power company compliance with mitigation plans in the Altamont Pass Wind Resource Area. Environmental & Energy Law Policy Journal 2(2):229-285.

Smallwood, K. S., C. G. Thelander. 2008. Bird Mortality in the Altamont Pass Wind Resource Area, California. Journal of Wildlife Management 72:215-223.

Smallwood, K. S. 2007. Estimating wind turbine-caused bird mortality. Journal of Wildlife Management 71:2781-2791.

Smallwood, K. S., C. G. Thelander, M. L. Morrison, and L. M. Rugge. 2007. Burrowing owl mortality in the Altamont Pass Wind Resource Area. Journal of Wildlife Management 71:1513-1524.

Cain, J. W. III, K. S. Smallwood, M. L. Morrison, and H. L. Loffland. 2005. Influence of mammal activity on nesting success of Passerines. J. Wildlife Management 70:522-531.

Smallwood, K.S. 2002. Habitat models based on numerical comparisons. Pages 83-95 *in* Predicting species occurrences: Issues of scale and accuracy, J. M. Scott, P. J. Heglund, M. Morrison, M. Raphael, J. Haufler, and B. Wall, editors. Island Press, Covello, California.

Morrison, M. L., K. S. Smallwood, and L. S. Hall. 2002. Creating habitat through plant relocation: Lessons from Valley elderberry longhorn beetle mitigation. Ecological Restoration 21: 95-100.

Zhang, M., K. S. Smallwood, and E. Anderson. 2002. Relating indicators of ecological health and integrity to assess risks to sustainable agriculture and native biota. Pages 757-768 *in* D.J. Rapport, W.L. Lasley, D.E. Rolston, N.O. Nielsen, C.O. Qualset, and A.B. Damania (eds.), Managing for Healthy Ecosystems, Lewis Publishers, Boca Raton, Florida USA.

Wilcox, B. A., K. S. Smallwood, and J. A. Kahn. 2002. Toward a forest Capital Index. Pages 285-298 *in* D.J. Rapport, W.L. Lasley, D.E. Rolston, N.O. Nielsen, C.O. Qualset, and A.B. Damania (eds.), Managing for Healthy Ecosystems, Lewis Publishers, Boca Raton, Florida USA.

Smallwood, K.S. 2001. The allometry of density within the space used by populations of Mammalian Carnivores. Canadian Journal of Zoology 79:1634-1640.

Smallwood, K.S., and T.R. Smith. 2001. Study design and interpretation of Sorex density estimates. Annales Zoologi Fennici 38:141-161.

Smallwood, K.S., A. Gonzales, T. Smith, E. West, C. Hawkins, E. Stitt, C. Keckler, C. Bailey, and K. Brown. 2001. Suggested standards for science applied to conservation issues. Transactions of the Western Section of the Wildlife Society 36:40-49.

Geng, S., Yixing Zhou, Minghua Zhang, and K. Shawn Smallwood. 2001. A Sustainable Agro-ecological Solution to Water Shortage in North China Plain (Huabei Plain). Environmental Planning and Management 44:345-355.

Smallwood, K. Shawn, Lourdes Rugge, Stacia Hoover, Michael L. Morrison, Carl Thelander. 2001. Intra- and inter-turbine string comparison of fatalities to animal burrow densities at Altamont Pass. Pages 23-37 in S. S. Schwartz, ed., Proceedings of the National Avian-Wind Power Planning Meeting IV. RESOLVE, Inc., Washington, D.C.

Smallwood, K.S., S. Geng, and M. Zhang. 2001. Comparing pocket gopher (*Thomomys bottae*) density in alfalfa stands to assess management and conservation goals in northern California. Agriculture, Ecosystems & Environment 87: 93-109.

Smallwood, K. S. 2001. Linking habitat restoration to meaningful units of animal demography. Restoration Ecology 9:253-261.

Smallwood, K. S. 2000. A crosswalk from the Endangered Species Act to the HCP Handbook and real HCPs. Environmental Management 26, Supplement 1:23-35.

Smallwood, K. S., J. Beyea and M. Morrison. 1999. Using the best scientific data for endangered species conservation. Environmental Management 24:421-435.

Smallwood, K. S. 1999. Scale domains of abundance among species of Mammalian Carnivora. Environmental Conservation 26:102-111.

Smallwood, K.S. 1999. Suggested study attributes for making useful population density estimates. Transactions of the Western Section of the Wildlife Society 35: 76-82.

Smallwood, K. S. and M. L. Morrison. 1999. Estimating burrow volume and excavation rate of pocket gophers (Geomyidae). Southwestern Naturalist 44:173-183.

Smallwood, K. S. and M. L. Morrison. 1999. Spatial scaling of pocket gopher (*Geomyidae*) density. Southwestern Naturalist 44:73-82.

Smallwood, K. S. 1999. Abating pocket gophers (*Thomomys* spp.) to regenerate forests in clearcuts. Environmental Conservation 26:59-65.

Smallwood, K. S. 1998. Patterns of black bear abundance. Transactions of the Western Section of the Wildlife Society 34:32-38.

Smallwood, K. S. 1998. On the evidence needed for listing northern goshawks (*Accipter gentilis*) under the Endangered Species Act: a reply to Kennedy. J. Raptor Research 32:323-329.

Smallwood, K. S., B. Wilcox, R. Leidy, and K. Yarris. 1998. Indicators assessment for Habitat Conservation Plan of Yolo County, California, USA. Environmental Management 22: 947-958.

Smallwood, K. S., M. L. Morrison, and J. Beyea. 1998. Animal burrowing attributes affecting hazardous waste management. Environmental Management 22: 831-847.

Smallwood, K. S, and C. M. Schonewald. 1998. Study design and interpretation for mammalian carnivore density estimates. Oecologia 113:474-491.

Zhang, M., S. Geng, and K. S. Smallwood. 1998. Nitrate contamination in groundwater of Tulare County, California. Ambio 27(3):170-174.

Smallwood, K. S. and M. L. Morrison. 1997. Animal burrowing in the waste management zone of Hanford Nuclear Reservation. Proceedings of the Western Section of the Wildlife Society Meeting 33:88-97.

Morrison, M. L., K. S. Smallwood, and J. Beyea. 1997. Monitoring the dispersal of contaminants by wildlife at nuclear weapons production and waste storage facilities. The Environmentalist 17:289-295.

Smallwood, K. S. 1997. Interpreting puma (*Puma concolor*) density estimates for theory and management. Environmental Conservation 24(3):283-289.

Smallwood, K. S. 1997. Managing vertebrates in cover crops: a first study. American Journal of Alternative Agriculture 11:155-160.

Smallwood, K. S. and S. Geng. 1997. Multi-scale influences of gophers on alfalfa yield and quality. Field Crops Research 49:159-168.

Smallwood, K. S. and C. Schonewald. 1996. Scaling population density and spatial pattern for terrestrial, mammalian carnivores. Oecologia 105:329-335.

Smallwood, K. S., G. Jones, and C. Schonewald. 1996. Spatial scaling of allometry for terrestrial, mammalian carnivores. Oecologia 107:588-594.

Van Vuren, D. and K. S. Smallwood. 1996. Ecological management of vertebrate pests in agricultural systems. Biological Agriculture and Horticulture 13:41-64.

Smallwood, K. S., B. J. Nakamoto, and S. Geng. 1996. Association analysis of raptors on an agricultural landscape. Pages 177-190 in D.M. Bird, D.E. Varland, and J.J. Negro, eds., Raptors in human landscapes. Academic Press, London.

Erichsen, A. L., K. S. Smallwood, A. M. Commandatore, D. M. Fry, and B. Wilson. 1996. White-tailed Kite movement and nesting patterns in an agricultural landscape. Pages 166-176 in D. M. Bird, D. E. Varland, and J. J. Negro, eds., Raptors in human landscapes. Academic Press, London.

Smallwood, K. S. 1995. Scaling Swainson's hawk population density for assessing habitat-use across an agricultural landscape. J. Raptor Research 29:172-178.

Smallwood, K. S. and W. A. Erickson. 1995. Estimating gopher populations and their abatement in forest plantations. Forest Science 41:284-296.

Smallwood, K. S. and E. L. Fitzhugh. 1995. A track count for estimating mountain lion *Felis concolor californica* population trend. Biological Conservation 71:251-259

Smallwood, K. S. 1994. Site invasibility by exotic birds and mammals. Biological Conservation 69:251-259.

Smallwood, K. S. 1994. Trends in California mountain lion populations. Southwestern Naturalist 39:67-72.

Smallwood, K. S. 1993. Understanding ecological pattern and process by association and order. Acta Oecologica 14(3):443-462.

Smallwood, K. S. and E. L. Fitzhugh. 1993. A rigorous technique for identifying individual mountain lions *Felis concolor* by their tracks. Biological Conservation 65:51-59.

Smallwood, K. S. 1993. Mountain lion vocalizations and hunting behavior. The Southwestern Naturalist 38:65-67.

Smallwood, K. S. and T. P. Salmon. 1992. A rating system for potential exotic vertebrate pests. Biological Conservation 62:149-159.

Smallwood, K. S. 1990. Turbulence and the ecology of invading species. Ph.D. Thesis, University of California, Davis.

Peer-reviewed Reports

Smallwood, K. S., and L. Neher. 2017. Comparing bird and bat use data for siting new wind power generation. Report CEC-500-2017-019, California Energy Commission Public Interest Energy Research program, Sacramento, California. http://www.energy.ca.gov/2017publications/CEC-500-2017-019/CEC-500-2017-019.pdf and http://www.energy.ca.gov/2017publications/CEC-500-2017-019/CEC-500-2017-019-APA-F.pdf

Smallwood, K. S. 2016. Bird and bat impacts and behaviors at old wind turbines at Forebay, Altamont Pass Wind Resource Area. Report CEC-500-2016-066, California Energy Commission Public Interest Energy Research program, Sacramento, California. http://www.energy.ca.gov/publications/displayOneReport.php? pubNum=CEC-500-2016-066

Sinclair, K. and E. DeGeorge. 2016. Framework for Testing the Effectiveness of Bat and Eagle Impact-Reduction Strategies at Wind Energy Projects. S. Smallwood, M. Schirmacher, and M. Morrison, eds., Technical Report NREL/TP-5000-65624, National Renewable Energy Laboratory, Golden, Colorado.

Brown, K., K. S. Smallwood, J. Szewczak, and B. Karas. 2016. Final 2012-2015 Report Avian and Bat Monitoring Project Vasco Winds, LLC. Prepared for NextEra Energy Resources, Livermore, California.

Brown, K., K. S. Smallwood, J. Szewczak, and B. Karas. 2014. Final 2013-2014 Annual Report Avian and Bat Monitoring Project Vasco Winds, LLC. Prepared for NextEra Energy Resources, Livermore, California.

Brown, K., K. S. Smallwood, and B. Karas. 2013. Final 2012-2013 Annual Report Avian and Bat Monitoring Project Vasco Winds, LLC. Prepared for NextEra Energy Resources, Livermore, California. http://www.altamontsrc.org/alt_doc/p274_ventus_vasco_winds_2012_13_avian_bat_monitoring_report_year_1.pdf

Smallwood, K. S., L. Neher, D. Bell, J. DiDonato, B. Karas, S. Snyder, and S. Lopez. 2009. Range Management Practices to Reduce Wind Turbine Impacts on Burrowing Owls and Other Raptors in the Altamont Pass Wind Resource Area, California. Final Report to the California Energy Commission, Public Interest Energy Research – Environmental Area, Contract No. CEC-500-2008-080. Sacramento, California. 183 pp. http://www.energy.ca.gov/2008publications/CEC-500-2008-080/CEC-500-2008-080.PDF

Smallwood, K. S., and L. Neher. 2009. Map-Based Repowering of the Altamont Pass Wind Resource Area Based on Burrowing Owl Burrows, Raptor Flights, and Collisions with Wind Turbines. Final Report to the California Energy Commission, Public Interest Energy Research – Environmental Area, Contract No. CEC-500-2009-065. Sacramento, California. http://www.energy.ca.gov/publications/displayOneReport.php?pubNum=CEC-500-2009-065

Smallwood, K. S., K. Hunting, L. Neher, L. Spiegel and M. Yee. 2007. Indicating Threats to Birds Posed by New Wind Power Projects in California. Final Report to the California Energy

Commission, Public Interest Energy Research – Environmental Area, Contract No. Pending. Sacramento, California.

Smallwood, K. S. and C. Thelander. 2005. Bird mortality in the Altamont Pass Wind Resource Area, March 1998 – September 2001 Final Report. National Renewable Energy Laboratory, NREL/SR-500-36973. Golden, Colorado. 410 pp.

Smallwood, K. S. and C. Thelander. 2004. Developing methods to reduce bird mortality in the Altamont Pass Wind Resource Area. Final Report to the California Energy Commission, Public Interest Energy Research – Environmental Area, Contract No. 500-01-019. Sacramento, California. 531 pp. http://www.energy.ca.gov/reports/500-04-052/2004-08-09_500-04-052.PDF

Thelander, C.G. S. Smallwood, and L. Rugge. 2003. Bird risk behaviors and fatalities at the Altamont Pass Wind Resource Area. Period of Performance: March 1998—December 2000. National Renewable Energy Laboratory, NREL/SR-500-33829. U.S. Department of Commerce, National Technical Information Service, Springfield, Virginia. 86 pp.

Thelander, C.G., S. Smallwood, and L. Rugge. 2001. Bird risk behaviors and fatalities at the Altamont Wind Resource Area – a progress report. Proceedings of the American Wind Energy Association, Washington D.C. 16 pp.

Non-Peer Reviewed Publications

Smallwood, K. S., D. Bell, and S. Standish. 2018. Skilled dog detections of bat and small bird carcasses in wind turbine fatality monitoring. Report to East Bay Regional Park District, Oakland, California.

Smallwood, K. S. 2009. Methods manual for assessing wind farm impacts to birds. Bird Conservation Series 26, Wild Bird Society of Japan, Tokyo. T. Ura, ed., in English with Japanese translation by T. Kurosawa. 90 pp.

Smallwood, K. S. 2009. Mitigation in U.S. Wind Farms. Pages 68-76 in H. Hötker (Ed.), Birds of Prey and Wind Farms: Analysis of problems and possible solutions. Documentation of an International Workshop in Berlin, 21st and 22nd October 2008. Michael-Otto-Instiut im NABU, Goosstroot 1, 24861 Bergenhusen, Germany. http://bergenhusen.nabu.de/forschung/greifvoegel/

Smallwood, K. S. 2007. Notes and recommendations on wildlife impacts caused by Japan's wind power development. Pages 242-245 in Yukihiro Kominami, Tatsuya Ura, Koshitawa, and Tsuchiya, Editors, Wildlife and Wind Turbine Report 5. Wild Bird Society of Japan, Tokyo.

Thelander, C.G. and S. Smallwood. 2007. The Altamont Pass Wind Resource Area's Effects on Birds: A Case History. Pages 25-46 in Manuela de Lucas, Guyonne F.E. Janss, Miguel Ferrer Editors, Birds and Wind Farms: risk assessment and mitigation. Madrid: Quercus.

Neher, L. and S. Smallwood. 2005. Forecasting and minimizing avian mortality in siting wind turbines. Energy Currents. Fall Issue. ESRI, Inc., Redlands, California.

Jennifer Davidson and Shawn Smallwood. 2004. Laying plans for a hydrogen highway. Comstock's Business, August 2004:18-20, 22, 24-26.

Jennifer Davidson and Shawn Smallwood. 2004. Refined conundrum: California consumers demand more oil while opposing refinery development. Comstock's Business, November 2004:26-27, 29-30.

Smallwood, K.S. 2002. Review of "The Atlas of Endangered Species." By Richard Mackay. Environmental Conservation 30:210-211.

Smallwood, K.S. 2002. Review of "The Endangered Species Act. History, Conservation, and Public Policy." By Brian Czech and Paul B. Krausman. Environmental Conservation 29: 269-270.

Smallwood, K.S. 1997. Spatial scaling of pocket gopher (Geomyidae) burrow volume. Abstract in Proceedings of 44th Annual Meeting, Southwestern Association of Naturalists. Department of Biological Sciences, University of Arkansas, Fayetteville.

Smallwood, K.S. 1997. Estimating prairie dog and pocket gopher burrow volume. Abstract in Proceedings of 44th Annual Meeting, Southwestern Association of Naturalists. Department of Biological Sciences, University of Arkansas, Fayetteville.

Smallwood, K.S. 1997. Animal burrowing parameters influencing toxic waste management. Abstract in Proceedings of Meeting, Western Section of the Wildlife Society.

Smallwood, K.S, and Bruce Wilcox. 1996. Study and interpretive design effects on mountain lion density estimates. Abstract, page 93 in D.W. Padley, ed., *Proceedings 5th Mountain Lion Workshop*, Southern California Chapter, The Wildlife Society. 135 pp.

Smallwood, K.S, and Bruce Wilcox. 1996. Ten years of mountain lion track survey. Page 94 in D.W. Padley, ed. Abstract, page 94 in D.W. Padley, ed., *Proceedings 5th Mountain Lion Workshop*, Southern California Chapter, The Wildlife Society. 135 pp.

Smallwood, K.S, and M. Grigione. 1997. Photographic recording of mountain lion tracks. Pages 75-75 in D.W. Padley, ed., *Proceedings 5th Mountain Lion Workshop*, Southern California Chapter, The Wildlife Society. 135 pp.

Smallwood, K.S., B. Wilcox, and J. Karr. 1995. An approach to scaling fragmentation effects. Brief 8, Ecosystem Indicators Working Group, 17 March, 1995. Institute for Sustainable Development, Thoreau Center for Sustainability – The Presidio, PO Box 29075, San Francisco, CA 94129-0075.

Wilcox, B., and K.S. Smallwood. 1995. Ecosystem indicators model overview. Brief 2, Ecosystem Indicators Working Group, 17 March, 1995. Institute for Sustainable Development, Thoreau Center for Sustainability – The Presidio, PO Box 29075, San Francisco, CA 94129-0075.

EIP Associates. 1996. Yolo County Habitat Conservation Plan. Yolo County Planning and Development Department, Woodland, California.

Geng, S., K.S. Smallwood, and M. Zhang. 1995. Sustainable agriculture and agricultural sustainability. Proc. 7th International Congress SABRAO, 2nd Industrial Symp. WSAA. Taipei, Taiwan.

Smallwood, K.S. and S. Geng. 1994. Landscape strategies for biological control and IPM. Pages 454-464 in W. Dehai, ed., Proc. International Conference on Integrated Resource Management for Sustainable Agriculture. Beijing Agricultural University, Beijing, China.

Smallwood, K.S. and S. Geng. 1993. Alfalfa as wildlife habitat. California Alfalfa Symposium 23:105-8.

Smallwood, K.S. and S. Geng. 1993. Management of pocket gophers in Sacramento Valley alfalfa. California Alfalfa Symposium 23:86-89.

Smallwood, K.S. and E.L. Fitzhugh. 1992. The use of track counts for mountain lion population census. Pages 59-67 in C. Braun, ed. Mountain lion-Human Interaction Symposium and Workshop. Colorado Division of Wildlife, Fort Collins.

Smallwood, K.S. and E.L. Fitzhugh. 1989. Differentiating mountain lion and dog tracks. Pages 58-63 in Smith, R.H., ed. Proc. Third Mountain Lion Workshop. Arizona Game and Fish Department, Phoenix.

Fitzhugh, E.L. and K.S. Smallwood. 1989. Techniques for monitoring mountain lion population levels. Pages 69-71 in Smith, R.H., ed. Proc. Third Mountain Lion Workshop. Arizona Game and Fish Department, Phoenix.

Reports to or by Alameda County Scientific Review Committee (Note: all documents linked to SRC website have since been removed by Alameda County)

Smallwood, K. S. 2014. Data Needed in Support of Repowering in the Altamont Pass WRA. http://www.altamontsrc.org/alt_doc/p284_smallwood_data_needed_in_support_of_repowering_in_the_altamont_pass_wra.pdf

Smallwood, K. S. 2013. Long-Term Trends in Fatality Rates of Birds and Bats in the Altamont Pass Wind Resource Area, California. http://www.altamontsrc.org/alt_doc/r68_smallwood_altamont_fatality_rates_longterm.pdf

Smallwood, K. S. 2013. Inter-annual Fatality rates of Target Raptor Species from 1999 through 2012 in the Altamont Pass Wind Resources Area. http://www.altamontsrc.org/alt_doc/p268_smallwood_inter_annual_comparison_of_fatality_rates_1999_2012.pdf

Smallwood, K. S. 2012. General Protocol for Performing Detection Trials in the FloDesign Study of the Safety of a Closed-bladed Wind Turbine. http://www.altamontsrc.org/alt_doc/p246_smallwood_flodesign_detection_trial_protocol.pdf

Smallwood, K. S., l. Neher, and J. Mount. 2012. Burrowing owl distribution and abundance study through two breeding seasons and intervening non-breeding period in the Altamont Pass Wind Resource Area, California. http://www.altamontsrc.org/alt_doc/p245_smallwood_et_al_burrowing_owl density_2012.pdf

Smallwood, K. S 2012. Draft study design for testing collision risk of Flodesign wind turbine in former AES Seawest wind projects in the Altamont Pass Wind Resource Area (APWRA). http://www.altamontsrc.org/alt_doc/p238_smallwood_floeesign_draft_study_design_april_2012.pdf

Smallwood, L. Neher, and J. Mount. 2012. Winter 2012 update on burrowing owl distribution and abundance study in the Altamont Pass Wind Resource Area, California. http://www.altamontsrc.org/alt_doc/p232_smallwood_et_al_winter_owl_survey_update.pdf

Smallwood, S. 2012. Status of avian utilization data collected in the Altamont Pass Wind Resource Area, 2005-2011. http://www.altamontsrc.org/alt_doc/p231_smallwood_apwra_use_data_2005_2011.pdf

Smallwood, K. S., L. Neher, and J. Mount. 2011. Monitoring Burrow Use of Wintering Burrowing Owls. http://www.altamontsrc.org/alt_doc/p229_smallwood_et_al_progress_monitoring_burrowing_owl_burrow_use.pdf

Smallwood, K. S., L. Neher, and J. Mount. 2011. Nesting Burrowing Owl Distribution and Abundance in the Altamont Pass Wind Resource Area, California. http://www.altamontsrc.org/alt_doc/p228_smallwood_et_al_for_nextera_burrowing_owl_distribution_and_abundance_study.pdf

Smallwood, K. S. 2011. Draft Study Design for Testing Collision Risk of Flodesign Wind Turbine in Patterson Pass Wind Farm in the Altamont Pass Wind Resource Area (APWRA). http://www.altamontsrc.org/alt_doc/p100_src_document_list_with_reference_numbers.pdf

Smallwood, K. S. 2011. Sampling Burrowing Owls Across the Altamont Pass Wind Resource Area. http://www.altamontsrc.org/alt_doc/p205_smallwood_neher_progress_on_sampling_burrowing_owls_across_apwra.pdf

Smallwood, K. S. 2011. Proposal to Sample Burrowing Owls Across the Altamont Pass Wind Resource Area. http://www.altamontsrc.org/alt_doc/p198_smallwood_proposal_to_sample_burrowing_owls_across_apwra.pdf

Smallwood, K. S. 2010. Comments on APWRA Monitoring Program Update. http://www.altamontsrc.org/alt_doc/p191_smallwood_comments_on_apwra_monitoring_program_update.pdf

Smallwood, K. S. 2010. Inter-turbine Comparisons of Fatality Rates in the Altamont Pass Wind Resource Area. http://www.altamontsrc.org/alt_doc/p189_smallwood_report_of_apwra_fatality_rate_patterns.pdf

Smallwood, K. S. 2010. Review of the December 2010 Draft of M-21: Altamont Pass Wind Resource Area Bird Collision Study. http://www.altamontsrc.org/alt_doc/p190_smallwood_review_of_december_2010_monitoring_report.pdf

Alameda County SRC (Shawn Smallwood, Jim Estep, Sue Orloff, Joanna Burger, and Julie Yee). Comments on the Notice of Preparation for a Programmatic Environmental Impact Report on Revised CUPs for Wind Turbines in the Alameda County portion of the Altamont Pass. http://www.altamontsrc.org/alt_doc/p183_src_integrated_comments_on_nop.pdf

Smallwood, K. S. 2010. Review of Monitoring Implementation Plan. http://www.altamontsrc.org/alt_doc/p180_src_comments_on_dip.pdf

Burger, J., J. Estep, S. Orloff, S. Smallwood, and J. Yee. 2010. SRC Comments on CalWEA Research Plan. http://www.altamontsrc.org/alt_doc/p174_smallwood_review_of_calwea_removal_study_plan.pdf

Alameda County SRC (Smallwood, K. S., S. Orloff, J. Estep, J. Burger, and J. Yee). SRC Comments on Monitoring Team's Draft Study Plan for Future Monitoring. http://www.altamontsrc.org/alt_doc/p168_src_comments_on_m53_mt_draft_study_plan_for_future_monitoring.pdf

Smallwood, K. S. 2010. Second Review of American Kestrel-Burrowing owl (KB) Scavenger Removal Adjustments Reported in Alameda County Avian Monitoring Team's M21 for the Altamont Pass Wind Resource Area. http://www.altamontsrc.org/alt_doc/p171_smallwood_kb_removal_rates_follow_up.pdf

Smallwood, K. S. 2010. Assessment of Three Proposed Adaptive Management Plans for Reducing Raptor Fatalities in the Altamont Pass Wind Resource Area. http://www.altamontsrc.org/alt_doc/p161_smallwood_assessment_of_amps.pdf

Smallwood, K. S. and J. Estep. 2010. Report of additional wind turbine hazard ratings in the Altamont Pass Wind Resource Area by Two Members of the Alameda County Scientific Review Committee. http://www.altamontsrc.org/alt_doc/p153_smallwood_estep_additional_hazard_ratings.pdf

Smallwood, K. S. 2010. Alternatives to Improve the Efficiency of the Monitoring Program. http://www.altamontsrc.org/alt_doc/p158_smallwood_response_to_memo_on_monitoring_costs.pdf

Smallwood, S. 2010. Summary of Alameda County SRC Recommendations and Concerns and Subsequent Actions. http://www.altamontsrc.org/alt_doc/p147_smallwood_summary_of_src_recommendations_and_concerns_1_11_10.pdf

Smallwood, S. 2010. Progress of Avian Wildlife Protection Program & Schedule. http://www.altamontsrc.org/alt_doc/p148_smallwood_progress_of_avian_wildlife_protection_program_1_11_10.pdf

Smallwood, S. 2010. Old-generation wind turbines rated for raptor collision hazard by Alameda County Scientific Review Committee in 2010, an Update on those Rated in 2007, and an Update on Tier Rankings. http://www.altamontsrc.org/alt_doc/p155_smallwood_src_turbine_ratings_and_status.pdf

Smallwood, K. S. 2010. Review of American Kestrel-Burrowing owl (KB) Scavenger Removal Adjustments Reported in Alameda County Avian Monitoring Team's M21 for the Altamont Pass Wind Resource Area. http://www.altamontsrc.org/alt_doc/p154_smallwood_kb_removal_rates_041610.pdf

Smallwood, K. S. 2010. Fatality Rates in the Altamont Pass Wind Resource Area 1998-2009. Alameda County SRC document P-145.

Smallwood, K. S. 2010. Comments on Revised M-21: Report on Fatality Monitoring in the Altamont Pass Wind Resource Area. P144 SRC Comments on 2009 Draft Monitoring Report M21.

Smallwood, K. S. 2009. http://www.altamontsrc.org/alt_doc/p129_smallwood_search_interval_summaries_supplemental_to_m39.pdf

Smallwood, K. S. 2009. Smallwood's review of M32. Alameda County SRC document P-111. 6 pp. http://www.altamontsrc.org/alt_doc/p111_smallwoods_review_of_m32.pdf

Smallwood, K. S. 2009. 3rd Year Review of 16 Conditional Use Permits for Windworks, Inc. and Altamont Infrastructure Company, LLC. Comment letter to East County Board of Zoning Adjustments. 10 pp + 2 attachments.

Smallwood, K. S. 2008. Weighing Remaining Workload of Alameda County SRC against Proposed Budget Cap. Alameda County SRC document not assigned. 3 pp.

Alameda County SRC (Smallwood, K. S., S. Orloff, J. Estep, J. Burger, and J. Yee). 2008. SRC comments on August 2008 Fatality Monitoring Report, M21. Alameda County SRC document P-107. 21 pp. http://www.altamontsrc.org/alt_doc/p107_smallwood_review_of_july_2008_monitoring_report_m21.pdf

Smallwood, K. S. 2008. Burrowing owl carcass distribution around wind turbines. Alameda County SRC document 106. 8 pp. http://www.altamontsrc.org/alt_doc/p106_smallwood_burrowing_owl_carcass_distribution_around_wind_turbines.pdf

Smallwood, K. S. 2008. Assessment of relocation/removal of Altamont Pass wind turbines rated as hazardous by the Alameda County SRC. Alameda County SRC document P-103. 10 pp. http://www.altamontsrc.org/alt_doc/p103_assessment_of_src_recommendations_to_relocate_rated_turbines.pdf

Smallwood, K. S. and L. Neher. 2008. Summary of wind turbine-free ridgelines within and around the APWRA. Alameda County SRC document P-102. 4 pp.

Smallwood, K. S. and B. Karas. 2008. Comparison of mortality estimates in the Altamont Pass Wind Resource Area when restricted to recent fatalities. Alameda County SRC document P-101.

Smallwood, K. S. 2008. On the misapplication of mortality adjustment terms to fatalities missed during one search and found later. Alameda County SRC document P-97. 3 pp.

Smallwood, K. S. 2008. Relative abundance of raptors outside the APWRA. Alameda County SRC document P-88. 6 pp.

Smallwood, K. S. 2008. Comparison of mortality estimates in the Altamont Pass Wind Resource Area. Alameda County SRC document P-76. 19 pp

Alameda County SRC (Smallwood, K. S., S. Orloff, J. Estep, J. Burger, and J. Yee). 2010. Guidelines for siting wind turbines recommended for relocation to minimize potential collision-related mortality of four focal raptor species in the Altamont Pass Wind Resource Area. Alameda County SRC document P-70.

Alameda County SRC (Smallwood, K. S., S. Orloff, J. Estep, J. Burger, and J. Yee). December 11, 2007. SRC selection of dangerous wind turbines. Alameda County SRC document P-67. 8 pp.

Smallwood, S. October 6, 2007. Smallwood's answers to Audubon's queries about the SRC's recommended four month winter shutdown of wind turbines in the Altamont Pass. Alameda County SRC document P-23.

Smallwood, K. S. October 1, 2007. Dissenting opinion on recommendation to approve of the AWI Blade Painting Study. Alameda County SRC document P-60.

Smallwood, K. S. July 26, 2007. Effects of monitoring duration and inter-annual variability on precision of wind-turbine caused mortality estimates in the Altamont Pass Wind Resource Area, California. SRC Document P44.

Smallwood, K. S. July 26, 2007. Memo: Opinion of some SRC members that the period over which post-management mortality will be estimated remains undefined. SRC Document P43.

Smallwood, K. S. July 19, 2007. Smallwood's response to P24G. SRC Document P41, 4 pp.

Smallwood, K. S. April 23, 2007. New Information Regarding Alameda County SRC Decision of 11 April 2007 to Grant FPLE Credits for Removing and Relocating Wind Turbines in 2004. SRC Document P26.

Alameda County SRC (Smallwood, K. S., S. Orloff, J. Estep, and J. Burger [J. Yee abstained]). April 17, 2007. SRC Statement in Support of the Monitoring Program Scope and Budget.

Smallwood, K. S. April 15, 2007. Verification of Tier 1 & 2 Wind Turbine Shutdowns and Relocations. SRC Document P22.

Smallwood, S. April 15, 2007. Progress of Avian Wildlife Protection Program & Schedule.

Alameda County SRC (Smallwood, K. S., S. Orloff, J. Estep, J. Burger, and J. Yee). April 3, 2007. Alameda County Scientific Review Committee replies to the parties' responses to its queries and to comments from the California Office of the Attorney General. SRC Document S20.

Smallwood, S. March 19, 2007. Estimated Effects of Full Winter Shutdown and Removal of Tier I & II Turbines. SRC Document S19.

Smallwood, S. March 8, 2007. Smallwood's Replies to the Parties' Responses to Queries from the SRC and Comments from the California Office of the Attorney General. SRC Document S16.

Smallwood, S. March 8, 2007. Estimated Effects of Proposed Measures to be Applied to 2,500 Wind Turbines in the APWRA Fatality Monitoring Plan. SRC Document S15.

Alameda County SRC (Smallwood, K. S., S. Orloff, J. Estep, J. Burger, and J. Yee). February 7, 2007. Analysis of Monitoring Program in Context of 1/1//2007 Settlement Agreement.

Smallwood, S. January 8, 2007. Smallwood's Concerns over the Agreement to Settle the CEQA Challenges. SRC Document S5.

Alameda County SRC (Smallwood, K. S., S. Orloff, J. Estep, J. Burger, and J. Yee). December 19, 2006. Altamont Scientific Review Committee (SRC) Recommendations to the County on the Avian Monitoring Team Consultants' Budget and Organization.

Reports to Clients

Smallwood, K. S. 2018. Addendum to Comparison of Wind Turbine Collision Hazard Model Performance: One-year Post-construction Assessment of Golden Eagle Fatalities at Golden Hills. Report to Audubon Society, NextEra Energy, and the California Attorney General.

Smallwood, K. S., and L. Neher. 2018. Siting wind turbines to minimize raptor collisions at Rooney Ranch and Sand Hill Repowering Project, Altamont Pass Wind Resource Area. Report to S-Power, Salt Lake City, Utah.

Smallwood, K. S. 2017. Summary of a burrowing owl conservation workshop. Report to Santa Clara Valley Habitat Agency, Morgan Hill, California.

Smallwood, K. S., and L. Neher. 2017. Comparison of wind turbine collision hazard model performance prepared for repowering projects in the Altamont Pass Wind Resources Area. Report to NextEra Energy Resources, Inc., Office of the California Attorney General, Audubon Society, East Bay Regional Park District.

Smallwood, K. S., and L. Neher. 2016. Siting wind turbines to minimize raptor collisions at Summit Winds Repowering Project, Altamont Pass Wind Resource Area. Report to Salka, Inc., Washington, D.C.

Smallwood, K. S., L. Neher, and D. A. Bell. 2017. Mitigating golden eagle impacts from repowering Altamont Pass Wind Resource Area and expanding Los Vaqueros Reservoir. Report to East Contra Costa County Habitat Conservation Plan Conservancy and Contra Costa Water District.

Smallwood, K. S. 2016. Report of Altamont Pass research as Vasco Winds mitigation. Report to NextEra Energy Resources, Inc., Office of the California Attorney General, Audubon Society, East Bay Regional Park District.

Smallwood, K. S., and L. Neher. 2016. Siting Wind Turbines to Minimize Raptor collisions at Sand Hill Repowering Project, Altamont Pass Wind Resource Area. Report to Ogin, Inc., Waltham, Massachusetts.

Smallwood, K. S., and L. Neher. 2015a. Siting wind turbines to minimize raptor collisions at Golden Hills Repowering Project, Altamont Pass Wind Resource Area. Report to NextEra Energy Resources, Livermore, California.

Smallwood, K. S., and L. Neher. 2015b. Siting wind turbines to minimize raptor collisions at Golden Hills North Repowering Project, Altamont Pass Wind Resource Area. Report to NextEra Energy Resources, Livermore, California.

Smallwood, K. S., and L. Neher. 2015c. Siting wind turbines to minimize raptor collisions at the Patterson Pass Repowering Project, Altamont Pass Wind Resource Area. Report to EDF Renewable Energy, Oakland, California.

Smallwood, K. S., and L. Neher. 2014. Early assessment of wind turbine layout in Summit Wind Project. Report to Altamont Winds LLC, Tracy, California.

Smallwood, K. S. 2015. Review of avian use survey report for the Longboat Solar Project. Report to EDF Renewable Energy, Oakland, California.

Smallwood, K. S. 2014. Information needed for solar project impacts assessment and mitigation planning. Report to Panorama Environmental, Inc., San Francisco, California.

Smallwood, K. S. 2014. Monitoring fossorial mammals in Vasco Caves Regional Preserve, California: Report of Progress for the period 2006-2014. Report to East Bay Regional Park District, Oakland, California.

Smallwood, K. S. 2013. First-year estimates of bird and bat fatality rates at old wind turbines, Forebay areas of Altamont Pass Wind Resource Area. Report to FloDesign in support of EIR.

Smallwood, K. S. and W. Pearson. 2013. Neotropical bird monitoring of burrowing owls (*Athene cunicularia*), Naval Air Station Lemoore, California. Tierra Data, Inc. report to Naval Air Station Lemoore.

Smallwood, K. S. 2013. Winter surveys for San Joaquin kangaroo rat (*Dipodomys nitratoides*) and

burrowing owls (*Athene cunicularia*) within Air Operations at Naval Air Station, Lemoore. Report to Tierra Data, Inc. and Naval Air Station Lemoore.

