BLM

United States Department of the Interior
Bureau of Land Management

ALTA EAST WIND PROJECT

PROPOSED
PLAN AMENDMENT AND FINAL
ENVIRONMENTAL IMPACT STATEMENT

Volume 3

Appendices B through D-14

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Proposed Plan Amendment & Final Environmental Impact Statement for the Alta East Wind Project

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TABLE OF CONTENTS (Volume 3)

Appendices

B. Federal Laws, Regulations, and Executive Orders

C. Public Scoping Report and Public Comments Received

D. Biological Technical Reports

- D-1 Biological Resources Report
- D-2 Vegetation Mapping and Wildlife Assessment
- D-3 Avian Baseline Studies 2010
- D-4 Avian Interim Report Summer 2010
- D-5 Avian Baseline Studies Summer Fall Interim Report July-November 2010
- D-6 Avian Interim Report Spring 2011
- D-7 Avian Interim Report Fall 2011
- D-8 Avian Baseline Studies 2011
- D-9 Bat Acoustic Studies 2010
- D-10 Bat Acoustic Studies 2011
- D-11 Summary Bat Roost Assessment Surveys
- D-12 Technical Memorandum – Results of Bat Acoustic Surveys
- D-13 Swainson's Hawk Nest Survey 2011 Final
- D-14 Swainson's Hawk Survey 2011 T-line

Appendix B

Federal Laws, Regulations, and Executive Orders

Appendix B. Federal Laws, Regulations, and Executive Orders

The Bureau of Land Management (BLM) must comply with the mandate and intent of the following federal laws (and any applicable regulations) and Executive Orders (EOs) that apply to BLM-administered lands and resources in the Planning Area.

B.1 Air

Clean Air Act (42 U.S.C. 7401 et seq.)

The primary objective of the Clean Air Act (CAA) is to establish federal standards for various pollutants from both stationary and mobile sources and to provide for the regulation of polluting emissions via state implementation plans. In addition, the amendments are designed to prevent significant deterioration in certain areas where air quality exceeds national standards and to provide for improved air quality in areas which do not meet federal standards ("non-attainment" areas).

Federal facilities are required to comply with air quality standards to the same extent as non-governmental entities. Part C of the 1977 amendments stipulates requirements to prevent significant deterioration of air quality and, in particular, to preserve air quality in national parks, national wilderness areas, national monuments, and national seashores.

The amendments establish Class I, II, and III areas, where emissions of particulate matter and sulfur dioxide are to be restricted. The restrictions are most severe in Class I areas and are progressively more lenient in Class II and III areas.

Mandatory Class I federal lands include all national wilderness areas exceeding 500 acres. Federal land managers are charged with direct responsibility to protect the air quality and related values (including visibility) of Class I lands and to consider, in consultation with the Environmental Protection Agency (EPA), whether proposed facilities will have an adverse impact on these values.

B.2 American Indians

A. American Indian Religious Freedom Act (42 U.S.C. 1996)

This act recognizes that freedom of religion for all people is an inherent right and that traditional American Indian religions are an indispensable and irreplaceable part of Indian life. Establishing federal policy to protect and preserve the inherent right of religions freedom for Native Americans, this act requires federal agencies evaluate their actions and policies to determine, if changes should be made to protect and preserve the religious cultural rights and practices of Native Americans. Such evaluations are made in consultation with native traditional religious leaders.

B. Native American Graves Protection & Repatriation Act (25 U.S.C. 3001-13)

This act establishes requirements for the treatment of Native American human remains and sacred or cultural objects found on federal land.

In any case where such items can be associated with specific tribes or groups of tribes, the agency is required to provide notice of the item in question to the tribe or tribes. Upon request, each agency is required to return any such item to any lineal descendant or specific tribe with whom such item is associated. There are various additional requirements imposed upon the Secretary.

C. Indian Sacred Sites (EO 13007, May 24, 1996)

In managing federal lands, agencies shall, to the extent practicable, permitted by law, and not inconsistent with agency functions, accommodate Indian religious practitioners' access to and ceremonial use of Indian sacred sites. Agencies are to avoid adversely affecting the physical integrity of these sites, maintaining the confidentiality of such sites, and informing tribes of any proposed actions that could restrict access to, ceremonial use of, or adversely affect the physical integrity of, sacred sites.

D. Consultation & Coordination with Indian Tribal Governments (EO 13175, November 6, 2000)

In formulating or implementing policies that have tribal implications, agencies shall respect Indian tribal self-government and sovereignty, honor tribal treaty and other rights, and strive to meet the responsibilities that arise from the unique legal relationship between the Federal Government and Indian tribal governments.

E. Religious Freedom Restoration Act (42 U.S.C. §2000bb)

This act is aimed at preventing laws which substantially burden a person's free exercise of their religion. The Religious Freedom Restoration Act reinstated the **Sherbert Test**, mandating that strict scrutiny be used when determining if the **Free Exercise Clause** of the **First Amendment to the United States Constitution**, guaranteeing religious freedom, has been violated. In this, the courts must first determine whether a person has a claim involving a sincere religious belief, and whether government action has a substantial burden on the person's ability to act on that belief. If these two elements are established, then the government must prove that it is acting in furtherance of a compelling state interest, and that it has pursued that interest in the manner least restrictive, or least burdensome, to religion.

B.3 Antiquities/Archaeological

A. Antiquities Act (16 U.S.C. §§431-433)

This act authorizes the President to designate as National Monuments objects or areas of historic or scientific interest on lands owned or controlled by the United States. The act required that a permit be obtained for examination of ruins, excavation of archaeological sites, and the gathering of objects of antiquity on lands under the jurisdiction of the Secretaries of the Interior, Agriculture, and Army, and provided penalties for violations.

B. Historic Sites, Buildings and Antiquities Act (16 U.S.C. 461-462, 464-467)

This act declared it a national policy to preserve historic sites and objects of national significance. It provided procedures for designation, acquisition, administration, and protection of such sites. Among other things, National Historic and Natural Landmarks are designated under authority of this act.

C. Archaeological Resources Protection Act (16 U.S.C. 470aa – 470ll)

This act largely supplanted the resource protection provisions of the Antiquities Act for archaeological items. It established detailed requirements for issuance of permits for any excavation for or removal of archaeological resources from federal or Indian lands. It also established civil and criminal penalties for the unauthorized excavation, removal, or damage of any such resources; for any trafficking in such resources removed from federal or Indian land in violation of any provision of federal law; and for interstate and foreign commerce in such resources acquired, transported or received in violation of any state or local law.

D. Archeological and Historic Preservation Act (16 U.S.C. 469-469c)

This law was enacted to carry out the policy established by the Historic Sites Act, directed federal agencies to notify the Secretary of the Interior whenever they find a federal or federally assisted, licensed or permitted project may cause loss or destruction of significant scientific, prehistoric, or archaeological data. The act authorized use of appropriated, donated, and/or transferred funds for the recovery, protection, and preservation of such data.

E. National Historic Preservation Act (16 U.S.C. 470 et seq.)

This act provided for preservation of significant historical features (buildings, objects, and sites) through a grant-in-aid program to the states. It established a National Register of Historic Places (NRHP) and a program of matching grants under the existing National Trust for Historic Preservation. The act established an Advisory Council on Historic Preservation, which was made a permanent independent agency in 1976. Federal agencies are directed to take into account the effects of their actions on items or sites listed or eligible for listing in the NRHP.

F. Protection & Enhancement of Cultural Environment (EO 11593, May 13, 1971)

Federal agencies are to provide leadership in the preservation, restoration, and maintenance of the historic and cultural environment. Agencies are to locate and evaluate all federal sites under their jurisdiction or control which may qualify for listing on the NRHP. For sites that qualify, agencies are to initiate procedures to maintain such federally owned sites. The Advisory Council on Historic Preservation must be allowed to comment on the alteration, demolition, sale, or transfer of property which is likely to meet the criteria for listing as determined in consultation with the State Historic Preservation Office.

G. Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations (EO 12898, February 11, 1994)

Agencies shall make achieving environmental justice part of their mission by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations.

H. Preserve America (EO 13287, March 3, 2003)

Agencies shall provide leadership in preserving America's heritage by actively advancing the protection, enhancement, and contemporary use of the historic properties owned by the federal government.

Each agency is to provide and maintain an assessment of the status of its inventory of historic properties and their ability to contribute to community economic development initiatives.

Where consistent with its mission and governing authorities, and where appropriate, agencies shall

1. seek partnerships with state and local governments, Indian tribes, and the private sector to promote the unique cultural heritage of communities and of the nation and to realize the economic benefit that these properties can provide; and
2. cooperate with communities to increase opportunities for public benefit from, and access to, federally owned historic properties.

B.4 Environment—Generally

A. National Environmental Policy Act (42 U.S.C. 4321 et seq.)

The NEPA encourages productive and enjoyable harmony between man and his environment; promotes efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; and enriches the understanding of the ecological systems and natural resources important to the nation

The NEPA requires that for recommendations or reports on proposals for legislation and other major actions significantly affecting the quality of the human environment that federal agencies through a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment include a detailed statement by the responsible official on:

1. the environmental impact of the proposed action;
2. any adverse environmental effects which cannot be avoided should the proposal be implemented;
3. alternatives to the Proposed Action;
4. the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and
5. any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action should it be implemented.

B. Protection & Enhancement of Environmental Quality (EO 11514, Mar 5, 1970)

Federal agencies shall initiate measures needed to direct their policies, plans and programs so as to meet national environmental goals of protecting and enhancing the quality of the nation's environment to sustain and enrich human life.

Agencies should monitor, evaluate, and control on a continuing basis their agencies' activities so as to protect and enhance the quality of the environment. Such activities shall include those directed to controlling pollution and enhancing the environment and those designed to accomplish other program objectives which may affect the quality of the environment.

Agencies shall ensure the fullest practicable provision of timely public information and understanding of federal plans and programs with environmental impact in order to obtain the views of interested parties. This will include, whenever appropriate, provision for public hearings and shall provide the public with relevant information, including information on alternative courses of action.

C. Environmental Quality Improvement Act (42 U.S.C. 4371 et seq.)

Ensures that each federal agency conducting or supporting public works activities affecting the environment implements policies established under existing law principally by establishing the Office of Environmental Quality to provide assistance to, and oversight of, federal agencies.

D. Federal Land Policy and Management Act (43 U.S.C. 1701 et seq.)

The "Organic Act" for the BLM, this act provides for the inventory and planning of the public lands to ensure that these lands are managed in accordance with the intent of Congress under the principles of multiple use and sustained yield. The lands are to be managed in a manner that protects the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values that, where appropriate, will preserve and protect certain public lands in their natural conditions, provide food and habitat for fish and wildlife and domestic animals, and provide for outdoor recrea-

tion and human occupancy and use by encouraging collaboration and public participation throughout the planning process.

In addition, the public lands must be managed in a manner that recognizes the nation's need for domestic sources of minerals, food, timber, and fiber from the public lands.

Many old laws were repealed, but rights obtained under those laws are protected.

New authority for the disposal of appropriate public lands through sale or exchange is provided.

Right-of-way granting procedures are provided for both the BLM and the US Forest Service (USFS).

The regulations contained in 43 Code of Federal Regulations (CFR) Part 1600 govern the BLM planning process.

B.5 Fire

Timber Protection Act (16 U.S.C. 5940)

This act authorizes the Secretary of the Interior to protect timber on lands under the Department of Interior's (DOI) jurisdiction from fire, disease, and insects

B.6 Fish and Wildlife

A. Animal Damage Control Act (7 U.S.C. 426-426c)

This act, as amended, gives the Secretary of Agriculture broad authority for investigation, demonstrations, and control of mammalian predators, rodents, and birds.

B. Bald Eagle Protection Act (16 U.S.C. 668-668d)

This law provides for the protection of the bald eagle (the national emblem) and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession, and commerce of such birds, parts, eggs, or nests.

C. Endangered Species Act (16 U.S.C. 1532 et seq.)

This act provides for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend, both through federal action and by encouraging the establishment of state programs. The act:

1. authorizes the determination and listing of species as endangered and threatened;
2. prohibits unauthorized taking, possession, sale, and transport of endangered species;
3. provides authority to acquire land for the conservation of listed species, using land and water conservation funds;
4. authorizes establishment of cooperative agreements and grants-in-aid to states that establish and maintain active and adequate programs for endangered and threatened wildlife and plants;
5. authorizes the assessment of civil and criminal penalties for violating the act or regulations; and
6. authorizes the payment of rewards to anyone furnishing information leading to arrest and conviction for any violation of the act or any regulation issued thereunder.

Section 7 of the Endangered Species Act requires federal agencies to ensure that any action authorized, funded, or carried out by them is not likely to jeopardize the continued existence of listed species or modify their critical habitat.

D. Neotropical Migratory Bird Conservation Act (P.L. 106-247)

This act provides grants to countries in Latin America and the Caribbean, and the United States for the conservation of neotropical migratory birds that winter south of the border and summer in North America. The law encourages habitat protection, education, researching, monitoring, and capacity building to provide for the long-term protection of neotropical migratory birds.

E. Conservation of Migratory Birds (EO 13186, January 10, 2001)

Under the principals of a Memorandum of Understanding (MOU) with the (US Fish and Wildlife Service (USFWS), each agency shall, to the extent permitted by law, subject to the availability of appropriations, within administration budgetary limits, and in harmony with agency missions, among others:

1. support the conservation intent of the migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions;
2. restore and enhance the habitat of migratory birds, as practicable;
3. prevent or abate the pollution or detrimental alteration of the environment for the benefit of migratory birds, as practicable;
4. design migratory bird habitat and population conservation principles, measures, and practices into agency plans and planning processes as practicable;
5. within established authorities and in conjunction with the adoption, amendment, or revision of agency management plans and guidance, ensure that agency plans and actions promote programs and recommendations of comprehensive migratory bird planning efforts; and
6. ensure that environmental analyses of actions required by the NEPA or other established environmental review processes evaluate the effects of actions and agency plans on migratory birds.

F. Recreational Fisheries (EO 12962, June 7, 1995)

Agencies shall improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities by such activities as:

1. developing and encouraging partnerships between governments and the private sector to advance aquatic resource conservation and enhance recreational fishing opportunities;
2. identifying recreational fishing opportunities that are limited by water quality and habitat degradation and promoting restoration to support viable, healthy, and, where feasible, self-sustaining recreational fisheries;
3. fostering sound aquatic conservation and restoration endeavors to benefit recreational fisheries;
4. supporting outreach programs designed to stimulate angler participation in the conservation and restoration of aquatic systems, and implementing laws under their purview in a manner that will conserve, restore, and enhance aquatic systems that support recreational fisheries.

G. Exotic Organisms (EO 11987, May 24, 1977)

Agencies, to the extent permitted by law, are to:

1. restrict the introduction of exotic species into the natural ecosystems on lands and waters owned or leased by the U.S.;
2. encourage states, local governments, and private citizens to prevent the introduction of exotic species into natural ecosystems of the U.S.;

3. restrict the importation and introduction of exotic species into any natural U.S. ecosystems as a result of activities they undertake, fund, or authorize; and
4. restrict the use of federal funds, programs, or authorities to export native species for introduction into ecosystems outside the U.S. where they do not occur naturally.

B.7 Land

A. Desert Land Act (43 U.S.C. 321 et seq.)

Allows entry of up to 320 acres of desert land of which the entryman intends to reclaim the land for agricultural purposes within 3 years. Lands must be determined to be available and classified pursuant to 43 U.S.C. 315f before such an entry can be allowed.

B. Sales of Public Lands (43 U.S.C. 1713)

Allows the sale of public lands found suitable for use other than grazing or the production of forage crops that also

a. is difficult and uneconomic to manage; or
b. the tract was acquired for a purpose for which the tract is no longer necessary, or
c. disposal of the tract will serve important public objectives

C. Exchanges of Public Land for Non-federal Land (43 U.S.C. 1716)

Allows the exchange of Public Land, or interests therein, for non-federal lands where it is determined (the Secretary finds) that the public interest will be well served by making the exchange. Values of the disposed and acquired lands must be equal in value.

D. Federal Land Exchange Facilitation Act (43 U.S.C. 1716, August 20, 1988)

Basically amends the exchange provisions of the Federal Land Policy and Management Act (FLPMA) to streamline and facilitate land exchange procedures and to expedite exchanges.

E. Federal Land Transaction Facilitation Act (PL 106-248, July 25, 2000)

Provides a more expeditious process for disposal and acquisition of land to facilitate a more effective configuration of land ownership patterns.

Funds from the sale of specified land is deposited in a special fund available to acquire land and to process additional land sales.

B.8 Rights-of-Way

With the passage of FLPMA in 1976, the BLM was left with existing rights-of-way (ROWs) (Pre-FLPMA ROWs) and three basic authorities under which Public Lands may be used or dedicated to various types of ROWs.

A. Pre-FLPMA ROWs (43 U.S.C. 1701 Savings Provision)

Various laws provided for ROWs ranging from ditches and canals through communications to railroads. Some are indefinite in term and will remain under the pre-FLPMA authority until abandoned. Others have definite terms and will come under current authorities if amended or renewed.

B. Oil and Gas Pipeline ROWs (30 U.S.C. 1850

The Mineral Leasing Act of 1920, as amended, contains provisions for the issuance of ROWs for the transportation of natural gas and oil or products derived there from. The term of the ROW is limited to 30 years but is renewable. Where an application involves land administered by two or more federal agencies, the Secretary of the Interior has delegated the decision making to the BLM. Federal agencies are not eligible under this authority.

C. FLPMA ROWs (43 U.S.C. 1761 et seq.)

Title V of FLPMA gives the BLM authority to authorize most any type of ROW use, other than oil and gas ROWs, on the public lands. The term of the ROW is determined by need and conditions; it may be indefinite but usually is around 30 years. ROWs are renewable.

D. Federal Aid Highways (23 U.S.C. 317)

Where Federal Aid Highways are involved, the Secretary of Transportation may appropriate federal land for such highway projects. Applications or requests are usually filed by the State Department of Transportation through the local office of the Federal Highway Administration (FHWA). If BLM does not disapprove such a request within 120 days, the appropriation is automatic. When BLM issues a letter "consenting" to the appropriation, reasonable terms and conditions may be included.

E. Energy Supply, Distribution, or Use (EO 13211, May 18, 2001)

This order requires an impact and alternative analysis for any proposed rule that would have an adverse impact on energy supply, distribution, or use.

F. Action to Expedite Energy-Related Projects (EO 13212, May 18, 2001)

For energy-related projects, agencies shall expedite their review of permits or take other actions as necessary to accelerate the completion of such projects, while maintaining safety, public health, and environmental protections. The agencies shall take such actions to the extent permitted by law and regulation, and where appropriate.

G. Environmental Stewardship and Transportation Infrastructure Project Reviews (EO 13274, September 18, 2002)

Agencies shall take appropriate actions, to the extent consistent with applicable law and available resources, to promote environmental stewardship in the nation's transportation system and expedite environmental reviews of high-priority transportation infrastructure projects. For transportation infrastructure projects, agencies shall, in support of the Department of Transportation, formulate and implement administrative, policy, and procedural mechanisms that enable each agency required by law to conduct environmental reviews with respect to such projects to ensure completion of such reviews in a timely and environmentally responsible manner.

H. Energy Policy Act (Pub. L. 109-58)

This act was signed into law on August 8, 2005. The act contains a multitude of provisions covering energy production, distribution, storage, efficiency, conservation, and research. The act requires efficiency standards for certain large appliances and extends Daylight Saving Time to reduce consumption. It provides funding to improve efficiency in low-income housing and expands the Energy Star program. It also requires the Federal Government to increase the efficiency of its buildings and vehicles, and provides tax credits for certain energy-efficient purchases or improvements. Other topics of note are renewable energy, expanding of the Strategic Petroleum Reserve, fuel production access in federal lands, the

banning of drilling in the Great Lakes, electricity reliability, hydrogen vehicles, vehicle efficiency and alternative fuels, ethanol, and motor fuels.

B.9 Mining and Mineral Leasing

A. General Mining Law (30 U.S.C. 21 et seq.)

This authority sets forth rules and procedures for the exploration, location, and patenting of lode, placer, and mill site mining claims. Claimants must file notice of the original claim with the BLM as well as annual notice of intention to hold, affidavit of assessment work, or similar notice.

B. Mining and Mineral Policy Act (30 U.S.C. 21a)

This act expressed the national policy to foster and encourage private enterprise in

1. the development of economically sound and stable domestic mining, mineral, metal, and mineral reclamation industries,
2. the orderly and economic development of domestic mineral resources, reserves, and reclamation of metals and minerals to help assure satisfaction of industrial, security and environmental needs,
3. mining, mineral, and metallurgical research, including the use and recycling of scrap to promote the wise and efficient use of our natural and reclaimable mineral resources, and
4. the study and development of methods for the disposal, control, and reclamation of mineral waste products, and the reclamation of mined land, so as to lessen any adverse impact of mineral extraction and processing upon the physical environment that may result from mining or mineral activities.

C. Stock Raising Homestead Act (43 U.S.C. 291-299)

Patents issued under this authority reserved minerals to the United States as well as the right to prospect for, mine, and remove said minerals. Certain conditions exist to protect the patentee's improvements.

D. Mineral Leasing Act (30 U.S.C. 181 et seq.)

This act authorizes and governs leasing of public lands for development of deposits of coal, oil, gas and other hydrocarbons, sulphur, phosphate, potassium, and sodium.

E. Federal Coal Leasing Amendments Act (30 U.S.C. §201)

This act made major changes in the way coal leases tracts are established, economic and environmental considerations, sale/leasing procedures, and penalties for violations.

F. Surface Mining Control and Reclamation Act (30 U.S.C. 1201 et seq.)

This act establishes a program for the regulation of surface mining activities and the reclamation of coal-mined lands, under the administration of the Office of Surface Mining, Reclamation and Enforcement, in the DOI.

The law sets forth minimum uniform requirements for all coal surface mining on federal and state lands, including exploration activities and the surface effects of underground mining. Mine operators are required to minimize disturbances and adverse impact on fish, wildlife, and related environmental values and achieve enhancement of such resources where practicable. Restoration of land and water resources is ranked as a priority in reclamation planning.

G. Geothermal Steam Act (30 U.S.C. 1001 et seq.)

This act authorizes and governs the lease of geothermal steam and related resources on public lands.

H. Mineral Leasing Act for Acquired Lands (30 U.S.C. 351 et seq.)

This act authorizes and governs mineral leasing on acquired lands.

I. Materials Sales Act (30 U.S.C. 601)

Authorizes the sale or free use of vegetative materials and mineral material (so-called common varieties) not otherwise authorized by other law.

B.10 Noise & Vibration

A. Occupational Safety and Health (29 U.S.C. 651 et seq.)

Under the Occupational Safety and Health Act of 1970 (29 U.S.C. Section 651 et seq.), the Department of Labor, Occupational Safety and Health Administration adopted regulations (29 CFR Section 1910.95) designed to protect workers against the effects of occupational noise exposure. These regulations list permissible noise exposure levels as a function of the amount of time during which the worker is exposed. The regulations further specify a hearing conservation program that involves monitoring the noise to which workers are exposed, assuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation.

B. Guidelines for Assessing the Impacts of Ground-borne Vibration

The Federal Transit Administration (FTA) has published guidelines for assessing the impacts of ground-borne vibration associated with construction of rail projects, which have been applied by other jurisdictions to other types of projects. The FTA-recommended vibration standards are expressed in terms of the "vibration level," which is calculated from the peak particle velocity measured from ground-borne vibration. The FTA measure of the threshold of perception is 65 vibrational decibel (VdB), which correlates to a peak particle velocity of about 0.002 inches per second (in/sec). The FTA measure of the threshold of architectural damage for conventional sensitive structures is 100 VdB, which correlates to a peak particle velocity of about 0.2 in/sec.

B.11 Pollution—General

A. Resource Conservation and Recovery Act (42 U.S.C. 6901 et seq.)

This act regulates the treatment, transportation, storage, and disposal of solid and hazardous wastes. The Service is required to comply with standards for wastes generated at its facilities. The key provisions include:

Identification and listing of hazardous waste and standards applicable to hazardous waste—requires reporting of hazardous waste, permitting for storage, transport, and disposal, and it includes provisions for oil recycling and federal hazardous waste facilities inventories.

1. Management for solid waste, including landfills.
2. Applicability of federal, state, and local laws to federal agencies.
3. Management, replacement, and monitoring of underground storage tanks.

B. Comprehensive Environmental Response Compensation and Liability Act (Superfund) (42 U.S.C. 9601 et seq.)

The "Superfund" statute was enacted in 1980; major amendments were enacted in 1983 and in 1986. The 1980 statute authorized, through 1985, the collection of taxes on crude oil and petroleum products, certain chemicals, and hazardous wastes. It also established liability to the U.S. Government for damage to natural resources over which the U.S. has sovereign rights and requires the President to designate federal officials to act as trustees for natural resources. Use of Superfund monies to conduct natural resource damage assessments was provided.

The 1983 amendments established a comprehensive system to react to releases of hazardous substances and to determine liability and compensation for those affected. The President is authorized to notify federal and state natural resource trustees of potential damages to natural resources and to coordinate related assessments.

Amendments enacted in 1986 (known as the Superfund Amendment and Reauthorization Act), among others, (1) added effects on natural resources as a criterion for determining facilities to be placed on the National Priorities List; (2) mandated the designation of federal officials to act as trustees for natural resources and to assess damages and injury to, as well as destruction of, or loss of, natural resources; (3) stipulated that Superfund monies may only be used for natural resource damage claims if all administrative and judicial remedies to recover costs from liable parties have been exhausted; (4) clarified that federal facilities are subject to the same cleanup requirements and liability standards as non-governmental entities, and (5) eliminated the authorization for use of Superfund monies to conduct damage assessments.

C. Federal Environmental Pesticide Control Act (7 U.S.C. §136)

This act, in simple terms, provided for a program for controlling the sale, distribution, and application of pesticides through an administrative registration process and for classifying pesticides for "general" or "restricted" use. "Restricted" pesticides may only be applied by or under the direct supervision of a certified applicator

D. Toxic Substances Control Act (15 U.S.C. 2601 et seq.)

This act authorized the EPA to obtain data from industry on health and environmental effects of chemical substances and mixtures. If unreasonable risk or injury may occur, the EPA may regulate, limit, or prohibit the manufacture, processing, commercial distribution, use, and disposal of such chemicals and mixtures.

E. Pollution Prevention Act (42 U.S.C. 13101 et seq.)

This act encourages manufacturers to avoid the generation of pollution by modifying equipment and processes, redesigning products, substituting raw materials, and making improvements in management techniques, training, and inventory control.

F. Federal Compliance with Right to Know Laws and Pollution Prevention Requirements (EO 12856, August 3, 1993)

Requires agencies to comply with the provisions of the Pollution Prevention Act and to assure all necessary actions are taken to prevent pollution. The Council on Environmental Quality provided guidance on pollution prevention in the Federal Register of January 29, 1993.

G. Solid Waste Disposal Act (42 U.S.C. 6901 et seq.)

Establishes a national policy that, wherever feasible, the generation of hazardous waste is to be reduced or eliminated as expeditiously as possible. Waste that is nevertheless generated should be treated, stored, or disposed of so as to minimize the present and future threat to human health and the environment. It directs the EPA to provide guidelines for the treatment, handling, and storage of such wastes.

B.12 Rangelands

A. Taylor Grazing Act (43 U.S.C. 215 et seq.)

The Taylor Grazing Act (TGA) was the Federal Government's first effort to regulate grazing on federal lands. Under the act grazing districts were established of vacant, unreserved, public domain lands which were chiefly valuable for grazing and raising forage crops. Grazing is regulated through leases or licenses for which a fee is paid. Grazing Administration Regulations (43 CFR 4100) provide for the development of state Standards for Rangeland Health and Guideline for Grazing Management. Such standards and guidelines are approved through the BLM's planning and NEPA processes.

The TGA also eliminated settlement on the public domain and provided for the classification and disposal of public lands more valuable for uses other than grazing or the production of forage crops.

B. Public Rangelands Improvement Act (43 U.S.C. 1901 et seq.)

This act was instituted to improve public rangeland conditions in the 16 contiguous western states on which there is, or which are capable of, domestic livestock grazing. Rangeland quality is determined by soil quality, forage values, wildlife habitat, watershed and plant communities, the current state of vegetation in a site in relation to its potential, and the relative degree to which the kinds, proportions, and amounts of vegetation in a plant community resemble the desired plant community.

C. Noxious Plant Control Act (43 U.S.C. §§1241-43)

Authorizes agencies to allow and pay for state authorities to enter federal land for the control/destruction of noxious plants.

D. Federal Noxious Weed Act (7 U.S.C. 2801 et seq.)

This act provides the Secretary of Agriculture authority to designate plants as noxious weeds by regulation and prohibits the movement of all such weeds in interstate or foreign commerce except under permit. The Secretary of Agriculture also has authority to inspect, seize, and destroy products and to quarantine areas, if necessary, to prevent the spread of such weeds. The Secretary of Agriculture is also authorized to cooperate with other federal, state, and local agencies, farmers associations, and private individuals in measures to control, eradicate, or prevent or retard the spread of such weeds.

Each federal land-managing agency is to designate an office or person adequately trained in managing undesirable plant species to develop and coordinate a program to control such plants on the agency's land.

E. Invasive Species (EO 13112, February 3, 1999)

The purpose is to prevent the introduction of invasive species and provide for their control, as well as to minimize the economic, ecological, and human health impacts that invasive species cause.

Agencies whose actions may affect the status of invasive species shall: (1) identify such actions; (2) use relevant programs and authorities to prevent, control, monitor, and research such species; and (3) not auth-

orize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere.

F. Wild Horses and Burros Act (16 U.S.C. 1331-1340)

This act provides for protection of wild, free-roaming horses and burros. It directs the BLM of the DOI and USFS of the Department of Agriculture to manage such animals on public lands under their jurisdiction.

B.13 Recreation

Recreation and Public Purposes Act (43 U.S.C. 869 et seq.)

This act provides for the lease or disposal of public lands and certain withdrawn or reserved lands to state and local governments, and qualified non-profit organizations to be used for recreational or public purposes. Prices charged for the use or acquisition are normally less than market value of the specific lands. Conditions are imposed in patents, and title may revert to the United States for cause.

B.14 Rivers and Streams

A. Wild & Scenic Rivers Act (16 U.S.C. 1271 et seq.)

This act establishes a National Wild and Scenic Rivers System and prescribes the methods and standards through which additional rivers may be identified and added to the system.

B. American Heritage Rivers (EO 13061, September 11, 1997)

This EO has three objectives: natural resource and environmental protection, economic revitalization, and historic and cultural preservation. Agencies, to the extent permitted by law and consistent with their missions and resources, shall coordinate federal plans, functions, programs, and resources to preserve, protect, and restore rivers and their associated resources important to our history, culture, and natural heritage.

B.15 Trails

National Trails System Act (16 U.S.C. 1241-1249)

This act provides for establishment of National Recreation, National Scenic, and National Historic Trails.

National Recreation Trails may be established by the Secretary of the Interior or Agriculture on land wholly or partly within their jurisdiction with the consent of the involved state(s) and other land managing agencies, if any. National Scenic and National Historic Trails may only be designated by an Act of Congress.

B.16 Water—General

A. Water Resources Planning Act (42 U.S.C. 1962a – 1962[a][4][e])

This act established a Water Resources Council to be composed of Cabinet representatives, including the Secretary of the Interior. It also established River Basin Commissions and stipulated their duties and authorities.

The council was empowered to maintain a continuing assessment of the adequacy of water supplies in each region of the U.S. In addition, the council was mandated to establish principles and standards for federal participants in the preparation of river basin plans and in evaluating federal water projects. Upon

receipt of a river basin plan, the council was required to review the plan with respect to agricultural, urban, energy, industrial, recreational, and fish and wildlife needs.

B. Water Rights (43 U.S.C. 666)

This act waives the sovereign immunity of the United States where there is a suit designed to establish the rights to a river or other source of water, or the administration of such rights, and the United States appears to own or be in the process of acquiring rights to any such water. (The effect is to permit state courts to adjudicate federal water rights claims under state law.)

C. Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.)

The original 1948 statute, the Water Pollution Control Act, authorized the Surgeon General of the Public Health Service in cooperation with other federal, state, and local entities to prepare comprehensive programs for eliminating or reducing the pollution of interstate waters and tributaries and improving the sanitary condition of surface and underground waters. During the development of such plans, due regard was to be given to improvements necessary to conserve waters for public water supplies, propagation of fish and aquatic life, recreational purposes, and agricultural and industrial uses. The original statute also authorized the Federal Works Administrator to assist states, municipalities, and interstate agencies in constructing treatment plants to prevent discharges of inadequately treated sewage and other wastes into interstate waters or tributaries.

Since 1948, the original statute has been amended extensively either to authorize additional water quality programs, standards, and procedures to govern allowable discharges, funding for construction grants, or general program funding. Amendments in other years provided for continued authority to conduct program activities or administrative changes to related activities.

D. Clean Water Act (PL 95-217)

The Clean Water Act (CWA) extensively amended the Federal Water Pollution Act. Of particular significance were the following provisions:

1. Development of a Best Management Program as part of the state areawide planning program
2. Authority for the U.S. Army Corps of Engineers to issue general permits on a state, regional, or national basis for any category of activities which are similar in nature will cause only minimal environmental effects when performed separately and will have only minimal cumulative adverse impact on the environment
3. Exemption of various activities from the dredge and fill prohibition including normal farming, silviculture, and ranching activities (33 U.S.C. 1344(f))
4. Procedures for state assumption of the regulatory program.

The CWA requires the EPA to establish water quality standards for specified contaminants in surface waters and forbids the discharge of pollutants from a point source into navigable waters without a National Pollutant Discharge Elimination System (NPDES) permit. NPDES permits are issued by EPA or the appropriate state, if it has assumed responsibility. Section 404 of the CWA establishes a federal program to regulate the discharge of dredged and fill material into waters of the United States. Section 404 permits are issued by the USACE.

E. Safe Drinking Water Act (42 U.S.C. §300h)

This act establishes a program to monitor and increase the safety of all commercially and publically supplied drinking water. Amended in 1986 to require the EPA to establish Maximum Contaminant Levels (MCLs), Maximum Contaminant Level Goals (MCLGs), and Best Available Control Technology

(BACT) treatment techniques for organic, inorganic, radioactive, and microbial contaminants, and turbidity. Current federal MCLs, MCLGs, and BACTs in public drinking water supplies were set in 1996.

F. Water Quality Act (PL 100-4)

This act provided the most recent series of amendments to the Federal Water Pollution Act. Provisions included:

1. Requirement that states develop strategies for toxics cleanup in waters where the application of BACT discharge standards is not sufficient to meet state water quality standards and support public health;
2. Increase in the penalties for violations of Section 404 permits; and
3. Requirement that EPA study and monitor the water quality effects attributable to the impoundment of water by dams.

G. Flood Control Act (16 U.S.C. 460d and other)

This act, as amended and supplemented by other flood control acts and river and harbor acts, authorizes various USACE water development projects. This statute expressed congressional intent to limit the authorization and construction of navigation, flood control, and other water projects to those having significant benefits for navigation and which could be operated consistently with other river uses. The authority to construct, operate, and maintain public park and recreational facilities in reservoir areas was also provided.

H. Oil Pollution Act (33 U.S.C. 2701 et seq.)

This act established new requirements and extensively amended the Federal Water Pollution Control Act to provide enhanced capabilities for oil spill response and natural resource damage assessment

Among other provisions are that federal trustees shall assess natural resource damages for natural resources under their trusteeship. Federal trustees may, upon request from an Indian tribe or state, assess damages to natural resources for them as well. Trustees shall develop and implement a plan for the restoration, rehabilitation, replacement, or acquisition of the equivalent of natural resources under their trusteeship.

I. Floodplain Management (EO 11988, May 24, 1977)

The purpose of this EO is to prevent agencies from contributing to the “adverse impacts associated with the occupancy and modification of floodplains” and the “direct or indirect support of floodplain development.”

In the course of fulfilling their respective authorities, agencies “shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains.”

Before proposing, conducting, supporting or allowing an action in a floodplain, each agency is to determine if planned activities will affect the floodplain and evaluate the potential effects of the intended actions on its functions. Agencies shall avoid siting development in a floodplain “to avoid adverse effects and incompatible development in the floodplains,”

J. Protection of Wetlands (EO 11990, May 24, 1977)

Similar to Floodplain Management, agencies are directed to consider alternatives to avoid adverse effects and incompatible developments in areas of wetlands. New construction is to be avoided if possible.

K. Colorado River Storage Project Act (43 U.S.C. 620)

This act authorized the Secretary of the Interior to construct a variety of dams, power plants, reservoirs, and related works. The act also authorized and directed the Secretary of the Interior, in connection with the development of the Colorado River Storage Project and participating projects, to investigate, plan, construct, and operate facilities to mitigate losses of and improve conditions for fish and wildlife and public recreational facilities. The act provided authority to acquire lands and to lease or convey lands and facilities to state and other agencies.

L. Colorado River Basin Project Act (43 U.S.C. 1501-1556)

This act provided a program for the comprehensive development of the water resources of the Colorado River Basin, and directed the Secretary of the Interior to develop, after consultation with affected states and appropriate federal agencies, a regional water plan to serve as the framework under which projects in the Colorado River Basin may be coordinated and constructed.

M. Colorado River Floodway Protection Act (100 Stat. 1129)

This act established a Colorado River Floodway Area, within which are prohibited (1) all new federal funding or financial assistance for any purpose (except for listed exceptions), (2) federal flood insurance for new construction or substantial improvements begun six months after enactment on existing structures, and (3) the granting of new federal leases (unless the Secretary of the Interior determines that the purpose is consistent with the act).

N. Colorado River Basin Salinity Control Act (43 U.S.C. §§1571-1599)

This act authorized the construction of facilities necessary to meet the terms of the 1973 Salinity Agreement with Mexico.

B.17 Wilderness

A. Wilderness Act (16 U.S.C. 1131 et seq.)

This act established a National Wilderness System of areas to be designated by Congress. It directed the Secretary of the Interior, within 10 years, to review every roadless area of 5,000 or more acres and every roadless island (regardless of size) within National Wildlife Refuge and National Park Systems and to recommend to the President the suitability of each such area or island for inclusion in the National Wilderness Preservation System, with final decisions made by Congress. The Secretary of Agriculture was directed to study and recommend suitable areas in the National Forest System.

The act provides criteria for determining suitability and establishes restrictions on activities that can be undertaken on a designated area. Criteria set by Congress within this act states that wilderness areas have the following characteristics: (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and confined types of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value. The Wilderness Act also set the accepted uses of designated WAs and what uses are prohibited. The act sets special provisions for an agency's continuing management of existing or grandfathered rights such as mining and grazing and other agency mission related activities.

B. The California Desert Protection Act (P.L. 103-433)

This act designated lands in the California Desert as wilderness, established Death Valley and Joshua Tree National Parks, and established the Mojave National Preserve. Each WA designated would be administered by BLM in accordance with the provisions of the Wilderness Act, except that any reference to the effective date of the Wilderness Act shall be deemed to be a reference to the effective date of this title.

B.18 Other

A. Base Closure and Realignment Act (Title II of P.L. 100-526)

The act establishes a preference for the sale of land made surplus as a result of base closures or reductions, with the funds to be utilized for the costs of the closures, or for transfer of the land to a local redevelopment authority. It does not require such sales, however, nor does it repeal the provisions of law permitting the no- or reduced-cost transfer of such land to federal agencies or the states for conservation purposes.

B. Cave Resources Protection Act (16 U.S.C. 4301 et seq.)

This act established requirements for the management and protection of caves and their resources on federal lands, including allowing the land managing agencies to withhold the location of caves from the public and requiring permits for any removal or collecting activities in caves on federal lands.

C. Federal Power Act (16 U.S.C. §§791-828c)

Established what is now the Federal Energy Regulatory Commission (FERC) studies water-related power development possibilities. Licenses and oversees the development of water power project on federal and non-federal lands. On federal land coordinates with agencies and for some agencies they may dictate conditions to be included in licenses.

The FERC also regulates interstate electric transmission lines and interstate oil and gas pipelines, and issues ‘certificates of public convenience’ for these interstate facilities.

D. Land and Water Conservation Fund (16 U.S.C. 460l – 460l-11)

The fund is derived from various types of revenue (primarily Outer Continental Shelf oil monies) and appropriations from the fund may be used for (1) matching grants to states for outdoor recreation projects and (2) land acquisition for various federal agencies.

E. Federalism (EO 13132, August 4, 1999)

In formulating and implementing policies that have federalism implications, agencies shall be guided by the following principles:

1. Federalism is rooted in the belief that issues that are not national in scope or significance are most appropriately addressed by the level of government closest to the people.
2. The people of the states created the national government and delegated to it enumerated governmental powers. All other sovereign powers, save those expressly prohibited the states by the Constitution, are reserved to the states or to the people.
3. The framers of the Constitution recognized that the states possess unique authorities, qualities, and abilities to meet the needs of the people and should function as laboratories of democracy.

4. The nature of our constitutional system encourages a healthy diversity in the public policies adopted by the people of the several states according to their own conditions, needs, and desires. One-size-fits-all approaches to public policy problems can inhibit the creation of effective solutions to those problems.
5. Policies of the national government should recognize the responsibility of—and should encourage opportunities for—individuals, families, neighborhoods, local governments, and private associations to achieve their personal, social, and economic objectives through cooperative effort.
6. The national government should be deferential to the states when taking action that affects the policy-making discretion of the states and should act only with the greatest caution where state or local governments have identified uncertainties regarding the constitutional or statutory authority of the national government.

F. Takings (EO 12630, March 15, 1988)

The Fifth Amendment of the United States Constitution provides that private property shall not be taken for public use without just compensation. Government historically has used the formal exercise of the power of eminent domain, which provides orderly processes for paying just compensation to acquire private property for public use. Recent Supreme Court decisions, however, in reaffirming the fundamental protection of private property rights provided by the Fifth Amendment and in assessing the nature of governmental actions that have an impact on constitutionally protected property rights, have also reaffirmed that governmental actions that do not formally invoke the condemnation power, including regulations, may result in a taking for which just compensation is required.

Agencies shall evaluate carefully the effect of their actions on constitutionally protected property rights to prevent unnecessary takings and should account in decision making for those takings that are necessitated by statutory mandate.

G. Regulatory Impact Analysis(EO 12866, September 30, 1993)

Requires agencies to analyze the economic impact of proposed rules.

H. Off-Road Vehicles (EO 11644, February 8, 1972; EO 11989, May 24, 1977)

These orders require public land managers “to establish policies and procedures that will ensure that the use of off-road vehicles on public lands will be controlled and directed to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands.”

Appendix C

Public Scoping Report and Public Comments Received

United States Department of the Interior
Bureau of Land Management
Ridgecrest Field Office

Alta East Wind Project

BLM Land Use Application
File # CACA-052537

SCOPING REPORT

RESULTS OF SCOPING

October 2011

Ridgecrest Field Office
300 South Richmond Road
Ridgecrest, CA 93555

TABLE OF CONTENTS

Alta East Wind Project Scoping Report

1.0 OVERVIEW OF CEQA/NEPA SCOPING PROCESS 1
- 1.1 Introduction 1
- 1.2 Summary of CEQA/NEPA Scoping Process 1
- 1.3 Agencies, Organizations, and Persons Providing Scoping Comments 3
- 1.4 Scoping Report Organization 4

2.0 SUMMARY OF PROPOSED PROJECT 5
- 2.1 Project Description 5
- 2.2 Project Purpose and Need 7
- 2.3 Project Objectives 7
- 2.4 Agency Coordination 8
  - 2.4.1 Lead Agency 8
  - 2.4.2 Cooperating Agency 8

3.0 SUMMARY OF SCOPING COMMENTS 9
- 3.1 Project Description 9
- 3.2 Geographic scope of effects 9
- 3.3 Human Environment Issues 9
  - 3.3.1 Aesthetics/Visual Resources 9
  - 3.3.2 Land Use 10
  - 3.3.3 Fire and Safety Hazards 10
  - 3.3.4 Noise 11
  - 3.3.5 Cultural and Historic Resources 11
  - 3.3.6 Transportation 11
  - 3.3.7 Solid and Hazardous Waste 12
  - 3.3.8 Social and Economic Conditions and Environmental Justice 12
- 3.4 Natural Environment Issues 12
  - 3.4.1 Biological Resources 12
  - 3.4.2 Water Resources 13
  - 3.4.3 Air Quality 15
- 3.5 Indirect and Cumulative Impacts 15
- 3.6 Project Alternatives 15
- 3.7 Issues Outside the Scope of the EIR/EIS 16

4.0 SUMMARY OF FUTURE STEPS IN THE PLANNING PROCESS 17
- 4.1 Identification of Issues 17
- 4.2 Data Information and Collection 17
- 4.3 Preparing Draft EIR/EIS 17

4.3 Draft EIR/EIS and Public Comment Period 17
4.4 Response to Comments, Preparation of Final EIR/EIS, Notice of Determination, and Record of Decision..... 18

5.0 REFERENCES CITED 19

Appendices

Appendix A. Kern County Notice of Preparation (NOP) A-1

Appendix B. BLM Notice of Intent (NOI) B-1

Appendix C. Scoping Meeting Materials..... C-1

Appendix D. Scoping Meeting Transcript D-1

Appendix E. Written Comments Received During Public Scoping Period.....E-1

Abbreviations and Acronyms Used in this Report

AFZC	Application for Zone Change
BLM	Bureau of Land Management
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
IOU	Investor Owned Utility
MDA	Master Development Agreement
MW	megawatt
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NOI	Notice of Intent
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
ROW	right-of-way
RPS	Renewables Portfolio Standard
RWQBC	Regional Water Quality Control Board
SCE	Southern California Edison
SR	State Route
WRA	Wind Resource Area
WTG	wind turbine generator

1.0 OVERVIEW OF CEQA/NEPA SCOPING PROCESS

1.1 Introduction

Alta Windpower Development, LLC (Applicant) has submitted an Application for Zone Change (AFZC) to Kern County (County) and an application with the Bureau of Land Management (BLM) for a right-of-way (ROW) under the Federal Land Policy and Management Act of 1976 to construct a renewable energy development that would generate up to 360 megawatts (MW) of electricity through the use of wind power on a 3,200-acre Project site located 2 miles west of the intersection of Highway 58 and Highway 14 in the Mojave Desert. The Project site is within the Tehachapi Wind Resource Area (WRA) of eastern Kern County.

The Applicant has also applied for changes in zone classifications, amendments to the Kern County General Plan, and a Conditional Use Permit to allow for the use of a temporary concrete batch plant to provide concrete and materials for turbine, substation, and building foundations during construction of the wind energy facility. The requested applications would also permit construction of wind ancillary facilities and supporting infrastructure. Permanent facilities would include up to 120 wind turbine generators (WTGs), service roads, a power collection system, communication cables, overhead and underground transmission lines, electrical switchyards, Project substations, meteorological towers, and operations & maintenance facilities.

This report documents the County's and BLM's California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) scoping process and the comments received for the proposed Project. Specifically, this report describes the scoping activities and summarizes the written and verbal comments received on the County's Notice of Preparation (NOP) and BLM's Notice of Intent (NOI) and comments received at the joint public scoping meeting held for the Project. This report serves as an information source to the County and BLM in their determination of the range of issues and alternatives to be addressed in the joint Environmental Impact Report (EIR)/Environmental Impact Statement (EIS). The County and BLM will use the comments received during the scoping period to:

1) Identify key issues to focus the analysis;

2) Identify reasonable alternatives for analysis;

3) Present environmental impacts of the Project and alternatives;

4) Identify ways to avoid or reduce environmental impacts; and

5) Inform the agency decision-making process.

1.2 Summary of CEQA/NEPA Scoping Process

The CEQA/NEPA scoping process provides government agencies, public and private organizations, and the general public the opportunity to identify environmental issues and

alternatives for consideration in the EIR/EIS. The scoping process and results are an initial step in the CEQA/NEPA process.

As required by CEQA Guidelines §15082 (14 California Code of Regulations [CCR] 15000 et seq.), the Kern County Planning and Community Development Department issued an NOP on July 15, 2011, that summarized the Alta East Wind Project and stated its intention to prepare a joint EIR/EIS, and requested comments from interested parties.

To comply with NEPA (40 Code of Federal Regulations [CFR] 1501.7), the BLM published the NOI in the Federal Register (FR) to prepare a joint EIR/EIS for the Alta East Wind Project (FR Vol. 76, No. 136, page 41817, July 15, 2011). The NOI serves as the official legal notice that a federal agency is commencing preparation of an EIS. The Federal Register serves as the U.S. Government's official noticing and reporting publication. The NOI initiates the public scoping period for the EIS, provides information about the proposed Project, and serves as an invitation for other federal agencies granted cooperating agency status to provide comments on the scope and content of the EIS. The NOP is included as Appendix A and the NOI is included as Appendix B.

The NOP/NOI was filed with the state clearing house and distributed to federal, state, regional, and local agencies and organizations; school districts; local libraries; Native American groups; and private firms and individuals. The Public notice ran in the local newspaper and was sent to the general distribution list of all those identified as property owners within a 5-mile radius of the proposed Project site. BLM issued a press release regarding the NOI on July 15, 2011. The NOI and press release were also made available to the public on BLM's website for the Alta East Wind Project at:

http://www.blm.gov/ca/st/en/fo/ridgecrest/alta_east_wind_project.html

During the NOP/NOI comment period, the County and BLM held a public scoping meeting on August 4, 2011, at the Mojave Veterans Hall located at 15580 O Street in Mojave, CA. The scoping meeting provided the public and government agencies the opportunity to receive information on the CEQA/NEPA process and on the proposed Project and to provide verbal and written comments. Approximately 35 people attended the scoping meeting, including representatives from local and state agencies, organizations, and private citizens. The materials associated with the scoping meeting are contained within Appendix C and include the following:

- Appendix C-1 – Meeting Agenda
- Appendix C-2 – Project Map
- Appendix C-3 – Kern County and BLM Joint CEQA/NEPA Process
- Appendix C-4 – Sign-in sheets

A court reporter was present at the public scoping meeting to capture verbal comments. The transcript is provided in Appendix D.

The comment period for the NOP and NOI ended on August 15, 2011. In total, 14 letters were received: 11 from state and local agencies and organizations; and 3 from individuals.

These comments are incorporated into the EIR/EIS Project record and are documented and summarized in this report.

1.3 Agencies, Organizations, and Persons Providing Scoping Comments

State and local agencies, private and public organizations, and the general public provided written comments during the public scoping period. Written comments received during the public scoping meetings and in response to the NOP/NOI are included in Appendix E. In summary, Table 1 presents the agencies, organizations, and private citizens that provided comments during the CEQA/NEPA scoping process organized in the order they were issued.

Table 1
Comments Received During Public Scoping Period

Commenter	Date
State and Local Agencies and Organizations	
Kern County Fire Department, Nick Dunn, Fire Chief	May 2, 2011
Southern California Gas Company, Mel Whiteaker, Planning Associate	July 19, 2011
Native American Heritage Commission, Dave Singleton, Program Analyst	July 29, 2011
Kern County Roads Department, Warren D. Maxwell, Transportation Development Engineer	August 5, 2011
Lahontan Regional Water Quality Control Board, Jan M. Zimmerman, Engineering Geologist	August 9, 2011
California Department of Transportation, District 9, Gayle J. Rosander, IGR/CEQA Coordinator	August 11, 2011
Kern County Engineering & Survey Services Dept. Floodplain Management Section, Aaron Leicht	August 12, 2011
U.S. Environmental Protection Agency, Region IX, Tom Plenys	August 12, 2011
Southern California Edison Company, Deborah Hess, Local Public Affairs Region Manager	August 15, 2011
U.S. Fish and Wildlife Service, Carl Benz, Assistant Field Supervisor	August 16, 2011
National Park Service, Partnerships Programs, PWR, Debbie Allen	August 17, 2011
Individuals	
Laith Sheet	July 19, 2011
John Myers	August 4, 2011
Jim & Deborah Crocoll	August 12, 2011

1.4 Scoping Report Organization

This report summarizes the comments and issues identified through the Project's scoping period, including the public scoping meeting. Kern County and BLM will review and consider all the written and verbal comments received in preparing the EIR/EIS for the proposed Project.

Section 2 provides a description of the Project and summary information on the Applicant's stated Project objectives.

Section 3 provides an overall summary of the comments received and issues raised during the Project's public review period, including verbal comments received during the public scoping meeting.

Section 4 provides a summary of future steps in the planning process and indicates opportunities for public participation in the environmental review process.

Section 5 includes a list of references used in preparation of this scoping report.

Following is the list of appendices that includes public scoping notices, scoping meeting materials, scoping meeting transcripts, and public comments received during the public review period.

A. Notice of Preparation (posted July 15, 2011)

B. Notice of Intent (published in the Federal Register on July 15, 2011)

C. Scoping Meeting Materials

- C-1 Meeting Agenda
- C-2 Project Area Map
- C-3 Kern County and BLM Joint CEQA/NEPA Process
- C-4 Meeting Sign-in Sheets

D. Scoping Meeting Transcript

E. Written Comments Received During Scoping Period

2.0 SUMMARY OF PROPOSED PROJECT

This section provides an overview of the Alta East Wind Project located in eastern Kern County, about 3 miles northwest of the unincorporated town of Mojave and 11 miles east of the City of Tehachapi.

2.1 Project Description

Alta Windpower Development, LLC proposes the Alta East Wind Project, a 360- MW wind energy facility of approximately 120 wind turbines, each up to 3.0 MW. The Project is proposed to be located on approximately 3,200 acres on the north and south sides of State Route (SR) 58 in southeastern Kern County, California. The Project area is approximately 3 miles northwest of the Town of Mojave and approximately 11 miles east of the City of Tehachapi. The Project site is within the Tehachapi WRA of eastern Kern County (See Figure 1, Project Boundary). In addition to wind turbines, the Project would include the following components:

1) An operation and maintenance facility;

2) One collector substation and underground and overhead electrical collection lines to collect energy from the WTGs;

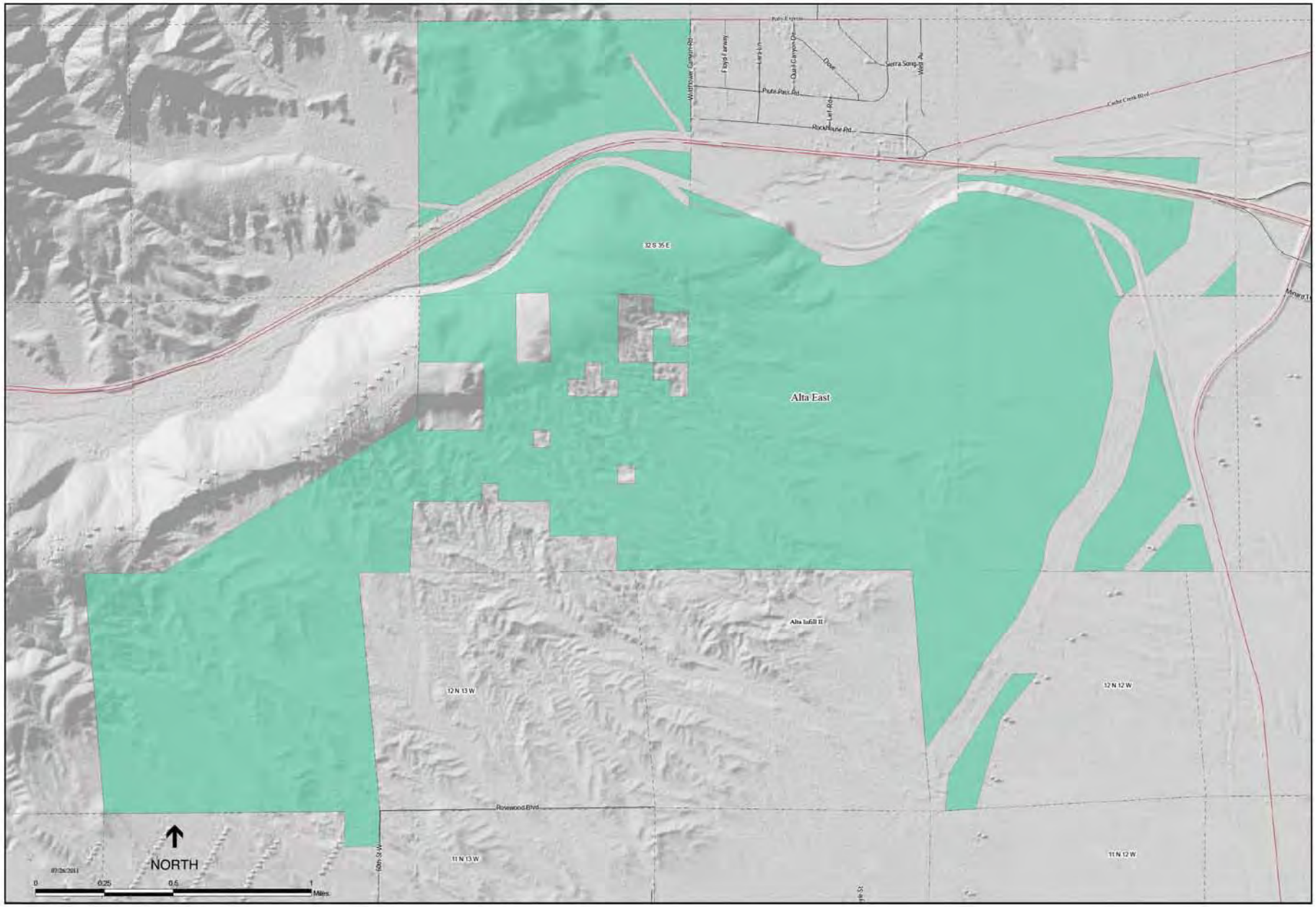
3) From two potential route options, a single 230 kV transmission line to interconnect to the existing Southern California Edison (SCE) Windhub Substation;

4) Meteorological towers;

5) Permanent access/service roads required for construction and operations and maintenance activities; and

6) Temporary construction staging and laydown areas to support the WTG component staging, office trailers, a concrete batch plant, portable rock crushers, and equipment marshaling.