Smallwood, K. S. and M. L. Morrison. 2013. San Joaquin kangaroo rat (*Dipodomys n. nitratoides*) conservation research in Resource Management Area 5, Lemoore Naval Air Station: 2012 Progress Report (Inclusive of work during 2000-2012). Naval Facilities Engineering Command, Southwest, Desert Integrated Products Team, San Diego, California.

Smallwood, K. S. 2012. Fatality rate estimates at the Vantage Wind Energy Project, year one. Report to Ventus Environmental, Portland, Oregon.

Smallwood, K. S. and L. Neher. 2012. Siting wind turbines to minimize raptor collisions at North Sky River. Report to NextEra Energy Resources, LLC.

Smallwood, K. S. 2011. Monitoring Fossorial Mammals in Vasco Caves Regional Preserve, California: Report of Progress for the Period 2006-2011. Report to East Bay Regional Park District.

Smallwood, K. S. and M. L. Morrison. 2011. San Joaquin kangaroo rat (*Dipodomys n. nitratoides*) Conservation Research in Resource Management Area 5, Lemoore Naval Air Station: 2011 Progress Report (Inclusive of work during 2000-2011). Naval Facilities Engineering Command, Southwest, Desert Integrated Products Team, San Diego, California.

Smallwood, K. S. 2011. Draft study design for testing collision risk of FloDesign Wind Turbine in Patterson Pass, Santa Clara, and Former AES Seawest Wind Projects in the Altamont Pass Wind Resource Area (APWRA). Report to FloDesign, Inc.

Smallwood, K. S. 2011. Comments on Marbled Murrelet collision model for the Radar Ridge Wind Resource Area. Report to EcoStat, Inc., and ultimately to US Fish and Wildlife Service.

Smallwood, K. S. 2011. Avian fatality rates at Buena Vista Wind Energy Project, 2008-2011. Report to Pattern Energy.

Smallwood, K. S. and L. Neher. 2011. Siting repowered wind turbines to minimize raptor collisions at Tres Vaqueros, Contra Costa County, California. Report to Pattern Energy.

Smallwood, K. S. and M. L. Morrison. 2011. San Joaquin kangaroo rat (*Dipodomys n. nitratoides*) Conservation Research in Resource Management Area 5, Lemoore Naval Air Station: 2010 Progress Report (Inclusive of work during 2000-2010). Naval Facilities Engineering Command, Southwest, Desert Integrated Products Team, San Diego, California.

Smallwood, K. S. 2010. Wind Energy Development and avian issues in the Altamont Pass, California. Report to Black & Veatch.

Smallwood, K. S. and L. Neher. 2010. Siting repowered wind turbines to minimize raptor collisions at the Tres Vaqueros Wind Project, Contra Costa County, California. Report to the East Bay Regional Park District, Oakland, California.

Smallwood, K. S. and L. Neher. 2010. Siting repowered wind turbines to minimize raptor collisions at Vasco Winds. Report to NextEra Energy Resources, LLC, Livermore, California.

Smallwood, K. S. 2010. Baseline avian and bat fatality rates at the Tres Vaqueros Wind Project, Contra Costa County, California. Report to the East Bay Regional Park District, Oakland, California.

Smallwood, K. S. and M. L. Morrison. 2010. San Joaquin kangaroo rat (*Dipodomys n. nitratoides*) Conservation Research in Resource Management Area 5, Lemoore Naval Air Station: 2009 Progress Report (Inclusive of work during 2000-2009). Naval Facilities Engineering Command, Southwest, Desert Integrated Products Team, San Diego, California. 86 pp.

Smallwood, K. S. 2009. Mammal surveys at naval outlying landing field Imperial Beach, California, August 2009. Report to Tierra Data, Inc. 5 pp

Smallwood, K. S. 2009. Mammals and other Wildlife Observed at Proposed Site of Amargosa Solar Power Project, Spring 2009. Report to Tierra Data, Inc. 13 pp

Smallwood, K. S. 2009. Avian Fatality Rates at Buena Vista Wind Energy Project, 2008-2009. Report to members of the Contra Costa County Technical Advisory Committee on the Buena Vista Wind Energy Project. 8 pp.

Smallwood, K. S. 2009. Repowering the Altamont Pass Wind Resource Area more than Doubles Energy Generation While Substantially Reducing Bird Fatalities. Report prepared on behalf of Californians for Renewable Energy. 2 pp.

Smallwood, K. S. and M. L. Morrison. 2009. Surveys to Detect Salt Marsh Harvest Mouse and California Black Rail at Installation Restoration Site 30, Military Ocean Terminal Concord, California: March-April 2009. Report to Insight Environmental, Engineering, and Construction, Inc., Sacramento, California. 6 pp.

Smallwood, K. S. 2008. Avian and Bat Mortality at the Big Horn Wind Energy Project, Klickitat County, Washington. Unpublished report to Friends of Skamania County. 7 pp.

Smallwood, K. S. 2009. Monitoring Fossorial Mammals in Vasco Caves Regional Preserve, California: report of progress for the period 2006-2008. Unpublished report to East Bay Regional Park District. 5 pp.

Smallwood, K. S. and M. L. Morrison. 2008. San Joaquin kangaroo rat (*Dipodomys n. nitratoides*) Conservation Research in Resource Management Area 5, Lemoore Naval Air Station: 2008 Progress Report (Inclusive of work during 2000-2008). Naval Facilities Engineering Command, Southwest, Desert Integrated Products Team, San Diego, California. 84 pp.

Smallwood, K. S. and M. L. Morrison. 2008. Habitat Assessment for California Red-Legged Frog at Naval Weapons Station, Seal Beach, Detachment Concord, California. Naval Facilities Engineering Command, Southwest, Desert Integrated Products Team, San Diego, California. 48

pp.

Smallwood, K. S. and B. Nakamoto 2008. Impact of 2005 and 2006 West Nile Virus on Yellow-billed Magpie and American Crow in the Sacramento Valley, California. 22 pp.

Smallwood, K. S. and M. L. Morrison. 2008. Former Naval Security Group Activity (NSGA), Skaggs Island, Waste and Contaminated Soil Removal Project (IR Site #2), San Pablo Bay, Sonoma County, California: Re-Vegetation Monitoring. Report to U.S. Navy, Letter Agreement – N68711-04LT-A0045. Naval Facilities Engineering Command, Southwest, Desert Integrated Products Team, San Diego, California. 10 pp.

Smallwood, K. S. and M. L. Morrison. 2008. Burrowing owls at Dixon Naval Radio Transmitter Facility. Report to U.S. Navy. Naval Facilities Engineering Command, Southwest, Desert Integrated Products Team, San Diego, California. 28 pp.

Smallwood, K. S. and M. L. Morrison. 2008. San Joaquin kangaroo rat (*Dipodomys n. nitratoides*) Conservation Research in Resource Management Area 5, Lemoore Naval Air Station: 2007 Progress Report (Inclusive of work during 2001-2007). Naval Facilities Engineering Command, Southwest, Desert Integrated Products Team, San Diego, California. 69 pp.

Smallwood, K. S. and M. L. Morrison. 2007. A Monitoring Effort to Detect the Presence of the Federally Listed Species California Clapper Rail and Salt Marsh Harvest Mouse, and Wetland Habitat Assessment at the Naval Weapons Station, Seal Beach, Detachment Concord, California. Installation Restoration (IR) Site 30, Final Report to U.S. Navy, Letter Agreement – N68711-05LT-A0001. U.S. Navy Integrated Product Team (IPT), West, Naval Facilities Engineering Command, San Diego, California. 8 pp.

Smallwood, K. S. and M. L. Morrison. 2007. San Joaquin kangaroo rat (*Dipodomys n. nitratoides*) Conservation Research in Resource Management Area 5, Lemoore Naval Air Station: 2006 Progress Report (Inclusive of work during 2001-2006). U.S. Navy Integrated Product Team (IPT), West, Naval Facilities Engineering Command, Southwest, Daly City, California. 165 pp.

Smallwood, K. S. and C. Thelander. 2006. Response to third review of Smallwood and Thelander (2004). Report to California Institute for Energy and Environment, University of California, Oakland, CA. 139 pp.

Smallwood, K. S. 2006. Biological effects of repowering a portion of the Altamont Pass Wind Resource Area, California: The Diablo Winds Energy Project. Report to Altamont Working Group. Available from Shawn Smallwood, puma@yolo.com . 34 pp.

Smallwood, K. S. 2006. Impact of 2005 West Nile Virus on Yellow-billed Magpie and American Crow in the Sacramento Valley, California. Report to Sacramento-Yolo Mosquito and Vector Control District, Elk Grove, CA. 38 pp.

Smallwood, K. S. and M. L. Morrison. 2006. San Joaquin kangaroo rat (*Dipodomys n. nitratoides*) Conservation Research in Resource Management Area 5, Lemoore Naval Air Station: 2005 Progress Report (Inclusive of work during 2001-2005). U.S. Navy Integrated Product Team

(IPT), West, Naval Facilities Engineering Command, South West, Daly City, California. 160 pp.

Smallwood, K. S. and M. L. Morrison. 2006. A monitoring effort to detect the presence of the federally listed species California tiger salamander and California red-legged frog at the Naval Weapons Station, Seal Beach, Detachment Concord, California. Letter agreements N68711-04LT-A0042 and N68711-04LT-A0044, U.S. Navy Integrated Product Team (IPT), West, Naval Facilities Engineering Command, South West, Daly City, California. 60 pp.

Smallwood, K. S. and M. L. Morrison. 2006. A monitoring effort to detect the presence of the federally listed species California Clapper Rail and Salt Marsh Harvest Mouse, and wetland habitat assessment at the Naval Weapons Station, Seal Beach, Detachment Concord, California. Sampling for rails, Spring 2006, Installation Restoration (IR) Site 1. Letter Agreement – N68711-05lt-A0001, U.S. Navy Integrated Product Team (IPT), West, Naval Facilities Engineering Command, South West, Daly City, California. 9 pp.

Morrison, M. L. and K. S. Smallwood. 2006. Final Report: Station-wide Wildlife Survey, Naval Air Station, Lemoore. Department of the Navy Integrated Product Team (IPT) West, Naval Facilities Engineering Command Southwest, 2001 Junipero Serra Blvd., Suite 600, Daly City, CA 94014-1976. 20 pp.

Smallwood, K. S. and M. L. Morrison. 2006. Former Naval Security Group Activity (NSGA), Skaggs Island, Waste and Contaminated Soil Removal Project, San Pablo Bay, Sonoma County, California: Re-vegetation Monitoring. Department of the Navy Integrated Product Team (IPT) West, Naval Facilities Engineering Command Southwest, 2001 Junipero Serra Blvd., Suite 600, Daly City, CA 94014-1976. 8 pp.

Dorin, Melinda, Linda Spiegel and K. Shawn Smallwood. 2005. Response to public comments on the staff report entitled *Assessment of Avian Mortality from Collisions and Electrocutions* (CEC-700-2005-015) (Avian White Paper) written in support of the 2005 Environmental Performance Report and the 2005 Integrated Energy Policy Report. California Energy Commission, Sacramento. 205 pp.

Smallwood, K. S. 2005. Estimating combined effects of selective turbine removal and winter-time shutdown of half the wind turbines. Unpublished CEC staff report, June 23. 1 p.

Erickson, W. and S. Smallwood. 2005. Avian and Bat Monitoring Plan for the Buena Vista Wind Energy Project Contra Costa County, California. Unpubl. report to Contra Costa County, Antioch, California. 22 pp.

Lamphier-Gregory, West Inc., Shawn Smallwood, Jones & Stokes Associates, Illingworth & Rodkin Inc. and Environmental Vision. 2005. Environmental Impact Report for the Buena Vista Wind Energy Project, LP# 022005. County of Contra Costa Community Development Department, Martinez, California.

Morrison, M. L. and K. S. Smallwood. 2005. A monitoring effort to detect the presence of the federally listed species California clapper rail and salt marsh harvest mouse, and wetland habitat assessment at the Naval Weapons Station, Seal Beach, Detachment Concord, California.

Targeted Sampling for Salt Marsh Harvest Mouse, Fall 2005 Installation Restoration (IR) Site 30. Letter Agreement – N68711-05lt-A0001, U.S. Department of the Navy, Naval Facilities Engineering Command Southwest, Daly City, California. 6 pp.

Morrison, M. L. and K. S. Smallwood. 2005. A monitoring effort to detect the presence of the federally listed species California clapper rail and salt marsh harvest mouse, and wetland habitat assessment at the Naval Weapons Station, Seal Beach, Detachment Concord, California. Letter Agreement – N68711-05lt-A0001, U.S. Department of the Navy, Naval Facilities Engineering Command Southwest, Daly City, California. 5 pp.

Morrison, M. L. and K. S. Smallwood. 2005. Skaggs Island waste and contaminated soil removal projects, San Pablo Bay, Sonoma County, California. Report to the U.S. Department of the Navy, Naval Facilities Engineering Command Southwest, Daly City, California. 6 pp.

Smallwood, K. S. and M. L. Morrison. 2004. 2004 Progress Report: San Joaquin kangaroo rat (*Dipodomys nitratoides*) Conservation Research in Resources Management Area 5, Lemoore Naval Air Station. Progress report to U.S. Department of the Navy, Lemoore, California. 134 pp.

Smallwood, K. S. and L. Spiegel. 2005a. Assessment To Support An Adaptive Management Plan For The APWRA. Unpublished CEC staff report, January 19. 19 pp.

Smallwood, K. S. and L. Spiegel. 2005b. Partial Re-assessment of An Adaptive Management Plan For The APWRA. Unpublished CEC staff report, March 25. 48 pp.

Smallwood, K. S. and L. Spiegel. 2005c. Combining biology-based and policy-based tiers of priority for determining wind turbine relocation/shutdown to reduce bird fatalities in the APWRA. Unpublished CEC staff report, June 1. 9 pp.

Smallwood, K. S. 2004. Alternative plan to implement mitigation measures in APWRA. Unpublished CEC staff report, January 19. 8 pp.

Smallwood, K. S., and L. Neher. 2005. Repowering the APWRA: Forecasting and minimizing avian mortality without significant loss of power generation. California Energy Commission, PIER Energy-Related Environmental Research. CEC-500-2005-005. 21 pp. [Reprinted (in Japanese) in Yukihiro Kominami, Tatsuya Ura, Koshitawa, and Tsuchiya, Editors, Wildlife and Wind Turbine Report 5. Wild Bird Society of Japan, Tokyo.]

Morrison, M. L., and K. S. Smallwood. 2004. Kangaroo rat survey at RMA4, NAS Lemoore. Report to U.S. Navy. 4 pp.

Morrison, M. L., and K. S. Smallwood. 2004. A monitoring effort to detect the presence of the federally listed species California clapper rails and wetland habitat assessment at Pier 4 of the Naval Weapons Station, Seal Beach, Detachment Concord, California. Letter Agreement N68711-04LT-A0002. 8 pp. + 2 pp. of photo plates.

Smallwood, K. S. and M. L. Morrison. 2003. 2003 Progress Report: San Joaquin kangaroo rat

(*Dipodomys nitratoides*) Conservation Research at Resources Management Area 5, Lemoore Naval Air Station. Progress report to U.S. Department of the Navy, Lemoore, California. 56 pp. + 58 figures.

Smallwood, K. S. 2003. Comparison of Biological Impacts of the No Project and Partial Underground Alternatives presented in the Final Environmental Impact Report for the Jefferson-Martin 230 kV Transmission Line. Report to California Public Utilities Commission. 20 pp.

Morrison, M. L., and K. S. Smallwood. 2003. Kangaroo rat survey at RMA4, NAS Lemoore. Report to U.S. Navy. 6 pp. + 7 photos + 1 map.

Smallwood, K. S. 2003. Assessment of the Environmental Review Documents Prepared for the Tesla Power Project. Report to the California Energy Commission on behalf of Californians for Renewable Energy. 32 pp.

Smallwood, K. S., and M. L. Morrison. 2003. 2002 Progress Report: San Joaquin kangaroo rat (*Dipodomys nitratoides*) Conservation Research at Resources Management Area 5, Lemoore Naval Air Station. Progress report to U.S. Department of the Navy, Lemoore, California. 45 pp. + 36 figures.

Smallwood, K. S., Michael L. Morrison and Carl G. Thelander 2002. Study plan to test the effectiveness of aerial markers at reducing avian mortality due to collisions with transmission lines: A report to Pacific Gas & Electric Company. 10 pp.

Smallwood, K. S. 2002. Assessment of the Environmental Review Documents Prepared for the East Altamont Energy Center. Report to the California Energy Commission on behalf of Californians for Renewable Energy. 26 pp.

Thelander, Carl G., K. Shawn Smallwood, and Christopher Costello. 2002 Rating Distribution Poles for Threat of Raptor Electrocution and Priority Retrofit: Developing a Predictive Model. Report to Southern California Edison Company. 30 pp.

Smallwood, K. S., M. Robison, and C. Thelander. 2002. Draft Natural Environment Study, Prunedale Highway 101 Project. California Department of Transportation, San Luis Obispo, California. 120 pp.

Smallwood, K.S. 2001. Assessment of ecological integrity and restoration potential of Beeman/Pelican Farm. Draft Report to Howard Beeman, Woodland, California. 14 pp.

Smallwood, K. S., and M. L. Morrison. 2002. Fresno kangaroo rat (*Dipodomys nitratoides*) Conservation Research at Resources Management Area 5, Lemoore Naval Air Station. Progress report to U.S. Department of the Navy, Lemoore, California. 29 pp. + 19 figures.

Smallwood, K.S. 2001. Rocky Flats visit, April 4th through 6th, 2001. Report to Berger & Montaque, P.C. 16 pp. with 61 color plates.

Smallwood, K.S. 2001. Affidavit of K. Shawn Smallwood, Ph.D. in the matter of the U.S. Fish and

Wildlife Service's rejection of Seatuck Environmental Association's proposal to operate an education center on Seatuck National Wildlife Refuge. Submitted to Seatuck Environmental Association in two parts, totaling 7 pp.

Magney, D., and K.S. Smallwood. 2001. Maranatha High School CEQA critique. Comment letter submitted to Tamara & Efren Compeán, 16 pp.

Smallwood, K.S. 2001. Preliminary Comments on the Proposed Blythe Energy Project. Submitted to California Energy Commission on March 15 on behalf of Californians for Renewable Energy (CaRE). 14 pp.

Smallwood, K. S. and D. Mangey. 2001. Comments on the Newhall Ranch November 2000 Administrative Draft EIR. Prepared for Ventura County Counsel regarding the Newhall Ranch Specific Plan EIR. 68 pp.

Magney, D. and K. S. Smallwood. 2000. Newhall Ranch Notice of Preparation Submittal. Prepared for Ventura County Counsel regarding our recommended scope of work for the Newhall Ranch Specific Plan EIR. 17 pp.

Smallwood, K. S. 2000. Comments on the Preliminary Staff Assessment of the Contra Costa Power Plant Unit 8 Project. Submitted to California Energy Commission on November 30 on behalf of Californians for Renewable Energy (CaRE). 4 pp.

Smallwood, K. S. 2000. Comments on the California Energy Commission's Final Staff Assessment of the MEC. Submitted to California Energy Commission on October 29 on behalf of Californians for Renewable Energy (CaRE). 8 pp.

Smallwood, K. S. 2000. Comments on the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP). Submitted to California Energy Commission on October 29 on behalf of Californians for Renewable Energy (CaRE). 9 pp.

Smallwood, K. S. 2000. Comments on the Preliminary Staff Assessment of the Metcalf Energy Center. Submitted to California Energy Commission on behalf of Californians for Renewable Energy (CaRE). 11 pp.

Smallwood, K. S. 2000. Preliminary report of reconnaissance surveys near the TRW plant south of Phoenix, Arizona, March 27-29. Report prepared for Hagens, Berman & Mitchell, Attorneys at Law, Phoenix, AZ. 6 pp.

Morrison, M.L., K.S. .Smallwood, and M. Robison. 2001. Draft Natural Environment Study for Highway 46 compliance with CEQA/NEPA. Report to the California Department of Transportation. 75 pp.

Morrison, M.L., and K.S. Smallwood. 1999. NTI plan evaluation and comments. Exhibit C in W.D. Carrier, M.L. Morrison, K.S. Smallwood, and Vail Engineering. Recommendations for NBHCP land acquisition and enhancement strategies. Northern Territories, Inc., Sacramento.

Smallwood, K. S. 1999. Estimation of impacts due to dredging of a shipping channel through Humboldt Bay, California. Court Declaration prepared on behalf of EPIC.

Smallwood, K. S. 1998. 1998 California Mountain Lion Track Count. Report to the Defenders of Wildlife, Washington, D.C. 5 pages.

Smallwood, K.S. 1998. Draft report of a visit to a paint sludge dump site near Ridgewood, New Jersey, February 26th, 1998. Unpublished report to Consulting in the Public Interest.

Smallwood, K.S. 1997. Science missing in the "no surprises" policy. Commissioned by National Endangered Species Network and Spirit of the Sage Council, Pasadena, California.

Smallwood, K.S. and M.L. Morrison. 1997. Alternate mitigation strategy for incidental take of giant garter snake and Swainson's hawk as part of the Natomas Basin Habitat Conservation Plan. Pages 6-9 and *iii* illustrations in W.D. Carrier, K.S. Smallwood and M.L. Morrison, Natomas Basin Habitat Conservation Plan: Narrow channel marsh alternative wetland mitigation. Northern Territories, Inc., Sacramento.

Smallwood, K.S. 1996. Assessment of the BIOPORT model's parameter values for pocket gopher burrowing characteristics. Report to Berger & Montague, P.C. and Roy S. Haber, P.C., Philadelphia. (peer reviewed).

Smallwood, K.S. 1997. Assessment of plutonium releases from Hanford buried waste sites. Report Number 9, Consulting in the Public Interest, 53 Clinton Street, Lambertville, New Jersey, 08530.

Smallwood, K.S. 1996. Soil Bioturbation and Wind Affect Fate of Hazardous Materials that were Released at the Rocky Flats Plant, Colorado. Report to Berger & Montague, P.C., Philadelphia.

Smallwood, K.S. 1996. Second assessment of the BIOPORT model's parameter values for pocket gopher burrowing characteristics and other relevant wildlife observations. Report to Berger & Montague, P.C. and Roy S. Haber, P.C., Philadelphia.

Smallwood, K.S., and R. Leidy. 1996. Wildlife and Their Management Under the Martell SYP. Report to Georgia Pacific, Corporation, Martel, CA. 30 pp.

EIP Associates. 1995. Yolo County Habitat Conservation Plan Biological Resources Report. Yolo County Planning and Development Department, Woodland, California.

Smallwood, K.S. and S. Geng. 1995. Analysis of the 1987 California Farm Cost Survey and recommendations for future survey. Program on Workable Energy Regulation, University-wide Energy Research Group, University of California.

Smallwood, K.S., S. Geng, and W. Idzerda. 1992. Final report to PG&E: Analysis of the 1987 California Farm Cost Survey and recommendations for future survey. Pacific Gas & Electric Company, San Ramon, California. 24 pp.

Fitzhugh, E.L. and K.S. Smallwood. 1987. Methods Manual – A statewide mountain lion population index technique. California Department of Fish and Game, Sacramento.

Salmon, T.P. and K.S. Smallwood. 1989. Final Report – Evaluating exotic vertebrates as pests to California agriculture. California Department of Food and Agriculture, Sacramento.

Smallwood, K.S. and W. A. Erickson (written under supervision of W.E. Howard, R.E. Marsh, and R.J. Laacke). 1990. Environmental exposure and fate of multi-kill strychnine gopher baits. Final Report to USDA Forest Service –NAPIAP, Cooperative Agreement PSW-89-0010CA.

Fitzhugh, E.L., K.S. Smallwood, and R. Gross. 1985. Mountain lion track count, Marin County, 1985. Report on file at Wildlife Extension, University of California, Davis.

Comments on Environmental Documents

I was retained or commissioned to comment on environmental planning and review documents, including:

- The Villages of Lakeview EIR (2017; 28 pp);
- Notes on Proposed Study Options for Trail Impacts on Northern Spotted Owl (2017; 4 pp);
- San Gorgonio Crossings EIR (2017; 22 pp);
- Replies to responses on Jupiter Project IS and MND (2017; 12 pp);
- MacArthur Transit Village Project Modified 2016 CEQA Analysis (2017; 12 pp);
- Central SoMa Plan DEIR (2017; 14 pp);
- Colony Commerce Center Specific Plan DEIR (2016; 16 pp);
- Fairway Trails Improvements MND (2016; 13 pp);
- Review of Avian-Solar Science Plan (2016; 28 pp);
- Replies to responses on Initial Study for Pyramid Asphalt (2016; 5 pp);
- Initial Study for Pyramid Asphalt (2016; 4 pp);
- Agua Mansa Distribution Warehouse Project Initial Study (2016; 14 pp);
- Santa Anita Warehouse IS and MND (2016; 12 pp);
- CapRock Distribution Center III DEIR (2016: 12 pp);
- Orange Show Logistics Center Initial Study and MND (2016; 9 pp);
- City of Palmdale Oasis Medical Village Project IS and MND (2016; 7 pp);
- Comments on proposed rule for incidental eagle take (2016, 49 pp);
- Grapevine Specific and Community Plan FEIR (2016; 25 pp);
- Grapevine Specific and Community Plan DEIR (2016; 15 pp);
- Clinton County Zoning Ordinance for Wind Turbine siting (2016);
- Hallmark at Shenandoah Warehouse Project Initial Study (2016; 6 pp);
- Tri-City Industrial Complex Initial Study (2016; 5 pp);
- Hidden Canyon Industrial Park Plot Plan 16-PP-02 (2016; 12 pp);
- Kimball Business Park DEIR (2016; 10 pp);
- Jupiter Project IS and MND (2016; 9 pp);
- Revised Draft Giant Garter Snake Recovery Plan of 2015 (2016, 18 pp);
- Palo Verde Mesa Solar Project Draft Environmental Impact Report (2016; 27 pp);

- Reply Witness Statement on Fairview Wind Project, Ontario, Canada (2016; 14 pp);
- Fairview Wind Project, Ontario, Canada (2016; 41 pp);
- Supplementary Reply Witness Statement Amherst Island Wind Farm, Ontario (2015, 38 pp);
- Witness Statement on Amherst Island Wind Farm, Ontario (2015, 31 pp);
- Second Reply Witness Statement on White Pines Wind Farm, Ontario (2015, 6 pp);
- Reply Witness Statement on White Pines Wind Farm, Ontario (2015, 10 pp);
- Witness Statement on White Pines Wind Farm, Ontario (2015, 9 pp);
- Proposed Section 24 Specific Plan Agua Caliente Band of Cahuilla Indians DEIS (2015, 9 pp);
- Replies to comments 24 Specific Plan Agua Caliente Band of Cahuilla Indians FEIS (2015, 6 pp);
- Willow Springs Solar Photovoltaic Project DEIR (2015; 28 pp);
- Sierra Lakes Commerce Center Project DEIR (2015, 9 pp);
- Columbia Business Center MND (2015; 8 pp);
- West Valley Logistics Center Specific Plan DEIR (2015, 10 pp);
- World Logistic Center Specific Plan FEIR (2015, 12 pp);
- Bay Delta Conservation Plan EIR/EIS (2014, 21 pp);
- Addison Wind Energy Project DEIR (2014, 32 pp);
- Response to Comments on the Addison Wind Energy Project DEIR (2014, 15 pp);
- Addison and Rising Tree Wind Energy Project FEIR (2014, 12 pp);
- Alta East Wind Energy Project FEIS (2013, 23 pp);
- Blythe Solar Power Project Staff Assessment, California Energy Commission (2013, 16 pp);
- Clearwater and Yakima Solar Projects DEIR (2013, 9 pp);
- Cuyama Solar Project DEIR (2014, 19 pp);
- Draft Desert Renewable Energy Conservation Plan (DRECP) EIR/EIS (2015, 49 pp);
- Kingbird Solar Photovoltaic Project EIR (2013, 19 pp);
- Lucerne Valley Solar Project Initial Study & Mitigated Negative Declaration (2013, 12 pp);
- Palen Solar Electric Generating System Final Staff Assessment of California Energy Commission, (2014, 20 pp);
- Rebuttal testimony on Palen Solar Energy Generating System (2014, 9 pp);
- Rising Tree Wind Energy Project DEIR (2014, 32 pp);
- Response to Comments on the Rising Tree Wind Energy Project DEIR (2014, 15 pp);
- Soitec Solar Development Project Draft PEIR (2014, 18 pp);
- Comment on the Biological Opinion (08ESMF-00-2012-F-0387) of Oakland Zoo expansion on Alameda whipsnake and California red-legged frog (2014; 3 pp);
- West Antelope Solar Energy Project Initial Study and Negative Declaration (2013, 18 pp);
- Willow Springs Solar Photovoltaic Project DEIR (2015, 28 pp);
- Alameda Creek Bridge Replacement Project DEIR (2015, 10 pp);
- Declaration on Tule Wind project FEIR/FEIS (2013; 24 pp);
- Sunlight Partners LANDPRO Solar Project Mitigated Negative Declaration (2013; 11 pp);
- Declaration in opposition to BLM fracking (2013; 5 pp);
- Rosamond Solar Project Addendum EIR (2013; 13 pp);
- Pioneer Green Solar Project EIR (2013; 13 pp);
- Reply to Staff Responses to Comments on Soccer Center Solar Project Mitigated Negative

Declaration (2013; 6 pp);
- Soccer Center Solar Project Mitigated Negative Declaration (2013; 10 pp);
- Plainview Solar Works Mitigated Negative Declaration (2013; 10 pp);
- Reply to the County Staff's Responses on comments to Imperial Valley Solar Company 2 Project (2013; 10 pp);
- Imperial Valley Solar Company 2 Project (2013; 13 pp);
- FRV Orion Solar Project DEIR (PP12232) (2013; 9 pp);
- Casa Diablo IV Geothermal Development Project (3013; 6 pp);
- Reply to Staff Responses to Comments on Casa Diablo IV Geothermal Development Project (2013; 8 pp);
- FEIS prepared for Alta East Wind Project (2013; 23 pp);
- Metropolitan Air Park DEIR, City of San Diego (2013;);
- Davidon Homes Tentative Subdivision Map and Rezoning Project DEIR (2013; 9 pp);
- Analysis of Biological Assessment of Oakland Zoo Expansion Impacts on Alameda Whipsnake (2013; 10 pp);
- Declaration on Campo Verde Solar project FEIR (2013; 11pp);
- Neg Dec comments on Davis Sewer Trunk Rehabilitation (2013; 8 pp);
- Declaration on North Steens Transmission Line FEIS (2012; 62 pp);
- City of Lancaster Revised Initial Study for Conditional Use Permits 12-08 and 12-09, Summer Solar and Springtime Solar Projects (2012; 8 pp);
- J&J Ranch, 24 Adobe Lane Environmental Review (2012; 14 pp);
- Reply to the County Staff's Responses on comments to Hudson Ranch Power II Geothermal Project and the Simbol Calipatria Plant II (2012; 8 pp);
- Hudson Ranch Power II Geothermal Project and the Simbol Calipatria Plant II (2012; 9 pp);
- Desert Harvest Solar Project EIS (2012; 15 pp);
- Solar Gen 2 Array Project DEIR (2012; 16 pp);
- Ocotillo Sol Project EIS (2012; 4 pp);
- Beacon Photovoltaic Project DEIR (2012; 5 pp);
- Declaration on Initial Study and Proposed Negative Declaration for the Butte Water District 2012 Water Transfer Program (2012; 11 pp);
- Mount Signal and Calexico Solar Farm Projects DEIR (2011; 16 pp);
- City of Elk Grove Sphere of Influence EIR (2011; 28 pp);
- Comment on Sutter Landing Park Solar Photovoltaic Project MND (2011; 9 pp);
- Statement of Shawn Smallwood, Ph.D. Regarding Proposed Rabik/Gudath Project, 22611 Coleman Valley Road, Bodega Bay (CPN 10-0002) (2011; 4 pp);
- Declaration of K. Shawn Smallwood on Biological Impacts of the Ivanpah Solar Electric Generating System (ISEGS) (2011; 9 pp);
- Comments on Draft Eagle Conservation Plan Guidance (2011; 13 pp);
- Comments on Draft EIR/EA for Niles Canyon Safety Improvement Project (2011; 16 pp);
- Declaration of K. Shawn Smallwood, Ph.D., on Biological Impacts of the Route 84 Safety Improvement Project (2011; 7 pp);
- Rebuttal Testimony of Witness #22, K. Shawn Smallwood, Ph.D, on Behalf of Intervenors Friends of The Columbia Gorge & Save Our Scenic Area (2010; 6 pp);
- Prefiled Direct Testimony of Witness #22, K. Shawn Smallwood, Ph.D, on Behalf of

Intervenors Friends of the Columbia Gorge & Save Our Scenic Area. Comments on Whistling Ridge Wind Energy Power Project DEIS, Skamania County, Washington (2010; 41 pp);

- Evaluation of Klickitat County's Decisions on the Windy Flats West Wind Energy Project (2010; 17 pp);
- St. John's Church Project Draft Environmental Impact Report (2010; 14 pp.);
- Initial Study/Mitigated Negative Declaration for Results Radio Zone File #2009-001 (2010; 20 pp);
- Rio del Oro Specific Plan Project Final Environmental Impact Report (2010;12 pp);
- Answers to Questions on 33% RPS Implementation Analysis Preliminary Results Report (2009: 9 pp);
- SEPA Determination of Non-significance regarding zoning adjustments for Skamania County, Washington. Second Declaration to Friends of the Columbia Gorge, Inc. and Save Our Scenic Area (Dec 2008; 17 pp);
- Comments on Draft 1A Summary Report to CAISO (2008; 10 pp);
- County of Placer's Categorical Exemption of Hilton Manor Project (2009; 9 pp);
- Protest of CARE to Amendment to the Power Purchase and Sale Agreement for Procurement of Eligible Renewable Energy Resources Between Hatchet Ridge Wind LLC and PG&E (2009; 3 pp);
- Tehachapi Renewable Transmission Project EIR/EIS (2009; 142 pp);
- Delta Shores Project EIR, south Sacramento (2009; 11 pp + addendum 2 pp);
- Declaration of Shawn Smallwood in Support of Care's Petition to Modify D.07-09-040 (2008; 3 pp);
- The Public Utility Commission's Implementation Analysis December 16 Workshop for the Governor's Executive Order S-14-08 to implement a 33% Renewable Portfolio Standard by 2020 (2008; 9 pp);
- The Public Utility Commission's Implementation Analysis Draft Work Plan for the Governor's Executive Order S-14-08 to implement a 33% Renewable Portfolio Standard by 2020 (2008; 11 pp);
- Draft 1A Summary Report to California Independent System Operator for Planning Reserve Margins (PRM) Study (2008; 7 pp.);
- SEPA Determination of Non-significance regarding zoning adjustments for Skamania County, Washington. Declaration to Friends of the Columbia Gorge, Inc. and Save Our Scenic Area (Sep 2008; 16 pp);
- California Energy Commission's Preliminary Staff Assessment of the Colusa Generating Station (2007; 24 pp);
- Rio del Oro Specific Plan Project Recirculated Draft Environmental Impact Report (2008: 66 pp);
- Replies to Response to Comments Re: Regional University Specific Plan Environmental Impact Report (2008; 20 pp);
- Regional University Specific Plan Environmental Impact Report (2008: 33 pp.);
- Clark Precast, LLC's "Sugarland" project, Negative Declaration (2008: 15 pp.);
- Cape Wind Project Draft Environmental Impact Statement (2008; 157 pp.);
- Yuba Highlands Specific Plan (or Area Plan) Environmental Impact Report (2006; 37 pp.);
- Replies to responses to comments on Mitigated Negative Declaration of the proposed

Mining Permit (MIN 04-01) and Modification of Use Permit 96-02 at North Table Mountain (2006; 5 pp);

- Mitigated Negative Declaration of the proposed Mining Permit (MIN 04-01) and Modification of Use Permit 96-02 at North Table Mountain (2006; 15 pp);
- Windy Point Wind Farm Environmental Review and EIS (2006; 14 pp and 36 Powerpoint slides in reply to responses to comments);
- Shiloh I Wind Power Project EIR (2005; 18 pp);
- Buena Vista Wind Energy Project Notice of Preparation of EIR (2004; 15 pp);
- Negative Declaration of the proposed Callahan Estates Subdivision (2004; 11 pp);
- Negative Declaration of the proposed Winters Highlands Subdivision (2004; 9 pp);
- Negative Declaration of the proposed Winters Highlands Subdivision (2004; 13 pp);
- Negative Declaration of the proposed Creekside Highlands Project, Tract 7270 (2004; 21 pp);
- On the petition California Fish and Game Commission to list the Burrowing Owl as threatened or endangered (2003; 10 pp);
- Conditional Use Permit renewals from Alameda County for wind turbine operations in the Altamont Pass Wind Resource Area (2003; 41 pp);
- UC Davis Long Range Development Plan of 2003, particularly with regard to the Neighborhood Master Plan (2003; 23 pp);
- Anderson Marketplace Draft Environmental Impact Report (2003: 18 pp + 3 plates of photos);
- Negative Declaration of the proposed expansion of Temple B'nai Tikyah (2003: 6 pp);
- Antonio Mountain Ranch Specific Plan Public Draft EIR (2002: 23 pp);
- Response to testimony of experts at the East Altamont Energy Center evidentiary hearing on biological resources (2002: 9 pp);
- Revised Draft Environmental Impact Report, The Promenade (2002: 7 pp);
- Recirculated Initial Study for Calpine's proposed Pajaro Valley Energy Center (2002: 3 pp);
- UC Merced -- Declaration of Dr. Shawn Smallwood in support of petitioner's application for temporary restraining order and preliminary injunction (2002: 5 pp);
- Replies to response to comments in Final Environmental Impact Report, Atwood Ranch Unit III Subdivision (2003: 22 pp);
- Draft Environmental Impact Report, Atwood Ranch Unit III Subdivision (2002: 19 pp + 8 photos on 4 plates);
- California Energy Commission Staff Report on GWF Tracy Peaker Project (2002: 17 pp + 3 photos; follow-up report of 3 pp);
- Initial Study and Negative Declaration, Silver Bend Apartments, Placer County (2002: 13 pp);
- UC Merced Long-range Development Plan DEIR and UC Merced Community Plan DEIR (2001: 26 pp);
- Initial Study, Colusa County Power Plant (2001: 6 pp);
- Comments on Proposed Dog Park at Catlin Park, Folsom, California (2001: 5 pp + 4 photos);
- Pacific Lumber Co. (Headwaters) Habitat Conservation Plan and Environmental Impact Report (1998: 28 pp);
- Final Environmental Impact Report/Statement for Issuance of Take authorization for listed

species within the MSCP planning area in San Diego County, California (Fed. Reg. 62 (60): 14938, San Diego Multi-Species Conservation Program) (1997: 10 pp);
- Permit (PRT-823773) Amendment for the Natomas Basin Habitat Conservation Plan, Sacramento, CA (Fed. Reg. 63 (101): 29020-29021) (1998);
- Draft Recovery Plan for the Giant Garter Snake (*Thamnophis gigas*). (Fed. Reg. 64(176): 49497-49498) (1999: 8 pp);
- Review of the Draft Recovery Plan for the Arroyo Southwestern Toad (*Bufo microscaphus californicus*) (1998);
- Ballona West Bluffs Project Environmental Impact Report (1999: oral presentation);
- California Board of Forestry's proposed amended Forest Practices Rules (1999);
- Negative Declaration for the Sunset Skyranch Airport Use Permit (1999);
- Calpine and Bechtel Corporations' Biological Resources Implementation and Monitoring Program (BRMIMP) for the Metcalf Energy Center (2000: 10 pp);
- California Energy Commission's Final Staff Assessment of the proposed Metcalf Energy Center (2000);
- US Fish and Wildlife Service Section 7 consultation with the California Energy Commission regarding Calpine and Bechtel Corporations' Metcalf Energy Center (2000: 4 pp);
- California Energy Commission's Preliminary Staff Assessment of the proposed Metcalf Energy Center (2000: 11 pp);
- Site-specific management plans for the Natomas Basin Conservancy's mitigation lands, prepared by Wildlands, Inc. (2000: 7 pp);
- Affidavit of K. Shawn Smallwood in Spirit of the Sage Council, et al. (Plaintiffs) vs. Bruce Babbitt, Secretary, U.S. Department of the Interior, et al. (Defendants), Injuries caused by the No Surprises policy and final rule which codifies that policy (1999: 9 pp).

Comments on other Environmental Review Documents:

- Proposed Regulation for California Fish and Game Code Section 3503.5 (2015: 12 pp);
- Statement of Overriding Considerations related to extending Altamont Winds, Inc.'s Conditional Use Permit PLN2014-00028 (2015; 8 pp);
- Draft Program Level EIR for Covell Village (2005; 19 pp);
- Bureau of Land Management Wind Energy Programmatic EIS Scoping document (2003: 7 pp.);
- NEPA Environmental Analysis for Biosafety Level 4 National Biocontainment Laboratory (NBL) at UC Davis (2003: 7 pp);
- Notice of Preparation of UC Merced Community and Area Plan EIR, on behalf of The Wildlife Society—Western Section (2001: 8 pp.);
- Preliminary Draft Yolo County Habitat Conservation Plan (2001; 2 letters totaling 35 pp.);
- Merced County General Plan Revision, notice of Negative Declaration (2001: 2 pp.);
- Notice of Preparation of Campus Parkway EIR/EIS (2001: 7 pp.);
- Draft Recovery Plan for the bighorn sheep in the Peninsular Range (*Ovis candensis*) (2000);
- Draft Recovery Plan for the California Red-legged Frog (*Rana aurora draytonii*), on behalf of The Wildlife Society—Western Section (2000: 10 pp.);
- Sierra Nevada Forest Plan Amendment Draft Environmental Impact Statement, on behalf of The Wildlife Society—Western Section (2000: 7 pp.);

- State Water Project Supplemental Water Purchase Program, Draft Program EIR (1997);
- Davis General Plan Update EIR (2000);
- Turn of the Century EIR (1999: 10 pp);
- Proposed termination of Critical Habitat Designation under the Endangered Species Act (Fed. Reg. 64(113): 31871-31874) (1999);
- NOA Draft Addendum to the Final Handbook for Habitat Conservation Planning and Incidental Take Permitting Process, termed the HCP 5-Point Policy Plan (Fed. Reg. 64(45): 11485 - 11490) (1999; 2 pp + attachments);
- Covell Center Project EIR and EIR Supplement (1997).

Position Statements I prepared the following position statements for the Western Section of The Wildlife Society, and one for nearly 200 scientists:

- Recommended that the California Department of Fish and Game prioritize the extermination of the introduced southern water snake in northern California. The Wildlife Society--Western Section (2001);
- Recommended that The Wildlife Society—Western Section appoint or recommend members of the independent scientific review panel for the UC Merced environmental review process (2001);
- Opposed the siting of the University of California's 10th campus on a sensitive vernal pool/grassland complex east of Merced. The Wildlife Society--Western Section (2000);
- Opposed the legalization of ferret ownership in California. The Wildlife Society--Western Section (2000);
- Opposed the Proposed "No Surprises," "Safe Harbor," and "Candidate Conservation Agreement" rules, including permit-shield protection provisions (Fed. Reg. Vol. 62, No. 103, pp. 29091-29098 and No. 113, pp. 32189-32194). This statement was signed by 188 scientists and went to the responsible federal agencies, as well as to the U.S. Senate and House of Representatives.

Posters at Professional Meetings

Leyvas, E. and K. S. Smallwood. 2015. Rehabilitating injured animals to offset and rectify wind project impacts. Conference on Wind Energy and Wildlife Impacts, Berlin, Germany, 9-12 March 2015.

Smallwood, K. S., J. Mount, S. Standish, E. Leyvas, D. Bell, E. Walther, B. Karas. 2015. Integrated detection trials to improve the accuracy of fatality rate estimates at wind projects. Conference on Wind Energy and Wildlife Impacts, Berlin, Germany, 9-12 March 2015.

Smallwood, K. S. and C. G. Thelander. 2005. Lessons learned from five years of avian mortality research in the Altamont Pass WRA. AWEA conference, Denver, May 2005.

Neher, L., L. Wilder, J. Woo, L. Spiegel, D. Yen-Nakafugi, and K.S. Smallwood. 2005. Bird's eye view on California wind. AWEA conference, Denver, May 2005.

Smallwood, K. S., C. G. Thelander and L. Spiegel. 2003. Toward a predictive model of avian

fatalities in the Altamont Pass Wind Resource Area. Windpower 2003 Conference and Convention, Austin, Texas.

Smallwood, K.S. and Eva Butler. 2002. Pocket Gopher Response to Yellow Star-thistle Eradication as part of Grassland Restoration at Decommissioned Mather Air Force Base, Sacramento County, California. White Mountain Research Station Open House, Barcroft Station.

Smallwood, K.S. and Michael L. Morrison. 2002. Fresno kangaroo rat (*Dipodomys nitratoides*) Conservation Research at Resources Management Area 5, Lemoore Naval Air Station. White Mountain Research Station Open House, Barcroft Station.

Smallwood, K.S. and E.L. Fitzhugh. 1989. Differentiating mountain lion and dog tracks. Third Mountain Lion Workshop, Prescott, AZ.

Smith, T. R. and K. S. Smallwood. 2000. Effects of study area size, location, season, and allometry on reported *Sorex* shrew densities. Annual Meeting of the Western Section of The Wildlife Society.

Presentations at Professional Meetings and Seminars

Repowering the Altamont Pass. Altamont Symposium, The Wildlife Society – Western Section, 5 February 2017.

Developing methods to reduce bird mortality in the Altamont Pass Wind Resource Area, 1999-2007. Altamont Symposium, The Wildlife Society – Western Section, 5 February 2017.

Conservation and recovery of burrowing owls in Santa Clara Valley. Santa Clara Valley Habitat Agency, Newark, California, 3 February 2017.

Mitigation of Raptor Fatalities in the Altamont Pass Wind Resource Area. Raptor Research Foundation Meeting, Sacramento, California, 6 November 2015.

From burrows to behavior: Research and management for burrowing owls in a diverse landscape. California Burrowing Owl Consortium meeting, 24 October 2015, San Jose, California.

The Challenges of repowering. Keynote presentation at Conference on Wind Energy and Wildlife Impacts, Berlin, Germany, 10 March 2015.

Research Highlights Altamont Pass 2011-2015. Scientific Review Committee, Oakland, California, 8 July 2015.

Siting wind turbines to minimize raptor collisions: Altamont Pass Wind Resource Area. US Fish and Wildlife Service Golden Eagle Working Group, Sacramento, California, 8 January 2015.

Evaluation of nest boxes as a burrowing owl conservation strategy. Sacramento Chapter of the Western Section, The Wildlife Society. Sacramento, California, 26 August 2013.

Predicting collision hazard zones to guide repowering of the Altamont Pass. Conference on wind

power and environmental impacts. Stockholm, Sweden, 5-7 February 2013.

Impacts of Wind Turbines on Wildlife. California Council for Wildlife Rehabilitators, Yosemite, California, 12 November 2012.

Impacts of Wind Turbines on Birds and Bats. Madrone Audubon Society, Santa Rosa, California, 20 February 2012.

Comparing Wind Turbine Impacts across North America. California Energy Commission Staff Workshop: Reducing the Impacts of Energy Infrastructure on Wildlife, 20 July 2011.

Siting Repowered Wind Turbines to Minimize Raptor Collisions. California Energy Commission Staff Workshop: Reducing the Impacts of Energy Infrastructure on Wildlife, 20 July 2011.

Siting Repowered Wind Turbines to Minimize Raptor Collisions. Alameda County Scientific Review Committee meeting, 17 February 2011

Comparing Wind Turbine Impacts across North America. Conference on Wind energy and Wildlife impacts, Trondheim, Norway, 3 May 2011.

Update on Wildlife Impacts in the Altamont Pass Wind Resource Area. Raptor Symposium, The Wildlife Society—Western Section, Riverside, California, February 2011.

Siting Repowered Wind Turbines to Minimize Raptor Collisions. Raptor Symposium, The Wildlife Society - Western Section, Riverside, California, February 2011.

Wildlife mortality caused by wind turbine collisions. Ecological Society of America, Pittsburgh, Pennsylvania, 6 August 2010.

Map-based repowering and reorganization of a wind farm to minimize burrowing owl fatalities. California burrowing Owl Consortium Meeting, Livermore, California, 6 February 2010.

Environmental barriers to wind power. Getting Real About Renewables: Economic and Environmental Barriers to Biofuels and Wind Energy. A symposium sponsored by the Environmental & Energy Law & Policy Journal, University of Houston Law Center, Houston, 23 February 2007.

Lessons learned about bird collisions with wind turbines in the Altamont Pass and other US wind farms. Meeting with Japan Ministry of the Environment and Japan Ministry of the Economy, Wild Bird Society of Japan, and other NGOs Tokyo, Japan, 9 November 2006.

Lessons learned about bird collisions with wind turbines in the Altamont Pass and other US wind farms. Symposium on bird collisions with wind turbines. Wild Bird Society of Japan, Tokyo, Japan, 4 November 2006.

Responses of Fresno kangaroo rats to habitat improvements in an adaptive management framework. California Society for Ecological Restoration (SERCAL) 13th Annual Conference, UC Santa

Barbara, 27 October 2006.

Fatality associations as the basis for predictive models of fatalities in the Altamont Pass Wind Resource Area. EEI/APLIC/PIER Workshop, 2006 Biologist Task Force and Avian Interaction with Electric Facilities Meeting, Pleasanton, California, 28 April 2006.

Burrowing owl burrows and wind turbine collisions in the Altamont Pass Wind Resource Area. The Wildlife Society - Western Section Annual Meeting, Sacramento, California, February 8, 2006.

Mitigation at wind farms. Workshop: Understanding and resolving bird and bat impacts. American Wind Energy Association and Audubon Society. Los Angeles, CA. January 10 and 11, 2006.

Incorporating data from the California Wildlife Habitat Relationships (CWHR) system into an impact assessment tool for birds near wind farms. Shawn Smallwood, Kevin Hunting, Marcus Yee, Linda Spiegel, Monica Parisi. Workshop: Understanding and resolving bird and bat impacts. American Wind Energy Association and Audubon Society. Los Angeles, CA. January 10 and 11, 2006.

Toward indicating threats to birds by California's new wind farms. California Energy Commission, Sacramento, May 26, 2005.

Avian collisions in the Altamont Pass. California Energy Commission, Sacramento, May 26, 2005.

Ecological solutions for avian collisions with wind turbines in the Altamont Pass Wind Resource Area. EPRI Environmental Sector Council, Monterey, California, February 17, 2005.

Ecological solutions for avian collisions with wind turbines in the Altamont Pass Wind Resource Area. The Wildlife Society—Western Section Annual Meeting, Sacramento, California, January 19, 2005.

Associations between avian fatalities and attributes of electric distribution poles in California. The Wildlife Society - Western Section Annual Meeting, Sacramento, California, January 19, 2005.

Minimizing avian mortality in the Altamont Pass Wind Resources Area. UC Davis Wind Energy Collaborative Forum, Palm Springs, California, December 14, 2004.

Selecting electric distribution poles for priority retrofitting to reduce raptor mortality. Raptor Research Foundation Meeting, Bakersfield, California, November 10, 2004.

Responses of Fresno kangaroo rats to habitat improvements in an adaptive management framework. Annual Meeting of the Society for Ecological Restoration, South Lake Tahoe, California, October 16, 2004.

Lessons learned from five years of avian mortality research at the Altamont Pass Wind Resources Area in California. The Wildlife Society Annual Meeting, Calgary, Canada, September 2004.

The ecology and impacts of power generation at Altamont Pass. Sacramento Petroleum Association,

Sacramento, California, August 18, 2004.

Burrowing owl mortality in the Altamont Pass Wind Resource Area. California Burrowing Owl Consortium meeting, Hayward, California, February 7, 2004.

Burrowing owl mortality in the Altamont Pass Wind Resource Area. California Burrowing Owl Symposium, Sacramento, November 2, 2003.

Raptor Mortality at the Altamont Pass Wind Resource Area. National Wind Coordinating Committee, Washington, D.C., November 17, 2003.

Raptor Behavior at the Altamont Pass Wind Resource Area. Annual Meeting of the Raptor Research Foundation, Anchorage, Alaska, September, 2003.

Raptor Mortality at the Altamont Pass Wind Resource Area. Annual Meeting of the Raptor Research Foundation, Anchorage, Alaska, September, 2003.

California mountain lions. Ecological & Environmental Issues Seminar, Department of Biology, California State University, Sacramento, November, 2000.

Intra- and inter-turbine string comparison of fatalities to animal burrow densities at Altamont Pass. National Wind Coordinating Committee, Carmel, California, May, 2000.

Using a Geographic Positioning System (GPS) to map wildlife and habitat. Annual Meeting of the Western Section of The Wildlife Society, Riverside, CA, January, 2000.

Suggested standards for science applied to conservation issues. Annual Meeting of the Western Section of The Wildlife Society, Riverside, CA, January, 2000.

The indicators framework applied to ecological restoration in Yolo County, California. Society for Ecological Restoration, September 25, 1999.

Ecological restoration in the context of animal social units and their habitat areas. Society for Ecological Restoration, September 24, 1999.

Relating Indicators of Ecological Health and Integrity to Assess Risks to Sustainable Agriculture and Native Biota. International Conference on Ecosystem Health, August 16, 1999.

A crosswalk from the Endangered Species Act to the HCP Handbook and real HCPs. Southern California Edison, Co. and California Energy Commission, March 4-5, 1999.

Mountain lion track counts in California: Implications for Management. Ecological & Environmental Issues Seminar, Department of Biological Sciences, California State University, Sacramento, November 4, 1998.

“No Surprises” -- Lack of science in the HCP process. California Native Plant Society Annual Conservation Conference, The Presidio, San Francisco, September 7, 1997.

In Your Interest. A half hour weekly show aired on Channel 10 Television, Sacramento. In this episode, I served on a panel of experts discussing problems with the implementation of the Endangered Species Act. Aired August 31, 1997.

Spatial scaling of pocket gopher (*Geomyidae*) density. Southwestern Association of Naturalists 44th Meeting, Fayetteville, Arkansas, April 10, 1997.

Estimating prairie dog and pocket gopher burrow volume. Southwestern Association of Naturalists 44th Meeting, Fayetteville, Arkansas, April 10, 1997.

Ten years of mountain lion track survey. Fifth Mountain Lion Workshop, San Diego, February 27, 1996.

Study and interpretive design effects on mountain lion density estimates. Fifth Mountain Lion Workshop, San Diego, February 27, 1996.

Small animal control. Session moderator and speaker at the California Farm Conference, Sacramento, California, Feb. 28, 1995.

Small animal control. Ecological Farming Conference, Asylomar, California, Jan. 28, 1995.

Habitat associations of the Swainson's Hawk in the Sacramento Valley's agricultural landscape. 1994 Raptor Research Foundation Meeting, Flagstaff, Arizona.

Alfalfa as wildlife habitat. Seed Industry Conference, Woodland, California, May 4, 1994.

Habitats and vertebrate pests: impacts and management. Managing Farmland to Bring Back Game Birds and Wildlife to the Central Valley. Yolo County Resource Conservation District, U.C. Davis, February 19, 1994.

Management of gophers and alfalfa as wildlife habitat. Orland Alfalfa Production Meeting and Sacramento Valley Alfalfa Production Meeting, February 1 and 2, 1994.

Patterns of wildlife movement in a farming landscape. Wildlife and Fisheries Biology Seminar Series: Recent Advances in Wildlife, Fish, and Conservation Biology, U.C. Davis, Dec. 6, 1993.

Alfalfa as wildlife habitat. California Alfalfa Symposium, Fresno, California, Dec. 9, 1993.

Management of pocket gophers in Sacramento Valley alfalfa. California Alfalfa Symposium, Fresno, California, Dec. 8, 1993.

Association analysis of raptors in a farming landscape. Plenary speaker at Raptor Research Foundation Meeting, Charlotte, North Carolina, Nov. 6, 1993.

Landscape strategies for biological control and IPM. Plenary speaker, International Conference on Integrated Resource Management and Sustainable Agriculture, Beijing, China, Sept. 11, 1993.

Landscape Ecology Study of Pocket Gophers in Alfalfa. Alfalfa Field Day, U.C. Davis, July 1993.

Patterns of wildlife movement in a farming landscape. Spatial Data Analysis Colloquium, U.C. Davis, August 6, 1993.

Sound stewardship of wildlife. Veterinary Medicine Seminar: Ethics of Animal Use, U.C. Davis. May 1993.

Landscape ecology study of pocket gophers in alfalfa. Five County Grower's Meeting, Tracy, California. February 1993.

Turbulence and the community organizers: The role of invading species in ordering a turbulent system, and the factors for invasion success. Ecology Graduate Student Association Colloquium, U.C. Davis. May 1990.

Evaluation of exotic vertebrate pests. Fourteenth Vertebrate Pest Conference, Sacramento, California. March 1990.

Analytical methods for predicting success of mammal introductions to North America. The Western Section of the Wildlife Society, Hilo, Hawaii. February 1988.

A state-wide mountain lion track survey. Sacramento County Dept Parks and Recreation. April 1986.

The mountain lion in California. Davis Chapter of the Audubon Society. October 1985.

Ecology Graduate Student Seminars, U.C. Davis, 1985-1990: Social behavior of the mountain lion; Mountain lion control; Political status of the mountain lion in California.

Other forms of Participation at Professional Meetings

- Scientific Committee, Conference on Wind energy and Wildlife impacts, Berlin, Germany, March 2015.
- Scientific Committee, Conference on Wind energy and Wildlife impacts, Stockholm, Sweden, February 2013.
- Workshop co-presenter at Birds & Wind Energy Specialist Group (BAWESG) Information sharing week, Bird specialist studies for proposed wind energy facilities in South Africa, Endangered Wildlife Trust, Darling, South Africa, 3-7 October 2011.
- Scientific Committee, Conference on Wind energy and Wildlife impacts, Trondheim, Norway, 2-5 May 2011.
- Chair of Animal Damage Management Session, The Wildlife Society, Annual Meeting, Reno, Nevada, September 26, 2001.

- Chair of Technical Session: Human communities and ecosystem health: Comparing perspectives and making connection. Managing for Ecosystem Health, International Congress on Ecosystem Health, Sacramento, CA August 15-20, 1999.

- Student Awards Committee, Annual Meeting of the Western Section of The Wildlife Society, Riverside, CA, January, 2000.

- Student Mentor, Annual Meeting of the Western Section of The Wildlife Society, Riverside, CA, January, 2000.

Printed Mass Media

Smallwood, K.S., D. Mooney, and M. McGuinness. 2003. We must stop the UCD biolab now. Op-Ed to the Davis Enterprise.

Smallwood, K.S. 2002. Spring Lake threatens Davis. Op-Ed to the Davis Enterprise.

Smallwood, K.S. Summer, 2001. Mitigation of habitation. The Flatlander, Davis, California.

Entrikan, R.K. and K.S. Smallwood. 2000. Measure O: Flawed law would lock in new taxes. Op-Ed to the Davis Enterprise.

Smallwood, K.S. 2000. Davis delegation lobbies Congress for Wildlife conservation. Op-Ed to the Davis Enterprise.

Smallwood, K.S. 1998. Davis Visions. The Flatlander, Davis, California.

Smallwood, K.S. 1997. Last grab for Yolo's land and water. The Flatlander, Davis, California.

Smallwood, K.S. 1997. The Yolo County HCP. Op-Ed to the Davis Enterprise.

Radio/Television

PBS News Hour,

FOX News, Energy in America: Dead Birds Unintended Consequence of Wind Power Development, August 2011.

KXJZ Capital Public Radio -- Insight (Host Jeffrey Callison). Mountain lion attacks (with guest Professor Richard Coss). 23 April 2009;

KXJZ Capital Public Radio -- Insight (Host Jeffrey Callison). Wind farm Rio Vista Renewable Power. 4 September 2008;

KQED QUEST Episode #111. Bird collisions with wind turbines. 2007;

KDVS Speaking in Tongues (host Ron Glick), Yolo County HCP: 1 hour. December 27, 2001;

KDVS Speaking in Tongues (host Ron Glick), Yolo County HCP: 1 hour. May 3, 2001;

KDVS Speaking in Tongues (host Ron Glick), Yolo County HCP: 1 hour. February 8, 2001;

KDVS Speaking in Tongues (host Ron Glick & Shawn Smallwood), California Energy Crisis: 1 hour. Jan. 25, 2001;

KDVS Speaking in Tongues (host Ron Glick), Headwaters Forest HCP: 1 hour. 1998;

Davis Cable Channel (host Gerald Heffernon), Burrowing owls in Davis: half hour. June, 2000;

Davis Cable Channel (hosted by Davis League of Women Voters), Measure O debate: 1 hour. October, 2000;

KXTV 10, In Your Interest, The Endangered Species Act: half hour. 1997.

Reviews of Journal Papers (Scientific journals for whom I've provided peer review)

Journal	**Journal**
American Naturalist	Journal of Animal Ecology
Journal of Wildlife Management	Western North American Naturalist
Auk	Journal of Raptor Research
Biological Conservation	National Renewable Energy Lab reports
Canadian Journal of Zoology	Oikos
Ecosystem Health	The Prairie Naturalist
Environmental Conservation	Restoration Ecology
Environmental Management	Southwestern Naturalist
Functional Ecology	The Wildlife Society--Western Section Trans.
Journal of Zoology (London)	Proc. Int. Congress on Managing for Ecosystem Health
Journal of Applied Ecology	Transactions in GIS
Ecology	Tropical Ecology
Wildlife Society Bulletin	Peer J
Biological Control	The Condor

Committees

- Scientific Review Committee, Alameda County, Altamont Pass Wind Resource Area
- Ph.D. Thesis Committee, Steve Anderson, University of California, Davis
- MS Thesis Committee, Marcus Yee, California State University, Sacramento

Other Professional Activities or Products

Testified in Federal Court in Denver during 2005 over the fate of radio-nuclides in the soil at Rocky Flats Plant after exposure to burrowing animals. My clients won a judgment of $553,000,000. I have also testified in many other cases of litigation under CEQA, NEPA, the Warren-Alquist Act, and other environmental laws. My clients won most of the cases for which I testified.

Testified before Environmental Review Tribunals in Ontario, Canada regarding proposed White Pines, Amherst Island, and Fairview Wind Energy projects.

Testified in Skamania County Hearing in 2009 on the potential impacts of zoning the County for development of wind farms and hazardous waste facilities.

Testified in deposition in 2007 in the case of O'Dell et al. vs. FPL Energy in Houston, Texas.

Testified in Klickitat County Hearing in 2006 on the potential impacts of the Windy Point Wind Farm.

Memberships in Professional Societies

The Wildlife Society
Raptor Research Foundation

Honors and Awards

Fulbright Research Fellowship to Indonesia, 1987
J.G. Boswell Full Academic Scholarship, 1981 college of choice
Certificate of Appreciation, The Wildlife Society—Western Section, 2000, 2001
Northern California Athletic Association Most Valuable Cross Country Runner, 1984
American Legion Award, Corcoran High School, 1981, and John Muir Junior High, 1977
CIF Section Champion, Cross Country in 1978
CIF Section Champion, Track & Field 2 mile run in 1981
National Junior Record, 20 kilometer run, 1982
National Age Group Record, 1500 meter run, 1978

Community Activities

District 64 Little League Umpire, 2003-2007
Dixon Little League Umpire, 2006-07
Davis Little League Chief Umpire and Board member, 2004-2005
Davis Little League Safety Officer, 2004-2005
Davis Little League Certified Umpire, 2002-2004
Davis Little League Scorekeeper, 2002
Davis Visioning Group member
Petitioner for Writ of Mandate under the California Environmental Quality Act against City of Woodland decision to approve the Spring Lake Specific Plan, 2002
Served on campaign committees for City Council candidates

Representative Clients/Funders

Law Offices of Stephan C. Volker	EDF Renewables
Blum Collins, LLP	National Renewable Energy Lab
Eric K. Gillespie Professional Corporation	Altamont Winds LLC
Law Offices of Berger & Montague	Salka Energy
Lozeau | Drury LLP	Comstocks Business (magazine)
Law Offices of Roy Haber	BioResource Consultants
Law Offices of Edward MacDonald	Tierra Data
Law Office of John Gabrielli	Black and Veatch
Law Office of Bill Kopper	Terry Preston, Wildlife Ecology Research Center
Law Office of Donald B. Mooney	EcoStat, Inc.
Law Office of Veneruso & Moncharsh	US Navy
Law Office of Steven Thompson	US Department of Agriculture
Law Office of Brian Gaffney	US Forest Service
California Wildlife Federation	US Fish & Wildlife Service
Defenders of Wildlife	US Department of Justice
Sierra Club	California Energy Commission
National Endangered Species Network	California Office of the Attorney General
Spirit of the Sage Council	California Department of Fish & Wildlife
The Humane Society	California Department of Transportation
Hagens Berman LLP	California Department of Forestry
Environmental Protection Information Center	California Department of Food & Agriculture
Goldberg, Kamin & Garvin, Attorneys at Law	Ventura County Counsel
Californians for Renewable Energy (CARE)	County of Yolo
Seatuck Environmental Association	Tahoe Regional Planning Agency
Friends of the Columbia Gorge, Inc.	Sustainable Agriculture Research & Education Program
Save Our Scenic Area	Sacramento-Yolo Mosquito and Vector Control District
Alliance to Protect Nantucket Sound	East Bay Regional Park District
Friends of the Swainson's Hawk	County of Alameda
Alameda Creek Alliance	Don & LaNelle Silverstien
Center for Biological Diversity	Seventh Day Adventist Church
California Native Plant Society	Escuela de la Raza Unida
Endangered Wildlife Trust	Susan Pelican and Howard Beeman
and BirdLife South Africa	Residents Against Inconsistent Development, Inc.
AquAlliance	Bob Sarvey
Oregon Natural Desert Association	Mike Boyd
Save Our Sound	Hillcroft Neighborhood Fund
G3 Energy and Pattern Energy	Joint Labor Management Committee, Retail Food Industry
Emerald Farms	Lisa Rocca
Pacific Gas & Electric Co.	Kevin Jackson
Southern California Edison Co.	Dawn Stover and Jay Letto
Georgia-Pacific Timber Co.	Nancy Havassy
Northern Territories Inc.	Catherine Portman (for Brenda Cedarblade)
David Magney Environmental Consulting	Ventus Environmental Solutions, Inc.
Wildlife History Foundation	Panorama Environmental, Inc.
NextEra Energy Resources, LLC	Adams Broadwell Professional Corporation
Ogin, Inc.	

Representative special-status species experience

Common name	Species name	Description
Field experience		
California red-legged frog	*Rana aurora draytonii*	Protocol searches; Many detections
Foothill yellow-legged frog	*Rana boylii*	Presence surveys; Many detections
Western spadefoot	*Spea hammondii*	Presence surveys; Few detections
California tiger salamander	*Ambystoma californiense*	Protocol searches; Many detections
Coast range newt	*Taricha torosa torosa*	Searches and multiple detections
Blunt-nosed leopard lizard	*Gambelia sila*	Detected in San Luis Obispo County
California horned lizard	*Phrynosoma coronatum frontale*	Searches; Many detections
Western pond turtle	*Clemmys marmorata*	Searches; Many detections
San Joaquin kit fox	*Vulpes macrotis mutica*	Protocol searches; detections
Sumatran tiger	*Panthera tigris*	Track surveys in Sumatra
Mountain lion	*Puma concolor californicus*	Research and publications
Point Arena mountain beaver	*Aplodontia rufa nigra*	Remote camera operation
Giant kangaroo rat	*Dipodomys ingens*	Detected in Cholame Valley
San Joaquin kangaroo rat	*Dipodomys nitratoides*	Monitoring & habitat restoration
Monterey dusky-footed woodrat	*Neotoma fuscipes luciana*	Non-target captures and mapping of dens
Salt marsh harvest mouse	*Reithrodontomys raviventris*	Habitat assessment, monitoring
Salinas harvest mouse	*Reithrodontomys megalotus distichlus*	Captures; habitat assessment
Bats		Thermal imaging surveys
California clapper rail	*Rallus longirostris*	Surveys and detections
Golden eagle	*Aquila chrysaetos*	Numerical & behavioral surveys
Swainson's hawk	*Buteo swainsoni*	Numerical & behavioral surveys
Northern harrier	*Circus cyaeneus*	Numerical & behavioral surveys
White-tailed kite	*Elanus leucurus*	Numerical & behavioral surveys
Loggerhead shrike	*Lanius ludovicianus*	Large area surveys
Least Bell's vireo	*Vireo bellii pusillus*	Detected in Monterey County
Willow flycatcher	*Empidonax traillii extimus*	Research at Sierra Nevada breeding sites
Burrowing owl	*Athene cunicularia hypugia*	Numerical & behavioral surveys
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	Monitored success of relocation and habitat restoration
Analytical		
Arroyo southwestern toad	*Bufo microscaphus californicus*	Research and report.
Giant garter snake	*Thamnophis gigas*	Research and publication
Northern goshawk	*Accipiter gentilis*	Research and publication
Northern spotted owl	*Strix occidentalis*	Research and reports
Alameda whipsnake	*Masticophis lateralis euryxanthus*	Expert testimony

EXHIBIT C

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

2656 29th Street, Suite 201
Santa Monica, CA 90405

Matt Hagemann, P.G, C.Hg.
(949) 887-9013
mhagemann@swape.com

July 1, 2019

Kyle C. Jones
Adams Broadwell Joseph & Cardozo
520 Capitol Mall, Suite 350
Sacramento, CA 95814

Subject: Comments on the Campo Wind Project with Boulder Brush Facilities

Dear Mr. Jones,

We have reviewed the May 2019 Environmental Impact Statement (EIS) for the Campo Wind Project with Boulder Brush Facilities ("Project"). A portion of the Project, referred to as the Campo Wind Facilities, will be constructed within a corridor of 2,200 acres on the Campo Indian Reservation ("Reservation") and the other portion of the Project, referred to as the Boulder Brush Facilities, will be located on an approximately 500-acre corridor off-reservation in the County of San Diego ("County"). The Project proposes to construct and operate a 252-megawatt (MW) wind farm with 60 wind turbines, 3 meteorological towers, a 1.5-acre parking and storage area, an 8.5-mile, 230 kilovolt (kV) gen-tie line, collector substation, and 15 miles of new road.

O12-30

Our review concludes that the EIS fails to adequately evaluate the Project's Hazards and Hazardous Waste impacts. An updated EIS should be prepared to adequately assess and mitigate the potential hazard-related impacts the Project may have on the surrounding environment.

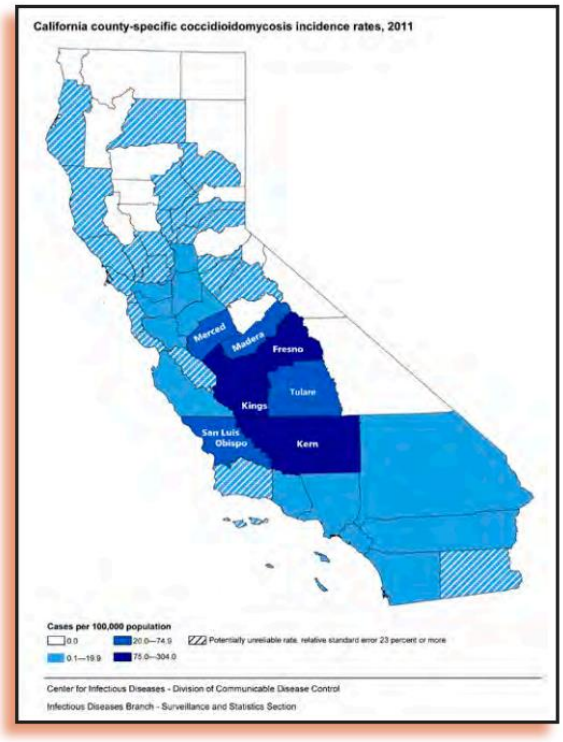
Hazards and Hazardous Waste

Failure to Evaluate Valley Fever Potential

The EIS fails to consider the potential for Project construction to increase the incidence of Valley Fever, a disease that can be caused by inhalation of spores of a soil-dwelling fungus. The impact of Valley Fever on workers constructing large, industrial-scale solar projects was documented in a study examining a period from October 2011 through April 2014, during which 44 California solar construction workers were diagnosed with symptom onset.[1] An updated EIS must be prepared to evaluate Valley Fever impacts resulting from Project construction.

[1] Coccidioidomycosis among Workers Constructing Solar Power Farms, California, USA, 2011–2014, http://wwwnc.cdc.gov/eid/article/21/11/15-0129_article

According to the Center for Infectious Diseases, the rate of incidence in 2011 for San Diego County were approximately 0.1 to 19.9 cases of Valley Fever for every 100,000 people (see excerpt below).[2]



California county-specific coccidioidomycosis incidence rates, 2011

Despite the ready availability of this information, the Applicant fails to mention how soil disturbing activity conducted during Project construction and operation might increase the incidence of Valley Fever in workers and the public.

Valley Fever is caused by inhaling the spores of a soil-dwelling fungus, *Coccidioides immitis.*[3] The spores become airborne when infected soils are disturbed during construction activities, agricultural operations, dust storms, or during earthquakes. A 2012 study documented that between 1990 and 2008, more than 3,000 people died in the United States from Valley Fever with about half of those incidences occurring in California.[4] In recent years, reported Valley Fever cases in the southwestern United States have increased dramatically.[5]

O12-30 Cont.