The Project site includes both private and federal lands. Federal lands within the Project area are under the jurisdiction of the BLM and private lands are under the jurisdiction of Kern County. Approximately 681 acres would need to be rezoned to be consistent with the Kern County Zoning Ordinance Wind Energy Combining District prior to Kern County's issuance of a Conditional Use Permit, required for Project approval.



SOURCE: Bureau of Land Management, 2011

Alta East Wind Project . 211237

Figure 1

Project Boundary

2.2 Project Purpose and Need

The State of California has enacted legislation to support the growth of wind power. California's Renewables Portfolio Standard (RPS) (Senate Bill 1078) is one of the most ambitious efforts in the country to integrate renewable energy into a state's energy mix. California's RPS currently requires investor-owned utilities to purchase 20 percent of their power from renewable resources, and former Governor Schwarzenegger's Executive Order S-14-08 increases this to 33 percent by 2020. The RPS complements California Assembly Bill 32, the Global Warming Solutions Act of 2006, which established a comprehensive program of regulatory and market mechanisms to reduce greenhouse gas emissions. The Alta East Wind Project would support both pieces of legislation by serving as a source of clean renewable energy, reducing the need for electricity generated from fossil fuels and offsetting greenhouse gas emissions.

In response to California clean energy legislation, SCE executed a Master Power Purchase and Wind Project Development Agreement (MDA) with the Applicant in December 2006. According to the agreement, the Applicant is to deliver up to 1,550 MW of wind energy from new projects to be developed in the Tehachapi WRA from 2010 through 2015. Power purchase agreements have been executed under the MDA for the Alta East Wind Project.

2.3 Project Objectives

The Applicant's fundamental objective for the Project is to construct, operate, maintain, and eventually decommission a 360-MW wind energy facility and associated interconnection transmission infrastructure, access roads, and ancillary facilities to provide renewable electric power to California's existing transmission grid to help meet federal and state renewable energy supply and greenhouse gas emissions reduction requirements. The Applicant is committed to constructing and operating the Project in an environmentally responsible manner and to providing a sustainable source of renewable energy to the state's investor-owned utilities and the public. The Applicant's specific objectives for the Project are:

1) To construct and operate a cost-competitive 360-MW wind energy facility to provide a renewable and reliable source of power to California's investor-owned utilities (IOUs);

2) To locate the Project on contiguous lands with high wind potential to maximize operational efficiency while minimizing environmental impacts and water use;

3) To minimize environmental impacts and land disturbance by locating the Project near existing transmission infrastructure and roads and by avoiding sensitive environmental areas, recreational resources and wildlife habitats (e.g., Desert Wildlife Management Areas, Areas of Critical Environmental Concern) to the extent practicable;

4) To develop a source of renewable electric power that can be placed into service in an expeditious manner by interconnecting to the existing SCE Windhub Substation; and

5) To assist California and its IOUs in meeting the state's RPS and greenhouse gas emissions reduction requirements, including the requirements set forth in Senate Bill 1078, Assembly Bill 32, and the Governor's Executive Order S-14-08.

2.4 Agency Coordination

2.4.1 Lead Agency

The Project site is located within Kern County, and Project approval would require a Conditional Use Permit from the County. Portions of the Project would also be located within existing BLM ROW grants. The County will act as the lead agency under CEQA and BLM will act as the lead agency under NEPA to produce a single environmental report (EIR/EIS) that will meet both agencies environmental requirements.

2.4.2 Cooperating Agency

The cooperating agency role derives from NEPA, which calls on federal, state, and local governments to cooperate with the goal of achieving "productive harmony" between humans and their environment. The Council on Environmental Quality's (CEQ) regulations implementing NEPA allow federal agencies (as lead agencies) to invite tribal, state, and local governments, as well as other federal agencies, to serve as cooperating agencies in the preparation of environmental impact statements. In 2005, the BLM amended its planning regulations to ensure that it engages its governmental partners consistently and effectively through the cooperating agency relationship whenever land use plans are prepared or revised.

State agencies, local governments, tribal governments, and other federal agencies may serve as cooperating agencies. CEQ regulations recognize two criteria for cooperating agency status: jurisdiction by law and special expertise. The BLM regulations incorporate these criteria:

> 40 CFR §1508.5 (CEQ) Defining eligibility. "Cooperating agency" means any Federal agency other than a lead agency which has "jurisdiction by law" or "special expertise" with respect to any environmental impact….A State or local agency of similar qualifications or, when the effects are on a reservation, an Indian Tribe, may by agreement with the lead agency become a cooperating agency.

To date, no agencies have agreed to be cooperating agencies.

3.0 SUMMARY OF SCOPING COMMENTS

This section of the report summarizes the comments raised by the public and agencies during the scoping process. This summary is based upon both written and verbal comments that were received during the NOP/NOI public scoping period and from the Project scoping meeting held in Mojave on August 4, 2011. Table 1 provides a list of commenters including state and local agencies and organizations that provided written comments during the public review period. There were a number of environmental concerns raised during the public scoping process, which focused on the Project's potential effects in several environmental categories. The scoping report summarizes the comments received according to the following major themes:

1) Project Description
2) Geographic scope of effects
3) Human environment issues
4) Natural environment issues
5) Indirect and cumulative impacts
6) Project alternatives
7) EIS/EIR administrative and permitting issues.

3.1 Project Description

- The Southern California Gas Company commented that it does not have distribution facilities within the Project site as shown in the NOP.

- The EIR/EIS should analyze the portions of the transmission line and diverse communication routes that would be constructed within and/or connected to the Windhub Substation.

- The EIR/EIS should include a clear statement of purpose and need for the Project as well as describe the eventual decommissioning and site restoration plan.

3.2 Geographic scope of effects

- Several commenters express concern regarding the adequacy of the distance from the Project site used by Kern County for notifying property owners and occupants about the Project scoping process, and indicated that the Project's potential effects could affect a broader range of stakeholders.

3.3 Human Environment Issues

3.3.1 Aesthetics/Visual Resources

- Several commenters indicated concern about the potential adverse visual and aesthetic impacts of the wind turbine towers and associated above-ground facilities.

- The Project, viewed in conjunction with other wind energy developments that have been constructed or are in progress, would place wind turbines on all four sides of some of the properties within 1,000 feet of the Project site.

- Several commenters expressed concern that the Project would adversely affect the scenic value of the Project area if it resulted in a reduction in wildlife, the viewing of which is an important aspect of the visual appeal of the region for its residents.

- Several commenters requested that the EIR/EIS address the effects that permanent Project lighting, such as potential lighting on the wind turbines to comply with the Federal Aviation Administration's Obstruction Lighting/Marking Requirements, would have on the experience of darkness of the night sky in the Project area.

3.3.2 Land Use

- The EIR/EIS should discuss how the proposed action would support or conflict with the objectives of federal, state, tribal, or local land use plans, policies, and controls in the Project area.

3.3.3 Fire and Safety Hazards

- Several comments discussed the potential for increased risk from wildfire hazards due to the introduction of industrial wind turbines and related facilities into the Project area.

- The risk of wildfire ignition from these facilities as well as the potential for blocking emergency access and egress routes in the event of a fallen turbine or blade assembly, raised concerns.

- Concern that the turbines would be located too close to buildings and homes and stated that the method for measuring setbacks between turbines and homes from the end of the topmost blade to the base of the home did not adequately ensure the safety of residents.

- Several comments suggested larger setbacks from homes and roads.

- There would be a potential for safety hazards in the event of a shattered turbine blade or a fallen turbine component on or near a roadway.

- Concerns that the Project would emit electromagnetic waves that could have adverse human health effects.

- A loss of Joshua trees due to Project construction could result in a loss of habitat for bees and could cause bees to move closer to populated places in the Project area, resulting in an increased human health and safety risk.

- Potential mitigation measures to reduce fire and safety hazards could include increasing setbacks for turbine placement from buildings and roads, installing and

maintaining a series of water tanks throughout the Project area to aid in firefighting, and installing and maintaining access roads for emergency vehicles

3.3.4 Noise

- Several commenters expressed concern regarding potential noise generated by operation and construction of the proposed wind turbines and its effect on adjacent residences.

- Several commenters requested that operational noise should be analyzed in the EIR/EIS and that noise evaluations for wind turbines should be conducted for all possible wind speeds at the Project site.

3.3.5 Cultural and Historic Resources

- The Native American Heritage Council (NAHC) expressed concern about the Project's potential effects on existing cultural and historic resources in the area and noted that even if no known cultural or historic resources are found in a search of the NAHC Sacred Lands File, unknown subsurface resources could be present.

- The NAHC commented that consultation with local Native American tribes would be necessary to determine if local knowledge of Native American cultural and historic resources would identify resources in the Project area. The NAHC stressed the necessity for compliance with all applicable regulations regarding the accidental discovery of previously unknown subsurface resources, in particular, human remains, and suggests that avoidance of any cultural or historic resources discovered in the course of site preparation or construction is the appropriate mitigation. The U.S. Environmental Protection Agency requested that the EIR/EIS describe the Project's coordination with tribal governments and compliance with the National Historic Preservation Act and Executive Orders 13175 and 13007.

3.3.6 Transportation

- Several commenters requested that traffic impacts resulting from transporting construction equipment and materials to the Project site, including the cumulative impacts of this Project and others scheduled concurrently in the Project area, should be analyzed in EIR/EIS.

- The Kern County Roads Department expressed concern for potential damage to existing roads as a result of the Project and noted that the Applicant would be required to obtain transportation permits from the County for transporting heavy loads on County-maintained roads and encroachment permits for any construction within County road ROWs. Additionally, the Applicant should submit a Traffic Control Plan, and should be responsible for prompt repair of roads if damaged due to Project-related activities.

- The California Department of Transportation (Caltrans) requested that the EIR/EIS analyze the Project's effects on SR 58, SR 14, and discuss the Project's compliance with all applicable Caltrans regulations, permitting requirements, and road maintenance requirements.

3.3.7 Solid and Hazardous Waste

- The EIR/EIS should discuss the eventual disposal of decommissioned wind turbines and associated equipment and facilities and identify hazardous wastes the Project would generate and describe plans for minimizing, storing, disposing, and managing these wastes.

3.3.8 Social and Economic Conditions and Environmental Justice

- Commenters expressed concern regarding the potential impact of the Project on their property values.

- One comment asserts that several local businesses have recently closed and suggests that the Applicant's claims that the Project will have positive effects on the local economy are unfounded.

- The EIR/EIS should describe the Project's compliance with Executive Order 12898, which addresses environmental justice for minority and low-income populations as defined by the Council on Environmental Quality.

3.4 Natural Environment Issues

3.4.1 Biological Resources

- Several commenters expressed concern regarding the Project's potential effects on biological resources such as sensitive and special status species, riparian and other sensitive natural communities, and migratory corridors for wildlife. Specifically, the California condor and golden eagle, as well as migratory birds and bats, were identified as resources of particular concern based on the Project's proposed location and equipment.

- Commenters requested that the EIR/EIS discuss the consultation and permitting process for impacts on biological resources with applicable federal and state agencies.

- Other issues raised included impacts related to invasive species and cumulative and indirect impacts on biological resources.

- A loss of Joshua trees due to Project construction could result in a loss of habitat for bees and could cause bees to move closer to populated places in the Project area.

- There is concern that the Project would emit electromagnetic waves that could have adverse effects on wildlife, including interfering with echolocation of bats and migratory patterns for birds.

- There is concern regarding communication between the public and members of the Project scoping and environmental analysis team with respect to the names and descriptions of plants in the area.

3.4.2 Water Resources

- There is concern that the Project could result in a lowered water table in the Project area, affecting the accessibility of well water.

- A description of the Project's water use during construction and operation should be included in the EIR/EIS.

The Lahontan Regional Water Quality Control Board (RWQCB) submitted the following comments:

- Several water bodies are located at or near the Project site, including Oak Creek, Cottonwood Creek, Cache Creek, and numerous unnamed washes, wetlands, springs, and other surface waters. Alteration, dredging, filling, and excavating of waters of the state, which include all surface and groundwater, constitute a discharge of waste and could affect water quality in these waters. The Applicant should comply with the Water Quality Control Plan for the Lahontan Region and all other applicable water quality standards and prohibitions to protect the quality of these waters.

- The EIR/EIS should contain analysis of potential effects from the Project on water quality and hydrology, including:

    - Project alternatives for the conceptual design for turbine pad locations, access roads, utility line alignments, and ancillary facilities. If the Preferred Alternative is different from the least damaging alternative, the EIR/EIS should discuss the rationale for the additional environmental impacts.

    - A regional-scale map identifying all surface water resources potentially affected by the Project.

    - A list of the beneficial uses of the water bodies identified as potentially affected by the Project and an evaluation of the Project's effects on these uses. The EIR/EIS should identify Project alternatives to avoid these impacts or mitigation measures to reduce significant unavoidable impacts to a less-than-significant level. Avoidance is the preferred strategy for reducing impacts on water bodies.

    - Quantification, to the extent possible, of effects on waters of the state, based on adequate data and appropriate models. The EIR/EIS should identify whether impacts would be temporary or permanent and should specify the

causes, natures, and magnitudes of all proposed impacts and should analyze these impacts to an extent commensurate with their size and complexity.

  - Analysis of the Project's impacts on the existing hydrograph, hydrology of upstream and downstream reaches, and cumulative impacts from existing or other planned projects in the area, and evaluation of alternatives and mitigation measures to maintain the pre-Project hydrograph.

  - Analysis of the regional importance of movement corridors in and along water bodies, sensitive plant and animal species that use them, the Project's potential impacts on these corridors, and mitigation measures to enhance corridors.

  - Analysis of impacts to water bodies that could adversely affect future remediation of existing barriers to habitat connectivity.

- Due to the Project's land disturbance and industrial activities, the Applicant may be required to obtain a Section 402(p) stormwater permit under the federal Clean Water Act, including a National Pollution Discharge Elimination System (NPDES) General Construction and/or General Industrial Stormwater Permit from the State Water Resources Control Board or individual stormwater permits from the Lahontan RWQCB.

- Due to the Project's potential streambed alteration and/or discharge of waste, the Applicant may be required to obtain a Section 401 Water Quality Certification under the federal Clean Water Act and/or comply with dredge and fill waste discharge requirements, both administered by the Lahontan RWQCB.

- The Applicant should consult with the United States Army Corps of Engineers to perform jurisdictional determinations for surface waters in the Project area.

- The EIR/EIS should list the necessary permits for the Project and describe the Project-related actions requiring these permits.

- The EIR/EIS should address post-construction stormwater management, particularly any Project-related changes in stormwater runoff into natural drainages, and should analyze alternatives and/or propose mitigation measures to avoid or minimize adverse hydrologic effects from stormwater runoff.

The U.S. Environmental Protection Agency requested that the EIR/EIS discuss:

- the Project's water needs and sources and whether those sources are adequate and would continue to be adequate in light of the effects of climate change;

- cumulative impacts on groundwater supply;

- ways to reduce or recycle water used for the Project;

- the feasibility of using non-groundwater sources of water;

- potential effects on surface water quality and all waters of the United States;
- the Project's methods of water disposal;
- potential impacts on natural and altered drainage patterns in the Project area, including desert washes, and mitigation and/or compensation to reduce impacts;
- Clean Water Ace Section 303(d) impaired waters in the Project area and Project coordination with restoration efforts; and
- Project compliance with the Construction General Permit through a Stormwater Pollution Prevention Plan.

3.4.3 Air Quality

- There are air quality concerns regarding construction exhaust and dust emissions and greenhouse gas emissions and climate change impacts.
- Commenters raised concerns regarding the Project's potential removal of vegetation that could result in erosion and adverse effects from windborne dust.

3.5 Indirect and Cumulative Impacts

- Concerns that the Project could contribute generally to cumulative changes to and loss of regional desert lands.
- The Kern County Roads Department requested cumulative analysis of construction-related traffic impacts.
- The Lahontan RWQCB commented that the Project could contribute to cumulative changes in and degradation of the watershed(s) in which the Project area is located. The EIR/EIS should analyze the direct, indirect, and cumulative (watershed-level) impacts of the Project on filling and excavation of waters, discharge of pollutants, hydrologic modification, aquatic function, floodwater retention, and habitat connectivity.

3.6 Project Alternatives

- Several commenters requested that Project alternative designs be considered in the EIS/EIR to avoid impacts on cultural and historic resources and water resources. Specifically, the Lahontan RWQCB requests that the EIR/EIS analyze alternatives to the conceptual design for turbine pad locations, access roads, utility line alignments, and ancillary facilities. It was also noted that Project alternatives may include alternative site, capacities, and technologies, and that the EIR/EIS should identify the environmentally preferred alternative.

- The U.S. Environmental Protection Agency noted its preference that renewable energy projects be sited on previously disturbed lands, which can be identified using the Renewable Energy Interactive Mapping Tool, and requested that the EIR/EIS describe its methodology for identifying and analyzing alternatives.

3.7 Issues Outside the Scope of the EIR/EIS

The following comments are outside the scope of the EIR/EIS analysis

- General comments were received that were against the development of the Project.
- Some comments were received requesting information.
- The Project would have an adverse effect generally on the social characteristics of residences in the Project area.

4.0 SUMMARY OF FUTURE STEPS IN THE PLANNING PROCESS

The EIR/EIS process requires a team of interdisciplinary resource specialists to complete each step. An important part of the environmental planning process is engaging the public and relevant agencies from the earliest stages of and throughout the planning process to address issues, comments, and concerns. The steps of the CEQA and NEPA planning processes and agency authority and decisions to be made are described as follows. The figure included as Appendix C-3 of this report depicts a summary of the joint EIR (CEQA) and EIS (NEPA) processes.

4.1 Identification of Issues

Issues associated with the Project were identified through the scoping period, which initiated the planning process. The scoping process and the issues identified through the scoping process are documented in this scoping report.

4.2 Data Information and Collection

Much of the necessary resource data and information will be compiled from existing studies prepared for the Project or through other local agencies. Additional data and information will be obtained from available sources to update and/or supplement existing data.

4.3 Preparing Draft EIR/EIS

Based on collected data, including public comments, a description of the Project and alternatives (including no action) will be developed. Only alternatives that meet CEQA and NEPA screening criteria will be considered in detail. Impacts that could result from implementing the Project and alternatives will be analyzed and measures to mitigate those impacts will be identified where appropriate.

4.3 Draft EIR/EIS and Public Comment Period

The next official public comment period will begin upon publication of the Draft EIR/EIS, which is anticipated to be fall of 2011. This document will evaluate a range of Project alternatives including a “No Action” alternative and a “Preferred” alternative and will generally include the following:

1) Executive summary
2) Introduction/overview (including purpose and need for the Project)
3) Description of Project and alternatives
4) Environmental analysis (including impacts and mitigation measures to minimize impacts)
5) Comparison of alternatives
6) Other CEQA/NEPA considerations.

Upon completion of the Draft EIR/EIS, the County will file a Notice of Completion with the California State Clearinghouse and BLM will publish a Notice of Availability in the Federal Register and a 45-day public comment period will follow. Copies of the Draft EIR/EIS will be distributed to elected officials, regulatory agencies, and interested members of the public. The document will also be available online at the BLM‘s website for the Project:

http://www.blm.gov/ca/st/en/fo/ridgecrest/alta_east_wind_project.html

During this time, public comment on the Draft EIR/EIS will be received.

4.4 Response to Comments, Preparation of Final EIR/EIS, Notice of Determination, and Record of Decision

After the public comment period, the County and BLM will respond to comments and prepare a Final EIR/EIS. The availability of the Final EIR/EIS will be announced in the Federal Register, and a 30-day public protest period will follow. Copies of the Final EIR/EIS will be distributed to elected officials, regulatory agencies, and interested members of the public. The document will also be available online at the BLM website, as described previously.

For NEPA, following a 30-day Protest Period and concurrent 60-day Governor’s Review, the BLM will resolve valid protests and prepare the Record of Decision. The Notice of Availability for the Record of Decision will be announced in the Federal Register.

5.0 REFERENCES CITED

14 CCR 15000–15387 and Appendix A–L. Guidelines for Implementation of the California Environmental Quality Act.

40 CFR 1501.1–1501.8. NEPA and Agency Planning.

Federal Register, Vol. 76, No. 136, page 41817, July 15, 2011.

APPENDIX A

Kern County Notice of Preparation (NOP)

PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT
Lorelei H. Oviatt, AICP, Director
2700 "M" STREET, SUITE 100
BAKERSFIELD, CA 93301-2323
Phone: (661) 862-8600
FAX: (661) 862-8601 TTY Relay 1-800-735-2929
E-Mail: planning@co.kern.ca.us
Web Address: www.co.kern.ca.us/planning

DEVELOPMENT SERVICES AGENCY
***Ted James, AICP**, DSA DIRECTOR*
Planning and Community Development
Engineering, Surveying and Permit Services
Roads Department

NOTICE OF PREPARATION

DATE: July 15, 2011

TO: See Attached Mailing List

FROM: Kern County Planning and Community Development Department
Attn: Jacquelyn Kitchen, Planner III
2700 "M" Street, Suite 100
Bakersfield, CA 93301
(661) 862-8619; KitchenJ@co.kern.ca.us

SUBJECT: NOTICE OF PREPARATION/ NOTICE OF INTENT OF A DRAFT ENVIRONMENTAL IMPACT REPORT/ ENVIORNMENTAL IMPACT STATEMENT.

The Kern County Planning and Community Development Department as Lead Agency (per CEQA Guidelines Section 15052) and the U.S. Bureau of Land Management (BLM), as the federal Lead Agency, will direct the preparation of a joint Environmental Impact Report (per CEQA Guidelines Section 15161) and an Environmental Impact Statement (EIS), referred to as an EIR/EIS, for the Alta East Wind Project proposed by Alta Windpower Development, LLC (Project Proponent). The EIR/EIS will be prepared to comply with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA).

The Planning and Community Development Department solicits the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval of projects.

Due to the limits mandated by State and Federal law, your response must be received by **August 15, 2011 at 5pm.** In addition, comments can be submitted at a **scoping meeting** that will be held at the Mojave Veterans Hall for **August 4, 2011** at **7:00 pm**. The Mojave Veterans Hall is located at 15580 O Street in Mojave, CA.

PROJECT TITLE: JRK 01-11; Alta East Wind Energy Project by Alta Windpower Development, LLC. (PP11212); General Plan Amendment 2, Zone Map 168; General Plan Amendment 2, Zone Map 168-27; General Plan Amendment 3, Zone Map 179; General Plan Amendment 1, Zone Map 180; Zone Change Case 10, Map 168; Zone Change Case 4, Map 168-27; Zone Change Case 3, Map 179; Zone Change Case 6, Map 180; Zone Change Case 47, Map 197; Conditional Use Permit No. 7, Map 168.

PROJECT LOCATION: The project is located 2 miles west of the intersection of Highway 58 and Highway 14 in the Mojave Desert and is within the Tehachapi Wind Resource Area (TWRA) of eastern Kern County; Located within in San Bernardino Base Meridian and Township 11 North, Range 13 West, Section 3; Township 12 North, Range 13 West, Section 34, Township 12 North, Range 12 West, Section 31, Township 32 South, Range 35 East, Sections 26-28, 32-35.

PROJECT DESCRIPTION: The project is a renewable energy development that would generate up to 360 megawatts (MW) of electricity through the use of wind power on a 3,200-acre project site. The project proponent is requesting: (a) a change in zone classification from the E (20) (Estate 20 acres) District and the A-1 (Limited Agriculture) District to the A (Exclusive Agriculture) District, to the A WE (Exclusive Agriculture, Wind Energy Combining) District and to the A FP (Exclusive Agriculture, Floodplain Combining) District in Map 168, (b) a change in zone classification from A-1 to A and A WE in Map 180, (c) a change in zone classification from E (20) to A and A WE in Map 180, (d) a change in zone classification from A-1 to A and A WE in Map 179, (e) a change in zone classification from A-1 to A in Map 197, (f) amendments to the Kern County General Plan to eliminate section and mid-section line road reservations within Maps 168, 168-27, 179, and 180, and (g) a conditional use permit to allow for the use of a temporary concrete batch plant during construction of the wind energy facility. The requested applications would also permit construction of wind ancillary facilities and supporting infrastructure, and a concrete batch plant to provide concrete and materials for turbine, substation, and building foundations. Permanent facilities would include up to 120 wind turbine generators, service roads, a power collection system, communication cables, overhead and underground transmission lines, electrical switchyards, project substations, meteorological towers, and operations & maintenance facilities.

Signature: /s/
Name: Jacquelyn R. Kitchen, Planner III

DISTRIBUTION LIST

Alta East Wind Project
PP11212
I:\WP\LABELS\eir01-11jk.nop.doc
jc (4/7/11)

City of Tehachapi
115 South Robinson Street
Tehachapi, CA 93561-1722

U.S. Bureau of Land Management
Ridgecrest Field Office
300 South Richmond Road
Ridgecrest, CA 93555

China Lake Naval Weapons Center
Tim Fox, RLA - Comm Plans & Liaison
429 E Bowen, Building 979
Mail Stop 4003
China Lake, CA 93555-6108

Edwards Air Force Base
AFFTC/XRX Bldg 0001, Room 110
#1 South Rosamond Blvd.
Edwards AFB, CA 93524-1936

Federal Aviation Administration
Western Reg Office/
Airport Div - AWP 600
P.O. Box 92007
Los Angeles, CA 90009

Federal Communications Comm
18000 Studebaker Road, #550
Cerritos, CA 90701

U.S. Fish & Wildlife Service
2493 Portola Road, Suite B
Ventura, CA 93003

Tehachapi Resource Cons Dist
321 West "C" Street
Tehachapi, CA 93561-2011

Eastern Kern Resource Cons Dist
1525 North Norma Street, Ste C
Ridgecrest, CA 93555

Environmental Protection Agency
Region IX Office
75 Hawthorn Street
San Francisco, CA 94105

U.S. Dept of Agriculture/NRCS
5000 California Avenue, Ste 100
Bakersfield, CA 93309-0711

So. San Joaquin Valley Arch Info Ctr
California State University of Bkfd
9001 Stockdale Highway
Bakersfield, CA 93311

Caltrans/Dist 6
Planning/Land Bank Bldg.
P.O. Box 12616
Fresno, CA 93778

Caltrans/Dist 9
Planning Department
500 South Main Street
Bishop, CA 93514

Caltrans/
Division of Aeronautics, MS #40
P.O. Box 942873
Sacramento, CA 94273-0001

State Clearinghouse
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Sacramento, CA 95812-3044
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State Dept of Conservation
Director's Office
801 "K" Street, MS 24-01
Sacramento, CA 95814-3528

State Dept of Conservation
Division of Oil & Gas
4800 Stockdale Highway, Ste 417
Bakersfield, CA 93309

State Dept of Fish & Game
1234 East Shaw Avenue
Fresno, CA 93710

California Regional Water Quality
Control Board/Lahontan Region
14440 Civic Drive, Suite 200
Victorville, CA 92392-2306

Kern County Airports Department

Kern County Engineering, Surveying,
& Permit Svs/Floodplain

Kern County Engineering, Surveying,
& Permit Svs/Survey

Kern County
Env Health Services Department

Kern County Fire Dept
Brian Marshall

Kern County Fire Dept
Dave Goodell

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Local History Room

Kern County Library/Beale
Diane Duquette

Kern County Parks & Recreation

Kern County Sheriff's Dept
Administration

Kern County Roads Department

Kern County
Waste Management Department

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Mojave, CA 93501

Kern High School Dist
5801 Sundale Avenue
Bakersfield, CA 93309

Kern County Superintendent of Schools
Attention Mary Baker
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Bakersfield, CA 93301

Mojave Public Utility Dist
15844 "K" Street
Mojave, CA 93501

Antelope Valley-East Kern
Water Agency
6500 West Avenue N
Palmdale, CA 93551

Kern County Water Agency
P.O. Box 58
Bakersfield, CA 93302-0058

East Kern Air Pollution
Control District

Mojave Airport
1434 Flightline
Mojave, CA 93501

East Kern Airport Dist
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Mojave, CA 93501

East Kern Airport Dist Engineer
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Lake Isabella, CA 93240-9536

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California Representative
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Sacramento, CA 95814

Desert Tortoise Preserve Committee
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Riverside, CA 92501

Mojave Chamber of Commerce
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Mojave, CA 93502

Native American Heritage Council
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Bakersfield, CA 93302

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Anitra Kass
Pacific Crest Trail Association
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Idyllwild, CA 92549

Brendan Taylor
Pacific Crest Trail Association
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Ridgecrest, CA 93555

Pacific Gas & Electric Co
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Bakersfield, CA 93301

Sheppard Mullin
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Los Angeles, CA 90071

Sierra Club/Kern Kaweah Chapter
Arthur Unger

*****PUT IN BUCKET*****

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421 West "J" Street
Tehachapi, CA 93561

Southern California Gas Co
1510 North Chester Avenue
Bakersfield, CA 93308

Southern California Gas Co
Transportation Dept
9400 Oakdale Avenue
Chatsworth, CA 91313-6511

Verizon California, Inc.
Attention Engineering Department
520 South China Lake Boulevard
Ridgecrest, CA 93555

David Laughing Horse Robinson
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Kern Valley Indian Council
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Native American Heritage Council
of Kern County/Fay Van Horn
P.O. Box 1507
Bakersfield, CA 93302

Northcutt and Associates
4220 Poplar Street
Lake Isabella, CA 93240-9536

Vestas
Sarah Adams
1881 Southwest Naito Parkway
Portland, OR 97201

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P. O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH # _____

Project Title: JRK 01-11 Alta East Wind Energy Project by Alta WindPower, LLC.

Lead Agency: Kern County Planning Department
Contact Person: Jacquelyn R. Kitchen
Mailing Address: 2700 "M" Street Suite 100
Phone: (661) 862-8619
City: Bakersfield
Zip: 93301-2323
County: Kern

Project Location: County: Kern
City/Nearest Community: City of Tehachapi
Cross Streets: 2 miles west of the intersection of Highway 58 and Highway 14 in the Mojave Desert
Zip Code: 93501
Lat. / Long.: 35° 5′ 4″ N / 118° 14’ 3″ W
Total Acres: 3200
Assessor's Parcel No.: Multiple
Section: Multiple
Twp.: Multiple
Range: Multiple
Base: SBB&M
Within 2 Miles: State Hwy #: SR 58 & SR 14
Waterways: Los Angeles Aqueduct
Airports: Mojave Airport
Railways: n/a
Schools: Mountain View Cont.

Document Type:

CEQA:
- ☒ NOP
- ☐ Early Cons
- ☐ Neg Dec
- ☐ Mit Neg Dec
- ☐ Draft EIR
- ☐ Supplement/Subsequent EIR (Prior SCH No.) _____
- Other _____

NEPA:
- ☒ NOI
- ☐ EA
- ☐ Draft EIS
- ☐ FONSI

Other:
- ☐ Joint Document
- ☐ Final Document
- ☐ Other _____

Local Action Type:

- ☐ General Plan Update
- ☐ General Plan Amendment
- ☐ General Plan Element
- ☐ Community Plan
- ☐ Specific Plan
- ☐ Master Plan
- ☐ Planned Unit Development
- ☐ Site Plan
- ☒ Rezone
- ☐ Prezone
- ☒ Use Permit
- ☐ Land Division (Subdivision, etc.)
- ☐ Annexation
- ☐ Redevelopment
- ☐ Coastal Permit
- ☐ Other _____

Development Type:

- ☐ Residential: Units _____ Acres _____
- ☐ Office: Sq.ft. _____ Acres _____ Employees _____
- ☐ Commercial: Sq.ft. _____ Acres _____ Employees _____
- ☐ Industrial: Sq.ft. _____ Acres _____ Employees _____
- ☐ Educational _____
- ☐ Recreational _____
- ☐ Water Facilities: Type _____ MGD _____
- ☐ Transportation: Type _____
- ☐ Mining: Mineral _____
- ☒ Power: Type Wind MW 360
- ☐ Waste Treatment: Type _____ MGD _____
- ☐ Hazardous Waste: Type _____
- ☐ Other: _____

Project Issues Discussed in Document:

- ☒ Aesthetic/Visual
- ☒ Agricultural Land
- ☒ Air Quality
- ☒ Archeological/Historical
- ☒ Biological Resources
- ☐ Coastal Zone
- ☒ Drainage/Absorption
- ☐ Economic/Jobs
- ☐ Fiscal
- ☒ Flood Plain/Flooding
- ☒ Forest Land/Fire Hazard
- ☒ Geologic/Seismic
- ☒ Minerals
- ☒ Noise
- ☒ Population/Housing Balance
- ☒ Public Services/Facilities
- ☒ Recreation/Parks
- ☐ Schools/Universities
- ☐ Septic Systems
- ☐ Sewer Capacity
- ☒ Soil Erosion/Compaction/Grading
- ☐ Solid Waste
- ☒ Toxic/Hazardous
- ☒ Traffic/Circulation
- ☒ Vegetation
- ☒ Water Quality
- ☒ Water Supply/Groundwater
- ☒ Wetland/Riparian
- ☒ Wildlife
- ☐ Growth Inducing
- ☒ Land Use
- ☒ Cumulative Effects
- ☐ Other _____

Present Land Use/Zoning/General Plan Designation:

Zoned: A-1 (Limited Agriculture) and E 20 (Estate Residential, 20 acres) Designated: 1.1 (State or Federal Land); 8.3 (Extensive Ag, 20 acre min); 8.4 (Mineral and Petroleum, Minimum 5 Acre Size); 8.5 (Resource Management, min 20 acre); 1.1/2.4 (Steep Slope); 8.4 /2.4; 8.5 /2.4; 8.5/2.5 (Flood Hazard)

Project Description: *(please use a separate page if necessary)* The Kern County Planning and Community Development Department as Lead Agency (per CEQA Guidelines Section 15052) and the U.S. Bureau of Land Management (BLM), as the federal Lead Agency, will direct the preparation of a joint Environmental Impact Report (per CEQA Guidelines Section 15161) and an Environmental Impact Statement (EIS), referred to as an EIR/EIS, for the Alta East Wind Project proposed by Alta Windpower Development, LLC (Project Proponent). The EIR/EIS will be prepared to comply with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA).

The project is a renewable energy development that would generate up to 360 megawatts (MW) of electricity through the use of wind power on a 3,200-acre project site. The project proponent is requesting: (a) a change in zone classification from the E (20) (Estate 20 acres) District and the A-1 (Limited Agriculture) District to the A (Exclusive Agriculture) District, to the A WE (Exclusive Agriculture, Wind Energy Combining) District and to the A FP (Exclusive Agriculture, Floodplain Combining) District in Map 168, (b) a change in zone classification from A-1 to A and A WE in Map 180, (c) a change in zone classification from E (20) to A and A WE in Map 180, (d) a change in zone classification from A-1 to A and A WE in Map 179, (e) a change in zone classification from A-1 to A in Map 197, (f) amendments to the Kern County General Plan to eliminate section and mid-section line road reservations within Maps 168, 168-27, 179, and 180, and (g) a conditional use permit to allow for the use of a temporary concrete batch plant during construction of the wind energy facility. The requested applications would also permit construction of wind ancillary facilities and supporting infrastructure, and a concrete batch plant to provide concrete and materials for turbine, substation, and building foundations. Permanent facilities would include up to 120 wind turbine generators, service roads, a power collection system, communication cables, overhead and underground transmission lines, electrical switchyards, project substations, meteorological towers, and operations & maintenance facilities.

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "**X**".
If you have already sent your document to the agency please denote that with an "**S**".

x	Air Resources Board		Office of Emergency Services
	Boating & Waterways, Department of		Office of Historic Preservation
x	California Highway Patrol		Office of Public School Construction
	CalFire		Parks & Recreation
S	Caltrans District # 6 & 9		Pesticide Regulation, Department of
	Caltrans Division of Aeronautics	x	Public Utilities Commission
	Caltrans Planning (Headquarters)	S	Regional WQCB # Lahontan
	Central Valley Flood Protection Board		Resources Agency
	Coachella Valley Mountains Conservancy		S.F. Bay Conservation & Development Commission
	Coastal Commission		San Gabriel & Lower L.A. Rivers and Mtns Conservancy
	Colorado River Board		San Joaquin River Conservancy
	Conservation, Department of		Santa Monica Mountains Conservancy
	Corrections, Department of		State Lands Commission
	Delta Protection Commission		SWRCB: Clean Water Grants
	Education, Department of		SWRCB: Water Quality
x	Energy Commission		SWRCB: Water Rights
S	Fish & Game Region # Fresno		Tahoe Regional Planning Agency
S	Food & Agriculture, Department of		Toxic Substances Control, Department of
	General Services, Department of		Water Resources, Department of
	Health Services, Department of		
	Housing & Community Development		Other _____
x	Integrated Waste Management Board		Other _____
S	Native American Heritage Commission		

Local Public Review Period (to be filled in by lead agency)

Starting Date July 15, 2011 Ending Date August 15, 2011

Lead Agency (Complete if applicable):

Consulting Firm: _____ Applicant: _____
Address: _____ Address: _____
City/State/Zip: _____ City/State/Zip: _____
Contact: _____ Phone: _____
Phone: _____

Signature of Lead Agency Representative: /s/ **Date:** 7/14/11

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

Notice of Preparation

Of a Joint Environmental Impact Report/Environmental Impact Statement

And

Request for Scoping Comments

On the Preparation of an Environmental Impact Report/Environmental Impact Statement

FOR THE

Alta East Wind Project

July 15, 2011

TO: All Interested Parties

Subject

Kern County and the U.S. Bureau of Land Management (BLM) will direct the preparation of a joint Environmental Impact Report (EIR) and an Environmental Impact Statement (EIS) referred to as an EIR/EIS for the Alta East Wind Project proposed by Alta Windpower Development, LLC (Project Proponent). Kern County, as the lead agency under California law, and the BLM, as the federal lead agency will prepare a Draft and Final EIR/EIS to comply with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA).

Summary of the Proposed Project

The proposed Alta East Wind Project would generate up to 360 megawatts (MW) of electricity through wind power. The proposed project includes up to 120 wind turbine generators, a substation, transmission interconnection to the Southern California Edison (SCE) Windhub Substation, access roads, and ancillary facilities. The proposed project area comprises 3,200 acres, 2,083 acres of which are on public land under the jurisdiction of the BLM three miles northwest of the unincorporated town of Mojave in southeastern Kern County, California. Please refer to the attached Initial Study for a more detailed description of the proposed project and maps of the proposed project area.

Because of potentially significant impacts on the environment, as identified in the attached Initial Study, Kern County and BLM will prepare a full-issue EIR/EIS. Note that this Notice of Preparation (NOP), attached Initial Study (IS), and all future project-related documents are available for review at the following location:

Kern County Planning and Community Development Department
2700 M Street, Suite 100
Bakersfield, CA 93301-2370
(661) 862-8600
Hours: 8 a.m. to 5 pm. (Monday through Friday)
http://www.co.kern.ca.us/planning/noticeprep.asp

The EIR/EIS Process

The proposed project is located on land administered by Kern County and the BLM. The Project Proponent requires various authorizations and permits from Kern County and the BLM to construct and operate the proposed project. In order to consider issuance of these authorizations and permits, and based on the proposed project's potential environmental impacts, Kern County will prepare an EIR pursuant to CEQA requirements and the BLM will prepare an Draft Plan Amendment (DPA) and EIS pursuant to the requirements of the Federal Land Policy and Management Act (FLPMA) and NEPA. Based on these requirements, a joint EIR/EIS will be prepared under the direction of both agencies to satisfy the permitting and decision-making requirements of each agency prior to project approval. CEQA and NEPA also require that the EIR/EIS development process include public notice of the proposed project and address concerns that the public has identified regarding the proposed project during a process referred to as public scoping. The issuance of this NOP/IS commences the EIR scoping process pursuant to CEQA requirements. The BLM will issue a separate Notice of Intent to prepare an EIS pursuant to NEPA requirements, which will be published in the Federal Register.

The analysis of the proposed project will result in the publication of a Draft EIR/EIS and a Final EIR/EIS. A comment period of a minimum of 90 days (per BLM requirements) will be allocated for the review of the Draft EIR/EIS. A notice of availability of the Draft EIR/EIS will be sent to the State Clearinghouse by Kern County and to the Federal Register by the BLM for publication. Kern County and the BLM will consider all comments on the Draft EIR/EIS and revise the document, as necessary, before issuing a Final EIR/EIS. The Final EIR/EIS will include responses to the comments received on the Draft EIR/EIS.

Proposed Scope of the EIR/EIS

The EIR/EIS will present the analysis of the environmental impacts of the proposed project and comparative environmental effects of the project alternatives and the No Project/No Action Alternative, and will identify mitigation measures for potentially significant impacts. The EIR/EIS will address all issue areas for which potentially significant impacts are anticipated. These issue areas are described further in the attached IS, and include:

- **Aesthetics**. Effects to visual resources from the presence of heavy construction equipment as well as operational impacts from large and highly-visible wind turbines.
- **Agricultural Resources**. Effects of conversion of agricultural land to non-agricultural use; changes to agricultural land use designations.
- **Air Quality**. Construction and operation emissions and effects, including the effects of on-site exhaust emissions from heavy-duty diesel and gasoline-powered construction equipment and the fugitive particulate matter from soil disturbing operations and sediment removal activities.
- **Biological Resources**. Effects on native habitat that supports special-status species; avian and bat collisions with wind turbines; degradation and fill of Waters of the State; and effects of noise and disturbance on nesting and foraging wildlife species.

- **Cultural Resources**. Effects of construction-related ground disturbance on recorded cultural resources sites and unknown sites that may exist in the project area.
- **Cumulative Impacts**. Contribution of the project to cumulative impacts to all environmental disciplines.
- **Geology and Soils**. Direct and indirect soils-and geologic-related impacts resulting from the proposed project; geological hazards; and erosion due to ground-disturbing activities.
- **Greenhouse Gas Emissions**. Effects of greenhouse gas emissions from use of conventional construction equipment and vehicles during construction and potential emission offsets from renewable energy generation.
- **Hazards and Hazardous Materials**. Effects of construction activities on the mobilization of potentially contaminated soil; migration of contaminants via surface water runoff; and displacement of contaminants; soil contamination from equipment leaks or spills during construction; and effects of disposal activities.
- **Hydrology and Water Quality**. Impacts from erosion and sedimentation; hydrological impacts; stormwater runoff.
- **Land Use and Public Recreation**. Construction and operational effects on adjacent land uses and recreational resources; access disruptions; consistency with the Kern County General Plan.
- **Mineral Resources**. Effects from preclusion of access for extraction of valuable or locally-important mineral resources if present within the project area.
- **Noise**. Effects of construction and operation activities on sensitive receptors, such as rural residences and recreational uses.
- **Population and Housing**. Effects of population growth, potential displacement of existing housing, and increased demand for construction of additional housing.
- **Public Services**. Effects on fire and police protection, parks, schools, or other public facilities due to any population increases during construction and/or operation.
- **Socioeconomics and Environmental Justice**. Impacts on the population (including potential disproportionate impacts to low-income and minority populations), employment, and housing communities in the study area caused by non-local project workers; and any potential impact from project-induced population growth.
- **Transportation and Traffic**. Effects of heavy-duty truck traffic from construction activities on travel and traffic lanes, driveways, access points, and service vehicles.
- **Utilities and Service Systems**. Effects on demand for public services and utilities from construction and sediment removal activities; and potential for conflicts with collocated utilities.

Project Scoping Process and Scoping Meeting

The EIR/EIS for the Alta East Wind Project will focus on significant environmental effects. The process of determining the focus and content of the EIR/EIS is known as scoping under both CEQA and NEPA. Scoping helps to identify the range of actions, alternatives, environmental effects, and mitigation measures to be analyzed in depth, and eliminates from detailed study those issues that are not pertinent to the final decision on the proposed project. Scoping is also an effective way to bring together and address the concerns of the public, affected agencies, and other interested parties. Significant issues may be identified through public and agency comments.

Scoping, however, is not conducted to resolve differences concerning the merits of the project or to anticipate the ultimate decision on the proposal. Rather, the purpose of scoping is to help ensure that a comprehensive and focused EIR/EIS will be prepared that provides a firm basis for the decision-making process. Members of the public, affected federal, State, and local agencies, interest groups, and other interested parties may participate in the scoping process for this project by providing written and verbal comments or recommendations concerning the issues to be analyzed in the EIR/EIS. Comments can be given verbally by attending the scheduled scoping meeting. For the date, time, and location of the EIR/EIS scoping meeting, please see the cover letter to this NOP/IS packet or visit the Kern County project website at: http://www.co.kern.ca.us/planning/noticeprep.asp.

Written comments must be sent by no later than **August 15, 2011** to:

Mr. Jeff Childers
Planning & Environmental Coordinator
CDDO - RECO
Bureau of Land Management
22835 Calle San Juan De Los Lagos
Moreno Valley, CA 92553

and

Ms. Jacquelyn Kitchen
Planner III
Kern County Planning and
Community Development Department
2700 M Street
Bakersfield, CA 93301

By Electronic Mail: E-mail communications are welcome; however, please remember to include your name and return address in the email message. E-mail messages should be sent to **AltaEast@BLM.gov and KitchenJ@co.kern.ca.us**.

Agency Comments

This NOP has been sent to State responsible and trustee agencies, cooperating federal agencies, the State Clearinghouse, and the Federal Register. We need to know the views of your agency regarding the scope and content of the environmental information to be included in the EIR/EIS, which reflects your agency's statutory responsibilities in connection with the proposed project. Once again, responses should identify the issues to be considered in the Draft EIR/EIS, including significant environmental issues, alternatives, mitigation measures, and whether the responding agency will be a responsible State or cooperating federal agency or a State trustee agency. Due to the time limits mandated by State and federal Laws, your response must be sent at the earliest possible date but no later than 30 days (August 15, 2011) after receipt of this notice.

INITIAL STUDY/NOTICE OF PREPARATION

Alta East Wind Project
by Alta Windpower Development, LLC

General Plan Amendment 2, Map 168;
General Plan Amendment 2, Map 168-27;
General Plan Amendment 3, Map 179;
General Plan Amendment 1, Map 180;
Zone Change Case 10, Map 168
Zone Change Case 4, Map 168-27
Zone Change Case 3, Map 179
Zone Change Case 6, Map 180
Zone Change Case 47, Map 197
Conditional Use Permit No. 7, Map 168

(PP11212)

LEAD AGENCY:

Kern County Planning and Community Development Department
2700 M Street, Suite 100
Bakersfield, CA93301-2370

Contact: Ms. Jacquelyn Kitchen
(661) 862-8619
Kitchenj@co.kern.ca.us

July 2011

TABLE OF CONTENTS

1. Project Description

1.1 Project Location 1
1.2 Environmental Setting 1
1.3 Project Description 4
1.4 Project Facilities and Operations 5
1.5 Project Objectives 13
1.6 Proposed Discretionary Actions/Required Approvals 14

2. Environmental Determination

2.1 Environmental Factors Potentially Affected 20
2.2 Determination 20

3. Evaluation of Environmental Impacts

3.1 Aesthetics 22
3.2 Agriculture and Forest Resources 24
3.3 Air Quality 26
3.4 Biological Resources 28
3.5 Cultural Resources 30
3.6 Geology and Soils 31
3.7 Greenhouse Gas Emissions 33
3.8 Hazards and Hazardous Materials 34
3.9 Hydrology and Water Quality 37
3.10 Land Use and Planning 40
3.11 Mineral Resources 41
3.12 Noise 42
3.13 Population and Housing 44
3.14 Public Services 45
3.15 Recreation 47
3.16 Transportation/Traffic 48
3.17 Utilities and Service Systems 51
3.18 Mandatory Findings of Significance 53

LIST OF FIGURES

Figure 1. Vicinity Map 2
Figure 2. Project Layout 15
Figure 3. General Plan 16
Figure 4. Existing Zoning 17
Figure 5. Proposed Zoning 18
Figure 6. Transmission Line Options 19

1.1 PROJECT LOCATION

The project site is located on land that is subject to the jurisdiction of Kern County and to the U.S. Bureau of Land Management (BLM); therefore, Kern County and the BLM will direct the preparation of a joint Environmental Impact Report (EIR) and an Environmental Impact Statement (EIS) referred to as an EIR/EIS for the Alta East Wind Project proposed by Alta Windpower Development, LLC (Project Proponent). Kern County, as the Lead Agency under California law, and the BLM, as the federal Lead Agency, will prepare a draft and final EIR/EIS to comply with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA).

The Alta East Wind Project is located 2 miles west of the intersection of Highway 58 and Highway 14 in the Mojave Desert and is within the Tehachapi Wind Resource Area (WRA) of eastern Kern County (Figures 1 and 2). The project area comprises approximately 3,200 acres; 2,083 of which are on federal land under the jurisdiction of the BLM, and 1,117 acres of which are on private land under the jurisdiction of Kern County. The private land is under lease or ownership of Alta Windpower Development, LLC, the applicant, or the current owners have authorized the applicant to include their land within the project boundaries. The project is generally located at the base of the Tehachapi Mountains in the Western Mojave Desert. Elevations in the area range between 3,000 and 3,400 feet above mean sea level.

The nearest populated areas to the project site are the unincorporated town of Mojave, which is located 3 miles southeast, and the City of Tehachapi which is located 11 miles to the west (Figure 1). Primary operational access for the project would be gained from Highway 58 and additional access locations are currently being negotiated by the applicant.

The 2,083-acre portion of the site that is on BLM land is included in an existing BLM right-of-way (ROW) Type 3 Grant Application (CACA-052537) that is held by Alta Windpower Development, LLC (AWD or Applicant) or by a subsidiary of AWD's parent company, Terra-Gen Power.

The project is located entirely within the U.S. Geological Service 7.5 minute series, Mojave topographic quadrangle. The project is located in San Bernardino Base Meridian and Township 11 North, Range 13 West, Section 3; Township 12 North, Range 13 West, Section 34, Township 12 North, Range 12 West, Section 31, Township 32 South, Range 35 East, Sections 26-28, 32-35 of the 1973 Mojave, California 7.5' and the 1995 Monolith, California 7.5' U.S. Geologic Survey (USGS) quadrangle maps.

1.2 ENVIRONMENTAL SETTING

The project vicinity is generally characterized as a sparsely developed, rural area located on the eastern flank of the Tehachapi Mountains. Land uses in and around the project area consist of open space with scattered residences, off-highway vehicle use, and livestock grazing. The nearest populated area is located immediately northeast of the project area, in the outskirts of the unincorporated town of Mojave. Existing developments on the site include rights-of-way (ROWs) for underground pipelines, underground portions of the Los Angeles Aqueduct, Southern California Edison (SCE) power lines, Union Pacific Railroad (UPRR) railroad siding, which is a short stretch of railroad track used to store rolling stock or enable trains on the same line to pass, and a Los Angeles Department of Water and Power (LADWP) electric transmission line easement. The Cameron Ridge segment of the Pacific Crest Trail passes within one mile of the northwestern portion of the project area, north of State Route 58.

The project area encompasses land under the jurisdiction of the BLM or Kern County. BLM lands within the project area are classified as Multiple-Use Class L (Limited Use) pursuant to the California Desert Conservation Area (CDCA) Plan. Additionally, BLM lands in the project area are located within the Middle Knob Motorized Access Zone, as identified in the West Mojave Plan (WMP) amendment to the CDCA Plan. The project area is not within any Desert Wildlife Management Areas or Areas of Critical Environmental Concern (ACEC) established by the WMP or U.S. Fish and Wildlife Service-designated critical habitat. The project area is within the boundaries of the Kern County General Plan (KCGP),

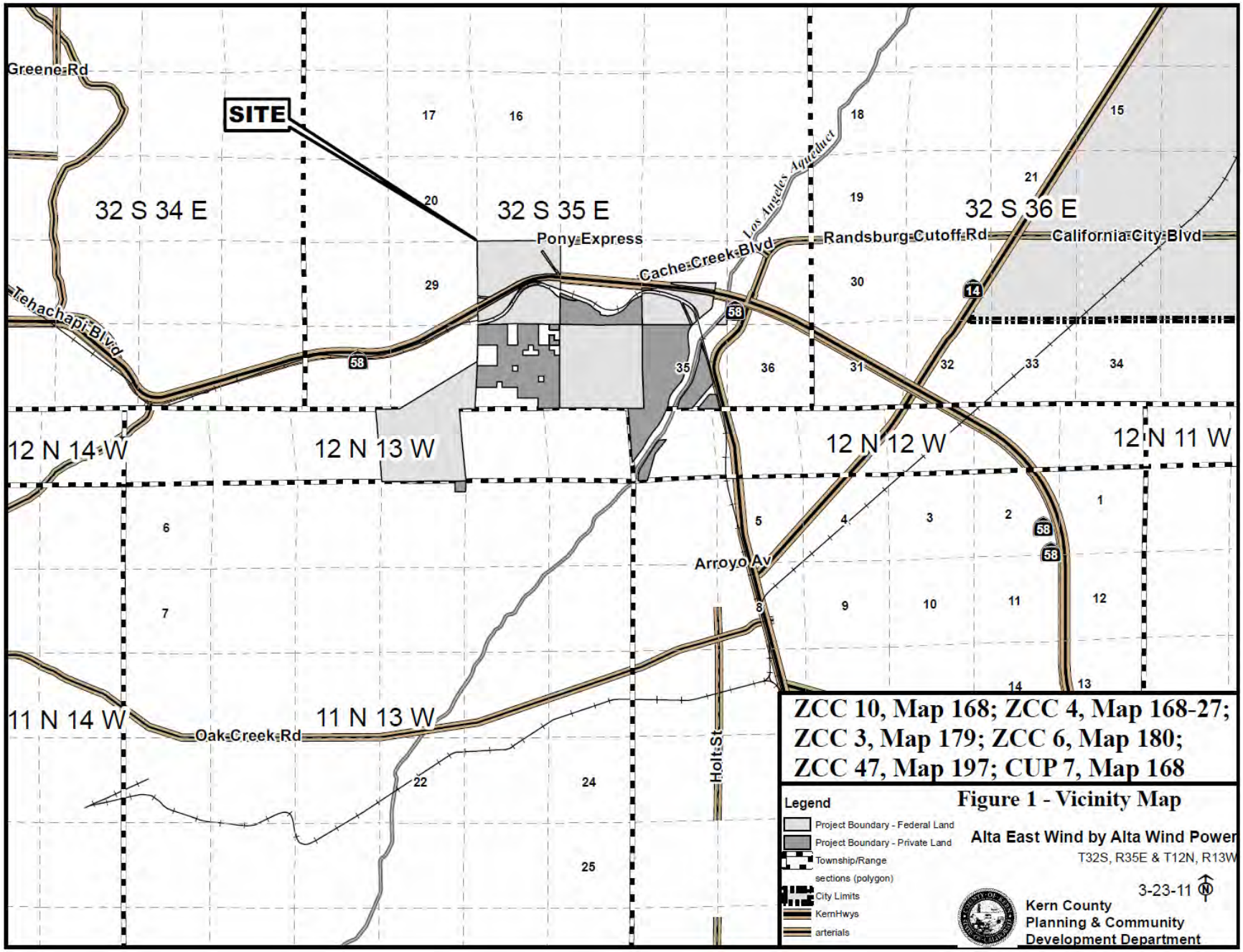

SITE
Greene Rd
32 S 34 E
32 S 35 E
32 S 36 E
Pony Express
Cache Creek Blvd
Los Angeles Aqueduct
Randsburg Cutoff Rd
California City Blvd
Tehachapi Blvd
12 N 14 W
12 N 13 W
12 N 12 W
12 N 11 W
Arroyo Av
11 N 14 W
11 N 13 W
Oak Creek Rd
Holt St
ZCC 10, Map 168; ZCC 4, Map 168-27;
ZCC 3, Map 179; ZCC 6, Map 180;
ZCC 47, Map 197; CUP 7, Map 168
Legend
Project Boundary - Federal Land
Project Boundary - Private Land
Township/Range sections (polygon)
City Limits
KernHwys
arterials
Figure 1 - Vicinity Map
Alta East Wind by Alta Wind Power
T32S, R35E & T12N, R13W
3-23-11
Kern County Planning & Community Development Department

Table 1, *Project Site and Surrounding Land Uses*, shows the zoning and general plan designations for the project site and for the surrounding properties. The table references the Kern County General Plan (KCGP) and the Mojave Specific Plan (MSP).