[2] https://www.sandiegocounty.gov/content/dam/sdc/pds/ceqa/Soitec-Documents/Final-EIR-Files/references/rtcref/ch9.0/rtcrefaletters/O10%202014-12-19_CaliforniaDepartmentofPublicHealth2013.pdf
[3] http://www.cdc.gov/fungal/diseases/coccidioidomycosis/definition.html
[4] Jennifer Y. Huang, Benjamin Bristow, Shira Shafir, and Frank Sorvillo, Coccidioidomycosis-associated Deaths, United States, 1990–2008; http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3559166/
[5] Center for Disease Control; Fungal Pneumonia: A Silent Epidemic, Coccidioidomycosis (Valley Fever); http://www.cdc.gov/fungal/pdf/cocci-fact-sheet-sw-us-508c.pdf

No known cure exists for the disease and there is no vaccine.[6] Common symptoms of Valley Fever include fatigue, fever, cough, headaches, breathing difficulties, rash, muscle aches, and joint pain. Advanced symptoms are marked by chronic pneumonia, meningitis, skin lesions and bone or joint infections. Pneumonia stemming from Valley Fever becomes evident 13 weeks after infection.[7]

Project construction and operation will generate dust which is one of the primary routes of exposure for contracting Valley Fever.[8] According to Google Earth, the nearest sensitive receptors are located immediately south of the Project site. Residents at that location and other nearby receptor locations may be exposed to dust during construction. Construction workers are also susceptible to contracting Valley Fever and, as stated, are one of the most at-risk populations.[9]

The disease is debilitating and prevents those who have contracted Valley Fever from working.[10] The longest period of disability from occupational exposure in California is to construction workers, with 62% of the reported cases resulting in over 60 days of lost work.[11] Another study estimated the average hospital stay for each non-construction work-related case of coccidioidomycosis at 35 days.[12]

The potentially exposed population is much larger than construction workers on or adjacent to the Project site because dust generated during Project construction will carry the very small spores – 0.002-0.005 millimeters in diameter – into other areas, potentially exposing large segments of the public.[13,14]

O12-30 Cont.

[6] http://www.cdc.gov/fungal/diseases/coccidioidomycosis/risk-prevention.html.
[7] *See, e.g.*, Lisa Valdivia, David Nix, Mark Wright, Elizabeth Lindberg, Timothy Fagan, Donald Lieberman, Prien Stoffer, Neil M. Ampel, and John N. Galgiani, Coccidioidomycosis as a Common Cause of Community-acquired Pneumonia, Emerging Infectious Diseases, v. 12, no. 6, June 2006; http://europepmc.org/articles/PMC3373055.
[8] Rafael Laniado-Laborin, Expanding Understanding of Epidemiology of Coccidioidomycosis in the Western Hemisphere, Ann. N.Y. Acad. Sci., v. 111, 2007, pp. 20-22;
Frederick S. Fisher, Mark W. Bultman, Suzanne M. Johnson, Demosthenes Pappagianis, and Erik Zaborsky Coccidioides Niches and Habitat Parameters in the Southwestern United States, a Matter of Scale, Ann. N.Y. Acad. Sci., No. 1111, 2007, pp. 47-72 ("All of the examined soil locations are noteworthy as generally 50% of the individuals who were exposed to the dust or were excavating dirt at the sites were infected.")
[9] Lawrence L. Schmelzer and R. Tabershaw, Exposure Factors in Occupational Coccidioidomycosis, Am. J. Public Health Nations Health, v. 58, no. 1, 1968, pp. 107-113, Table 3;
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1228046/?page=1
[10] Frank E. Swatek, Ecology of *Coccidioides Immitis*, Mycopathologia et Mycologia Applicata, V. 40, Nos. 1-2, pp. 3-12, 1970.
[11] Schmelzer and Tabershaw, 1968, Table 4.
[12] Demosthenes Pappagianis and Hans Einstein, Tempest from Tehachapi Takes Toll or Coccidioides Conveyed Aloft and Afar, West J. Med., v. 129, Dec. 1978, pp. 527-530;
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1238466/pdf/westjmed00256-0079.pdf.
[13] Schmelzer and Tabershaw, 1968, p. 110; Pappagianis and Einstein, 1978.
[14] Pappagianis and Einstein, 1978, p. 527 ("The northern areas were not directly affected by the ground level windstorm that had struck Kern County but the dust was lifted to several thousand feet elevation and, borne on high currents, the soil and arthrospores along with some moisture were gently deposited on sidewalks and automobiles as "a mud storm" that vexed the residents of much of California." The storm originating in Kern County, for example, had major impacts in the San Francisco Bay Area and Sacramento).

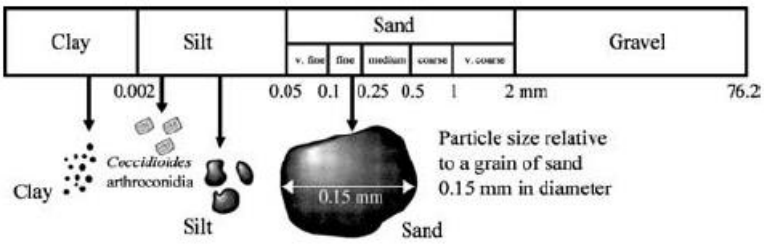


Figure 4: Size of cocci spores compared to soil particles (in mm)
(from: Fisher et al., 2007, Fig. 3)

Valley Fever spores have been documented to travel as far as 500 miles.[15] Thus, dust raised during construction could potentially expose a large number of people located miles away from the Project site.

The EIS does not propose any dust mitigation measures. An updated EIS should be prepared to incorporate Valley Fever-specific mitigation measures such as the following.

The California Departments of Public Health and Industrial Relations recommends:[16]

1. Determine if the worksite is in an area where Valley Fever is consistently present. Check with your local health department to determine whether cases have been known to occur in the proximity of your work area.
2. Encourage workers to report respiratory symptoms that last more than a week to a crew leader, foreman, or supervisor.
3. Suspend work during heavy wind or dust storms and minimize amount of soil disturbed.
4. Make sure workers keep the windows closed in heavy construction equipment and equip with high efficiency particulate air (HEPA) filters. Two-way radios can be used for communication so that the windows can remain closed but allow communication with other workers.
5. When digging a trench or fire line or performing other soil-disturbing tasks, position workers upwind when possible.
6. Place sleeping quarters and dining halls away from sources of dust, such as roadways.
7. Provide NIOSH-approved respiratory protection with particulate filters rated as N95, N99, N100, P100, or HEPA. Household materials such as washcloths, bandanas, and handkerchiefs do not protect workers from breathing in dust and spores. Respirators for employees must be used within a Cal/OSHA compliant respiratory protection program that covers all respirator wearers and includes medical clearance to wear a respirator, fit testing, training, and procedures for cleaning and maintaining respirators. Different classes of respirators provide different levels of protection according to their Assigned Protection Factor (see table below). Powered air-purifying respirators have a battery-powered blower that pulls air in through filters to clean it

O12-30
Cont.

[15] David Filip and Sharon Filip, Valley Fever Epidemic, Golden Phoenix Books, 2008, p. 24.
[16] California Department of Public Health and California Department of Industrial Relations, Hazard Evaluation System & Information Service, Preventing Work-Related Coccidioidomycosis (Valley Fever), June 2013; available at https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/HESIS/CDPH%20Document%20Library/CocciFact.pdf

before delivering it to the wearer's breathing zone. PAPRs will provide a high level of worker protection, with an APF of 25 or 1000 depending on the model. When PAPRs are not available, provide a well-fitted NIOSH-approved full-face or half-mask respirator with particulate filters.

Fit-tested half-mask or filtering face-piece respirators are expected to reduce exposure by 90%. However, allowing about 10% face-seal leakage can result in an unacceptable risk of infection when digging where Valley Fever spores are present.

Respiratory Protection for Reducing Dust and Spore Exposure

	Respirator Type (worn with particulate filters)	Assigned Protection Factor (APF)	Expected Reduction of Exposure to Dust and Spores (%)
	No respirator	None	0
Increasing Protection ↓	Half-mask respirator (elastomeric or filtering facepiece)	10	90
	Powered air-purifying respirator with loose-fitting face covering	25	96
	Full-face respirator	50	98
	Some powered air-purifying respirators are designed to offer higher protection (check with manufacturer)	1000	99.9

O12-30 Cont.

Other studies have developed additional recommendations to minimize the incidence of Valley Fever. The U.S. Geological Survey (USGS) has developed recommendations to protect geological field workers in endemic areas.[17] An occupational study of Valley Fever in California workers also developed recommendations to protect those working and living in endemic areas.[18] These two sources identified the following measures that should be incorporated into an updated EIS:

1. Pre-test soils to determine if each work location is within an endemic area.
2. Implement a vigorous program of medical surveillance.
3. Implement aggressive enforcement of respiratory use where exposures from manual digging are involved.
4. Test all potential employees for previous infection to identify the immune population and assign immune workers to operations involving known heavy exposures.
5. Hire resident labor whenever available, particularly for heavy dust exposure work.
6. All workers in endemic areas should use dust masks to protect against inhalation of particles as small as 0.4 microns. Mustaches or beards may prevent a mask from making an airtight seal against the fact and thus should be discouraged.
7. Establish a medical program, including skin tests on all new employees, retesting of susceptible employees, prompt treatment of respiratory illness in susceptible employees;

[17] Fisher et al., 2000.
[18] Schmelzer and Tabershaw, 1968, pp. 111 - 113.

periodic medical examination or interview to discover a history of low grade or subclinical infection, including repeated skin testing of susceptible employees.

Implementation of these mitigation measures is feasible and would significantly reduce public health impacts. An updated EIS must be prepared to acknowledge the potential for a construction-related increase in Valley Fever incidences. The EIS should evaluate this potentially significant impact and include a full range of mitigation measures to reduce the incidence of Valley Fever in workers, visitors, and nearby residents.

SWAPE has received limited discovery regarding this project. Additional information may become available in the future; thus, we retain the right to revise or amend this report when additional information becomes available. Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable environmental consultants practicing in this or similar localities at the time of service. No other warranty, expressed or implied, is made as to the scope of work, work methodologies and protocols, site conditions, analytical testing results, and findings presented. This report reflects efforts which were limited to information that was reasonably accessible at the time of the work, and may contain informational gaps, inconsistencies, or otherwise be incomplete due to the unavailability or uncertainty of information obtained or provided by third parties.

O12-30 Cont.

Sincerely,

Matt Hagemann, P.G., C.Hg.

Kaitlyn Heck

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

1640 5th St., Suite 204 Santa
Santa Monica, California 90401
Tel: (949) 887-9013
Email: mhagemann@swape.com

Matthew F. Hagemann, P.G., C.Hg., QSD, QSP

Geologic and Hydrogeologic Characterization
Industrial Stormwater Compliance
Investigation and Remediation Strategies
Litigation Support and Testifying Expert
CEQA Review

Education:

M.S. Degree, Geology, California State University Los Angeles, Los Angeles, CA, 1984.
B.A. Degree, Geology, Humboldt State University, Arcata, CA, 1982.

Professional Certifications:

California Professional Geologist
California Certified Hydrogeologist
Qualified SWPPP Developer and Practitioner

Professional Experience:

Matt has 25 years of experience in environmental policy, assessment and remediation. He spent nine years with the U.S. EPA in the RCRA and Superfund programs and served as EPA's Senior Science Policy Advisor in the Western Regional Office where he identified emerging threats to groundwater from perchlorate and MTBE. While with EPA, Matt also served as a Senior Hydrogeologist in the oversight of the assessment of seven major military facilities undergoing base closure. He led numerous enforcement actions under provisions of the Resource Conservation and Recovery Act (RCRA) while also working with permit holders to improve hydrogeologic characterization and water quality monitoring.

Matt has worked closely with U.S. EPA legal counsel and the technical staff of several states in the application and enforcement of RCRA, Safe Drinking Water Act and Clean Water Act regulations. Matt has trained the technical staff in the States of California, Hawaii, Nevada, Arizona and the Territory of Guam in the conduct of investigations, groundwater fundamentals, and sampling techniques.

Positions Matt has held include:

- Founding Partner, Soil/Water/Air Protection Enterprise (SWAPE) (2003 – present);
- Geology Instructor, Golden West College, 2010 – 2014;
- Senior Environmental Analyst, Komex H2O Science, Inc. (2000 -- 2003);

- Executive Director, Orange Coast Watch (2001 – 2004);
- Senior Science Policy Advisor and Hydrogeologist, U.S. Environmental Protection Agency (1989–1998);
- Hydrogeologist, National Park Service, Water Resources Division (1998 – 2000);
- Adjunct Faculty Member, San Francisco State University, Department of Geosciences (1993 – 1998);
- Instructor, College of Marin, Department of Science (1990 – 1995);
- Geologist, U.S. Forest Service (1986 – 1998); and
- Geologist, Dames & Moore (1984 – 1986).

Senior Regulatory and Litigation Support Analyst:

With SWAPE, Matt's responsibilities have included:

- Lead analyst and testifying expert in the review of over 100 environmental impact reports since 2003 under CEQA that identify significant issues with regard to hazardous waste, water resources, water quality, air quality, Valley Fever, greenhouse gas emissions, and geologic hazards. Make recommendations for additional mitigation measures to lead agencies at the local and county level to include additional characterization of health risks and implementation of protective measures to reduce worker exposure to hazards from toxins and Valley Fever.
- Stormwater analysis, sampling and best management practice evaluation at industrial facilities.
- Manager of a project to provide technical assistance to a community adjacent to a former Naval shipyard under a grant from the U.S. EPA.
- Technical assistance and litigation support for vapor intrusion concerns.
- Lead analyst and testifying expert in the review of environmental issues in license applications for large solar power plants before the California Energy Commission.
- Manager of a project to evaluate numerous formerly used military sites in the western U.S.
- Manager of a comprehensive evaluation of potential sources of perchlorate contamination in Southern California drinking water wells.
- Manager and designated expert for litigation support under provisions of Proposition 65 in the review of releases of gasoline to sources drinking water at major refineries and hundreds of gas stations throughout California.
- Expert witness on two cases involving MTBE litigation.
- Expert witness and litigation support on the impact of air toxins and hazards at a school.
- Expert witness in litigation at a former plywood plant.

With Komex H2O Science Inc., Matt's duties included the following:

- Senior author of a report on the extent of perchlorate contamination that was used in testimony by the former U.S. EPA Administrator and General Counsel.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of MTBE use, research, and regulation.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of perchlorate use, research, and regulation.
- Senior researcher in a study that estimates nationwide costs for MTBE remediation and drinking water treatment, results of which were published in newspapers nationwide and in testimony against provisions of an energy bill that would limit liability for oil companies.
- Research to support litigation to restore drinking water supplies that have been contaminated by MTBE in California and New York.

- Expert witness testimony in a case of oil production-related contamination in Mississippi.
- Lead author for a multi-volume remedial investigation report for an operating school in Los Angeles that met strict regulatory requirements and rigorous deadlines.
- Development of strategic approaches for cleanup of contaminated sites in consultation with clients and regulators.

Executive Director:

As Executive Director with Orange Coast Watch, Matt led efforts to restore water quality at Orange County beaches from multiple sources of contamination including urban runoff and the discharge of wastewater. In reporting to a Board of Directors that included representatives from leading Orange County universities and businesses, Matt prepared issue papers in the areas of treatment and disinfection of wastewater and control of the discharge of grease to sewer systems. Matt actively participated in the development of countywide water quality permits for the control of urban runoff and permits for the discharge of wastewater. Matt worked with other nonprofits to protect and restore water quality, including Surfrider, Natural Resources Defense Council and Orange County CoastKeeper as well as with business institutions including the Orange County Business Council.

Hydrogeology:

As a Senior Hydrogeologist with the U.S. Environmental Protection Agency, Matt led investigations to characterize and cleanup closing military bases, including Mare Island Naval Shipyard, Hunters Point Naval Shipyard, Treasure Island Naval Station, Alameda Naval Station, Moffett Field, Mather Army Airfield, and Sacramento Army Depot. Specific activities were as follows:

- Led efforts to model groundwater flow and contaminant transport, ensured adequacy of monitoring networks, and assessed cleanup alternatives for contaminated sediment, soil, and groundwater.
- Initiated a regional program for evaluation of groundwater sampling practices and laboratory analysis at military bases.
- Identified emerging issues, wrote technical guidance, and assisted in policy and regulation development through work on four national U.S. EPA workgroups, including the Superfund Groundwater Technical Forum and the Federal Facilities Forum.

At the request of the State of Hawaii, Matt developed a methodology to determine the vulnerability of groundwater to contamination on the islands of Maui and Oahu. He used analytical models and a GIS to show zones of vulnerability, and the results were adopted and published by the State of Hawaii and County of Maui.

As a hydrogeologist with the EPA Groundwater Protection Section, Matt worked with provisions of the Safe Drinking Water Act and NEPA to prevent drinking water contamination. Specific activities included the following:

- Received an EPA Bronze Medal for his contribution to the development of national guidance for the protection of drinking water.
- Managed the Sole Source Aquifer Program and protected the drinking water of two communities through designation under the Safe Drinking Water Act. He prepared geologic reports,

conducted public hearings, and responded to public comments from residents who were very concerned about the impact of designation.

- Reviewed a number of Environmental Impact Statements for planned major developments, including large hazardous and solid waste disposal facilities, mine reclamation, and water transfer.

Matt served as a hydrogeologist with the RCRA Hazardous Waste program. Duties were as follows:

- Supervised the hydrogeologic investigation of hazardous waste sites to determine compliance with Subtitle C requirements.
- Reviewed and wrote "part B" permits for the disposal of hazardous waste.
- Conducted RCRA Corrective Action investigations of waste sites and led inspections that formed the basis for significant enforcement actions that were developed in close coordination with U.S. EPA legal counsel.
- Wrote contract specifications and supervised contractor's investigations of waste sites.

With the National Park Service, Matt directed service-wide investigations of contaminant sources to prevent degradation of water quality, including the following tasks:

- Applied pertinent laws and regulations including CERCLA, RCRA, NEPA, NRDA, and the Clean Water Act to control military, mining, and landfill contaminants.
- Conducted watershed-scale investigations of contaminants at parks, including Yellowstone and Olympic National Park.
- Identified high-levels of perchlorate in soil adjacent to a national park in New Mexico and advised park superintendent on appropriate response actions under CERCLA.
- Served as a Park Service representative on the Interagency Perchlorate Steering Committee, a national workgroup.
- Developed a program to conduct environmental compliance audits of all National Parks while serving on a national workgroup.
- Co-authored two papers on the potential for water contamination from the operation of personal watercraft and snowmobiles, these papers serving as the basis for the development of nation-wide policy on the use of these vehicles in National Parks.
- Contributed to the Federal Multi-Agency Source Water Agreement under the Clean Water Action Plan.

Policy:

Served senior management as the Senior Science Policy Advisor with the U.S. Environmental Protection Agency, Region 9. Activities included the following:

- Advised the Regional Administrator and senior management on emerging issues such as the potential for the gasoline additive MTBE and ammonium perchlorate to contaminate drinking water supplies.
- Shaped EPA's national response to these threats by serving on workgroups and by contributing to guidance, including the Office of Research and Development publication, Oxygenates in Water: Critical Information and Research Needs.
- Improved the technical training of EPA's scientific and engineering staff.
- Earned an EPA Bronze Medal for representing the region's 300 scientists and engineers in negotiations with the Administrator and senior management to better integrate scientific principles into the policy-making process.
- Established national protocol for the peer review of scientific documents.

Geology:

With the U.S. Forest Service, Matt led investigations to determine hillslope stability of areas proposed for timber harvest in the central Oregon Coast Range. Specific activities were as follows:

- Mapped geology in the field, and used aerial photographic interpretation and mathematical models to determine slope stability.
- Coordinated his research with community members who were concerned with natural resource protection.
- Characterized the geology of an aquifer that serves as the sole source of drinking water for the city of Medford, Oregon.

As a consultant with Dames and Moore, Matt led geologic investigations of two contaminated sites (later listed on the Superfund NPL) in the Portland, Oregon, area and a large hazardous waste site in eastern Oregon. Duties included the following:

- Supervised year-long effort for soil and groundwater sampling.
- Conducted aquifer tests.
- Investigated active faults beneath sites proposed for hazardous waste disposal.

Teaching:

From 1990 to 1998, Matt taught at least one course per semester at the community college and university levels:

- At San Francisco State University, held an adjunct faculty position and taught courses in environmental geology, oceanography (lab and lecture), hydrogeology, and groundwater contamination.
- Served as a committee member for graduate and undergraduate students.
- Taught courses in environmental geology and oceanography at the College of Marin.

Matt taught physical geology (lecture and lab and introductory geology at Golden West College in Huntington Beach, California from 2010 to 2014.

Invited Testimony, Reports, Papers and Presentations:

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Presentation to the Public Environmental Law Conference, Eugene, Oregon.

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Invited presentation to U.S. EPA Region 9, San Francisco, California.

Hagemann, M.F., 2005. Use of Electronic Databases in Environmental Regulation, Policy Making and Public Participation. Brownfields 2005, Denver, Coloradao.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Nevada and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Las Vegas, NV (served on conference organizing committee).

Hagemann, M.F., 2004. Invited testimony to a California Senate committee hearing on air toxins at schools in Southern California, Los Angeles.

Brown, A., Farrow, J., Gray, A. and **Hagemann, M.**, 2004. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to the Ground Water and Environmental Law Conference, National Groundwater Association.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Arizona and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Phoenix, AZ (served on conference organizing committee).

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in the Southwestern U.S. Invited presentation to a special committee meeting of the National Academy of Sciences, Irvine, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a tribal EPA meeting, Pechanga, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a meeting of tribal repesentatives, Parker, AZ.

Hagemann, M.F., 2003. Impact of Perchlorate on the Colorado River and Associated Drinking Water Supplies. Invited presentation to the Inter-Tribal Meeting, Torres Martinez Tribe.

Hagemann, M.F., 2003. The Emergence of Perchlorate as a Widespread Drinking Water Contaminant. Invited presentation to the U.S. EPA Region 9.

Hagemann, M.F., 2003. A Deductive Approach to the Assessment of Perchlorate Contamination. Invited presentation to the California Assembly Natural Resources Committee.

Hagemann, M.F., 2003. Perchlorate: A Cold War Legacy in Drinking Water. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. From Tank to Tap: A Chronology of MTBE in Groundwater. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. A Chronology of MTBE in Groundwater and an Estimate of Costs to Address Impacts to Groundwater. Presentation to the annual meeting of the Society of Environmental Journalists.

Hagemann, M.F., 2002. An Estimate of the Cost to Address MTBE Contamination in Groundwater (and Who Will Pay). Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to a meeting of the U.S. EPA and State Underground Storage Tank Program managers.

Hagemann, M.F., 2001. From Tank to Tap: A Chronology of MTBE in Groundwater. Unpublished report.

Hagemann, M.F., 2001. Estimated Cleanup Cost for MTBE in Groundwater Used as Drinking Water. Unpublished report.

Hagemann, M.F., 2001. Estimated Costs to Address MTBE Releases from Leaking Underground Storage Tanks. Unpublished report.

Hagemann, M.F., and VanMouwerik, M., 1999. Potential Water Quality Concerns Related to Snowmobile Usage. Water Resources Division, National Park Service, Technical Report.

VanMouwerik, M. and **Hagemann, M.F**. 1999, Water Quality Concerns Related to Personal Watercraft Usage. Water Resources Division, National Park Service, Technical Report.

Hagemann, M.F., 1999, Is Dilution the Solution to Pollution in National Parks? The George Wright Society Biannual Meeting, Asheville, North Carolina.

Hagemann, M.F., 1997, The Potential for MTBE to Contaminate Groundwater. U.S. EPA Superfund Groundwater Technical Forum Annual Meeting, Las Vegas, Nevada.

Hagemann, M.F., and Gill, M., 1996, Impediments to Intrinsic Remediation, Moffett Field Naval Air Station, Conference on Intrinsic Remediation of Chlorinated Hydrocarbons, Salt Lake City.

Hagemann, M.F., Fukunaga, G.L., 1996, The Vulnerability of Groundwater to Anthropogenic Contaminants on the Island of Maui, Hawaii. Hawaii Water Works Association Annual Meeting, Maui, October 1996.

Hagemann, M. F., Fukanaga, G. L., 1996, Ranking Groundwater Vulnerability in Central Oahu, Hawaii. Proceedings, Geographic Information Systems in Environmental Resources Management, Air and Waste Management Association Publication VIP-61.

Hagemann, M.F., 1994. Groundwater Characterization and Cleanup at Closing Military Bases in California. Proceedings, California Groundwater Resources Association Meeting.

Hagemann, M.F. and Sabol, M.A., 1993. Role of the U.S. EPA in the High Plains States Groundwater Recharge Demonstration Program. Proceedings, Sixth Biennial Symposium on the Artificial Recharge of Groundwater.

Hagemann, M.F., 1993. U.S. EPA Policy on the Technical Impracticability of the Cleanup of DNAPL-contaminated Groundwater. California Groundwater Resources Association Meeting.

Hagemann, M.F., 1992. Dense Nonaqueous Phase Liquid Contamination of Groundwater: An Ounce of Prevention... Proceedings, Association of Engineering Geologists Annual Meeting, v. 35.

Other Experience:

Selected as subject matter expert for the California Professional Geologist licensing examination, 2009-2011.

KAITLYN MARIE HECK

SOIL WATER AIR PROTECTION ENTERPRISE
2656 29th Street, Suite 201
Santa Monica, California 90405
Mobile: (678) 551-0836
Office: (310) 452-5555
Fax: (310) 452-5550
Email: hadley@swape.com

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

EDUCATION

UNIVERSITY OF CALIFORNIA, LOS ANGELES **B.S. ENVIRONMENTAL SCIENCES & ENVIRONMENTAL SYSTEMS AND SOCIETY** *JUNE 2017*

PROJECT EXPERIENCE

SOIL WATER AIR PROTECTION ENTERPRISE ***SANTA MONICA, CA***

AIR QUALITY SPECIALIST

PROJECT ANALYST: CEQA ANALYSIS & MODELING

- Calculated roadway, stationary source, and cumulative impacts for risk and hazard analyses at proposed land use projects.
- Quantified criteria air pollutant and greenhouse gas emissions released during construction and operational activities of proposed land use projects using CalEEMod and EMFAC2011 emission factors.
- Utilized AERSCREEN, a screening dispersion model, to determine the ambient air concentrations at sensitive receptor locations.
- Organized reports containing figures and tables comparing results of particulate matter analyses to CEQA thresholds.
- Prepared reports that discuss results of the health risk analyses conducted for several land use redevelopment projects.

PROJECT ANALYST: GREENHOUSE GAS MODELING AND DETERMINATION OF SIGNIFICANCE

- Quantified greenhouse gas (GHG) emissions of a "business as usual" scenario for proposed land use projects using CalEEMod.
- Determined compliance of proposed projects with AB 32 GHG reduction targets, with measures described in CARB's Scoping Plan for each land use sector, and with GHG significance thresholds recommended by various Air Quality Management Districts in California.
- Produced tables and figures that compare the results of the GHG analyses to applicable CEQA thresholds and reduction targets.

PROJECT ANALYST: EXPOSURE ASSESSMENT FOR PROP 65 LEAD PRODUCTS

- Calculated human exposure and human health risk for over 50 lead Prop 65 cases.
- Compiled and analyzed laboratory testing data and produced tables, charts, and graphs to exhibit emission levels.
- Compared finalized testing data to Proposition 65 Maximum Allowable Dose Levels (MADLs).
- Prepared final analytical lead exposure Certificate of Merit (COM) reports and organized supporting data for use in environmental enforcement statute Prop 65 cases.

PROJECT ANALYST: EXPOSURE ASSESSMENT FOR PROP 65 ACRYLAMIDE PRODUCTS

- Calculated the human exposure to acrylamide for approximately 15 Prop 65 cases
- Analyzed laboratory testing data to determine the level of consumption required to meet the No Significant Risk Level (NSRL)
- Compared consumption levels to dietary trends in the public in order to determine if the average person will consume enough of a product to exceed the NSRL
- Prepared final analytical exposure COM reports and organized supporting data for use in environmental enforcement statute of Prop 65 cases.

PROJECT ANALYST: EXPOSURE ASSESSMENT FOR WORKERS COMPENSATION CASES

- Calculated the level of contaminant exposure a worker was likely exposed to under their working conditions
- Compiled peer reviewed articles and data demonstrating the effects of human exposure to the case contaminants
- Prepared reports that discuss the contaminant exposure levels and summarized the effects of these contaminants on human health.

EXHIBIT B

Scott Cashen, M.S.—Independent Biological Resources Consultant

January 30, 2020

Mr. Kyle C. Jones
Adams Broadwell Joseph & Cardozo
520 Capitol Mall, Suite 350
Sacramento, CA 95814

Subject: Comments on the Draft Environmental Impact Report for the Campo Wind Project with Boulder Brush Facilities

Dear Mr. Jones:

This letter contains my comments on the Draft Environmental Impact Report ("DEIR") that was prepared by the County of San Diego ("County") for the Campo Wind Project with Boulder Brush Facilities ("Project"). Terra-Gen Development Company LLC ("Terra-Gen" or "Developer") proposes to construct, operate, and ultimately decommission a 252-megawatt (MW) wind energy generation facility on land within the boundary of the Campo Indian Reservation in Eastern San Diego County, California. The Project consists of both the Campo Wind Facilities on land within the Reservation and the Boulder Brush Facilities on adjacent private lands within the Boulder Brush Boundary. The Campo Wind Facilities include up to 60 wind turbines, each approximately 4.2 megawatts in capacity and approximately 586 feet in total height, access roads, electrical collection and communication system, project collector substation, operations and maintenance facility, meteorological towers, water collection and septic system, temporary concrete batch plant, temporary staging areas, on-reservation portion of the generation tie line ("gen-tie line"). The Boulder Brush Facilities include a portion of the gen-tie line, a high-voltage substation, a switchyard, and access roads. O12-31

I am an environmental biologist with 26 years of professional experience in wildlife ecology and natural resources management. I have served as a biological resources expert for over 150 projects, the majority of which have been renewable energy facilities in California. My experience and scope of work in this regard has included assisting various clients with evaluations of biological resource issues, reviewing environmental compliance documents prepared pursuant to the California Environmental Quality Act ("CEQA") and the National Environmental Policy Act ("NEPA"), and submitting written comments in response to CEQA and NEPA documents. My work has included the preparation of written and oral testimony for the California Energy Commission, California Public Utilities Commission, and Federal courts. My educational background includes a B.S. in Resource Management from the University of California at Berkeley, and a M.S. in Wildlife and Fisheries Science from the Pennsylvania State University. My curriculum vitae is attached. O12-32

The comments herein are based on my review of: (a) the DEIR and associated Biological Resources Technical Report ("BRTR"); (b) the Draft Environmental Impact Statement ("DEIS") and associated Biological Technical Report ("BTR"); and (c) scientific literature pertaining to biological resources in the Project area.

Project Description Issues

The Project contains many individual components, including wind turbines and pads, new roads, meteorological ("MET") towers, a gen-tie line, a collector substation, and an O&M facility, among others. The DEIR quantifies impacts for some of these features. For example, the DEIR states that the concrete batch plant would occupy an area of approximately 400 feet by 400 feet, or 3.7 acres. However, the DEIR does not quantify impacts for all Project components, nor does it provide the information the public would need to independently quantify the impacts. Because the DEIR does not provide a breakdown of impacts (permanent and temporary), by Project component, it is impossible to determine how accurately the DEIR estimates impacts to various biological resources, and whether all Project components have been considered in those estimates.

O12-33a

Roads

The DEIR states: "[i]t is anticipated that approximately 15 miles of existing roads would need to be widened up to 40 feet during construction and reduced to 24 feet after construction."[1] The DEIR fails to provide the width(s) of existing roads, thus precluding knowledge of how much grading and vegetation removal would be required to make those roads wide enough for Project use.

According to the Project Description: "[u]pon completion of construction, all new access roads more than 24 feet wide would be reduced to approximately 24 feet wide, and the edges of the existing roads would be restored and the existing widths would be returned to pre-construction widths. Along either side of new access roads, a 6-foot-wide vegetation management area would be maintained."[2] This information conflicts with the information provided in the Developer's Fire Protection Plan, which states: (a) the new access road would be up to 30 feet wide, and (b) roads would include 20 feet of fuel modification on each side.[3]

O12-33b

Road Improvements (Outside of the Project Boundary)

Wind energy projects often require vegetation removal adjacent to existing roadways to provide clearance for large trucks transporting the turbine components. They may also require physical improvements to the roadway, or construction of detours around overpasses. As a result, the County needs to identify: (a) the transportation route for the trucks carrying the Project's wind turbine components, and (b) whether the Project entails any impacts along the transportation route (i.e., to accommodate the trucks).

O12-33c

MET Towers

The Project includes the installation of three permanent and six temporary MET towers. The lattice structures, fences, and lights associated with the MET towers have the potential to increase bird and bat collisions with the Project's wind turbines, especially if the towers are

O12-33d

[1] DEIR, p. 1-12.
[2] DEIR, pp. 1-12 and -13.
[3] DEIR, Appendix I, pp. 4 and 5.

located near the turbines.[4] None of the maps in the DEIR depict where the permanent MET towers would be located. This precludes the ability to evaluate whether the MET towers will increase bird and bat collisions with the Project's wind turbines.

The DEIR states: "[a] road would be provided to each permanent MET tower from the nearest Project road access point."[5] It is unclear whether the DEIR's estimates of impacts account for these roads, especially because the MET towers and associated access roads are not depicted on any maps.

O12-33d Cont.

Water Line

The Project's O&M building would require approximately 210 gallons per day of potable water. According to the DEIR: "[i]t is anticipated that on-site groundwater sourced from an existing, nearby groundwater well would be used for the Project's operation."[6] This description is too vague to understand the environmental impacts associated with installing a new water line between the "nearby" well and the O&M building. Moreover, the DEIR does not analyze or quantify impacts associated the new water line, nor does it depict the water line on any maps.

O12-33e

Retention Pond

The Project includes a 0.6-acre retention pond at the proposed switchyard.[7] The DEIR does not provide any additional information about the pond, including the pond's function, substrate, dimensions (i.e., depth and slope of banks), and precise location. This precludes the ability to evaluate the hazards the pond may pose to wildlife.

O12-33f

Concrete Wastewater

The DEIR states: "[c]onstruction wastewater would be generated from concrete trucks after concrete loads have been emptied. The construction contractor would be responsible for conducting wash-down activities, as appropriate."[8] The DEIR fails to assess potentially significant impacts associated with the concrete wastewater, which is classified as a hazardous substance (it contains caustic soda and potash) under the Federal Clean Water Act (part 116).[9] The DEIR's statement that "the construction contractor would be responsible for conducting wash-down activities" is vague, and thus does not ensure compliance with federal regulations (and avoidance of significant impacts due to improper disposal of hazardous substances).

O12-33g

[4] National Academy of Sciences. 2007. Environmental impacts of wind-energy projects. The National Academies Press, Washington, DC.
[5] DEIR, p. 1-16.
[6] DEIR, p. 1-15.
[7] DEIR, p. 1-6.
[8] DEIR, p. 1-40.
[9] 40 CFR 116.

Restoration of Disturbance Areas

The DEIR claims that temporarily disturbed areas around the Project's wind turbines would be restored.[10] This claim is inconsistent with the DEIS, which does not require restoration of disturbance areas.[11]

O12-33h

Decommissioning

The DEIR provides the following discussion of Project decommissioning:

> The Developer would be responsible for the decommissioning of the Campo Wind Facilities. Prior to decommissioning, a decommissioning plan will be prepared consistent with the requirements of the Campo Lease. The decommissioning plan would be implemented after the Campo Lease term… Reclamation of the Campo Corridor following decommissioning would be based on the terms of the Campo Lease and may include regrading, replacement of topsoil, and revegetation…To the extent practicable, topsoil removed during decommissioning would be stockpiled and used as topsoil during restoration efforts. Soil would be stabilized and revegetated with plant species characteristic of native species within adjacent habitats. Local seed sources would be used where feasible.[12]

I have the following comments pertaining to the DEIR's discussion of decommissioning:

1. The DEIR's statements are vague, and thus, preclude the ability to evaluate impacts associated with decommissioning of the Project. This issue is compounded by the DEIR's failure to identify the "terms of the Campo Lease."
2. The DEIR's statement that the terms of the Campo Lease *may* include regrading, replacement of topsoil, and revegetation suggests the lease *may not* include terms for those activities. The DEIR does not incorporate a mitigation measure (or other enforcement mechanism) that requires revegetation of disturbed areas following decommissioning. Active revegetation efforts are required to minimize invasive plants, which would undoubtedly colonize areas disturbed by decommissioning activities.
3. The DEIR's reference to "plant species characteristic of native species within adjacent habitats" is too vague to understand the environmental implications. For example, would the plants used for revegetation be the same species as those that occur in adjacent habitats, or would they simply be plants that have the same physical characteristics (e.g., size and shape)?
4. The DEIR fails to discuss why use of local seed sources might not be "feasible." The Project is expected to operate for at least 25 to 30 years,[13] which is ample time to collect and store seeds from native plants that occur at the Project site. As a result, use of seeds from native plants that occur at the Project site should be incorporated as required mitigation.

O12-34

[10] DEIR, p. 1-31.
[11] Cashen comments on the Campo Wind DEIS, p. 69.
[12] DEIR, pp. 1-38 and -39.
[13] The DEIR provides inconsistent information on the duration of the lease. Page 1-2 indicates 25 years, whereas pages 1-3 and 1-37 indicate 30 years.

5. The DEIR fails to identify what would occur if it is *not* feasible to use local seed sources. Use of seeds from non-local ecotypes can cause significant impacts on ecological systems.[14] The DEIR fails to disclose or evaluate those impacts.
6. The DEIR fails to incorporate any performance standards for site conditions following decommissioning.

O12-34 Cont.

EXISTING CONDITIONS

Special-Status Plants

Terra-Gen's consultant, Dudek, conducted special-status plant surveys within the Boulder Brush Corridor in 2017 and 2018. The 2017 surveys were conducted between May 11 and May 19, and between July 17 and July 27.[15] The 2018 surveys were conducted between May 8 and June 1, and between August 1 and August 3.[16] Dudek claims: "surveys for special-status plants were conducted at the appropriate phenological stage of the plant (blooming and fruiting) to detect and identify the target species."[17] This claim is not entirely accurate:

Tecate tarplant blooms sometime between August and October.[18] Dudek's late-season surveys were limited to the first three days of August 2018, which was a drought year "that affected plant growth."[19] The California Consortium of Herbaria does not contain any records of Tecate tarplant being collected in early August (during any year).[20] In addition, Dudek did not detect Tecate tarplant during its reference checks, which were designed "to determine appropriate survey timing."[21] Due to these factors, Dudek's survey results do not provide reliable information on the number of Tecate tarplants that will be impacted by the Project. This is important because the mitigation requirements of M-BI-5 are based on the number of individual plants that will be impacted by the Project.

Colorado Desert larkspur blooms between March and April.[22] Dudek did not conduct any special-status plant surveys during this time frame, nor did Dudek detect any Colorado Desert larkspur during its inspection of reference sites.[23] As a result, Dudek's survey results do not provide reliable information on the abundance and distribution of Colorado Desert larkspur within the Project area.

O12-35

[14] Longcore T, R Mattoni, G Pratt, C Rich. 2000. On the perils of ecological restoration: Lessons from the El Segundo blue butterfly. Pages 281-286 *in* JE Keeley, M Baer-Keeley, CJ Fotheringham, editors. 2nd Interface Between Ecology and Land Development in California. U.S. Geological Survey Open-file Report 00-62. U.S. Geological Survey, Sacramento, CA.
[15] BRTR, Table 3-1.
[16] BRTR, Table 3-1.
[17] BRTR, p. 39.
[18] BRTR, p. 248.
[19] BRTR, p. 50.
[20] Data provided by the participants of the Consortium of California Herbaria. Available at: <ucjeps.berkeley.edu/consortium/>. (Accessed 24 Jan 2020).
[21] BRTR, p. 50.
[22] BRTR, p. 253.
[23] BRTR, p. 50.

Quino Checkerspot Butterfly

The DEIR and BRTR identify the Quino checkerspot butterfly as an endangered subspecies. However, neither document provides contextual information for the public to understand the relative importance of the Project area to the persistence and recovery of the subspecies.[24]

There are currently 15 extant "core occurrence complexes" of the Quino checkerspot butterfly.[25] These occurrence complexes are considered likely centers of population density based on characteristics including geographic size, number of reported individuals, documented reproduction, and repeated observations. Such population density centers are likely to contain habitat supporting local "source" populations for a metapopulation (or even for megapopulations).[26] Contrary to the DEIR's claim,[27] the Project site coincides with the Campo Core Occurrence Complex ("Campo Core").[28] Most of the Quino checkerspot butterflies that comprise the Campo Core are associated with the Project site.[29]

The prediction that drought conditions are likely to continue into the near future highlights the importance of conserving populations locally adapted to drier climates and diverse habitat types.[30] Habitats in the Campo Core and Jacumba Core occurrence complexes are warmer and drier than other core occurrence complexes and differ substantially in other habitat characteristics.[31] Therefore, the U.S. Fish and Wildlife Service ("USFWS") has concluded that maintenance of these core occurrence complexes is essential for recovery and survival of the Quino checkerspot butterfly in San Diego County because Quino populations associated with these cores are locally adapted to drier climates and diverse habitat types.[32] The USFWS has further concluded that the Campo and Jacumba Core Occurrence Complexes contribute significantly to reducing the subspecies' extinction probability.[33] This is consistent with research conducted by Preston et al. (2008, 2012). They reported:

> The eastern edge of Quino checkerspot's range supports large and robust butterfly populations, abundant and diverse larval host plants and nectar sources, and relatively low levels of development and intensive agriculture. These areas may provide climate refugia that Quino checkerspot will require under future predicted scenarios of climate

O12-36

[24] *See* 43 FR 55990 Sec.1500.1
[25] U.S. Fish and Wildlife Service. 2019. Recovery Plan for Quino Checkerspot Butterfly (*Euphydryas editha quino*), Draft Amendment 1.
[26] U.S. Fish and Wildlife Service. 2009. Quino Checkerspot Butterfly (*Euphydryas editha quino*), 5-Year Review: Summary and Evaluation. p. 5.
[27] DEIR, p. 2.3-113.
[28] U.S. Fish and Wildlife Service. 2019. Recovery Plan for Quino Checkerspot Butterfly (*Euphydryas editha quino*), Draft Amendment 1.
[29] CFWO GIS Coordinator, Carlsbad Fish and Wildlife Office. Species Occurrence Data [GIS data]. Available at: <https://www.fws.gov/carlsbad/GIS/CFWOGIS.html>. (Accessed 2019 Jun 26).
[30] U.S. Fish and Wildlife Service. 2009. Revised Designation of Critical Habitat for the Quino Checkerspot butterfly (*Euphydryas editha quino*). 74 FR 28776 28862. *See also* U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). Portland, Oregon. p. 76.
[31] *Ibid*.
[32] *Ibid.*
[33] *Ibid.*

change (Preston et al., 2008).[34]

Since completion of the Recovery Plan in 2003, the loss and modification of Quino habitat continues to be the primary threat to the subspecies, especially in southeast San Diego County.[35] In areas where habitat is protected, urbanization of surrounding lands may result in the fragmentation of protected habitats, which could prevent movement of the subspecies between habitat areas.[36]

This information is fundamental to an accurate depiction of the affected environment, and to the public and decision's makers' understanding of the potential consequences of the Project on the Quino checkerspot butterfly.

Campo Corridor - 2018 Quino Checkerspot Butterfly Surveys

According to Dudek's BTR (for the DEIS): "[t]he 2010 USFWS protocol surveys conducted by AECOM overlapped with a large portion (63%) of the current study area."[37] However, the BTR does not define the "current study area," and it is unclear whether it refers to: (a) the overall Project study area (i.e., 2,200-acre Campo Corridor portion of the Project site), or (b) the 699-acre study area referred to in Dudek's 2018 survey report.[38] Furthermore, there are no maps in the DEIS or DEIR that depict the 2010 and 2018 survey areas in relation to the Project footprint. This makes it impossible to: (a) determine whether all potential Quino checkerspot butterfly habitat that may be affected by the Project has been surveyed, and to (b) evaluate the extent of significant indirect impacts to Quino checkerspot butterfly habitat.

O12-36 Cont.

The BTR states: "[f]ocused Quino checkerspot butterfly surveys were conducted over 10 visits between March 3, 2018, and May 15, 2018, per the Quino checkerspot butterfly survey guidelines published on December 15, 2014 (USFWS 2014)." This statement is inconsistent with the survey guidelines. For example:[39]

1. The survey guidelines state: "[s]urveys shall be conducted weekly and spaced no closer than 4 days apart." Many of Dudek's surveys were only two or three days apart. Survey passes 1 and 2 in Area 10 were only one day apart, and passes 5 and 6 were conducted on the same day.[40]
2. The survey guidelines state: "[s]urveys should be conducted at a rate of approximately 5-10 acres (2-4 hectares) per person-hour." Many of Dudek's surveys exceeded this rate. For example, survey pass 9 in Area 1 (73 acres) was conducted in 3 hours and 25

[34] Preston KL, RA Redak, MF Allen, JT Rotenberry. 2012. Changing distribution patterns of an endangered butterfly: Linking local extinction patterns and variable habitat relationships. Biological Conservation 152: 280-290. *See also* Preston KL, JT Rotenberry, RA Redak, MF Allen. 2008. Habitat shifts of endangered species under altered climate conditions: importance of biotic interactions. Global Change Biology 14: 2501-2515.
[35] U.S. Fish and Wildlife Service. 2009. Quino Checkerspot Butterfly (*Euphydryas editha quino*), 5-Year Review: Summary and Evaluation. p. 13.
[36] *Ibid.*
[37] DEIS, BTR, p. 31.
[38] DEIS, BTR, Appendix C-1, p. 5.
[39] The subsequent examples are not intended to serve as an exhaustive list; there are similar issues with the 2018 and 2019 surveys conducted for the Boulder Brush Corridor.
[40] DEIS, BTR, Appendix C-1, Table 1.

minutes.[41] This is equivalent to a rate of over 21 acres per hour (assuming the surveyor did not take any breaks). Although the survey guidelines acknowledge the survey rate can depend on topography and other physical factors, most of Dudek's survey routes had moderate topographic relief, and thus, do not appear to qualify as routes that can be surveyed at a rate greater than 10 acres per person-hour.[42]

3. The survey guidelines state that surveys will not be conducted when temperature in the shade at ground level is less than 60° F on a clear, sunny day with less than 50 percent cloud cover, or less than 70° F on days with 50 percent or more cloud cover. Several of Dudek's surveys violated this requirement.[43]

O12-36 Cont.

Birds

30-minute Point Counts

The BRTR identifies the survey data that were collected during the 30-minute points counts.[44] However, the BRTR does not include a survey report, and the only data provided with the BRTR (and DEIR) is a list of species detected during the surveys. This precludes the ability to assess risk to the various bird species that occur at the Project site.[45]

Golden Eagle (Utilization)

The best available data indicate golden eagle populations are declining throughout the western United States.[46] The golden eagle population in San Diego County has experienced a "precipitous" decline.[47] Unitt (2004) estimated approximately 50 to 55 pairs of golden eagles nested within San Diego County from 1997 to 2001.[48] Wildlife Research Institute estimated that the county's eagle population may decline by an additional 50 percent by the year 2030.[49]

Golden eagles are extremely sensitive to additional mortality because: (a) they occur at very low densities, (b) they have late ages of maturity, and (c) a relatively high percentage of juveniles do not survive to breeding age (typically the 4th or 5th year of life). These traits make them sensitive to impacts of additional mortality because stability of the population depends on survival of the adults.

O12-37

[41] *Ibid.*
[42] *Ibid*, Figures 2 through 6.
[43] DEIS, BTR, Appendix C-1, Table 1.
[44] BRTR, pp. 45 and 46.
[45] *See* U.S. Fish and Wildlife Service. 2012 Mar 23. Land-Based Wind Energy Guidelines. 71 pp. *See also* California Energy Commission and California Department of Fish and Game. 2007. California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development. Commission Final Report. CEC-700-2007-008-CMF. 125 pp.
[46] U.S. Fish and Wildlife Service, Division of Migratory Bird Management. 2009. Final Environmental Assessment, Proposal to Permit Take. Provided Under the Bald and Golden Eagle Protection Act. Washington: Dept. of Interior.
[47] Unitt PA. 2004. San Diego County Bird Atlas. Proceedings of the San Diego Society of Natural History, No. 39.
[48] DEIS, p. 3.4-41.
[49] *Ibid.*

As noted in the USFWS's Eagle Conservation Plan Guidance ("ECPG"):

> Wind energy development can affect eagles in a variety of ways. First, eagles can be killed by colliding with structures such as wind turbines. This is the primary threat to eagles from wind facilities, and the ECPG guidance is primarily aimed at this threat. Second, disturbance from pre-construction, construction, or operation and maintenance activities might disturb eagles at concentration sites or and result in loss of productivity at nearby nests. Third, serious disturbance or mortality effects could result in the permanent or long term loss of a nesting territory. Additionally, disturbances near important eagle use areas or migration concentration sites might stress eagles so much that they suffer reproductive failure or mortality elsewhere, to a degree that could amount to prohibited take. All of these impacts, unless properly permitted, are violations of BGEPA [Bald and Golden Eagle Protection Act].[50]

The first step in evaluating a project's risk to eagles involves site-specific surveys and assessments (i.e., Stage 1 of the ECPG). The USFWS recommends that project proponents implement four types of surveys to assess risk to eagles at proposed wind projects: (1) point count surveys, which mainly generate occurrence data that form underpinnings of the risk assessment model; (2) migration ("hawk watch") counts, documenting hourly passage rates of eagles; (3) a utilization distribution assessment that accounts for intensity of use of various parts of the home range within the project footprint; and (4) surveys of nesting territory occupancy in the project area.[51] The ECPG recommends that: "pre-construction surveys at proposed wind energy sites encompass a minimum of 2 years, including at least 1 year characterized by robust sampling that integrates multiple survey types."[52] Dudek's "eagle count" surveys were conducted between: (a) 15 May and 28 June 2018, and (b) 2 October and 28 November 2018.[53] Thus, Dudek's eagle count surveys lasted only 3.5 months, and no surveys were conducted during the time of year when golden eagles are most mobile and conspicuous (i.e., during courtship).[54]

The ECPG indicates point count surveys for eagles and other large birds need to be conducted exclusive of those for small birds (i.e., because it is ineffective to survey for large birds while searching and recording flight patterns of small birds).[55] For point count surveys, the ECPG recommends two years of surveys that cover at least 30% of the area within 1 km of the proposed turbines.[56] The BRTR claims Dudek satisfied this requirement by establishing five count stations on the Campo and Boulder Brush Corridors.[57] It would have been impossible to survey

O12-37
Cont.

[50] U.S. Fish and Wildlife Service. 2013 Apr. Eagle Conservation Plan Guidance: Module 1—Land-based Wind Energy, Ver 2. pp. ii and iii.
[51] U.S. Fish and Wildlife Service. 2013 Apr. Eagle Conservation Plan Guidance: Module 1—Land-based Wind Energy, Ver 2. Appendix C: Stage 2—Site-Specific Surveys and Assessment.
[52] *Ibid*, pp. 63 and 64.
[53] BRTR, Table 3-1.
[54] Pagel JE, DM Whittington, GT Allen. 2010 Feb. Interim Golden Eagle inventory and monitoring protocols; and other recommendations. Division of Migratory Birds, United States Fish and Wildlife Service. pp. 8 and 12.
[55] U.S. Fish and Wildlife Service. 2013 Apr. Eagle Conservation Plan Guidance: Module 1—Land-based Wind Energy, Ver 2. Appendix C: Stage 2—Site-Specific Surveys and Assessment. p. 55.
[56] *Ibid*, p. 57.
[57] BRTR, p. 46.

30% of the area within 1 km of the Project's 60 wind turbines with only five count stations, especially because one of the stations provided no coverage.[58]

The ECPG recommends 20 hours of point count surveys, per turbine, per year for two years (i.e., 2,400 hours for this project).[59] The DEIS states: "[i]n total, as of March 2019, eagles were observed on site for approximately 20 of more than 20,000 minutes [333 hour] during the 2017–2019 avian point-count surveys."[60] However, according to the DEIR: "[i]n total, as of September 2019, eagles were observed flying over the Reservation Boundary for approximately 15 of more than 131,600 minutes [2,193 hours] during the 2017–2019 all-day eagle surveys and avian point-count surveys."[61] Thus, the DEIR suggests 5 less minutes of eagle observations, but 1,860 more hours of surveys. There is no explanation for this discrepancy.[62] Based on the information in the BRTR, Dudek conducted point-count surveys on 23 days between March and September 2019.[63] This equates to a maximum of 54 additional hours of survey time beyond what was reported in the DEIS.[64] If the value provided in the DEIS is correct, the survey effort for the entire Project site (Boulder Brush and Campo Corridors) was 387 hours, which is 16% the level of effort recommended in the ECPG. As a result, the surveys were insufficient to document golden eagle use of the Project area, and thus, to: (a) evaluate the risk that the Project poses to the golden eagle population, and (b) properly micro-site turbines to minimize risk to eagles.

O12-37 Cont.

<u>Eagle Nests (Territories)</u>

The DEIR states: "[t]here are no suitable large trees or cliffs present for nesting; therefore, this species [golden eagle] is not expected to nest within the Boulder Brush Corridor or Campo Corridor."[65] This conclusion is not supported by evidence. According to the DEIR: "Coast live oak woodland [at the Project site] is dominated by a single evergreen species: coast live oak with a canopy height reaching 32.8 to 82.0 feet (10 to 25 meters)."[66] Trees in this size range are tall enough to support golden eagle nests.[67] An 82-foot-tall coast live oak is massive and is definitely large enough to support an eagle nest. Nevertheless, Dudek made no attempt to locate eagle nests on the Project site.[68]

---

[58] Point counts for eagles extend 800 m. BRTR Figure 3-1 depicts only two of the count stations, one of which is more than 800 m from the nearest wind turbine.
[59] U.S. Fish and Wildlife Service. 2013 Apr. Eagle Conservation Plan Guidance: Module 1—Land-based Wind Energy, Ver 2. Appendix C: Stage 2—Site-Specific Surveys and Assessment. p. 58.
[60] DEIS, BTR, p. 63.
[61] DEIR, p. 2.3-21.
[62] BRTR, Table 3-1.
[63] BRTR, Table 3-1.
[64] I assumed the March 2019 dates were not included in the DEIS's total, and that all 7 of the "30-minute point count" stations were surveyed on each date between March and September 2019. The latter 20 minutes of each count was devoted to large birds within 800 m. Thus, there were 2 hours and 20 minutes of surveys for large birds on each date.
[65] DEIR, p. 2.3-21.
[66] DEIR, p. 2.3-6
[67] Menkens GE JR, SH Anderson. 1987. Nest site characteristics of a predominantly tree-nesting population of golden eagles. J. Field Ornithol. 58:22-25.
[68] *See* U.S. Fish and Wildlife Service. 2013 Apr. Eagle Conservation Plan Guidance: Module 1—Land-based Wind Energy, Ver 2. Appendix C. pp. 64 and 65.

The likelihood that a wind energy project will "take" eagles depends on how close the project footprint is to eagle territories.[69] If the size of territories in the project region is not known, the USFWS recommends that the developer consider the project a threat to all eagles associated with nests within 10 miles of the Project footprint.[70]

The ECPG recommends: "determining locations of occupied nests of eagles within the project area[71] for no less than two breeding seasons prior to construction."[72] Dudek did not conduct the eagle nest surveys recommended in the ECPG. Nevertheless, the DEIR states:

> The closest suitable golden eagle nesting habitat is located approximately 5.5 miles east of the Boulder Brush Corridor in the Jacumba Mountains where there may be rocky outcrops suitable for nesting, and where this species has been documented (USFWS 2018). There are no golden eagle nests within the Boulder Brush Corridor. The nearest active golden eagle nest (e.g., nesting behavior documented) to the Boulder Brush Corridor is approximately 5.5 miles to the east in the Carrizo Gorge area of the Jacumba Mountains.[73]

The cited reference (i.e., USFWS 2018) does not lead to a source that substantiates the information provided in the DEIR. Based on publicly available data:

1. In 2010 there was an active golden eagle nest site approximately 4.3 miles from the Project site.[74]
2. AECOM detected 8 golden eagle nesting territories within 10 miles of the Campo Corridor in 2010 and 2011[75]
3. WRI detected 10 golden eagle nesting territories within 10 miles of the Tule Wind Project site between 2010 and 2012.[76]

As reported in the DEIR, wind farms may affect golden eagle territories.[77] Consequently, territories may have shifted since construction of nearby wind projects (e.g., Tule Wind and Ocotillo Wind). If the County has recent survey data, the data should be provided for public review. Otherwise, if the County is relying on data that were collected 8 to 10 years, it cannot make conclusory statements pertaining to golden eagle nests (territories) in the Project area.[78]

O12-37
Cont.

[69] U.S. Fish and Wildlife Service. 2013 Apr. Eagle Conservation Plan Guidance: Module 1—Land-based Wind Energy, Ver 2.
[70] *Ibid.*
[71] *Ibid, p. 64.* The "project area" is dependent on spacing of occupied eagle nests for the project-area nesting population. If there are no recent (i.e., within the past 5 years) data on spacing of occupied nests, the project area is defined as the project footprint and all area within 10 miles.
[72] U.S. Fish and Wildlife Service. 2013 Apr. Eagle Conservation Plan Guidance: Module 1—Land-based Wind Energy, Ver 2. Appendix C.
[73] DEIR, p. 2.3-56.
[74] AECOM. 2012. Biological Technical Report, Shu'luuk Wind Project. p. 3-40.
[75] *Ibid*, Figure 17.
[76] Tule Wind LLC. 2012 Aug. Project-Specific Avian and Bat Protection Plan for the Tule Reduced Ridgeline Wind Project. Table 2-4.
[77] DEIR, pp. 2.3-55 and -56.
[78] The reference cited in the DEIR (i.e., USFWS 2018) does not provide more recent survey data.

California Condor

The DEIR identifies the California condor and six other federally listed animal species that: "have some potential to occur within the Campo Corridor and vicinity based on habitat or records."[79] However, it subsequently states that the Quino checkerspot butterfly is the only federally listed species that is: "known to occur or has moderate or better potential for occurring within the Campo Corridor." The DEIR provides no additional discussion of the California condor, including the potential for a condor to collide with one of the Project's wind turbines.

The BRTR's discussion of the California condor is limited to the following statements in Appendix I-2:

> Very Low potential to forage and not expected to nest. There is potential foraging habitat; however, no suitable nesting vegetation present and the only records are at least 15 miles away from the site from 2017 (other years are further from the site) (USFWS 2018).

This information is misleading and conflicts with the information provided in AECOM (2012).[80] Figure 16 in AECOM (2012) shows that in 2007 a condor flew within approximately 4.7 miles of the northeast corner of the Campo Corridor, and extremely close to (if not directly over) the Boulder Brush Corridor. I was unable to evaluate whether there have been more recent flights near the Project site because the URL cited in the BTR (i.e., USFWS 2018) does not lead to the data. This is important because AECOM (2012) concluded:

1. "It is estimated that, given the current rate of population increase from reintroductions and wild-hatched condors, the range of the condor population in Baja California will extend across the International Border within 10 years (San Diego Zoo ICR 2012). Similar range expansions of reintroduced populations have been observed in the Los Angeles basin and Big Sur condor populations (USFWS 2011c)." [81]
2. "suitable [condor] nesting and roosting sites are available along mountain cliffs within the vicinity of the Reservation. Suitable foraging habitat is present within the BSA in the form of big sagebrush scrub, nonnative grassland, upper Sonoran subshrub scrub, and wildflower field."[82]

Based on this information, it appears highly probable that condors will pass through the Project site during the life of the Project.

O12-37 Cont.

Bats

There is substantial evidence that modern wind energy facilities kill a considerable number of bats, and cumulatively, they threaten the persistence of migratory tree-roosting species such as

O12-38

[79] DEIR, pp. 2.3-18 and -19.
[80] AECOM. 2012. Biological Technical Report, Shu'luuk Wind Project.
[81] *Ibid*, p. 3-34.
[82] *Ibid*, p. 3-32.

the hoary bat.[83] As a result, it is essential that the County properly establish the environmental setting so the public understands the bat species that may be significantly impacted by the Project.

The DEIR relies on bat survey data Dudek conducted between September 2011 and September 2012 for the Jewell Wind Project.[84] The survey consisted of placing two acoustical monitors at one sampling location along the eastern border of the Boulder Brush Corridor. Data that were collected eight years ago from one sampling location do not provide adequate information on the environmental setting, especially for portion of the Project site posing the threat (Campo Corridor). This is exacerbated by Dudek's failure to provide a survey report and the data.

The resource agencies have provided guidelines for the surveys needed to assess a wind project's risk to bats. These include:

1. USFWS's *Land-Based Wind Energy Guidelines.*[85]
2. CEC and CDFG's *California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development*.[86]

O12-38 Cont.

The surveys that were conducted for the Jewell Wind Project do not even come close to adhering to these guidelines. For example, the USFWS recommends installing a minimum of one acoustic monitoring station approximately every two kilometers across the site where turbines are expected to be sited.[87] This is consistent with guidance the California Department of Fish and Wildlife ("CDFW") provided to Terra-Gen for its proposed Humboldt Wind Energy Project.[88] Not only are the survey data limited to a single monitoring station, but there are no survey data from areas where the Project's wind turbines will be located. As noted in Lintott et al. (2016): "surveying effort has to be adequate both spatially and temporally to assess risks to bats."[89] It is indisputable that data from a single monitoring station is inadequate because it does not account for spatial variation in bat activity across the landscape (or even bat activity where wind turbines will be located).

[83] Frick WF, Baerwald EF, Pollock JF, Barclay RMR, Szymanski JA, Weller TJ, Russell AL, Loeb SC, Medellin RA, and McGuire LP. 2017. Fatalities at wind turbines may threaten population viability of a migratory bat. Biological Conservation 209:172-177. *See also* Thaxter CB, GM Buchanan, J Carr, SH Butchart, T Newbold, R Green, JA Tobias, et al. 2017. Bird and bat species' global vulnerability to collision mortality at wind farms revealed through a trait-based assessment. Proc. R. Soc. B 284: 20170829. *See also* Barclay R, E Baerwald, J Gruver. 2007. Variation in bat and bird mortalities at wind energy facilities: assessing the effects of rotor size and tower height. Canadian Journal of Zoology 85:381–387.
[84] BRTR, p. 48.
[85] U.S. Fish and Wildlife Service. 2012 Mar 23. Land-Based Wind Energy Guidelines. 71 pp.
[86] California Energy Commission and California Department of Fish and Game. 2007. California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development. Commission Final Report. CEC-700-2007-008-CMF.
[87] U.S. Fish and Wildlife Service. 2012 Mar 23. Land-Based Wind Energy Guidelines. 71 pp.
[88] CDFW. 2018 Feb 9. Pre-consultation comments on Terra-Gen Humboldt Wind Project Draft Biological Resources Plan. p. 6.
[89] Lintott, P.R., Richardson, S.M., Hosken, D.J., Fensome, S.A., Mathews, F., 2016. Ecological impact assessments fail to reduce risk of bat casualties at wind farms. Curr. Biol. 26:R1135–R1136.

According to the DEIR, 13 species of bats were detected within the vicinity of the acoustic detectors.[90] Whereas this may be correct, it does not mean that there are only 13 species of bats present within the Project area (as suggested in the DEIR); it simply means that Dudek detected 13 species at a single location that is almost two miles from the nearest wind turbine proposed for the Project.[91] As reported in the BRTR, surveys for the Tule Wind Project documented 22 bat species.[92] As a result, it is extremely unlikely that only 13 bat species occur at the Project site.

Dudek used the acoustic monitoring data from the Project site to generate the total index of activity ("IA").[93] It then compared this value to the IA values generated from three long-term acoustic studies in Clark County, Nevada. The IA value from two of these studies greatly exceeded the IA value from the Project site (the IA value from the third study was less than the Project IA).[94] The County adopts Dudek's conclusion that "there were low occurrences of bats during surveys within the Boulder Brush Corridor, particularly when compared to other areas with higher-quality habitat types in the region."[95] This is not a valid conclusion because Clark County, Nevada is not "in the region."[96] To make a comparison to other sites that truly are in the region (eastern San Diego County), Dudek needs to generate the IA from data that were collected for the Tule Wind Project and Shu'luuk Wind Project (additional data for the region may be available from staff at the San Diego Natural History Museum).[97] Nevertheless, Dudek and the County have misapplied the data. Hein et al. (2013) summarize the purpose of acoustic monitoring for wind energy facilities:

> Acoustic surveys can provide valuable data useful for understanding the timing and conditions under which bats are more or less active at a site, particularly for regions in which wind development is relatively new. Modeling bat activity or species presence using acoustic detectors as a function of time (i.e., night, season, or year) and meteorological conditions can provide powerful insight to predict when bats are most at risk, and which strategies are best suited to minimize fatalities while maximizing power production.[98]

O12-38 Cont.

[90] BRTR, p. 243.
[91] BRTR, Figure 3-5.
[92] BRTR, p. 244.
[93] BRTR, pp. 243 and 244.
[94] It is unclear why there are two values (i.e., 215-815) in the IA reported in the BRTR because the IA is represented as a single value. In addition, the BRTR fails to identify the elevation(s) of the acoustic monitors used in the Clark County studies, and the publications it cites are not open-source documents.
[95] DEIR, p. 2.3-52.
[96] Las Vegas Wash is approximately 230 miles away. The Virgin River is over 300 miles away. Table Mountain is approximately 200 miles away.
[97] According to the BRTR, the IA was not included in any reports prepared for the Tule Wind or Ocotillo Wind projects. However, because Dudek was the author of the EIR/EIS for the Tule Wind Project I presume it has access to the data and could independently calculate the IA.
[98] Hein CD, J Gruver, EB Barnett. 2013. Relating pre-construction bat activity and post-construction bat fatality to predict risk at wind energy facilities: a synthesis. A report submitted to the National Renewable Energy Laboratory. Bat Conservation International, Austin, TX, USA.

Bat Roosts

The BRTR concludes that the western small-footed myotis is the only bat species with high potential to roost on the Project site.[99] It further concludes: "[w]hile there are rock outcroppings within and surrounding the Boulder Brush Corridor, these features are not large enough to support large roosting populations of bats."[100] These conclusions are not supported by survey data or other scientific evidence. In addition, they conflict with information provided in: (a) BRTR Appendices H-1 and H-2, (b) the BTR for the Shu'luuk Wind Project (which reported multiple bat roosts within the Campo Corridor).[101]

O12-38 Cont.

Corridors

The DEIR states: "[t]he Boulder Brush Corridor and Campo Corridor are not readily identifiable as corridors per se, because wildlife movement is not constrained or directed through the Project Site. The Boulder Brush Corridor is, however, included within a Core Wildlife Area due to its size and the undeveloped land in the surrounding area (County of San Diego 2010a)."[102] This is incorrect; a portion of the Campo Corridor has been classified an "Essential Connectivity Area" because it provides areas essential for ecological connectivity between large, relatively natural habitat blocks that support native biodiversity (Figure 1, below).[103]

O12-39

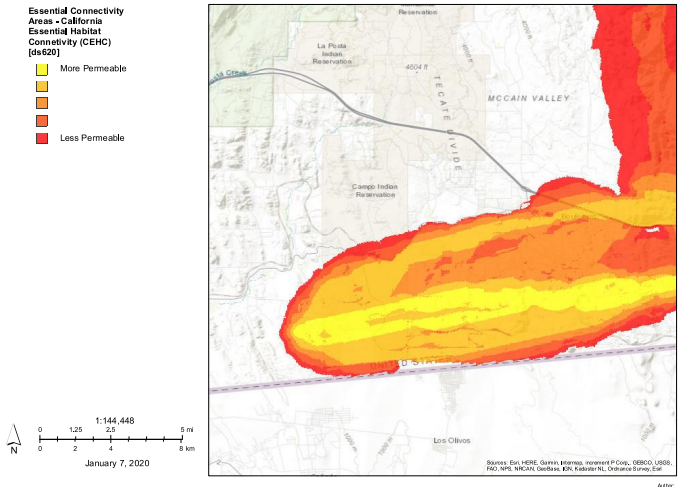


Figure 1. Essential Connectivity Area within the Project site.[104]

[99] BRTR, p. 277 and Section 4.6.2.
[100] BRTR, p. 243.
[101] AECOM. 2012. Biological Technical Report, Shu'luuk Wind Project. Figure 21.
[102] DEIR, p. 2.3-33.
[103] Spencer, W.D., P. Beier, K. Penrod, K. Winters, C. Paulman, H. Rustigian-Romsos, J. Strittholt, M. Parisi, and A. Pettler. 2010. California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California. Prepared for California Department of Transportation, California Department of Fish and Game, and Federal Highways Administration. Available at: <www.dfg.ca.gov/habcon/connectivity/>.
[104] *Ibid*. *See also* Gogol-Prokurat M. 2014. Essential Connectivity Areas - California Essential Habitat Connectivity (CEHC) [ds620]. Calif. Dept. of Fish and Wildlife. Biogeographic Information and Observation System (BIOS). Retrieved January 25, 2020 from http://bios.dfg.ca.gov.

PROJECT IMPACTS

Minimization of Impacts

The maps provided in the DEIR fail to demonstrate that the Developer has attempted to minimize impacts by utilizing the existing network of roads in the Boulder Brush Corridor. Indeed, in some locations, the Developer proposes construction of the Project's access road and gen-tie in close proximity to an existing road, or in-between two existing roads (Figure 2, below).[105] Although co-locating the access road and gen-tie with existing roads would slightly increase the length of those features, it would substantially reduce fragmentation of the landscape, habitat loss, and other environmental impacts.

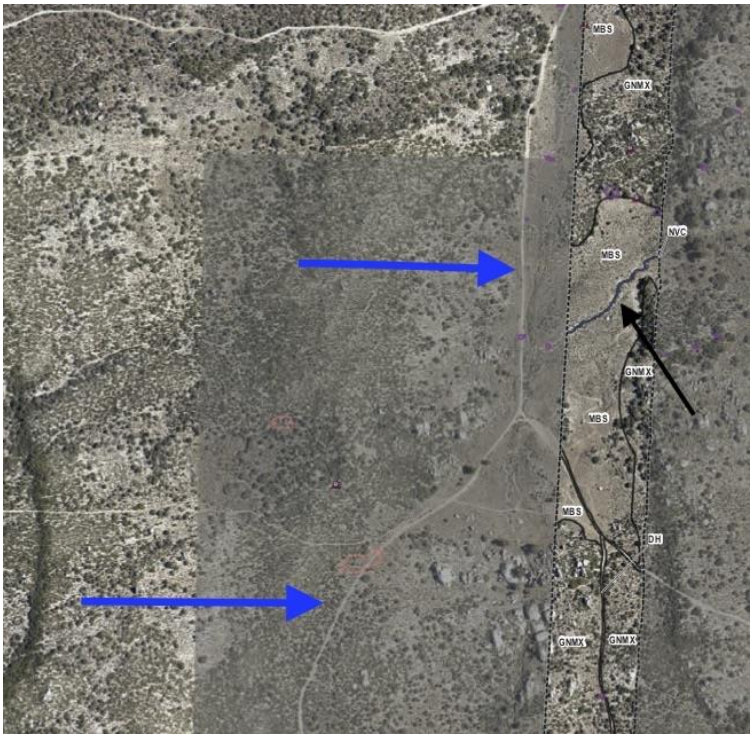


Figure 2. Proposed access road and gen-tie in relation to existing road (blue arrows).[106] Relocating the access road and gen-tie would reduce impacts to jurisdictional waters (black arrow) and other biological resources.

It is clear that the Developer has not attempted to design the Project to avoid and minimize impacts to the Quino checkerspot butterfly (and its habitat) to the maximum practicable extent. Indeed, both Alternative 1 and Alternative 2 (in the DEIS) include Project features in the portion

O12-40

[105] *For example, see* DEIR, Figure 1-4C. *See also* BRTR, Figures 4-1c and -1e.
[106] Base image obtained from BRTR, Figure 4-1c.

of the Project site containing the highest concentration of Quino checkerspot butterfly occurrences (Figure 3, below).