Table 1. Project Site and Surrounding Land Uses

Location	Existing Land Use	Existing Map Code Designations	Existing Zoning Classification
Project Site	Vacant Land	*KCGP & MSP:* 1.1 (State or Federal Lands); 8.3 (Extensive Ag, 20 acre min); 8.4 (Mineral & Petroleum, min 5 acre); 8.5 (Resource Management, min 20 acre); 1.1/2.4 (Steep Slope); 8.4 /2.4; 8.5 /2.4; 8.5/2.5 (Flood Hazard)	• A-1 (Limited Agriculture); • E (20) (Estate, 20 acre)
North	Vacant Land, Scattered Residential, Small Commercial Area (Gas Station)	*KCGP & MSP:* 1.1; 8.5; 8.5/2.1 (Seismic Hazard); 8.5/2.4; 8.5/2.5 *Cache Creek Interim Rural Community Plan:* 5.5 (Min. 1 Acre/Dwelling Unit); 5.6 (Min. 2.5 Acres/Dwelling Unit); 5.8 (Min. 20 Acres/Dwelling Unit); 6.3 (Highway Commercial); 7.2 (Service Industrial)	• A (Exclusive Agriculture) • A-1; • A-1 FPS (A-1 with Floodplain Secondary); • E (1) (Estate, 1 acre) • E (2.5) (Estate, 2.5 acre) • E (2.5) MH (E 2.5 with Mobilehome Combining) • C-2 (General Commercial) • M-2 PD (Medium Industrial, with Precise Development Combining)
South	Wind Farms, Vacant Land, Scattered Residential	*KCGP & MSP:* 1.1; 3.3 (Other Facilities); 5.7 (Min 5 Acres/Dwelling Unit)/2.4; 8.3; 8.3/2.4; 8.4/2.4; 8.5, 8.5/2.1 (Seismic Hazard); 8.5/2.4; 8.5/2.5	• A WE (A with Wind Energy Combining) • A-1 • E (20)
East	Vacant Land, Scattered Residential	*MSP:* 1.1; 3.3; 8.5, 8.5/2.4; 8.5/2.5	• A-1 • A-1 H (A-1 with Airport Approach Height Combining) • PL H (Platted Lands)
West	Wind Farms, Vacant Land, Scattered Residential	*KCGP:* 1.1; 8.5; 8.5/2.1; 8.5/2.4; 8.5/2.5	• A WE • A-1 • E (20)

The Alta East Wind Project site has not been designated by the California Department of Conservation (CDC) as Prime Farmland, Farmland of Statewide Importance, or Unique Farmland. The project area comprises two CDC land-use designations: Grazing Land; and Non-agriculture and Natural Vegetation. The project is not located on lands that are under a Williamson Act contract.

The project is located near several public, private, and military airport facilities; however, the turbine layout would not be within the boundaries of the Kern County Airport Land Use Compatibility Plan (ALUCP). The southeastern portion of the project is 2.5 miles away from the Mojave Air and Space Port, and is subject to Airport Influence Area "C" according to the ALUCP. The California City Municipal Airport is located 10 miles east of the project site. The project is within the Mojave Air Basin and the Antelope Valley Groundwater Basin.

Surrounding Land Uses

The project is proposed to be located on 3,200 acres on the north and south sides of State Route (SR) 58 in southeastern Kern County, California, within an area of existing wind development. There are several

existing, permitted, and proposed wind energy and transmission projects proximate to the project, including the Alta-Oak Creek Mojave Wind Project, the 300-megawatt (MW) and 151-MW Pacific Wind Projects, the Catalina Renewable Energy Project, the Rising Tree Wind Project, and SCE's Tehachapi Renewable Transmission Line Project (TRTP).

1.3 PROJECT DESCRIPTION

The Alta East Wind Project would generate up to 360 MW of electricity through wind power. The project includes up to 120 wind turbine generators (WTGs or turbines), a substation, transmission interconnection, access roads, and ancillary facilities. As described above, the project area comprises 3,200 acres; however, the total wind energy development area (on both Private and BLM land) is anticipated to cover approximately 2,430 acres onsite, and only a portion of wind energy development area would be temporarily or permanently disturbed. Two proposed wind turbine layouts (Figure 2) and two transmission line options (Figure 6) have been identified by the applicant.

Table 2. Project Statistics

Total Project Boundary	Private Land	BLM Land	Proposed WE Zoning	Total Wind Development	Max No. of WTGs	Max. MWs
3,200 acres	1,117 acres	2,083 acres	680 acres	2,431 acres	120 WTGs	360 MW

Specifically, the project applicant is requesting: (a) a change in zone classification from the E (20) (Estate 20 acres) District and the A-1 (Limited Agriculture) District to the A (Exclusive Agriculture) District, to the A WE (Exclusive Agriculture, Wind Energy Combining) District and to the A FP (Exclusive Agriculture, Floodplain Combining) District in Map 168, (b) a change in zone classification from A-1 to A and A WE in Map 180, (c) a change in zone classification from E (20) to A and A WE in Map 180, (d) a change in zone classification from A-1 to A and A WE in Map 179, (e) a change in zone classification from A-1 to A in Map 197, (f) amendments to the Kern County General Plan to eliminate section and mid-section line road reservations within Maps 168, 168-27, 179, and 180, and (g) a conditional use permit to allow a temporary concrete batch plant during construction of the wind energy facility. The requested applications would also permit the construction of wind ancillary facilities and supporting infrastructure, as well as a concrete batch plant that is necessary to provide concrete and materials for turbine, substation, and building foundations.

Figure 5 displays the areas proposed for rezoning to the A, A WE and A FP districts.

The purpose of the WE Combining District is to promote the use of an alternative to fossil fuel-generated electrical power in areas of the County that are identified to have suitable wind resources for production of commercial quantities of wind-generated electrical power. The WE Combining District contains specific development standards that apply to the associated construction and siting of WTGs and accessory facilities in the WE Combining District.

Inclusion of the Flood Plain (FP) Combining District is necessary for the portions of the project site located within the boundaries of a Zone A flood hazard area. The purpose of the FP Combining District is to protect public health and safety, and minimize property damage by designating areas that are potentially subject to flooding and by establishing reasonable restrictions on land use in such areas. The FP Combining District shall be applied to those areas lying within Zone A on the FEMA Flood Insurance Rate Maps (FIRM) or those areas potentially subject to flooding as designated by the Kern County Engineering, Surveying and Permit Services Department, pending future reclassification of such areas into the Floodplain Primary (FPP) District or the Floodplain Secondary (FPS) Combining District. The regulation established by the FP Combining District shall be in addition to the regulations of the base district with which the FP Combining District is combined.

The project would be supported by a 230-kV overhead transmission corridor that would be up to 15 miles in length. The transmission line would generally be aligned from the northeast to the southwest where it ultimately would be connected to the existing SCE Windhub Substation. The project would include the construction of one substation facility on-site, which would collect the power generated and step-up voltage from the 34.5 kV collector system to 230 kV for transmission to the Windhub Substation.

Water would be provided to the project via a new on-site well or other water service (to serve the non-potable demands). The Operations and Maintenance (O&M) facility would utilize a septic system for sewage treatment. The O&M facility would also include approved hazardous waste containment for turbine oils and fuels, as required. Any water that is needed for construction (such as water for dust suppression) would be trucked in from nearby municipalities, such as those serving Mojave or Tehachapi, or be supplied by the new on-site well.

The project proponent executed two project-specific power purchase agreements for the Alta East Wind Project under their Master Power Purchase and Wind Project Development Agreement with Southern California Edison (SCE) for a total of 300 MW on April 30, 2010. Additionally, draft Large Generator Interconnection Agreements (LGIA) for interconnecting into Windhub Substation have been issued and are in the process of finalization. In addition, the project proponent submitted an "Application for Transportation and Utility Systems and Facilities on Federal Lands" (Standard Form 299) to BLM to address a ROW Grant on federal land as well as a project-specific CDCA (California Desert Conservation Area) Plan Amendment.

The Alta East Wind Project is assumed to have a lifespan of 30 years, based on landowner lease arrangements and permit approval timeframes. Decommissioning of the Project would require removal of the wind turbines, cables, and other infrastructure support facilities and land restoration in accordance with local, State, and federal regulations and/or landowners' contractual commitments. Repowering the project would require new environmental and permit/entitlement reviews and new landowner agreements to extend the project's operational period beyond 30 years.

1.4 PROJECT FACILITIES AND OPERATIONS

1.4.1 Project Components Overview

The project includes various components related to the generation and transmission of renewable energy. These are listed below and described in the following subsections.

- Up to 120 wind turbines not to exceed 500 feet in height with associated towers, foundations, and pad mounted transformers (each turbine up to 3 MW) for a total generation capacity up to 360 MW of electricity;
- Temporary construction staging and laydown areas to support the WTG component staging, office trailers, a concrete batch plant, portable rock crushers and equipment marshaling;
- Permanent access/service roads required for construction and operations and maintenance activities;
- One collector substation and underground and overhead electrical collection lines to collect energy from the WTGs;
- Operations and Maintenance (O&M) facility;
- Meteorological towers;
- From two potential route options, a single 230 kV transmission line to interconnect to the SCE Windhub Substation.

Wind Turbine Generators

The proposed turbines are utility-scale Vestas V90 or equivalent, capable of generating up to 3 MW of electricity each. Up to 120 WTGs would be arranged in rows in accordance with industry siting recommendations for optimum energy production and minimal land disturbance. Typically, WTGs are spaced 1.2 to 2.0 rotor diameters apart within rows and the rows are spaces 8 to 10 rotor diameters apart. Refer to Figure 2 for an illustration of the proposed WTG configuration options. The WTGs would be a horizontal-axis design, light gray color and non-reflective finish, which is consistent with the design requirements of the Kern County design guidelines specified in the WE Combining District. A WTG is composed of a tower, nacelle, hub, blades/rotor, controller, central Supervisory Control and Data Acquisition (SCADA) system for communication, transformer, braking system, safety lighting, and lightning protection system.

The total height of the WTG at the highest point of the rotor blade rotation would be 125 meters (410 feet). The ground clearance for the rotor blades at their lowest point of rotation is 35 meters (115 feet). The turbines are designed to withstand wind speeds in excess of 120 miles per hour, which exceeds recorded and projected maximum wind speeds at the project site.

Tower. The tower portion of the WTG consists of a tubular steel monopole that extends from the top of its concrete foundation at ground level to its connection with the nacelle. The tower supports the nacelle, hub, and three-bladed rotor and has internal access ladders for turbine maintenance. The total height of the tower to the hub of the rotor blades would be 80 meters (262 feet) tall on a 3-meter (10-foot) diameter base.

Nacelle. The nacelle is an aerodynamic welded steel and fiberglass structure atop the tower that contains the inner mechanical workings of the turbine, including the power-generating components. Power-generating components mounted within the nacelle would include main drive shaft/generator and the gearbox, electrical components/cabinets, and depending on the confirmed turbine size and make, the power transformer, which steps up the turbine voltage to the voltage level of the internal wind farm electrical distribution network. The nacelle also contains the blade pitch control (a system that controls the angle of the blades), a cooling system, and the yaw drive, which controls the position of the turbine relative to the wind.

Hub. The hub is the fixture for attaching the blades to the main drive shaft and is usually made from a large iron or steel casting. It would be located on the front of the nacelle and covered by a composite nose-cone structure to streamline the airflow and protect the equipment. The hub also contains the mechanisms that allow the blades to pitch in response to wind, temperature, and air density conditions.

Blades/Rotor. The WTGs would have three blades bolted to the hub; the blades and hub are collectively called the rotor. The proposed rotors are 90 meters (295 feet) in diameter. The blades are long, tapered, small-chord airfoils that resemble airplane wings and vary in thickness (thinnest at the tip and thickest where they attach to the hub) and use aerodynamic lift, similar to an airplane wing, to provide the driving force that spins the rotor. Each rotor would be equipped with a braking system to prevent rotors from dislocating from the turbine.

Controller/Communications. The controller is a microprocessor that automatically regulates operation of the WTG, including startup, shutdown, pitch control, yaw control, and safety monitoring. Information is communicated from the controller to the central O&M facility via fiber-optic cables or other means of communication such as radio-links. A central SCADA system will monitor data input from the controller to facilitate centralized operation and maintenance. If a control parameter deviates from its normal operating range, the controller would automatically shut down the WTG and notify the operating technician(s) of the fault. In many situations, the controller would analyze the data and restart the WTG if the fault were corrected or the operating conditions returned to normal. If the fault reoccurred, the controller might require a manual start.

Transformer. A step-up transformer would be either contained within the WTG unit or pad-mounted next to the WTG base. Transformers function to boost the voltage of the WTG (500 to 1,000 volts) to the collector system voltage of 34.5 kilovolts (kV) because the low voltage power generated by the WTG is not suitable for power transmission. Electricity from the transformer would be transmitted via underground collection system electrical cables to the project substation.

Safety Lighting. Safety lighting would be installed on the exterior of some of the nacelles in compliance with FAA rules. Specific requirements for the project would be developed in conjunction with the FAA based on the turbine heights and site-specific aviation conditions. On recent wind projects, white flashing lights were used during the daytime and red flashing lights were used at night to warn aviators away from the area; however, FAA rules have recently been revised and daytime lighting is no longer required. Lights are not required on every wind turbine; instead, they may be spaced every 1,000 feet and at the ends of turbine strings. Lighting on WTGs would be consistent with all FAA requirements.

Lightning Protection. For protection from potential lightning strikes, a lightning protection system would be installed on each WTG and connected to an underground grounding arrangement to facilitate lightning flowing safely to the ground. In addition, all equipment, cables, and structures comprising the wind turbines would be connected to a metallic project-wide grounding network.

Wind Turbine Foundations and Pad Areas

Each proposed WTG would be supported by a steel-reinforced concrete foundation. The project could include several proposed WTG foundation types depending on geotechnical constraints, wind pattern, and other factors onsite:

- **Patrick and Henderson Inc. (P&H) foundation.** This patented foundation type would be drilled or dug to approximately 15 to 35 feet deep, depending on geotechnical conditions and loadings, and would be approximately 18 feet in diameter. The foundation would be in the configuration of an annulus—two concentric steel cylinders. The central core of the smaller, inner cylinder would be filled with soil removed during excavation. In the cavity between the rings, bolts would be used to anchor the tower to the foundation, and the cavity would be filled with concrete. Bolting the tower to the foundation would provide post-tensioning to the concrete.
- **Rock anchor.** For each foundation, six to 20 holes, depending on geotechnical data, would be drilled approximately 35 feet into the bedrock, and steel anchors would be epoxy-grouted in place. A reinforced concrete cap containing the anchor bolts would be poured on the top of the steel anchors to support the tower structure.
- **Spread-footing.** This foundation would be square or octagonal and formed with reinforcing steel and concrete. Depending on geotechnical data, this type of foundation may be as large as 35 by 35 feet and 6 to 10 feet thick.

Total combined cut and fill volumes for the WTG foundations would be determined after site-specific geotechnical investigation. For all designs, the exposed concrete pad would be approximately 18 feet in diameter and extend less than 1 foot above grade.

Meteorological Towers

Meteorological towers were previously installed on the project site to measure and collect data necessary to properly assess project viability and determine optimum turbine layout. These towers support anemometers, wind direction sensors, and temperature and relative humidity gauges at the same height of the WTG rotor hubs to monitor wind and other climate data needed to support operations and help meet reporting obligations. Some of the larger towers already installed would remain as permanent towers and some additional permanent towers would be installed.

Power Collection and Transmission

Project electricity would be collected from each WTG through its associated transformer and transferred to a substation at the project site via the electrical collection system. The proposed 230/34.5-kV project substation will be constructed within the project site to minimize power losses in the collection system and would consist of the following components: (1) a control house, (2) electrical breakers, (3) one or more 230/34.5-kV transformers, (4) an overhead electrical bus connecting the various electrical apparatus, and (5) pole structures to support electrical conductors entering the substation. The actual capacity of the project substation would depend on the total number of WTGs that supply it power. The substation site would be graded to provide for stormwater drainage. A grounding grid would be installed to protect the substations against lightning and shorts. The substation would be built to Kern County building code requirements, and the site would be graveled and enclosed within a security fence.

At least one switchyard would be required for the project, which will collect power coming from the substation and consolidate the power onto high voltage (230 kV) overhead transmission lines. The switchyard would include the following main equipment: (1) a control room, (2) electrical breakers, (3) an overhead electrical bus connecting the various electrical apparatus, and (4) pole structures to support electrical conductors entering the switchyard.

Two transmission line route options have been identified by the project proponent to deliver project electricity to the SCE Windhub substation (Figure 6). Both proposed transmission line options would consist of up to 15 miles of aboveground 230-kv lines that would likely be installed on metal monopoles, with conductors on one side. Both transmission line route options A and B are shown on Figure 6.

Access and Maintenance Roads

No temporary roads are proposed. All roads designed for construction are planned to be retained and possibly narrowed for use during operations. Permanent maintenance roads would be constructed for use during operation to access project facilities for maintenance. Because of topography, grading of access roads would, in some limited cases, disturb an area of 40 to 125 feet on either side of the centerline to accommodate appropriate cut or fill slopes to allow for the necessary road width and to comply with percent slopes per Kern County grading requirements and manufacturer specifications of construction and installation equipment. Some roads intended for permanent use would be temporarily widened to 36 feet and engineered to support heavy cranes and delivery vehicles. Following completion of construction, the temporarily widened portions of these roads would be restored, leaving 20- to 24-foot-wide permanent maintenance roads.

Temporary Staging Areas and Temporary Concrete Batch Plants

The project would require up to three temporary construction laydown yards (see Figure 2) to stage construction equipment, construction contractor trailers, and the offloading and temporary storage of project equipment and materials. The lay-down areas would be cleared of vegetation and compacted to support the construction equipment. At the end of construction, up to three laydown areas may be retained for long-term parts and equipment storage. Those lay-down areas not retained for permanent use would be reclaimed and re-vegetated.

An on-site, temporary, concrete batch plant would be required to provide concrete and materials for the turbine and transformer foundations. The concrete batch plant would operate between approximately 7:00 a.m. and 7:00 p.m., Monday through Saturday for up to 6 months. All remnant materials and debris would be hauled off site and disposed of at a certified location. Operation of the temporary, concrete batch plant would require a Conditional Use Permit (CUP) from Kern County.

Permanent Operations and Maintenance Facility

One O&M Facility would be required for administration and maintenance of the Alta East Wind Project. The facility will be approximately 2 to 3 acres in size and have a foundation footprint of approximately 100 by 150 feet (building). The facility would include a main building with offices, SCADA system, control room, spare parts storage, restroom, shop area, outdoor parking facilities, lay-down area, a turn-around area for larger vehicles, outdoor lighting, and gated access with partial or full perimeter fencing as well as a small information center for visitors.

Security Fencing

Security fencing would be installed in accordance with Kern County zoning requirements, which allow either fencing the exterior boundary of the entire project property or each wind turbine cluster or row independently. At this time, it has not been determined which of these options would be used.

Security fencing consisting of new steel "T" posts would be installed at 10- to 15-foot intervals and with four strands of barbed wire a minimum of four feet high. The bottom strand of wire would be a minimum of 18 inches above ground. Signs warning of wind turbine dangers would be installed on all perimeter fencing at 300-foot intervals and at all points of ingress and egress. Fencing would not interfere with access to existing ROWs crossing the project area (e.g., transmission lines, railroad, gas pipelines, the Los Angeles Aqueduct, and public highways). Cattle guards may be installed in grazing areas.

Two types of gates would be installed:

- **Main access entrances** off county highways would consist of two 12-foot-wide swing gates, providing a 24-foot opening. The gates would be installed a reasonable distance off the highways to permit trucks delivering turbine components to pull completely off the highway before stopping to open the gate. The access areas would be graveled to prevent tracking of mud onto the paved highways.
- **Interior access gates** would provide access between the various fenced areas within the project site and would consist of one 10- to 16-foot-wide swing gate, wide enough to permit access for the normal maintenance vehicles and equipment. The post at the free end of the gate would be removable to permit the fence to be temporarily opened to 24 feet to allow access for large vehicles or cranes.

1.4.2 CONSTRUCTION SCENARIO

Construction of the project is anticipated to commence in the spring of 2012 and require 9 to 12 months to complete. The sequence of construction activities for the project would generally be site preparation, access road installation, WTG foundation construction, electrical collection system installation, collector substation construction, WTG installation, final testing and turbine commissioning, and cleanup and restoration.

Site Preparation

Preparation of the project site for construction would involve land clearing and grading by removing topsoil and vegetation for roads, WTGs, and the substation. Land clearing and grading would be performed according to the Soil Erosion and Sedimentation Mitigation Plan approved by Kern County, the project's Regional Water Quality Control Board-approved Stormwater Pollution Prevention Plan, and the grading and building permits issued by Kern County (see Table 1 in Section 1.6).

Access Road Installation

The first step in access road installation would be rough grading and leveling of proposed roadway areas. Then, base rock would be trucked in, spread, and compacted to create a road base. Capping rock would then be spread over the road base and roll-compacted to finished grade. At completion of heavy construction, the road would be re-graded to a width of 20 to 24 feet for service as a permanent maintenance road or restored to pre-project conditions, as appropriate. For permanent maintenance roads, a final pass

would be made with the grading equipment to level the road surfaces, and more capping rock would be spread and compacted in areas where needed. In some very steep areas, the road might be paved. Water bars, similar to speed bumps, would be cut into the roads in areas where needed, to allow for natural drainage of water over the road surface and to prevent road washout. V-ditches and culverts would be installed, where necessary, to handle excess drainage water. All road work would be performed under final approved grading, erosion control, and stormwater quality management plans. Excess excavated soil and rock would be disposed of onsite at approved disposal areas, such as eroded gullies and ravines. Larger excavated rocks also would be disposed of at approved sites or crushed and re-used onsite as backfill or roadway material.

Foundation Construction

Each WTG would have a concrete and steel reinforced foundation with permanent mounting pads. Each pad would extend approximately 10 to 15 feet in all directions beyond the edge of the turbine foundation and transformer pad; this open area would be maintained free of vegetation for safety and fire control. Depending on the foundation type used, each WTG foundation could require approximately 90 cubic yards of 4,000- to 6,000-pound-per-square-inch (psi) test concrete and 80 cubic yards of 1,000-pounds per square inch (psi) slurry mix, totaling approximately 18 to 20 truckloads of concrete per WTG from the on-site temporary concrete batch plant.

Foundation construction would include the following stages: drilling, blasting (if required, although not currently anticipated), and hole excavation; outer form setting; rebar and bolt cage assembly; concrete casting and finishing; removal of the forms; backfilling and compaction; construction of the transformer foundation pad; and foundation site area restoration.

Electrical Collection System Installation

After the roads, WTG foundations, and transformer pads are completed for a row of WTGs, underground electric cables would be installed along that road section. Trenches would be cut 3 to 5 feet deep for each cable circuit and electric cables would be laid in the trenches, surrounded with a cushion of clean fill, inspected, and the trenches backfilled. The 34.5 kV cables would be connected to the WTG pad-mounted transformers, and low-voltage wiring between the transformers and the bus cabinet inside the WTG towers would be completed, inspected, and tested.

In cases where the distance to the substation is excessive, or where terrain and/or obstacles dictate such, the underground cables may connect to an overhead collection system on wood or steel poles that would more efficiently transport the power to the project collection substation. As part of the final design engineering, a field survey would be conducted to determine the exact power pole locations for overhead collector lines, if required. Holes would be drilled and the poles erected with a small crane or boom truck. The poles would be set in place using concrete or compacted clean fill, according to the engineer's specifications. The overhead lines would be connected to the underground cables at each end through a fused disconnect switch, to ensure personnel safety.

Collector Substation Construction

Construction of the collector substation and interconnection facilities would involve several stages of work, including grading of the collector substation area; installation of a grounding mat; construction of several foundations for the transformers, power circuit breakers, and structures; erection and placement of the steel work and all outdoor equipment; and electrical work for all of the required terminations. The entire collector substation would be enclosed with a chain link security fence. Following construction, an inspection and commissioning test plan would be executed prior to the collector substation being energized.

Wind Turbine Generator Installation

Once adequate turbine pad sites and site roads are prepared, the individual WTG components, tower sections, nacelle, hub and rotor blades, would be shipped to the construction site in two to five sections. After setting the WTG electrical bus cabinet and ground control panels on the foundation, the tower would be erected by crane in sections. Tower construction would be followed by hoisting and installation of the nacelle; assembly, hoisting, and installation of the rotor; connection and termination of internal cables; and inspection and testing of the electrical system.

Water Supply and Usage

During construction, water use would be temporary and required for onsite mixing of concrete as well as for dust abatement activities. Any water that is needed for construction would likely be trucked in from nearby municipalities, such as Mojave or Tehachapi, or by a new on-site well. Operation of a wind energy facility requires very small amounts of water. Water for the O&M Building during operation would either be provided by a new on-site well, by purchase of water from the Tehachapi Cummings Valley Water District (TCVWD), or would be trucked in from off-site and stored adjacent to the building.

Final Testing and Turbine Commissioning

After construction, all project facilities, systems, controls, and safety equipment would be calibrated and tested before being commissioned to ensure compliance with required specifications and proper working order. Testing would be conducted by qualified technicians and electricians.

Cleanup and Restoration

After construction, preconstruction land contours at the project site would be restored to the extent feasible. All areas of temporary disturbance would be reseeded with a seed mixture appropriate to the Project site in accordance with Kern County or other regulatory agencies. All construction debris and waste would be removed from the site and disposed of at an appropriate location.

1.4.3 OPERATION AND MAINTENANCE

Upon completion of all construction activities, the project applicant would ensure that the facility would be properly operated and maintained. Up to 15 full-time and part-time staff, including wind turbine technicians, operations personnel, administrative personnel and managers, would be employed to operate and maintain the project. Staff would be responsible for implementing the project's Standard Operating Procedures, operating the SCADA system, and performing maintenance and repair work.

The applicant would develop an operations and maintenance protocol to be implemented throughout the life of the project. The protocol would specify routine turbine maintenance and operation, which typically adheres to the maintenance program developed by the turbine manufacturer. O&M personnel would conduct maintenance activities for each wind turbine required by the routine schedule provided by the turbine supplier or as required to keep the equipment in operation. On average, each turbine would require 40 to 50 hours of scheduled mechanical and electrical maintenance per year. Routine maintenance may include, but would not be limited to, replacing lubricating fluids, checking parts for wear and replacing, as required, and recording data from data-recording chips in all pertinent equipment including anemometers. O&M personnel would also inspect and maintain access roads, crane and turbine pads, erosion control systems, and perimeter fencing areas regularly and maintain them to ensure minimal degradation.

The proposed wind turbines would also be monitored continuously by the SCADA system of the project. Each turbine would be equipped with monitors that communicate major aspects of operation through communication lines. The SCADA system would send notification to the operations group if operational characteristics deviate outside set limits and, as described above, the turbines would be equipped with an

automatic braking system to shut down the turbine blades in such an event. O&M personnel would address all operational deviations and place the equipment back in service safely and in a timely manner.

The Kern County General Plan Safety Element further outlines protocol that would ensure that the project property is properly maintained. These measures include identifying access and evacuation routes at the project property, clearing dry vegetative cover, limiting potential fuel sources, and designing firebreaks (by at minimum adhering to the established setback distances). The project would implement all relevant safety measures into the operation and maintenance of the project in order to ensure the safety to the employees, visitors, and residents within the vicinity of the project property.

1.5 PROJECT OBJECTIVES

The following project objectives have been identified by the lead agencies and the applicant:

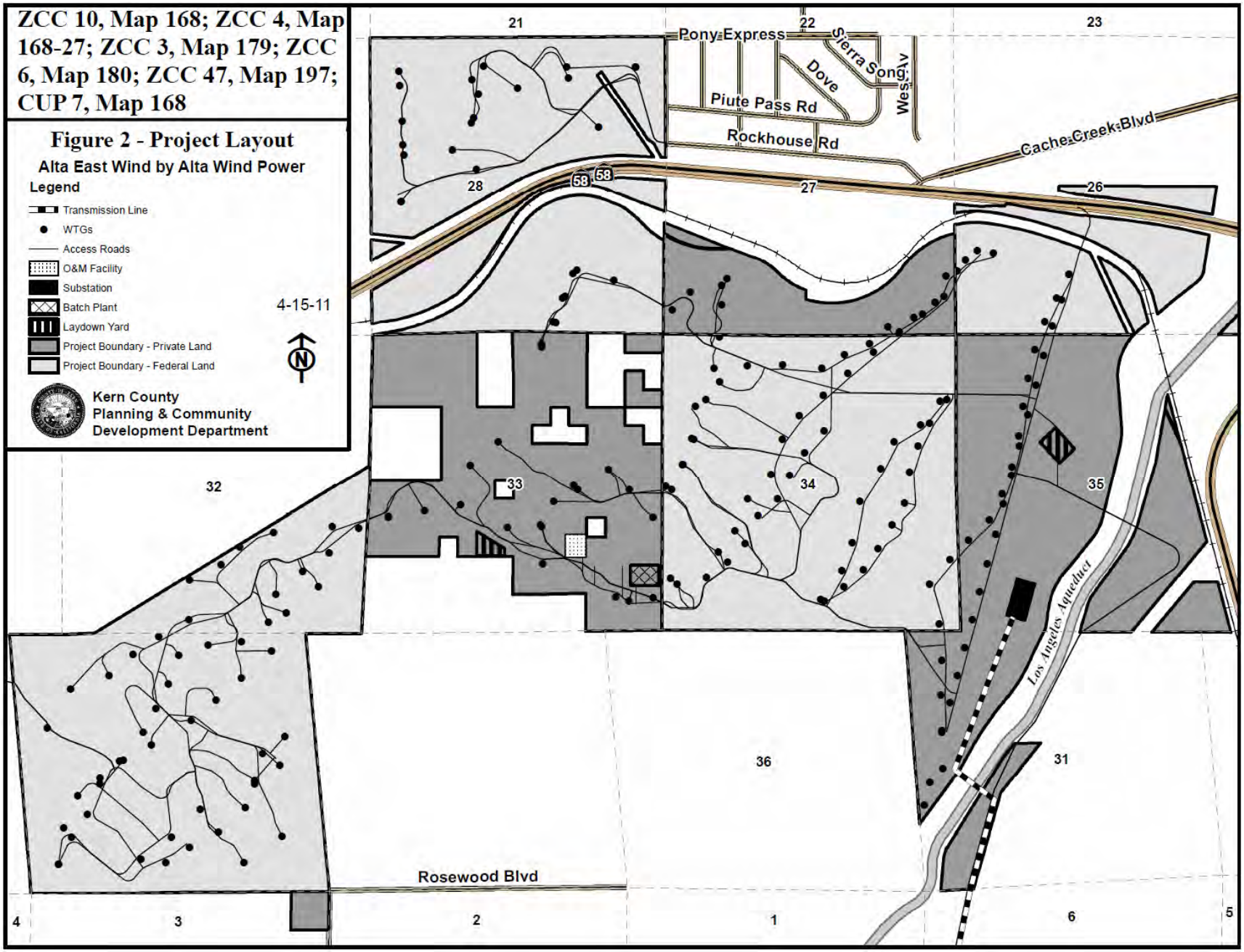
- Help the federal government reach its renewable energy goals;
- Support California's Renewable Portfolio Standard (RPS) and California Assembly Bill 32 by serving as a source of clean renewable energy, reducing the need for electricity generated from fossil fuels and offsetting greenhouse gas emissions;
- Deliver wind energy in the Tehachapi Wind Resource Area (TWRA) according to an executed Master Power Purchase and Wind Project Development Agreement (MDA) with SCE;
- Increase the tax base of Kern County;
- Provide increased revenue to BLM for the use of the federal land;
- Create a substantial number of temporary and permanent jobs in the county;
- Boost local business activity during construction and operation; and
- Provide revenue to county residents who own underutilized land that has little potential to be developed for other uses while allowing these landowners to retain much of their current land use.

1.6 PROPOSED DISCRETIONARY ACTIONS/REQUIRED APPROVALS

Construction and operation of the project may require certain discretionary actions and approvals including, but not limited to, those presented in Table 3, below.

Table 3. Proposed Discretionary Actions/Required Approvals

Agency	Permit/Authorization
FEDERAL	
Bureau of Land Management	• ROW Grant pursuant to the Federal Land Policy and Management Act • California Desert Conservation Area (CDCA) Plan Amendment
Tribal Historic Preservation Office/State Historic Preservation Office	• Programmatic Agreement or determination of No Adverse Effect under Section 106 consultation pursuant to the National Historic Preservation Act • Native American consultation
U.S. Fish and Wildlife Service	• Biological Opinion or determination of No Adverse Effect under Section 7 consultation pursuant to the Endangered Species Act • Programmatic Take Permit pursuant to the Bald and Golden Eagle Protection Act (if deemed required and if available)
Federal Aviation Administration	• Notice of Proposed Construction or Alteration Application • Determination of No Hazard
STATE	
California Department of Fish and Game	• Streambed Alteration Agreement pursuant to California Fish & Game Code Section 1602 • California Endangered Species Act Section 2081 Incidental take permit and/or Section 2080.1 Consistency Determination
Lahontan Regional Water Quality Control Board (Region 6)	• Waste Discharge Requirements • National Pollutant Discharge Elimination System (NPDES) General Permit for discharges associated with construction activity • Stormwater Pollution Prevention Plan
LOCAL	
Kern County	• Changes in Zone Classification (Discretionary) • Conditional Use Permit (Discretionary) • General Plan Amendment (Discretionary) • Public easement vacations (Discretionary; if deemed required) • Grading Permit (Ministerial) • Building, electrical, and well permits (Ministerial) • Franchise Agreement (Discretionary; if deemed required)
Kern County Air Pollution Control District	• Authority to Construct/Permit to Operate
Los Angeles Department of Water and Power	• Los Angeles Aqueduct Encroachment/Crossing Permit


ZCC 10, Map 168; ZCC 4, Map 168-27; ZCC 3, Map 179; ZCC 6, Map 180; ZCC 47, Map 197; CUP 7, Map 168
Figure 2 - Project Layout
Alta East Wind by Alta Wind Power
Legend
Transmission Line
WTGs
Access Roads
O&M Facility
Substation
Batch Plant
Laydown Yard
Project Boundary - Private Land
Project Boundary - Federal Land
4-15-11
N
Kern County
Planning & Community
Development Department
Pony Express
Sierra Song
Dove
Piute Pass Rd
Rockhouse Rd
Cache Creek Blvd
Rosewood Blvd
Los Angeles Aqueduct
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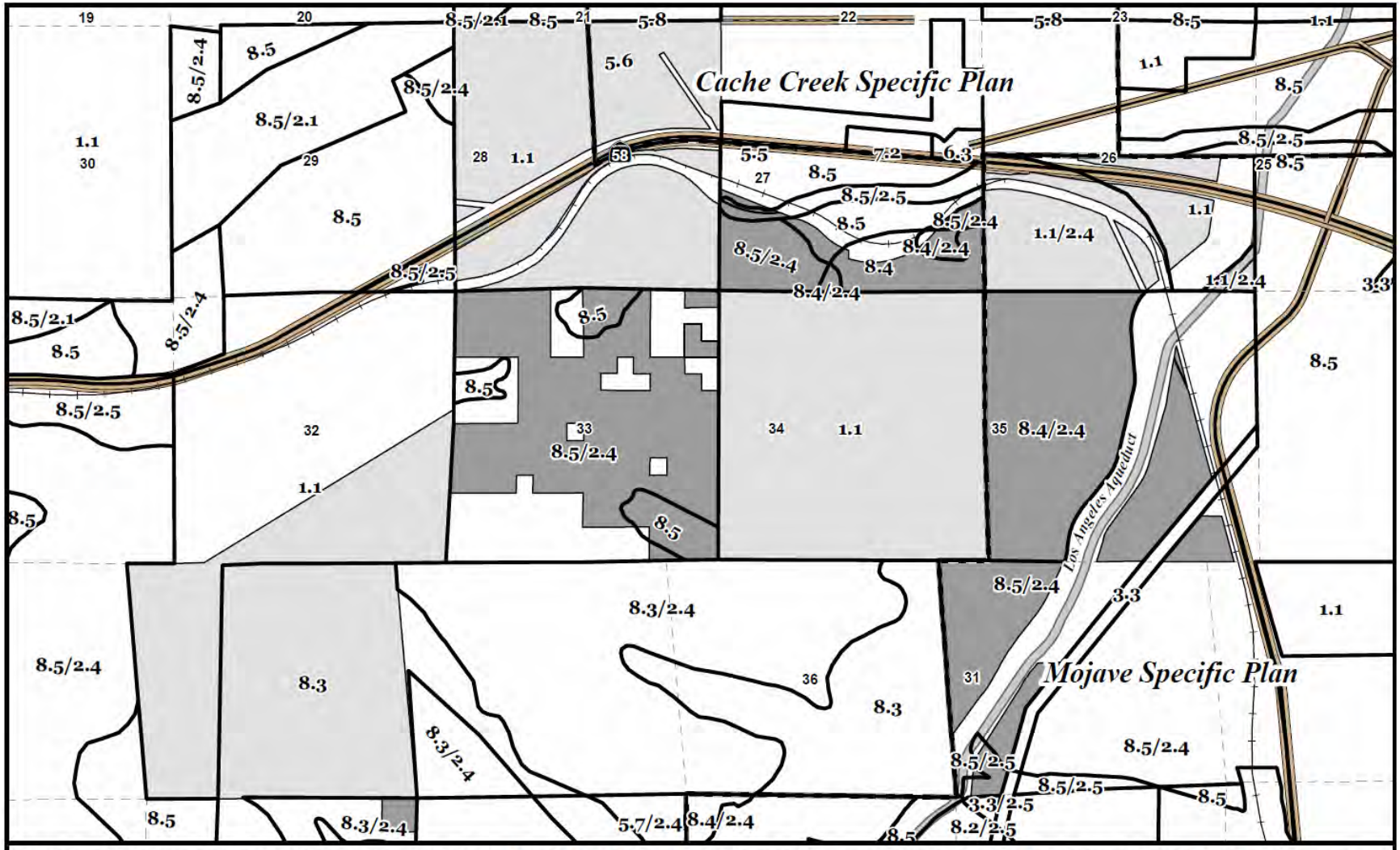


ZCC 10, Map 168; ZCC 4, Map 168-27; ZCC 3, Map 179; ZCC 6, Map 180; ZCC 47, Map 197; CUP 7, Map 168

1.1 STATE AND FEDERAL LAND
2.1 SEISMIC HAZARD
2.4 STEEP SLOPE
2.5 FLOOD HAZARD
3.3 OTHER FACILITIES
5.5 MAXIMUM 1 UNIT/NET ACRE (43,560 SQ. FT. SITE AREA/UNIT)
5.6 MINIMUM 2.5 GROSS ACRES/UNIT
5.7 MINIMUM 5 GROSS ACRES/UNIT
5.8 MINIMUM 20 GROSS ACRES/UNIT
6.3 HIGHWAY COMMERCIAL
7.2 SERVICE INDUSTRIAL
8.1 INTENSIVE AGRICULTURE (MIN. 20- ACRE PARCEL SIZE)
8.2 RESOURCE RESERVE (MIN. 20- OR 80- ACRE PARCEL SIZE)
8.3 EXTENSIVE AGRICULTURE (MIN. 20- OR 80-ACRE PARCEL SIZE)
8.4 MINERAL AND PETROLEUM (MIN. 5-ACRE PARCEL SIZE)
8.5 RESOURCE MANAGEMENT (MIN. 20- OR 80-ACRE PARCEL SIZE)

Legend
General Plan Boundaries
specific_plans
Project Boundary - Federal Land
Project Boundary - Private Land
KernHwys

N

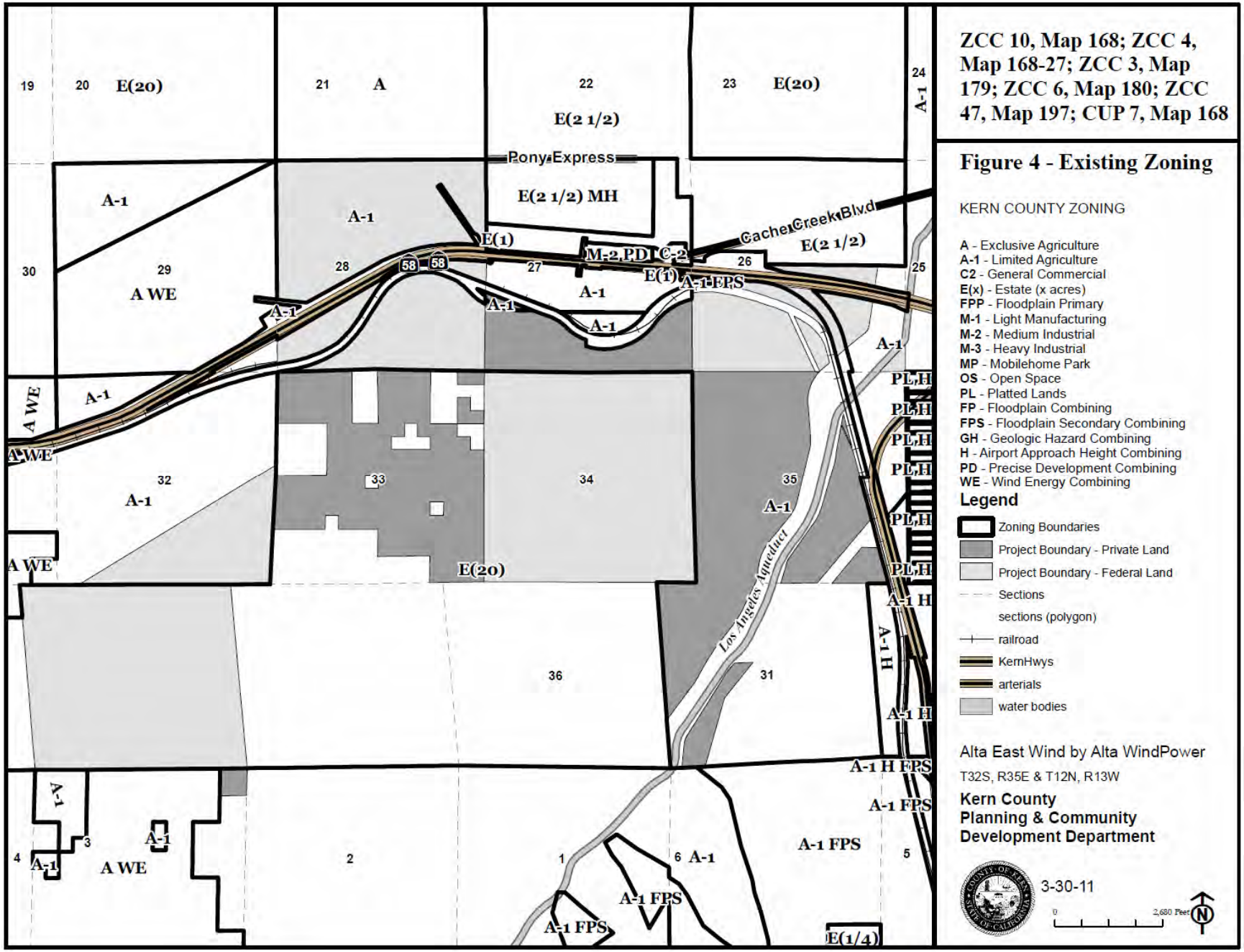
3-30-11

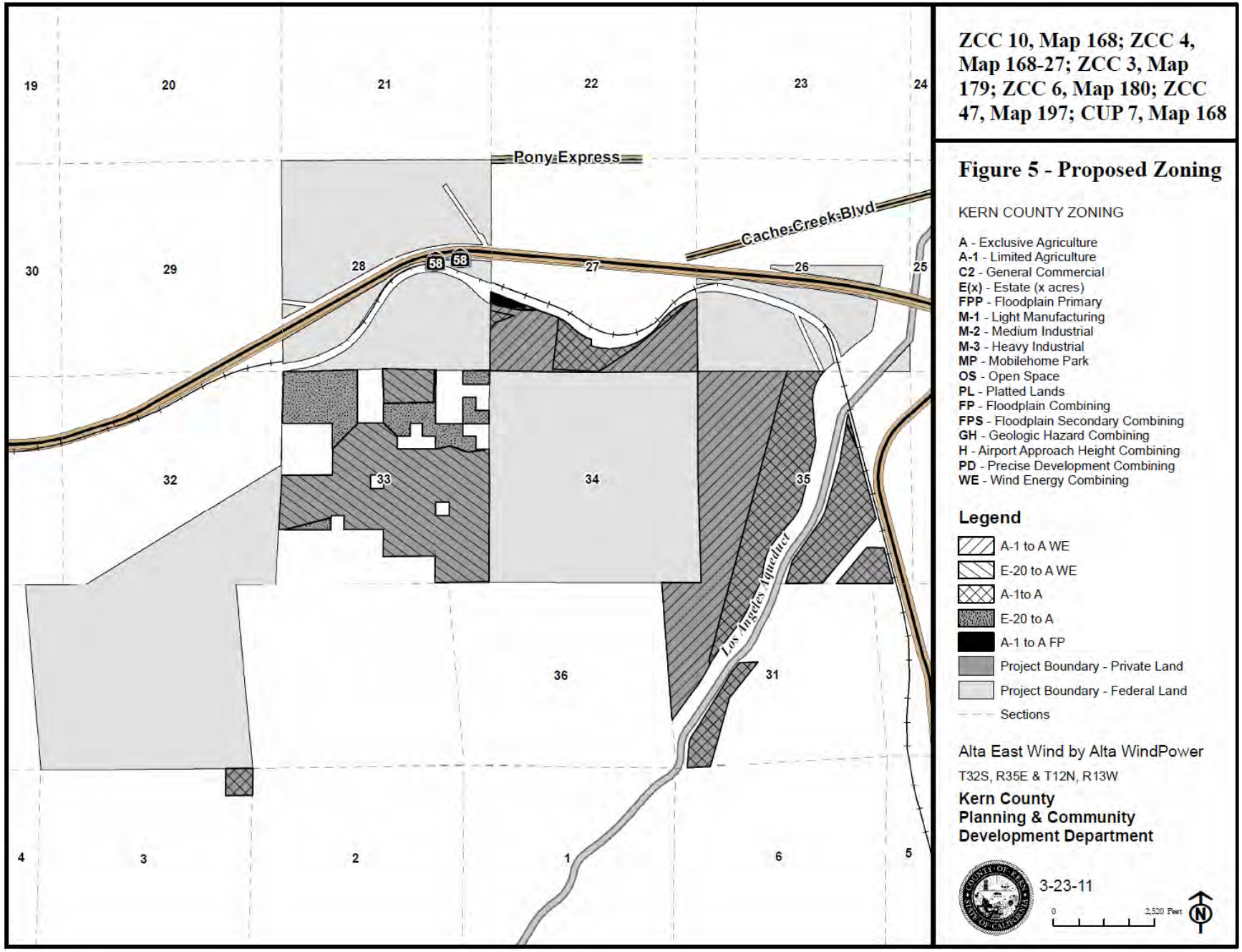
Figure 3 - General Plan

Alta East Wind by Alta Windpower Development, LLC

T32S, R35E & T12N, R13W

Kern County Planning & Community Development Department


ZCC 10, Map 168; ZCC 4, Map 168-27; ZCC 3, Map 179; ZCC 6, Map 180; ZCC 47, Map 197; CUP 7, Map 168
Figure 4 - Existing Zoning
KERN COUNTY ZONING
A - Exclusive Agriculture
A-1 - Limited Agriculture
C2 - General Commercial
E(x) - Estate (x acres)
FPP - Floodplain Primary
M-1 - Light Manufacturing
M-2 - Medium Industrial
M-3 - Heavy Industrial
MP - Mobilehome Park
OS - Open Space
PL - Platted Lands
FP - Floodplain Combining
FPS - Floodplain Secondary Combining
GH - Geologic Hazard Combining
H - Airport Approach Height Combining
PD - Precise Development Combining
WE - Wind Energy Combining
Legend
Zoning Boundaries
Project Boundary - Private Land
Project Boundary - Federal Land
Sections
sections (polygon)
railroad
KernHwys
arterials
water bodies
Alta East Wind by Alta WindPower
T32S, R35E & T12N, R13W
Kern County
Planning & Community
Development Department
3-30-11
0
2,680 Feet
N
Pony Express
Cache Creek Blvd
Los Angeles Aqueduct
E(20)
A
E(2 1/2)
E(2 1/2) MH
A-1
A WE
E(1)
M-2,PD
C-2
A-1 FPS
PL,H
A-1 H
A-1 H FPS
E(1/4)


ZCC 10, Map 168; ZCC 4, Map 168-27; ZCC 3, Map 179; ZCC 6, Map 180; ZCC 47, Map 197; CUP 7, Map 168
Figure 5 - Proposed Zoning
KERN COUNTY ZONING
A - Exclusive Agriculture
A-1 - Limited Agriculture
C2 - General Commercial
E(x) - Estate (x acres)
FPP - Floodplain Primary
M-1 - Light Manufacturing
M-2 - Medium Industrial
M-3 - Heavy Industrial
MP - Mobilehome Park
OS - Open Space
PL - Platted Lands
FP - Floodplain Combining
FPS - Floodplain Secondary Combining
GH - Geologic Hazard Combining
H - Airport Approach Height Combining
PD - Precise Development Combining
WE - Wind Energy Combining
Legend
A-1 to A WE
E-20 to A WE
A-1to A
E-20 to A
A-1 to A FP
Project Boundary - Private Land
Project Boundary - Federal Land
Sections
Alta East Wind by Alta WindPower
T32S, R35E & T12N, R13W
Kern County
Planning & Community
Development Department
3-23-11
0
2,520 Feet
N
Pony Express
Cache Creek Blvd
Los Angeles Aqueduct
58
19
20
21
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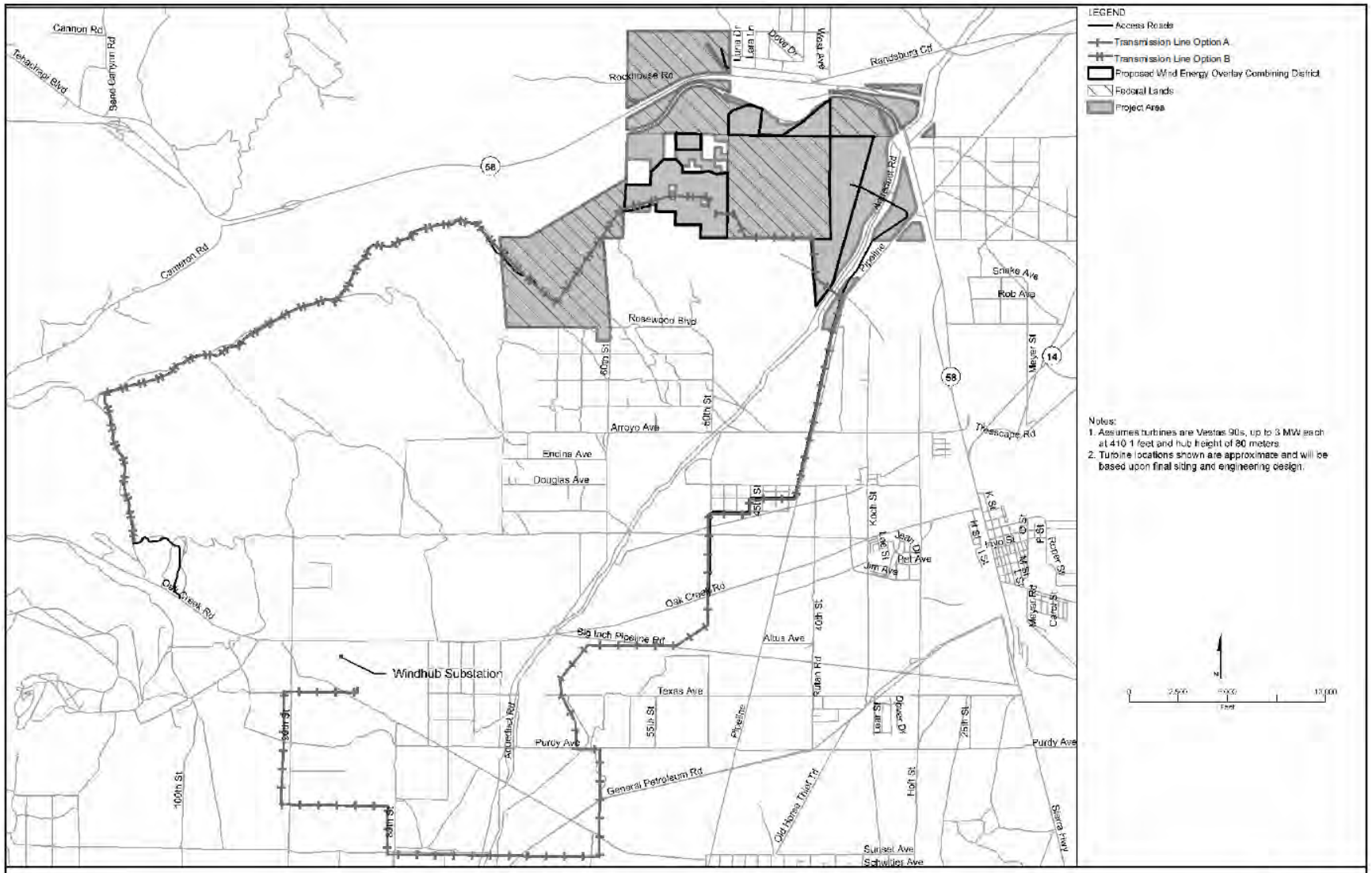


Figure 6
Transmission Line Options

KERN COUNTY ENVIRONMENTAL CHECKLIST FORM

Environmental Factors Potentially Affected:

The environmental factors checked below would be potentially affected by this proposed Project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☒ Aesthetics	☒ Agriculture & Forestry Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☒ Geology / Soils
☒ Greenhouse Gas Emissions	☒ Hazards & Hazardous Materials	☒ Hydrology / Water Quality
☒ Land Use and Planning	☒ Mineral Resources	☒ Noise
☒ Population and Housing	☒ Public Services	☒ Recreation
☒ Transportation & Traffic	☒ Utilities / Service Systems	☒ Mandatory Findings of Significance

DETERMINATION (To be completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☒ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (a) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (b) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENT IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

/s/
Signature

Date

Jacquelyn R. Kitchen
Printed Name

For

Evaluation of Environmental Impacts:

(1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

(2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

(3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

(4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measure and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced).

(5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or Negative Declaration, Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

(a) Earlier Analysis Used. Identify and state where they are available for review.

(b) Impacts Adequately Addressed. Identify which effects from the above checklist where within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

(c) Mitigation Measures. For effects that are "Less Than Significant With Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

(6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

(7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

(8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

(9) The explanation of each issue should identify:

(a) The significance criteria or threshold, if any, used to evaluate each question.

(b) The mitigation measure identified, if any, to reduce the impact to less than significant.

	Potentially Significant Impact	Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
AESTHETICS. *Would the project:*				
a. Have a substantial adverse effect on a scenic vista?	☒	☐	☐	☐
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings and historic buildings within a state scenic highway?	☒	☐	☐	☐
c. Substantially degrade the existing visual character or quality of the site and its surroundings?	☒	☐	☐	☐
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☒	☐	☐	☐

Discussion:

(a) Development of the project and all facilities in the foothills of the Tehachapi Mountain Range would alter the views of the project area. Persons traveling in vehicles on nearby roads and hikers/ equestrians passing near the project area along the Pacific Crest National Scenic Trail would observe substantial alterations to these existing views. The project would potentially result in significant alteration to existing scenic vistas. Therefore, this potential impact will be further evaluated in the EIR/EIS.

(b) The project would not be visible from any Officially Designated (OD) State or County Scenic Highway, as none exist in Kern County. However, both SR-14 north of Mojave and SR-58 east of Mojave are designated as Eligible (E) for State Scenic Highway status (California Department of Transportation, 2011). The project would be visible from portions of SR-14 north of Mojave and SR-58 east of Mojave. As development of the project and all facilities would alter existing views of the project area, the project could substantially damage the viewsheds of these Eligible State Scenic Highways. Therefore, this potential impact will be further evaluated in the EIR/EIS.

(c) Most of the project area supports native desert plant communities, predominately scrub brush, which are partially degraded by past and current grazing activities and by a network of paved and dirt roads. Lands managed by BLM along the projects western edge are mostly undeveloped. Existing land uses at and in the immediate vicinity of the project site include existing WTGs of varying heights and ages, overhead high-voltage transmission lines, grazing areas with rural fences, paved and unpaved roads, and undeveloped areas. Off-road vehicle (ORV) or off-highway vehicle (OHV) activities occur in the project vicinity and the Pacific Crest Trail passes within one mile of the northwestern portion of the project area. Development of the project and all facilities would represent a substantial visual change and increase the industrial character of the project site and its surroundings. Therefore the project's potential to substantially degrade the existing visual character or quality of the site and its surroundings will be further evaluated in the EIR/EIS.