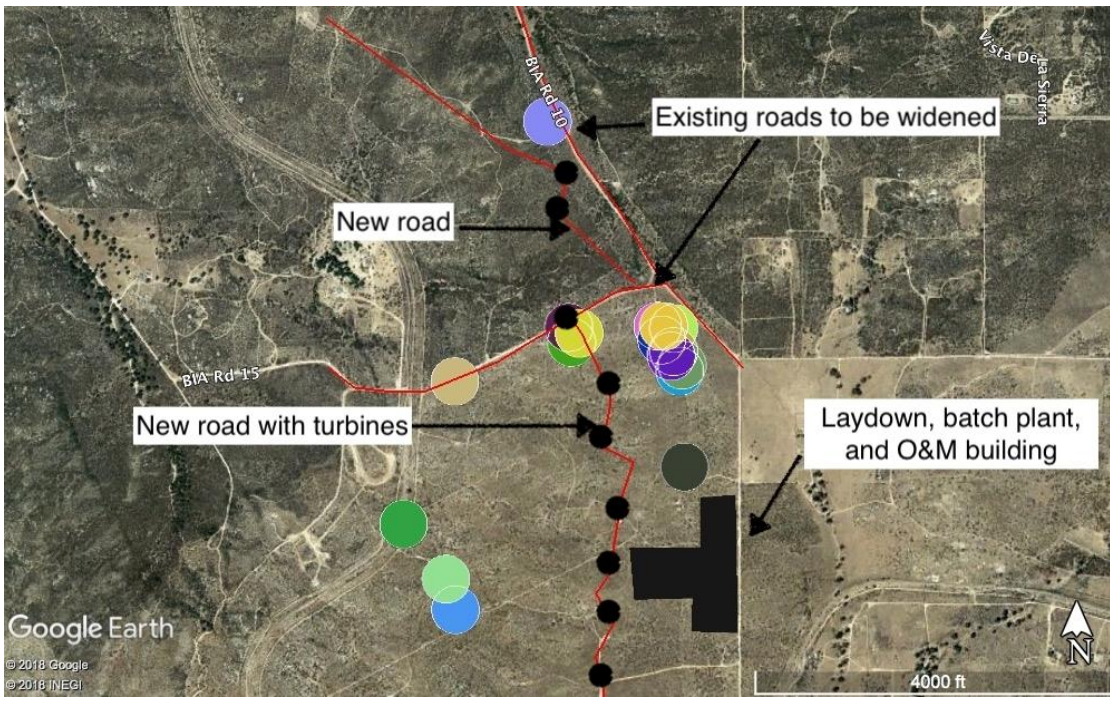


Figure 3. Project features in relation to Quino checkerspot butterfly occurrence records (colored circles). Turbines and roads are not to scale (disturbance will be more extensive than depicted). Extensive grading and construction will occur in (or adjacent to) the area containing the highest concentration of butterfly occurrences associated with the Campo Core Occurrence Complex.

O12-40 Cont.

Special-Status Plants

County List A and B species (Boulder Brush Corridor)

The DEIR states: "[t]he Boulder Brush Facilities are not anticipated to result in habitat fragmentation for special-status plants within the Boulder Brush Corridor."[107] This conclusory statement is not supported by scientific evidence or analysis. As reported in the BRTR, the Project will directly impact special-status plants and will create "gaps in the vegetation" (i.e., cause fragmentation).[108]

O12-41

The DEIR states: "[t]he Boulder Brush Corridor is approximately 320 acres. Construction of the Boulder Brush Facilities would result in impacts to approximately 130.9 acres of native vegetation communities and land cover types, of which approximately 122.8 acres are considered

[107] DEIR, p. 2.3-64.
[108] BRTR, pp. 373, 551, and 556.

sensitive vegetation communities (Table 2.3-1)."[109] Thus, the Project would directly impact 41% of the land within the Boulder Brush Corridor. This constitutes significant habitat fragmentation, and it demonstrates that fragmentation of habitat for special-status plants is potentially significant.

The DEIR correctly concludes that the Project would have potentially significant indirect impacts on special-status plants. However, the DEIR makes no attempt to quantify the extent of indirect impacts (e.g., by estimating how far edge effects might extend into the surrounding landscape). Instead, the DEIR assumes M-BI-2 through M-BI-4, and M-BI-10 through M-BI-13, would "ensure avoidance of indirect impacts outside of the construction area." This conclusion is not supported by evidence. Although the measures listed in the DEIR will minimize indirect impacts, those impacts may remain significant. For example, alterations to the site's hydrology is an inevitable consequence of road construction.[110] As a result, it is unrealistic for the County to conclude M-BI-4 (SWPPP) would "ensure avoidance of indirect impacts outside of the construction area."[111] It also is unrealistic for the County to conclude the proposed mitigation measures would prevent invasive plants, fugitive dust, chemical pollutants, and other edge effects that indirectly affect special-status plants.

The buffer size needed to protect special-status plants from edge effects is site- and species-specific. As a result, there is no universal standard for buffer size. Instead, determining the appropriate buffer width requires: (1) identifying risk factors and potential impacts to the species of concern, and (2) determining the permeability of the project-wildland boundary to vectors of those risk factors.[112]

Based on my review of relevant scientific literature and consultations with other experts, 200 feet is the *absolute minimum* set-back distance needed to protect a special-status plant species from potentially significant indirect impacts.[113] Because the County has not provided evidence that a buffer less than 200 feet would adequately protect special-status plants from indirect impacts, it must assume that (at a minimum) all plants within 200 feet of disturbance areas would be permanently impacted by the Project. The County, however, assumes any plant that is not directly removed by the Project would be "avoided." This includes plants located within inches of areas identified for grading, and despite the County's acknowledgement that grading (and other ground disturbance activities) would cause potentially significant indirect impacts. Because the DEIR fails to establish a mechanism (e.g., monitoring and adaptive management program) that would ensure special-status plants do not succumb to the indirect impacts caused

O12-41 Cont.

[109] DEIR, p. 2.3-75.
[110] Spellerberg IF. 1998. Ecological effects of roads and traffic: a literature review. Global Ecology and Biogeography Letters 7:317–333. *See also* Trombulak SC, CA Frissell. 2000. Review of ecological effects of roads on terrestrial and aquatic communities. Conservation Biology 14:18–30.
[111] *See* U.S. Environmental Protection Agency. 2013 Mar 4. Draft Environmental Impact Statement (DEIS), Shu'luuk Wind Project, Campo Indian Reservation, San Diego County, California (CEQ # 20130001). Comments submitted to Robert Eben, Superintendent, Bureau of Indian Affairs.
[112] *See review provided in:* Conservation Biology Institute. 2000. Review of potential edge effects on the San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*). Unpublished report prepared for Ahmanson Land Company, West Covina, California, by CBI, San Diego California.
[113] Conservation Biology Institute. 2000. Review of potential edge effects on the San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*). Unpublished report prepared for Ahmanson Land Company, West Covina, California, by CBI, San Diego California (recommending 200-foot buffer).

by the Project, it provides no assurances that indirect impacts would be "avoided" (or less than significant).

County List A and B species (Campo Corridor)

The DEIR concludes: "impacts to County List A and B species would likely occur. These impacts cannot be quantified because location information for special-status plants identified during surveys in 2010 and 2011 for the previously proposed Shu'luuk Wind project was not recorded. Permanent direct impacts to County List A and B plant species would be significant and unavoidable (Impact BI-B)."[114]

The statement that impacts cannot be quantified and thus would result in significant and unavoidable impacts is not supported by substantial evidence. The County could require botanical surveys to quantify the impacts. Except for Tecate cypress, all of the County List A and B species that occur in the Campo Corridor were documented in the Boulder Brush Corridor. Therefore, in the absence of site-specific data, the County could use the Boulder Brush data (e.g., pertaining to density and habitat associations) to estimate impacts to List A and B species in the Campo Corridor. Furthermore, it would be relatively easy for the Project biologist to quantify impacts to Tecate cypress (a tree) while implementing M-BI-C (General Avoidance and Minimization Measures). At a minimum, the County has the ability to estimate impacts to List A and B species, and these estimates could be used to adjust the compensation requirements imposed under M-BI-5.

O12-41 Cont.

County List D Species (Campo Corridor)

The DEIR presents conflicting conclusions on the significance of impacts to County List D species within the Campo Corridor:

- Page 2.3-53 states: "[p]otential impacts to County List D species…within the Campo Corridor, are considered less than significant per the County Guidelines because the Project would not impact the long-term survival of these plants."
- Page 2.3-54 states: "[p]otential impacts to County List D species within the Campo Corridor would include Payson's jewelflower (List D), Peninsular spineflower (List D), and pride-of-California (List D) because of their removal as part of development of the Campo Wind Facilities. Impacts to these species are considered significant and unavoidable per the County Guidelines (see Impact BI-B)."

As explained in the DEIR, County List D species are known to occur in the Campo Corridor but their distribution and abundance were not recorded. As a result, the County has no ability to assess whether impacts within the Campo Corridor would affect "long-term survival" of those plants. This invalidates the conclusion that impacts would be less than significant. However, it is also inappropriate for the County to conclude that impacts are significant and unavoidable. As discussed above (for List A and B species), the County has the ability to: (a) require botanical surveys to assess impacts, and (b) adjust the compensation requirements imposed under M-BI-5.

[114] DEIR, p. 2.3-50.

Quino Checkerspot Butterfly - Dudek's Habitat Model

The DEIR indicates the Project would impact 54.8 of the 121.8 acres of Quino checkerspot habitat modeled within the Boulder Brush Corridor, and 272.8 of the 674.1 acres of habitat modeled within the Campo Corridor.[115] This information was derived from Dudek, who calculated impacts to Quino checkerspot butterfly habitat through the following process:

First, Dudek developed a model of potentially occupied habitat based on Quino checkerspot butterfly records, host plants, hilltops, and ridgelines.[116] According to the BRTR: "[t]he habitat model is created from the following parameters based on general industry guidance from USFWS for other projects:

- 200-meter buffer around Quino checkerspot butterfly locations
- 200-meter buffer around "significant" plant populations (i.e., >20 individuals)
- Hilltops
- Ridgelines (centerline with 100-foot (31.2-meter) buffer)."[117]

O12-42

Dudek then excluded areas from the habitat model. The BTR reports:

> The 2010 and 2018 Quino checkerspot butterfly exclusion areas were removed from the model, because those areas were determined to be unsuitable for this species. This model resulted in approximately 674.1 acres of potentially occupied habitat mapped within the On-Reservation portion of the Project Site (i.e., Campo Corridor). Figure 11, Quino Checkerspot Butterfly Modeled Habitat, shows the model and estimated occupied habitat.[118]

Finally, Dudek ran its model to calculate the amount of modeled habitat that would be impacted by the Project. Because Dudek did not describe its methods, it is unclear how many of the parameters an area needed to satisfy to qualify as modeled habitat.[119]

As described below, Dudek's habitat model has numerous flaws and does not provide an accurate estimate of Project impacts to Quino checkerspot butterfly habitat.

Step 1: Habitat Model

Dudek's model incorporated four parameters that it claims are: "based on general industry guidance from USFWS for other projects." Dudek's claim is not supported by evidence and is inconsistent with information provided by the USFWS. For example:

O12-43

[115] DEIR, p. 2.3-48.
[116] The model for the Campo Corridor was based on host plants observed in 2010, whereas the model for the Boulder Brush Corridor was based on host plants observed in 2019. *See* BRTR, p. 273 and DEIS, BTR, p. 61.
[117] BRTR, p. 61.
[118] DEIS, BTR, p. 62.
[119] *See* BRTR, Figure 4-6. In some locations the figure depicts modeled habitat where one parameter is present, however, modeled habitat is not depicted in other locations possessing two parameters.

1. The USFWS considers all suitable habitat within one kilometer (*not 200 meters*) of a Quino checkerspot butterfly sighting to be occupied habitat.[120] According to the Recovery Plan: "[t]his distance delineates the area within which we would expect to find the habitat associated with the observed butterfly."[121]
2. There is no scientific basis for using "significant plant populations" as a model parameter. According to the USFWS: "[i]t is not possible to determine habitat suitability based on standing host plant densities."[122] This issue is compounded by Dudek's failure to adequately describe the process for identifying the "significant plant populations" that were included in the model, including the species that were considered for inclusion in the model and the minimum mapping unit.
3. One of the primary constituent elements for the Quino checkerspot butterfly is: "[p]rominent topographic features, such as hills and/or ridges, with an open woody or herbaceous canopy at the top."[123] However, Quino checkerspot butterflies are not limited to hilltops and ridgelines.[124] As reported in the Recovery Plan: "[p]rominence should be determined relative to other local topographic features."[125] Dudek's model failed to consider other local topographic features. Furthermore, the figure that the BTR (DEIS) provided to "show the model" does not depict the ridgelines within the Project site.[126] The figure provided with the BRTR (DEIR) does not rectify this issue: (a) no hilltops or ridgelines are depicted for the Boulder Brush Corridor, and (b) the figure does not depict the 100-foot buffers for ridges on the Campo Corridor (although it depicts 40-foot buffers).

O12-43 Cont.

Nevertheless, I contacted Eric Porter and Alison Anderson at the Carlsbad Fish and Wildlife Office to determine whether Dudek's habitat model was indeed "based on general industry guidance from USFWS for other projects." Both individuals stated that Dudek's model *is not* based on (and conflicts with) guidance from the USFWS.[127]

This issue is exacerbated by Dudek's maps, which are inconsistent with the modeling methods, do not support the information provided in the DEIR, and are insufficient for impacts analyses. For example:

---

[120] U.S. Fish and Wildlife Service. 2011 Sep 1. Formal Section 7 Consultation for the Proposed East County Substation and Transmission Line Project, San Diego County, California. p. 4. *See also* U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). Portland, Oregon. pp. v, 35, and 164. *See also* U.S. Fish and Wildlife Service. 2009. Quino Checkerspot Butterfly (*Euphydryas editha quino*), 5-Year Review: Summary and Evaluation. pp. 5, 14, 26.
[121] U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). Portland, Oregon. p. 35.
[122] U.S. Fish and Wildlife Service. 2009. Quino Checkerspot Butterfly (*Euphydryas editha quino*), 5-Year Review: Summary and Evaluation. p. 10.
[123] U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). Portland, Oregon. p. 67.
[124] Mattoni R, GF Pratt, TR Longcore, JF Emmel, JN George. 1997. The endangered quino checkerspot butterfly, *Euphydryas editha quino* (Lepidoptera: Nymphalidae). Journal of Research on the Lepidoptera 34:99-118. p. 110.
[125] U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). Portland, Oregon. p. 67.
[126] DEIS, BTR, p. 62 and Figure 11.
[127] Personal communication with Alison Anderson on June 21, 2019, and Eric Porter on June 25, 2019.

1. According to the BRTR: "[p]lant population buffers, hilltops, and ridgelines were added to the primary Quino checkerspot butterfly detection polygon or each other as they would connect. If the link was broken by distance or unsuitable habitat, then the potentially occupied patch would end."[128] This approach is not reflected on Dudek's maps of modeled habitat. For example, Dudek's map of potentially occupied modeled habitat (Figure 4-6) depicts a cluster of butterfly detections, host plants, hilltops, and ridgelines in the southwest corner of the Campo Corridor. The "link" between these parameters is not broken by distance or unsuitable habitat. However, the map does not depict modeled habitat throughout this "link." In addition, Dudek's map of Project impacts to modeled habitat (Figure 5-3) suggests there is virtually no modeled habitat whatsoever in that area. As a result, at least one of the maps is inaccurate.
2. Figure 4.6, depicts the results of Dudek's model, but it fails to depict: (a) the hilltops and ridgelines within the Boulder Brush Corridor, and (b) the Project footprint (disturbance areas). As a result, it impossible to understand where Project impacts would occur in relation to Quino checkerspot butterfly occurrences (and the other model parameters). Furthermore, although Figure 5-3 depicts the modeled habitat that would be impacted by the Project, it does not depict the modeled habitat that occurs outside of the immediate Project footprint. This precludes the ability to evaluate the severity of the Project's direct and indirect impacts. For example, Figure 5-3 depicts a sliver of habitat that would be impacted in the southwest corner of the Campo Corridor. Because the figure does not depict habitat outside of the Project footprint, the reader has no way of knowing whether this represents elimination of an entire patch of habitat, fragmentation of a larger patch of habitat, or a combination therein.

O12-43 Cont.

<u>Step 2: Exclusion Areas</u>

Dudek's second step was to remove all "exclusion areas" from its model because "those areas were determined to be unsuitable for this species."[129] This includes the 2010 and 2018 exclusion areas for the Campo Corridor, and the 2018 and 2019 exclusion areas for the Boulder Brush Corridor. As described below, there is substantial evidence that Dudek has underestimated habitat at the Project site because it improperly excluded areas that provide potential habitat and satisfy the parameters of Dudek's model.

O12-44

[128] BRTR, p. 273.
[129] BRTR, p. 273.

2010 Exclusion Areas (Campo Corridor)-

Habitat, by definition, is defined by presence of the species.[130] Therefore, areas where butterflies have been detected contain habitat for the species, regardless of *a priori* assumptions about habitat suitability prior to butterfly detection. AECOM conducted Quino surveys for the Shu'luuk Wind Project in 2010. Dudek removed AECOM's 2010 exclusion areas from the model because "those areas were determined to be unsuitable for this species."[131] However, that determination is inconsistent with the 2010 survey data. Specifically, Dudek removed areas where Quino checkerspot butterflies (and host plants) were detected (Figure 4, below).[132] This includes both areas where the number of Quino observations "clearly established presence of the species."[133] As a result, those areas should not have been removed from the model, and they need to be incorporated in a revised estimate of the amount of Quino checkerspot butterfly habitat within the Campo Corridor.

Moreover, AECOM (2010) acknowledged numerous problems with their process for excluding habitat. This included misinterpretation of the protocol definition of dense chaparral, which resulted in a narrowing of habitat to be surveyed.[134] As a result, AECOM reassessed the habitat and the survey area was expanded to 1,806 acres. However, the problems continued. The survey report states:

> As the focused adult surveys ensued, some surveyors observed patches of open habitat in the dense chaparral they deemed suitable for the species. Starting in survey week 2, Quino observations were made outside of the original survey area (Figure 3). The survey area was expanded during survey week 2 to include additional trails and narrow openings in the chaparral that were not easily visible during habitat assessments. The expanded survey area is depicted in Figure 3 and constitutes approximately 541 additional acres.[135]

After conclusion of the field season the biologists held a meeting to discuss the results. According to the survey report:

> *The total area surveyed, including the original and expanded survey areas (2,347 acres), represents what is considered the optimal habitat for Quino on-site*. Of the areas surveyed, Quino were observed in a small percentage of the total survey area. The Quino is known to undergo population fluctuations with extirpation of local populations and recolonization of new areas in a fashion characteristic of metapopulation dynamics (Osborne 1998). *Thus, the participants of the June 24 meeting concluded that a larger area of suitable habitat totaling 3,456 acres is potentially supporting the persistence of the species. Much of this area was excluded from surveys* based on the presence of dense chaparral. However, the larger area of suitable habitat defined in Figure 5 includes all chaparral with host plants and occasional openings (>1 acre). This area of suitable habitat

O12-44
Cont.

[130] *See* Hall L, P Krausman, M Morrison. 1997. The Habitat Concept and a Plea for Standard Terminology. Wildlife Society Bulletin 25(1):173-182.
[131] DEIS, BTR, p. 62.
[132] DEIS, BTR, Figure 10.
[133] DEIS, BTR, Appendix B-1 (AECOM 2010). p. 8.
[134] *Ibid*, p. 4.
[135] *Ibid*, p. 5.

> is most relevant for discussing the larger patterns of species distribution through space and time (Figure 5).[136]

A subsequent habitat assessment was conducted in 2012, which caused AECOM to conclude there were approximately 3,803 acres of suitable Quino habitat within the Biological Study Area ("BSA").[137] This does not comport with Dudek's conclusion that there are only 674 acres of Quino habitat within the Campo Corridor[138]—especially because Dudek and AECOM analyzed the same data.[139]

As a rough metric, I compared how much of the BSA AECOM considered to be suitable habitat against how much of the Campo Corridor portion of Project site Dudek considered to be suitable habitat:

1. AECOM concluded 3,803 acres (80%) of the 4,739-acre BSA provide suitable habitat for the Quino checkerspot butterfly.[140]
2. Dudek concluded 674 acres (30.6%) of the Campo Corridor provide potentially occupied (or "suitable") habitat or the Quino checkerspot butterfly.[141]

There is no obvious reason for this substantial discrepancy, especially because the 2,200-acre Campo Corridor portion of the Project site lies largely within the BSA.[142] Indeed, the only logical explanation is that Dudek, by applying the artificial constraints of its habitat model, excluded areas that AECOM concluded were suitable habitat. As discussed previously, this includes areas where AECOM had detected Quino checkerspot butterflies and host plants.

O12-44
Cont.

[136] *Ibid*, pp. 11 and 12. [emphasis added].
[137] AECOM. 2012. Biological Technical Report Shu'luuk Wind Project Campo Indian Reservation San Diego, California. p. 3-21.
[138] DEIS, BTR, pp. 1 and 62.
[139] *See* DEIS, BTR, p. 61: "*potentially occupied habitat was modeled based on Quino checkerspot butterfly records and host plants observed in 2010*."
[140] AECOM. 2012. Biological Technical Report Shu'luuk Wind Project Campo Indian Reservation San Diego, California. p. 2-1 and Table 3-5.
[141] DEIS, BTR, p. 62.
[142] DEIS, Figure 2-1. *See also* AECOM. 2012. Biological Technical Report Shu'luuk Wind Project Campo Indian Reservation San Diego, California. Figures 3 and 7.

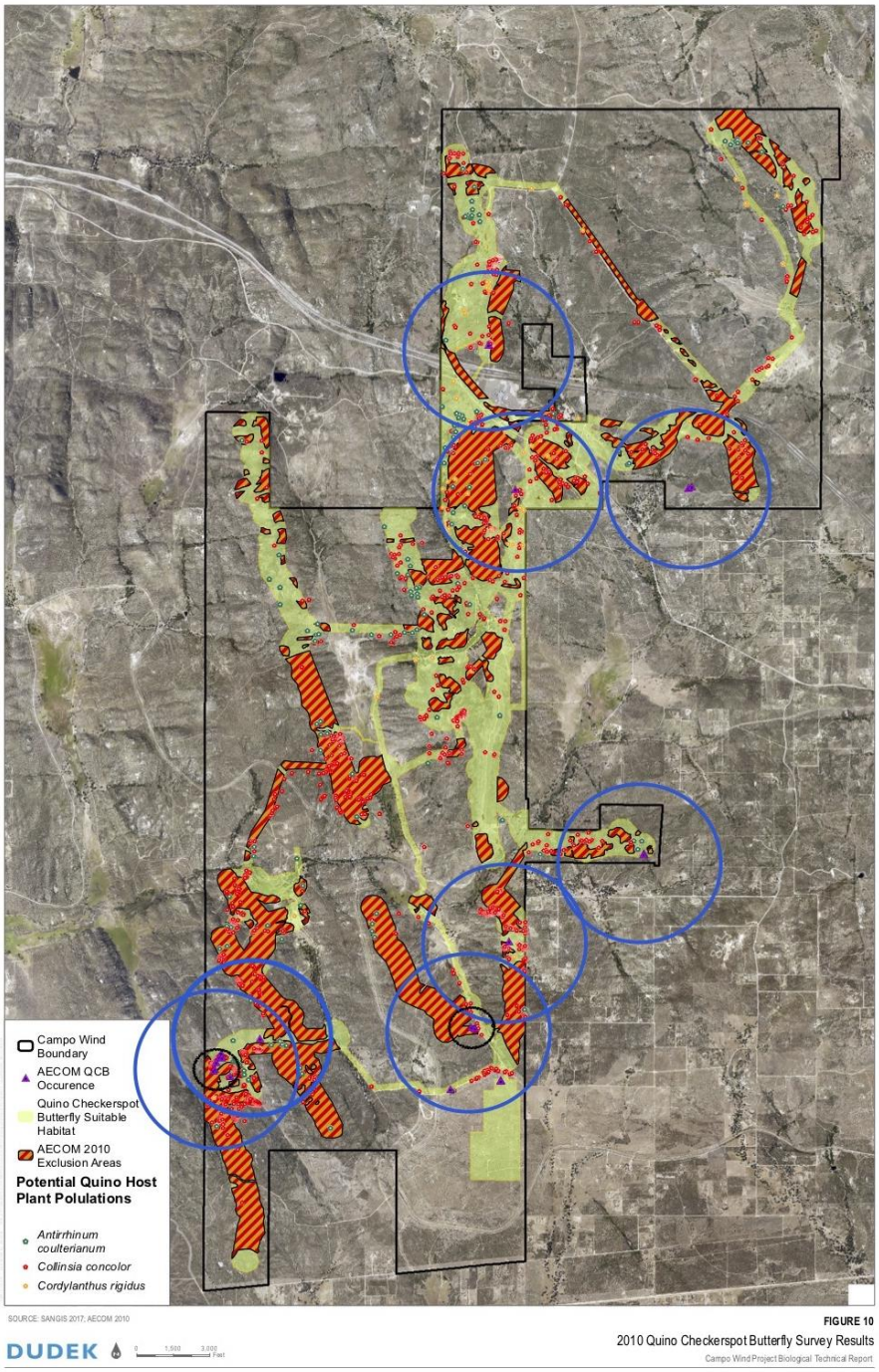


Figure 4. Quino checkerspot butterfly occurrences, host plant populations, and exclusion areas. Small black circles depict butterfly occurrences within exclusion areas. Large blue circles depict areas within approximately 1 km of butterfly occurrences and show exclusion areas with potential habitat (host plants).

O12-44 Cont.

2018 Exclusion Areas (Campo Corridor)-

Dudek failed to clearly define the process that was implemented to exclude areas in 2018, although it claims those areas are unsuitable for the butterfly. Figure 4 in the BTR depicts the 2018 exclusion areas, which are labeled: "Survey Areas Excluded per Habitat Assessment." However, this is inconsistent with the information provided in Figures 10 and 11, which depict presence of suitable habitat throughout large portions of the 2018 exclusion areas. The 2018 survey report does not provide any data or photographs to validate the exclusion process, and no additional information is provided in the BTR. As a result, it is impossible to determine: (a) whether all potential habitat has been surveyed (in 2010, 2018, or both); (b) what areas were excluded based on *a priori* assumptions about habitat suitability, versus actual survey data; and thus, (c) the extent to which the BTR accurately reports Project impacts to potential habitat.

2018 and 2019 Exclusion Areas (Boulder Brush Corridor)-

According to the BRTR: "[i]n 2018, prior to conducting protocol surveys, Dudek biologists conducted a habitat assessment as well as host plant mapping within the Boulder Brush Corridor and additional proposed Torrey Wind Project areas, both located within the overall Boulder Brush Boundary, to determine which areas could be excluded as Quino checkerspot butterfly habitat."[143] This statement is inconsistent with Dudek's 2018 survey report, which states: "[s]urveys also focused on identifying Quino host plants; however, only dried host plants from last year were observed. Therefore, no host plants were mapped within the study area."[144] If Dudek did not map host plants in 2018, it had no basis for excluding areas (as potential habitat) based on "host plant mapping."

The 2018 study area encompassed 517 acres.[145] According to Dudek's survey report, the host plant surveys and habitat assessment were conducted concurrently by a single biologist on February 16, 2018.[146] It would have been impossible for a single biologist to complete these tasks (especially host plant mapping) in one day. As a result, the 2018 survey report fails to provide evidence that Dudek accurately mapped exclusion areas. This had implications not only on the adequacy of the 2018 surveys, but also on the 2019 surveys, which relied on the 2018 habitat assessment and implemented the same exclusion areas.[147]

O12-44 Cont.

Step 3: Calculation of Modeled Habitat and Impacts

Campo Corridor-

The BTR states: "[a]pproximately 1,216 acres were considered potential suitable habitat within the Project Site (Figure 4)."[148] Although the 2018 survey report (an appendix to the BTR)

O12-45

[143] BRTR, p. 40.
[144] BRTR, Appendix B-1, p. 10.
[145] BRTR, Appendix B-1, p. 10.
[146] BRTR, Appendix B-1, p. 4 and Table 1.
[147] BRTR, Appendix B-2, p. 3.
[148] DEIS, BTR, p. 61.

provides maps of the survey areas, there are no maps that clearly depict the portions of those areas that provide suitable habitat for the Quino checkerspot butterfly. As a result, it is unclear how the results of the surveys affected: (a) Dudek's habitat model (and vice versa), and (b) the information presented in the BTR.

The BTR subsequently states that there are 674.1 acres of "potentially occupied habitat mapped within the On-Reservation portion of the Project Site."[149] This value was derived from Dudek's habitat model (discussed in more detail in the subsequent section), thus completely ignoring the field assessment, which had led to the conclusion that there are approximately 1,216 acres of potentially suitable habitat within the Project Site. Dudek's use of the model (only) to estimate acres of potentially occupied habitat within the Project site is inherently flawed because the model output (i.e., acres of potentially occupied or "suitable" habitat) is dependent on the 2010 survey data, and 37% of the Project site was not surveyed in 2010.[150] Specifically, the model output was dependent on two key input variables: (1) acres within 200 meters of Quino checkerspot butterfly locations in 2010, and (2) acres within 200 meters of "significant" host plant populations in 2010. Therefore, if an area had not been surveyed in 2010, these input variables would be zero acres, and thus, the output variable would also be zero acres.[151]

O12-45 Cont.

This issue is compounded by Dudek's failure to collect the data needed to update the model. Specifically, Dudek did not map host plants (i.e., input variable #2) within areas that were not surveyed in 2010. According to Dudek's report: "[s]urveys also focused on identifying Quino host plants; however, only dried host plants from last year were observed. Therefore, no host plants were mapped on site."[152] Host plant density, distribution, and phenology change over time for a variety of reasons, and Quino checkerspot butterfly populations have evolved to respond to shifting habitat patch suitability in space and time.[153] For example, environmental conditions (e.g., low rainfall) may result in a low germination rate of host plants one year, but abundant germination the next year.[154] As a result, the presence of host plants in habitat that otherwise appears suitable is an indicator of habitat suitability, regardless of the phenology of the host plants.[155] Dudek's failure to map host plants (albeit dried) within the survey areas precludes its ability to use its model to make accurate estimates on the amount of suitable Quino checkerspot butterfly habitat within the Campo Corridor.

[149] DEIS, BTR, p. 62.
[150] DEIS, BTR, pp. 31 and 61.
[151] The model also included an undisclosed amount of area around hilltops, and area within 100 feet of ridgelines. Figure 11 in the BTR shows modeled habitat around hilltops, but not ridgelines.
[152] DEIS, BTR, Appendix C-1, p. 5.
[153] U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). Portland, Oregon. p. 19.
[154] *Ibid. See also* BRTR, p. 50: "With the exception of the 2016/2017 and 2018/2019 winters, San Diego County experienced drought conditions over the last several years that affected plant growth."
[155] U.S. Fish and Wildlife Service. 2009. Quino Checkerspot Butterfly (*Euphydryas editha quino*), 5-Year Review: Summary and Evaluation. p. 10.

Finally, the BTR concludes:

1. "There would be impacts to 222.98[156] acres of potentially occupied Quino checkerspot butterfly habitat (Figure 15, Impacts on Potentially Occupied Quino Checkerspot Butterfly Habitat)."[157]
2. "Alternative 2 would result in direct impacts to 191.58 acres of potentially occupied Quino checkerspot butterfly habitat."[158]

Presumably these estimates were derived by overlaying the Project footprint onto the map of modeled habitat, after the exclusion areas had been removed. However, the BTR does not articulate how Dudek derived its estimates. Furthermore, although Figure 15 depicts "QCB Modeled Habitat Impacted by Project Footprint," it does not depict the Project footprint. This precludes the ability to understand: (a) which Project features were included in the impact calculations, and (b) whether the fire management zones were included in the impact calculations. This, in turn, precludes the ability to validate the impact estimates provided in the BTR and DEIS.

The DEIR exacerbates these issues in two ways. First, it states the Project would directly impact 272.8 acres of Quino checkerspot butterfly habitat within the Campo Corridor.[159] The DEIR fails to explain why the Campo Corridor portion of the Project would impact an additional 50 acres of habitat beyond what was reported in the DEIS, especially because: (a) both documents applied the same baseline value to assess impacts, and (b) the DEIR does not identify any revisions to Dudek's habitat model or the Project footprint.

Second, the map of modeled habitat in the DEIR is different from the one provided in the DEIS.[160] Nevertheless, both documents state that there are 674.1 acres of modeled habitat in the Campo Corridor. This is impossible: either the baseline value has changed, or one of the maps does not accurately depict the modeled habitat. Figure 5 (below) provides an example of a change that was made to the map of modeled habitat.

O12-45
Cont.

[156] The DEIS reports 222.1 acres for Alternative 1.
[157] DEIS, BTR, p. 85.
[158] DEIS, BTR, p. 89.
[159] DEIR, p. 2.3-48.
[160] DEIR, BRTR, Figure 4-6. *See also*, DEIS, BTR, Figure 11.

Figure 5. Quino checkerspot habitat (green color) in the Campo Corridor based on Dudek's habitat model. The map in the DEIS (left) depicted modeled habitat that was omitted from the map in the DEIR (right).

O12-45 Cont.

Boulder Brush Corridor-

The DEIR's estimate of impacts to Quino checkerspot butterfly habitat in the Boulder Brush Corridor is based on Dudek's flawed habitat model. The BRTR introduces an additional flaw:

> Dudek modeled habitat in order to estimate the overall potentially occupied areas within the Boulder Brush Corridor (see Section 4.6.1). The Boulder Brush Facilities would result in impacts to 54.79 acres of Quino checkerspot butterfly habitat (Figure 5-3), a portion of which is considered occupied based on the 2019 Quino checkerspot butterfly observations. There is no modeled habitat that overlaps with the 2.63 acres of previously un-surveyed areas within the Boulder Brush Facilities. These areas will be surveyed for plants in the spring and summer of 2020; if any host plants for Quino checkerspot butterfly are observed, the habitat model will be updated accordingly.[161]

Dudek has no basis for claiming that: "there is no modeled habitat that overlaps with the 2.63 acres of previously un-surveyed areas within the Boulder Brush Facilities" because its habitat model is dependent on presence of host plants, and as Dudek acknowledges, it has not surveyed 27.1 acres of the Boulder Brush Corridor for the presence of host plants.[162] Because Dudek's habitat model includes a 200-meter buffer around "significant" plant populations (i.e., >20 individuals), its proposal to limit surveys to the direct impact areas that have not been surveyed (i.e., 2.63 acres) may result in an underestimate of direct impacts to modeled habitat (Figure 6, below).

[161] BRTR, p. 571.
[162] BRTR, p. 272.

Figure 6. Un-surveyed area (green) in relation to proposed access road (hatched line). The access road contains modeled habitat if the un-surveyed area contains host plants, however, the DEIR does not require surveys of this area because if falls outside of the road footprint. Image taken from BRTR, Figure 3-1.

The County Improperly Defers Analysis to the EIS

The County defers to the DEIS for analysis of impacts within the Campo Corridor. The DEIR states: "Quino checkerspot butterfly is known to occur in the Campo Corridor and there are impacts to potentially occupied habitat (Impact BI-A). The analysis and conclusions contained in the EIS regarding the Quino checkerspot butterfly are hereby incorporated by reference."[163] There are three main reasons why the County cannot rely on the analysis and conclusions in the DEIS:

First, the analysis in the DEIS was based on the premature conclusion that the Quino checkerspot butterfly was not present in the Boulder Brush Corridor. The DEIS states: "[t]he Off-Reservation portion of the Project would not adversely affect any federally listed plants or wildlife, because none are present."[164] However, it is now known that Dudek detected five Quino checkerspot butterflies in the Boulder Brush Corridor on April 10, 2019.

Because the DEIS assumed there were no Quino checkerspot butterflies in the Boulder Brush Corridor, it assumed there was almost no habitat for the butterfly in the Boulder Brush Corridor.[165] As a result, the analysis in the DEIS assumed permanent impacts from the entire Project would be limited to 222.1 acres of "suitable" Quino checkerspot butterfly habitat.[166] However, it is now known that the Project would permanently impact at least 327.6 acres of

O12-46

[163] DEIR, p. 2.3-107. *See also* p. 2.3-48.
[164] DEIS, p. 86.
[165] DEIS, BTR, p. 62: *"No habitat was modeled specifically for the Off-Reservation portion of the Project Site (i.e., Boulder Brush Corridor) due to the lack of observations in both 2011 and 2018 focused surveys. However, a small section of the modeled habitat from the Reservation overlaps with the westernmost portion of the Off-Reservation Boulder Brush Corridor. Figure 11, Quino Checkerspot Butterfly Modeled Habitat, shows the model and estimated occupied habitat."*
[166] *Ibid. See also* DEIS, p. 86.

habitat (an increase of 47.5%).[167,168] Therefore, at a minimum, the DEIS's analysis of Project impacts (including cumulative impacts) to the Quino checkerspot butterfly was based on false information pertaining to the butterfly's absence, an underestimate of habitat that would be affected, and thus, an incomplete understanding of the Project as a whole.

Second, the DEIS concluded that all indirect and temporary impacts to Quino checkerspot butterfly habitat would not be adverse (significant).[169] This conflicts with the County's conclusions that indirect and temporary impacts associated with the Project are potentially significant.[170] For example, the DEIS concluded that temporary impacts to habitat within the Campo Corridor would not be adverse because the disturbance areas "would be allowed to passively revegetate."[171] To the contrary, the County concluded that temporary impacts to habitat within the Boulder Brush Corridor are potentially significant and need to be classified as permanent impacts because the Developer does not have a revegetation plan with enforceable success criteria.[172] The actions causing the temporary impacts within the two corridors are the same (e.g., grading). Therefore, it is illogical for the County to conclude that temporary impacts within the Boulder Brush Corridor are potentially significant, while also adopting the Bureau of Indian Affair's ("BIA") conclusion that temporary impacts within the Campo Corridor are not adverse (i.e., less than significant). This issue is confounded by: (a) the DEIS's failure to provide a clear breakdown of impacts, by type (direct versus indirect), and duration (temporary versus permanent);[173] and (b) the County's and BIA's failure to provide a quantifiable estimate of the Project's indirect impacts to Quino checkerspot butterfly habitat.