(d) The only existing source of light on the project site is from existing wind turbine generators to the north and rural residential development in the area. The WTGs would have a non-reflective finish and are not expected to be a source of glare. The project WTGs and meteorological towers will likely require nighttime lighting per FAA regulations, which could adversely affect nighttime views in and of the area. The type of lighting that the FAA would require has not yet been determined, but is anticipated to be red flashing lights. Additionally night lighting may be required for permanent structures (e.g., O&M building and substation) and would be consistent with the requirements of the Kern County Zoning Ordinance. Given the potential for the project to create a new source of nighttime lighting, this potentially significant impact will be evaluated in the EIR/EIS.

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
AGRICULTURE RESOURCES. In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. *Would the project:*				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use?	☐	☐	☒	☐
b. Conflict with existing zoning for agricultural use, or Williamson Act contract?	☒	☐	☐	☐
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)) or timberland zoned Timberland Productions (as defined in Public Resources Code section 51104(g))?	☐	☐	☒	☐
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☒	☐
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☒	☐	☐	☐
f. Result in the cancellation of an open space contract made pursuant to the California Land Conservation Act of 1965 or Farmland Security Zone Contract for any parcel of 100 or more acres (Section 15206(b)(3) Public Resources Code?	☐	☐	☒	☐

Discussion:

(a) There is no designated Prime Farmland, Unique Farmland, or Farmland of Statewide Importance within the project area according to the California Division of Land Resource Protection Farmland Mapping and Monitoring Program Important Farmland maps. The project site has two land use designations according to the Department of Conservation: Grazing Land; and Non-agriculture and Natural Vegetation. Grazing Land is land on which the existing vegetation is suited for

grazing of livestock. Non-agriculture and Natural Vegetation includes heavily wooded, rocky or barren areas, riparian and wetland areas, small water bodies, and constructed wetlands, and grassland areas, which do not qualify for grazing. Although the project would remove some grazing land from agricultural use, the project would not result in the conversion of designated Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to a nonagricultural use. Nevertheless, the EIR/EIS will discuss the potential conversion of Grazing Land and Nonagricultural and Natural Vegetation land to a nonagricultural use.

(b) The Alta East Wind Project site is not located on lands that are under a Williamson Act contract. However, portions the project include the following agricultural land use designations:

- Project Site:
  General Plan Designation – Extensive Agriculture;
  Zoning Designation: A-1 (Limited Agriculture).

- Transmission Line Route:
  General Plan Designations - 4.1 (Resource Agriculture), 8.3 (Extensive Agriculture;
  Zoning Designation - A-1 (Limited Agriculture).

As construction and operation of the project would remove some land from agricultural use and change agricultural land use designations, potential impacts may occur and will be further analyzed in the EIR/EIS.

(c)/(d) Both the project site and transmission line route options (including immediate surrounding properties) do not contain any land defined as forest land (as defined by Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or land zoned Timberland Production (as defined by Government Code section 51104(g)). No conversion of forestland to non-forest use or loss of forestland is expected to occur with the project. Nevertheless, the EIR/EIS will discuss this issue.

(e) As discussed above in checklist question (b), construction and operation of the project would remove some land from agricultural use. Potential impacts from this change may occur and will be further analyzed in the EIR/EIS.

(f) The Alta East Wind Project site is not located on lands that are under any land preservation contracts such as Williamson Act contracts. Therefore, the project would not result in the cancellation of an open space contract made pursuant to the California Land Conservation Act of 1965 or Farmland Security Zone Contract for any parcel of 100 or more acres (Section 15206(b)(3) Public Resources Code. No impacts would occur; nevertheless, the EIR/EIS will discuss this issue.

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
AIR QUALITY. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. *Would the project:*				
a. Conflict with or obstruct implementation of the applicable air quality plan?	☒	☐	☐	☐
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☒	☐	☐	☐
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? Specifically, would implementation of the project exceed any of the following adopted thresholds:	☒	☐	☐	☐
i. San Joaquin Valley Unified Air Pollution Control District:				
Operational and Area Sources:				
Reactive Organic Gases (ROG) 10 tons per year.	☒	☐	☐	☐
Oxides of Nitrogen (NO_x) 10 tons per year.	☒	☐	☐	☐
Particulate Matter (PM_{10}) 15 tons per year.	☒	☐	☐	☐
Stationary Sources determined by District Rules:				
Severe Nonattainment 25 tons per year.	☒	☐	☐	☐
Extreme Nonattainment 10 tons per year.	☒	☐	☐	☐
ii. Kern County Air Pollution Control District:				
Operational and Area Sources:				
Reactive Organic Gases (ROG) 25 tons per year.	☒	☐	☐	☐
Oxides of nitrogen (NO_x) 25 tons per year.	☒	☐	☐	☐
Particulate Matter (PM_{10}) 15 tons per year.	☒	☐	☐	☐

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
Stationary Sources – determined by District Rules:				
25 tons per year.	☒	☐	☐	☐
d. Expose sensitive receptors to substantial pollutant concentrations?	☒	☐	☐	☐
e. Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Discussion:

(a)/(b) The project would be located entirely within the jurisdiction of the Eastern Kern Air Pollution Control District (APCD) in the Mojave Desert Air Basin (MDAB). The MDAB is designated non-attainment for both the State and federal ozone standards, and the State particulate matter of less than 10 microns in size (PM10) standard. Equipment usage and activities during construction of the project would result in emissions of PM10 and ozone precursors, including nitrogen oxides (NOx) and volatile organic compounds (VOC), which could result in significant impacts to air quality in the area. The sources of emissions include heavy equipment used to excavate and grade the turbine pads and roads, cranes, and on-road motor vehicles for equipment and material deliveries and workers commuting to the site. Activity on unpaved roads and lay-down areas and grading would contribute to PM10 emissions. This impact is potentially significant. Further analysis of air quality impacts is warranted to determine whether the project would conflict with or obstruct implementation of the applicable plans for attainment and if so, to determine the reasonable and feasible mitigation measures that could be imposed. Short-term construction emissions and temporary facilities could significantly contribute to an existing or projected air quality violation of PM10 or ozone standards, requiring the consideration of mitigation measures. These issues will be evaluated in the EIR/EIS.

(c) The Eastern Kern APCD is a nonattainment area for the State and federal ozone standards, and the State PM10 standard, and the Eastern Kern APCD rules and regulations apply to all project activities. No project activities would occur within the San Joaquin Valley Unified Air Pollution Control District. Cumulative contributions to the MDAB could be potentially significant. Cumulative contribution of construction and operational emissions will be analyzed in the EIR/EIS.

(d) Land uses determined to be “sensitive” to air quality include residential areas, schools, convalescent and acute care hospitals, parks and recreational areas, and churches. The nearest sensitive receptors to the project are residences and recreational areas within and adjacent to the project boundaries. Construction-related activity and temporary facilities would result in diesel exhaust emissions and dust that could adversely affect air quality for the nearest sensitive receptors. Mitigation measures for diesel equipment and dust control that are recommended by the Eastern Kern APCD will be evaluated as part of the EIR/EIS to avoid or reduce the impacts to construction workers and affected sensitive receptors.

(e) Aside from odors associated with vehicle exhaust and fueling, no other odors would result from the project. Due to the limited reach of these odor sources and the distance of potential receptors in the vicinity of these activities, fueling odors during project construction would not impact a substantial number of people. Therefore, the project is not expected to result in significant impacts to air quality related to objectionable odors; nevertheless, the EIR/EIS will discuss this issue.

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
BIOLOGICAL RESOURCES. *Would the project:*				
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☒	☐	☐	☐
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☒	☐	☐	☐
c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☒	☐	☐	☐
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☒	☐	☐	☐
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☒	☐	☐	☐
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan?	☒	☐	☐	☐

Discussion:

(a) Field surveys have identified several special-status, including federally and State-listed, species within and adjacent to the project area. Construction and operation of the project has the potential to result in significant direct and indirect impacts to these species and their habitat. Therefore, this potential impact will be further evaluated in the EIR/EIS.

(b)-(c) The project area supports numerous desert washes that are likely under the jurisdiction of California Department of Fish and Game (CDFG) as waters of the State and potentially also under the jurisdiction of U.S. Army Corps of Engineers. Other sensitive natural communities identified in

local or regional plans, policies, and regulations or by the CDFG or United States Fish and Wildlife Service (USFWS) may also be present within the project area. These potentially significant impacts to jurisdictional wetlands and other water, as well as sensitive natural communities, will be evaluated in the EIR/EIS.

(d) The project area and vicinity may be used for migration or dispersal by wildlife, including bats, migratory birds, desert tortoise and other reptiles, as well as mammals. Further, the project area may, although is not currently known to, contain movement corridors essential for population connectivity. Birds and bats may be subject to mortality during wind turbine operation if they collide with the towers or turbine blades. Construction of the project would potentially impede migration and/or habitat connectivity. This impact is potentially significant and will be evaluated in the EIR/EIS.

(e) Ordinances from the Kern County General Plan pertaining to protection of biological resources may apply to the project area. Consistency with this and other local policies or ordinances will be evaluated in the EIR/EIS.

(f) Portions of the project are located within the California Desert Conservation Area Plan and its amendment, the West Mojave Plan. Consistency with these and any other or approved local, regional, or State habitat conservation plans will be evaluated in the EIR/EIS.

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
CULTURAL RESOURCES. *Would the project:*				
a. Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5?	☒	☐	☐	☐
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines §15064.5?	☒	☐	☐	☐
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☒	☐	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☒	☐	☐	☐

Discussion:

(a) Cultural resources surveys will be completed for the site and the transmission route options. The results of these surveys will be included within the EIR/EIS. Further evaluation is warranted to identify potential impacts and formulate avoidance or mitigation measures, if applicable.

(b) Archaeological surveys will be completed for the site and the transmission route options. The results of these surveys will be included within the EIR/EIS. Further evaluation is warranted to identify potential impacts and formulate avoidance or mitigation measures, if applicable.

(c) A paleontological records search and survey will be completed for the project site and transmission line route options. The results of the records search and survey will be included within the EIR/EIS. The Horned Toad Formation, a geological formation with a high sensitivity for paleontological resources, is located within the project site. Potential impacts to paleontological resources and mitigation measures will therefore, be evaluated in the EIR/EIS.

(d) If human burial grounds are identified in any part of the project area, the project would be redesigned to avoid them. Given the sensitivity of the project area, the potential for locating human remains is reasonably foreseeable, and therefore, potentially significant. The EIR/EIS will evaluate this potential impact and identify measures to be implemented if any are unexpectedly uncovered during the course of development.

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
GEOLOGY AND SOILS. *Would the project:*				
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☒	☐	☐	☐
ii) Strong seismic ground shaking?	☒	☐	☐	☐
iii) Seismic-related ground failure, including liquefaction?	☒	☐	☐	☐
iv) Landslides?	☒	☐	☐	☐
b. Result in substantial soil erosion or the loss of topsoil?	☒	☐	☐	☐
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☒	☐	☐	☐
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☒	☐	☐	☐
e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☒	☐	☐	☐

Discussion:

(a) (i) The entire County is located in a seismic Zone 4, a designation previously used in the Uniform Building Code (UBC) (the predecessor to the International Building Code) to denote the areas of highest risk to earthquake ground motion. An Alquist-Priolo Special Study Zone does not cross the project site or the transmission line route options. However, the project area is located near major earthquake faults, and, therefore, may have the potential to expose people or structures to adverse effects. Significant seismic activity in the area could adversely affect structures and workers on the site. This issue will be evaluated in the EIR/EIS.

(ii) As discussed above in checklist question (a)(i), the project is located in a seismically active area. Strong seismic ground shaking could occur at the project site, resulting in damage to

structures that are not properly designed to withstand strong ground shaking. The project would potentially be subject to moderate to strong ground shaking from local and regional earthquakes. This potential impact will be evaluated in the EIR/EIS.

(iii) The project area has not been identified by the Safety Element of the Kern County General Plan (2007) as an area that is subject to liquefaction hazards. However, due to the potential for major seismic activity in the project area, the potential for substantial adverse effects due to seismic-related ground failure, including liquefaction, will be examined in the EIR/EIS.

(iv) Although the project site is not considered to be at high-risk area for landslides, the potential for substantial adverse effects due to landslides will nevertheless be analyzed in the EIR/EIS.

(b) Grading and excavation would be required for foundations for each WTG tower. Grading would also be required for construction of access roads throughout the project site. Construction activities could result in substantial soil erosion if the improved access roads and/or turbine sites are not properly designed. These issues and the potential for increased erosion will be evaluated in the EIR/EIS.

(c) The geotechnical report will examine the current baseline stability of the soils that underlie the project area and the findings of that report will be presented and evaluated in the EIR/EIS. The project would be designed such that it would not degrade the stability of the underlying soils. Because of this, potential impacts are expected to be less than significant. However, the findings of the geotechnical report and these issues will be evaluated in the EIR/EIS and mitigation measures will be presented, if necessary, to protect both structures and people from adverse effects due to landslide, lateral spreading, subsidence, liquefaction, or collapse.

(d) The soil present at the site and along the transmission line route options are primarily sands, gravels and rock that typically would not exhibit shrink and swell characteristics. Expansive soils generally result from specific clay minerals that expand when saturated and shrink in volume when dry. Although clays and other fine grained soils are not expected to be common at the project site, the EIR/EIS will confirm and evaluate the presence or absence of expansive soils.

(e) The project would include construction of a limited septic system or leach lines to accommodate on-site operations facilities if required by the Kern County Environmental Health Services Division; therefore, the ability of soils within the project area to support a septic tank will be examined in the EIR/EIS.

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
GREENHOUSE GAS EMISSIONS. *Would the project:*				
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☒	☐	☐	☐
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☒	☐	☐	☐

Discussion:

(a)/(b) Global climate change is an international phenomenon, and the regulatory background and scientific data are changing rapidly. In 2006, the California state legislature adopted AB 32, the California Global Warming Solutions Act of 2006. Assembly Bill (AB) 32 describes how global climate change would affect the environment in California. The impacts described in AB 32 include changing sea levels, changes in snow pack and availability of potable water, changes in storm flows and flood inundation zones, and other impacts.

As required by AB 32, California Air Resources Board (CARB) determined what the statewide greenhouse gas (GHG) emissions level was in 1990 and then approved a statewide GHG emissions limit that is equivalent to that level, which is to be achieved by 2020. CARB approved the 2020 limit on December 6, 2007. CARB's GHG inventory estimated the 1990 emissions level in California to be 427 million metric tons carbon dioxide equivalent (MMTCO2e). In 2004, the emissions were estimated to be 480 MMTCO2e.

The primary source of GHG emissions from the project during operation would be mobile sources. Not all GHGs exhibit the same ability to induce climate change; therefore, GHG contributions are commonly quantified in carbon dioxide equivalencies. The carbon dioxide equivalent (CO2e) portion of GHGs from the project will be estimated in an air quality impact analysis using the URBEMIS program and California Climate Action Registry (CCAR) General Reporting Protocol. These emissions would be predominantly produced during construction and therefore would be short term in duration and would not have a continual impact on the environment. The project's operational emissions are expected to be low. Regardless, since this project would replace the creation of energy through other methods, such use of a natural gas–fired turbine, the operational GHG emissions may have a reduction in GHG emissions. Impacts related to GHGs and climate stemming from the project and any potential conflicts with any applicable plan or policy will be evaluated in the EIR/EIS.

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
HAZARDS AND HAZARDOUS MATERIALS. *Would the project:*				
a. Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials?	☒	☐	☐	☐
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☒	☐	☐	☐
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
e. For a project located within the adopted Kern County Airport Land Use Compatibility Plan, would the project result in a safety hazard for people residing or working in the project area?	☒	☐	☐	☐
f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☒	☐	☐	☐
h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☒	☐	☐	☐

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
i. Would implementation of the project generate vectors (flies, mosquitoes, rodents, etc.) or have a component that includes agricultural waste? Specifically, would the project exceed the following qualitative threshold:				
i. Occur as immature stages and adults in numbers considerably in excess of those found in the surrounding environment; and	☐	☐	☒	☐
ii. Are associated with design, layout, and management of project operations; and	☐	☐	☒	☐
ii. Disseminate widely from the property; and	☐	☐	☒	☐
iv. Cause detrimental effects on the public health or well being of the majority of the surrounding population.	☐	☐	☒	☐

Discussion:

(a) The project is not expected to result in impacts from hazards and hazardous materials with respect to creating a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials because the project would not involve the routine transport, use, or disposal of hazardous materials as defined by the Hazardous Materials Transportation Uniform Safety Act. The only hazardous materials expected to be transported to and from the site include transformer oil (which is used in electrical transformers), vehicle fuel, carburetor fluid, and various types and grades of lubrication oil, all of which are expected to be used in small quantities for project construction and daily maintenance during operations. However, the EIR/EIS will evaluate the transport and use of these materials. The closest route that is designated for the transport of hazardous materials is State Route (SR) 58, located immediately adjacent to the project site. The project does not anticipate the need for blasting to prepare WTG foundations. However, in the unlikely event that blasting is required it will be evaluated in the EIR/EIS.

(b) Potential impacts that may result from construction and operation of the project include the accidental release of storage materials such as transformer oil, which is used in electrical transformers for turbines, vehicle fuel, carburetor fluid, and various types and grades of lubricants, solvents, and oils. The toxicity and potential release of these materials will depend on the quantity, the type of storage container, safety protocols used on the site, the location and/or proximity to receptors, the frequency and duration of spills or storage leaks, and the reactivity of hazardous substances with other materials. The use of all materials used on site, how the materials will be transported, in what form they will be used, possible environmental contamination or worker exposure, and identification of all regulations and standard protocols to be followed during the storage, transportation, and usage of any hazardous materials will be evaluated in the EIR/EIS.

(c) There are no schools located within one mile of the project site or transmission line route options. The nearest school is the Douglas Adult School and the Mountain View Continuation School, which are located two miles to the south. The use of materials such as transformer oil, which is

used in electrical transformers for turbines, vehicle fuel, carburetor fluid, and various types and grades of lubricants, solvents, and oils do not have the potential to extend beyond the work areas on-site. Project-related infrastructure would not emit hazardous materials or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or school. Nevertheless, potential impacts will be discussed in the EIR/EIS.

(d) The project is not located on the lists of parcels relating to hazardous wastes pursuant to Section 65962.5 of the California Government Code. Nevertheless, potential impacts will be discussed in the EIR/EIS.

(e) The project area is located approximately 2.5 miles from the Mojave Air and Space Port, 10 miles from the California City Municipal Airport, 12.5 miles from the Mountain Valley Airport and 13 miles from the Tehachapi Municipal Airport. Safety hazards for people residing or working in the project area with respect to the project's proximity to a public or military use airport are expected to be less than significant due to the distances from such facilities. However, the EIR/EIS will evaluate potential impacts related to aviation safety hazards and compliance with the Kern County Airport Land Use Compatibility Plan (ALUCP), Federal Aviation Administration (FAA) 7460, and military airspace requirements.

(f) The project site is not located within 2 miles of a private airstrip. No safety hazard for people residing or working in the project area with respect to the project's proximity to a private airstrip is expected to occur due to the distances from such facilities. Nevertheless, potential impacts will be discussed in the EIR/EIS.

(g) Operation of the project is not anticipated to physically impede the existing emergency response plans, emergency vehicle access, or personnel access to the site. Therefore, no operational impacts related to impairment of the implementation of or physical interference with an adopted emergency response plan or emergency evacuation plan is anticipated. However, construction of the project would generate construction trips and potential roadway lane closures that could temporarily increase the daily traffic volumes on local roadways and intersections, thereby impeding emergency access. Therefore, the potential for project construction-related traffic to impair or interfere with emergency response or evacuation plans will be evaluated in the EIR/EIS.

(h) The project site is under the jurisdiction of the Kern County Wildland Fire Management Plan. This plan documents the wildland fire situation within the county. The project site is within a State Responsibility Area (SRA), and the California Department of Forestry and Fire Protection (CAL FIRE) implements wildfire planning and protection for the SRA. The project site and transmission line route options would be located in an area highly susceptible to wildfires. Vegetation consists of juniper woodland, mixed chaparral, Joshua tree woodland, and bitterbrush, with areas of introduced annual grasses, and native needle grass grassland, and areas of single-leaf pinyon pine woodland. The potential for construction and operation of the project to result in increased risk of wildfires in the project area will be evaluated in the EIR/EIS. The evaluation will include a review of the 2004 Kern County Fire Department Wildland Fire Management Plan and CAL FIRE's and Kern County Fire Department's prevention measures for wildland fires.

(i)(i-iv) The project would result in construction of WTGs, substations, transmission line infrastructure, and O&M facilities. Project-related infrastructure is not expected to result in features or conditions (such as standing water, agricultural products, agricultural waste, or human waste) that would provide habitat for vectors such as mosquitoes, flies, cockroaches or rodents. Workers would generate small quantities of solid waste (i.e., trash) that would be appropriately stored for permanent disposal. Nevertheless, potential impacts will be discussed in the EIR/EIS.

	Potentially Significant Impact	Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
HYDROLOGY AND WATER QUALITY. *Would the project:*				
a. Violate any water quality standards or waste discharge requirements?	☒	☐	☐	☐
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☒	☐	☐	☐
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on-site or off-site?	☒	☐	☐	☐
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on-site or off-site?	☒	☐	☐	☐
e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☒	☐	☐	☐
f. Otherwise substantially degrade water quality?	☒	☐	☐	☐
g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☒	☐	☐	☐
i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☒	☐	☐	☐
j. Inundation by seiche, tsunami, or mudflow?	☒	☐	☐	☐

Discussion:

(a) Construction of the project would be subject to County, State, and federal water quality regulations. This includes, but is not limited to, required adherence to the federal Clean Water Act, National Pollutant Discharge Elimination System requirements, the National Flood Insurance Act, requirements of the California Department of Water Resources, adherence to the requirements of the California Fish and Game Code, the California Water Code, the requirements of the Kern County General Plan and Zoning Ordinance, etc. Development of the project would result in a significant impact to hydrology and water quality if associated construction, maintenance, or decommissioning activities would result in the violation of any water quality or waste discharge standards. Such violations could occur through the creation of erosion, sedimentation, and/or polluted runoff, through the accidental release of potentially hazardous materials required during construction or operational activities, or through the discharge of contaminated groundwater during dewatering activities. It is anticipated that appropriate best management practices and compliance with applicable regulations would reduce potential water quality impacts to a less than significant level; however, this potential impact will be evaluated fully in the EIR/EIS.

(b) The project may include the construction of a new water well in order to supply water to the project during construction. If the project applicant is unable to secure the use of water via a new well within the project boundary, then water would be imported via truck to the site for use in the temporary concrete batch plant as well as for dust abatement activities. The project is located in the jurisdiction of the Regional Water Quality Control Board, Lahontan Region 4. Because the project would not include a substantial increase in impervious surfaces, the project is not anticipated to interfere substantially with groundwater recharge. However, a Water Supply Assessment is being prepared to analyze groundwater supplies and recharge in the project area, and the EIR/EIS will analyze potential hydrology and water quality impacts associated with this issue.

(c) Grading would be required for access roads throughout the project site. Leveling and excavation would be required for each WTG installation site. The turbines would require the construction of concrete pads and fencing and would be strategically placed on the topography in turbine rows. Transmission line poles would also require grading. The construction of these project features could potentially alter the existing drainage pattern of the site or area. Evaluation of impacts to drainage patterns resulting from project components, as well as the potential for increased erosion and/or siltation will be evaluated in the EIR/EIS.

(d) An increase in impervious surfaces could increase stormwater run-off. As discussed above in checklist question (c), project features could potentially alter the existing drainage pattern of the site or area and would generate new impervious surfaces. Evaluation of impacts related to the project potential alteration of drainage patterns of the site will be evaluated in the EIR/EIS.

(e) The project would increase impervious surfaces on-site, which could substantially increase stormwater runoff. The applicant would be required to prepare a drainage plan to address potential stormwater run-off impacts. Further analysis is required to identify appropriate mitigation/design measures and evaluate their effectiveness. Evaluation of the project's potential to impact capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff will be evaluated in the EIR/EIS.

(f) Project construction activities (such as grading of access roads) could potentially degrade water quality through erosion and subsequent sedimentation of streams. Additionally, accidental release of potentially harmful materials, such as engine oil, diesel fuel, turbine lubricant, and cement slurry, could degrade water quality of nearby streams. This potential impact will be further evaluated in the EIR/EIS.

(g) The project does not include housing. Therefore, no impact would occur; however, this issue will be discussed in the EIR/EIS.

(h) Portions of the project site are located within an A Zone (100-year) Flood Hazard Area as delineated on the Federal Emergency Management Agency's (FEMA) Digital Flood Insurance Rate Maps (DFIRM). The project requests the overlay of the Floodplain (FP) Combining District over portions of the project located within the A Zone. The purpose of the FP Combining District is to protect public health and safety and minimize property damage by designating areas that are potentially subject to flooding by establishing reasonable restrictions on land use. While the project does not include the placement of structures within a 100-year flood hazard zone, the potential for project structures to redirect or impede flood flows within a floodplain zone will be evaluated in the EIR/EIS.

(i) The project would not be not located within an area that is subject to flooding due to failure of a levee or dam. However, portions of the project site are located within an A Zone (100-year) Flood Hazard Area as delineated on the Federal Emergency Management Agency's (FEMA) Digital Flood Insurance Rate Maps (DFIRM). Therefore, the potential for project structures to be impacted by flood flows within this floodplain zone will be evaluated in the EIR/EIS.

(j) The project is not located near an ocean or enclosed body of water, and would not be subject to inundation by seiche or tsunami. Mudflows are a type of mass wasting or landslide, where earth and surface materials are rapidly transported downhill under the force of gravity. Mudflow events are caused by a combination of factors, including soil type, precipitation, and slope. Mudflow may be triggered by heavy rainfall that the soil is not able to sufficiently drain or absorb. As a result of this super-saturation, soil and rock materials become unstable and eventually slide away from their existing location. The potential for project structures to be inundated by mudflow will be further evaluated in the EIR/EIS.

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
LAND USE AND PLANNING. *Would the project:*				
a. Physically divide an established community?	☒	☐	☐	☐
b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☒	☐	☐	☐
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?	☒	☐	☐	☐

Discussion:

(a) The project is not within or adjacent to any established community. However, as the project would involve a change in zoning designations and new project features, this potential impact will be evaluated in the EIR/EIS.

(b) The project area is within the boundaries of the Kern County General Plan (KCGP) and the Mojave Specific Plan (MSP). The KGCP and MSP designate the site as: Map Code 1.1 (State or Federal Land), Map Code 8.3 (Extensive Agriculture), Map Code 8.4 (Mineral and Petroleum), and Map Code 8.5 (Resource Management). The site is also designated with the following combining hazard overlays: Map Code 2.4 (Steep Slope) and Map Code 2.5 (Flood Hazard). The Kern County Zone Districts in the project area are: A-1 (Limited Agriculture), and E (20) (Estate, 20 acres).

Under the project, a portion of the project area would be changed from the existing zone classifications to the A WE (Exclusive Agriculture, Wind Energy Combining) District. The WE Combining District contains specific development standards and conditions that apply to all construction and siting of wind turbines in this zone. Consistency of the project with the policies of the Kern County General Plan and any other applicable land use plan, policy, or regulation will be evaluated in the EIR/EIS.

(c) The project is not within the boundaries of any adopted habitat conservation plan or natural community conservation plan. However, the project is encompassed in the area covered by the California Desert Conservation Area Plan and its amendment, the West Mojave Plan. Consistency with these and any other or approved local, regional, or State habitat conservation plans will be evaluated in the EIR/EIS.

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
MINERAL RESOURCES. *Would the project:*				
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☒	☐	☐	☐
b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☒	☐	☐	☐

Discussion:

(a)(b) Kern County is known to contain numerous mining operations that extract a variety of materials, including sand and gravel, stone, gold, dimensional stone, limestone, clay, shale, gypsum, pumice, decorative rock, silica, and specialty sand. It is anticipated that mineral resources occur within the project area given its designation under the Kern County General Plan as Mineral and Petroleum, which applies to areas that contain producing or potentially producing petroleum fields, natural gas, or geothermal resources, or mineral deposits of statewide significance. The project may potentially preclude access for extraction of valuable or locally-important mineral resources if present within the project area. Therefore, these potential impacts will be further evaluated in the EIR/EIS.

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
NOISE. *Would the project result in:*				
a. Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies?	☒	☐	☐	☐
b. Exposure of persons to, or generation of, excessive ground borne vibration or ground borne noise levels?	☒	☐	☐	☐
c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☒	☐	☐	☐
d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☒	☐	☐	☐
e. For a project located within the Kern County Airport Land Use Compatibility Plan, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐
f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐

Discussion:

(a) Land uses determined to be "sensitive" to noise as defined by the Kern County General Plan include residential areas, schools, convalescent and acute care hospitals, parks and recreational areas, and churches. The nearest sensitive receptors to the project are residences and recreational areas within and adjacent to the project boundaries. Implementation of the project would result in a change in the zone classification on various properties on the project site to include the WE Combining District. This classification requires that noise levels associated with wind turbine operations do not exceed 45 dBA (A-weighted decibels) for more than five minutes out of any one hour time period or 50 dBA for any period of time if the turbine is within 50 feet of any existing residence, school, hospital, church, or public library (Kern County Ordinance 19.64.140 (J)). A noise analysis will be included in the EIR/EIS to determine the project's consistency with the applicable noise regulations and provisions of the Kern County General Plan and Zoning Ordinance.

(b) Ground-borne vibration and ground-borne noise could originate from earth movement during the construction phase of the project as well as from operation and maintenance of the facilities. The project would be expected to comply with all applicable noise regulations and requirements for long-term operation, as well as with measures to reduce excessive ground-borne vibration and noise to ensure that the project would not expose persons or structures to excessive ground-borne vibration. However, due to potential vibration impacts during construction, further analysis of ground-borne vibration and ground-borne noise will be included in the EIR/EIS.

(c) Turbine operation, maintenance related traffic, and general maintenance activities associated with the project would introduce permanent noise sources to the project area. Construction activity would also increase ambient noise levels for a temporary period of time during construction. Further analysis of ambient noise levels and the project's potential impact on those levels will be included in the EIR/EIS.

(d) Heavy equipment use during construction would cause a temporary or periodic increase in ambient noise levels. Project construction activity would increase ambient noise levels in the immediate area above existing levels for 9 to 12 months. Temporary or periodic increases in ambient noise levels caused by construction activities could be reduced with the incorporation of mitigation measures. Project-related construction noise levels will be quantified and evaluated in the EIR/EIS.

(e) The project area is located approximately 2.5 miles from the Mojave Air and Space Port, 10 miles from the California City Municipal Airport, 12.5 miles from the Mountain Valley Airport and 13 miles from the Tehachapi Municipal Airport. Aviation related noise hazards for people residing or working in the project area are expected to be less than significant with respect to the project's proximity to a public or military use airport. However, because this project is located within the sphere of influence of an airport identified in the Kern County Airport Land Use Compatibility Plan, the EIR/EIS will discuss this issue.

(f) The project is not located within 5 miles of a private airstrip; therefore, implementation of the project is not expected to expose individuals working in the project area to excessive noise levels generated from private airstrips. Nevertheless, the EIR/EIS will discuss this issue.

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
POPULATION AND HOUSING. *Would the project:*				
a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☒	☐	☐	☐
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☒	☐	☐	☐
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☒	☐	☐	☐

Discussion:

(a) Typical established local thresholds of significance for housing and population growth pursuant to the State CEQA Guidelines, Section 15064.7 include effects that would induce substantial growth or concentration of a population beyond County projections, alter the location, distribution, density, or growth rate of the population beyond that projected in the Housing Element, result in a substantial increase in demand for additional housing, or create a development that significantly reduces the ability of the County to meet housing objectives set forth in the General Plan Housing Element.

Construction of the project is expected to require an average of 80 workers with a peak of 262 workers over a three week period during construction, which would be a minimal increase in employment over the 9-12 month construction period given the project area's existing population. Construction workers are expected to travel to the site from various locations throughout southern California, and the number of workers expected to relocate to the surrounding area is not expected to be substantial. Operation of the project would also require up to 15 full-time or part-time staff. The EIR/EIS will contain analysis to determine the project's potential for directly or indirectly inducing any new population or the development of housing or businesses.

Although the project would produce additional electricity, it is intended to meet the demand for energy that is already projected based on growth in communities around California. While the project's electricity would replace electricity generated by fossil fuels, thereby contributing to California's renewable energy goals, the production of additional electricity may indirectly be growth inducing. These issues will be analyzed within the EIR/EIS.

(b)/(c) Although not anticipated, the EIR/EIS will identify and analyze any impacts to identified residential or commercial buildings requiring relocation. Should any occupied buildings need to be relocated, the EIR/EIS will contain appropriate mitigation. Additionally, the project's potential for displacement of any persons will be evaluated in the EIR/EIS.

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
PUBLIC SERVICES.				
a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services:				
i) Fire protection?	☒	☐	☐	☐
ii) Police protection?	☒	☐	☐	☐
iii) Schools?	☒	☐	☐	☐
iv) Parks?	☒	☐	☐	☐
v) Other public facilities?	☒	☐	☐	☐

Discussion:

(a) The Kern County Fire Department provides fire suppression and emergency medical services to the project area. The Mojave Station, located 3.5 miles southeast of the project site at 1953 SR-58 in Mojave, would be the primary fire station to service the project. The majority of the project site is within a State Responsibility Area (SRA), and CAL FIRE implements wildfire planning and protection for the SRA. Construction and operation activities may result in increased risk of wildfire, which could impact firefighting capacity in the area. The potential impact on fire services from construction in a SRA area and operation of the project is therefore potentially significant and will be evaluated in the EIR/EIS.

The Kern County Sheriff's Department provides police protection services to the project area. The Mojave Substation, located 3.5 miles southeast of the project site at 1771 SR-58 in Mojave, would be the primary police substation to service the project area. During construction, on-site security would be provided. In addition, temporary construction fencing with gated site access would be installed in accordance with County regulations to assure security and personnel safety during construction. Where appropriate, construction fencing may be retained for permanent fencing and would be constructed to meet standards for permanent installations. While security and fencing would minimize the need for police surveillance and response, the project's impacts on sheriff services and existing capacities is potentially significant and will be evaluated in the EIR/EIS.

Construction of the project is expected to require an average of 80 workers with a peak of 262 workers over a three week period during construction, which would be a minimal increase in employment over the 9-12 month construction period given the project area's existing population. Construction workers are expected to travel to the site from various locations throughout southern California, and the number of workers expected to relocate to the surrounding area is not expected

to be substantial. Operation of the project would also require up to 15 full-time or part-time staff. However, further analysis is required to determine the project's potential for directly or indirectly inducing new population growth. The EIR/EIS will analyze any population increase that would be experienced during construction and operation of the project that could result in additional demand for school facilities.

As further analysis is required to determine the project's potential for directly or indirectly inducing population growth, the EIR/EIS will analyze any population increase that would be experienced during the construction phase and operation of the project that could result in additional demand for recreational facilities. The project is expected to result in less than significant impacts on public services, such as post office and library services. Nevertheless, all impacts on public services will be evaluated in the EIR/EIS.

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
RECREATION.				
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☒	☐	☐	☐
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☒	☐	☐	☐

Discussion:

(a) Construction of the project is expected to require an average of 80 workers with a peak of 262 workers over a three week period during construction, which would be a minimal increase in employment over the 9-12 month construction period given the project area's existing population. Construction workers are expected to travel to the site from various locations throughout southern California, and the number of workers expected to relocate to the surrounding area is not expected to be substantial. Operation of the project would also require up to 15 full-time or part-time staff. The temporary increase of population during construction that might be caused by an influx of workers would not likely result in an increase in the use of County parks, private golf courses, the Pacific Crest Trail (PCT), or other recreation facilities that would deteriorate the subject recreational facilities. However, further analysis is required to determine the project's potential for directly or indirectly inducing new population. The EIR/EIS will analyze any population increase that would be experienced during construction and operation of the project that could result in additional demand for recreational facilities.

(b) The project does not include new recreational facilities or require construction or expansion of recreational facilities. However, a portion of the PCT passes within one mile of the northwestern portion of the project area. The PCT is an international hiking trail that extends from Mexico to Canada through California, Oregon and Washington. Impacts to this trail and other recreational facilities as well as wilderness areas, including potential preclusion of access and degradation of value, will be further evaluated in the EIR/EIS.

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
TRANSPORTATION/TRAFFIC. *Would the project:*				
a. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☒	☐	☐	☐
b. Exceed, either individually or cumulatively, a Level of Service standard established by the county congestion management agency or adopted County threshold for designated roads or highways? Specifically, would implementation of the project cause the Level of Service (LOS) for roadways and/or intersections to decline below the following thresholds or further degrade already degraded segment(s):				
i. Metropolitan Bakersfield General Plan LOS "C"	☒	☐	☐	☐
ii. Kern County General Plan LOS "D"	☒	☐	☐	☐
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☒	☐	☐	☐
d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☒	☐	☐	☐
e. Result in inadequate emergency access?	☒	☐	☐	☐
f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☒	☐	☐	☐

Discussion:

(a) Both SR-14 and SR-58 provide regional access to the project area. Project-related traffic would use access roads entering the project from the west or the east. Construction of the project will take approximately 9 to 12 months. Vehicle trips generated by construction workers traveling to the site as well as equipment and materials deliveries would add vehicle trips to the area roadway system. Delivery of construction materials would require a number of oversize vehicle trips that may travel at slower speeds than existing traffic and, due to their size, may intrude into adjacent travel lanes. These oversize trips may decrease the existing level of service (LOS) on area freeways, roadways and intersections. Additionally, the total number of vehicle trips associated with all construction-related traffic (including construction workers) could temporarily increase daily traffic volumes traveling on local roadways and intersections. Furthermore, stringing activities required for transmission line infrastructure may require temporary lane closures that may result in temporary traffic delays on affected roadways. The EIR/EIS will evaluate these potential impacts on the local roadway system from construction related vehicle trips.

Once constructed, the project is expected to employ a relatively small number of staff and generate minimal daily trips to maintain the project. However, the potential impact of project operational traffic on the area roadway system will be evaluated in the EIR/EIS.

(b) (i) The project site is located approximately 40 miles southeast of the metropolitan Bakersfield area. Construction and operation of the project would result in increased vehicle trips on roadways in the project area; however, these trips are not expected to be focused within or result in a substantial number of trips on roadways in the metropolitan Bakersfield area. However, potential impacts to Bakersfield metropolitan area roadways will be discussed in the EIR/EIS.

(ii) Construction of the project would generate construction trips and may require roadway lane closures, which could temporarily increase the daily traffic volumes or delays on local roadways and intersections. Operation of the project would also generate trips on local roadways. The potential impacts of these conditions on LOS of area roadways will be evaluated in the EIR/EIS.

(c) The project area is located approximately 2.5 miles from the Mojave Air and Space Port, 10 miles from the California City Municipal Airport, 12.5 miles from the Mountain Valley Airport and 13 miles from the Tehachapi Municipal Airport. Due to the proximity of these airport facilities and the heights of project components, the EIR/EIS will evaluate potential impacts related to aviation safety hazards and compliance with the Kern County ALUCP, FAA 7460, and military airspace requirements.

(d) A number of existing dirt roads within the project site would be graded, widened, and compacted to provide adequate construction and maintenance access to project facilities. New access roads would be constructed where required. Because all site access roadways would be private and gated to restrict public use, all modifications to existing onsite access roads and any new access roads created are not expected to result in an increase to public transportation hazards due to design or incompatible use. However, because all project access roads would require Access Road Design and Encroachment Permits from both Kern County and the California Department of Transportation, the project's compliance with regulations pertaining to access road modifications and construction will be evaluated in the EIR/EIS.

(e) Construction of the project would generate construction trips and potential roadway lane closures that could temporarily increase the daily traffic volumes or delays on local roadways and intersections, thereby impeding emergency access. The potential for project-related traffic to result in inadequate emergency access will be evaluated in the EIR/EIS.

(f) Construction of the project would generate construction trips and potential roadway lane closures that could temporarily disrupt bicycle traffic on local roadways. However, due to the rural nature of the project site area, no bus stops or designated bicycle lanes exist on the roadways likely to be used during project construction and operation. There is sufficient space on the project site to provide adequate parking. However, to ensure project compliance to the General Plan policies supporting alternative transportation, the EIR/EIS will discuss how the project's traffic impacts can be mitigated through ride sharing and limiting project-generated trips.

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
UTILITIES AND SERVICE SYSTEMS. *Would the project:*				
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☒	☐	☐	☐
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☒	☐	☐	☐
c. Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☒	☐	☐	☐
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☒	☐	☐	☐
e. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☒	☐	☐	☐
g. Comply with federal, state, and local statutes and regulations related to solid waste?	☒	☐	☐	☐

Discussion:

(a) The project would generate a minimal volume of wastewater. During construction and operation, wastewater from the concrete batch plant and that associated with other construction activities would be contained within portable facilities and disposed of at an approved site. During operation, the project would not generate substantial volumes of wastewater due to the minimal number of full-time or part-time employees. Impacts exceeding wastewater treatment requirements are expected to be less than significant; however, the EIR/EIS will consider these issues more thoroughly.

(b) The project may require the construction of a septic system or leach lines; however, wastewater generation during construction and operation is expected to be limited due to the minimal employment associated with project operation. Water would be provided by a well or other water service (to serve non-potable demands) and by onsite well or bottled drinking water (to serve potable needs). Water that is needed for construction, such as for dust suppression and concrete mixing, would either be supplied from a new well on the project site or be trucked in from nearby municipalities. Since the project would provide its own water source, it would not impact existing water

supply systems. However, the project would still require construction of the facilities listed above. The EIR/EIS will evaluate the project's compliance with all applicable local, State, and federal water and wastewater requirements and best management practices incorporated into construction of these project features.

(c) Although the project would create a small amount of additional impervious surface and may require a small amount of imported water for concrete mixing and dust suppression during construction, these changes are not expected to substantially increase the amount of stormwater runoff. The project area is drained by natural stream channels and does not rely on constructed stormwater drainage systems. As any new impervious surface and grading of access roads have the potential to alter the pattern and concentration of runoff; the EIS/EIS will provide further analysis to determine the need for any appropriate stormwater mitigation/design measures.

(d) Drinking water would be provided by bottled water or onsite well. However, water that is needed for construction, such as for dust suppression and concrete mixing, would either be supplied from a new on-site well or be trucked in from nearby municipalities. A Water Supply Assessment will be prepared to analyze groundwater supplies and recharge in the project area. Therefore, the issue of new or expanded entitlements will be evaluated in the EIR/EIS.

(e) The project would include construction of a limited septic system or leach lines to accommodate on-site operations facilities if required by the Kern County Environmental Health Services Division. There would be no substantial wastewater flows to treatment providers and no impacts to existing wastewater treatment facilities. Nevertheless, this issue will be evaluated in the EIR/EIS.

(f) The project is not expected to generate a significant amount of waste that would exceed the capacity of local landfills. Materials brought to the project site would be used to construct facilities and few residual materials are expected. Non-hazardous construction refuse and solid waste would be disposed of at a local landfill, while any hazardous waste generated during project construction would be disposed of at an approved location. However, as the project would generate some level of waste during construction, the EIR/EIS will evaluate if the amount of solid waste generated by the project site would exceed the capacity of local landfills needed to accommodate the waste.

(g) The project would generate solid waste during construction and operation, thus requiring the consideration of waste reduction and recycling measures. The 1989 California Integrated Waste Management Act (AB 939) requires Kern County to attain specific waste diversion goals. In addition, the California Solid Waste Reuse and Recycling Access Act of 1991, as amended, requires expanded or new development projects to incorporate storage areas for recycling bins into the project design. The need for mitigation measures to confirm that the project will comply with the 1989 California Integrated Waste Management Act and the 1991 California Solid Waste Reuse and Recycling Access Act of 1991, as amended will be evaluated in the EIR/EIS.

	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
MANDATORY FINDINGS OF SIGNIFICANCE				
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	☐
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☒	☐	☐	☐
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐

Discussion:

(a) Impacts to biological resources are currently unknown. Biota studies for the project are currently being conducted. The EIR/EIS's biological resources section will discuss specific project impacts on plants and wildlife including avian species. The EIR/EIS will also evaluate the project's contribution to cumulative biological resources impacts and propose mitigation that will reduce the impacts.

(b) The project has the potential to contribute to cumulative impacts to aesthetics, agricultural resources, air quality, biological resources, greenhouse gas emission, hydrology, land use and planning, noise, public services, and transportation and traffic. The EIR/EIS will evaluate the project's contribution to cumulative impacts in these and other areas as further impacts are identified.

(c) Although there may be significant air quality impacts during construction, the long term air quality impacts could be beneficial if fossil fuel use is reduced. However, the health impacts from project-related and cumulative contribution to air quality impacts will be evaluated in the EIR/EIS.

APPENDIX B

BLM Notice of Intent (NOI)

Diego. An additional 15 acres would be temporarily disturbed during construction.

The Project would be a 15 to 18 MW (with peak capacity of 20 MW) project and would include photo-voltaic (PV) arrays, inverters, transformers, and a maintenance building. The project would connect to the existing SDG&E Imperial Valley Substation (IVS), which is located to the Project's immediate north via a buried 12.47 kilovolt cable. The project would not require any expansion of the IVS, nor any upgrades to the existing transmission lines exiting the substation.

The purpose of the public scoping process is to determine relevant issues that will influence the scope of the environmental analysis, including alternatives, and guide the process for developing the EIS. At present, the BLM has identified the following preliminary issues: Air quality, biological resources, cultural resources, water resources, geological resources and hazards, land use, noise, paleontological resources, socioeconomics, traffic and transportation, and visual resources. An updated inventory of wilderness characteristics will be used to determine whether lands with wilderness characteristics are present in the project area and to analyze impacts associated with these resources.

Pursuant to the CDCA Plan, sites associated with power generation or transmission not identified in the CDCA Plan will be considered through the plan amendment process to determine the suitability of the sites for renewable energy development. Since the Project site was not previously identified as suitable, authorization of the Project would require amendment of the CDCA Plan. By this notice, the BLM is complying with requirements in 43 CFR 1610.2(c) to notify the public of potential amendments to land use plans predicated on the findings in the EIS. If a Plan Amendment is necessary, the BLM will integrate the land use planning process with the NEPA process for the Project. A preliminary list of the potential planning criteria that will be used to help guide and define the scope of the plan amendment process include:

- The plan amendments will be completed in compliance with FLPMA, NEPA, and all other relevant Federal laws, executive orders, and BLM policies;
- Existing, valid plan decisions will not be changed and any new plan decisions will not conflict with existing plan decisions; and
- The plan amendment(s) will recognize valid existing rights.

The BLM will also use and coordinate the NEPA commenting process to help fulfill the public involvement process under Section 106 of the National Historic Preservation Act (16 U.S.C. 470(f) as provided for in 36 CFR 800.2(d)(3). Native American Tribal consultations will be conducted in accordance with policy, and Tribal concerns will be given due consideration. Federal, State, and local agencies, along with Tribes and other stakeholders that may be interested or affected by the BLM's decision on this project, are invited to participate in the scoping process and, if eligible, may request or be requested by the BLM to participate as cooperating agencies.

In connection with its processing of SDG&E's application, the BLM is also segregating, under the authority contained in 43 CFR 2091.3–1(e) and 2804.25(e), subject to valid existing rights, the public lands within the Project application area from appropriation under the public land laws, including the Mining Law of 1872, as amended, but not the Mineral Leasing the Material Sales Acts, for a period of 2 years from the date of publication of this notice. The public lands contained within this temporary segregation total approximately 240 acres and are described as follows:

San Bernardino Meridian

T. 16½ S., R. 12 E.,
Sec. 3, E½SW¼, SE¼.

The BLM has determined that this temporary segregation is necessary to ensure the orderly administration of the public lands by maintaining the status quo while it processes SDG&E's ROW application for the above described lands. The segregation period will terminate and the lands will automatically reopen to appropriation under the public land laws, including the Mining Law, if one of the following events occurs: (1) The BLM issues a decision granting, granting with modifications, or denying SDG&E's ROW application; (2) publication of a **Federal Register** notice terminating this segregation; or (3) there is no further administrative action at the end of the segregation provided for in the **Federal Register** notice initiating the segregation, whichever occurs first. Any segregation made under this authority is effective only for a period of up to 2 years.

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Authority: 40 CFR 1501.7; 43 CFR 1610.2, 2091.3–1(e), and 2804.25(e).

Thomas Pogacnik,

Deputy State Director, California.

[FR Doc. 2011–17718 Filed 7–14–11; 8:45 am]

BILLING CODE 4310–40–P

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[LLCAD05000, L51010000.LVRWB11B4520.FX0000]

Notice of Intent To Prepare a Joint Environmental Impact Statement and Environmental Impact Report for the Proposed Alta East Wind Project, and Possible Land Use Plan Amendment, Kern County, CA

AGENCY: Bureau of Land Management, Interior.

ACTION: Notice of Intent.

SUMMARY: In compliance with the National Environmental Policy Act of 1969, as amended (NEPA), the Federal Land Policy and Management Act of 1976, as amended (FLPMA), and the California Environmental Quality Act, the Bureau of Land Management (BLM) Ridgecrest Field Office, Ridgecrest, California, together with the County of Kern, California, intend to prepare a joint Environmental Impact Statement (EIS)/Environmental Impact Report (EIR), which may include an amendment to the California Desert Conservation Area (CDCA) Plan (1980 as amended), related to Alta Windpower Development LLC's (Applicant or AWD) right-of-way (ROW) authorization request for the Alta East Wind Project (Project), a 300-megawatt (MW) wind farm. By this notice BLM and Kern County are announcing the beginning of the scoping process to identify issues and solicit public comments on the EIS/EIR and proposed plan amendment. By this notice the BLM is also segregating, subject to valid existing rights, approximately 2,083 acres of public lands from appropriation under the public land laws, including the Mining Law of 1872, as amended, but not from leasing under the mineral leasing laws or disposal under the mineral material laws, for a period of 2 years from the date of publication of this notice for the purpose of processing AWD's ROW authorization request.

DATES: This notice initiates: (1) The public scoping process for the EIS/EIR and possible plan amendment; and (2) the 2 year segregation period for the public lands within the AWD ROW application area. Comments on issues related to the EIS and possible plan amendment may be submitted in writing until August 15, 2011. The date(s) and location(s) of any scoping meetings will be announced at least 15 days in advance through local media, newspapers, and the BLM Web site at: *http://www.blm.gov/ca/st/en/fo/cdd.html.* In order to be fully addressed in the Draft EIS/EIR, all comments must be received prior to the close of the scoping period or 15 days after the last public meeting, whichever is later. We will provide additional opportunities for public participation upon publication of the Draft EIS/EIR. The segregation of the public lands is effective as of July 15, 2011. The segregation will terminate if one of the following events occurs: (1) The BLM issues a decision granting, granting with modifications, or denying AWD's ROW authorization request; (2) publication of a **Federal Register** notice terminating this segregation; or (3) no further administrative action occurs before the end of this segregation on July 15, 2013.

ADDRESSES: You may submit comments on issues and alternatives related to the Alta East Wind Project Draft EIS/EIR and CDCA Plan amendment by any of the following methods:

- Web site: *http://www.blm.gov/ca/st/en/fo/cdd.html.*
- E-mail: *altaeast@blm.gov.*
- Fax: (951) 697–5299.
- Mail: ATTN: Jeffery Childers, Project Manager, BLM California Desert District Office, 22835 Calle San Juan de Los Lagos, Moreno Valley, California 92553–9046.

Documents pertinent to this proposal may be examined at the BLM California Desert District Office.

FOR FURTHER INFORMATION CONTACT: For further information and/or to have your name added to our mailing list, contact Jeffery Childers; telephone (951) 697–5308; address BLM California Desert District Office, 22835 Calle San Juan de Los Lagos, Moreno Valley, California 92553–9046; e-mail *jchilders@blm.gov.* Persons who use a telecommunications device for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 1–800–877–8339 to contact the above individual during normal business hours. The FIRS is available 24 hours a day, 7 days a week, to leave a message or question with the above individual. You will receive a reply during normal business hours.

SUPPLEMENTARY INFORMATION: AWD has requested a ROW authorization to construct, operate, maintain, and decommission the 300–MW Alta East Project. The Project is proposed to be located on approximately 3,200 acres on the north and south sides of State Route 58 in southeastern Kern County, California. The proposed Project area is approximately 3 miles northwest of the Town of Mojave and approximately 11 miles east of the City of Tehachapi. The project would include wind turbines, access roads, and energy collection lines on 3,200 acres, of which 2,083 acres are on public land under the jurisdiction of the BLM and 1,117 acres of private land under the jurisdiction of Kern County. Approximately 681 acres would need to be re-zoned to be consistent with the Kern County Zoning Ordinance Wind Energy (WE) Combining District. The purpose of the public scoping process is to determine relevant issues that will influence the scope of the environmental analysis, including alternatives, and guide the process for developing the Draft EIS/EIR and CDCA Plan amendment. At present, the BLM has identified the following preliminary issues: Air quality and greenhouse gas emissions, biological resources including special status species, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, land use, noise, recreation, traffic, visual resources, lands with wilderness characteristics, cumulative effects, and areas with high potential for renewable energy development. Pursuant to the CDCA Plan, sites associated with power generation or transmission not identified in the CDCA Plan will be considered through the plan amendment process to determine the suitability of the sites for renewable energy development. Since the proposed Project site was not previously identified as suitable, authorization of the Project will require amendment of the CDCA Plan. By this notice, the BLM is complying with requirements in 43 CFR 1610.2(c) to notify the public of potential amendments to land use plans predicated on the findings in the EIS/EIR. If a land use plan amendment is necessary, the BLM will integrate the land use planning process with the NEPA process for the project. A preliminary list of the potential planning criteria that will be used to help guide and define the scope of the plan amendment process include:

- The plan amendments will be completed in compliance with the FLPMA, NEPA, and all other relevant Federal laws, executive orders, and BLM policies;
- Existing, valid plan decisions will not be changed and any new plan decisions will not conflict with existing plan decisions; and
- The plan amendment(s) will recognize valid existing rights.

The BLM will also use and coordinate the NEPA commenting process to satisfy the public involvement process for Section 106 of the National Historic Preservation Act (16 U.S.C. 470(f) as provided for in 36 CFR 800.2(d)(3). Native American tribal consultations will be conducted in accordance with policy and tribal concerns will be given due consideration, including impacts on Indian trust assets. Federal, State, and local agencies, along with tribes and other stakeholders that may be interested in or affected by the BLM's decision on this project, are invited to participate in the scoping process and, if eligible, may request or be requested by the BLM to participate in the development of the environmental analysis as a cooperating agency.

In connection with its processing of AWD's application, the BLM is also segregating, under the authority contained in 43 CFR 2091.3–1(e) and 43 CFR 2804.25(e), subject to valid existing rights, the public lands within the Project application area from appropriation under the public land laws including the Mining Law of 1872, as amended, but not the Mineral Leasing or the Material Sales Acts, for a period of 2 years from the date of publication of this notice. The public lands contained within this temporary segregation total approximately 2,083 acres and are described as follows:

Mount Diablo Meridian

T. 32 S., R. 35 E.,
Sec. 26, SW¼ and W½SE¼;
Secs. 28, 32, and 34; and

San Bernardino Meridian

T. 12 N., R. 13 W.,
sec. 34.

The areas described aggregate approximately 2,083 acres in Kern County.

The BLM has determined that this temporary segregation is necessary to ensure the orderly administration of the public lands by maintaining the status quo while it processes AWD's ROW application for the above described lands. The temporary segregation period will terminate and the lands will automatically reopen to appropriation under the public land laws, including the Mining Law, if one of the following events occurs: (1) The BLM issues a decision granting, granting with modifications, or denying AWD's ROW

authorization request; (2) Publication in the **Federal Register** of a notice terminating this segregation; or (3) No further administrative action occurs at the end of this segregation. Any segregation made under this authority is effective only for a period of up to 2 years.

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Authority: 40 CFR 1501.7; 43 CFR 1610.2, 2091.3–1(e), and 2804.25(e)).

Thomas Pogacnik,

Deputy State Director, California.

[FR Doc. 2011–17717 Filed 7–14–11; 8:45 am]

BILLING CODE 4310–40–P

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[LLNM01000 L16100000 DO0000]

Notice of Intent To Prepare a Resource Management Plan Amendment for the Glade Run Recreation Area, Farmington Field Office, New Mexico, and Associated Environmental Assessment

AGENCY: Bureau of Land Management, Interior.

ACTION: Notice of Intent.

SUMMARY: In compliance with the National Environmental Policy Act of 1969 (NEPA), as amended, and the Federal Land Policy and Management Act of 1976 (FLPMA), as amended, the Bureau of Land Management (BLM) Farmington Field Office (Field Office), Farmington, New Mexico, intends to prepare a Resource Management Plan (RMP) amendment to the 2003 Farmington RMP with an associated Environmental Assessment (EA) to address recreation and travel management in the Glade Run Recreation Area (the Glade). By this Notice, the Field Office is announcing the beginning of the scoping process to solicit public comments and identify issues.