Third, detection of five Quino checkerspot butterflies in the Boulder Brush Corridor constitutes significant information that was not contemplated in the BIA's analysis. Specifically, detection of the subspecies at the Project site between 2005 and 2009 (by Pacific Southwest Biological Services), in 2010 (by AECOM), and in 2019 (by Dudek) after a drought-induced crash appears to be an indication of population resiliency, which is critical to recovery of the subspecies.[174] Dudek's failure to notify the BIA that it had detected butterflies in the Boulder Brush Corridor precluded knowledge of population resiliency, and thus, the BIA's ability to effectively evaluate the significance of Project impacts on recovery of the subspecies.

O12-46 Cont.

Bats

The DEIR adopts Dudek's conclusion that bats "are not anticipated to have a high number of collisions with turbines," and thus, potential effects of the Project on bats "would be negligible."[175] Dudek was responsible for analyzing the effects of the Tule Wind Project on bats.

O12-47

[167] DEIR, p. 2.3-48.
[168] This value assumes no Quino checkerspot butterflies or habitat occur on the 27.1 acres within the Boulder Brush Corridor that have not been surveyed.
[169] DEIS, BTR, pp. 88 and 89.
[170] *For example, see* DEIR, pp. 2.3-51, -67, and -69.
[171] DEIS, BTR, p. 89.
[172] DEIR, p. 2.3-75.
[173] *See* DEIS, Appendix H (BTR), pp. 71, 72, and Table 8a.
[174] U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). Portland, Oregon. *See also* Recovery Plan Amendment, p. 3.
[175] DEIR, pp. 2.3-52 and -53.

For that project, Dudek also reported "low" bat use; however, it concluded: "[g]iven the detected bat use and the potential for special-status bat species to forage in the Tule Wind Project area, the presence of wind turbines would result in a significant risk of collision to special-status species."[176] The BRTR fails to explain why the Tule Wind Project would have a significant risk to bats, while the risk associated with the Campo Wind Project would be negligible and less than significant if both project sites have "low" bat use.[177]

The DEIR's conclusion rests entirely on the acoustic monitoring data, which reportedly indicate "low occurrences of bats during surveys within the Campo Corridor."[178] This is not a valid conclusion because the acoustic monitoring data were not collected in the Campo Corridor. Moreover, acoustic monitoring does not measure the number of individual bats or population density.[179] As a result, acoustic monitoring data cannot be used to predict bat fatalities at a wind energy facility.

Hein et al. (2013) analyzed 12 sites with adequate (i.e., both pre-construction acoustic and post-construction fatality) data to determine whether bat acoustic data gathered prior to construction can be used to predict fatality. Based on this analysis, the authors concluded: "given current available data, acoustic data gathered prior to construction cannot accurately predict bat fatality."[180] Lintott et al. (2016) derived a similar conclusion and noted:

> The precautionary principle indicates that sites perceived to contain little collision threat to bats should be treated with caution until there is greater understanding of how to identify risk factors to bats. In occasions when mitigation is currently deemed unnecessary, post-construction surveys should still be conducted (e.g., carcass searches) to ensure that the predictions are accurate and bat behaviour has not altered from pre-construction levels.[181]

Although Dudek's acoustic monitoring data cannot be used to assess the Project's risk to bats, post-construction fatality monitoring data from the Tule Wind Project could be used. Indeed, the fact that there are post-construction fatality data from a nearby wind farm with similar habitats and turbines (in terms of MW capacity) provides the County with the unique opportunity to make a highly accurate prediction of the Project's bat fatality rate. Until that analysis is conducted, the County must conclude the Project would kill an unknown number of bats, and that the subsequent consequences on bat populations are potentially significant.

O12-47 Cont.

[176] Dudek. 2010. Draft EIR/EIS for the East County Substation/Tule Wind/Energia Sierra Juarez Gen-Tie Projects. pp. D.2-179 and -180.
[177] BRTR, p. 612.
[178] DEIR, pp. 2.3-52 and -53.
[179] California Energy Commission and California Department of Fish and Game. 2007. California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development. Commission Final Report. p. 55.
[180] Hein CD, J Gruver, EB Barnett. 2013. Relating pre-construction bat activity and post-construction bat fatality to predict risk at wind energy facilities: a synthesis. A report submitted to the National Renewable Energy Laboratory. Bat Conservation International, Austin, TX, USA.
[181] Lintott, P.R., Richardson, S.M., Hosken, D.J., Fensome, S.A., Mathews, F., 2016. Ecological impact assessments fail to reduce risk of bat casualties at wind farms. Curr. Biol. 26:R1135–R1136.

Tricolored Blackbird

The DEIR provides no analysis of Project impacts on the tricolored blackbird, which is listed as a threatened species under the California Endangered Species Act. AECOM detected tricolored blackbirds within the Campo Corridor, and Dudek concluded the species has moderate potential to nest on site.[182] The tricolored blackbird is susceptible to collisions with the Project's wind turbines. Because the tricolored blackbird is a colonially nesting species, one poorly sited wind turbine could cause mass mortality and have severe and significant impacts on the species.[183]

O12-48

Group 2 Species

The DEIR makes the conclusory statement that:

> Loss of Group 2 special-status wildlife species that are not CDFW SSC wildlife species due to development of the Boulder Brush Facilities would be less than significant because these species occur within a variety of habitats and through wide geographic, topographic, and elevation ranges where there are an abundance of these species in the region.[184]

O12-49

The County's conclusion is not supported by scientific evidence or analysis. For example, there are only 13 CNDDB records of the San Diego ringneck snake (a Group 2 species), all of which are associated with locations in the western portion of the county. Therefore, the subspecies is neither widespread nor abundant.

Habitat Fragmentation

Boulder Brush Corridor

According to the DEIR: "[h]abitat fragmentation for wildlife species is not anticipated to result from implementation of the Boulder Brush Facilities."[185] This statement is inconsistent with the definition of habitat fragmentation. The Project entails numerous linear features that would "fragment" the natural landscape and reduce the total habitat area.[186] Indeed, construction of the Boulder Brush Facilities would permanently eliminate 130.9 acres of native vegetation communities within the 320-acre Boulder Brush Corridor. This constitutes significant habitat loss and fragmentation.

O12-50

The County's conclusions regarding fragmentation of wildlife habitat appears to be based on the premise that 130 acres of habitat loss is insignificant given the amount of habitat in the region, and that the Boulder Brush Facilities would not preclude wildlife movement. Even if one accepts this premise, it fails to consider the effects of the entire Project, and the Project's contribution to cumulative effects. At the cumulative level, the Boulder Brush Facilities, Torrey

[182] BRTR, Appendix H-2.
[183] Cook LF, CA Toft. 2005. Dynamics of extinction: population decline in the colonially nesting tricolored blackbird Agelaius tricolor. Bird Conservation International 15(1):73-88.
[184] DEIR, p. 2.3-54.
[185] DEIR, p. 2.3-68.
[186] *See* DEIR, p. 2.3-68.

Wind Project, and Sunrise Powerlink would result in severe habitat fragmentation that will undoubtedly affect wildlife habitat within the Boulder Brush Boundary.

Campo Corridor

The DEIR states: "[p]ermanent indirect impacts to special-status wildlife species within the Campo Corridor are the same as those described above for the Boulder Brush Corridor… Potential permanent indirect impacts to special-status wildlife species within the Campo Corridor would be **potentially significant** (**Impact BI-K**)."[187]

Habitat fragmentation is one of the permanent indirect impacts "described above for the Boulder Brush Corridor."[188] However, the DEIR's description "above" is limited to a couple sentences explaining why habitat fragmentation is a significant impact, followed by the statement: "[h]abitat fragmentation for wildlife species is not anticipated to result from implementation of the Boulder Brush Facilities." Therefore, impacts due to habitat fragmentation within the Campo Corridor cannot be the "same as those described above," because the only description "above" consists of a conclusory statement pertaining to Boulder Brush.

O12-50 Cont.

Ultimately, the DEIR concludes that measure M-BI-C (general avoidance and minimization measures) would reduce the potentially significant impacts associated with habitat fragmentation to less than significant levels. This conclusion is not supported by evidence because general avoidance and minimization measures do nothing to mitigate the unavoidable habitat fragmentation caused by the Project.

Before jumping to the conclusion that habitat fragmentation would be less than significant, the County needs to provide some actual analysis of the issue. I provided extensive comments on the habitat fragmentation issue in my DEIS comment letter. I hereby incorporate those comments by reference.

Golden Eagle

The DEIR provides the following analysis of impacts to golden eagle territories:

> The USFWS and BLM determined through the Desert Renewable Energy Conservation Plan process that impacts to 20% of an eagle territory might cause "take" of an individual or pair. On the small side, home ranges are around 12,000 acres in size, so 20% would equate to 2,400 acres. Even cumulatively in this area, there would not be that much impact (2,400 acres or more) on foraging habitat, so the assessment would be a less than significant finding.[189]

O12-51

I have two comments on the County's analysis: First, the argument that impacts would be less than 20% is based on direct impacts to habitat and ignores the functional loss of habitat, which the DEIR acknowledges is likely to occur.[190] Second, the County fails to provide any spatial

[187] DEIR, p. 2.3-69.
[188] *See* DEIR, p. 2.3-68.
[189] DEIR, pp. 2.3-56 and -57.
[190] DEIR, pp. 2.3-55 and -56.

analysis to support the conclusion that the Project would not contribute to a significant cumulative impact. Eagle territories in the region were mapped to assess impacts of the Tule Wind Project. Therefore, there is no need for the County to speculate on territory size and how the Project might impact the (approximately 10) golden eagle territories that occur in the region. To properly assess cumulative impacts, the County needs to assess the configuration of all past, present, and reasonably foreseeable future projects in relation to the territories that were mapped for the Tule Wind Project.

The DEIR argues the following with respects to impacts on eagle nests: "[t]he Project would not have site-specific impacts on golden eagle nesting. Impacts to suitable foraging habitat for eagles within the Boulder Brush Corridor (Impact BI-26) would be significant."[191] The County has no basis for its conclusion that the Project would not impact eagle nesting because Dudek did not conduct surveys for eagle nests to determine how close they are to the Project site. Moreover, the loss of foraging habitat can reduce productivity of eagle nests.[192] Therefore, if impacts to foraging habitat would be significant, impacts to "eagle nesting" are potentially significant.

O12-51 Cont.

The DEIR concludes that impacts to 69.8 acres of golden eagle foraging habitat in the Boulder Brush Corridor would be significant, but that impacts to 785.7 acres of golden eagle foraging habitat in the Campo Corridor would be less than significant.[193] This conclusion is illogical. If impacts to 69.8 acres of foraging habitat are significant, so are impacts to 785.7 acres of foraging habitat.

Raptor Habitat

According to the DEIR:

> Disturbances associated with construction of the Campo Wind Facilities would result in impacts to 785.67 acres of foraging habitat, approximately 4.9% of the Reservation Boundary. Per the County guidelines, impacts to raptor foraging habitat within the Reservation Boundary would be less than significant because less than 5% of the raptor foraging habitat on the Reservation, as well as the entire Project Site, would be impacted.[194]

O12-52

The DEIR does not describe the steps that went into making this calculation. However, it appears the calculation assumed all of the land remaining within the 16,000-acre Reservation Boundary provides raptor foraging habitat. In other words, it appears the calculation does not account for the Kumeyaay Wind Project, development, and other portions of the Reservation where raptor foraging habitat has already been eliminated.

[191] DEIR, p. 2.3-107.
[192] U.S. Fish and Wildlife Service. 2013 Apr. Eagle Conservation Plan Guidance: Module 1—Land-based Wind Energy, Ver 2.
[193] DEIR, p. 2.3-108.
[194] DEIR, p. 2.3-59.

Collisions

Bats

The DEIR makes the following statements regarding the Project's threat to bats:

1. "Additionally, there were low occurrences of bats during surveys within the Campo Corridor, particularly when compared to other areas with higher-quality habitat types in the region. Therefore, bats and golden eagles are not anticipated to have a high number of collisions with turbines due to the low occurrence of these species using the site."[195]
2. "Direct impacts to bats could result in mortality or injury due to collisions at wind turbines. However, potential effects of the Project on the meta-community of bats in the region, including those species known to be susceptible to collision with turbine blades, would be negligible."[196]

The DEIR's analysis is not supported by substantial evidence.[197] Acoustic monitoring data from pre-construction surveys is not evidence because it cannot be used to predict the number of bat fatalities at a wind energy facility. Currently, the only way to validate a project's bat risk assessment is through analysis of post-construction fatality monitoring data. Therefore, to provide credibility to its prediction that the Project would not result in a high number of bat collisions, the County needs to provide the fatality monitoring data collected at the Tule Wind Project site (and Kumeyaay Wind if data were collected). O12-53

Contrary to the DEIR's claim, there is substantial evidence that the Project could have a substantial impact on bats in the region. For example, Frick et al. (2017) showed that current mortality from wind turbines could result in rapid and severe declines of bat populations within 50 years and increased risk of extinction in 100 years.[198] Brown (2007) concluded that wind turbines could be the "nail in the coffin" for some migratory bat species.[199]

The rotor swept area associated with a project's turbines is an important factor in the collision risk to birds and bats. In addition, there is evidence that bat fatalities increase exponentially with turbine capacity (megawatts) and height.[200] Given the size of the Project, bat fatalities may be substantial even if bat activity at the site is indeed "low."

[195] DEIR, p. 2.3-52.
[196] DEIR, p. 2.3-53.
[197] *See* Dr. Shawn Smallwood's comments on the Campo Wind DEIS.
[198] Frick WF, Baerwald EF, Pollock JF, Barclay RMR, Szymanski JA, Weller TJ, Russell AL, Loeb SC, Medellin RA, and McGuire LP. 2017. Fatalities at wind turbines may threaten population viability of a migratory bat. Biological Conservation 209:172-177.
[199] Brown P. 2007 Sep 25. Letter to the California Energy Commission regarding California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development. Docket nr. 06-011-1. 2 pp.
[200] Thaxter CB, GM Buchanan, J Carr, SH Butchart, T Newbold, R Green, JA Tobias, et al. 2017. Bird and bat species' global vulnerability to collision mortality at wind farms revealed through a trait-based assessment. Proc. R. Soc. B 284: 20170829. *See also* Barclay R, Baerwald E, and Gruver J. 2007. Variation in bat and bird mortalities at wind energy facilities: assessing the effects of rotor size and tower height. Canadian Journal of Zoology 85:381–387.

The 250-MW Shu'luuk Wind Project was previously proposed for the Project site. A bat risk assessment was performed for the Shu'luuk Wind Project after: (a) roost sites and hibernacula searches; (b) comprehensive analysis of acoustic data collected from six MET towers at the project site; (c) review of scientific literature from post-construction studies at operating wind farms; and (d) input from experts on bat behavior (including the San Diego Natural History Museum's bat expert).[201] Based on that analysis, the DEIS concluded: "[a]lthough measures would be implemented to reduce effects associated with bat collisions and/or barotrauma, these effects would be considered significant and unavoidable."[202] The larger wind turbines associated with the proposed Project pose more of a threat to bats; otherwise it is nearly identical to the Shu'luuk Wind Project (e.g., in terms of generating capacity and location). As a result, there is no scientific explanation for why impacts from the Shu'luuk Wind Project would be significant and unavoidable, while impacts from the proposed Project would be less that significant, especially given: (a) mounting scientific evidence that wind energy projects pose a serious threat to bat populations;[203] (b) the conclusion presented in the Shu'luuk DEIS was based on multi-faceted analysis, including analysis of data pertaining to bat activity within the rotor zone where turbines were proposed; and (c) the DEIR for the proposed Project does not incorporate mitigation that is more effective (at reducing bat fatalities) than the mitigation proposed in the Shu'luuk DEIS. As a result, the DEIR fails to provide substantial evidence to support the County's findings regarding impacts to bats.

O12-53 Cont.

Birds

The DEIR provides virtually no analysis of the avian collision hazard associated with the Project. For example, there is no information on how many birds might be killed by the Project, and which species are most at risk (based on the site-specific survey data). Instead of conducting the risk assessments recommended by the USFWS and CDFW,[204] the County jumps straight to its conclusion. However, it is impossible to understand the County's actual conclusion because it varies throughout the DEIR. For example:

1. Page 2.3-52 states: "[b]irds protected under the MBTA would be at risk for collisions with the turbines and gen-tie line support poles, and these impacts would be **potentially significant** (**Impact BI-E**)."[205]
2. Page 2.3-96 states: "[m]igratory birds would be at risk for collisions risk for electrocution or collision and these impacts would be **significant** (**Impact BI-X**)."[206]
3. Page 2.3-121 states: "[t]he chance for wildlife collisions/electrocution is very low and potential impacts would be **less than significant** (**Impact BI-W**). However, migratory

[201] AECOM. 2012. Draft Environmental Impact Statement for the Shu'luuk Wind Project, Appendix C.
[202] *Ibid*, p. 4.4-39.
[203] *For example, see* Frick WF, Baerwald EF, Pollock JF, Barclay RMR, Szymanski JA, Weller TJ, Russell AL, Loeb SC, Medellin RA, and McGuire LP. 2017. Fatalities at wind turbines may threaten population viability of a migratory bat. Biological Conservation 209:172-177.
[204] U.S. Fish and Wildlife Service. 2012 Mar 23. Land-Based Wind Energy Guidelines. 71 pp. *See also* U.S. Fish and Wildlife Service. 2013 Apr. Eagle Conservation Plan Guidance: Module 1—Land-based Wind Energy, Ver 2. *See also* California Energy Commission and California Department of Fish and Game. 2007. California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development. Commission Final Report.
[205] DEIR, p. 2.3-52.
[206] DEIR, p. 2.3-96.

> birds would be at risk for collisions with the turbines, met towers and gen-tie line and these impacts from the Campo Wind Facilities would be **potentially significant** (**Impact BI-X**).[207]

O12-53 Cont.

As discussed further below, the mitigation proposed in the DEIR (i.e., fatality monitoring) does nothing to reduce bird fatality levels once the Project begins operating. Therefore, the proposed mitigation does not support a finding of "less than significant."

Noise

The DEIR acknowledges that noise can adversely affect wildlife in numerous ways.[208] However, it makes the conclusion that noise associated with the Project would have less than significant impacts on wildlife.[209] The analysis in the DEIR and BRTR do not support that conclusion. In fact, neither document demonstrates there was a concerted effort to analyze how the Project's noise levels would affect wildlife. According to the BRTR, the data used to assess impacts to wildlife are in Appendix G.[210] However, the analysis in Appendix G was designed solely to assess impacts to humans and cannot be applied to animal species that have substantially different audiograms.[211]

The DEIR makes a single attempt to dismiss noise impacts in the Boulder Brush Corridor:

> The Land within the Boulder Brush Boundary has historically been subject to off-highway vehicle use, which Brattstrom and Bondello (1983) concludes has significant impacts on species such as kangaroo rats (*Dipodomys* spp.), desert iguanas (*Dipsosaurus dorsalis*), and fringe-toed lizards (*Uma* spp.). Therefore, it is likely that species sensitive to noise may not utilize the area given the off-highway vehicle use.[212]

O12-54

The DEIR misrepresents the information provided in Brattstrom and Bondello (1983) and the amount of off-highway vehicle use in the Boulder Brush Corridor.[213] Nevertheless, the premise of the argument is false because sensitive wildlife species are known to occur in the Boulder Brush Corridor.[214] Instead of suggesting that sensitive species "may not utilize the area," the County needs to analyze how noise from the Project would affect the species that do in fact occur.

The rationale for the DEIR's conclusion that noise from the Project's wind turbines would be less than significant is limited to the statement that: "operational noise sources would be widely

[207] DEIR, p. 2.3-121.
[208] DEIR, p. 2.3-66.
[209] DEIR, pp. 2.3-97 and -98.
[210] BRTR, p. 600.
[211] Francis CD, JR Barber. 2013. A framework for understanding noise impacts on wildlife: an urgent conservation priority. Frontiers in Ecology and the Environment 11:305-313. *See also* Ortega CP. 2012. Effects of Noise Pollution on Birds: A Brief Review of Our Knowledge. Ornithological Monographs 74:6-22. *See also* Pater LL, TG Grubb, DK Delany. 2009. Recommendations for Improved Assessment of Noise Impacts on Wildlife. Journal of Wildlife Management 73(5):788-795.
[212] DEIR, p. 2.3-66.
[213] The data provided in DEIR Appendix G do not support the premise of extensive off-highway vehicle use in the Boulder Brush Corridor.
[214] BRTR, Attachment E.

spaced."[215] This does not justify the County's conclusion. The wind turbines proposed for the Project produce a maximum sound power level of approximately 110 dBA. Noise at that level is deafening and far exceeds levels that have been shown to be deleterious to wildlife.[216] Therefore, the fact that the wind turbines would be "widely spaced" indicates impacts associated with turbine noise would extend across the landscape—not that noise impacts would be less than significant.

O12-54 Cont.

Cumulative Impacts

According to the DEIR, the geographic scope of the County's cumulative impacts analysis was the Peninsular Ranges of the California Floristic Province.[217] However, the cumulative impacts maps, and the list of cumulative projects, do not encompass all projects within the Peninsular Ranges. As a result, the County's assessment of cumulative conditions does not comport with its assessment of cumulative impacts. This is important because it resulted in calculations that do not accurately reflect the relative severity of cumulative impacts (e.g., that cumulative impacts to vegetation communities would be limited to 0.67% of the total acreage).[218]

The DEIR suggests the cumulative projects would impact either 2,893 acres (p. 2.3-111) or 2,367 acres (p. 2.3-7). Neither value is consistent with the information provided in DEIR Table 1-4.

Special-Status Species

The DEIR's analysis of cumulative impacts to special-status species states:

O12-55

> However, impacts to these County Group 1 and/or CDFW SSC species would be less than significant given the large amount of remaining habitat in the region, as well as implementation of all required minimization and mitigation measures during federal and state permitting (e.g., Quino checkerspot butterfly). The Project Area is not located within a Quino checkerspot butterfly Recovery Unit nor is it within a core occurrence complex identified in the Recovery Plan (USFWS 2003) or Recovery Plan Amendment (USFWS 2019). Therefore, the Project would not contribute to a cumulatively considerable significant impact.

There are several flaws with the DEIR's analysis:

First, the DEIR fails to provide evidence that there is a "large amount of remaining habitat in the region." If this was the case, the species would not be classified as County Group 1 and/or CDFW SSC species. Furthermore, most County Group 1 and/or CDFW SSC species are limited to specific habitat types. Therefore, it is inappropriate for the DEIR to consider all of the remaining land to be "habitat" for each of the County Group 1 and/or CDFW SSC species.

---

[215] DEIR, p. 2.3-98.
[216] Kaseloo PA, KO Tyson. 2004. Synthesis of Noise Effects on Wildlife Populations. US Department of Transportation, Federal Highway Administration. Publication No. FHWA-HEP-06-016. *See also* Reijnen R, R Foppen, G Veenbaas. 1997. Disturbance by traffic of breeding birds: evaluation of the effect and planning and managing road corridors. Biodiversity and Conservation 6:567-581. *See also* Ortega CP. 2012. Effects of Noise Pollution on Birds: A Brief Review of Our Knowledge. Ornithological Monographs 74:6-22.
[217] DEIR, p. 2.3-108.
[218] DEIR, p. 2.3-115.

Second, the conclusion that there would be no cumulative impact because of "all required minimization and mitigation measures" is not supported by evidence. Most of the cumulative impacts to habitat are associated with projects on federal or tribal land. As the DEIR acknowledges, projects on federal or tribal land are not required to provide compensatory habitat for impacts to County Group 1 and/or CDFW SSC species. Although all projects that affect the Quino checkerspot butterfly require minimization and mitigation measures as part of the federal permitting process, neither the DEIR nor DEIS has demonstrated there are feasible mitigation options to offset the impacts, especially at the cumulative level.

Third, there is no actual analysis of cumulative impacts to the Quino checkerspot butterfly. At a minimum, cumulative impacts analysis would require overlaying the footprint of the cumulative projects onto a map of butterfly occurrence complexes.

Fourth, the DEIR's statements pertaining to the Quino checkerspot butterfly are incorrect. The Campo core occurrence complex is located entirely within the Project site.[219] As discussed above, Project impacts to that core occurrence complex will be significant. The Campo Corridor is not within a designated Recovery Unit because Tribal lands are not subject to the same controls as Federal public lands.[220] Therefore, the fact that the Project site is not within a Recovery Unit does not mean that it has no ecological value to recovery of the butterfly, or that the Project would not contribute to a cumulatively considerable significant impact. Based on my review of the recovery plan and other scientific literature, there is no doubt that there will be significant cumulative impacts to the Quino checkerspot butterfly (Campo Core and Jacumba Core populations). Given the relatively high number of Quino checkerspot butterfly occurrences at the Project site,[221] the Project's contribution to cumulative impacts would considerable.

O12-55 Cont.

Avian and Bat Collisions

The cumulative impacts scenario includes four industrial-scale wind projects with a combined generating capacity of 614 MW.[222] These projects present a collision threat that extends for miles across the landscape.[223] The DEIR provides absolutely no discussion or analysis of cumulative impacts to birds and bats due to collisions with wind turbines. Several scientists have concluded that, cumulatively, bird and bat fatalities caused by wind energy facilities may have population-level impacts on some species.[224] Thaxter et al. (2017) conducted a meta-analysis of bird and bat collision rates reported by 93 and 134 wind farms, respectively.[225] They concluded:

[219] CFWO GIS Coordinator, Carlsbad Fish and Wildlife Office. Species Occurrence Data [GIS data]. Available at: <https://www.fws.gov/carlsbad/GIS/CFWOGIS.html>. (Accessed 2019 Jun 26). *See also* U.S. Fish and Wildlife Service. 2019. Recovery Plan for Quino Checkerspot Butterfly (*Euphydryas editha quino*), Draft Amendment 1.
[220] U.S. Fish and Wildlife Service. 2019. Recovery Plan for Quino Checkerspot Butterfly (*Euphydryas editha quino*), Draft Amendment 1.
[221] CFWO GIS Coordinator, Carlsbad Fish and Wildlife Office. Species Occurrence Data [GIS data]. Available at: <https://www.fws.gov/carlsbad/GIS/CFWOGIS.html>. (Accessed 2019 Jun 26).
[222] DEIR, Table 1-4: Campo Wind, Kumeyaay Wind, Tule Wind, and Torrey Wind.
[223] I estimate approximately 14 miles (north-south) by 7 miles (east-west) based on DEIR, Figure 1-12.
[224] American Wind Wildlife Institute (and sources cited therein). 2019. Wind turbine interactions with wildlife and their habitats: a summary of research results and priority questions.
[225] Thaxter CB, GM Buchanan, J Carr, SH Butchart, T Newbold, R Green, JA Tobias, et al. 2017. Bird and bat species' global vulnerability to collision mortality at wind farms revealed through a trait-based assessment. Proc. R. Soc. B 284: 20170829.

"[o]verall, these findings emphasize the need to consider cumulative impacts of wind farms on populations, particularly for migrants and wide-ranging species."[226]

O12-55 Cont.

MITIGATION

Quino Checkerspot Butterfly (M-BI-1 and M-BI-A)

Measures M-BI-1 and M-BI-A defer the Quino checkerspot butterfly mitigation requirements to the Section 7 consultation process and the Biological Opinion. This includes the compensatory mitigation ratio, and any restrictions on the location of compensatory habitat. Section 7 consultation and issuance of a Biological Opinion provides no guarantees that adverse effects on the Quino checkerspot and its habitat would be reduced to less than significant levels,[227] especially given the USFWS's recent withdrawal of the Endangered Species Act (ESA) Compensatory Mitigation Policy.[228] Moreover, the Government Accountability Office concluded that the USFWS: "has done limited monitoring to ensure [mitigation] fees are used as intended and desired mitigation results are achieved."[229] The terms and conditions of the Biological Opinion have not been developed. Therefore, the County has no ability to conclude those terms and conditions would reduce Project impacts to less than significant levels. Indeed, the County has no basis for concluding Project impacts would be less than significant until the USFWS issues its decision on whether the proposed Project will violate the Endangered Species Act prohibitions on jeopardy.

O12-56

The DEIR requires compensatory mitigation, which it states: "shall focus on habitat preservation and creation for long-term conservation of metapopulation dynamics." The County concludes this requirement would ensure impacts to the Quino checkerspot butterfly are mitigated to less than significant levels. There are several reasons why the County does not have the basis for this conclusion:

First, the USFWS has concluded:

> Acquisitions of land and conservation easements have resulted in preservation of much habitat for the subspecies. We do not yet know how much local Quino abundance, distribution, and habitat availability can be reduced without critically compromising population resiliency.[230]

Before the County can conclude in sufficient detail that habitat compensation would contribute to reducing adverse effects to a level below significance, it must first demonstrate that Project impacts would not compromise the resiliency of the Campo Core population. Then it must demonstrate that the habitat compensation provided through M-BI-1 and M-BI-A is feasible and

[226] *Ibid.* p. 7.
[227] U.S. Government Accountability Office. 2001. Endangered Species Act: Fee-Based Mitigation Arrangements. 16 pp. *See also* U.S. Government Accountability Office. 2016. Endangered Species Act: U.S. Fish and Wildlife Service's American Burying Beetle Conservation Efforts. 72 pp.
[228] 83 FR 36469.
[229] *Ibid*, p. 3.
[230] U.S. Fish and Wildlife Service. 2009. Quino Checkerspot Butterfly (*Euphydryas editha quino*), 5-Year Review: Summary and Evaluation. p. 13.

would contribute to one or more of the recovery criteria established in the Recovery Plan or Recovery Plan Amendment.

Second, there is insufficient information to determine whether the Project's compensatory habitat would indeed provide "long-term conservation of metapopulation dynamics." According to the USFWS, it is still in the process of developing a "preliminary metapopulation model," which would then need to be verified by research and monitoring over a time frame that is incommensurate with issuance of a Biological Opinion for the Project.[231] Therefore, it is not feasible to defer site selection to the USFWS, while also ensuring the site would provide "long-term conservation of metapopulation dynamics."

Third, the DEIR fails to demonstrate it would be feasible to acquire compensatory habitat. The USFWS defines population resilience as: "[i]n general, the ability of a Quino checkerspot butterfly population or metapopulation to survive periodic extreme and unpredictable environmental circumstances and persist long-term (50+ years) in an ecosystem not [irreparably] compromised by human impacts."[232] I assume the compensation ratio will be at least 2:1 (as was required for the Tule Wind Project). Thus, mitigating the Project's significant impacts on the Quino checkerspot butterfly would require acquisition of at least 546 acres of land occupied by the Quino checkerspot butterfly, in an ecosystem not irreparably compromised by human impacts. The DEIR fails to provide evidence that such acquisition opportunities exist, especially given the scarcity of Quino checkerspot butterfly habitat on private parcels in eastern San Diego County[233] and the demand for those parcels (i.e., from other projects with compensatory mitigation requirements).

O12-56 Cont.

For these reasons, measures M-BI-1 and M-BI-A do not ensure Project impacts to the Quino checkerspot butterfly are mitigated to a less than significant level.

<u>M-BI-A (Campo Corridor)</u>

M-BI-A differs from M-BI-1 because it states: "[p]er coordination with USFWS, seasonal avoidance of mapped suitable Quino checkerspot butterfly habitat during Project construction would not be required." This condition is confusing for the following reasons:

1. It conflicts with MM-BIO-3(b) in the DEIS for the Project.
2. It is unclear whether the condition is a prediction, or whether the USFWS has already informed the County that the Biological Opinion will not have seasonal avoidance requirements.
3. The Biological Opinion issued for the Tule Wind Project (also on tribal land) required clearing and grubbing of occupied Quino habitat outside the Quino flight season to reduce direct mortality of adult Quino.

[231] U.S. Fish and Wildlife Service. 2019. Recovery Plan for Quino Checkerspot Butterfly (*Euphydryas editha quino*), Draft Amendment 1.
[232] *Ibid,* p. 16.
[233] U.S. Fish and Wildlife Service. 2009. Quino Checkerspot Butterfly (*Euphydryas editha quino*), 5-Year Review: Summary and Evaluation. p. 25.

Pre-construction Surveys (M-BI-5)

There are 27.1 acres within the Boulder Brush Corridor that have not been surveyed. M-BI-5(a) only requires surveys within the 2.6 acres that will be directly impacted, thus ignoring (a) the remaining 24.5 acres that would be exposed to indirect impacts, and (b) the potential for those 24.5 acres to affect the output of Dudek's Quino checkerspot habitat model.

M-BI-5(a) states:

> If any special-status plants are found, the Applicant shall develop a plant relocation plan for the open space (prepared by a biologist with at least 5 years of experience in rare plant relocation), with plant specimens grown on site or from local seed or cutting sources. The individuals shall be planted within the open space to secure a 2:1 mitigation ratio for any County List A species, and a 1:1 mitigation ratio for County list B species identified.

It is unclear whether the "open space" refers to the habitat preserved under M-BI-5(b), habitat at the Project site, or something else entirely. Furthermore, it is unclear why the DEIR requires relocation of any special-status plants found in the portion of the footprint that has not been surveyed, but not the special-status plants in other portions of the footprint (that have already been surveyed). Most attempts to relocate special-status plants fail,[234] and the DEIR provides no evidence that the species that may be discovered during the pre-construction surveys can successfully be "relocated." Relocating plants to a non-local ecotype may cause significant ecological impacts (e.g., genetic contamination) at the receptor site.[235] These issues highlight why the County cannot defer formulation of the "plant relocation plan" and assume it would effectively mitigate the Project's impacts.

The DEIR claims the compensatory habitat required under M-BI-5(b) would provide "equal or greater benefit to plant and wildlife species." However, it fails identify the criteria that would be evaluated to assess the value of habitat at lands proposed for mitigation (if "Option 2" is selected). As a result, the DEIR's conclusion that M-BI-5(b) would mitigate potentially significant impacts to special-status plants and animals is not supported by substantial evidence.

O12-57 Cont.

Exotic Plant Species (M-BI-13)

The DEIR acknowledges the Project would increase the likelihood of invasion by exotic plants (weeds), and that exotic plants would cause significant impacts to many of the sensitive resources in the Project area. However, the County's proposed mitigation (M-BI-13) is limited to the prohibition of invasive plant species in the hydroseed mix. This measure does not mitigate the impact because it does not address the potential for the Project to: (1) introduce new weed species, and (2) facilitate the spread of existing weed species. Because weeds (exotic plants)

O12-58

[234] Fiedler PL. 1991. Mitigation-related transplantation, relocation and reintroduction projects involving endangered and threatened, and rare plant species in California. Final Report to the California Department of Fish and Game.

[235] Longcore T, R Mattoni, G Pratt, C Rich. 2000. On the perils of ecological restoration: Lessons from the El Segundo blue butterfly. Pages 281-286 *in* JE Keeley, M Baer-Keeley, CJ Fotheringham, editors. 2nd Interface Between Ecology and Land Development in California. U.S. Geological Survey Open-file Report 00-62. U.S. Geological Survey, Sacramento, CA.

rapidly colonize disturbed areas and are already present in the Project area, they will undoubtedly colonize the Project's roads and begin spreading into the surrounding landscape.[236]

The California Invasive Plant Council has published guidelines for preventing the spread of invasive plants.[237] The BMPs described therein are feasible and they should be incorporated as required mitigation measures. Because the DEIR fails to incorporate any mitigation (other than prohibition of invasive plant species in the hydroseed mix), significant impacts associated with the colonization and spread of weeds remain unmitigated.

O12-58 Cont.

Weed Management Plan (M-BI-C)

Measure M-BI-C requires a weed management plan, but only for the Campo Corridor portion of the Project. The only quantifiable standards the DEIR has established for the weed management plan are: (a) "annual surveys within the restoration areas to document weed patches for 2 years post construction;" and (b) "success standards, such as no more than a 10% increase in weed species in restoration areas." These standards do not ensure impacts associated with weeds would be mitigated to less than significant levels. Specifically:

1. The potential for weeds due to the Project is not limited to "restoration areas," nor does the DEIS establish any such areas. In lieu of actual restoration, the DEIS allows the Developer to spray disturbance areas with soil binders.
2. Surveys (to document weed patches) are not mitigation.
3. Two years is an insufficient time frame. It often takes multiple years to eradicate (or control) a weed once it becomes established at a site. In addition, the potential for the Project to introduce (or spread) weeds will not be eliminated within the first two years; it will extend through the operational and (especially) decommissioning phases.
4. The condition for: "success standards, such as no more than a 10% increase in weed species in restoration areas" appears to be an example, not an actual requirement. If it is indeed a requirement, the requirement is too vague to ensure success. For example, how would the 10% increase be measured and what would it be measured against (e.g., baseline conditions, reference sites, etc.)? Why would a 10% increase be considered "success" (and a less than significant impact)? Weeds can reproduce and spread exponentially, so an increase of 9% (for example) in only two years would be indicative of failure, not success.