DATES: This Notice initiates the public scoping process for the RMP amendment/EA. Comments on issues and planning criteria may be submitted 30 days from the date of publication of this Notice in the **Federal Register** (the scoping period). The date(s) and location(s) of any scoping meeting(s) will be announced at least 15 days in advance through the local news media, mailings to interested individuals, and on the BLM Field Office Web site at: *http://www.blm.gov/nm/st/en.html.* In order to be included in the Draft RMP amendment/EA, all comments must be received prior to the close of the scoping period or 30 days after the last public meeting, whichever is later.

The BLM will provide additional opportunities for public participation and comment upon publication of the Draft RMP amendment/EA.

ADDRESSES: You may submit comments on issues and planning criteria related to the Farmington Field Office Glade Run Recreation Area RMP amendment/EA by any of the following methods:

- *Web site: http://www.blm.gov/nm/st/en.html.*
- *E-mail: FFO_Comments@blm.gov.*
- *Fax:* 505–599–8999 Attention: Outdoor Recreation Planner.
- *Mail:* 1235 La Plata Highway, Farmington, New Mexico 87401, Attention: Outdoor Recreation Planner.

Public comments, maps and other information related to the Glade RMP amendment/EA may be examined at the Field Office.

FOR FURTHER INFORMATION CONTACT: For further information and/or to have your name added to our mailing list, contact Janelle Alleman, Outdoor Recreation Planner, telephone: 505–599–8944; address: 1235 La Plata Highway, Farmington, New Mexico 87401; or by e-mail at *FFO_Comments@blm.gov.* Persons who use a telecommunications device for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 1–800–877–8339 to contact the above individual during normal business hours. The FIRS is available 24 hours a day, 7 days a week, to leave a message or question with the above individual. You will receive a reply during normal business hours.

SUPPLEMENTARY INFORMATION: The BLM Farmington Field Office, Farmington, New Mexico, intends to prepare an RMP amendment/EA to address recreation and travel management decisions in the Glade. The Glade encompasses 21,544 acres of which 17,935 acres are Federal lands. The remaining acres consist of State of New Mexico and private lands. The planning area is located in San Juan County, New Mexico. The purpose of the public scoping process is to determine relevant issues that will influence the scope of the RMP amendment/EA, including alternatives, and will help to guide the planning process.

New forms of motorized vehicles and technology, population growth, increasing user conflicts, and related developments have out-paced guidance and decisions in the current recreation and travel management plan for the Glade, which was approved in 1996. To address these developments, the RMP amendment/EA will consider proposals to amend the RMP to make changes in off-highway vehicle (OHV) area designations (43 CFR 8342.2). OHV area designations are land use allocations that classify areas of public lands as open, limited, or closed to motorized travel. The RMP amendment/EA will also consider a proposal to designate the Glade as a Special Recreation Management Area (SRMA). SRMA designations recognize specified public lands where recreation opportunities and recreation settings are the predominant land use planning focus and are managed through the land use planning process.

In addition, this planning effort will develop management alternatives that include specific activity planning targeted at identifying a travel and transportation network of routes for specified uses within the planning area.

The BLM anticipates the following planning issues (43 CFR 1610.2(c)(3)): (1) How to best address conflicts between recreational users? (2) What is an appropriate balance in providing for the different kinds of recreation uses and opportunities? (3) Is there an opportunity for a Recreation & Public Purpose lease within the planning area? and (4) How can BLM best promote and address public safety?

The BLM will use an interdisciplinary approach to develop the plan in order to consider the variety of resource issues and concerns identified. Specialists with expertise in the following disciplines will be involved in the planning process: Rangeland management, minerals and geology, forestry, outdoor recreation, archaeology, paleontology, wildlife and fisheries, lands and realty, hydrology, soils, sociology, and economics.

Proposed planning criteria include the following:

1. The RMP amendment/EA will comply with FLPMA, NEPA, and all other applicable laws, regulations, and policies;

2. For program-specific guidance for decisions at the land use planning level, the process will follow the BLM's policies in the Land Use Planning Handbook, H–1601–1;

APPENDIX C

Scoping Meeting Materials

ALTA EAST WIND PROJECT
SCOPING MEETING

KERN COUNTY PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT
and
BUREAU OF LAND MANAGEMENT

Mojave Veterans Building Room 1
15580 O Street
Mojave, CA

August 4, 2011 – 7:00 p.m. to 9:00 p.m.

Meeting Schedule

5:00 p.m. – Introductions from Kern County and Bureau of Land Management
5:10 p.m. – CEQA/NEPA Scoping Process
5:20 p.m. – Alta East Wind Project Description
5:30 p.m. – Public Comment Period Begins (a court reporter is present)
6:30 p.m. – Question and Answer Session
7:00 p.m. – Meeting Adjourns

CEQA/NEPA Scoping Process

The Kern County Planning and Community Development Department as Lead Agency (per CEQA Guidelines Section 15052) and the U.S. Bureau of Land Management (BLM), Ridgecrest Field Office, as federal Lead Agency, are preparing a joint Environmental Impact Report (EIR), per the California Environmental Quality Act (CEQA) Guidelines Section 15161, and Environmental Impact Statement (EIS) per the National Environmental Policy Act of 1969 (NEPA) for the Alta East Wind Project proposed by Alta Windpower Development, LLC (Project Proponent). The joint EIR/EIS may include an amendment to the California Desert Conservation Area (CDCA) Plan.

Pursuant to the requirements of CEQA and NEPA, this scoping meeting is being held to receive public and agency comments on the preparation of the joint EIR/EIS for the Alta East Wind Project. The process of determining the scope, focus, and content of the EIR/EIS is known as "scoping." Scoping helps to identify the range of actions, alternatives, environmental effects, methods of assessment, and mitigation measures to be analyzed in depth, and eliminate from detailed study those issues that are not important to the decision at hand. This is not a public hearing; however, the public may be present and offer comments. A court reporter is present and will be preparing a written transcript of the meeting. If you intend to address an item on the agenda, please prepare a comment card and return that card to agency staff before the comment session begins. Written comments may also be submitted on the comments sheets at the meeting or after the meeting until August 15, 2011.

The comment submittal forms have been prepared to allow for your comments to also apply to the proposed Rising Tree Wind Farm Project, if applicable. The scoping meeting for the Rising Tree Wind Farm Project is scheduled to begin promptly at 5:00 p.m., immediately prior to the Alta East Wind Project scoping meeting.

Comments specific to the Rising Tree Wind Farm Project should presented during the Rising Tree Wind Farm Project scoping meeting or be submitted in writing, as described below, prior to August 16, 2011.

Alta East Wind Project Description

(a) General Plan Amendment 2, Map 168; (b) General Plan Amendment 2, Map 168-27; (c) General Plan Amendment 3, Map 179; (d) General Plan Amendment 1, Map 180; (e) Zone Change Case 10, Map 168; (f) Zone Change Case 4, Zone 168-27; (g) Zone Change Case 3, Map 179; (h) Zone Change Case 6, Map 180; (i) Zone Change Case 47, Map 197; and (j) Conditional Use Permit 7, Map 168.
Alta Windpower Development, LLC (PP11212)

The proposed Alta East Wind Project is a renewable energy project that would generate up to 360 megawatts (MW) on a 3,200-acre project site located two (2) miles west of the intersection of State Route (SR) 58 and SR 14, in Mojave, California, and north and south of SR 58, on 1,117 acres of private lands under the jurisdiction of Kern County and 2,083 acres of public lands administered by the BLM. The requested applications would also permit construction of ancillary facilities and supporting infrastructure, and a concrete batch plant to provide concrete and materials for turbine, substation, and building foundations. Permanent facilities would include up to 120 wind turbine generators, service roads, a power collection system, communication cables, overhead and underground transmission lines, electrical switchyards, project substations, meteorological towers, and operations & maintenance facilities.

The Project Proponent, Alta Windpower Development, LLC, is requesting: (a) an amendment to the Circulation Element of the Kern County General Plan to eliminate section and mid-section line road reservations within Map 168; (b) an amendment to the Circulation Element of the Kern County General Plan to eliminate section and mid-section line road reservations within Map 168-27; (c) an amendment to the Circulation Element of the Kern County General Plan to eliminate section and mid-section line road reservations within Map 179; (d) an amendment to the Circulation Element of the Kern County General Plan to eliminate section and mid-section line road reservations within Map 180; (e) a change in zone classification from the E (20) (Estate 20 acres) District and A-1 (Limited Agriculture) District to the A (Exclusive Agriculture) District, A WE (Exclusive Agriculture - Wind Energy Combining) District, in Map 168; (f) a change in zone classification from the A-1 District to the A District, A WE District, and A FP (Exclusive Agriculture – Floodplain Combining) District in Map 168-27; (g) a change in zone classification from the A-1 District to the A District and A WE District in Map 179; (h) a change in zone classification from the A-1 District to the A District and A WE District in Map 180; (i) a change in zone classification from the A-1 District to the A District in Map 197; and (j) a conditional use permit to allow for the use of a temporary concrete batch plant during construction of the wind energy facility in Map 168.

Alta Windpower Development, LLC, has also requested a right-of-way (ROW) authorization from the BLM to construct, operate, maintain, and decommission the proposed Alta East Wind Project. Pursuant to the CDCA Plan, sites associated with power generation or transmission not identified in the CDCA Plan are considered through the plan amendment process.

How to Submit Scoping Comments

Comments on issues and alternatives regarding the proposed Alta East Wind Project Draft EIR/EIS may be submitted verbally and in writing at tonight's scoping meeting. Comments may also be submitted until August 15, 2011, by any of the following methods and contacts listed below.

Ms. Jacquelyn Kitchen
Planner III
Project Manager
Kern County Planning and
Community Development Department
2700 M Street, Suite 100
Bakersfield, CA 93301-2370
Phone: (661) 862-8619
Fax: (661) 862-8601
Email: KitchenJ@co.kern.ca.us

AND

Mr. Jeffrey Childers
Project Manager
Bureau of Land Management
California Desert District Office
22835 Calle San Juan De Los Lagos
Moreno Valley, CA 92553-9046
Fax: (951) 697-5299
altaeast@blm.gov

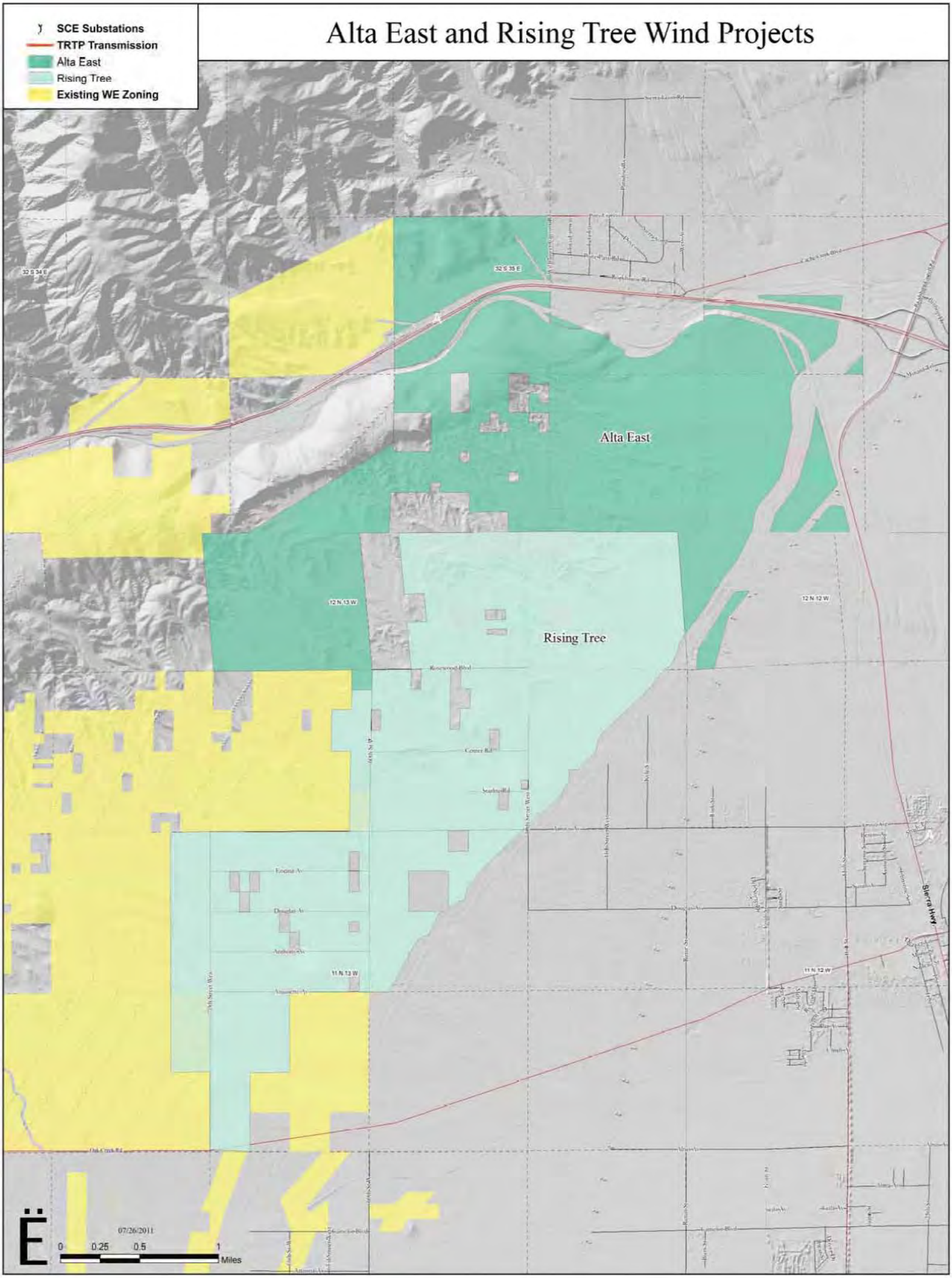
Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Requests for Special Assistance

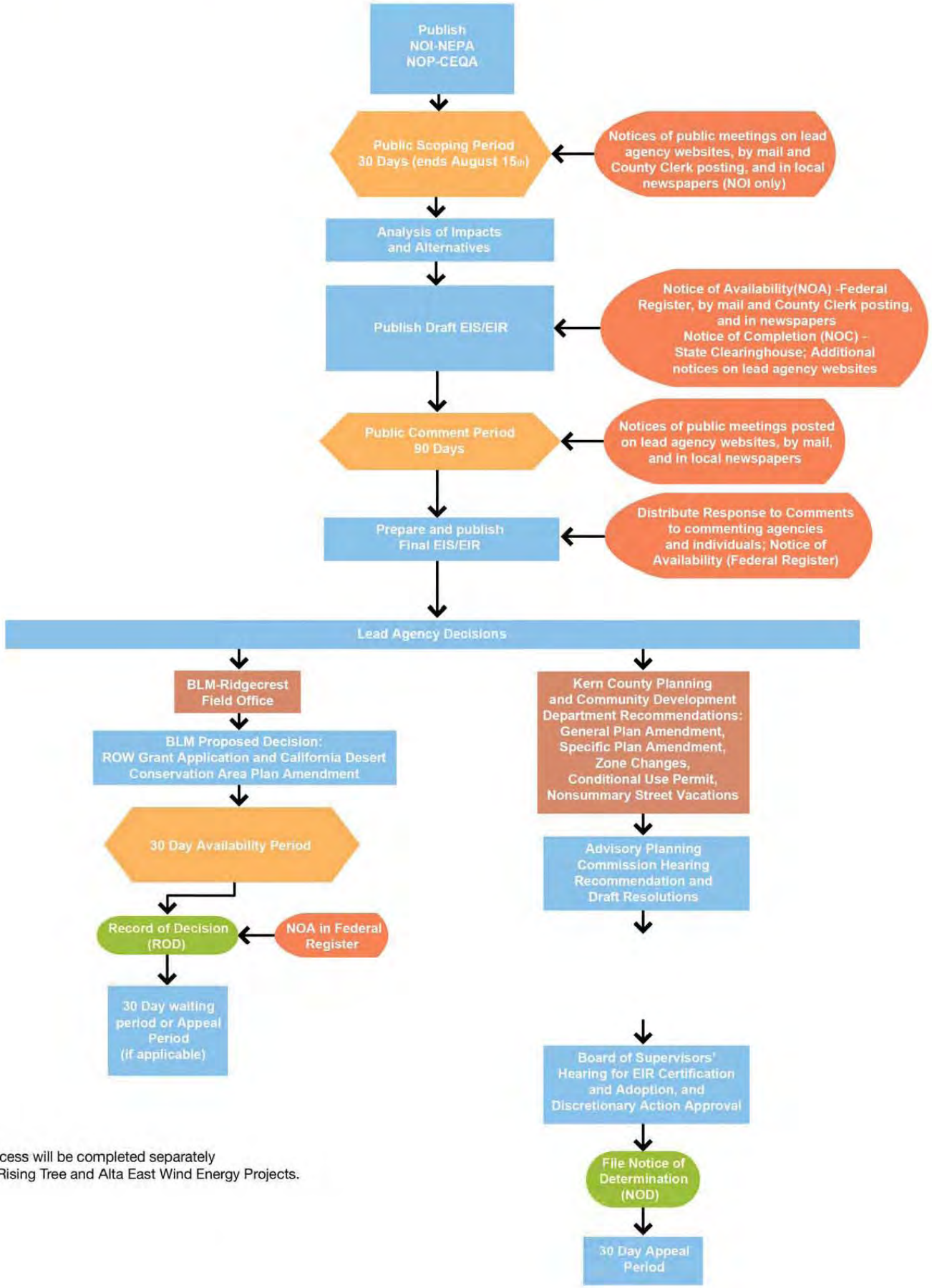
Pursuant to the Americans with Disabilities Act, disabled individuals who need special assistance to attend or participate in the scoping meeting may request assistance at the Kern County Planning and Community Development Department or by calling Janet Bowtell at (661) 862-8615. Every effort will be made to reasonably accommodate individuals with disabilities by making meeting materials available in alternative formats. Requests for assistance should be made five (5) working days in advance whenever possible.

Posted: August 3, 2011
CBM:MDH

Alta East and Rising Tree Wind Projects



Kern County and BLM Joint CEQA/NEPA Process



Note:
This process will be completed separately
for The Rising Tree and Alta East Wind Energy Projects.

Bureau of Land Management & Kern County, California

Public Scoping Meetings

Rising Tree Wind Farm EIS/EIR and Alta East Wind Farm EIS/EIR

Veterans Building, Mojave, CA - August 4, 2011

SIGN-IN SHEET FOR SCOPING MEETINGS

NAME	AFFILIATION	MAIL ADDRESS	PHONE	EMAIL	Add to Rising Tree Mailing List?	Add to Alta East Mailing List?
S.P. Vallogrena		14718 Winchester Dr	✓	✓	✓	✓
Daniel Dotson		Bakersfield Ca 93305 2025 Monterey St.	626-864-6130		✓	✓
David Dmohowski	Premier Planning Group	500 Truxtun S 300 Bak 93301	661-377-1089	dawd@projectdesign.com	✓	
Irene Matyjick		P.O. Box 705 Mojave CA 93502	818 421 7880		✓	✓
Terry ADAMS ~~Robert Jelas~~		Box 227 93549				
Robert J. Jelas	T.M. WPARK INC					

Before including your address, phone number, email address, or other personal identifying information in your comment(s), you should be aware that your entire comment(s) – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment(s) to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

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NAME	AFFILIATION	MAIL ADDRESS	PHONE	EMAIL	Add to Rising Tree Mailing List?	Add to Alta East Mailing List?
Dal Reinke	Edwards AFB	POB 385 Edwards, CA 93523		danny.reinke@edwards.af.mil	X	✓
Charlotte Beale	Mojave	14356 Bieri Mojave	8242354			
TIM MARRIGH	EDPR		510.292.0246	timothy.marrich@edpr.com		
John Mijons	Home owner	PO Box 383 Mojave CA 93502	661 824 8849	—		
Jim Crocoll	Mojave Resident	16329 Koch St. Mojave CA 93501	661 824-9536	crocoll165@sbcglobal.net	✓	✓
Jon VanDerZee	EDPR	53 SW Yamhill St Portland, OR 97204	503-535-1516	jon.vanderzee@horizonwind.com		

Before including your address, phone number, email address, or other personal identifying information in your comment(s), you should be aware that your entire comment(s) – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment(s) to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

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NAME	AFFILIATION	MAIL ADDRESS	PHONE	EMAIL	Add to Rising Tree Mailing List?	Add to Alta East Mailing List?
Johnny Casana	EDPR	53 SW Yamhill Portland, OR 97214	503.535.1528	Johnny.Casana@EDPR.com	No	No
Deborah Crocoll	Resident	16329 Koch St	661 824-9536	Crocoll65@skyglobal.net	✓	✓
Jean P Chave	Resident	14274 Bieri St	661 824 2564			✓
Michael Fortuna	"	PO BOX M ~~3304 Cantor Blvd~~ 93502	661-478-7132			✓
Susan Fortuna	"	"	"			✓
Mark Casper	Terra-Gen		646-291-2011	mcasper@terra-genpower.com	No	No

Before including your address, phone number, email address, or other personal identifying information in your comment(s), you should be aware that your entire comment(s) – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment(s) to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

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Veterans Building, Mojave, CA - August 4, 2011

SIGN-IN SHEET FOR SCOPING MEETINGS

NAME	AFFILIATION	MAIL ADDRESS	PHONE	EMAIL	Add to Rising Tree Mailing List?	Add to Alta East Mailing List?
Bennett Collier	Terra-Gen	11512 El Camino Real #100 San Diego, CA 92130		bcollier@tgpnyc.com	✓	✓
Randy Jenks	Terra-gen	"		rjenks@Terra-genpower.com	✓	✓
Joseph Sherlino	Owner					✓
Rose Nayer	"	PO Box 156 Mojave 93501				
George Pearson	Resident	PO Box 614 Mojave 93502		gpep3@yahoo.com		
Moira Sanders	SAIC	2012 Mountain Ave. SB, CA 93101		Sandersmm@saic.com		

Before including your address, phone number, email address, or other personal identifying information in your comment(s), you should be aware that your entire comment(s) – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment(s) to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

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Veterans Building, Mojave, CA - August 4, 2011

SIGN-IN SHEET FOR SCOPING MEETINGS

NAME	AFFILIATION	MAIL ADDRESS	PHONE	EMAIL	Add to Rising Tree Mailing List?	Add to Alta East Mailing List?
Jeanne Hall-Ledere		5800 Rosewood Bl	661-824-4339	—		
Jacques Ledere		5818 Rosewood Bl	661-824-0184	—		
Jim Price	Owner	5553 W. Lane Ln	661 223 0465	jim.price-civil-engineer@gmail.com	*	
Andrew Nelson	SAIC	5464 Carpinteria Ave Carpinteria CA	805-566-6403	nelsonad@saic.com		
DAVID Armstrong		PO BOX 7 MOJAVE, CA 93502	661/824-2110	—		
Hedy Koczwara	Aspen Envir-Group	235 Montgomery St, Ste 935 SF, CA 94104	415-955-4775 x207	hkoczwara@aspeneg.com		X

Before including your address, phone number, email address, or other personal identifying information in your comment(s), you should be aware that your entire comment(s) – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment(s) to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Bureau of Land Management & Kern County, California

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Veterans Building, Mojave, CA - August 4, 2011

SIGN-IN SHEET FOR SCOPING MEETINGS

NAME	AFFILIATION	MAIL ADDRESS	PHONE	EMAIL	Add to Rising Tree Mailing List?	Add to Alta East Mailing List?
Negar Vahidi	Aspen	5020 Chesebro Rd. Agoura Hills, CA 91301	818 597 3407	nvahidi@aspenenv.com		X
Jim Radmach						
Bud Bell		22301 Pine Cyn Rd Tehachapi CA 93561	661 822 7617			
Marilyn Yerkey		2420 Three Springs Dr. Westlake Village, CA 91361	818 8848960		X	X
Robert Blackburn		1495 North Batea St. Camarillo, CA 93010	805 482-4836		X	X

Before including your address, phone number, email address, or other personal identifying information in your comment(s), you should be aware that your entire comment(s) – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment(s) to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

APPENDIX D

Scoping Meeting Transcript

COPY

ALTA EAST WIND ENERGY PROJECT SCOPING MEETING

VETERANS HALL

MOJAVE, CALIFORNIA

AUGUST 4, 2011

7:00 P.M.

APPEARANCES:

JEFF CHILDERS:	BUREAU OF LAND MANAGAMENT CALIFORNIA DESERT DISTRICT OFFICE MORENO VALLEY, CALIFORNIA
CHRIS MYNK:	KERN CO. PLANNING, COMMUNITY DEVELOPMENT DEPARTMENT BAKERSFIELD, CALIFORNIA (Supervising Planner)
JACQUI KITCHEN:	KERN CO. PLANNING, COMMUNITY DEVELOPMENT DEPARTMENT BAKERSFIELD, CALIFORNIA (Project Manager for Alta East)

James G. Ortiz, CSR
Cert. No. 5756
(661) 868-4942

INDEX

COMMENTOR	PAGE
GEORGE PEARSON	9
IRENE MATIGICK	10
DANIEL DOTSON	12
MARILYN YURKI	15

Mojave, California, August 4, 2011

7:00 p.m.

--o0o--

MR. CHILDERS: We wanna start the scoping meeting on the Alta East Windpower. We had the Rising Tree projects from seven to nine -- or from five to seven, and we're going to do Alta East from seven to nine. I want to try to do the same kind of introductions we did before: I'm Jeff Childers from the California Desert District, Bureau of Land Management Moreno Valley. I'm the project manager for the Alta East project. We have some staff here from this county.

MR. MYNK: Chris Mynk, Kern County Planning and Community Redevelopment Department. I'm a supervising planner.

MS. KITCHEN: I'm Jacqui Kitchen, I'm the project manager from the Kern County Planning and Community Development Department.

MR. CHILDERS: And we have some of our support staff helping us out as well.

So the Alta East project is now another joint document with BLM and the county; we're going to be doing a joint CEQA/NEPA document, means we're going to be addressing the Environmental Policy Act, the California Quality

Act in one document.

The project consists of lands both under the jurisdiction of Kern County for Land Use and the BLM. This particular project has a lot more BLM interest than the Rising Tree project. I'll let Chris go into the details, specifically on the acreages.

So the processes as we have described before, we're at the very beginning of what we call the NEPA process. I'm gonna talk about NEPA and Chris is gonna talk about CEQA.

The NEPA process starts out with our scoping: we send out a Notice of Intent through our federal registered noticing process. It let's everybody know, hey, we're getting ready to start a process. A lot of you have commented on how to get that information, and if you need more information on how to get those things, let me know, I'll pass it on to you.

So we start off with the NOI, we come out to the community, we do a scoping meeting, ask for your input about the issues that are out there on the ground.

Sometimes we may not recognize some of the issues that are important to people; we want your input. We're here to get your input in a number

of different ways: we're recording it just on the regular recorder, we have a court reporter who's taking down the transcripts, and we have the speaker cards; if you wanna speak, fill out a card, bring it up here. You don't have to stand up, you can sit there and talk if you want to. Take those comments, we'll take those comments, that part of the scoping process, we will take it back and we'll do all the analysis of the resource sections. And we'll also analyze any specfic issues that you've brought up.

So this is kind of a give and take: You give us things that you're concerned about, we'll take that back and compile it with all of our internal scoping, the other agencies' responsibilities, the county's responsibilities, we'll draft a document, an environmental report, environmental assessment, EIS/EIR. We'll send that back out to you for 90 days. The draft document will go out for 90 days. So you'll have 90 days to comment on this document. Tell us what we missed. Tell us if we missed something. If you said you wanted to look at the purple horned flower, and we didn't cover the purple horned flower, hey, you missed the purple horned flower. So we'll go back and address that issue.

So that's what we're trying to do, get that information from you all, write it down, compile it and try to get it in a number of different ways: people taking notes, the court reporter. We want your input.

Then we'll come out with a draft document. You'll comment on that. We will take your comments and analyze them, make sure we've covered everything. We'll respond to those comments. We have a couple different ways of doing that; county's got a little different process, which is cool. We'll respond to those comments, and then we'll come back out with the final document.

At this point it gets a little different, the county and BLM. We're gonna have a final document that's gonna go out for about 30 days. After that 30-day period we'll come up with a Record of Decision, we'll have all of our findings in there. We'll take that decision and provide it to you for comment for another 30 days. So then that's actually an appealable period.

This project does include a plan amendment to the California Desert Conservation Area Plan. Parts of this project are included in three different types of what we call multiple use classes. So there's some differences to this

1 project that are a little bit different than Alta
2 East or -- excuse me, than Rising Tree.
3 So we'll do a plan amendment process that
4 gives you another 30 days of protest period. And
5 then at the end of that time we'll work with the
6 applicant to sign a Notice of Receipt.
7 So that's pretty much the conclusion of the
8 NEPA process. There are some other processes that
9 go along with it. But we really are here to get
10 your comments. I'm gonna turn it over to Chris
11 now to talk about the CEQA portion.
12 MR. MYNK: So most of you here were here
13 earlier, when we were speaking.
14 The CEQA process does follow the NEPA
15 process at the beginning: It does vary towards
16 the end of the process. So after the comment
17 period that Jeff talked about, the county then has
18 a Response to Comments period. And that is where
19 we formulate all of our responses to comments, and
20 we send that back out to all of the people that
21 commented on the projects. If you commented on
22 the project, you would receive our responses back,
23 a whole list of everybody's responses. That is
24 mandated to be sent to all commentors at least ten
25 days before a public hearing. We typically like
26 to do three weeks before a public hearing. During

that time, we send out a Public Hearing Notice. And that notice is for the planning commision meeting. Planning commissioners are appointed by the board of supervisors. They make a recommendation on the project to the board of supervisors. And this is for all county portions of the project.

After that meeting, we then send out a Public Hearing Notice to the board of supervisors and they would make the final decision. That meeting is held in Bakersfield, it's usually at 2:00 p.m. on Tuesdays. And you would be notified well in advance of that meeting, should you choose to show up and talk about the project.

That's really kind of the difference between the NEPA and CEQA process. I didn't say it before, but we're kind of excited that we get to do this process. My staff is very versed in writing CEQA documents and going through that county process. But this is kind of some of the first times that we have been able to do a joint document for a joint project. It's a little interesting, it's been fun to work with the different agencies, see different perspectives, get different feedback and input on the process. So that's been a good little learning exercise for

us. I'll go ahead and start talking about the project that we have before us.

This project is pretty similar to the Rising Tree Project, it's the Alta East Wind Energy Project by Alta Wind Power Development, LLC. For the county they have four general plan amendments, four zone changes and one conditional use permit for a temporary batch plant. That is the request before us.

The project is located two miles west of the intersection of Highway 58 and Highway 14, directly north of the Rising Tree Project, for everybody that was here at that meeting earlier.

The Project consists of 360 megawatts of electricity, 3,200 acre project site.

Of that project site, 2,083 acres are on public land. So it's a little larger public portion than the previous project. But the same concept applies: You would have ancillary facilities such as access roads, underground transmission lines, above ground transmission lines, an O. and M. facility, operations and maintenance facility. All of these are part of the project that is being proposed before the county and the BLM.

With that, I'll turn it back over to Jeff

to start the public testimony portion.

MR. CHILDERS: Just to give you a rundown how we wanna do this, we'll do the same thing we did before: if you'd like to speak, if you filled out a card before, we have your name. Just say your name beforehand, so we can capture that. We'll take your name, you can say your comments, we'll take notes.

Please let us know if there's any issues. That's what we're really looking for, if there's any kind of environmental issues, concerns that you might have about what the project is, we'll capture that information. And when we're done with everybody who wants to speak, we'll do the open house again, and talk about this project, which is a little different, has a little more public lands influence, and we can talk about the issues that are specific to this site as well, which is a little bit different resource issues out on this site, versus the Rising Tree site. So we'll do that.

With that, if you filled out a Comment card, you'd like to speak, just raise your hand and we'll get started. If you wanna have the same comments that you had earlier included, just let me know. You don't have to say anything right

now, but let me know, we'll just do that.

GEORGE PEARSON: Is this the time to stand up and speak your peace?

MR. CHILDERS: Yes, sir, if you'll say your name, we'll be good to go.

GEORGE PEARSON: My name is George Pearson, I spoke earlier. There's two points. First of all, what are these projects going to do to the local water tables? This is brought to my attention by somebody who is down Backus Road, they thought their water level had dropped below the well they dug a long time ago. Turns out they had a broken pipe, so it wasn't really a water table problem. But the existing question is, what does this do to the water situation? I don't know how much the wind turbines can use, I can't see what they use water for, except to make the concrete in the first place. But who knows.

And the second thing is, there's a bigger issue that I think is being skirted, is that a lot of the people go out and live in the Homestead area and other places like that, do that out of choice, because they don't wanna put up with the nonsense and control trips and all the other garbage that get, you get involved with in living in a community, even as small as Mojave. So, this

is, can be construed as a threat to their way of life and their peace of mind. And that certainly has to be taken into consideration. Because it's a direct intrusion on somebody's personal space. That's about it.

MR. CHILDERS: Thank you. Anyone else?

IRENE MATIGICK: Irene Matigick again. To reiterate the same things I said for the last project, I did have a couple of questions: Because there's a lot more BLM land involved, is there going to be more general public notice? We talked about it during break that I'm involved actually in some BLM dealings in Nevada so, it's not like it's just Mojave people. Is there a way to notify just more general people that might have an interest in the desert and in the changes that are being made?

MR. CHILDERS: Get with me after.

IRENE MATIGICK: Okay. Also, when it comes to you putting out the report, you were giving an example of red, the purple whatever plant, and is there a way to I. D. stuff by pictures? Because what you might call purple I might call periwinkle, and we're gonna be -- are we talking about the same plant? Animals I have no problem with, but when it comes to the plants and the

general issues...

Again, trust issues are part of it. Just making sure that the, the people doing the asking of the questions and giving of the answers are actually held accountable for information they're gathering, and that there's a way, I don't know if there's any kind of public oversight for any of that, so we're sure that, you know, they don't just take the report, and one report that really has a lot of information in it, kind of file it in a circular file. I would hate to see that happen. That's just my own suspicious mind. And the fact that everything seems to be LLC, which is that whole temporary, we're here today, gone tomorrow feeling of dealing with things.

JOSEPH SHERLINE: Limited liability corporation.

IRENE MATIGICK: Exactly.

JOSEPH SHERLINE: If somebody knocks on the door and nobody's home.

IRENE MATIGICK: Be sure and write us next week and we're not here.

Electromagnetic waves, I don't know if that has anything to do with it, I mean, you're putting in transmission, I know you don't hold electricity, but there's gotta be a way to track

it out of there, whether it's under the ground, over the ground, whatever. Electromagnetic waves have a huge impact on people's healths, on just living conditions. Just it has a large impact on wildlife, which are a lot more sensitive than we tend to be. Things like bats, it affects the echo location that's going to have a huge impact on them. And again, back to the migratory birds and all; like I said, all the comments that I made at the last meeting, just kinda ditto.

If there's any way at all, instead of just completely ripping everything out and denuding and watching the winds come through and blow up big dust storms, if there was a way they can consider co-existing and making it so they're not so damaging to the land around you and you're actually much more selective on how you access the area you're gonna access, and how much of a footprint you leave. That's it.

MR. CHILDERS: Anyone else?

DANIEL DOTSON: I have a couple questions. The neighborhood that's towards the top of that map there, were all people that live in that neighborhood notified? I'm not sure where everyone's from. Because that's a neighborhood right there that's just east of that green mark.

JACQUES LECLERC: I'm the last one up there, me and my wife, I don't know of anybody else. Well, we have a neighbor, but he works for the wind farms.

DANIEL DOTSON: But are you north of the highway there? I'm talking all the way, if you look all the way to the top, there's a full block, there's Rockhouse Road.

JACQUES LECLERC: That's Cache Creek, yeah, that's on the other side.

DANIEL DOTSON: If those people there were notified as well?

JOSEPH SHERLINE: You talking about here?

DANIEL DOTSON: To the right. There's quite a few people.

JACQUES LECLERC: That may be Hanson's property up in the mountains.

DANIEL DOTSON: Some of it is Hanson's. But there are other properties there.

MR. MYNK: The standard notification for a Notice of Preparation is a thousand foot around the project site and all parcels within the project site. So that that's our standard notification for a Notice of Preparation.

We also, then when we go through the draft EIR, we would do the same, but we also then start

1 to publish things in the local newspapers. So
2 that's where we get even a broader spectrum of
3 participation.
4 The scoping process is really, was really
5 laid out in CEQA for agency, agency consultation.
6 Kern County, we feel as planners, that it
7 shouldn't just being limited to agencies. And
8 that's why we go further than what state law
9 requires of us and we actually notify people
10 within a thousand feet of the project. Other
11 jurisdictions may only do notification to agencies
12 and not actually provide any public participation
13 from local residents. So we feel like we're going
14 beyond what is required of us by state law to
15 notify people. And we continue to provide more
16 notification as the process goes on, and we do
17 that even more so than what's required of state
18 law of us.
19 IRENE MATIGICK: That kind of brings me
20 back to the BLM question versus county property.
21 It's one thing to notify the homeowners, but
22 again, with BLM land, you're talking public land.
23 There's a much larger interest in what should or
24 shouldn't be preserved for the greater public. So
25 a thousand feet just really doesn't cut it. It
26 really should be much more public notice. And if

you've ever tried to read the sections of the newspaper where you do your official legal, yes you've done your due diligence and you're covered, but if you really look at it, you can go blind trying to read that and find out your particular issue. If there were a way to do an article or something on the local news, something where it's a little bit more, I guess public notification, because there's more people involved than just the ones that live there.

MR. CHILDERS: Yes, ma'am?

MARILYN YURKI: I'm here because my husband passed away last year and he had quite a bit of land in Rosamond and Mojave, and I'm just getting a handle on where it is. And I got this letter and so the closest place I could think I am is by like Backus and 30th. Is this actually a thousand feet from that -- or how do I find out what parcels of mine are actually within a thousand feet? Because it doesn't say that on the letter.

MR. CHILDERS: We'd have to --

MR. MYNK: Ma'am, what we could do is, Jacqui Kitchen here is the day-to-day project manager for the county, she has a list of all parcels that are either within the project boundary or a thousand feet from the project

boundary. I would just suggest that you give her that information tonight, if you have it, or you guys can exchange numbers and then contact her later on and she'll walk you through, send you a map, e-mail you, whatever you need.

MARILYN YURKI: That would show which parcels --

MR. MYNK: Exactly. It's common for us to go ahead and take people's parcels when they ask us and put that on a map and send it to them to show them exactly where they are in relation to the project boundary.

MR. CHILDERS: Can you please state your name?

MARILYN YURKI: Marilyn Yurki.

MR. CHILDERS: Again, I wanna reiterate, this is not the end of the process. The scoping process continues through, and we really wanna have everybody's input, as much as you can give us. If you have a concern or a thought process, send us communication, either a letter, you can address it to the county, you can send us e-mails, our e-mails, the project specific e-mails are in the agendas tonight.

If you have any specific questions, feel free to give us a ring and talk to us. We're here

to serve and we're here to take your comments.

With that, I think we're pretty much done with the public scoping. Nobody has anything else to say? Again, we'll be here until everybody decides to go home. And I'll be here until you tell me to go home. We'll be here and we appreciate your input. And again, thank you all for coming.

(Whereupon, the hearing was concluded at 7:45 p.m.)

--o0o--

STATE OF CALIFORNIA)
) ss.
COUNTY OF KERN)

I, James G. Ortiz, a Certified Shorthand Reporter, hereby certify that I, as Official Reporter, was present and took down correctly in shorthand all the testimony and proceedings in the foregoing-entitled matter on August 4, 2011; and I further certify that the annexed and foregoing is a full, true and correct statement of such testimony and proceedings, and a full, true and correct transcript of my shorthand notes thereof.

Dated at Bakersfield, California on this 18th day of August, 2011.

Official Reporter Cert. No. 5756

APPENDIX E

Written Comments Received During Public Scoping Period

Nick Dunn
Fire Chief & Director of Emergency Services

Fire Department Headquarters
5642 Victor Street • Bakersfield, CA 93308 • www.kerncountyfire.org
Telephone 661-391-7000 • FAX 661-399-2915 • TTY Relay 800-735-2929

2 May 2011

Alta Windpower Development LLC
Attention: Randy Jenks
11512 El Camino Real Suite 100
San Diego, CA 92130

Mr. Jenks,

Your proposed wind energy project will directly impact Kern County Fire Departments (KCFD) existing emergency response and general service capacities.

This Fire Department requests the following mitigation measures to offset the service deficits precipitated by your project:
(Note, please, facility, accessory and/or process modifications will conform to KCFD regulations and standards).

1. Install and maintain water tanks/cisterns strategically installed at one 10,000 gallon tank per square mile.
2. Install and maintain access roads, which interlace the project site.
3. Donate fire safety educational material through the Kern County Fire Prevention Unit to the elementary schools in the Mojave and Tehachapi areas. Contact Fire Prevention at (661)391-7080.
4. Donate rescue equipment and gear to the Kern County Fire Department for fire stations in the Mojave and Tehachapi areas. Contact Fire Prevention to discuss at (661)391-7080.

Please remit <u>$90.00</u> to cover project impact/mitigation processing costs.

Respectfully submitted,

NICK DUNN, Fire Chief

Benny Wofford, Fire Marshal

This is an example of what page 2 would look like.

Jacquelyn Kitchen - Alta East Wind Energy Proj

From: Laith Sheet <llsheet@hotmail.com>
To: <kitchenj@co.kern.ca.us>
Date: 07/19/2011 9:35 AM
Subject: Alta East Wind Energy Proj

Hi Jacquelyn, I am writing you as a property owner who cannot attend the upcoming planning meeting where the referenced project will be discussed. I own three parcels of land that will be less than a 1000 feet from this proposed Project. First let me say that if this project is allowed to progress it will basically render my property to be worthless. I am saying this because of the noise and negative esthetic and nature value that this project will contribute to the environment around that area. I have seen similar projects near Indio and the Altamont Pass area of CA, both of which have resulted in those same negative consequences with no restetution to the property owners around them.

My only suggestion is to obligate the sponsors of any such project to purchase all properties within a one mile radius around the project. That is really the only equitable thing to do.

Anyway - you have my NO vote.

Regards, Laith Sheet
925.352.4603

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-6251
Fax (916) 657-5390
Web Site www.nahc.ca.gov
ds_nahc@pacbell.net

July 29, 2011

Ms. Jacquelyn R. Kitchen, Planner

Kern County Planning and Community Development Department

2700 "M" Street, Suite 100
Bakersfield, CA 93301

Re: SCH#2011071051 CEQA Notice of Preparation (NOP); draft Environmental Impact Report (DEIR) fo the **"JRK 01-11; Alta East Wind Energy Project, GPA 2, Zone Map 168;"** located in the Mojave Desert and the Tehachapi Wind Resource Area; Kern County, California

Dear Ms. Kitchen:

The Native American Heritage Commission (NAHC), the State of California 'Trustee Agency' for the protection and preservation of Native American cultural resources pursuant to California Public Resources Code §21070 and affirmed by the Third Appellate Court in the case of EPIC v. Johnson (1985: 170 Cal App. 3rd 604.. The NAHC wishes to comment on the above-referenced proposed Project.

This letter includes state and federal statutes relating to Native American historic properties of religious and cultural significance to American Indian tribes and interested Native American individuals as 'consulting parties' under both state and federal law. State law also addresses the freedom of Native American Religious Expression in Public Resources Code §5097.9.

The California Environmental Quality Act (CEQA – CA Public Resources Code 21000-21177, amendments effective 3/18/2010) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archaeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR) per the CEQA Guidelines defines a significant impact on the environment as 'a substantial, or potentially substantial, adverse change in any of physical conditions within an area affected by the proposed project, including ...objects of historic or aesthetic significance." In order to comply with this provision, the lead agency is required to assess whether the project will have an adverse impact on these resources within the 'area of potential effect (APE), and if so, to mitigate that effect. The NAHC Sacred Lands File (SLF) search resulted as follows: **Native American cultural resources were not identified** within one-half mile of the project site, the 'area of potential effect (APE), based on the USGS coordinates provided. The absence of archaeological items at the surface level does not preclude their existence at the subsurface level once ground-breaking activity is underway.

The NAHC "Sacred Sites,' as defined by the Native American Heritage Commission and the California Legislature in California Public Resources Code §§5097.94(a) and 5097.96. Items in the NAHC Sacred Lands Inventory are confidential and exempt from the Public Records Act pursuant to California Government Code §6254 (r).

Early consultation with Native American tribes in your area is the best way to avoid unanticipated discoveries of cultural resources or burial sites once a project is underway. Culturally affiliated tribes and individuals may have knowledge of the religious and cultural significance of the historic properties in the project area (e.g. APE). We strongly urge that you make contact with the list of Native American Contacts on the attached list of Native American contacts, to see if your proposed project might impact Native American cultural resources and to obtain their recommendations concerning the proposed project. Pursuant to C"A Public Resources Code § 5097.95, the NAHC requests that the Native American consulting parties be provided pertinent project information. Consultation with Native American communities is also a matter of environmental justice as defined by California Government Code §65040.12(e). Pursuant to CA Public Resources Code §5097.95, the NAHC requests that pertinent project information be provided consulting tribal parties. The NAHC recommends *avoidance* as defined by CEQA Guidelines §15370(a) to pursuing a project that would damage or destroy Native American cultural resources and Section 2183.2 that requires documentation, data recovery of cultural resources.

Furthermore we recommend, also, that you contact the California Historic Resources Information System (CHRIS) California Office of Historic Preservation for pertinent archaeological data within or near the APE, at (916) 445-7000 for the nearest Information Center in order to learn what archaeological fixtures may have been recorded in the APE.

Consultation with tribes and interested Native American consulting parties, on the NAHC list, should be conducted in compliance with the requirements of federal NEPA (42 U.S.C 4321-43351) and Section 106 and 4(f) of federal NHPA (16 U.S.C. 470 *et seq*), 36 CFR Part 800.3 (f) (2) & .5, the President's Council on Environmental Quality (CSQ, 42 U.S.C 4371 *et seq.* and NAGPRA (25 U.S.C. 3001-3013) as appropriate. The 1992 *Secretary of the Interiors Standards for the Treatment of Historic Properties* were revised so that they could be applied to all historic resource types included in the National Register of Historic Places and including cultural landscapes. Also, federal Executive Orders Nos. 11593 (preservation of cultural environment), 13175 (coordination & consultation) and 13007 (Sacred Sites) are helpful, supportive guides for Section 106 consultation.

Furthermore, Public Resources Code Section 5097.98, California Government Code §27491 and Health & Safety Code Section 7050.5 provide for provisions for accidentally discovered archeological resources during construction and mandate the processes to be followed in the event of an accidental discovery of any human remains in a project location other than a 'dedicated cemetery'.

To be effective, consultation on specific projects must be the result of an ongoing relationship between Native American tribes and lead agencies, project proponents and their contractors, in the opinion of the NAHC. Regarding tribal consultation, a relationship built around regular meetings and informal involvement with local tribes will lead to more qualitative consultation tribal input on specific projects.

The response to this search for Native American cultural resources is conducted in the NAHC Sacred Lands Inventory, established by the California Legislature (CA Public Resources Code 5097.94(a) and is exempt from the CA Public Records Act (c.f. California Government Code 6254.10) although Native Americans on the attached contact list may wish to reveal the nature of identified cultural resources/historic properties. Confidentiality of "historic properties of religious and cultural significance" may also be protected under Section 304 of he NHPA or at the Secretary of the Interior discretion if not eligible for listing on the National Register of Historic

Places and there may be sites within the APE eligible for listing on the California Register of Historic Places. The Secretary may also be advised by the federal Indian Religious Freedom Act (cf. 42 U.S.C., 1996) in issuing a decision on whether or not to disclose items of religious and/or cultural significance identified in or near the APEs and possibility threatened by proposed project activity.

If you have any questions about this response to your request, please do not hesitate to contact me at (916) 653-6251.

Sincerely,

Dave Singleton
Program Analyst

Cc: State Clearinghouse

Attachment: Native American Contact List

California Native American Contact List
Kern County
July 29, 2011

San Manuel Band of Mission Indians
James Ramos, Chairperson
26569 Community Center Drive — Serrano
Highland , CA 92346
(909) 864-8933
(909) 864-3724 - FAX
(909) 864-3370 Fax

Kitanemuk & Yowlumne Tejon Indians
Delia Dominguez, Chairperson
981 N. Virginia — Yowlumne
Covina , CA 91722 — Kitanemuk
deedominguez@juno.com
(626) 339-6785

Tule River Indian Tribe
Ryan Garfield, Chairperson
P.O. Box 589 — Yokuts
Porterville , CA 93258
(559) 781-4271
chairman@tulerivertribe-nsn.gov
(559) 781-4610 FAX

San Fernando Band of Mission Indians
John Valenzuela, Chairperson
P.O. Box 221838 — Fernandeño
Newhall , CA 91322 — Tataviam
tsen2u@hotmail.com — Serrano
(661) 753-9833 Office — Vanyume
(760) 885-0955 Cell — Kitanemuk
(760) 949-1604 Fax

Ron Wermuth
P.O. Box 168 — Tubatulabal
Kernville , CA 93238 — Kawaiisu
warmoose@earthlink.net — Koso
(760) 376-4240 - Home — Yokuts
(916) 717-1176 - Cell

Tejon Indian Tribe
Katherine Montes- Morgan, Chairperson
2234 4th Street — Yowlumne
Wasco , CA 93280 — Kitanemuk
kmorgan@bak.rr.com — Kawaiisu
661-758-2303

Tehachapi Indian Tribe
Attn: Charlie Cooke
32835 Santiago Road — Kawaiisu
Acton , CA 93510
suscol@intox.net
(661) 733-1812

Kawaiisu Tribe of Tejon Reservation
David Laughinghorse Robinson
PO Box 1547 — Kawaiisu
Kernville , CA 93238
(661) 664-3098 - work
(661) 664-7747 - home
horse.robinson@gmail.com

This list is current only as of the date of this document.
Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH#2011071051; CEQA Notice of Preparation (NOP); draft Environmental Impact Report (DEIR) for the JRK 01-11 Alta East Wind Energy Project by Alta WindPower, LLC; located in the Mojave Desert near the intersection of State Route 58 and Highway 14, in the Tehachapi Wind Resource Area; eastern Kern County, California.

California Native American Contact List
Kern County
July 29, 2011

Kern Valley Indian Council
Julie Turner, Secretary
P.O. Box 1010
Lake Isabella, CA 93240
(661) 366-0497
(661) 340-0032 - cell

Southern Paiute
Kawaiisu
Tubatulabal
Koso
Yokuts

Santa Rosa Tachi Rancheria
Lalo Franco, Cultural Coordinator
P.O. Box 8
Lemoore , CA 93245
(559) 924-1278 - Ext. 5
(559) 924-3583 - FAX

Tachi
Tache
Yokut

San Manuel Band of Mission Indians
Ann Brierty, Policy/Cultural Resources Departmen
26569 Community Center. Drive
Highland , CA 92346
(909) 864-8933, Ext 3250
abrierty@sanmanuel-nsn.gov
(909) 862-5152 Fax

Serrano

Kern Valley Indian Council
Robert Robinson, Co-Chairperson
P.O. Box 401
Weldon , CA 93283
brobinson@iwvisp.com
(760) 378-4575 (Home)
(760) 549-2131 (Work)

Tubatulabal
Kawaiisu
Koso
Yokuts

Tubatulabals of Kern Valley
Donna Begay, Tribal Chairwoman
P.O. Box 226
Lake Isabella, CA 93240
drbegay@aol.com
(760) 379-4590
(760) 379-4592 FAX

Tubatulabal

This list is current only as of the date of this document.
Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH#2011071051; CEQA Notice of Preparation (NOP); draft Environmental Impact Report (DEIR) for the JRK 01-11 Alta East Wind Energy Project by Alta WindPower, LLC; located in the Mojave Desert near the intersection of State Route 58 and Highway 14, in the Tehachapi Wind Resource Area; eastern Kern County, California.

Proposed Rising Tree and Alta East Wind Farms
Public Scoping Meetings

Thursday August 4, 2011

Comment Sheet
PLEASE PRINT CLEARLY

Veterans Building
15580 O Street
Mojave, CA 93501-1835

Name: Mr John Myers & Family

Address: Po box 397

City, State, Zip: Mojave Calif. 93502 **Email:** ask if needed

How did you find out about today's meeting? NOP Letter

My comments concern the proposed: ☐ **Rising Tree Wind Farm** ☐ **Alta East Wind Farm**
☑ **Both Wind Projects**

Our Property parsol # are
237-132-26-00-4
237-132-28-00-0
237-132-41-00-7
237-132-27-00-7

All comments must be post-marked, emailed, or hand delivered by August 15, 2011, to be considered for incorporation into the Rising Tree and/or Alta East EIS/EIR. Written comments on the Draft EIS/EIR documents may be sent to Jeff Childers, BLM Project Manager by email: risingtreewind@blm.gov. You may also send written comments by mail to: Bureau of Land Management California Desert District, 22835 Calle San Juan De Los Lagos, Moreno Valley, CA 92553-9046 or by Fax (951) 697-5299. Or to: Mr. Michael D. Hollier, Planner II, Kern County Planning and Community Development Department, 2700 M Street, Suite 100, Bakersfield, CA 93301-2370 or by Fax (661) 862-8601 or by email hollierm@co.kern.ca.us

Before including your address, phone number, email address, or other personal identify information in your comment(s), you should be aware that your entire comment(s) - including your personal identifying information - may be made publicly available at any time. While you can ask us in your comment(s) to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

NOP coments.

Our family has lived here nearly 20 years.
Our daughter was born here on our living room couch. And my husbands parents died here on this land they so loved!

We now have not one but two wind turbine companies wanting to build all around us, up to our property line.
Horizon Wind Energy/EDP Renewable's is wanting to build on three sides of our property.
And Alta Wind Infill 2 wants to build on the fourth side.

We moved here 20 years ago because we love the natural beauty and peacefulness of the desert.
We love seeing the wide variety of desert wildlife that makes this area their home.
The rabbits,brown squirrel, chipmunks, Antelope, Kangaroo mice,
And we have many bird species that live here year round Owls, hawks, falcons, ravens,house finch.
And then their are all the migrating birds that come through each year Geese, Ducks, Crane's,
Sometimes were lucky enough to have them land in our field.
Then their is all the desert snakes ,Mojave greens, King snakes, Coach Whip, horned lizards, salamanders,
This is just a short list of what has been on our property.
We love being away from the lights of town, So we can enjoy looking at the nights star filled sky.
We love to teach our children about the natural wonders that are all around this beautiful Mojave area.
Please help protect this beautiful desert and the wildlife that lives here.

Both of these company's are all ready plowing down the Joshua trees, And this is prior to the NOP reports, and EIR.
We have seen a large amount of bee's because of the Joshua trees being destroyed.
Many bees make their hives inside the Joshua trees.

Now our quiet and peaceful way of life is being threatened by these two wind turbine companies!

Now were going to be surrounded by nearly 500 foot tall turbines, DANGEROUSLY close to homes !!!

The Vesta's own safety manual states "DO NOT STAY WITHIN 1,300 FEET FROM TURBINE UNLESS IT IS NECESSARY"
That is a WARNING to their own workers. (probably has a lot to due with insurance)

What about the safety of us, The residents of Kern County ?

We are being told they can build 500 feet from home owners property.

Would you let your kids play that close to them ?

Their asking us to not only let our children play, But to live their.(during ALL wind speeds)

We would like to recommend a 2,000 foot set back from homes
Measuring from base of residence to base of turbine
(NOT from uppermost blade tip to base of home)

We now live about two miles from the turbines south of Oak Creek Rd., We can hear the whooshing sound they make.
Some night's it keeps us awake, and we have the red flashing lights lite up our home at night.

Our access road is Arroyo Ave.
We would like to recommend a turbine setback of at least 600 + feet from access roads
For the safety of the Kern County residents, In case the turbine should ever fall over, Break or start a fire.
The access road would not be blocked for residents getting to safety or Emergency vehicles.

We would also like to request that when any sound tests are done
That the test are ongoing for one year duration (AT ALL WIND SPEED'S)

Because of the vast area these two wind turbine projects they are now getting closer and closer to more homes in Kern County than before. These turbines are dangerous!
If these are going to be built around the residents of this County,
The county needs to step up it's fire protection for this area !
Many times the Mojave Fire Dept. is on calls to Rosamond or California City.

Their are many business people telling everyone this is the best thing possible for Mojave
Well their only thinking of the old mighty dollar.

If this is so good for business then why have three long time Mojave businesses closed
In the past two week's ?

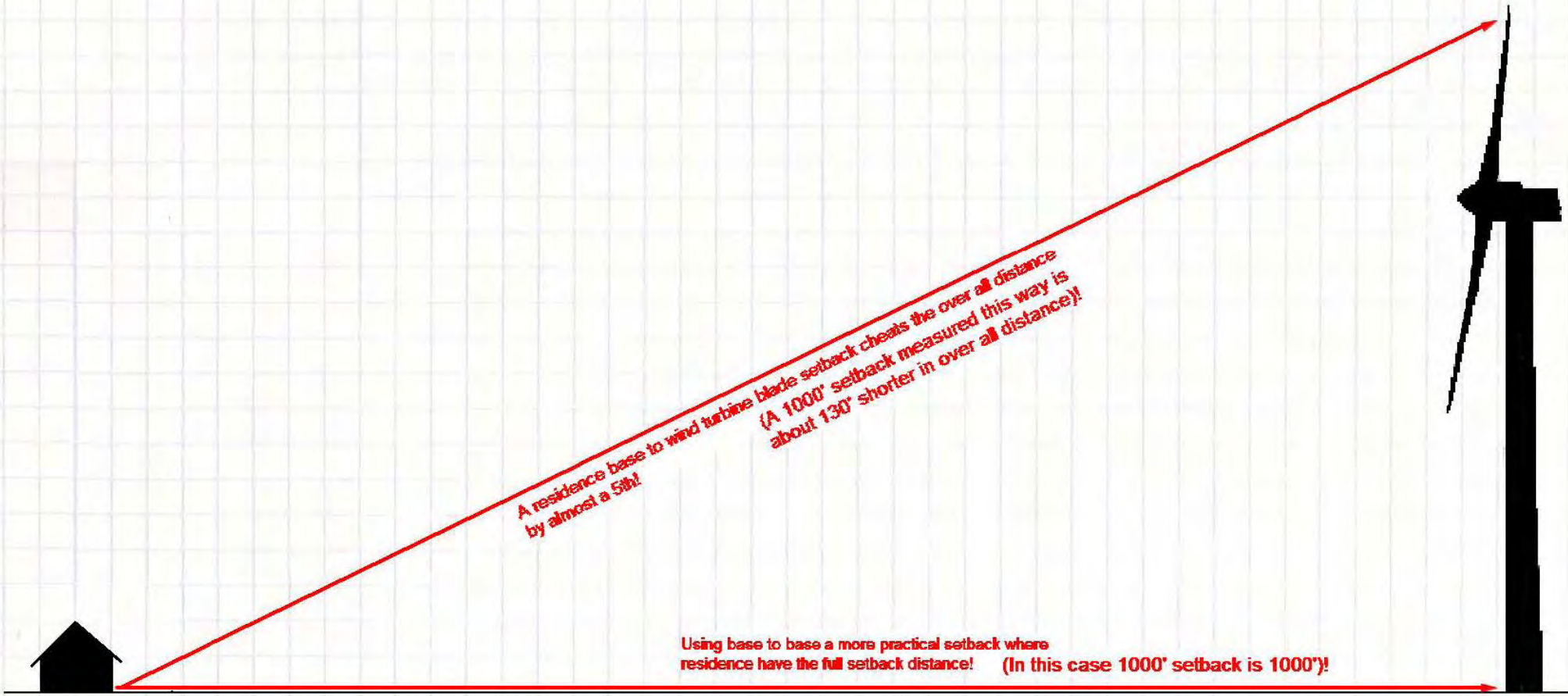
NOP coments.

The concerned citizens that live very close to where these are going to be built
Want to make sure the residents of Kern County are SAFE ,
from fire, turbines falling, shattering blades,many health concerns,
and having the loud sounds and bright red lights flashing at night like strobe lights.
PLEASE KEEP KERN COUNTY SAFE!

We would like to see a 2 mile distance/radius from any city/township residential area example..
Mojave Proper, Camelot, Country Modern, Western Village etc.
This is for the PUBLIC SAFETY / HEALTH.

THANK YOU for hearing our concern's !

NOT TO SCALE


A residence base to wind turbine blade setback cheats the over all distance
by almost a 5th!
(A 1000' setback measured this way is
about 130' shorter in over all distance)!
Using base to base a more practical setback where
residence have the full setback distance!
(In this case 1000' setback is 1000')!

COUNTY OF KERN
DEVELOPMENT SERVICES AGENCY
ROADS DEPARTMENT
Office Memorandum

To: Lorelei Oviatt, Director
Planning Department
Attn: Jacquelyn Kitchen, Planner III

August 5, 2011

From: Warren D. Maxwell, Transportation Development Engineer
Roads Department

Subject: 7-5.3 Notice of Preparation of Draft Environmental Impact Report Alta East Wind Energy Project by Alta Windpower Development, LLC.(PP11212); GPA #2, Map #168; GPA #2, Map 168-27; GPA #3, Map 179; GPA #1, Map 180; ZCC #10, Map 168; ZCC #4, Map 168-27; ZCC #3, Map 179; ZCC #6, Map 180;ZCC #47, Map 197; CUP #7, Map 168.

This Department has reviewed the Notice of Preparation of Draft Environmental Impact Report for the subject project and recommends the following:

1. Project construction timing may coincide with other neighboring projects. Coordinate construction traffic to avoid possible conflicts during the project construction phases.

2. Enter into a secured agreement with the Kern County Roads Department to ensure that any County roads that are demonstrably damaged by project-related activities are promptly repaired and, if necessary, paved, slurry-sealed, or reconstructed as per requirements of the State and or Kern County.

3. Provide a Traffic Control Plan that addresses the routes, duration and manner of traffic control that will be implemented to accommodate construction related traffic.

4. Obtain all necessary Encroachment Permits for any proposed work within the County road right of way. These permits may be obtained from our Permits Engineer.

5. Obtain all necessary Transportation Permits for any oversized or overweight (heavy) loads that will utilize County maintained roads, which may require California Highway Patrol escort. These permits may be obtained from our Permits Engineer.

Thank you for the opportunity to comment on this project, if you have any questions or comments please contact Steven Young at 862-8860.

California Regional Water Quality Control Board
Lahontan Region

Victorville Office
14440 Civic Drive, Suite 200, Victorville, California 92392
(760) 241-6583 • FAX (760) 241-7308
http://www.waterboards.ca.gov/lahontan

Matthew Rodriquez
Secretary for Environmental Protection

Edmund G. Brown Jr.
Governor

August 9, 2011

File: Environmental Doc Review
Kern County

Jacquelyn R. Kitchen
Kern County Planning and CDD
2700 "M" Street, Suite 100
Bakersfield, CA 93301-2323
FAX: (661) 862-8601

COMMENTS ON NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE ALTA EAST WIND ENERGY PROJECT, ALTA WINDPOWER, LLC, KERN COUNTY, STATE CLEARINGHOUSE NO. 2011071051

The California Regional Water Quality Control Board, Lahontan Region (Water Board) staff received the Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR) for the above-referenced project (Project) on July 15, 2011. The proposed Project is a renewable energy development that would generate up to 360 megawatts of electricity through the use of wind power. The Project site total 3,200 acres and is located on land administered by both Kern County and Bureau of Land Management (BLM). It is our understanding that a joint environmental document to satisfy the requirements of both the California Environmental Quality Act (CEQA) and the National Environmental Protection Act (NEPA) will be prepared for this Project. Our comments on the NOP and proposed development are outlined below.

Pursuant to CEQA guidelines, California Code of Regulations (CCR), title 14, section 15096, responsible agencies must specify the scope and content of the environmental information germane to their statutory responsibilities. Water Board staff, acting as a responsible agency, is providing these comments to help guide in the development of Project alternatives in an effort to maintain water quality and hydrologic function, and ultimately, for the protection of the beneficial use of waters of the State. We expect the County will value our position with respect to protecting and maintaining water quality within the Lahontan region, and request that the following comments be incorporated in the environmental review process.

BASIN PLAN

State law assigns responsibility for protection of water quality in the Lahontan Region to the Lahontan Water Board. The *Water Quality Control Plan for the Lahontan Region* (Basin Plan) contains policies that the Water Board uses with other laws and regulations to protect quality of waters of the State within the region. All groundwater

and surface waters are considered waters of the State. Surface waters include, but are not limited to, drainages, streams, washes, ponds, pools, or wetlands, and may be permanent or intermittent, either natural or manmade, and may or may not be identified as "blueline streams" on published topographic maps. All waters of the State are protected under California law. Additional protection is provided for waters of the U.S. under the Federal Clean Water Act (CWA). Based on our review of the NOP, Project components may involve alteration, dredging, filling, and/or excavating activities in waters of the State. Such activities constitute a discharge of waste[1], as defined in California Water Code (CWC), section 13050, and could affect the quality of waters of the State.

The State Water Resources Control Board (State Water Board) and the Lahontan Water Board regulate discharges in order to protect the water quality and, ultimately, the beneficial uses of waters of the State. The Basin Plan provides guidance regarding water quality and how the Lahontan Water Board may regulate activities that have the potential to affect water quality within the region. The Basin Plan includes prohibitions, water quality standards, and policies for implementation of standards. The Basin Plan can be accessed via the Water Board's web site (http://www.waterboards.ca.gov/lahontan/water_issues/programs/basin_plan/references.shtml). We request that the Project proponent comply with all applicable water quality standards and prohibitions, including provisions of the Basin Plan, for implementation of the proposed Project.

ENVIRONMENTAL ANALYSES

The environmental analysis must evaluate the Project's potential impact to environmental resources, including water quality and hydrology, and should include the following.

Project Alternatives

The role of a DEIR is to evaluate a number of project alternatives and their potential impacts on environment resources, including hydrology and water quality, and to list specific mitigation measures that, when implemented, reduces those impacts to a less than significant level. At minimum, the alternatives evaluated in the DEIR must include a conceptual design for turbine pad locations, access road and utility line alignments, and ancillary facility locations. Alternative conceptual designs are critical to support mitigation measures proposed in the DEIR or to support the lead agency's determination with respect to level of significance, particularly for hydrology and water quality impacts. The Project alternative that is least environmentally damaging is often the preferred alternative (other than the no-build alternative). Should the Project proponent determine that the preferred alternative is one other than the least

[1] "Waste" is defined in the Basin Plan to include any waste or deleterious material including, but not limited to, waste earthen materials (such as soil, silt, sand, clay, rock, or other organic or mineral material) and any other waste as defined in the California Water Code, section 13050(d).

environmentally damaging alternative, the rationale and justification for the additional environmental impacts must be included in the discussion sections of the DEIR.

Beneficial Uses

Proposed Project components have the potential to involve alteration, dredging, filling, and/or excavating activities in waters of the State. The surface waters located within the vicinity of the Project site include Oak Creek, Cottonwood Creek, Cache Creek, and numerous unnamed washes, wetlands, springs, and other surface waters, which are identified in the Basin Plan as intermittent streams, minor surface waters, and minor wetlands. Beneficial uses, either past, present, or future, associated with these waterbodies include municipal and domestic supply (MUN), agricultural supply (AGR), industrial service supply (IND), groundwater recharge (GWR), freshwater replenishment (FRSH), water contact recreation (REC-1), non-contact water recreation (REC-2), commercial and sport fishing (COMM), warm freshwater habitat (WARM), cold freshwater habitat (COLD), wildlife habitat (WILD), water quality enhancement (WQE), and flood peak attenuation/flood water storage (FLD). Realignment, channelization, lining, and/or infilling of Oak Creek, Cottonwood Creek, or other surface waters may result in changes in the stream channel functions and may adversely affect these beneficial uses, particularly MUN, GWR, FRSH, WARM, and WILD.

The DEIR must include a regional-scale map identifying all surface water resources, both onsite and offsite (upstream and downstream), potentially affected by the Project. These water resources should be tabulated and organized by waterbody type and described in detail in the appropriate sections of the DEIR. We request that the DEIR identify and list the beneficial uses of the identified surface water resources, as outlined in the Basin Plan, and evaluate the Project's potential impacts to water quality with respect to those beneficial uses. The environmental document must include alternatives to avoid those impacts or list specific mitigation measures that, when implemented, minimize unavoidable impacts to a less than significant level.

Avoidance and Minimization

There are many ways a proposed Project can degrade water quality. Fortunately, avoiding or minimizing any step in a pollution pathway will eliminate or reduce subsequent effects and will simplify the associated needed analyses. Usually, a small number of key variables control most of the pathways causing water quality degradation. We strongly encourage avoidance as the primary strategy to address water quality concerns. The analyses should discuss any remaining impacts that cannot be avoided or further minimized and propose mitigations to reduce those impacts to a less than significant level.

Characterization of Impacts

Avoidance is the best strategy for managing potential water quality impacts. For unavoidable impacts, understanding how pollution pathways will operate is essential to managing them. Please consider the following:

- Specify the causes, natures, and magnitudes of all proposed impacts. Provide a level of analysis commensurate with the size and complexity of the Project and its potential water quality impacts;
- Quantify impacts as definitively as feasible, using appropriate modeling and adequate data. Modeling approaches should be documented, and data deficiencies or other factors affecting the reliability of the results should be identified and characterized; and
- Identify whether impacts will be temporary or permanent.

Hydrology

Because increased runoff from developed areas is a key variable driving a number of other adverse effects, attention to maintaining the pre-development hydrograph will prevent or minimize many problems and will limit the need for other analyses and mitigation. We request that the following be considered in the hydrological analysis for the Project.

- Evaluate alternatives and include mitigation measures to maintain the pre-project hydrograph;
- Evaluate the Project's potential hydromodification impacts on upstream and downstream reaches; and
- Provide a meaningful analysis of potential cumulative impacts to watershed hydrology from existing and other planned development in the watershed or planning area.

Habitat Connectivity

Riparian corridors and other waters within the regulatory purview of the Water Board play an important role in maintaining habitat connectivity. Both aquatic and terrestrial habitat may be fragmented by impacts to streams, riparian areas, or other waters. For projects that have the potential to impact surface waters, we request that the following be included in the environmental document.

- Analyze the regional importance of movement corridors in and along waterbodies, the potential effect of disrupting such corridors, and the potential for enhancing such corridors through mitigation measures;
- Include information regarding any sensitive plant and animal species that likely utilize the corridors; and
- Identify any impacts to riparian or other waters that could compromise future remediation of existing connectivity barriers.

PERMITTING REQUIREMENTS

A number of activities associated with the proposed development may require permits issued by either the State Water Board or Lahontan Water Board because they appear to have the potential to impact waters of the State. The required permits may include:

- Land disturbance of more than 1 acre may require a CWA, section 402(p) stormwater permits, including a National Pollutant Discharge Elimination System (NPDES) General Construction Stormwater Permit, obtained from the State Water Board, or individual stormwater permit obtained from the Lahontan Water Board;

- Industrial activities may require an NPDES General Industrial Stormwater Permit, obtained from the State Water Board, or individual stormwater permit obtained from the Lahontan Water Board; and

- Streambed alteration and/or discharge of fill material to a surface water may require a CWA, section 401 water quality certification (WQC) for impacts to federal waters (waters of the U.S.), or dredge and fill waste discharge requirements (WDRs) for impacts to non-federal waters, both issued by the Lahontan Water Board.

Some waters of the State are "isolated" from waters of the U.S. Determinations of the jurisdictional extent of the waters of the U.S. are made by the United States Army Corps of Engineers (USACE). Projects that have the potential to impact surface waters will require the appropriate jurisdictional determinations. These determinations are necessary to discern if the proposed surface water impacts will be regulated under section 401 of the CWA or through dredge and fill WDRs issued by the Water Board.

We request that the Project proponent consult with the USACE and perform the necessary jurisdictional determinations for surface waters within the Project area. In areas where USACE does not take jurisdiction, the Water Board generally delineates waters of the State based on distinct geomorphic flow indicators with or without clearly definable bed and bank features.

In addition, we request that the environmental document list the permits that may be required, as outlined above, and identify the specific activities that may trigger these permitting actions in the appropriate sections of the environmental document. Information regarding these permits, including application forms, can be downloaded from our web site at http://www.waterboards.ca.gov/lahontan/.

STORMWATER MANAGEMENT

Post-construction stormwater management must be considered a significant component in the environmental review process. Of particular concern is the collection and concentration of stormwater runoff into channels and the discharge of that stormwater to natural drainage systems. Without adequate design, the consequences

of combining these flows will likely degradation to the existing natural drainage channel both upstream and downstream from the confluence. The environmental document must evaluate all potential stormwater impacts, particularly potential post-construction hydrologic impacts, and describe specific best management practices that, when implemented, will reduce those potential impacts to a less than significant level. Where feasible, we request that design alternatives be considered that direct captured runoff away from surface waters to areas where it will dissipate by percolation into the landscape. For example, a spreader system constructed at the downstream end of an engineered channel would act to return concentrated flows to sheetflow conditions.

CUMULATIVE IMPACTS TO WATERS OF THE STATE

Watersheds are complex natural systems in which physical, chemical, and biological components interact to create the beneficial uses of water. Poorly planned development and redevelopment upsets these natural interactions and degrades water quality through a network of interrelated effects. The primary impacts of poorly planned development and redevelopment projects on water quality are:

- Direct, indirect, and cumulative impacts – plans must include a comprehensive analysis of the direct, indirect, and cumulative physical impacts of filling and excavation of wetlands, riparian areas, and other waters of the State, performed from the site to the watershed level;
- Pollutants – the generation of pollutants during and after construction;
- Hydrologic modification – the alteration of flow regimes and groundwater; and
- Watershed-level effects – the disruption of watershed-level aquatic function, including pollutant removal, floodwater retention, and habitat connectivity.

These impacts have the potential to degrade water quality and impair a number of beneficial uses by reducing the available riparian habitat and eliminating the natural buffer system to filter runoff and enhance water quality. These impacts typically result in hydrologic changes by decreasing water storage capacity and increasing water flow velocity, which in turn leads to increases in the severity of peak discharges. These hydrologic changes may ultimately lead to near-total loss of natural functions and values, resulting in the increased need for engineered solutions to re-establish the disrupted flow patterns. Many examples of such degradation exist in California and elsewhere. The Water Boards are mandated to prevent such degradation.

Nearly two dozen wind energy projects either exist or are planned for the Tehachapi Wind Resource Area. The cumulative impacts of these projects on water quality and hydrology overtime must be fully evaluated in the DEIR. We urge the County to provide a thorough analysis of cumulative impacts in the environmental document. The analysis should consider the point impacts of all wind projects planned and constructed within the watershed and evaluate, at minimum, the potential impacts to groundwater recharge due to increased impervious surface and compacted soils, changes in the hydrology of the respective watershed(s) and potential flooding implications, and habitat

connectivity. The cumulative impacts analysis should identify both regional and project-specific mitigation measures that, when implemented, will reduce potential impacts to a less than significant level.

Thank you for the opportunity to comment on the NOP. We look forwarding to reviewing the Draft Environmental Impact Report when it becomes available for review. If you have any questions regarding this letter, please contact me at (760) 241-7376 (jzimmerman@waterboards.ca.gov) or Patrice Copeland, Senior Engineering Geologist, at (760) 241-7404 (pcopeland@waterboards.ca.gov).

Sincerely,

Jan M. Zimmerman, PG
Engineering Geologist

cc: State Clearinghouse (SCH No. 2011071051)
Jeff Childers, Bureau of Land Management
Dave Hacker, California Department of Fish and Game (San Luis Obispo)
Paul Amato, Wetlands Regulatory Office, USEPA, Region 9
(via email, Amato.Paul@epamail.epa.gov)
Bill Orme, State Water Resources Control Board, Division of Water Quality

JZ\rc\U:\CEQA Review\AltaEast_NOP.doc

Southern California Gas Company

A Sempra Energy company

July 19, 2011

Southern California Gas Company

9400 Oakdale Avenue
Chatsworth, CA
91313

Mailing Address:
P. O. Box 2300
Chatsworth, CA
91313-2300
M.L.9331

tel 818-701-2565
fax 818-701-3380

Kern County Planning Department
2700 "M" Street, Suite100
Bakersfield, CA 93301

Attn: Jacquelyn Kitchen, Planner III

Re: Alta East Wind Project

I have reviewed your Notice of Preparation Draft Environmental Impact Report for the Alta East Wind Project. The Southern California Gas Company currently does not have any Distribution facilities within the project site as shown on map page 2, figure1, and as described on page 1section 1.1 of the Alta East Wind Project Notice of Preparation document.

Thank You,

Mel Whiteaker
Planning Associate
Technical Services, North Region

Voice: 818-701-2565
Fax: 818-701-3380
E-mail: MWhiteaker@semprautilities.com

DEPARTMENT OF TRANSPORTATION
DISTRICT 9
500 SOUTH MAIN STREET
BISHOP, CA 93514
PHONE (760) 872-0785
FAX (760) 872-0754
TTY 711 (760) 872-0785
www.dot.ca.gov

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CALIF. DESERT DISTRICT
MORENO VALLEY, CA

Flex your power!
Be energy efficient!

August 11, 2011

Jacquelyn R. Kitchen
Kern County Planning/Community Development Department
2700 M Street, Suite 100
Bakersfield, California 93301-2323

File: KER
IS/NOP DEIR/NOI EIS
SCH #: 2011071051

Dear Ms. Kitchen:

Alta East Wind Energy Farm - Notice of Preparation of an Environmental Impact Report/Notice of Intent of an Environmental Impact Statement (GPA 2, CUP 7, Map 168)

The California Department of Transportation (Caltrans) District 9 appreciates the opportunity to comment on the proposed wind energy facility, northwest of the community of Mojave and straddling State Route 58 (SR-58). In the last several months we have been interacting with a project consultant - Gerry Mack of Terra-Gen Power, LLC. Please consider the following in project environmental analysis:

- The project could access SR-58 via the West-end Business Route 58 ramps and SR-14 via the Oak Creek Road Bridge/Mono St. intersection. Please evaluate project traffic and prepare a Construction Traffic Control Plan analyzing adequacy of the locations to be used. Consult Caltrans District 9 if improvements or traffic control will be necessary in State right-of-way. If so an encroachment permit must be obtained; any improvements must be built to Caltrans standards. Our Encroachment Permit Engineer - Mark Reistetter may be contacted at (760) 872-0674 or mark.reistetter@dot.ca.gov.

- We understand that a service line would be necessary underneath SR-58 (and the rail road). A Caltrans Encroachment Permit is required for activity. Hence, "Section 1.6 Proposed Discretionary Actions/Required Approvals" should also list Caltrans District 9 for this work and the other potential items noted in the above paragraph.

- Ensure any damage done to public roadways is repaired to pre-construction phase conditions.

- As stated in the document, operational phase traffic would be minimal. However, during the operational phase, safety for SR-58 travelers must be addressed. Please evaluate possible turbine malfunction, which could cause components to fall into State highway right-of-way. (In May 2009, the California Highway Patrol had closed SR-58 due to "Wind Turbine Danger.") Consider a turbine offset distance from the highway, incident prevention via turbine inspection/maintenance, and liability.

- The South Region Transportation Permits Office issues oversized vehicle permits: Phone: (909) 383-4637 or link: http://www.dot.ca.gov/hq/traffops/permits/contact.htm

We value a cooperative working relationship regarding project impacts upon State highways in eastern Kern County. I may be contacted at (760) 872-0785, with any questions.

Sincerely,

Gayle J. Rosander

GAYLE J. ROSANDER
IGR/CEQA Coordinator

c: State Clearinghouse
Jeff Childers, Bureau of Land Management
Steve Wisniewski, Caltrans

Department of Transportation
District 9
500 South Main Street
Bishop, California 93514

Mr. Jeff Childers
Bureau of Land i
22835 Calle San
Moreno Valley, C

Mr. Jeffery Childers
Planning and Environment of the BLM

8/12/11

As I write you this letter, it is 1:30 a.m. Once again, I am awakened by another night of overwhelming feelings of anxiety and hopelessness. My husband and I built our costume ranch style home on five acres here in Mojave. For years we saved, planned, and built this home amid criticism as to why we would put everything we have into a little isolated town like Mojave.

We chose to live here for a variety of reasons. One, being the visual beauty of the quiet desert complete with dark night skies, wildlife and the ability to enjoy miles of open land to explore with our children. This was the trade off. We gave up the "convences of life" for solitude and peace.

For years wind energy has been part of our lives and we have never opposed that. Now, that resource is being sought after in the most aggressive way yet. Endless miles of multiple wind farms threaten our quiet peaceful way of living. I feel that our family has compromised and yet we are being forced to compromise in even a greater way. Wind farms are overzealous and raping our deserts. We alone are facing the loss of over 17,000 acres (10,800 Alta Wind Infill II, 3,200 Alta East, 3,300 Rising Tree) of land and mile after mile of fencing just to the west and northwest of our home. Some of which can come as close as 900 yards from our back fence.

I would like to ask the Kern County Planning Commission put a nonnegotiable barrier between residents, towns, and communities within Kern County. I propose a two mile radius be in place throughout the County of Kern thus protecting home values, safety, and the preservation of chosen life styles. I like to think of it as a sort of "green belt". This idea would put an end to community outcry throughout east kern and ease up the agendas of town council meetings, town halls, and other such meetings.

I would like to invite you to come visit our family, our home and see for yourself the true impact this amount of wind farms will have on our lives and the community of Mojave. I feel like this is a classic example of, "too much of a good thing". None of us know the long term effect of epic sized wind farms of this magnitude will have over the years and I would hate for Kern County to be the example of what not to do.

Thank you,

Deborah Crocoll

Deborah Crocoll
16329 Koch Street
Mojave, CA 93501
(661) 824-9536

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Question Card

Proposed Rising Tree and Alta East Wind Farms

Public Scoping Meetings — August 4, 2011

PLEASE PRINT CLEARLY

Name: Jim + Debbie Crocoll

Address: 16329 Koch St.
Mojave CA 93501

This Question is for ☐ Rising Tree Wind Farm ☐ Alta East Wind Farm
☑ Both Wind Projects

Question (one question per card): please Save our BLM Land for Recreational use.

Submission of this question card is completely voluntary, and any identifying information provided will become part of the public record, and as such must be released to any individual upon request. Request to withhold comments and associated personal identifying information from public review cannot be guaranteed.

Deborah Crocoll
16329 Koch Street
Mojave, CA 93501

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Office Memorandum

KERN COUNTY -

To: Planning Department
Attn: Jacquelyn Kitchen

August 12, 2011

From: Engineering & Survey Services Dept.
Floodplain Management Section
Aaron Leicht

Phone: 862-5093

Subject: NOP of DEIR – Alta East Wind Energy project

This Section has reviewed the Notice of Preparation of the Draft EIR for Alta East Wind Energy project and finds that the proposed evaluation of drainage impacts and geotechnical issues related to the project is sufficient to address this Departments concerns.

Deborah Hess
Local Public Affairs
(661) 726-5608
FAX (661) 726-5615

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MORENO VALLEY, CA

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

August 15, 2011

Mr. Jeff Childers, Planning & Environmental Coordinator
CDDO – RECO
Bureau of Land Management
22835 Calle San Juan De Los Lagos
Moreno Valley, California 92553

Ms. Jacquelyn Kitchen, Planner III
Kern County Planning and Community Development Department
2700 "M" Street, Suite 100
Bakersfield, California 93301

RE: Notice of Preparation (NOP)/Notice of Intent (NOI) of a Draft Environmental Impact Report/ Environmental Impact Statement (EIR/EIS) for the Alta East Wind Project by Alta Windpower Development, LLC

Dear Mr. Childers and Ms. Kitchen:

Southern California Edison (SCE) appreciates the opportunity to review and provide comment on the NOP/NOI of a Draft EIR/EIS for the Alta East Wind Project ("project") by Alta Windpower Development, LLC ("project proponent"). SCE understands that Kern County and the U.S. Bureau of Land Management will prepare a joint EIR/EIS for this project. The project is described as a renewable energy development that would generate up to 360 megawatts of electricity using wind power on a 3,200-acre project site. The project would be located two miles west of the intersection of Highway 58 and Highway 14 in the Mojave Desert and within the Tehachapi Wind Resource Area of eastern Kern County.

The NOP/NOI indicates that the project would interconnect to the SCE Windhub Substation via a single 230-kilovolt (kV) transmission line from two potential route options. As you know, interconnection of this project into the California Independent Systems Operator (CAISO)-Controlled Grid is established through an application process conducted under the rules and tariffs of CAISO. SCE is continuing to engineer and design the interconnection facilities required for this project pursuant to an engineering, design and procurement letter agreement entered into by Alta Windpower Development, LLC and SCE. Accordingly, SCE will work closely with the project proponent and the County throughout the California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) and development review process to provide additional details of required interconnection facilities to interconnect the project into SCE's transmission system.

Based on SCE's initial studies, interconnection of this project would require SCE to construct a portion of the transmission line identified in the NOP/NOI at Windhub Substation. SCE suggests that these activities be

clearly described and analyzed in the Draft EIR/EIS, such as construction of access roads and foundations associated with the transmission line.

Although the text of the NOP/NOI identifies transmission interconnection to Windhub Substation, it does not appear that Figure 6 depicts the entire routes of the transmission line options to Windhub Substation. Please provide clarification on the routes to Windhub Substation in the Draft EIR/EIS.

Interconnection of the project would also require diverse communication routes from the project area to Windhub Substation. SCE suggests that activities related to construction of the diverse communication routes to Windhub Substation be clearly described and analyzed in the Draft EIR/EIS.

Please note that as the project description and interconnection studies indicate the need for SCE to build new or relocate existing electrical facilities that operate at or above 50 kV, the SCE construction may have environmental consequences subject to CEQA review as required by the California Public Utilities Commission (CPUC) and under NEPA as required under the Federal Land Policy and Management Act (FLPMA). If those environmental consequences are identified and addressed by the Lead Agency in the CEQA/NEPA processes for the larger project, SCE may not be required to pursue a later, separate mandatory CEQA review through the CPUC's General Order 131-D process. If the SCE facilities are not adequately addressed in the Draft EIR, the required additional CEQA review could delay the power portion of the project for two years or longer.

Again, thank you for the opportunity to review and provide comment on the NOP//NOI for this project. If you have any questions regarding this letter, do not hesitate to contact me at (661) 726-5608.

Sincerely,

Deborah Hess

Deborah Hess
Local Public Affairs Region Manager
Southern California Edison Company

42060 10 Street West
Lancaster, CA 93534

SOUTHERN CALIFORNIA
EDISON
An EDISON INTERNATIONAL Company

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Mr. Jeff Childers, Planning & Environmental Coordinator
CDDO – RECO
Bureau of Land Management
22835 Calle San Juan De Los Lagos
Moreno Valley, California 92553

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

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MORENO VALLEY, CA

Jeffery Childers, Project Manager
California Desert District Office, BLM
22835 Calle San Juan De Los Lagos
Moreno Valley, California 92553-9046

Subject: Notice of Intent to Prepare an Environmental Impact Statement, and Possible Land Use Amendment to the California Desert Conservation Area Plan, for the Proposed Alta East Wind Project, Kern County, California

Dear Mr. Childers:

The U.S. Environmental Protection Agency has reviewed the July 15, 2011 Notice of Intent to Prepare an Environmental Impact Statement for the Proposed Alta East Wind Project, Kern County, California, which may include an amendment to the California Desert Conservation Area Plan. Our comments are provided pursuant to the National Environmental Policy Act, Council on Environmental Quality regulations (40 CFR Parts 1500-1508) and our NEPA review authority under Section 309 of the Clean Air Act.

The EPA supports increasing the development of renewable energy resources, as recommended in the National Energy Policy Act of 2005. Using renewable energy resources such as wind power can help the nation meet its energy requirements while reducing greenhouse gas emissions. To assist in the scoping process for this project, we have identified several issues for your attention in the preparation of the EIS. The proposed project would be located within the Tehachapi Wind Resources Area in the Western Mojave Desert of eastern Kern County. We are most concerned about direct and cumulative impacts to aquatic and biological resources, including threatened and endangered species, associated with the multitude of approved and proposed large-scale wind projects in the immediate vicinity of the Alta East Wind Project.

We appreciate the opportunity to review this NOI and are available to discuss our comments. Please send one hard copy of the Draft EIS and one CD ROM copy to this office at the same time it is officially filed with our Washington D.C. Office. If you have any questions, please contact me at (415) 972-3238, or plenys.thomas@epa.gov.

Sincerely,

Tom Plenys
Environmental Review Office
Communities and Ecosystems Division

Enclosure: EPA's Detailed Comments

US EPA DETAILED COMMENTS ON THE NOTICE OF INTENT TO PREPARE AN ENVIRONMENTAL IMPACT STATEMENT, AND POSSIBLE LAND USE AMENDMENT TO THE CALIFORNIA DESERT CONSERVATION AREA PLAN, FOR THE PROPOSED ALTA EAST WIND PROJECT, KERN COUNTY, CALIFORNIA, AUGUST 15, 2011

Project Description

Alta Windpower Development LLC has submitted a right-of-way application to the Bureau of Land Management to build the Alta East Wind Project that would generate 300 megawatts of electricity using wind resources. The proposed project would include up to 120 wind turbine generators, a substation, transmission interconnection to the Southern California Edison Windhub Substation, access roads, and ancillary facilities.

The project area comprises 3,200 acres, 2,083 of which are on public land under the jurisdiction of the Bureau of Land Management three miles northwest of the unincorporated town of Mojave in southeastern Kern County, California.

Authorization of this proposal may require an amendment to the California Desert Conservation Area Plan. If a land use plan amendment is necessary, BLM intends to integrate the land use planning process with the National Environmental Policy Act process for this project.

Statement of Purpose and Need

The Draft Environmental Impact Statement should clearly identify the underlying purpose and need to which the BLM is responding in proposing the alternatives (40 CFR 1502.13). The *purpose* of the proposed action is typically the specific objectives of the activity, while the *need* for the proposed action may be to eliminate a broader underlying problem or take advantage of an opportunity.

> *Recommendation:*
> The purpose and need should be a clear, objective statement of the rationale for the proposed project. The DEIS should discuss the proposed project in the context of the larger energy market that this project would serve and discuss how the project will assist the state in meeting its renewable energy portfolio standards and goals.

Alternatives Analysis

The National Environmental Policy Act requires evaluation of reasonable alternatives, including those that may not be within the jurisdiction of the lead agency (40 CFR Section 1502.14(c)). A robust range of alternatives will include options for avoiding significant environmental impacts. The DEIS should provide a clear discussion of the reasons for the elimination of alternatives which are not evaluated in detail. Reasonable alternatives should include, but are not necessarily limited to, alternative sites, capacities, and technologies as well as alternatives that identify environmentally sensitive areas or areas with potential use conflicts. The alternatives analysis should describe the approach used to identify environmentally sensitive areas and describe the process that was used to designate them in terms of sensitivity (low, medium, and high).

The environmental impacts of the proposal and alternatives should be presented in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public (40 CFR 1502.14). The potential environmental impacts of each alternative should be quantified to the greatest extent possible (e.g., acres of pristine desert impacted, tons per year of emissions produced).

Recommendations:
The DEIS should describe how each alternative was developed, how it addresses each project objective, and how it will be implemented. The alternatives analysis should include a discussion of alternative sites, capacities, and generating technologies, including different types of renewable energy technologies, and describe the benefits associated with the proposed technology.

The DEIS should clearly describe the rationale used to determine whether impacts of an alternative are significant or not. Thresholds of significance should be determined by considering the context and intensity of an action and its effects (40 CFR 1508.27).

The EPA recommends that the DEIS identify and analyze an environmentally preferred alternative. This alternative should consider options such as downsizing the proposed project within the project area and/or relocating sections/components of the project in other areas, including private land, to reduce environmental impacts.

The EPA strongly encourages BLM and other interested parties to pursue the siting of renewable energy projects on disturbed, degraded, and contaminated sites, including fallow or abandoned agricultural lands, as appropriate, before considering large tracts of undisturbed public lands.

The DEIS should describe the current condition of the land selected for the proposed project, discuss whether the land is classified as disturbed, and describe to what extent the land could be used for other purposes.

The EPA recommends that BLM utilize the Renewable Energy Interactive Mapping Tool to explore whether there are disturbed sites located in proximity to the proposed project that might also be utilized.[1]

Water Resources

Water Supply and Water Quality
Public drinking water supplies and/or their source areas often exist in many watersheds. Source water is water from streams, rivers, lakes, springs, and aquifers that is used as a supply of drinking water. Source water areas are delineated and mapped by the state for each federally-regulated public water system. The 1996 amendments to the Safe Drinking Water Act require federal agencies to protect sources of drinking water for communities. Therefore, the EPA recommends that the DEIS identify:

[1] See EPA's Re-Powering America's Land site at: http://www.epa.gov/renewableenergyland/mapping_tool.htm. Open the Renewable Energy Interactive Map (KMZ) to launch the Renewable Energy Mapping Tool. More detailed information on the EPA tracked sites is available at: http://epa.gov/renewableenergyland/maps/ocpa_renewable_energy_data.xls.

- A discussion of the amount of water needed for the proposed project and where this water will be obtained.
- A discussion of availability of groundwater within the basin and annual recharge rates. A description of the water right permitting process and the status of water rights within that basin, including an analysis of whether water rights have been over-allocated.
- A discussion of cumulative impacts to groundwater supply within the hydrographic basin, including impacts from other large-scale wind installations that have also been proposed.
- An analysis of different types of technology that can be used to minimize or recycle water.
- A discussion of whether it would be feasible to use other sources of water, including potable water, irrigation canal water, wastewater or deep-aquifer water.
- An analysis of the potential for alternatives to cause adverse aquatic impacts such as impacts to water quality and aquatic habitats.

The DEIS should address the potential effects of project discharges, if any, on surface water quality. Specific discharges should be identified and potential effects of discharges on designated beneficial uses of affected waters should be analyzed. If the facility is a zero discharge facility, the DEIS should disclose the amount of process water that would be disposed of onsite and explain methods of onsite containment.

The EPA strongly encourages the BLM to include in the DEIS a description of all water conservation measures that will be implemented to reduce water demands. Project designs should maximize conservation measures such as appropriate use or recycled water for landscaping and industry, xeric landscaping and water conservation education.

In addition, the DEIS should describe water reliability for the proposed project and clarify how existing and/or proposed sources may be affected by climate change. At a minimum, EPA expects a qualitative discussion of impacts to water supply and the adaptability of the project to these changes.

Large turbines require substantial foundations and associated structural and geotechnical engineering considerations. The substantial amount of concrete typically used in foundations for large wind turbines requires a large amount of cement, sand, and aggregate. A typical 1.5 MW wind turbine generator can require up to 6,500 gallons of water for each turbine foundation mixture.

> *Recommendation:*
> The DEIS should describe the availability of a water supply for construction and operation of the proposed project and fully evaluate the environmental impacts associated with using the selected water supply.

Clean Water Act Section 404

The project applicant should coordinate with the U.S. Army Corps of Engineers to determine if the proposed project requires a Section 404 permit under the Clean Water Act. Section 404 regulates the discharge of dredged or fill material into waters of the United States, including wetlands and other *special aquatic sites*. The DEIS should describe all WOUS that could be affected by the

project alternatives, and include maps that clearly identify all waters within the project area. The discussion should include acreages and channel lengths, habitat types, values, and functions of these waters. In addition, EPA suggests that the BLM include a jurisdictional delineation for all WOUS, including ephemeral drainages, in accordance with the 1987 *Corps of Engineers Wetlands Delineation Manual* and the December 2006 *Arid West Region Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region.* A jurisdictional delineation will confirm the presence of WOUS in the project area and help determine impact avoidance or if state and federal permits would be required for activities that affect WOUS.

If a permit is required, EPA will review the project for compliance with *Federal Guidelines for Specification of Disposal Sites for Dredged or Fill Materials* (40 CFR 230), promulgated pursuant to Section 404(b)(1) of the CWA ("404(b)(1) Guidelines"). Pursuant to 40 CFR 230, any permitted discharge into WOUS must be the least environmentally damaging practicable alternative (LEDPA) available to achieve the project purpose. The DEIS should include an evaluation of the project alternatives in this context in order to demonstrate the project's compliance with the 404(b)(1) Guidelines. If, under the proposed project, dredged or fill material would be discharged into WOUS, the DEIS should discuss alternatives to avoid those discharges.

The DEIS should describe the original (natural) drainage patterns in the project locale, as well as the drainage patterns of the area during project operations, and identify whether any components of the proposed project are within a 50 or 100-year floodplain. We also recommend the DEIS include information on the functions and locations of WOUS, as well as ephemeral washes in the project area, because of the important hydrologic and biogeochemical role these washes play in direct relationship to higher-order waters downstream.

Clean Water Act Section 303(d)
The CWA requires States to develop a list of impaired waters that do not meet water quality standards, establish priority rankings, and develop action plans, called Total Maximum Daily Loads, to improve water quality.

> *Recommendation:*
> The DEIS should provide information on CWA Section 303(d) impaired waters in the project area, if any, and efforts to develop and revise TMDLs. The DEIS should describe existing restoration and enhancement efforts for those waters, how the proposed project will coordinate with on-going protection efforts, and any mitigation measures that will be implemented to avoid further degradation of impaired waters.

Drainages, Ephemeral Washes, and Floodplains
The DEIS should consider the up-and-downstream reach and extent of waters and their importance in this landscape. Natural washes perform a diversity of hydrologic, biochemical, and geochemical functions that directly affect the integrity and functional condition of higher-order waters downstream. Healthy ephemeral waters with characteristic plant communities control rates of sediment deposition and dissipate the energy associated with flood flows. Ephemeral washes also provide habitat for breeding, shelter, foraging and movement of wildlife. Many plant populations are dependent on these aquatic ecosystems and adapted to their unique conditions. The potential damage that could result from disturbance of flat-bottomed washes includes alterations to the hydrological functions that natural

channels provide in arid ecosystems, such as adequate capacity for flood control, energy dissipation and sediment movement; as well as impacts to valuable habitat for desert species.

Recommendations:
The EPA recommends that the DEIS characterize the functions of any aquatic features that could be affected by the proposed project and are determined not to constitute waters of the U.S. and discuss potential mitigation.

To avoid and minimize direct and indirect impacts to desert washes (such as erosion, migration of channels and local scour), as applicable:

- Utilize existing natural drainage channels on site and more natural features, such as earthen berms or channels, rather than concrete-lined channels.
- Commit to the use of natural washes, in their present location and natural form and including adequate natural buffers, for flood control to the maximum extent practicable.

Discuss the availability of sufficient compensation lands within the project's watershed to replace desert wash functions lost on the Project site.

Construction Stormwater Discharge Permit
The Notice of Intent does not state the total disturbance for the project. Given the scope of this project, it is anticipated that the project will disturb more than one acre of soil during the construction phase. Lack of vegetation and periodic disturbance due to maintenance in these areas would potentially increase sedimentation and decrease water quantity.

The California State Water Resources Control board requires owner/operators to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity if the project will disturb more than one acre of soil. Given the disturbance area for this project, California State Water Resources Control Board General Permit associated with construction activity - Construction General Permit Order 2009-0009-DWQ - would likely be required. Additionally, a Stormwater Pollution Prevention Plan, that includes erosion control measures, would need to be generated for the project and implemented on-site.

The SWPPP would include the elements described in the Construction General Permit, including a site map(s) showing the construction site perimeter, existing and proposed buildings, lots, roadways, storm water collection and discharge points, general topography both before and after construction, and drainage patterns across the project. The SWPPP also would list Best Management Practices, including erosion control BMPs that would be used to protect stormwater runoff, and include a description of required monitoring programs.

Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment. Section A of the Construction General Permit describes the elements that must be contained in a SWPPP. Guidance from other documents, such as the EPA document entitled "Developing Your Stormwater Pollution Prevention Plan: A Guide for Construction Sites" also could be used in the development of the SWPPP.

Recommendation:
The EPA recommends that the applicant determine the need for a California State Water Resources Control Board General Permit associated with construction activity Construction General Permit Order 2009-0009-DWQ. If such a permit is required, include a description of the proposed stormwater pollution control and mitigation measures in the DEIS.

Biological Resources and Habitat

During construction of the proposed project, vegetation would be cleared and soils moved during the construction of roads, wind turbine foundations, and other facilities. The DEIS should describe the current quality and capacity of habitat and its use by wildlife in the proposed project area, including golden eagles and condors, as well as other avian species including bats. The DEIS should describe the critical habitat for the species; identify any impacts the proposed project will have on the species and their critical habitats; and how the proposed project will meet all requirements under the Endangered Species Act, including consultation with the U.S. Fish and Wildlife Service and California Department of Fish and Game.

Wind energy generation projects have the potential to disrupt important wildlife species habitat, resulting in mortality of migratory species such as birds and bats due to collisions with rotors. The DEIS should consider whether migratory birds are likely to use the project area and avoid, if possible: 1) areas supporting a high density of wintering or migratory birds, 2) areas with high level of raptor activity, and 3) breeding, wintering or migrating populations of less abundant species which may be sensitive to increased mortality as a result of collision.

A comprehensive monitoring program should be designed to evaluate impacts on bats and avian species. We suggest that the BLM conduct pre-construction baseline surveys to evaluate the site for its importance to bats and avian species, as well as post-construction surveys to determine the extent of mortalities and to determine the effectiveness of mitigation measures. Surveys should be conducted by a qualified biologist during the appropriate time of year. BLM actions should promote the recovery of declining populations of species. Collision risk depends on a range of factors related to species, numbers and behavior, weather conditions, topography, and lighting. The DEIS should identify and describe specific turbine types and their operating characteristics and consider turbine design standards that minimize adverse impacts to wildlife, particularly birds and bats. Consideration should be given to reducing the perching and nesting opportunities, which may help reduce potential collisions.

The DEIS should identify all petitioned and listed threatened and endangered species that might occur within the project area. The DEIS should identify and quantify which species might be directly or indirectly affected by each alternative. The DEIS should discuss the potential for habitat fragmentation and impediments to wildlife movements which are among the greatest threats to desert communities and species, and that maximizing habitat connectivity is essential to climate change adaptation[2]. The California Condor is listed as an endangered species under the Federal Endangered Species Act and is also fully protected pursuant to Fish and Game Code, Section 3511. All raptor and owl species are protected under the Migratory Bird Treaty Act. The golden eagle and bald eagle also receive protection

[2] Recommendations of Independent Science Advisors for the California Desert Renewable Energy Conservation Plan, DRECP Independent Science Advisors, October, 2010,

under the Bald and Golden Eagle Protection Act. The MBTA, however, has no provision for allowing unauthorized take. In September 2009, the FWS finalized permit regulations[3] under the BGEPA for the take of bald and golden eagles on a limited basis, provided that the take is compatible with preservation of the eagle and cannot be practicably avoided. The final rule states that if advanced conservation practices can be developed to significantly reduce take, the operator of a wind-power facility may qualify for a programmatic take permit. Most permits under the new regulations would authorize *disturbance,* rather than take. In February 2011 FWS issued Draft Eagle Conservation Plan Guidance which provides additional background information necessary for wind energy project proponents to prepare an Eagle Conservation Plan that will assess the risk of their project(s) to eagles and how siting, design, and operational modifications can mitigate that risk.

Recommendations:

Design a comprehensive monitoring program to evaluate impacts on bats and avian species, and discuss design and management measures to minimize adverse impacts to wildlife and native and rare plants.

Identify specific measures to reduce impacts to eagles and clarify how the proposed project will comply with the MBTA and BGEPA.

Commit to additional data collection/analysis to identify areas that are important to bald and golden eagles to ensure proper siting and avoid take of these species.

Consider site specific risk mapping for avian species of concern as a means to site individual wind turbines in lower risk areas. An example of this type of study was performed at the Altamont Wind Resource Area.[4] This study was funded by the California Energy Commission's Public Interest Energy Research program.

Discuss the applicability of the recently finalized FWS permit regulations (50 CFR parts 13 and 22) to the proposed project. Elaborate on process and/or likelihood of obtaining a permit via these regulations.

Discuss in the DEIS the applicability of the recent Eagle Conservation Plan Guidelines to the proposed project. Elaborate on siting, design, and operational modifications that will mitigate impacts.

The DEIS should describe the potential for habitat fragmentation and obstructions for wildlife movement.

If alternatives cannot be developed that avoid the take of eagles, develop an operational monitoring and adaptive management plan to address this issue.

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[3] See Eagle Permits, 50 CFR parts 13 and 22, issued Sept. 11, 2009. See internet address: http://www.fws.gov/migratorybirds/CurrentBirdIssues/BaldEagle/Final%20Disturbance%20Rule%209%20Sept%202009.pdf

[4] Smallwood, K. S., and L. Neher. 2008. Map-Based Repowering of the Altamont Pass Wind Resource Area Based on Burrowing Owl Burrows, Raptor Flights, and Collisions with Wind Turbines. California Energy Commission, PIER Energy-Related Environmental Research Program. CEC-500-2009-065.

Determine if the proposed project is within the existing or historical ranges of the California condor or have the potential to impact future expanded populations and consult with FWS and CDFG early in the process.

Indicate what mitigation measures will be taken to protect important wildlife habitat areas from potential adverse effects of proposed covered activities.

Discuss mechanisms in the DEIS that would: 1) protect into perpetuity any compensatory mitigation lands that are selected; and 2) exclude the non-developed portion of a subject ROW from further disturbance or development.

The DEIS should include the requirement for the owner to provide financial assurance for any required mitigation projects. Such assurances can be provided by third-party institutions, such as surety bonding companies, insurance companies, banks and other financial institutions that agree to hold themselves financially liable for the failure of a responsible party to perform compensatory mitigation obligations.

The US Fish and Wildlife Service published on March 4, 2010 a set of guidelines and recommendations[5] on how to avoid and minimize impacts of land-based wind farms on wildlife and habitat. Further revisions and clarifications were published in February 2011 in the Draft Voluntary Land-Based Wind Energy Guidelines.[6] The document was prepared by the Wind Turbine Guidelines Advisory Committee and contains both policy recommendations and recommended voluntary guidelines for siting and operating wind energy projects in order to avoid or minimize potential impacts to wildlife and habitat.

The Committee's Guidelines utilize a "tiered approach" to assess potential impacts to wildlife and their habitats. The five tiers include: 1) preliminary evaluation or screening of sites; 2) site characterization; 3) field studies to document site wildlife conditions and predict project impacts; 4) post-construction fatality studies; and 5) other post-construction studies. The Committee's Guidelines provide a consistent methodology for conducting pre-construction risk assessments and post-construction impact assessments to guide siting decisions by developers and agencies. Furthermore, the Guidelines address all elements of a wind energy facility, including the turbine string or array, access roads, ancillary buildings, and the above-and below-ground electrical lines which connect a project to the transmission system.

Recommendations:
Discuss, in the DEIS, the applicability of the recent Land-Based Wind Energy Guidelines to the proposed project. Elaborate on siting, design, and operational modifications that will mitigate impacts.

Consider utilizing unique types of radar technology to monitor for bird and bats.[7]

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[5] U.S. Fish and Wildlife Service Wind Turbine Guidelines Advisory Committee Recommendations, submitted to the Secretary of the Interior by the U.S. Fish and Wildlife Service, March 4, 2010. See Internet address: http://www.fws.gov/habitatconservation/windpower/Wind_Turbine_Guidelines_Advisory_Committee_Recommendations_Secretary.pdf

[6] U.S. Fish and Wildlife Service Draft Land-Based Wind Energy Guidelines, February 8, 2011. See Internet address: http://www.fws.gov/windenergy/

[7] For example, see http://www.detect-inc.com/avian.html and http://www.upi.com/Science_News/Resource-

Consider a tactical shut down option during critical hours of species activity, as appropriate, to minimize adverse impacts on such species.

Consider blade feathering/idling (including on-the-spot and seasonal shutdowns), reducing cut-in speeds, and adjusting turbine speeds during strategic intervals to reduce take and to prevent mortality.

Invasive Species

Executive Order 13112, *Invasive Species* (February 3, 1999), mandates that federal agencies take actions to prevent the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts that invasive species cause. Executive Order 13112 also calls for the restoration of native plants and tree species. If the proposed project will entail new landscaping, the DEIS should describe how the project will meet the requirements of Executive Order 13112.

Recommendation:
The DEIS should include an invasive plant management plan to monitor and control noxious weeds.

Cumulative and Indirect Impacts

The cumulative impacts analysis should identify how resources, ecosystems, and communities in the vicinity of the project have already been affected by past or present activities in the project area. Characterize these resources in terms of their response to change and capacity to withstand stresses. Trends data should be used to establish a baseline for the affected resources, to evaluate the significance of historical degradation, and to predict the environmental effects of the project components.

For the cumulative impacts assessment, we recommend focusing on resources of concern or resources that are "at risk" and/or are significantly impacted by the proposed project, before mitigation. For this project, the BLM should ensure that a thorough assessment of the cumulative impacts to bird and bat species is included, especially in the context of the larger wind power developments occurring nearby including, but not limited to, the Alta Wind Energy Center, PdV/Manzana Wind, Catalina Wind Energy Project, Pacific Wind and the Antelope Valley Wind Farm. In general, individual projects may not significantly affect bird or bat populations, but the BLM should look at cumulative impacts based upon the avian and bat fatalities accumulating under all future wind development scenarios in the Tehachapi area. Based on Kern County's projections, at least 10 additional proposed wind projects in the immediate vicinity could result in development of an additional 2,000 MW of wind energy power.[8]

EPA assisted in the preparation of a guidance document for assessing cumulative impacts and we recommend consideration of its use for the DEIS. While this guidance was prepared for transportation projects in California, the principles and the 8-step process outlined therein can be applied to other types

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Wars/2010/03/18/Radar-reduces-wind-farm-risk-to-birds/UPI-71441268920323/. These resources are provided as examples only and do not constitute endorsement of any particular product by EPA.

[8]See http://www.co.kern.ca.us/planning/pdfs/renewable/wind_projects.pdf

of projects and offers a systematic way to analyze cumulative impacts for a project. The guidance is available at: http://www.dot.ca.gov/ser/cumulative_guidance/purpose.htm. In the introduction to the *Cumulative Impacts Section*, identify which resources are analyzed, which ones are not, and why. For each resource analyzed, the DEIS should:

- Identify the current condition of the resource as a measure of past impacts. For example, the percentage of species habitat lost to date.
- Identify the trend in the condition of the resource as a measure of present impacts. For example, the health of the resource is improving, declining, or in stasis.
- Identify all on-going, planned, and reasonably foreseeable projects in the study area that may contribute to cumulative impacts.
- Identify the future condition of the resource based on an analysis of impacts from reasonably foreseeable projects or actions added to existing conditions and current trends.
- Assess the cumulative impacts contribution of the proposed alternatives to the long-term health of the resource, and provide a specific measure for the projected impact from the proposed alternatives.
- When cumulative impacts are identified for a resource, mitigation should be proposed.
- Disclose the parties that would be responsible for avoiding, minimizing, and mitigating those adverse impacts.
- Identify opportunities to avoid and minimize impacts, including working with other entities.

Recommendations:
The DEIS should consider the cumulative impacts associated with multiple large-scale renewable energy projects proposed in the western Mojave desert/Tehachapi area and the potential impacts on various resources including: water supply, endangered species, and habitat.

The BLM and project proponents should consider a regional assessment of resource impacts, including cumulative impacts to avian and bat populations, given the large number of wind energy projects either built or planned for the region.

The DEIS should discuss the adequacy of the current and future transmission line capacity for all the regional wind projects and whether the capacity can accommodate the multiple proposed wind projects slated for operation.

As an indirect result of providing additional power, it can be anticipated that these projects will allow for development and population growth to occur in those areas that receive the generated electricity.

Recommendation:
The DEIS should describe the reasonably foreseeable future land use and associated impacts that will result from the additional power supply. The document should provide an estimate of the amount of growth, its likely location, and the biological and environmental resources at risk.

Climate Change

Scientific evidence supports the concern that continued increases in greenhouse gas emissions resulting from human activities will contribute to climate change. Global warming is caused by emissions of carbon dioxide and other heat-trapping gases. On December 7, 2009, the EPA determined that emissions

of GHGs contribute to air pollution that "endangers public health and welfare" within the meaning of the Clean Air Act. One report indicates that observed changes in temperature, sea level, precipitation regime, fire frequency, and agricultural and ecological systems reveal that California is already experiencing the measurable effects of climate change[9]. The report indicates that climate change could result in the following changes in California: poor air quality; more severe heat; increased wildfires; shifting vegetation; declining forest productivity; decreased spring snowpack; water shortages; a potential reduction in hydropower; a loss in winter recreation; agricultural damages from heat, pests, pathogens, and weeds; and rising sea levels resulting in shrinking beaches and increased coastal floods.

Recommendations:
The DEIS should consider how climate change could potentially influence the proposed projects, specifically within sensitive areas, and assess how the projected impacts could be exacerbated by climate change.

The DEIS should quantify and disclose the anticipated climate change *benefits* of wind energy. We suggest quantifying greenhouse gas emissions from different types of generating facilities including solar, geothermal, natural gas, coal-burning, and nuclear and compiling and comparing these values.

Air Quality

The DEIS should provide a detailed discussion of ambient air conditions (baseline or existing conditions), National Ambient Air Quality Standards, criteria pollutant nonattainment areas, and potential air quality impacts of the proposed projects (including cumulative and indirect impacts). Such an evaluation is necessary to assure compliance with State and Federal air quality regulations, and to disclose the potential impacts from temporary or cumulative degradation of air quality.

The DEIS should describe and estimate air emissions from potential construction and maintenance activities, as well as proposed mitigation measures to minimize those emissions. EPA recommends an evaluation of the following measures to reduce emissions of criteria air pollutants and hazardous air pollutants (air toxics).

Recommendations:

- *Existing Conditions* – The DEIS should provide a detailed discussion of ambient air conditions, National Ambient Air Quality Standards, and criteria pollutant nonattainment areas in all areas considered for wind development.