O12-59

The DEIR's deferral of the weed management plan is compounded by its failure to provide information fundamental to evaluating the likelihood that the weed management plan would be enforced, or that it would provide any measurable reduction in indirect impacts associated with weeds. Specifically, the DEIR fails to identify:

1. the specific weed species that would be subject to weed management measures.
2. the management objectives for each species (e.g., eradication versus control).

[236] Schoenig SE, Dept. of Food and Agriculture. 2005. California Noxious and Invasive Weed Action Plan.
[237] Cal-IPC. 2012. Preventing the Spread of Invasive Plants: Best Management Practices for Land Managers (3rd ed.). Cal-IPC Publication 2012-03. California Invasive Plant Council, Berkeley, CA.

3. the specific measures that would be taken to minimize weed introductions (e.g., vehicle wash stations), and to manage weeds after they colonize Project areas.
4. specific, measurable performance standards for the weed management plan.
5. the monitoring and reporting requirements, including the variables that shall be monitored, the monitoring methods, and the frequency and duration of monitoring.
6. a mechanism (e.g., performance security) for ensuring implementation, enforcement, and success of the weed management plan.

This issue is further compounded by the DEIS, which fails to require a proactive and aggressive weed management strategy. Indeed, it states: "the areas beyond the turbine pads would be allowed to passively revegetate."[238] This would undoubtedly result in the colonization and spread of invasive plants. As reported in the Quino Checkerspot Butterfly Recovery Plan:

> Once invasion by nonnatives has occurred, natural succession likely will not allow for the complete recovery of the site to a pre-disturbance state. For example, after surveying 25 coastal sage scrub and chaparral sites disturbed up to 70 years ago in San Diego County, Stylinski and Allen (1999) concluded that all the original plant communities were significantly altered by nonnative plant invasion. These sites were primarily disturbed by mechanical means such as agriculture, landfills, and grading, but sites that have been subject to disturbances that remove vegetation without disrupting the soil, such as frequent fire, also contain persistent stands of nonnative vegetation (Freudenberger et al. 1984, Minnich and Dezzani 1998). These kinds of studies indicate that active restoration will be required to control nonnative annuals and reestablish native vegetation.[239]

O12-59 Cont.

Jurisdictional Aquatic Resources (M-BI-16)

M-BI-16 states:

> A functional assessment, such as the California Rapid Assessment Method (CRAM), of the jurisdictional areas proposed to be impacted and preserved at the mitigation site shall be conducted. The purpose of the functional assessment is to evaluate the existing functions and services within the jurisdictional drainages and ensure that the functions and values of the jurisdictional areas lost are replaced at the mitigation site. The precise mitigation ratio shall depend on the functions and values of the mitigation site and any restoration activities that may be conducted to further increase the functions and values of the mitigation site.

O12-60

This constitutes improper deferral of the impact assessment. If the functional assessment has not been completed, there is no scientific basis for the RPO buffer widths proposed in the BRTR (and adopted by the County in the DEIR).[240] M-BI-16 further violates CEQA by deferring formulation of performance criteria for the Conceptual Wetlands Mitigation and Monitoring Plan.

[238] DEIS, BTR, p. 89.
[239] U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). Portland, Oregon. p. 58.
[240] *See* BRTR, pp. 363 and 364.

Bird and Bat Conservation Strategy (M-BI-Bc)

Measure M-BI-B(c) begins by deferring formulation of the Bird and Bat Conservation Strategy until after the CEQA review process terminates:

> The Developer shall prepare a Bird and Bat Conservation Strategy (BBCS). The BBCS shall be prepared by a qualified biologist and shall include methods and results of avian and bat surveys conducted in 2017, 2018, and 2019 at the Project Site; a risk assessment associated with potential collisions/barotrauma with Project turbines and meteorological towers and electrocution associated with overhead transmission lines; recommended avoidance, minimization, and mitigation measures to address this risk; methods and protocols associated with post-construction monitoring; and adaptive management actions that can be taken based on monitoring results.

Avian and bat mortality has the potential to be one of the most severe environmental impacts of the Project.[241] Consequently, the BBCS is fundamental to the public's ability to understand: (a) the overall severity of the Project's impacts on birds and bats, and (b) the steps the Developer is willing to take should the Project result in unacceptable fatality levels. By deferring the BBCS, the DEIR robs the public of this critical information.

The County's explicit recognition that the BBCS needs to contain a risk assessment is especially troubling. In addition to providing the public and decision makers with the information needed to decide whether a project poses an unacceptable risk, the reason a risk assessment is conducted is to design the Project in a way that reduces the risk. Because the DEIR defers the risk assessment (i.e., until after the planning phase), it is unlikely the Developer will be able to make any meaningful changes to the Project design (termed "micrositing" in the context of wind energy facilities). Nevertheless, the DEIR does not require the Developer to make *any* changes (e.g., turbine relocations) based on the risk assessment. This renders the risk assessment relatively useless.

O12-61

Even though the risk assessment has not been conducted, the County has made the a priori conclusion that impacts to birds and bats would be less than significant. This contradicts the scientific process and would only be possible if the DEIR established: (a) a rigorous plan for collecting the data needed to obtain accurate fatality estimates once the Project starts operating; (b) specific fatality thresholds; and (c) an explicit and enforceable strategy for reducing fatality levels should the thresholds be exceeded. Not only are these elements absent from the DEIR, but the requirements of M-BI-B(c) are so vague that there are no assurances they will be in the BBCS. For example, although M-BI-B(c) requires the BBCS to include "methods and protocols associated with post-construction monitoring," it fails to establish any standards for those methods and protocols. This is a critical omission because it has direct implications on the accuracy of the data, and thus, the ability to implement effective adaptive management decisions.

The County defers to the Developer for: "management actions that can be taken based on monitoring results." There is no reason for this ambiguity because curtailment is the only proven

[241] *See* Dr. Shawn Smallwood's comments on the Campo Wind DEIS. *See also* Thaxter CB, GM Buchanan, J Carr, SH Butchart, T Newbold, R Green, JA Tobias, et al. 2017. Bird and bat species' global vulnerability to collision mortality at wind farms revealed through a trait-based assessment. Proc. R. Soc. B 284: 20170829.

method to reduce bird and bat fatalities after a project begins operating. This needs to be articulated to the public in the EIR. The EIR also needs to articulate whether the Developer will commit to curtailment if the Project kills birds or bats at unacceptable levels. Currently, the DEIR does not establish any requirements for curtailment, thus allowing the Project to kill an unlimited number of birds and bats without a mechanism in place to reduce the severity of those fatalities on the afflicted bird and bat populations.

O12-61 Cont.

Conclusions (DEIR Section 2.3.7)

The end of the biological resources chapter provides a summary of the County's conclusions.[242] As described below, many of the conclusions do not comport with the information and analyses provided in the DEIR and DEIS.

1. *"the BIA has prepared an EIS for the Project with these same recommended mitigation measures as identified in Section 2.3.6."*

This statement is not entirely correct. The EIS does not require a Bird and Bat Conservation Strategy. Of the subparts outlined in M-BI-B(c), the only one required in the EIS is the Worker Response Reporting System ("WRSS"). Even if the WRSS was a scientifically acceptable way to measure bird and bat fatality levels, it does nothing to mitigate significant impacts unless accompanied by fatality thresholds that would trigger remedial actions (i.e., measures to reduce fatality rates below the accepted thresholds). However, there are no fatality thresholds in the EIS (or DEIR). The DEIR acknowledges: "[a]s mitigation beyond those measures identified in the EIS cannot be guaranteed to be completed, no mitigation is assumed in the analysis and the impact would remain significant and unmitigated." Because reporting fatalities does not reduce fatalities, and because the County cannot guarantee any mitigation beyond what is identified in the EIS, the only possible conclusion is that impacts due to collisions with the Project's wind turbines would be significant.

O12-62

In addition, the revegetation requirements in the EIS are inconsistent with those suggested in M-BI-C(e). The requirements of the EIS are limited to: "[d]isturbed areas shall be revegetated or stabilized using soil binders that can be determined to be as efficient, or more efficient, for fugitive dust control than California Air Resources Board-approved soil stabilizers, as soon as possible after disturbance and shall not increase any other environmental impacts including loss of vegetation."

2. *"As the mitigation measures in the EIS will be a requirement of the BIA approval and record of decision, measures in the EIS would be guaranteed to be implemented."*

This is an extremely tenuous claim because the DEIS is limited to "recommended mitigation measures," which means the BIA has not formally committed to any of the measures. If the BIA does adopt the mitigation measures, it must put in place a mitigation monitoring and enforcement program, which was absent from the DEIS. Contrary to NEPA guidelines, the DEIS did not discuss the likelihood that the "recommended mitigation measures" would be implemented,

[242] DEIR, Section 2.3.7.

enforced, and successful. As a result, the County's statement that the mitigation measures in the EIS are "guaranteed to be implemented" is not supported by evidence in the record.

3. *"Project impacts to special-status plant and wildlife species would be reduced to below a level of significance with mitigation."*[243]

At a minimum, this statement is misleading to the public because elsewhere in the DEIR the County acknowledges that impacts to special-status plant and wildlife species in the Campo Corridor would be significant and unavoidable due to the absence of mitigation.

4. *"Nesting raptor (**Impact BI-L**) impacts would remain significant. These potential impacts would be reduced to below a level of significance with the implementation of EIS-recommended mitigation measures **M-BI-B** (Avian-Specific Avoidance, Minimization, and Mitigation Measures)."*

The two sentences in this conclusion are inconsistent.

5. *"Permanent indirect impacts to jurisdictional waters (**Impact BI-R**) would be mitigated to below a level of significance through implementation of EIS-recommended mitigation measures **M-BI-C (**General Avoidance and Minimization Measures). Although impacts would be significant as a result of impacts to RPO wetland and wetland buffers (**Impact BI-U**), no EIS-recommended mitigation measures would be implemented because the Campo Wind Facilities On-Reservation are not subject to the County RPO."*

This statement appears to contradict the subsequent statement that: "[t]he Campo Wind Facilities would not have impacts to RPO wetland and wetland buffer as land within the Reservation Boundary is not subject to RPO wetland regulations."[244] This issue is confounded by the DEIR's statement that: "[i]t is not known whether there are RPO resources within the Campo Corridor."[245]

6. *"Impacts to wildlife movement on the Reservation would be potentially significant due to electrocution (**Impact BI-W**) and collision (**Impact BI-X**) risk to migrating birds with the turbines, met towers and the On-Reservation gen-tie line. These potential impacts would be mitigated to below a level of significance by EIS-recommended mitigation measures **M-BI-B** (Avian-Specific Avoidance, Minimization, and Mitigation Measures). Potential temporary direct impacts to foraging and breeding habitat within the Campo Corridor would be potentially significant (**Impact BI-V**) during construction that could significantly affect the County Wildlife Core area. These potential impacts would be mitigated to below a level of significance by EIS-recommended mitigation measure **M-BI-C (**General Avoidance and Minimization Measures)."*

O12-62 Cont.

[243] DEIR, p. 2.3-141.
[244] DEIR, p. 2.3-146.
[245] DEIR, p. 2.3-103.

Both of these conclusions are incorrect. The DEIS does not incorporate any mitigation for avian collisions with the turbines. Similarly, the DEIS does not require restoration of habitat that is temporarily impacted. The DEIS states: "[d]isturbed areas shall be revegetated *or stabilized using soil binders*."[246] The DEIR's reference to "temporary direct impacts" does not comport with: (a) the County's conclusion that all temporary impacts need to be considered permanent due to the lack of performance standards; and (b) the BRTR's statement that: "[t]here are no temporary impacts described for the Campo Wind Facilities because no temporary impact areas have been distinguished from permanent impacts within the Campo Wind Facilities at this time (i.e. all impacts are considered permanent)."[247] Therefore, the County does not have the basis for the conclusion that "temporary" impacts would be mitigated to less than significant.

7. *"The Campo Wind Facilities would potentially impact golden eagle foraging (**Impact BI-G**) due to habitat loss. It is noted that the habitat preservation mitigation similar to **M-BI-5** would mitigate this impact to less than significant. The County does not have legal authority to require mitigation on the Reservation and raptor foraging mitigation is not proposed (see EIS). Thus, this impact would remain significant."*

O12-62 Cont.

This conclusion makes no sense due to the internal inconsistencies. There is no "habitat preservation mitigation similar to M-BI-5" in the DEIS. As a result, the impact remains significant regardless of the County's legal authority.

This concludes my comments on the DEIR.

Sincerely,

Scott Cashen, M.S.
Senior Biologist

[246] DEIS, Appendix P. [emphasis added].
[247] BRTR, p. 372.

Scott Cashen, M.S.
Senior Wildlife Ecologist

Scott Cashen has 25 years of professional experience in natural resources management. During that time he has worked as a field biologist, forester, environmental consultant, and instructor of Wildlife Management. Mr. Cashen focuses on CEQA/NEPA compliance issues, endangered species, scientific field studies, and other topics that require a high level of scientific expertise.

Mr. Cashen has knowledge and experience with numerous taxa, ecoregions, biological resource issues, and environmental regulations. As a biological resources expert, Mr. Cashen is knowledgeable of the various agency-promulgated guidelines for field surveys, impact assessments, and mitigation. Mr. Cashen has led field investigations on several special-status species, including ones focusing on the yellow-legged frog, red-legged frog, desert tortoise, steelhead, burrowing owl, California spotted owl, northern goshawk, willow flycatcher, Peninsular bighorn sheep, red panda, and various forest carnivores.

Mr. Cashen is a recognized expert on the environmental impacts of renewable energy development. He has been involved in the environmental review process of over 80 solar, wind, biomass, and geothermal energy projects. Mr. Cashen's role in this capacity has encompassed all stages of the environmental review process, from initial document review through litigation support. Mr. Cashen has provided expert witness testimony on several of the Department of the Interior's "fast-tracked" renewable energy projects. His testimony on those projects helped lead agencies develop project alternatives and mitigation measures to reduce environmental impacts associated with the projects.

Mr. Cashen was a member of the independent scientific review panel for the Quincy Library Group project, the largest community forestry project in the United States. As a member of the panel, Mr. Cashen was responsible for advising the U.S. Forest Service on its scientific monitoring program, and for preparing a final report to Congress describing the effectiveness of the Herger-Feinstein Forest Recovery Act of 1998.

AREAS OF EXPERTISE

- CEQA, NEPA, and Endangered Species Act compliance issues
- Comprehensive biological resource assessments
- Endangered species management
- Renewable energy development
- Scientific field studies, grant writing and technical editing

EDUCATION

M.S. Wildlife and Fisheries Science - The Pennsylvania State University (1998)
Thesis: *Avain Use of Restored Wetlands in Pennsylvania*
B.S. Resource Management - The University of California, Berkeley (1992)

PROFESSIONAL EXPERIENCE

Litigation Support / Expert Witness

Mr. Cashen has served as a biological resources expert for over 100 projects subject to environmental review under the California Environmental Quality Act (CEQA) and/or the National Environmental Policy Act (NEPA). As a biological resources expert, Mr. Cashen reviews CEQA/NEPA documents and provides his clients with an assessment of biological resource issues. He then submits formal comments on the scientific and legal adequacy of the project's environmental documents (e.g., Environmental Impact Statement). If needed, Mr. Cashen conducts field studies to generate evidence for legal testimony, or he can obtain supplemental testimony from his deep network of species-specific experts. Mr. Cashen has provided written and oral testimony to the California Energy Commission, California Public Utilities Commission, and U.S. district courts. His clients have included law firms, non-profit organizations, and citizen groups.

REPRESENTATIVE EXPERIENCE

Solar Energy

- Abengoa Mojave Solar Project
- Avenal Energy Power Plant
- Beacon Solar Energy Project
- Blythe Solar Power Project
- Calico Solar Project
- California Flats Solar Project
- Calipatria Solar Farm II
- Carrizo Energy Solar Farm
- Catalina Renewable Energy Project
- Fink Road Solar Farm
- Genesis Solar Energy Project
- Heber Solar Energy Facility
- Imperial Valley Solar Project
- Ivanpah Solar Electric Generating
- Maricopa Sun Solar Complex
- McCoy Solar Project
- Mt. Signal and Calexico Solar
- Panoche Valley Solar
- San Joaquin Solar I & II
- San Luis Solar Project
- Stateline Solar Project
- Solar Gen II Projects
- SR Solis Oro Loma
- Vestal Solar Facilities
- Victorville 2 Power Project
- Willow Springs Solar

Geothermal Energy

- Casa Diablo IV Geothermal Project
- East Brawley Geothermal
- Mammoth Pacific 1 Replacement
- Orni 21 Geothermal Project
- Western GeoPower Plant

Wind Energy

- Catalina Renewable Energy Project
- Ocotillo Wind Energy Project
- SD County Wind Energy Ordinance
- Searchlight Wind Project
- Shu'luuk Wind Project
- Tres Vaqueros Repowering Project
- Tule Wind Project
- Vasco Winds Relicensing Project

Biomass Facilities

- CA Ethanol Project
- Colusa Biomass Project
- Tracy Green Energy Project

Other

- DRECP
- Carnegie SVRA Expansion Project
- Lakeview Substation Project
- Monterey Bay Shores Ecoresort
- Phillips 66 Rail Spur
- Valero Benecia Crude By Rail
- World Logistics Center

Project Management

Mr. Cashen has managed several large-scale wildlife, forestry, and natural resource management projects. Many of the projects have required hiring and training field crews, coordinating with other professionals, and communicating with project stakeholders. Mr. Cashen's experience in study design, data collection, and scientific writing make him an effective project manager, and his background in several different natural resource disciplines enable him to address the many facets of contemporary land management in a cost-effective manner.

REPRESENTATIVE EXPERIENCE

Wildlife Studies

- Peninsular Bighorn Sheep Resource Use and Behavior Study: (*CA State Parks*)
- "KV" Spotted Owl and Northern Goshawk Inventory: (*USFS, Plumas NF*)
- Amphibian Inventory Project: (*USFS, Plumas NF*)
- San Mateo Creek Steelhead Restoration Project: (*Trout Unlimited and CA Coastal Conservancy, Orange County*)
- Delta Meadows State Park Special-Status Species Inventory: (*CA State Parks, Locke*)

Natural Resources Management

- Mather Lake Resource Management Study and Plan – (*Sacramento County*)
- Placer County Vernal Pool Study – (*Placer County*)
- Weidemann Ranch Mitigation Project – (*Toll Brothers, Inc., San Ramon*)
- Ion Communities Biological Resource Assessments – (*Ion Communities, Riverside and San Bernardino Counties*)
- Del Rio Hills Biological Resource Assessment – (*The Wyro Company, Rio Vista*)

Forestry

- Forest Health Improvement Projects – (*CalFire, SD and Riverside Counties*)
- San Diego Bark Beetle Tree Removal Project – (*SDG&E, San Diego Co.*)
- San Diego Bark Beetle Tree Removal Project – (*San Diego County/NRCS*)
- Hillslope Monitoring Project – (*CalFire, throughout California*)

Biological Resources

Mr. Cashen has a diverse background with biological resources. He has conducted comprehensive biological resource assessments, habitat evaluations, species inventories, and scientific peer review. Mr. Cashen has led investigations on several special-status species, including ones focusing on the foothill yellow-legged frog, mountain yellow-legged frog, desert tortoise, steelhead, burrowing owl, California spotted owl, northern goshawk, willow flycatcher, Peninsular bighorn sheep, red panda, and forest carnivores.

REPRESENTATIVE EXPERIENCE

Biological Assessments/Biological Evaluations ("BA/BE")

- Aquatic Species BA/BE – Reliable Power Project (*SF Public Utilities Commission*)
- Terrestrial Species BA/BE – Reliable Power Project (*SF Public Utilities Commission*)
- Management Indicator Species Report – Reliable Power Project (*SF Public Utilities Commission*)
- Migratory Bird Report – Reliable Power Project (*SF Public Utilities Commission*)
- Terrestrial and Aquatic Species BA – Lower Cherry Aqueduct (*SF Public Utilities Commission*)
- Terrestrial and Aquatic Species BE – Lower Cherry Aqueduct (*SF Public Utilities Commission*)
- Terrestrial and Aquatic Species BA/BE – Public Lands Lease Application (*Society for the Conservation of Bighorn Sheep*)
- Terrestrial and Aquatic Species BA/BE – Simon Newman Ranch (*The Nature Conservancy*)

Avian

- Study design and Lead Investigator - Delta Meadows State Park Special-Status Species Inventory *(CA State Parks: Locke)*
- Study design and lead bird surveyor - Placer County Vernal Pool Study *(Placer County: throughout Placer County)*
- Surveyor - Willow flycatcher habitat mapping *(USFS: Plumas NF)*
- Independent surveyor - Tolay Creek, Cullinan Ranch, and Guadacanal Village restoration projects *(Ducks Unlimited/USGS: San Pablo Bay)*
- Study design and Lead Investigator - Bird use of restored wetlands research *(Pennsylvania Game Commission: throughout Pennsylvania)*
- Study design and surveyor - Baseline inventory of bird species at a 400-acre site in Napa County *(HCV Associates: Napa)*

- Surveyor - Baseline inventory of bird abundance following diesel spill *(LFR Levine-Fricke: Suisun Bay)*
- Study design and lead bird surveyor - Green Valley Creek Riparian Restoration Site *(City of Fairfield: Fairfield, CA)*
- Surveyor - Burrowing owl relocation and monitoring *(US Navy: Dixon, CA)*
- Surveyor - Pre-construction burrowing owl surveys *(various clients: Livermore, San Ramon, Rio Vista, Napa, Victorville, Imperial County, San Diego County)*
- Surveyor - Backcountry bird inventory *(National Park Service: Eagle, Alaska)*
- Lead surveyor - Tidal salt marsh bird surveys (*Point Reyes Bird Observatory: throughout Bay Area*)
- Surveyor – Pre-construction surveys for nesting birds (*various clients and locations)*

Amphibian

- Crew Leader - Red-legged frog, foothill yellow-legged frog, and mountain yellow-legged frog surveys *(USFS: Plumas NF)*
- Surveyor - Foothill yellow-legged frog surveys *(PG&E: North Fork Feather River)*
- Surveyor - Mountain yellow-legged frog surveys *(El Dorado Irrigation District: Desolation Wilderness)*
- Crew Leader - Bullfrog eradication *(Trout Unlimited: Cleveland NF)*

Fish and Aquatic Resources

- Surveyor - Hardhead minnow and other fish surveys *(USFS: Plumas NF)*
- Surveyor - Weber Creek aquatic habitat mapping (*El Dorado Irrigation District: Placerville, CA*)
- Surveyor - Green Valley Creek aquatic habitat mapping *(City of Fairfield: Fairfield, CA)*
- GPS Specialist - Salmonid spawning habitat mapping *(CDFG: Sacramento River)*
- Surveyor - Fish composition and abundance study (*PG&E: Upper North Fork Feather River and Lake Almanor*)
- Crew Leader - Surveys of steelhead abundance and habitat use *(CA Coastal Conservancy: Gualala River estuary)*
- Crew Leader - Exotic species identification and eradication *(Trout Unlimited: Cleveland NF)*

Mammals

- Principal Investigator – Peninsular bighorn sheep resource use and behavior study (*California State Parks: Freeman Properties*)
- Scientific Advisor –Study on red panda occupancy and abundance in eastern Nepal *(The Red Panda Network: CA and Nepal)*
- Surveyor - Forest carnivore surveys *(University of CA: Tahoe NF)*
- Surveyor - Relocation and monitoring of salt marsh harvest mice and other small mammals *(US Navy: Skagg's Island, CA)*
- Surveyor – Surveys for Monterey dusky-footed woodrat. Relocation of woodrat houses (*Touré Associates: Prunedale*)

Natural Resource Investigations / Multiple Species Studies

- Scientific Review Team Member – Member of the scientific review team assessing the effectiveness of the US Forest Service's implementation of the Herger-Feinstein Quincy Library Group Act.
- Lead Consultant - Baseline biological resource assessments and habitat mapping for CDF management units *(CDF: San Diego, San Bernardino, and Riverside Counties)*
- Biological Resources Expert – Peer review of CEQA/NEPA documents (*various law firms, non-profit organizations, and citizen groups)*
- Lead Consultant - Pre- and post-harvest biological resource assessments of tree removal sites *(SDG&E: San Diego County)*
- Crew Leader - T&E species habitat evaluations for Biological Assessment in support of a steelhead restoration plan *(Trout Unlimited: Cleveland NF)*
- Lead Investigator - Resource Management Study and Plan for Mather Lake Regional Park *(County of Sacramento: Sacramento, CA)*
- Lead Investigator - Biological Resources Assessment for 1,070-acre Alfaro Ranch property *(Yuba County, CA)*
- Lead Investigator - Wildlife Strike Hazard Management Plan *(HCV Associates: Napa)*
- Lead Investigator - Del Rio Hills Biological Resource Assessment *(The Wyro Company: Rio Vista, CA)*
- Lead Investigator – Ion Communities project sites (*Ion Communities: Riverside and San Bernardino Counties*)
- Surveyor – Tahoe Pilot Project: Validation of California's Wildlife Habitat Relationships (CWHR) Model *(University of California: Tahoe NF)*

Forestry

Mr. Cashen has five years of experience working as a consulting forester on projects throughout California. Mr. Cashen has consulted with landowners and timber operators on forest management practices; and he has worked on a variety of forestry tasks including selective tree marking, forest inventory, harvest layout, erosion control, and supervision of logging operations. Mr. Cashen's experience with many different natural resources enable him to provide a holistic approach to forest management, rather than just management of timber resources.

REPRESENTATIVE EXPERIENCE

- Lead Consultant - CalFire fuels treatment projects *(SD and Riverside Counties)*
- Lead Consultant and supervisor of harvest activities – San Diego Gas and Electric Bark Beetle Tree Removal Project *(San Diego)*
- Crew Leader - Hillslope Monitoring Program *(CalFire: throughout California)*
- Consulting Forester – Forest inventories and timber harvest projects *(various clients throughout California)*

Grant Writing and Technical Editing

Mr. Cashen has prepared and submitted over 50 proposals and grant applications. Many of the projects listed herein were acquired through proposals he wrote. Mr. Cashen's clients and colleagues have recognized his strong scientific writing skills and ability to generate technically superior proposal packages. Consequently, he routinely prepares funding applications and conducts technical editing for various clients.

PERMITS

U.S. Fish and Wildlife Service Section 10(a)(1)(A) Recovery Permit for the Peninsular bighorn sheep

PROFESSIONAL ORGANIZATIONS / ASSOCIATIONS

The Wildlife Society
Cal Alumni Foresters
Mt. Diablo Audubon Society

OTHER AFFILIATIONS

Scientific Advisor and Grant Writer – *The Red Panda Network*
Scientific Advisor – *Mt. Diablo Audubon Society*
Grant Writer – *American Conservation Experience*

TEACHING EXPERIENCE

Instructor: Wildlife Management - The Pennsylvania State University, 1998

Teaching Assistant: Ornithology - The Pennsylvania State University, 1996-1997

PUBLICATIONS

Gutiérrez RJ, AS Cheng, DR Becker, S Cashen, et al. 2015. Legislated collaboration in a conservation conflict: a case study of the Quincy Library group in California, USA. Chapter 19 *in*: Redpath SR, et al. (eds). Conflicts in Conservation: Navigating Towards Solutions. Cambridge Univ. Press, Cambridge, UK.

Cheng AS, RJ Gutiérrez RJ, S Cashen, et al. 2016. Is There a Place for Legislating Place-Based Collaborative Forestry Proposals?: Examining the Herger-Feinstein Quincy Library Group Forest Recovery Act Pilot Project. Journal of Forestry.

EXHIBIT C

Lorrie J. LeLe

From: Sjoblom, Randall <Randall.Sjoblom@sdcounty.ca.gov>
Sent: Friday, January 17, 2020 3:44 PM
To: Sheila M. Sannadan
Cc: Ippolito, Sharon; Koutoufidis, Nicholas
Subject: RE: [Confidential: Attorney-Client Communication] FW: Extension Letter re PRAR for Campo Wind Project DEIR-referenced records

Dear Ms. Sannadan,

I received your request for a copy of the following items:

1. Campo Lease and tribal regulations
2. Campo Land Use Code
3. Campo Land Use Plan

County staff discussed the availability of these documents with the project applicant, who worked with the Campo Tribe. As you noted, these Tribal documents are mentioned in the DEIR on P 2.3-104, which explains that they are not applicable to the project:

> "The Campo Wind Facilities are subject to the land use and permitting jurisdiction of the Tribal government and BIA. However, under the Campo Lease, Tribal regulations and plans such as the Campo Land Use Code and Campo Land Use Plan are not applicable to the Campo Wind Facilities. Therefore, the Project conforms to the goals and requirements as outlined in the regional planning effort."

O12-63

For Item No. 1, the County does not have access to the lease but has been informed by the applicant (a fact confirmed by the BIA's Draft EIS) that the lease exempts the project from the Tribe's Land Use Code and Land Use Plan (as stated in the DEIR excerpt quoted above). Thus, these documents are not applicable to the project. Because the Tribe's planning documents are not applicable, they are not required to understand the project's environmental impacts.

I do not know what you mean by "other tribal regulations" and so cannot respond further to this request.

For Items Nos. 2 and 3, the County has been informed that the Tribe considers its planning codes and plans to be confidential. The County is not in possession of these documents, and because of their confidentiality, the County cannot release these documents without the Tribe's consent under Public Resources Section 21082.3(c). This section provides for confidential treatment of information submitted by a tribe to a CEQA lead agency in the course of environmental review. Further, these documents are not subject to release under the Public Records Act because they are confidential and proprietary to the Campo tribe. (Gov. Code § 6254.15.) The County also believes the public interest is best served by not making the Tribe's documents public without its consent, and that this clearly outweighs the public interest served by disclosure of the documents. (Gov. Code § 6255(a).)

Please let me know if you have any further questions.

Regards,

Randall Sjoblom, Senior Deputy
Office of County Counsel, County of San Diego
1600 Pacific Highway, Room 355
San Diego, CA 92101

Randall.Sjoblom@sdcounty.ca.gov
(619) 531-4723

From: Sheila M. Sannadan <ssannadan@adamsbroadwell.com>
Sent: Friday, January 03, 2020 4:50 PM
To: Sjoblom, Randall <Randall.Sjoblom@sdcounty.ca.gov>
Cc: Ippolito, Sharon <Sharon.Ippolito@sdcounty.ca.gov>; Koutoufidis, Nicholas <Nicholas.Koutoufidis@sdcounty.ca.gov>
Subject: RE: [Confidential: Attorney-Client Communication] FW: Extension Letter re PRAR for Campo Wind Project DEIR-referenced records

Good Afternoon Mr. Sjoblom,

Can you please provide a copy the following items listed below? They are mentioned in the DEIR on P 2.3-104. If they are posted online, please provide the web links.

1. Campo Lease and tribal regulations
2. Campo Land Use Code
3. Campo Land Use Plan

Thank you for your assistance.

Regards,
Sheila

Sheila Sannadan
Legal Assistant
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080
Phone (650) 589-1660
Fax (650) 589-5062
ssannadan@adamsbroadwell.com

From: Sjoblom, Randall <Randall.Sjoblom@sdcounty.ca.gov>
Sent: Tuesday, December 31, 2019 9:36 AM
To: Sheila M. Sannadan <ssannadan@adamsbroadwell.com>
Cc: Ippolito, Sharon <Sharon.Ippolito@sdcounty.ca.gov>; Koutoufidis, Nicholas <Nicholas.Koutoufidis@sdcounty.ca.gov>
Subject: RE: [Confidential: Attorney-Client Communication] FW: Extension Letter re PRAR for Campo Wind Project DEIR-referenced records

Ms. Sannadan,

I was sent your original request and the follow up email below. Thank you for clarifying your request.

O12-63
Cont.

Pursuant to Section 15087(c)(5) of the 2019 CEQA Handbook Regulations, "The address where copies of the EIR and all documents incorporated by reference in the EIR will be available for public review. This location shall be readily accessible to the public during the lead agency's normal working hours." The County is required to provide the documents that were incorporated by reference for public review. PDS staff has reviewed the EIR and confirmed, as required by the CEQA regulations, that all materials incorporated by reference in the EIR are available for immediate review because they included a link to the source material. The following are the only documents that were incorporated by reference in the EIR, and the website links are provided to you again:

1. BIA (Bureau of Indian Affairs). 2019. Draft Environmental Impact Statement for the Campo Wind Project with Boulder Brush Facilities. Prepared by Dudek. May 2019.

   Website Link: http://www.campowind.com/

2. County of San Diego. 2013. Final CEQA Considerations Document, Wind Energy Ordinance Amendment POD 10-007.

   Website Links:
   https://www.sandiegocounty.gov/content/sdc/pds/advance/POD10007FEIR.html#par_title

   https://www.sandiegocounty.gov/pds/advance/BOSMay8POD10-007.html

3. San Diego RWQCB (Regional Water Quality Control Board). 2016. The Basin Plan. Assessed December 2018.

   Website Link: https://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/

Furthermore, the DEIR contains website links for the vast majority of all other referenced materials in the DEIR (379 references with website links). For the remaining documents that were referenced without a website link, PDS staff has prepared the attached list of County references with website links. PDS staff is currently working with the DEIR consultants so that the few remaining references can be made available for your review shortly.

If you have any questions or requests for additional information, please contact me.

Randall Sjoblom, Senior Deputy
Office of County Counsel, County of San Diego
1600 Pacific Highway, Room 355
San Diego, CA 92101
Randall.Sjoblom@sdcounty.ca.gov
(619) 531-4723

O12-63 Cont.

From: Sheila M. Sannadan <ssannadan@adamsbroadwell.com>
Sent: Monday, December 23, 2019 12:41 PM
To: Ippolito, Sharon <Sharon.Ippolito@sdcounty.ca.gov>; Koutoufidis, Nicholas <Nicholas.Koutoufidis@sdcounty.ca.gov>
Cc: Menvielle, Joshua <Joshua.Menvielle@sdcounty.ca.gov>; Wardlaw, Mark <Mark.Wardlaw@sdcounty.ca.gov>
Subject: RE: Extension Letter re PRAR for Campo Wind Project DEIR-referenced records

O12-64

Good Afternoon Ms. Ippolito and Mr. Koutoufidis,

Just to clarify, this is not a PRA request. We are requesting *immediate access* to any and all documents referenced in the Draft
Environmental Impact Report prepared for the Campo Wind Project and Boulder Brush Facilities project (SCH No. 2019029094). This request excludes any documents that are currently available under the Project's name on the County of San Diego website. As stated in our request letter attached, "*Our request for all documents referenced in the DEIR is made pursuant to the California Environmental Quality Act ("CEQA"), which requires that all documents referenced in an environmental review document be made available to the public for the entire comment period."*

Could you please advise when the reference documents of the DEIR for the Campo Wind Project and Boulder Brush Facilities project will be available?

Thank you for your assistance.

Regards,
Sheila

Sheila Sannadan
Legal Assistant
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080
Phone (650) 589-1660
Fax (650) 589-5062
ssannadan@adamsbroadwell.com

O12-64
Cont.

From: Ippolito, Sharon <Sharon.Ippolito@sdcounty.ca.gov>
Sent: Monday, December 23, 2019 11:12 AM
To: Sheila M. Sannadan <ssannadan@adamsbroadwell.com>
Cc: Menvielle, Joshua <Joshua.Menvielle@sdcounty.ca.gov>; Alisha C. Pember <apember@adamsbroadwell.com>
Subject: Extension Letter re PRAR for Campo Wind Project DEIR-referenced records

Good Morning, Ms. Sannadan,

Attached please find an extension letter regarding your Public Records Act request (also attached) on documents referenced in the DEIR – Campo Wind Project and Boulder Brush Facilities (SCH No. 2019029094). Please let me know if you have any questions.

Thank you,

Sharon Ippolito, Administrative Analyst III
Public Records Act Request Coordinator
Planning & Development Services
County of San Diego Land Use & Environment Group
O: (858) 495-5450

From: Alisha C. Pember <apember@adamsbroadwell.com>
Sent: Friday, December 13, 2019 4:03 PM
To: Wardlaw, Mark <Mark.Wardlaw@sdcounty.ca.gov>; Ippolito, Sharon <Sharon.Ippolito@sdcounty.ca.gov>; Koutoufidis, Nicholas <Nicholas.Koutoufidis@sdcounty.ca.gov>
Cc: Sheila M. Sannadan <ssannadan@adamsbroadwell.com>
Subject: Request for Immediate Access to Documents Referenced in the Draft Impact Report - Campo Wind Project and Boulder Brush Facilities (SCH No. 2019029094)

Good afternoon,

Please see the attached correspondence.

If you have any questions, please contact Sheila Sannadan.

Thank you.

Alisha Pember

Alisha C. Pember
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080
(650) 589-1660 voice, Ext. 24
apember@adamsbroadwell.com

O12-65