- *Quantify Emissions* – The DEIS should estimate emissions of criteria pollutants from the proposed projects and discuss the timeframe for release of these emissions over the lifespan of the projects. The DEIS should describe and estimate emissions from potential construction activities, as well as proposed mitigation measures to minimize these emissions.

[9] Moser, Susie, Guido Franco, Sarah Pittiglio, Wendy Chou, Dan Cayan. 2009. The Future Is Now: An Update on Climate Change Science Impacts and Response Options for California. California Energy Commission, PIER Energy-Related Environmental Research Program. CEC-500-2008-071.

- *Specify Emission Sources* – The DEIS should specify the emission sources by pollutant from mobile sources, stationary sources, and ground disturbance. This source specific information should be used to identify appropriate mitigation measures and areas in need of the greatest attention.

- *Construction Emissions Mitigation Plan* – The DEIS should include a Construction Emissions Mitigation Plan. In addition to all applicable local, state, or federal requirements, the EPA recommends that the following mitigation measures be included in the Construction Emissions Mitigation Plan in order to reduce impacts associated with emissions of particulate matter and other toxics from construction-related activities:

  - *Fugitive Dust Source Controls:* The DEIS should identify the need for a Fugitive Dust Control Plan and how that plan will comply with the Eastern Kern County Air Pollution Control District Rule 402 for control of fugitive dust emissions. We recommend that the plan include these general commitments:
    - Stabilize heavily used unpaved construction roads with a non-toxic soil stabilizer or soil weighting agent that will not result in loss of vegetation, or increase other environmental impacts.
    - During grading use water, as necessary, on disturbed areas in construction sites to control visible plumes.
    - Vehicle Speed
      - Limit speeds to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions.
      - Limit speeds to 10 miles per hour or less on unpaved areas within construction sites on unstabilized (and unpaved) roads.
      - Post visible speed limit signs at construction site entrances.
    - Inspect and wash construction equipment vehicle tires, as necessary, so they are free of dirt before entering paved roadways, if applicable.
    - Provide gravel ramps of at least 20 feet in length at tire washing/cleaning stations, and ensure construction vehicles exit construction sites through treated entrance roadways, unless an alternative route has been approved by appropriate lead agencies, if applicable.
    - Use sandbags or equivalent effective measures to prevent run-off to roadways in construction areas adjacent to paved roadways. Ensure consistency with the project's Storm Water Pollution Prevention Plan, if such a plan is required for the project
    - Sweep the first 500 feet of paved roads exiting construction sites, other unpaved roads en route from the construction site, or construction staging areas whenever dirt or runoff from construction activity is visible on paved roads, or at least twice daily (less during periods of precipitation).
    - Stabilize disturbed soils (after active construction activities are completed) with a non-toxic soil stabilizer, soil weighting agent, or other approved soil stabilizing method.
    - Cover or treat soil storage piles with appropriate dust suppressant compounds and disturbed areas that remain inactive for longer than 10 days. Provide vehicles

(used to transport solid bulk material on public roadways and that have potential to cause visible emissions) with covers. Alternatively, sufficiently wet and load materials onto the trucks in a manner to provide at least one foot of freeboard.

- Use wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) where soils are disturbed in construction, access and maintenance routes, and materials stock pile areas. Keep related windbreaks in place until the soil is stabilized or permanently covered with vegetation.

- *Mobile and Stationary Source Controls:*
  - If practicable, lease new, clean equipment meeting the most stringent of applicable Federal[10] or State Standards[11]. In general, commit to the best available emissions control technology. Tier 4 engines should be used for project construction equipment to the maximum extent feasible[12].
  - Where Tier 4 engines are not available, use construction diesel engines with a rating of 50 hp or higher that meet, at a minimum, the Tier 3 California Emission Standards for Off-Road Compression-Ignition Engines[13], unless such engines are not available.
  - Where Tier 3 engine is not available for off-road equipment larger than 100 hp, use a Tier 2 engine, or an engine equipped with retrofit controls to reduce exhaust emissions of nitrogen oxides and diesel particulate matter to no more than Tier 2 levels.
  - Consider using electric vehicles, natural gas, biodiesel, or other alternative fuels during construction and operation phases to reduce the project's criteria and greenhouse gas emissions.
  - Plan construction scheduling to minimize vehicle trips.
  - Limit idling of heavy equipment to less than 5 minutes and verify through unscheduled inspections.
  - Maintain and tune engines per manufacturer's specifications to perform at CARB and/or EPA certification levels, prevent tampering, and conduct unscheduled inspections to ensure these measures are followed.

- *Administrative controls:*
  - Develop a construction traffic and parking management plan that maintains traffic flow and plan construction to minimize vehicle trips.
  - Identify any sensitive receptors in the project area, such as children, elderly, and infirmed, and specify the means by which you will minimize impacts to these populations (e.g. locate construction equipment and staging zones away from sensitive receptors and building air intakes).
  - Include provisions for monitoring fugitive dust in the fugitive dust control plan and initiate increased mitigation measures to abate any visible dust plumes.

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[10] EPA's website for nonroad mobile sources is http://www.epa.gov/nonroad/.

[11] For California, see ARB emissions standards, see: http://www.arb.ca.gov/msprog/offroad/offroad.htm.

[12] Diesel engines < 25 hp rated power started phasing in Tier 4 Model Years in 2008. Larger Tier 4 diesel engines will be phased in depending on the rated power (e.g., 25 hp - <75 hp: 2013; 75 hp - < 175 hp: 2012-2013; 175 hp - < 750 hp: 2011 - 2013; and ≥ 750 hp 2011- 2015).

[13] as specified in California Code of Regulations, Title 13, section 2423(b)(1)

Noise Impacts

The DEIS should include an assessment of noise levels from the wind turbines. Decibel levels of the turbines should be evaluated as should the effects of noise levels on a variety of species, as well as effects on property values, residences, and recreational use.

Visual Impacts

Careful attention should be given to how a wind turbine array is set against the landscape. Steps should be taken to minimize the visual impacts and make the wind turbines less obtrusive.

Hazardous Materials/Hazardous Waste/Solid Waste

The DEIS should address potential direct, indirect and cumulative impacts of hazardous waste from construction and operation. The document should identify projected hazardous waste types and volumes, and expected storage, disposal, and management plans. It should address the applicability of state and federal hazardous waste requirements. Appropriate mitigation should be evaluated, including measures to minimize the generation of hazardous waste (i.e., hazardous waste minimization). Alternate industrial processes using less toxic materials should be evaluated as mitigation. This potentially reduces the volume or toxicity of hazardous materials requiring management and disposal as hazardous waste.

Wind Turbine Production and Recycling
Wind turbine production can address the full product life cycle, from raw material sourcing through end of life collection and reuse or recycling. Wind turbine companies can minimize their environmental impacts during raw material extraction and minimize the amount of rare materials used in the product. Collection and recycling can be facilitated through buy-back programs or collection and recycling guarantees. Some companies provide recycling programs that pay all packaging, transportation, and recycling costs.

> *Recommendation:*
> EPA recommends that the proponent strive to address the full product life cycle by sourcing wind turbine components from a company that: 1) minimizes environmental impacts during raw material extraction; 2) manufactures wind turbines in a zero waste facility; and 3) provides future disassembly for material recovery for reuse and recycling.

Project Decommissioning, Site Restoration and Financial Assurance

On average, a lifespan of a wind park is 20-30 years. The life of the proposed wind project should be taken into consideration regarding decommissioning and reclamation.

> *Recommendation:*
> The EPA recommends that the DEIS include a requirement for a decommissioning and site restoration plan to include cost estimates; the project owner to secure a performance bond surety bond, letter of credit, corporate guarantee, or other form of financial assurance adequate to cover the cost of decommissioning/restoration; description of the conditions when decommissioning

will commence; description of time allotted to complete the decommissioning; description of the structures, facilities, and foundations to be removed; and restoration of the site by recontouring the surface and revegetation to a condition reasonably similar to the original condition.

Coordination with Tribal Governments

Executive Order 13175

Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments* (November 6, 2000), was issued in order to establish regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications, and to strengthen the United States government-to-government relationships with Indian tribes.

Recommendation:
The DEIS should describe the process and outcome of government-to-government consultation between the BLM and each of the tribal governments within the project area, issues that were raised (if any), and how those issues were addressed in the selection of the proposed alternative.

National Historic Preservation Act and Executive Order 13007
Consultation for tribal cultural resources is required under Section 106 of the National Historic Preservation Act (NHPA). Historic properties under the National Historic Preservation Act (NHPA) are properties that are included in the National Register of Historic Places (NRHP) or that meet the criteria for the National Register. Section 106 of the NHPA requires a federal agency, upon determining that activities under its control could affect historic properties, consult with the appropriate State Historic Preservation Officer/Tribal Historic Preservation Officer (SHPO/THPO). Under NEPA, any impacts to tribal, cultural, or other treaty resources must be discussed and mitigated. Section 106 of the NHPA requires that Federal agencies consider the effects of their actions on cultural resources, following regulation in 36 CFR 800.

Executive Order 13007, *Indian Sacred Sites* (May 24, 1996), requires federal land managing agencies to accommodate access to, and ceremonial use of, Indian sacred sites by Indian Religious practitioners, and to avoid adversely affecting the physical integrity, accessibility, or use of sacred sites. It is important to note that a sacred site may not meet the National Register criteria for a historic property and that, conversely, a historic property may not meet the criteria for a sacred site.

Recommendation:
The DEIS should address the existence of Indian sacred sites in the project areas. It should address Executive Order 13007, distinguish it from Section 106 of the NHPA, and discuss how the BLM will avoid adversely affecting the physical integrity, accessibility, or use of sacred sites, if they exist. The DEIS should provide a summary of all coordination with Tribes and with the SHPO/THPO, including identification of NRHP eligible sites, and development of a Cultural Resource Management Plan.

Environmental Justice and Impacted Communities

The recently signed interagency Memorandum of Understanding on Environmental Justice and Executive Order 12898 (August 4, 2011) and the Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994) directs federal agencies to identify and address disproportionately high and adverse human health or environmental effects on minority and low-income populations, allowing those populations a meaningful opportunity to participate in the decision-making process. Guidance[14] by CEQ clarifies the terms low-income and minority population (which includes American Indians) and describes the factors to consider when evaluating disproportionately high and adverse human health effects.

Recommendations:
The DEIS should include an evaluation of environmental justice populations within the geographic scope of the projects. If such populations exist, the DEIS should address the potential for disproportionate adverse impacts to minority and low-income populations, and the approaches used to foster public participation by these populations. Assessment of the project's impact on minority and low-income populations should reflect coordination with those affected populations.

The DEIS should describe outreach conducted to all other communities that could be affected by the project, since rural communities may be among the most vulnerable to health risks associated with the project.

Coordination with Land Use Planning Activities

The DEIS should discuss how the proposed action would support or conflict with the objectives of federal, state, tribal or local land use plans, policies and controls in the project areas. The term "land use plans" includes all types of formally adopted documents for land use planning, conservation, zoning and related regulatory requirements. Proposed plans not yet developed should also be addressed it they have been formally proposed by the appropriate government body in a written form (CEQ's Forty Questions, #23b).

[14] Environmental Justice Guidance under the National Environmental Policy Act, Appendix A (Guidance for Federal Agencies on Key Terms in Executive Order 12898), CEQ, December 10, 1997.

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
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81440-2011-TA-0478

August 16, 2011

Jacquelyn Kitchen
Planning and Community Development Department
County of Kern
2700 "M" Street, Suite 100
Bakersfield, California 93301-2323

Subject: Notice of Preparation and Notice of Intent of Draft Environmental Impact Report and Environmental Impact Statement for Alta East Wind Energy Project by Alta Windpower Development, LLC. (PP11212) General Plan Amendment 2, Zone Map 168 and 168-27; General Plan Amendment 3, Zone Map 179; General Plan Amendment 1, Zone Map 180; Zone Change Case 10, Map 168; Zone Change Case 4, Map 168-27; Zone Change Case 3, Map 179; Zone Change Case 6, Map 180; Zone Change Case 47, Map 197; Conditional Use Permit No. 7, Map 168, Kern County, California

Dear Ms. Kitchen:

We have reviewed the referenced notice of preparation/notice of intent to develop a draft environmental impact report/environmental impact statement and offer the following comments on the proposed development of the Alta EastWind Energy Project. The proposed action would include general plans amendments and changes in zone classification and development as described in your letter submitted to the U. S. Fish and Wildlife Service (Service) on July 15, 2011, regarding the subject project. We are providing these comments under the authorities of the Federal Endangered Species Act of 1973, as amended, the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act (Eagle Act), and other authorities of the Department of the Interior.

We agree with the County of Kern's (County) and Bureau of Land Management's (Bureau) assessment of the probable environmental effects of the proposed action with regard to biological resources. Specifically, the proposed project may have substantial adverse effects on sensitive and special status species, riparian and other sensitive natural communities, and migratory corridors for wildlife. The notice indicates that field surveys have identified several special-status species, including federally listed species, within and adjacent to the project area. We encourage the County and Bureau to work with the Service to review the survey results for their adequacy and to work with the service to develop avoidance, minimization, and mitigation measures. For any surveys that have yet to be completed, we recommend that the County and Bureau require the applicant to use protocols that have been developed or approved by the

Service and California Department of Fish and Game; please contact us or staff from the California Department of Fish and Game if you or the applicant have any questions regarding the protocols.

The Service is concerned that the subject project poses a threat to the endangered California condor (*Gymnogyps californianus*). In the last few years, California condors have expanded their use of the habitat available to them, and have continued to re-colonize historical portions of the species' range, moving east and north into the Tehachapi and Sierra Nevada mountain ranges, and within the vicinity of numerous wind facilities that are under construction or have been proposed. The Service is currently working with a group of stakeholders and the U.S. Geological Survey to try to assess the areas that California condors are likely to use in the future, based on land based habitat and wind patterns. Until we can ascertain how California condors will use the wind resources, we remain concerned that wind energy facilities in this region pose a substantial threat to the species. Given the behavioral ecology of California condors (e.g., the importance of experienced individuals in teaching recently released birds how to survive and their habitat of gathering in large numbers at a single carcass), we consider avoidance of mortality of California condors to be the only acceptable conservation strategy at this point in time. In particular, because of their feeding strategy, we are concerned that many individuals could be killed by wind turbines during a single feeding event. The draft environmental impact report/environmental impact statement should fully evaluate the potential for such incidents to occur and assess whether measures can be implemented to avoid them. If you are interested, we can provide you with recent information on the locations of California condors in this area.

Section 9 of the Endangered Species Act prohibits the "take" of listed species and could result in prosecution unless that take is authorized by the Service. Take is defined by the Endangered Species Act of 1973 as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined as significant habitat modification or degradation that actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 Code of Federal Regulations 17.3). "Harass" is defined as an intentional or negligent act or omission that creates the likelihood of injury to listed species by annoying it to such an extent as to significantly impair normal behavioral patterns which include breeding, feeding or sheltering (50 Code of Federal Regulations 17.3). Take may be authorized by the Service through the issuance of a biological opinion for federal projects pursuant to section 7(a)(2) of the Endangered Species Act, or the issuance of an incidental take permit pursuant to section 10(a)(1)(B0 of the Act. Despite the fact that take can be authorized for listed species, given that relatively few individuals remain in the wild and the potential for the proposed activity to kill multiple California condors, either in multiple events or during a single feeding event, authorizing lethal take of California condors could be difficult.

The proposed project has the potential to result in the "take" of golden eagles (*Aquila chrysaetos*. The Bald and Golden Eagle Act (50 Code of Federal Regulation 22.26, 22.27) prohibits a variety of actions with respect to eagles, including their "take." Take under the Eagle Act is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, or molest or disturb."

Anyone who takes an eagle is in violation of the Eagle Act unless the take has been authorized by the Secretary of the Interior via a permit obtained prior to the action. Under the Eagle Act, "disturb" means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, either injury to an eagle or a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior. "Substantial interference" was not defined in regulation but refers to interference at or above the level that causes eagles to abandon their nest or that causes injury or loss of productivity. "Injury" could be the direct result of the interference, such as a nestling being knocked from the nest by a startled adult, or it can be indirect, such as a nestling that is fed inadequately because the adults are agitated by human activities in the vicinity of the nest. Loss of productivity refers to a situation where reproductive output is reduced. Some examples of disturbance causing a loss of productivity include adults abandoning a nesting attempt because of human activity in the vicinity, nestlings failing to survive because the adults are deterred from using their primary foraging area and cannot adequately feed them, and pairs of previously successful breeding eagles being underweight and making no nesting attempt the next breeding season after their wintering concentration area is disturbed. The Service addressed the issue of disturbance in detail in its final regulations defining the term (see 72 Federal Register 31132, June 5, 2007).

The Service issued regulations in September of 2009 (Federal Register 74: 46835-46879) that allow permits to take eagles under the Eagle Act where take is associated with, but not the purpose of the activity, and cannot practicably be avoided. Available information indicates that golden eagles populations are in decline. Therefore, the final Environmental Assessment and Finding of No Significant Impact set the current take threshold for golden eagles at zero; thus, take can only be authorized where it is "compatible with the preservation of the eagle." To achieve no-net loss for the species and to maintain stable or increasing breeding populations, applications for take permits will need to include measures to avoid and minimize the potential for take to the maximum degree practicable.

Individual permits can be authorized for limited instances of disturbance. To address landscape-scale impacts, injuries, or mortalities, programmatic permits can be developed that may allow for take of eagles on an on-going operational basis. For these types of permits, the project proponent should implement comprehensive measures called "advanced conservation practices" that would be developed in cooperation with the Service. Advanced conservation practices are scientifically supportable measures that are approved by the Service and represent the best available techniques to reduce disturbance to and ongoing mortalities of eagles to a level where the remaining take is unavoidable, and the remaining impacts of the project have been offset. Currently, the Service is encouraging the development of eagle management plans to identify the specific measures a project proponent would implement to minimize a project's potential adverse effects to eagles. The Service's established protocols should be used for breeding and non-breeding season surveys and monitoring, to assess potential impacts to resident, migrating, floater, and wintering golden eagles, and to provide rigorous data to address the conditions of existing population. Data collected pre- and post-construction should be used to determine ongoing risk and the potential for adaptive management strategies to continue to reduce conflict with eagles.

For these reasons, we recommend that the County and Bureau require the project applicants to conduct surveys for golden eagles according to our recommended guidelines found at this link: http://www.fws.gov/southwest/es/oklahoma/Documents/Wind%20Power/Documents/USFWS_Interim_GOEA_Monitoring_Protocol_10March2010.pdf . If the surveys demonstrate that the proposed project would likely result in the take of golden eagles, we recommend that the County and Bureau require the project applicants develop advanced conservation practices to achieve the standard of no-net loss for the species.

We also recommend that the draft environmental impact report/environmental impact statement contain a comprehensive analysis of the cumulative effects of this and other renewable energy projects on golden eagles in Kern County and the California desert. We encourage the County and the Bureau to coordinate with the Service, and other local jurisdictions on a desert-wide planning effort to ensure the maintenance of a viable population of golden eagles in the California desert.

The Migratory Bird Treaty Act prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior. The Migratory Bird Treaty Act has no provision for allowing take of migratory birds except under specific circumstances, such as threat to human health. We recognize that some birds may be killed at structures such as communication towers and wind energy facilities even if all reasonable measure to avoid it are implemented. The Service carries out its mission to protect migratory birds not only through investigations and enforcement, but also through fostering relationships with individuals and industries that proactively seek to eliminate their impacts on migratory birds. Although the Migratory Bird Treaty Act does not allow us to absolve individuals or companies from liability, if they follow recommended guidelines, the Service and Department of Justice have used enforcement and prosecutorial discretion in the past regarding individuals or companies who have made good faith efforts to avoid the take of migratory birds.

Wind energy developments affect wildlife in several ways. Raptors, passerines, waterbirds, and bats have been killed as a result of collision with rotating turbine blades and interactions with other infrastructure associated with wind energy facilities (Arnett et al. 2007, Kunz et al. 2007, Kuvlesky et al. 2007, Ontario Ministry of Natural Resources 2006). Barotrauma, an apparent effect of sudden air pressure changes from wind wake turbulence, also appears to cause direct mortality in some songbirds and is being documented in bats (Kunz et al. 2007, Manville 2009). In addition, wind energy projects can cause displacement and disturbance of wildlife, fragment habitat, negatively affect birds and bats by preventing breeding, decreasing population vigor and viability, and altering behavior; these potential effects should be considered when evaluating project sites (Stewart et al. 2007). Given the myriad potential impacts that the proposed projects may have on migratory birds and bats, we recommend that the County and Bureau include in the draft environmental impact report/environmental impact statement an avian and bat protection plan that identifies a full spectrum of adaptive management measures. We have enclosed information of the development of avian and bat protection plans. The plan should include

sufficient monitoring to detect mortality events that could result during sporadic migration pulses.

If you have any questions regarding this letter, please contact Ashleigh Blackford of the Ventura Fish and Wildlife Office at (805) 644-1766, extension 234.

Sincerely,

Carl Benz
Assistant Field Supervisor

Enclosures

✓Cc
Jeff Childers
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US Fish and Wildlife Service
Pacific Southwest Region

INTERIM GUIDELINES FOR THE DEVELOPMENT OF A PROJECT SPECIFIC AVIAN AND BAT PROTECTION PLAN FOR WIND ENERGY FACILITIES

I. Introduction and Purpose

Increased energy demands and the nationwide goal to increase energy production from renewable sources have intensified the development of energy facilities, including wind turbines. The U.S. Fish and Wildlife Service (Service) supports renewable energy development. However, the Service strongly encourages energy development that is wildlife- and habitat-friendly. Of concern is that the cumulative effects of renewable energy projects may initiate or contribute to the decline of some bird and bat populations as well as other affected species. In order to ensure that renewable energy projects avoid and minimize impacts to bird and bat populations, the Service's Pacific Southwest Region developed these *Interim Guidelines for the Development of a Project Specific Avian and Bat Protection Plan for Wind Energy Facilities* as a means to provide energy project developers a tool for assessing the risk of potential impacts, designing, and then operating a bird- and bat-friendly wind facility.

Migratory birds are a Federal trust resource managed and protected by the Service. The Service estimates that between 58,000 and 440,000 birds are killed each year by wind turbines in the U.S., with that number growing based on at least 23,000 commercially operating turbines today (Manville 2005, 2009). Impacts from wind energy developments result from both direct and indirect causes. Raptor, passerine, waterbird, and bat fatalities have been documented as a result of collision with rotating turbine blades and interactions with other infrastructure associated with wind energy facilities (Arnett et al. 2007, Kunz et al. 2007, Kuvlesky et al. 2007, Ontario Ministry of Natural Resources 2006). Barotrauma, an apparent effect of sudden air pressure changes from wind wake turbulence, also appears to cause direct mortality in some songbirds and is being documented in bats (Kunz et al. 2007, Manville 2009). In addition, indirect impacts from energy projects such as displacement, disturbance, and habitat fragmentation can have negative effects on birds and bats by preventing breeding, decreasing population vigor and/or viability, and altering behaviors and should be considered when evaluating project sites (Stewart et al. 2007).

Legal Drivers

The Endangered Species Act (16 U.S.C. § 1531 et seq.; ESA) prohibits the harassment, harm, pursuit, hunting, shooting, wounding, killing, trapping, capture, or collection of a listed species. ESA provides specific mechanisms to authorize "incidental" take that occurs as a result of an otherwise legal activity and does not jeopardize listed species or adversely modify habitat designated as critical. An ABPP does not authorize take of federally listed species.

The Migratory Bird Treaty Act (16 U.S.C. § 703 et seq.; MBTA) prohibits the taking, killing, possession, transportation and importation of migratory birds, their eggs, parts, and nests, except when authorized by the Department of Interior. Because MBTA does not provide a specific mechanism to permit "incidental" take, it is important for proponents to work proactively with

the Service to avoid and minimize take. While MBTA has no provision for allowing an "incidental" take, it must be recognized that some birds may be killed at renewable energy developments even if all reasonable measures to avoid it are implemented. The Service's Office of Law Enforcement carries out its mission to protect migratory birds not only through investigations and enforcement, but also through fostering relationships with individuals and industries that proactively seek to eliminate their impacts on migratory birds. While it is not possible under MBTA to absolve individuals, companies, or agencies from liability if they follow these recommended guidelines, the Department of Justice has used prosecutorial discretion in the past regarding individuals, companies, or agencies who have made good faith efforts to avoid the take of migratory birds.

The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d; BGEPA) further protects eagles from "take", where take is defined as to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, disturb individuals, their nests and eggs. "Disturb" was defined in 2007 (72 FR 31132) as "to agitate or bother a bald or golden eagle to a degree that causes…injury to an eagle, reduced productivity, or nest abandonment…" In 2009, two new permit rules were created for eagles. New 50 CFR 22.26 can authorize limited take of bald (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) when the take is associated with, but not the purpose of an otherwise lawful activity, and cannot practicably be avoided. New 50 CFR 22.27 can provide for the intentional take of eagle nests where necessary to alleviate a safety hazard to people or eagles, to ensure public health and safety, where nest prevents use of a human-engineered structure, and where the activity or mitigation for the activity will provide a net benefit to eagles. Only inactive nests are allowed to be taken except in cases of safety emergencies.

These new rules and regulations pertaining to take do not alter or increase in any way existing prohibitions against take in the statute, but do provide a mechanism where non-purposeful take of eagles can be legally authorized. However, BGEPA provides the Secretary of Interior with the authority to issue eagle take permits only if he is able to determine that the take is compatible with the preservation of the eagle. This must be "…consistent with the goal of increasing or stable breeding populations." For more information regarding the new eagle rules see the eagle rule and guidance listed in Appendix 1 of this document. The development of a protection plan does not guarantee qualification for a permit under BGEPA.

What is an Avian and Bat Protection Plan?

An Avian and Bat Protection Plan (ABPP) is a project-specific document that delineates a program designed to reduce the operational risks that result from bird and bat interactions with a specific wind energy facility. Although each project's ABPP will be different, the overall goal of any ABPP should be to reduce avian and bat mortality with the ultimate goal of eliminating take. The development and implementation of an ABPP is voluntary and is not intended nor shall it be construed to limit or preclude the Service from exercising its authority under any laws, statute, or regulation, and to take enforcement action against any individual, company, industry, or agency or to release any individual, company, industry, or agency of its obligation to comply with any applicable Federal, State, or local laws, statutes, or regulations. Ultimately, the ABPP can and should result in an agreement between the project proponent and the Service as a "good faith" effort to conserve migratory birds and bats while still allowing for the development of

wind energy projects and production of renewable electricity in the most environmentally friendly ways possible and practicable.

In an effort to reduce the impacts of wind energy projects to migratory birds and bats, the Service recommends that wind energy project proponents develop an ABPP that outlines the project development process and includes conservation measures that will be implemented to avoid and minimize impacts to birds and bats at each project they propose to develop. ABPPs could be similar or essentially the same for adjacent projects or may simply not be needed (see criteria below). The ABPP will aid project developers with 1) establishing project development in an adaptive management framework, 2) proper siting and project design strategies, 3) design and implementation of pre-construction surveys, 4) implementing appropriate conservation measures for each development phase, 5) design and implementation of appropriate post-construction monitoring strategies, 6) use of possible post-construction studies to better understand the dynamics of mortality reduction (e.g., changes in blade cut-in speed, assessments of blade "feathering" success, and studies on the effects of visual and acoustic deterrents) including efforts tied into Before-After/Control-Impact (BACI) analysis, and 7) conducting a thorough risk assessment and validation leading to adjustments in management and mitigation actions.

The template/recommendations set forth in this guidance were based upon the Avian Powerline Interaction Committee (APLIC) APP template (2005) developed for electric utilities and has been modified accordingly to address the unique concerns with wind energy facilities. These recommendations are consistent with the *2003 Service Interim Guidelines to Avoid and Minimize Wildlife Impacts from Wind Turbines* (USFWS 2003) and the March 4, 2010, *Wind Turbine Guidelines Advisory Committee Recommendations to the Secretary of Interior*. These ABPP guidelines follow the principles of the Advisory Committee guidelines, which strive to:

1. Provide a consistent methodology for conducting pre-construction risk assessments and post-construction impact assessments to guide siting decisions by developers and agencies.
2. Encourage communication and coordination between the developer and relevant state and federal agencies during all phases of wind energy project development.
3. Provide mechanisms to encourage the adoption and use of the Guidelines by all federal agencies, as well as the wind energy industry, while recognizing the primary role of the lead agency in coordinating specific project assessments.
4. Complement state and tribal efforts to address wind/wildlife interactions and provide a voluntary means for these entities to coordinate and standardize review of wind projects with the USFWS.
5. Provide a clear and consistent approach that increases predictability and reduces the risk of liability exposure under federal wildlife laws.
6. Provide sufficient flexibility to accommodate the diverse geographic and habitat features of different wind development sites.
7. Present mechanisms for determining compensatory mitigation, when appropriate, in the event of unforeseen impacts to wildlife during construction or operation of a wind energy project.
8. Define scientifically rigorous and cost-effective study designs that improve the ability to predict direct and indirect wildlife impacts locally and regionally.

9. Include a formal mechanism for revision in order to incorporate experience, technological improvements, and scientific advances that reduce uncertainty in the interactions between wind energy and wildlife.

II. Criteria for Developing an ABPP

Due to differences in wind energy projects, locations selected for development, and varying distribution of wildlife resources and their habitats, some wind energy projects may not need to develop an ABPP. The following criteria should be used to determine if a project should pursue the development of an ABPP. If a project does not fit within the decision key criteria below to develop an ABPP, coordination with the Service is encouraged prior to actual site selection and project construction to ensure that appropriate conservation measures that avoid and minimize bird and bat impacts are incorporated into the project design. Below is a decision key to determine whether an ABPP should be developed.

A. Are there bird or bats that are listed as federally threatened or endangered, state threatened or endangered, state species of special concern, state fully protected, or delineated on the federal Birds of Conservation Concern list (USFWS 2008) that use the project footprint for nesting, wintering, foraging, staging, roosting, breeding, or migrating?
   1. If yes – **DEVELOP ABPP**
   2. If no – Go to B
B. Is there one or more eagle territory within the project footprint or 16 km (10 miles) of the nearest project boundary?
   1. If yes – **DEVELOP ABPP**
   2. If no – Go to C
C. Is the project footprint (including transmission corridors) located within/or adjacent to a designated Important Bird Area (see http://www.audubon.org/bird/IBA/) or within a major bird and/or bat migratory corridor, pathway, staging area, breeding, roosting, wintering, or stopover site (e.g., Western Hemisphere Shorebird Reserve Network [WHSRN], or Ramsar Convention site)?
   1. If yes or unknown – **DEVELOP ABPP**
   2. If no - Go To D
D. Does the project consist of > 10 turbines each equal to or greater than 1.5 Megawatt (MW)?
   1. If yes – **DEVELOP ABPP**
   2. If no – Go to E

III. Recommended Elements of an ABPP

While the structure of an individual ABPP will be based upon the specifics of the project, it is recommended that every ABPP contain the following elements and address both birds and bats.

A. Introduction

1. A description of the purpose and goal of the plan
2. Legal drivers – MBTA, BGEPA, ESA, Section 404 of the Clean Water Act, National Environmental Protection Act (if there is a Federal nexus), state regulations, other regulations as appropriate

B. Corporate Policy - An ABPP typically includes a statement of company policy confirming the company's commitment to work cooperatively towards the protection of migratory birds and bats.

C. Adaptive Management and Habitat Compensation
   1. Adaptive Management Process – outline the adaptive management process, including key decision making steps to ensure each phase (e.g., siting, design, construction, operation, and post-operation) of project development is evaluated
      a. Establish goals for the project
      b. Establish biologically meaningful triggers for management actions such as:
         i. Additional Conservation Measures (CMs) – operational changes if appropriate (e.g., seasonal blade "feathering" protocol, changes in blade cut-in speed, turbine set-backs from ridges, elimination of "killer" turbine strings, and replacement of turbines in dips and end-of-row turbines with pylons).
         ii. Additional monitoring or research studies if appropriate
         iii. Additional compensation if appropriate (e.g., habitat compensation, other mitigation measures)
   2. Habitat Compensation – The Service recommends habitat compensation for the loss of high quality bird habitat
      a. Habitat Equivalency Analysis – HEA is a pre-construction analysis tool to guide upfront habitat compensation (see below for more information)

D. Site Suitability Assessment
   1. Pre-site Assessment
      a. Determine whether the site is designated as Critical Habitat under the Endangered Species Act, designated as an Important Bird Area, WHSRN or RAMSAR site, an area of critical environmental concern (ACEC), or other special designation as important for wildlife.
      b. Using an initial coarse site assessment (e.g., Potential Impact Index [PII], Rapid Assessment Method [RAM]) identify important habitats, sensitive species (e.g., Species of Conservation Concern, Threatened or Endangered Species, or eagles), and other environmental issues within the proposed footprint.
      c. Make a determination as to whether the proposed site can be developed for wind energy while concurrently avoiding or minimizing impacts to wildlife. An alternative site analysis may be required if significant adverse impacts cannot be minimized.
   2. Pre-construction Studies and Risk Assessment
      a. Bird Use Studies - Determine the temporal and spatial distribution of avian populations including special status species within the proposed

footprint, during the breeding, nesting, foraging, roosting, feeding, wintering, and migration seasons.

b. Bat Use Studies – Determine the presence and activity levels of bats at a temporal and spatial scale during the breeding, winter, and migration seasons within the proposed footprint.

c. Threats – Identify the current threats to wildlife within entire project footprint.

d. Risk Assessment – What are potential short and long-term impacts of project development on bird and bat populations, including the cumulative impacts from all threats (including compensatory and additive) and lethal "take"?

3. Reporting – All site surveys, rapid assessment methodologies, reconnaissance surveys, and risk assessments should be shared with appropriate agencies prior to final site selection and initial construction. To the extent allowable under the Freedom of Information Act (FOIA), this information would remain confidential between the Service and the proponent and be protected from the release to the public.

E. Project Design and Impact-Reducing Conservation Measures

1. A detailed description of the facility layout, including macro- and micro-siting CMs implemented (e.g., avoid fragmenting large contiguous blocks of high quality bird/bat habitat, creation of avoidance buffers, turbine set-backs from ridges; see below for additional siting CMs).
2. Construction Phase CMs to be implemented (e.g., avoid breeding season for vegetation removal and construction, minimize area disturbed to maximum practicable)
3. Operation Phase CMs to be implemented (e.g., minimize lighting, follow all APLIC guidelines; see below for additional operational CMs)

F. Post-Construction Monitoring and Risk Assessment Validation

1. A detailed description of the post-construction monitoring plan including the proposed duration and intensity of monitoring including a justification.
2. The monitoring plan should assess changes in baseline data.
   a. Changes in temporal and spatial distribution of wildlife populations
   b. Changes in migratory or resident species behavior (e.g., avoidance of the site, attraction to the site, abandonment of the site, attraction of nest predators, and noted reduction in population vigor).
3. Mortality Studies – must include detectability and scavenger studies based on the use of accepted scavenger and search efficiency studies (e.g., Erickson et al. 2004, Kunz et al. 2007).
4. Nest Management – identify actions that are proposed to be taken by the proponent and/or its consultant when nests are observed on facilities (e.g., power poles, infrastructure, or outbuildings).
5. Risk Assessment Validation – comparison of pre- and post-construction data to determine "actual" impacts to wildlife due to facility operation, ideally validating or negating the pre-construction risk assessment.

6. Reporting
    a. Facility Mortality Reporting System – develop an internal reporting system for the facility to report detected bird and bat mortalities. This system will include provisions to report bird/bat fatalities to the Service office of Law Enforcement's confidential, voluntary mortality reporting website.
    b. Agency Reports – annual monitoring reports (including documented mortalities) will be submitted to the appropriate federal, state, and/or county agencies. Annual reporting will be a condition of any migratory bird or eagle permit issued by the Regional Migratory Bird Permits Office.

G. Implementation
1. Permit Compliance - An ABPP should identify which permits are required related to wildlife issues.
2. Employee Training - Training is an important element of an ABPP. All appropriate facility personnel should be properly trained in avian and bat issues including basic avian and bat biology, ecology, behavior, presence, site use, monitoring protocols, and key issues that may result in significant impacts (e.g., presence of Federally listed species, critical habitat, adjacent hibernacula, and maternity colonies). This training should encompass the reasons, need, and method by which employees should report a bird or bat mortality, follow nest management protocols, dispose of carcasses, comply with applicable regulations, including the consequences of non-compliance, and the appropriate agencies that should be contacted after incidents.
3. Quality Control - An ABPP should provide a mechanism to review existing practices, ensuring quality control and a project audit.
4. Key Resources – key regulations, laws, contact information, forms, protocols, etc.
5. Public Awareness –outreach and education materials for stakeholders, etc.

IV. Guidance on Specific Elements of ABPP

The following section is meant to provide project proponents useful information for planning each development phase of the facility. For each phase outlined below, conservation measures and guidance are recommended for inclusion in the development of any wind energy project.

Coordination

The most essential element to developing a successful project is the coordination between the project proponent and the appropriate agencies (e.g., federal, state, county agencies). Early coordination ensures that all parties and agencies understand the scope of the project and can highlight details that require special attention. Early coordination with agency personnel can ensure appropriate survey design is used, special status species are addressed, specific conservation measures are recommended, and inform the project proponent about any permit requirements and how to obtain those permits. Through early coordination, the project

proponent should understand agency expectations and have guidance on how to meet those expectations.

Adaptive Management and Habitat Compensation

The Service recommends that proponents take an Adaptive Management (AM) approach to project development and operation. Adaptive Management promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions become better understood (Williams et al. 2009). The AM process is a decision making process that has six key principles: Problem Assessment, Design, Implementation, Monitoring, Evaluation, and Adjustment. The AM process should establish clear, biologically appropriate goals and triggers tied to mitigation measures. Based on the validation of risk assessment through post-construction monitoring a series of adaptive management actions should be identified as possible solutions to identified sources of wildlife impacts. The AM process should develop triggers based on available data and perceived risk that signal the level of adaptive action that is required. Through the AM process, management decisions can be made in response to post-construction assessments. Adapative Management decisions could include (but are not limited to) changes in facility operation, use of additional conservation measures, further impact research or monitoring, and/or additional resource compensation. For a complete discussion of AM, please see Williams et al. (2009).

In order to compensate for the loss of high quality wildlife habitat, the Service strongly encourages project proponents to conduct a Habitat Equivalency Analysis (HEA) and determine compensation for both temporary and permanently lost habitat at the start of the project. HEA is a method of quantifying interim and permanent habitat injuries, measured as a loss of habitat services from pre-disturbance conditions, and scaling compensatory habitat requirements to those injuries (Dunford et al. 2004, National Oceanic and Atmospheric Administration 2006, 2009). Habitat services are generally defined by a metric that represents the functionality of that habitat (i.e., the ability of that habitat to provide “services” such as nest sites, prey populations, cover from predators, protected loafing areas, protected roosting areas, and reliable feeding sites). Interim habitat injuries are those habitat services that are absent during disturbance and during vegetation restoration that would have been available if that disturbance had not occurred. Permanent habitat injuries are habitat injuries remaining after vegetation recovery is complete (e.g., permanent habitat loss). The objective of an HEA is to replace lost services with like services, providing a replacement ratio for interim and permanent injury (see literature in Appendix 1 for more information on HEA).

Pre-siting Data Collection

Due to local differences in wildlife concentrations and movement patterns, habitats, area topography, facility design, and weather; each proposed development site is unique and requires detailed and individual evaluation (USFWS 2003). In addition, renewable energy projects are rapidly expanding into habitats and regions that have not been well studied and where animal population data are scarce. Thus, in an effort to place projects in locations that will yield the least risk of population impacts, a rigorous siting evaluation process should be completed.

Pre-siting analyses should consist of 1) a coarse site assessment (e.g., PII, RAM), 2) a HEA, 3) site specific wildlife use surveys, and 4) a wildlife-facility interaction risk assessment. Data collection methods will vary between projects due to differences mentioned previously, however the Service recommends the following considerations when conducting pre-siting assessments.

A. Coarse Site Assessment – Each pre-siting assessment should start with a coarse site assessment of the potential environmental issues that might preclude the site from development based on its perceived or validated level of risk. At a minimum, every wind project should conduct either a PII (USFWS 2003 – Appendix 1) or use a more detailed and consistent RAM that will include a checklist for temporal and spatial air space components lacking in the PII (the RAM is still in development). Factors that should be considered during any coarse assessment include:
   1. Is the site designated as Critical Habitat for any federally listed species?
   2. Is the site designated as an Important Bird Area (see http://www.audubon.org/bird/IBA/), or a WHSRN or RAMSAR site?
   3. Does the site provide suitable habitat for any federal or state listed species, or sensitive species (e.g., ACEC)?
   4. What is the type and quality of bird/bat habitat within and surrounding the footprint?

B. Habitat Equivalency Analysis – The Service encourages the wind industry to look for opportunities to promote bird, bat, and other wildlife conservation when planning renewable energy facilities. These opportunities may come in the form of voluntary habitat acquisition or conservation easements. In order to quantify the appropriate compensation acreage, the use of an HEA can be used to identify high quality habitat and calculate compensation for the development of high quality habitats for both permanent and temporary losses. See HEA resources in Appendix 1 of this document.

C. Site Specific Wildlife Surveys
   1. Development of appropriate survey question – It is important to develop the appropriate survey questions as they dictate the sampling design and protocols to be used. An inappropriate study design and/or insufficient duration of data collection may result in unreliable data inferences with resultant biases and skewed results (Kunz et al. 2007). Pre-siting survey data will become the baseline for project impacts to bird and bat populations. Thus, most survey designs should be established as BACI studies, when possible. Well designed BACI studies that test the response of birds and bats to certain operational conditions are needed to fully evaluate options for mitigating fatalities to birds and bats at wind-energy projects (Kunz et al. 2007). Examples of possible survey questions include (but are not limited to):
      a. Which species of birds and bats use the project area and how do their numbers vary temporally (i.e., daily, monthly, annually)?
      b. How much time do birds/bats spend in the risk zone (rotor swept area) and does this behavior vary by season?
      c. What is the estimated range of bird/bat mortalities from the project?

d. Are there nesting raptors within the project footprint (all species), within 5 km (3 miles) of footprint (all species), within 16 km (10 miles) of footprint (eagles)?
e. Is there a preponderance of inclement weather events that coincide with avian and/or bat presence that would put these species at especially high risk?

2. Selection of appropriate survey methodology – Based on the project and questions being asked, there are many suitable methods to survey birds and bats and establish baseline data. Generally, it is recommended to employ multiple survey techniques to ensure adequate data collection. A good summary of survey methods can be found in Kunz et al (2007) for night-migrating birds and bats and Ontario Ministry of Natural Resources (2006) for bats. Efforts are currently underway to update the Anderson et al. 1999 methods for monitoring diurnally active birds. In addition, follow Service survey and monitoring guidelines (e.g., the Interim National Golden Eagle Inventory and Monitoring Guidelines; Pagel et al. 2010). Examples of survey methods that might be appropriate for wind projects include acoustic, radar, infrared, radio telemetry, mist netting, harp trapping, and a variety of observational surveys. Specific survey methods should include:
    a. Diurnal bird use counts
    b. Nocturnal bird use counts
    c. Raptor nest searches (see Pagel et al. 2010 for golden eagle protocols)
    d. Small bird counts (CEC 2007, EC/CWS 2006a and 2006b)
    e. Migration counts
    f. Acoustic bat monitoring
    g. Bat roost exit counts – if applicable
3. Duration and timing of surveys – To collect data under variable climatic conditions and accumulate sufficient samples for data analysis, pre-construction surveys should be conducted to assess the potential risk of the proposed project to wildlife. Multi-year surveys, up to three years pre-construction, may be warranted. This can vary depending on the project specifics, known or perceived level of risk, the variability in use of habitat by avian species, environmental stochasticity, and species present. Surveys should be designed to ensure adequate data are collected on breeding, staging, migration, and winter bird/bat use of the project site, taking into account peak use of the site temporally and spatially. Bird surveys should include diurnal and nocturnal use studies for the project footprint. Bat surveys should also include year-round acoustic monitoring to detect presence and activity (e.g., mean number of passes/detector/night), as little information is typically known about the ecology of resident, wintering, and migrating bats. Coordinate with the wildlife agencies when selecting locations for bird and bat data collection.
4. Use of additional data – Other sources of data may be available for specific project sites. When available and appropriate, these data should also be included in the site evaluation. Other good sources of bird data include (but are not limited to) Audubon Christmas Bird Count data, USGS Breeding Bird Survey data, Cornell Lab of Ornithology eBird data, California Natural Diversity Database, and Audubon Important Bird Area data. These data have utility limitations (i.e., what

the data can be used for) and these limitations should be considered prior to inclusion in the assessments.

5. Special status species – When evaluating a project site, special status species should be identified. Special status species include all federal and state species listed as endangered or threatened, state species of concern and fully protected species, and those listed on the Fish and Wildlife Service's Birds of Conservation Concern 2008 (http://library.fws.gov/Bird_Publications/BCC2008.pdf)
    a. Eagles – The ABPP should address whether bald or golden eagles use the project site for foraging, roosting, nesting, wintering, migration, or as a migration stop-over site. The project assessment should address whether there are nesting bald or golden eagles within 16 km (10 miles) of the project site and include whether the project development impacts eagle foraging habitat, roost sites, wintering habitat, migratory stop-over sites, migratory corridors, defended eagle territories, or displaces eagles during either the breeding and/or the winter seasons.

D. Risk Assessment – The risk assessment should identify potential short and long-term impacts of the project development on bird and bat populations, including lethal "take" (as defined by all applicable regulations).
1. Site specific threats – Based on the results of the site specific wildlife surveys, the site specific risk assessment should address what the potential for take is based on:
    a. Turbine collision and other turbine interactions (e.g., barotrauma, crippling loss or injury from wind wake turbulence and blade-tip vortices)
    b. Transmission line, power tower, met tower, or guy line collision
    c. Electrocution potential
    d. Displacement issues
    e. Nest and roost site disturbances
    f. Habitat loss
    g. Habitat fragmentation
    h. Additional human presence disturbances
2. Cumulative Impacts – Effects that are likely to result from the project in combination with other projects or activities that have or will be carried out should be analyzed. We recommend that the cumulative effects assessment, where practicable and reasonable, should include the impacts from all threats and lethal "take".
    a. Evaluate the cumulative effects of all new or existing renewable energy projects within 16 km (10 miles) of the project footprint
    b. Evaluate the cumulative effects of all new or existing utility structures within 16 km (10 miles) of the project footprint
    c. Evaluate the cumulative impacts of all other human disturbances within 16 km (10 miles) of the project footprint (e.g., urbanization, agriculture, off-road recreation areas, other recreation areas)
    d. For eagle cumulative effects, we recommend the analysis should include the area within 69 km (43 miles) of the project site for bald eagles and 225 km (140 miles) for golden eagles (USFWS *in prep*)

E. Reporting – After all appropriate pre-siting survey work is completed; the resulting information and risk assessment should be provided to all appropriate agencies for review and discussion.

Project Design Conservation Measures

Based on the information gathered in the pre-siting data collection and risk assessment phase, the project design should be tailored so that wildlife mortality risks are avoided and minimized. The primary question to be asked during project design is what design features and/or considerations can potentially reduce the hazard of wind turbines to wildlife populations? Consideration for the following aspects is strongly recommended:

A. Project siting – After all pre-siting survey data have been collected and analyzed, it is important to select the site that will have the least impacts to bird and bat populations. The ultimate goal is to avoid any take of migratory birds and bats and/or minimize the loss, destruction, or degradation of migratory bird or bat habitat by placing projects in disturbed and degraded areas to the maximum extent practicable. Siting conservation measures should include both the macro- and micro-site scales.
   1. Macro-siting – Consideration should be made to avoid:
      a. Locations with federally or state listed, or otherwise designated sensitive species, and areas managed for the conservation of listed species (i.e., ACECs)
      b. Areas frequently used for daily bird and bat movements (i.e., areas between roosting and feeding sites)
      c. Breeding and wintering eagle use areas
      d. Known migration flyways for birds and bats
      e. Areas near known bat hibernacula, breeding, and maternity/nursery colonies
      f. Areas with high incidence of fog, mist, low cloud ceilings, and low visibility, or where other risk factors may come into play
      g. Fragmentation of large, contiguous tracts of wildlife habitat (see ES/CWS 2006a and 2006b)
   2. Micro-siting – Once a footprint has been selected, there may be opportunities for finer scale micro-siting of the project components. Component siting considerations include:
      a. Avoid placing turbines near landscape features that attract raptors
      b. Avoid placing turbines near landscape features that attract migrant birds (e.g., water sources, riparian vegetation)
      c. Set turbines back at least 200 meters (~650 feet) from cliff tops where raptors nest (Richardson and Miller 1997)
      d. Minimize the potential for creating habitats suitable for rodents such as rock piles and eroded turbine pads with openings underneath that will additionally attract raptors, especially golden eagles

B. Buffer zones – It might be appropriate and necessary to establish biologically meaningful buffer zones to protect raptor and other bird nests, areas of high bird and bat use, and known bat roosts. These buffers should be established up-front and be part of the siting process. The Service recommends that the following avoidance buffers are considered:

1. Passerines – Avoid disturbance activities (e.g., construction actions, noise) within established buffers for active nests of any protected bird species or any high quality nesting habitat (e.g., riparian areas). Buffer distances should consider species, terrain, habitat type, and activity level as these features relate to the bird alert distance and bird flight initiation distance (Whitfield et al. 2008). Buffer size should be coordinated with the Service biologists prior to activities.
2. Raptors (including eagles) – Avoid siting wind turbines, minimize human access, and avoid disturbance activities (e.g., construction actions, noise) within 1.6 km (1 mile) of an active raptor/eagle nest, unless specific features (e.g., terrain, barriers) dictate reduced buffers (Richardson and Miller 1997). Reduced buffers should be coordinated with the Service.
3. "Prairie" and Sage Grouse – Avoid construction of wind facilities within 8 km (5 miles) of all grouse lekking sites (Manville 2004)

C. Appropriate facility design – There are many conservation measures that can be incorporated into the facility design that might reduce the potential effects of a project on bird populations. Some include:
1. Use tubular supports with pointed nacelle tops rather than lattice supports to minimize bird perching and nesting opportunities.
2. Avoid placing external ladders and platforms on tubular towers to minimize perching and nesting.
3. Consider using fewer larger turbines compared to a larger number of smaller turbines.
4. Avoid the use of guy wires for all meteorological towers and do not light them unless the Federal Aviation Administration (FAA) requires them to be lit, which is generally >60 meters (>199 ft) AGL in height. Any necessary guy wires should be marked with recommended bird deterrent devices (APLIC 1994, USFWS 2000)
5. If taller turbines (top of rotor swept area is >60 meters [>199 ft] AGL) require lights for aviation safety, the minimum amount of pilot warning and obstruction avoidance lighting specified by the FAA should be used (FAA 2007), approximately 1 in every 5 turbines should be lit, and all lights within the facility should illuminate synchronously. Lighting of the boundary of the facility is most important as an aviation safety warning. Unless otherwise requested by the FAA, use only the minimum number of strobed, strobe-like or blinking red incandescent lights, with minimum intensity, duel strobe lights preferred per lit nacelle. No steady burning lights should be used on turbines or facility infrastructures.
6. Facility lights should be focused downward to reduce skyward illumination. Lights should be equipped with motion detectors to reduce continuous illumination.
7. Where feasible, place electric power lines underground or on the surface as insulated, shielded wire to avoid electrocution of birds. Use recommendations of APLIC (1994, 2006) for any required above-ground lines, transformers, or conductors. When transmission lines must be above-ground, avoid placing lines within wetlands and over canyons.
8. The creation of roads leads to further loss and fragmentation of migratory bird habitat. The Service recommends that the number of roads be minimized for all phases of a project.

D. Appropriate turbine layout – A well thought out turbine layout can substantially reduce the potential for bird strikes. Some examples of better turbine layouts include grouping turbines versus spreading them widely across the project area and orienting rows of turbines parallel to known bird movements. In addition, placing large, turbine sized pylons at the end of turbine rows and in ridge dips can re-direct birds and bats away from the danger areas.

Construction Phase Conservation Measures

During the construction of energy facilities, standard construction conservation measures should be established. Conservation measures (CMs) that specifically relate to bird conservation include (but are not limited to):

A. Minimize area disturbed to extent practicable, including access road construction – In an effort to minimize the amount of habitat disturbance and fragmentation, construction plans should emphasize the minimization and placement of habitat disturbance whenever possible, and where possible, avoid construction during the breeding, nesting, and maternity-colony seasons. Construction roads that are not required for long-term operation and maintenance of the facility should be closed and restored to the pre-construction habitat type present.

B. Vegetation clearing – Over 1,000 bird species and their eggs and nests are protected from take by the MBTA. Thus, the Service recommends that all vegetation within the project footprint that will be disturbed be cleared outside of the bird breeding season to the maximum extent practicable (Note: the bird breeding season will vary from location to location, by habitat type, and by species, please consult the Service for breeding seasons in the specific project area). If the proposed project includes potential for take of migratory birds and/or the loss or degradation of migratory bird habitat and vegetation removal cannot occur outside the bird breeding season, project proponents should provide the Service an explanation for why work must occur during the bird breeding season. Further, in these cases, project proponents should demonstrate that all reasonable and practicable efforts to complete work outside the bird breeding season were attempted, and that reason for work to be completed during the breeding season were beyond the proponent's control.
    1. When vegetation removal cannot take place outside of the breeding season and a reasonable explanation was provided to the Service, the Service recommends having a qualified, on-site biologist during construction activities to locate active nests, establish avoidance buffers around active nests, watch for new nesting activity, and if necessary stop construction when noise and general activity threaten to disturb an active nest. All active nests of protected birds (e.g., MBTA, ESA, state regulations) should not be disturbed until after nest outcome is complete.

C. Minimize wildfire potential – Wildfire is a potential threat that could impact bird and bat habitat. The Service recommends that construction activities are conducted in a manner that avoids and/or minimizes the ignition of a wildfire.

D. Minimize activities that attract prey and predators – During construction, garbage should be removed promptly and properly to avoid creating attractive nuisances for birds and bats.

E. Control of non-native plants – The introduction of non-native, invasive plant species can impact bird habitat quality. The Service recommends that all appropriate control measures be implemented to prevent the introduction and spread of invasive plant species with and surrounding the project area. Use only plants native to the area for seeding or planting during habitat revegetation or restoration efforts.

Operational Phase Conservation Measures

Once a facility is built, appropriate CMs should be in place to reduce the attractiveness of the facility to breeding, migrating, and wintering birds and bats to ensure mortality is minimized. The following Operational CMs should be considered:

A. Do not create or maintain attraction features for birds/bats – Through appropriate habitat maintenance, facilities should seek to reduce features that attract birds and bats to the facility. Simple measures could include removal of carrion that attracts raptors and other scavengers to the site, maintain vegetation heights around turbines to reduce raptor foraging (habitat maintenance to reduce prey availability), and minimizing water sources (especially in desert habitats) that birds and other wildlife seek, and avoid creating situations where rodent prey bases will increase (i.e., through creating new habitats for them, disturbance, and cattle grazing) thus drawing in raptors. These measures should be implemented only after completely evaluating each specific project site and implementation of these measures will not have deleterious effects on other special status wildlife species.

B. Reduce "Motion Smear" – When an object moves across the retina with increasing speed, it becomes progressively blurred, termed "motion smear" (Hodos 2003). This blurring of turbines blades lessen a bird's ability to detect and avoid rotating turbine blades. Using blades with staggered stripes or incorporating a black blade with two white blades could reduce motion smear and thus potential bird turbine collisions (Hodos 2003), although this needs more research.

C. Turbine feathering and cut-in speed - Data suggest that most bird fatalities at wind projects occurred at times of low wind speed (typically <6m/sec), conditions under which rotor blades are moving, but the amount of electricity generated is minimal (Kunz et al. 2007). Turbine feathering, electronically pitching the blades parallel to the wind, could significantly reduce bird impacts by making the blades stationary at low wind speeds (Kunz et al. 2007, Manville 2009). In addition, changing the blade cut-in speed and reducing operation hours in periods of low wind (e.g., from cut-in at 3.0mps to 5.0mps) has been shown to reduce bat mortality by up to 92% with minimal power loss (Arnett et al. 2009). The Service recommends setting a maximum rpm rate for each nameplate turbine that allows for sufficient energy production but reduces the potential for avian and bat collisions. In addition, the Service recommends reducing operation hours during periods of low wind.

D. Lock rotors during daytime and at night during peak migration periods and peak presence – In areas with high concentrations of migrating raptors, passerines, and bats, and high concentrations of overwintering raptors, it may be appropriate to turn the turbines off during peak migration periods or peak use of an area (Manville 2009).

E. Follow APLIC guidelines for overhead utilities – If overhead transmission lines are necessary, facilities should follow all APLIC (1994 and 2006) guidelines.

F. Minimize lighting – Research indicates that lights can both attract and confuse migrating birds (Gehring et al. 2009, Manville 2005, 2009) and bats are known to feed on concentrations of insects at lights (Fenton 1997). The goal of every facility should be to minimize operational lighting to the maximum extent practicable.
   1. To avoid disorienting or attracting birds and bats, FAA visibility lighting of wind turbines should employ only strobed, strobe-like or blinking incandescent lights, preferably with all lights illuminating simultaneously. Minimum intensity, maximum "off-phased" duel strobes are preferred by the Service. No steady burning lights (e.g., L-810s) should be used. See also Project Design recommendations for additional lighting guidance.
   2. Keep lighting at both operation and maintenance facilities and substations located within ½ mile of the turbines to the minimum level for safety and security needs by using motion or infrared light sensors and switches to keep lights off when not required, shielding operational lights downward to minimize skyward illumination, and do not use high intensity, steady burning, bright lights such as sodium vapor or spotlights.

G. Decommission Non-operational Turbines – All turbines that are non-operational should be decommissioned to reduce collision threats and ideally the blades removed immediately.

Post-construction Monitoring

An essential element to understanding the actual impacts of each wind energy facility is post-construction monitoring. The goal of the post-construction monitoring program is to validate the pre-construction risk assessment and allow the facility to implement adjustments based on identified problems and triggers (see Adaptive management section above). Every post-construction monitoring program should be comprised of 1) clear monitoring objectives, 2) a sound monitoring design including an appropriate duration and intensity of study, 3) nest management protocols, 4) a risk assessment validation, and 5) reporting.

A. Monitoring Objectives (should include but are not limited too)
   1. Estimate bird/bat fatality rate due to all aspects of facility operation
   2. Assess changes in bird/bat behavior due to all aspects of facility operation
   3. Assess changes in population status within and adjacent to the project footprint
   4. Assess displacement and avoidance of birds/bats from within the project footprint
   5. Determine whether avoidance and minimization measures implemented for the project were adequate to reduce mortality

B. Monitoring Design - The degree and intensity of a monitoring program is determined by a combination of factors including size of the facility, presence of special status species as determined by pre-construction data, and perceived/known risks at the site, as well as additional permit conditions. Similar to pre-siting surveys, the design of post-construction monitoring programs is critical to generate meaningful results. Using BACI study designs pre- and post-construction data, where possible, will be comparable and achieve monitoring objectives. Coordinate with wildlife agencies when designing any monitoring programs. Important aspects of a post-construction monitoring plan include:

1. Duration and Timing - Post-construction monitoring programs should be done for a minimum of three years after operation of the facility begins (see Pagel et al. 2010 for duration of eagle monitoring). Where risk is determined to be high, at least five years of assessment and monitoring is recommended (Stewart et al. 2007). This time period ensures data capture differences in parameters due to seasonal and annual variability. Monitoring programs should be extended, as appropriate, if mortality level triggers are reached or the project results in the mortality of a listed species or eagle. It is important to ensure that monitoring includes data collection during breeding, wintering, and migration periods as bird/bat use of areas will vary across season.
2. Study Components – All studies should be based on the objectives of the monitoring program and should follow accepted scavenger and search efficiency studies (e.g., Erickson et al. 2003).
    a. Mortality Studies should cover both turbine collisions and mortalities associated with other aspects of the facility (e.g., electrocutions, transmission line collisions, displacement, wind wake and blade-tip vortices)
        i. The Service recommends that mortality surveys be completed on a weekly basis for at least one year post monitoring. The survey frequency could be adjusted, if appropriate, depending on the results of the detectability and scavenger studies
    b. Assessment of search efficiency (observer bias studies)
    c. Assessment of carcass scavenger rates
    d. Ensure monitoring plan is representative of the entire footprint
3. Eagle Monitoring Plan – In addition to project-specific mortality monitoring studies, the Service recommends developing an eagle monitoring plan separately to ensure that bald and golden eagle mortality is adequately assessed (2007 National Bald Eagle Management Guidelines).

C. Nest Management – Each facility should have protocols in place on how to manage nests established on any part of the facility (see APLIC 2006). Eagle nests should be covered separately according to the new rules and included in the Eagle Monitoring Plan (see above).

D. Risk Assessment Validation – Using pre-and post-construction data, the proponent should validate the identified risks of the project. The validation process should consider:

1. Whether the documented mortality rate is higher, lower, or expected as determined in the pre-construction risk assessment
2. Are CMs adequate to meet expected levels of mortality?
3. Would additional CMs reduce mortality rates?
4. Do documented mortality rates trigger additional management or mitigation actions?

E. Reporting – All post-construction monitoring results and risk assessment validation should be reviewed by the appropriate agencies annually. Additional reporting may be a condition of permits issued. Confidentiality should be maintained between the proponent and the agency (ies) reviewing the project reports. For Service reviews, to the extent allowable under FOIA, project-specific information would remain confidential between the Service and the proponent and be protected from release to the public.

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Appendix 1. Key Resources for Avian and Bat Protection Plan Development

Adaptive Management

- 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. http://www.doi.gov/initiatives/AdaptiveManagement/TechGuide.pdf

Avian and Bat Protection Plan Guidelines

- Avian Power Line Interaction Committee and U.S. Fish and Wildlife Service. 2005. Avian protection plan (APP) guidelines. http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/APP/AVIAN%20PROTECTION%20PLAN%20FINAL%204%2019%2005.pdf
- Avian Power Line Interaction Committee. 2006. Suggested practices for avian protection on power lines, the state of the art in 2006. http://www.aplic.org/
- Avian Power Line Interaction Committee. 1994. Suggested practices for avoiding avian collisions on power lines: state of the art in 1994. Edison Electric Institute and APLIC, Washington, DC.

Birds of Conservation Concern

- U.S. Fish and Wildlife Service, Division of Migratory Birds. 2008. Birds of Conservation Concern. Arlington, VA. http://library.fws.gov/Bird_Publications/BCC2008.pdf

Eagle Rule and Guidance

- For a general overview of the new eagle permits final rule, review the Service's *Migratory Bird Management Information: Eagle Rule Questions and Answers*; located at http://www.fws.gov/migratorybirds/CurrentBirdIssues/Management/BaldEagle/QAs%20for%20Eagle%20Rule.final.10.6.09.pdf
- Review the Service's 2009 *Final Environmental Assessment, Proposal to Permit Take as Provided Under the Bald and Golden Eagle Protection Act*; located at http://www.fws.gov/migratorybirds/CurrentBirdIssues/BaldEagle/FEA_EagleTakePermit_Final.pdf
- Review the Service's 2009 *Eagle Permits; Take Necessary to Protect Interests in Particular Localities; Final Rules*; located at http://www.fws.gov/migratorybirds/CurrentBirdIssues/BaldEagle/Final%20Disturbance%20Rule%209%20Sept%202009.pdf
- Minimize impacts to bald eagles by implementing recommendations provided in the Service's 2007 *National Bald Eagle Management Guidelines*; located at http://www.fws.gov/migratorybirds/CurrentBirdIssues/Management/BaldEagle/NationalBaldEagleManagementGuidelines.pdf
- Pagel, J.E., D.M. Whittington, and G.T. Allen. 2010. Interim golden eagle inventory and monitoring protocols; and other recommendations. Division of Migratory Birds, Arlington, VA

Habitat Equivalency Analysis

- National Oceanic and Atmospheric Administration. 2006. Habitat equivalency analysis: an overview. http://www.darrp.noaa.gov/library/pdf/heaoverv.pdf
- National Oceanic and Atmospheric Administration. 2009. Restoration economics, habitat equivalency analysis. http://www.csc.noaa.gov/coastal/economics/habitatequ.htm

Bird and Bat Monitoring Methods

- California Bat Working Group. 2006. Guidelines for assessing and minimizing impacts to bats at wind energy development sites in California. http://www.wbwg.org/conservation/papers/CBWGwindenergyguidelines.pdf
- Kunz, T.H., E.B. Arnett, B.M. Cooper, W.P. Erickson, R.P. Larkin, T. Mabee, M.L. Morrison, M.D. Strickland, and J.M. Szewczak. 2007. Assessing impacts of wind-energy development on nocturnally active birds and bats: a guidance document. Journal Wildlife Management 71:2249-2486.
- Ontario Ministry of Natural Resources. 2006. Wind Power and Bats: Bat Ecology Background Information and Literature Review of Impacts. December 2006. Fish and Wildlife Branch. Wildlife Section. Lands and Waters Branch. Renewable Energy Section. Peterborough, Ontario. 61 p.

Wind Project Development Guidance

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. http://www.energy.ca.gov/windguidelines/index.html

- Environment Canada's Canadian Wildlife Service. 2006. Wind turbines and birds, a guidance document for environmental assessment. March version 6. EC/CWS, Gatineau, Quebec. 50 pp. http://www.bape.gouv.qc.ca/sections/mandats/eole_matane/documents/DB15.pdf
- Environment Canada's Canadian Wildlife Service. 2006. Recommended protocols for monitoring impacts of wind turbines and birds. July 28 final document. EC/CWS, Gatineau, Quebec. 33 pp. http://www.canwea.ca/images/uploads/File/Resources/Government/Wind_Turbines_and_Birds_Monitoring_Protocols_FINAL.PDF
- National Wind Coordinating Collaborative. 2007. Mitigation Toolbox. http://www.nationalwind.org/assets/publications/Mitigation_Toolbox.pdf
- USFWS. 2000. *Interim Guidelines for Recommendations on Communications Tower Siting, Construction, Operation, and Decommissioning* http://www.fws.gov/habitatconservation/com_tow_guidelines.pdf

- USFWS. 2003. Interim Guidelines to Avoid and Minimize Wildlife Impacts from Wind Turbines. http://www.fws.gov/habitatconservation/wind.html

Alexandra Kostalas

From: Allen, Debbie [Debbie_Allen@nps.gov]
Sent: Wednesday, August 17, 2011 2:21 PM
To: BLM_CA_TerraGen_Alta_East
Cc: Schmierer, Alan C.; WASO_EQD_ExtRev; Port, Patricia; Pendurthi, Susmita
Subject: Fw: DEC-11/0140:Alta East Wind Project - Possible Land Use Plan Amendment (CACA 52537)

PWR has no comment regarding subject document.

Debbie Allen
National Park Service
Partnerships Programs, PWR
1111 Jackson Street #700
Oakland, CA 94607
510/817-1446
510/817-1505 Fax

"Don't dwell on what went wrong. Instead, focus on what to do next. Spend your energies on moving forward toward finding the answer." -- Denis Waitley

----- Forwarded by Debbie Allen/OAKLAND/NPS on 08/17/2011 02:19 PM -----

Dale_Morlock@nps.gov
07/26/2011 08:16 AM

To: Debbie_Allen@nps.gov
cc:
Subject: DEC-11/0140:Alta East Wind Project - Possible Land Use Plan Amendment (CACA 52537)

EIS/Related Document Review: Detail View -
http://er2000/detail.cfm?ernum=15962 -

Document Information -

Record #15962

ER Document Number

DEC-11/0140

Document Title

Alta East Wind Project - Possible Land Use Plan Amendment (CACA 52537)

Location

State	County
California	Kern County

Document Type

Notice of Intent, Prepare Environmental Impact Statement, Land Use Plan Amendment

Doc. Classification

Energy Project

Applicant

Bureau of Land Management

Web Review Address

http://www.gpo.gov/fdsys/pkg/FR-2011-07-15/html/2011-17717.htm

http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/cdd/energy/pods0.Par.23308.File.dat/AltaEast_POD_2-15-11.pdf

http://www.blm.gov/ca/st/en/fo/ridgecrest/alta_east_wind_project.html

http://www.blm.gov/ca/st/en/prog/energy/fasttrack/Alta_East/fedstatus.html

http://www.blm.gov/ca/st/en/fo/ridgecrest.html

Document Reviewers

WASO Lead Reviewer

WASO Reviewers -

Thomas Flanagan(2310), Nancy Brian(2340), Kerry Moss(2360), David Vana-Miller(2380), Patricia F Brewer(2350), Bill Commins(2200), Paul Wharry(2033), Dale Morlock(2310), Patrick Walsh(2310), Fred Sturniolo(2420), Tokey Boswell(2510)

Regional Lead Reviewer

Alan Schmierer (PWR-O)

Regional Reviewers

Alan Schmierer(PWR-O), Martha Crusius(PWR-O), Debbie Allen(PWR-O)

Cultural Lead Reviewer

Daniel Odess

Cultural Reviewers

Daniel Odess

Action -

Lead Bureau

Bureau of Land Management

Response Type

Regional Response

Instructions

Comments to Lead DOI Bureau. NPS Lead consolidates NPS comments, prepares comment/no comment memo, and emails to Lead DOI Bureau with copy to EQD (WASO-2310). See DI Remarks Section below for specifics.

Topic Context

The Bureau of Land Management (BLM) Ridgecrest Field Office, Ridgecrest, California, together with the County of Kern, California, intend to prepare a joint Environmental Impact Statement (EIS)/ Environmental Impact Report (EIR), which may include an amendment to the California Desert Conservation Area (CDCA) Plan (1980 as amended), related to Alta Windpower Development LLC's (Applicant or AWD) right-of-way (ROW) authorization request for the Alta East Wind Project (Project), a 300-megawatt (MW) wind farm.

BLM is also segregating, subject to valid existing rights, approximately 2,083 acres of public lands from appropriation under the public land laws, including the Mining Law of 1872, as amended, but not from leasing under the mineral leasing laws or disposal under the mineral material laws, for a period of 2 years from the date of

publication of this notice for the purpose of processing AWD's ROW authorization request.

AWD has requested a ROW authorization to construct, operate, maintain, and decommission the 300-MW Alta East Project.

The Project is proposed to be located on approximately 3,200 acres on the north and south sides of State Route 58 in southeastern Kern County, California.

The proposed Project area is approximately 3 miles northwest of the Town of Mojave and approximately 11 miles east of the City of Tehachapi.

The project would include wind turbines, access roads, and energy collection lines on 3,200 acres, of which 2,083 acres are on public land under the jurisdiction of the BLM and 1,117 acres of private land under the jurisdiction of Kern County.

DI Remarks

Reviewers: Please Email comments to NPS Lead Alan Schmierer (PWR-O), Alan_Schmierer@nps.gov by August 3, 2011.

NPS Lead: Alan Schmierer please consolidate NPS comments (no comment) in memo format and send directly to BLM, Moreno Valley, CA, altaeast@blm.gov by August 12, 2011, with copy to: waso_eqd_extrev@nps.gov, Susmita_Pendurthi@ios.doi.gov and Patricia Port@doi.gov

Applicant Address for Alan Schmierer: ATTN: Jeffery Childers, Project Manager, BLM California Desert District Office, 22835 Calle San Juan de Los Lagos, Moreno Valley, California 92553-9046.

* FAX: (951) 697-5299.

BLM CONTACT: Jeffery Childers, California Desert District ffice.

* Telephone: (951) 697-5308.

*email: jchilders@blm.gov -

Email Comment Address -

altaeast@blm.gov -

Workflow -

Send Comments to Lead Office: PWR-O
Send to: Alan Schmierer (PWR-O) by 08/03/11

Lead DOI Bureau: Bureau of Land Management
DUE TO: Lead Bureau by 08/12/11
DATE DUE OUT: 08/12/11

OEPC Memo to EQD: 07/26/11
Comments Due To Lead WASO Div:
Comments Due Out to
OEPC/Wash or Applicant: 08/12/11

Comments Due To Lead Region: 08/03/11 -
Comments Due in EQD: -
Comments Due to REO: -

Tracking Dates -

Rcvd. Region Comments: -
Comments Sent to OEPC, REO, or Applicant: -
New Instructions: -
Recvd. Ext. Letter: -
Reg. Cmts. to Bureau: -
Cmts. Called In: -

Comments Sent to EQD Chief: -
Comment Letter/Memo Signed: -
Recvd. Extension: -
Sent Add. Info: -
Reg. Cmts. Listed: -
Rcvd. Bureau Cmts: -

Tracking Notes

Reviewer Notes -

Documentation

Document Last Modified: 07/26/2011
Complete: False

Date Created: 07/26/2011
Date Last Email Sent:

NOP Public Comments Received

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse and Planning Unit

Edmund G. Brown Jr.
Governor

Ken Alex
Director

Notice of Preparation

July 15, 2011

To: Reviewing Agencies

Re: JRK 01-11 Alta East Wind Energy Project by Alta WindPower, LLC.
SCH# 2011071051

Attached for your review and comment is the Notice of Preparation (NOP) for the JRK 01-11 Alta East Wind Energy Project by Alta WindPower, LLC. draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Jacquelyn R. Kitchen
Kern County
2700 M Street, Suite 100
Bakersfield, CA 93301

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental [illegible] please call the [illegible] (916) 445-0613.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Attachments
cc: Lead Agency

Document Details Report
State Clearinghouse Data Base

SCH#	2011071051
Project Title	JRK 01-11 Alta East Wind Energy Project by Alta WindPower, LLC.
Lead Agency	Kern County

Type	**NOP** Notice of Preparation
Description	The Kern County Planning and Community Development Department as Lead Agency and the U.S. Bureau of Land Management, as the federal Lead Agency, will direct the preparation of a joint EIR (per CEQA Guidelines Section 15161) and an EIS, referred to as an EIR/EIS, for the Alta East Wind Project proposed by Alta Windpower Development, LLC (Project Proponent). The EIR/EIS will be prepared to comply with the CEQA and the NEPA.

Lead Agency Contact

Name	Jacquelyn R. Kitchen		
Agency	Kern County		
Phone	661 862 8619	*Fax*	
email			
Address	2700 M Street, Suite 100		
City	Bakersfield	*State* CA	*Zip* 93301

Project Location

County	Kern						
City	Tehachapi						
Region							
Cross Streets	2 miles west of the intersection of Hwy 58 and Hwy 14 in the Mojave Desert						
Lat / Long	35° 5' 4" N / 118° 14' 3" W						
Parcel No.	Multiple						
Township	mult.	*Range*	mult.	*Section*	mult.	*Base*	SBB&M

Proximity to:

Highways	SR 58 & 14
Airports	Mojave
Railways	
Waterways	Los Angeles Aqueduct
Schools	Mountain View Cont.
Land Use	Zoned: A-1 and E 20 Designated: 1.1; 8.3; 8.4; 8.5; 1.1/2.4; 8.4/ 2.4; 8.5 / 2.4; 8.5/2.5

Project Issues	Aesthetic/Visual; Agricultural Land; Air Quality; Archaeologic-Historic; Biological Resources; Drainage/Absorption; Flood Plain/Flooding; Forest Land/Fire Hazard; Geologic/Seismic; Minerals; Noise; Population/Housing Balance; Public Services; Recreation/Parks; Soil Erosion/Compaction/Grading; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Wildlife; Landuse; Cumulative Effects
Reviewing Agencies	Resources Agency; Department of Conservation; California Energy Commission; Office of Historic Preservation; Department of Parks and Recreation; Department of Water Resources; Department of Fish and Game, Region 4; Native American Heritage Commission; Public Utilities Commission; California Highway Patrol; Caltrans, District 9; Department of Toxic Substances Control; Regional Water Quality Control Bd., Region 6 (Victorville)

Date Received	07/15/2011	*Start of Review*	07/15/2011	*End of Review*	08/15/2011

County: _____ SCH# _____

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ervices Division

egion 1

- ☐ Fish & Game Region 1E
  Laurie Harnsberger
- ☐ Fish & Game Region 2
  Jeff Drongesen
- ☐ Fish & Game Region 3
  Charles Armor
- ☒ Fish & Game Region 4
  Julie Vance
- ☐ Fish & Game Region 5
  Leslie Newton-Reed
  Habitat Conservation Program
- ☐ Fish & Game Region 6
  Gabrina Gatchel
  Habitat Conservation Program
- ☐ Fish & Game Region 6 I/M
  Brad Henderson
  Inyo/Mono, Habitat Conservation Program
- ☐ Dept. of Fish & Game M
  George Isaac
  Marine Region

Other Departments

- ☐ Food & Agriculture
  Steve Shaffer
  Dept. of Food and Agriculture
- ☐ Depart. of General Services
  Public School Construction
- ☐ Dept. of General Services
  Anna Garbeff
  Environmental Services Section
- ☐ Dept. of Public Health
  Bridgette Binning
  Dept. of Health/Drinking Water

Independent Commissions,Boards

- ☐ Delta Protection Commission
  Linda Flack
- ☐ Cal EMA (Emergency Management Agency)
  Dennis Castrillo
- ☐ Governor's Office of Planning & Research
  State Clearinghouse

- ☒ Native American Heritage Comm.
  Debbie Treadway
- ☒ Public Utilities Commission
  Leo Wong
- ☐ Santa Monica Bay Restoration
  Guangyu Wang
- ☐ State Lands Commission
  Cy R. Oggins
- ☐ Tahoe Regional Planning Agency (TRPA)
  Cherry Jacques

Business, Trans & Housing

- ☐ Caltrans - Division of Aeronautics
  Philip Crimmins
- ☐ Caltrans - Planning
  Terri Pencovic
- ☒ California Highway Patrol
  Scott Loetscher
  Office of Special Projects
- ☐ Housing & Community Development
  CEQA Coordinator
  Housing Policy Division

Dept. of Transportation

- ☐ Caltrans, District 1
  Rex Jackman
- ☐ Caltrans, District 2
  Marcelino Gonzalez
- ☐ Caltrans, District 3
  Bruce de Terra
- ☐ Caltrans, District 4
  Lisa Carboni
- ☐ Caltrans, District 5
  David Murray
- ☐ Caltrans, District 6
  Michael Navarro
- ☐ Caltrans, District 7
  Elmer Alvarez
- ☐ Caltrans, District 8
  Dan Kopulsky
- ☒ Caltrans, District 9
  Gayle Rosander
- ☐ Caltrans, District 10
  Tom Dumas
- ☐ Caltrans, District 11
  Jacob Armstrong
- ☐ Caltrans, District 12
  Marlon Regisford

Cal EPA

Air Resources Board

- ☐ Airport Projects
  Jim Lerner
  - ☐ Transportation Projects
    Douglas Ito
  - ☐ Industrial Projects
    Mike Tollstrup
- ☐ State Water Resources Control Board
  Regional Programs Unit
  Division of Financial Assistance
- ☐ State Water Resources Control Board
  Student Intern, 401 Water Quality Certification Unit
  Division of Water Quality
- ☐ State Water Resouces Control Board
  Phil Crader
  Division of Water Rights
- ☒ Dept. of Toxic Substances Control
  CEQA Tracking Center
- ☐ Department of Pesticide Regulation
  CEQA Coordinator

Regional Water Quality Control Board (RWQCB)

- ☐ RWQCB 1
  Cathleen Hudson
  North Coast Region (1)
- ☐ RWQCB 2
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- ☐ RWQCB 3
  Central Coast Region (3)
- ☐ RWQCB 4
  Teresa Rodgers
  Los Angeles Region (4)
- ☐ RWQCB 5S
  Central Valley Region (5)
  - ☐ RWQCB 5F
    Central Valley Region (5)
    Fresno Branch Office
  - ☐ RWQCB 5R
    Central Valley Region (5)
    Redding Branch Office
- ☐ RWQCB 6
  Lahontan Region (6)
  - ☒ RWQCB 6V
    Lahontan Region (6)
    Victorville Branch Office
- ☐ RWQCB 7
  Colorado River Basin Region (7)
- ☐ RWQCB 8
  Santa Ana Region (8)
- ☐ RWQCB 9
  San Diego Region (9)

☐ Other _____

_____

_____

Last Updated 6/28/11

www.JohnJasonChun.com

DOCUMENT DEPOSITS
Fax 888-595-6299
repo4sale@yahoo.com

Phone#1-949-254-3179 & 1-888-532-7999
Facebook & Twitter: John Jason Chun
Po Box 7249 Newport Beach Ca 92658

WORLDWIDE COMMUNICATION NETWORK

18 July 2011 CertMailReturnReceipt:7008-3230-0002-8039-9611

Kern Cty Planning & Comm. Dev. Dept. 2700 M Street #100 Bak, Ca 93301

AltaEast Wind Energy Project PP11212 & **Parcel Apn#224-450-02-00-9**

I will approve this project if I have Paved Road access to each of the ¼ parts of this property, including all Utilities. Aka, I will subdivide this property into 4 pieces and Road access to all 4 pieces must be Provided with all utilities available to all 4 pieces.

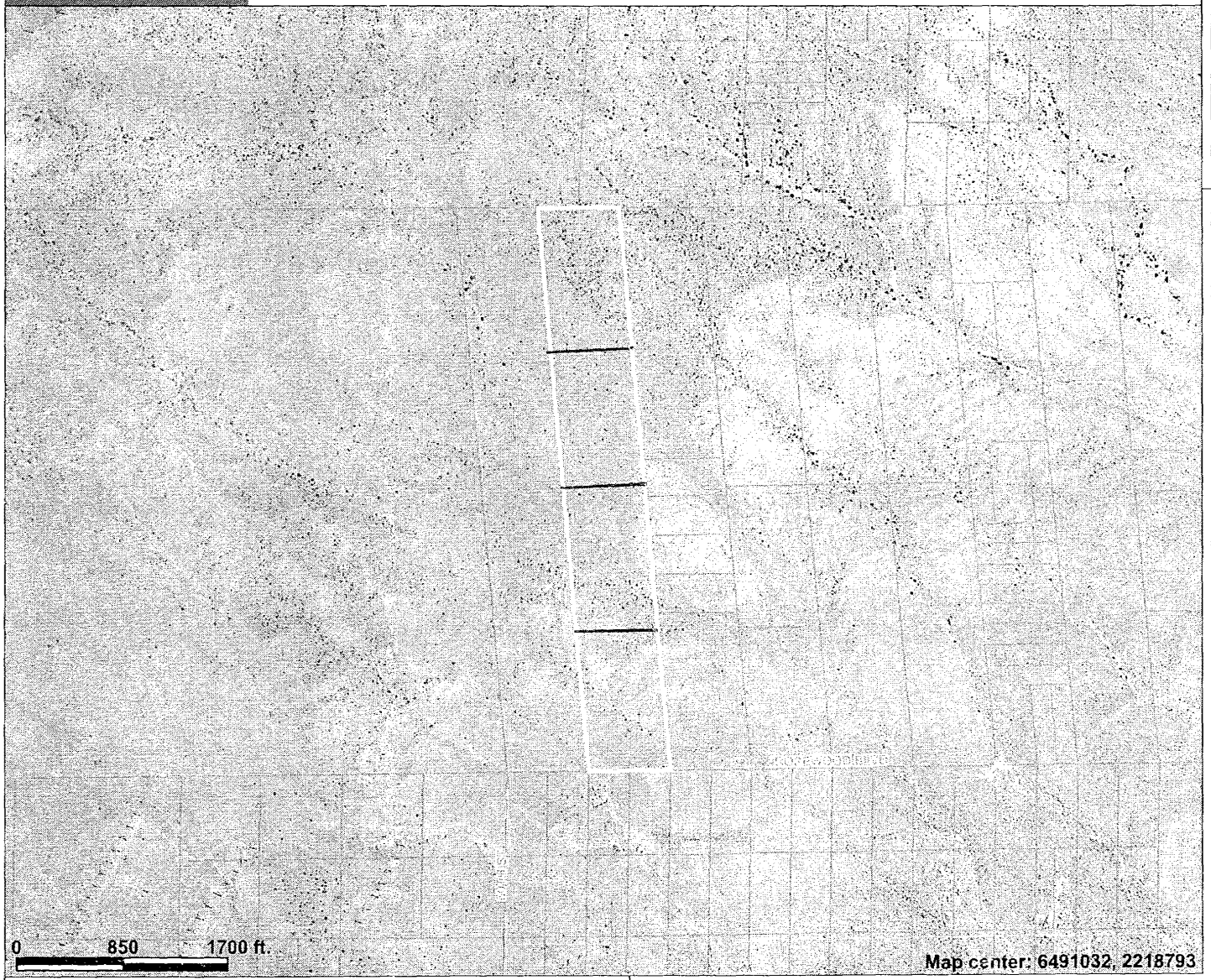
See attached parcel map with 4 parcels...

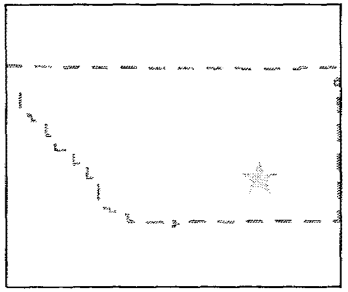
Yours truly,

JohnJasonChun
PO Box 7249
Newport Beach CA 92658
Cash4acres@Gmail.com

Kern County
Online Mapping System

70acres





Legend

Roads

Arterial

Collector

Highway

Local

Ramp

Unpaved

County of Kern

Assessment Parcels

Aerial Photo 2008

Scale: 1:14,769

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Notes: 224-450-02-00-9
john jason chun
Po Box 7249
Newport Beach Ca 92658

DEPARTMENT OF TRANSPORTATION
DISTRICT 9
500 SOUTH MAIN STREET
BISHOP, CA 93514
PHONE (760) 872-0785
FAX (760) 872-0754
TTY 711 (760) 872-0785
www.dot.ca.gov

Flex your power!
Be energy efficient!

August 10, 2011

Cedric Perry
Bureau of Land Management, Desert District
22835 Calle San Juan de Los Lagos
Moreno Valley, California 92553-9046

File: FED
NOI EIS
SCH #: none

Dear Mr. Perry:

Tyler Horse Wind Project - Notice of Intent to prepare an Environmental Impact Statement

The California Department of Transportation (Caltrans) District 9 appreciates the opportunity to comment on the proposed wind energy project (thirty-four turbines) east of the community of Rosamond and adjacent to the PdV/Manzana Project previously approved by Kern County. Please consider the following in project environmental analysis:

- The project could access State Route 14 (SR-14) at Rosamond Blvd. and SR-138 at 170th Street West. Please prepare a Construction Traffic Plan analyzing adequacy of these (or other) locations to be used. If improvements or traffic control will be necessary in State right-of-way, notify me and I will provide you the contact information for the appropriate Encroachment Permit Office.

- Ensure any damage done to public roadways is repaired to pre-construction phase conditions.

- The South Region Transportation Permits Office issues oversized vehicle permits: Phone: (909) 383-4637 or link: http://www.dot.ca.gov/hq/traffops/permits/contact.htm

We value a cooperative working relationship regarding project impacts upon State highways. I may be contacted at (760) 872-0785, with any questions.

Sincerely,

GAYLE J. ROSANDER
IGR/CEQA Coordinator

c: Chris Mynk, Kern County
Steve Wisniewski, Caltrans

STATE OF CALIFORNIA EDMUND G. BROWN JR., *Governor*

PUBLIC UTILITIES COMMISSION
320 WEST 4TH STREET, SUITE 500
LOS ANGELES, CA 90013

August 12, 2011

Jacquelyn R. Kitchen
Kern County
2700 M Street, Suite 100
Bakersfield, CA 93301

Dear Ms. Kitchen:

Re: SCH# 2011071051; JRK-01-11 Alta East Wind Energy Project by Alta WindPower, LLC

The California Public Utilities Commission (Commission) has jurisdiction over the safety of highway-rail crossings (crossings) in California. The California Public Utilities Code requires Commission approval for the construction or alteration of crossings and grants the Commission exclusive power on the design, alteration, and closure of crossings.

The Commission's Rail Crossings Engineering Section (RCES) is in receipt of the *Notice of Completion & Environmental Document Transmittal-Notice of Preparation (NOP)* from the State Clearinghouse for the proposed Alta East Wind Energy 2 miles west of the intersection of Highway (Hwy) 58 and Hwy 14 in the Mojave Desert.

The NOP "Access and Maintenance" section indicates, all roads designed for construction are planned to be retained, but does not actually mention which roads will be accessed. Figure 2 – Project Layout shows an access road crossing the Union Pacific Railroad (UPRR) main line tracks that is unknown to the Commission. RCES is also concerned with the vehicle trips generated by construction workers traveling to the site, and road trips generated from the delivery of construction equipment and materials with oversized vehicles traveling at slower speeds across UPRR's crossing.

The County should arrange a meeting with RCES and UPRR to discuss relevant safety issues, identify the crossing being used to access the project, possible mitigation measures for the project's crossing impacts and, if necessary, the process for filing authority to modify an at-grade crossing or application process for a new crossings.

If you have any questions in this matter, please contact me at (213) 576-7078 or at rxm@cpuc.ca.gov.

Sincerely,

Rosa Muñoz, PE
Senior Utilities Engineer
Rail Crossings Engineering Section
Consumer Protection & Safety Division

C: Ken Tom, UPRR

California Office
1303 J Street, Suite 270 | Sacramento, CA 95814 | tel 916.313.5800 | fax 916.313.5812
www.defenders.org

August 12, 2011

Jeffery Childers, Project Manager
California Desert District Office
Bureau of Land Management
22835 Calle San Juan de Los Lagos
Moreno Valley, California 92553-9046
(via email to: altaeast@blm.gov)

and

Jacquelyn Kitchen, Planner III
Kern County Planning and Community
Development Department
2700 "M" Street, Suite 100
Bakersfield, CA 93301
(via email to: KitchenJ@co.kern.ca.us)

Re: Notice of Intent To Prepare a Joint Environmental Impact Statement and Environmental Impact Report for the Proposed Alta East Wind Project, and Possible Land Use Plan Amendment, Kern County, CA

Dear Mr. Childers and Ms. Kitchen:

Defenders of Wildlife appreciate the opportunity to submit issue scoping comments on the proposed Alta East Wind Project. Our scoping comments are provided to assist the Bureau of Land Management (BLM) and Kern County in preparing the required environmental impact statement/environmental impact report for the proposed project, which includes a possible amendment to the California Desert Conservation Area (CDCA) Plan to designate the area for wind energy development.

Defenders has approximately 1,100,000 members and supporters nationally, approximately 99,000 of whom reside in California. Defenders is dedicated to protecting all wild animals and plants in their natural communities. To this end, we employ science, public education and participation, media, legislative advocacy, litigation, and proactive on-the-ground solutions in order to impede the accelerating rate of extinction of species, associated loss of biological diversity, and habitat alteration and destruction.

National Headquarters
1130 17th Street, N.W.
Washington, D.C. 20036-4604
tel 202.682.9400 | fax 202.682.1331

As we transition toward a clean energy future, it is imperative for our future and the future of our wild places and wildlife that we strike a balance between addressing the near term impacts of large scale wind energy development with the long-term impacts of climate change on our biological diversity, fish and wildlife habitat, and natural landscapes. To ensure that the proper balance is achieved, we need smart planning for renewable power that avoids and minimizes adverse impacts on wildlife and wild lands. These projects should be placed in the least harmful locations, near existing transmission lines and already disturbed lands.

We strongly support the emission reduction goals found in the Global Warming Solutions Act of 2006, AB 32, including the development of renewable energy in California. However, we urge that in seeking to meet our renewable energy portfolio standard in California, project proponents design their projects in the most sustainable manner possible. This is essential to ensure that project approval moves forward expeditiously and in a manner that does not sacrifice our fragile desert landscape and wildlife in the rush to meet our renewable energy goals.

Despite our fundamental belief in the critical importance of agency-guided development of renewable energy, rather than developer-initiated development, we have invested a great deal of time and effort into the fast track projects, and will engage on individual projects, such as this one, in 2011. We are engaging on these projects in response to the emphasis the Department, the BLM and the State of California place on renewable energy development because of their potential in helping achieve environmental and economic benefits. We are also doing so because we want to make the projects as environmentally sensitive as they can be and because we want to ensure, to the extent possible, that their accompanying environmental documents are as sound as they can be.

Description of the Proposed Project: The proposed Alta East Wind Project is located 2 miles west of the intersection of Highway 58 and Highway 14 in the Mojave Desert and is within the Tehachapi Wind Resource Area (WRA) of eastern Kern County. The project area comprises approximately 3,200 acres; 2,083 of which are on federal land under the jurisdiction of the BLM, and 1,117 acres of which are on private land under the jurisdiction of Kern County. The project is generally located at the base of the Tehachapi Mountains in the Western Mojave Desert with elevations ranging from 3,000 to 3,400 feet above mean sea level.

The proposed project entails the installation and operation of up to 120 wind turbine generators that would generate up to 300 MW, located on the north and south sides of State Route 58. The proposed Project area is adjacent to and/or near existing wind farms, transmission lines, and a heavily used divided highway and railroad. Electricity generated from the project will be delivered to the existing Windhub substation southwest of the project site.

Issue Scoping Comments: Our issue scoping comments are as follows, according to subject.

1. Effect on biological resources. The Plan of Development (POD) for the proposed project available on the BLM website referenced various biological surveys and reports that were included in Appendix C. Unfortunately, that appendix was not included in the POD. The Notice of Preparation (NOP) for the proposed project on the Kern County Planning and Community Development website contained abbreviated information on biological resources, including the following statements:

    - Field surveys have identified several special-status, including federally and State-listed, species within and adjacent to the project area. Construction and operation of the project has the potential to result in significant direct and indirect impacts to these species and their habitat.

    - The project area and vicinity may be used for migration or dispersal by wildlife, including bats, migratory birds, desert tortoise and other reptiles, as well as mammals. Further, the project area may, although is not currently known to, contain movement corridors essential for population connectivity. Birds and bats may be subject to mortality during wind turbine operation if they collide with the towers or turbine blades. Construction of the project would potentially impede migration and/or habitat connectivity.

    Comment: Absent information on sensitive and at-risk biological resources occurring within or adjacent to the proposed project, we are unable to offer specific comments or recommendations at this time. Given the above statements in the POD, we stress the importance of thorough and acceptable surveys and impact assessments for the various at-risk species and their habitats that would be affected by the proposed project. This information will not be available for public review and comment until the DEIS/DEIR is published. The surveys and impact assessments should address the Desert tortoise, California condor, Golden eagle, other migratory birds in general, Mohave ground squirrel and various species of bats.

    Should ongoing and planned surveys for the above at-risk species indicate they may or will be adversely affected by the proposed project, we strongly recommend that a robust and effective impact avoidance and minimization plan be developed and included in the draft EIR/EIS for the proposed project. This is especially important for the Golden eagle and California condor. We recommend close coordination with the U.S. Fish and Wildlife Service with regard to these latter species, including obtaining the most recent information on condor locations and their flight paths obtained from ongoing radio-tracking studies. It is our understanding that condors fly to and from the Tehachapi and southern Sierra Nevada

Mountains, and on occasion these flight paths appear to be approximately five miles generally west of the proposed project.

Comment. We recommend the analysis of effects to wildlife movements and habitat connectivity be based, in part, on three recent reports that 1) assess ecosystems in the Mojave Desert[1], 2) assess general habitat connectivity[2], and 3) describe a habitat linkage area termed the Tehachapi Connection[3]. These documents indicate that, in general, the ecological value of the land that would support the proposed project is likely moderately degraded due to existing and past human uses, and that it lies adjacent to, but perhaps outside of, a zone of lands along the eastern Tehachapi Mountains that has been identified as an essential habitat connectivity area. These documents are general in nature and further on-site studies will likely be required to address the issue of habitat linkage and biological connectivity.

2. Purpose and Need and Range of Alternatives. Based on our recent experience in analyzing and commenting on many NEPA and CEQA documents for fast-track renewable energy projects in the California Desert, which were published by the Bureau of Land Management (BLM) and various state agencies, we often noted that the propose and need for renewable energy projects was described as simply an agency response to a project application.

   Comment. We strongly recommend that particular attention be paid to developing accurate and factual sections of the DEIS/DEIR document for this project for, 1) purpose and need, and 2) alternatives to the proposed action. The purpose and need statement should not simply indicate that the agencies are responding to an applicant's request for agency-issued permits for a proposed project.

   Alternatives to the Project are extremely important considering that renewable energy projects in the California Desert Conservation Area (CDCA), individually and cumulatively, have resulted in the allocation of tens of thousands of acres of ecologically intact public

---

[1] Randall, J. M., S.S. Parker, J. Moore, B. Cohen, L. Crane, B. Christian, D. Cameron, J. MacKenzie, K. Klausmeyer and S. Morrison. 2010. Mojave Desert Ecoregional Assessment. Unpublished Report. The Nature Conservancy, San Francisco, California. 106 pages + appendices. Available at: http://conserveonline.org/workspaces/mojave/documents/mojave-desert-ecoregional-2010/@@view.html.

[2] 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: http://www.dot.ca.gov/hq/env/bio/project_materials.htm

[3] Penrod, K., C. Cabanero, C. Luke, P. Beier, W. Spencer, and E. Rubin. 2003. South Coast Missing Linkages: A Linkage Design for the Tehachapi Connection. S.C. Wildlands, Monrovia, CA. 48 pp. + appendices. Available at: http://scwildlands.org.

lands to single-use, utility scale energy projects in just the past year. The range of alternatives must be carefully and methodically developed as a means to primarily avoid, and secondarily to minimize, adverse impacts to natural and cultural resources. Alternatives to the proposed project, including alternative locations and reduced project sizes need to be fully considered and analyzed, especially in the event that the project, as proposed, would result in significant adverse impacts.

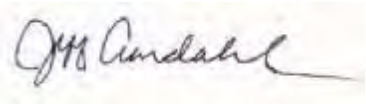
3. Cumulative Impacts. Cumulative impacts of the Project, and other existing and reasonably foreseeable land uses, on at-risk species and their habitats on a regional scale need to be carefully analyzed. This cumulative impact analysis needs to be analyzed and considered in the context of various laws and regulations pertaining to management of public and private lands and the at-risk biological resources associated with them. We believe a robust cumulative effects analysis is especially critical here given the extraordinary level of wind energy and electrical transmission development planned and underway in the southern Sierra Nevada and eastern Tehachapi Mountains.

4. Security Fencing. Design of security fencing for the project should include provisions to allow for the movement and continued use of habitat within the project area by terrestrial species. Such security fencing could contribute to improved habitat conditions within the project site if it effectively eliminated off-road vehicle use, trash dumping and allowed for rehabilitation of areas heavily disturbed by past human activities that would not be used to support the wind farm infrastructure.

5. Land Use Plan Designations. Please note that public lands under BLM administration located north of State Route 58 are designated as Limited Use Class whereas those located south are designated as Moderate Use Class in the CDCA Plan, as amended.

In closing, we hope these comments are helpful to each of you respective agencies as they prepare the draft EIR/EIS for the proposed project. Please contact me if you have any questions about our comments or if we can provide additional information.

Sincerely,



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WORLDWIDE COMMUNICATION NETWORK

1Sept2011, 28 July 2011

CertMailReturnReceipt:7008-3230-0002-8039-9635 to: Horizon Wind Energy Attn: Tim Marvich Project Manager & Johnny Casana Project Developer, 1526 Blake St. #200 Denver Co 80202

18 July 2011 CertMailReturnReceipt:7008-3230-0002-8039-9611 (triplicate)

Kern Cty Planning & Comm. Dev. Dept. 2700 M Street #100 Bak, Ca 93301

AltaEast Wind Energy Project PP11212 & **Parcel Apn#224-450-02-00-9**

I will ~~approve~~ Support this project if I have Paved Road access to each of the ¼ parts of this property, including all Utilities. Aka, I will subdivide this property into 4 pieces and Road access to all 4 pieces must be Provided with all utilities available to all 4 pieces.

See attached parcel map with 4 parcels...

Yours truly,

JohnJasonChun
PO Box 7249
Newport Beach CA 92658
Cash4acres@Gmail.com

Appendix D-1

Biological Resources Report

Biological Resources Report for the Alta East Wind Project in Kern County, California

Prepared for

Alta Windpower Development, LLC

August 2010

Prepared by

CH2MHILL

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Contents

1.0 Introduction 1-1
1.1 Project Description 1-1
1.2 Project Location 1-1
1.3 Project Setting 1-1

2.0 Pre-Field Investigation Literature Review 2-1

3.0 Vegetation 3-1
3.1 Creosote Bush Scrub 3-3
3.2 Brittlebush Series 3-4
3.3 Rabbitbrush Scrub 3-4
3.4 California Buckwheat Scrub 3-4
3.5 Scalebroom Scrub 3-5
3.6 Desert Almond Scrub 3-5
3.7 California Juniper Woodland 3-5
3.8 Joshua Tree Woodland Classification 3-5

4.0 Wildlife Habitat 4-1
4.1 Desert Scrub 4-2
4.2 Juniper 4-2
4.3 Joshua Tree 4-3

5.0 Special-status Wildlife and Plant Surveys 5-1
5.1 Protocol Surveys 5-1
5.2 Other Special-status Wildlife Surveys 5-1
5.2.1 Mohave Ground Squirrel, Yellow-eared Pocket Mouse, San Joaquin Pocket Mouse, and Tulare Grasshopper Mouse 5-1
5.2.2 American Badger, Loggerhead Shrike, Tehachapi Slender Salamander, Coast Horned Lizard 5-3

6.0 Wetlands and Waters 6-1
6.1 ST-1 and ST-2 6-1
6.2 ST-3 6-1
6.3 ST-4 6-1
6.4 ST-5 6-2
6.5 ST-6 6-2
6.6 ST-7 6-2
6.7 ST-8 6-2
6.8 ST-9 6-2
6.9 ST-10 6-3
6.10 ST-11 6-3
6.11 ST-12 6-3
6.12 ST-13 6-3
6.13 ST-14 6-3

6.14 ST-15 6-4
6.15 ST-17 6-4
6.16 ST-18 6-4
6.17 ST-19 6-4
6.18 ST-20 6-4
6.19 ST-21 6-5
6.20 ST-22 6-5
6.21 ST-23 6-5
6.22 ST-24 6-5
6.23 ST-25 6-5
6.24 ST-26 6-6
6.25 ST-27 6-6
6.26 ST-28 6-6
6.27 ST-29 6-6
6.28 ST-30 6-6
6.29 ST-31 6-7
6.30 ST-32 6-7
6.31 ST-33 6-7
6.32 ST-35 6-7
6.33 ST-36 6-7
6.34 ST-37 6-8
6.35 ST-38 6-8
6.36 ST-39 6-8
6.37 ST-40 6-8
6.38 ST-41 6-8

7.0 Literature Cited 7-1

Tables

1 Special-Status Species with Potential to Occur in the Site Boundary 2-1

2 Plants Observed in the Site Boundary 3-1

3 Vegetation Communities and Approximate Acreage in the Site Boundary 3-3

4 Wildlife Species Identified in the Site Boundary 4-1

Figures

1 Site Overview
2 CNDDB Data
3 Vegetation Communities

Appendix

A Site Photographs

Executive Summary

The proposed Alta East Project is proposed to be located on the northern and southern sides of State Route (SR) 58 in southeastern Kern County, California. The proposed development is a wind energy facility, consisting of up to 300 megawatts of wind turbine generation, ancillary facilities, and supporting infrastructure. The proposed wind turbine generators would be located on land managed by Kern County and the Bureau of Land Management. Construction is anticipated to commence in the spring of 2012 or earlier, if all required permits and authorizations have been secured.

This Biological Resources Report presents the results of biological investigations in support of the proposed project including: vegetation community/wildlife habitat mapping, wetlands and waters delineation, other special-status species surveys, and Mohave ground squirrel habitat assessment. Survey reports for other resources including avian use, raptor nests, bat use, desert tortoise, and rare plants will be submitted separately.

The project site boundary supports eight distinct vegetation communities. Of these eight communities, the California Department of Fish and Game considers two to have special status: Joshua Tree Woodland and Scalebroom Scrub. Three wildlife habitat types were identified.

Two special-status species were identified during the surveys conducted for this report: American badger and loggerhead shrike.

Thirty-three potentially jurisdictional Waters of the State were identified during the surveys. No wetlands or Waters of the U.S. were identified.

1.0 Introduction

The purpose of this Biological Resources Report is to present the results of biological investigations in support of the proposed Alta East Wind Project (project). A Biological Survey Plan, which detailed the proposed field survey methods, was submitted to the California Department of Fish and Game (CDFG), the U.S. Fish and Wildlife Service (USFWS), and the Bureau of Land Management (BLM) on June 9, 2010. Minor comments from CDFG were received on August 18, 2010 (Sloan pers. comm., 2010). No comments were received from USFWS or the BLM.

summarized in this report include: vegetation community/wildlife habitat mapping, wetlands and waters delineation, other special-status species surveys, and Mohave ground squirrel habitat assessment. Survey reports for other resources including avian use, raptor nests, bat use, desert tortoise, and rare plants will be submitted separately. Following is a brief description of the proposed project and the location.

1.1 Project Description

The proposed development is a wind energy facility, consisting of up to 300 megawatts of wind turbine generation, ancillary facilities, and supporting infrastructure. Up to 120 wind turbine generators (WTGs) would be located on approximately 3,660 acres of land managed by Kern County and the BLM. Construction is anticipated to commence in the spring of 2012 or earlier, if all required permits and authorizations have been secured.

1.2 Project Location

The Project is proposed to be located on the northern and southern sides of State Route (SR) 58 in southeastern Kern County, California (Figure 1). The site boundary is approximately 3 miles northwest of the town of Mojave and approximately 11 miles east of the city of Tehachapi. The region is characterized by rolling hills supporting several wind farms. The elevation of the site ranges from approximately 3,200 above mean sea level (msl) in the southeastern portion of the site to 4,400 feet msl in the western portion of the site. Major transportation corridors in the region include Highway 14 (north-south) and Highway 58 (east-west), which intersect approximately 2.8 miles northeast of the site in the unincorporated town of Mojave. Larger cities in the region include Lancaster, approximately 27 miles to the southeast, and Palmdale, approximately 35 miles to the southeast. This region is known as the Tehachapi Wind Resource Area and has some of the best wind resources in California. Several wind farms already exist in this area and many more are currently undergoing the regulatory review process.

1.3 Project Setting

The site is located within the Mojave Desert Ecoregion (Miles and Goudy, 1997). The Mojave Desert Ecoregion is characterized by widely separated short mountain ranges in wide planes with isolated mountains, plateaus, alluvial fans, playas, basins, and dunes (Miles and

Goudy, 1997). Rainfall ranges from 4 to 9 inches annually and the mean annual temperature ranges from 60° F to 66° F. Runoff is rapid from mountains and alluvial fans and slow from basin-fill. All drainage is internal to closed basins in the Mojave Desert (Miles and Goudy, 1997). Streams are dry most of each year.

2.0 Pre-Field Investigation Literature Review

Prior to the field investigation, a review of existing databases, technical reports, and other resources was conducted to identify information about special-status species, habitats, and documented wetlands. The USFWS species list for eastern Kern County (USFWS, 2010) was reviewed for federally listed, candidate, and proposed species with potential to occur in the site boundary. The California Natural Diversity Database (CNDDB, 2010) was queried for information about specific occurrences of state and federally listed, candidate, proposed, and sensitive species within the vicinity of the site boundary. In addition, the California Native Plant Society On-line Inventory (CNPS, 2010) was queried for special-status plants that could occur on the site. The West Mojave Plan (BLM, 2005) was also reviewed for BLM species of concern. In addition, National Wetland Inventory (NWI, 2010) maps were reviewed for locations of potential wetlands. The review identified a number of special-status species, which are listed in Table 1. Locations of CNDDB records within a 10-mile radius of the site boundary are shown on Figure 2. No NWI-mapped wetlands were identified.

TABLE 1
Special-Status Species with Potential to Occur in the Site Boundary

Species	Federal Status[1]	State Status[2]/ CNPS List[3]
Mammals		
American badger *Taxidea taxus*	--	SC
Mohave ground squirrel *Spermophilus mohavensis*	--	T
Yellow-eared pocket mouse *Perognathus xanthonotus*	BLM	--
San Joaquin pocket mouse *Perognathus inornatus inornatus*	BLM	--
Tulare grasshopper mouse *Onychomys torridus tularensis*	BLM	SC
Pallid bat *Antrozous pallidus*	BLM	SC
Townsend's big-eared bat *Corynorhinus townsendii*	BLM	SC
California myotis *Myotis californicus*	BLM	--
California leaf-nosed bat *Macrotus californicus*	BLM	SC
Big brown bat *Eptesicus fuscus*	BLM	--

TABLE 1
Special-Status Species with Potential to Occur in the Site Boundary

Species	Federal Status[1]	State Status[2]/ CNPS List[3]
Western pipistrelle *Pipistrellus hesperus*	BLM	--
Birds		
California condor *Gymnogyps californianus*	E	E, FP
Ferruginous hawk *Buteo regalis*	BLM	WL
Prairie falcon *Falco mexicanus*	BLM	WL
Burrowing owl *Athene cunicularia*	BLM	SC
Long-eared owl *Asio otus*	BLM	SC
Least Bell's vireo *Vireo bellii pusillus*	E	E
Loggerhead shrike *Lanius ludovicianus*	--	SC
Willow flycatcher *Empidonax traillii*	--	T
Southwestern willow flycatcher *Empidonax traillii extimus*	E	--
Amphibians and Reptiles		
Desert tortoise *Gopherus agassizii*	T	T
Coast horned lizard *Phrynosoma coronatum*	BLM	SC
Tehachapi slender salamander *Batrachoseps stebbinsi*	BLM / C	T
Plants		
Spanish needle onion *Allium shevockii*	BLM	--/1B
Darwin Mesa milk-vetch *Astragalus atratus*	BLM	--/1B
Geyer's milk-vetch *Astragalus geyeri*	BLM	--/1B
Curved-pod milk-vetch *Astragalus mohavensis var. hemigyrus*	BLM-	--/1A
Alkali mariposa lily *Calochortus striatus*	BLM	--/1B.2

TABLE 1
Special-Status Species with Potential to Occur in the Site Boundary

Species	Federal Status[1]	State Status[2]/ CNPS List[3]
White pygmy-poppy *Canbya candida*	--	--/4.2
Muir's raillardella [=tarplant] *Carlquistia muirii*	BLM	--/1B.3
Desert cymopterus *Cymopterus deserticola*	BLM	--/1B.2
Ripley's cymopterus *Cymopterus ripleyi* var. *saniculoides*	BLM	--/1B.2
July gold *Dedeckera eurekensis*	BLM	R/1B.3
Mojave tarplant *Deinandra mohavensis*	BLM	E/1B.3
Panamint daisy *Enciliopsis covillei*	BLM	--/1B.2
Hall's daisy *Erigeron aequifolius*	BLM	--/1B.3
Kern buckwheat *Eriogonum kennedyi* var. *pinicola*	BLM	--/1B.1
Reveal's buckwheat *Eriogonum contiguum*	BLM	--/2.3
Barstow woolly sunflower *Eriophyllum mohavense*	BLM	--/1B.2
Red Rock poppy *Eschscholzia minutiflora* ssp. *twisselmannii*	BLM	--/1B.2
Red Rock tarplant *Hemizonia arida*	BLM	R / 1B2
Owens Peak lomatium *Lomatium shevockii*	BLM	--/1B.3
Panamint Mountains lupine *Lupinus magnificus* ssp*. magnificus*	BLM	--/1B.2
Kelso Creek monkeyflower *Mimulus shevockii*	BLM	--/1B.2
Sweet-smelling monardella *Monardella beneolens*	BLM	--/1B.3
Flax-like (=Tehachapi) monardella *Monardella linoides* ssp. *oblonga*	BLM	--/1B.3
Bakersfield cactus *Opuntia basilaris* var. *treleasei*	E	E
Death Valley sandpaper plant *Petalonyx thurberi* ssp. *gilmanii*	BLM	--/1B.3

TABLE 1
Special-Status Species with Potential to Occur in the Site Boundary

Species	Federal Status[1]	State Status[2]/ CNPS List[3]
Round-leaved phacelia *Phacelia mustelina*	BLM	--/1B.3
Charlotte's phacelia *Phacelia nashiana*	BLM	--/1B.2
Nine Mile Canyon phacelia *Phacelia novenmillensis*	BLM	--/1B.2
Piute Mountains jewel-flower *Streptanthus cordatus* ssp. *piutensis*	BLM	--/1B.2
Golden violet *Viola aurea*	--	--/2.2

Notes:

-- = No status

Regulatory Status

[1]Federal Status:

T Listed as Threatened by the USFWS
E Listed as Endangered by the USFWS
C Listed as being a Candidate Species by the USFWS
BLM Designated as BLM Sensitive

[2]State Status:

E Listed as Endangered by the CDFG
T Listed as Threatened by the CDFG
SC CDFG Species of Special Concern
SR CDFG Rare
FP CDFG Fully Protected Species
WL CDFG Watch List Species

[3]California Native Plant Society (CNPS) List:

1A Plants presumed extinct in California
1B Plants rare, threatened, or endangered in California and elsewhere
2 Plants rare, threatened, or endangered in California, but more common elsewhere
3 Plants about which we need more information - a review list
4 Plants of limited distribution - a watch list

3.0 Vegetation

CH2M HILL biologists conducted a survey of the vegetation communities within the project boundary from May 26 to 28, 2009 and June 21 to 25, 2010. Plants observed during the surveys are listed in Table 2.

TABLE 2
Plants Observed in the Site Boundary

Common Name	Scientific Name
Indian ricegrass	*Achnatherum hymenoides*
Desert needlegrass	*Achnatherum speciosum*
White bursage	*Ambrosia dumosa*
Fiddleneck	*Amsinckia tessellata*
Prickly poppy	*Argemone corymbosa*
Common saltbush	*Atriplex polycarpa*
Bractscale	*Atriplex serenana*
Red brome	*Bromus madritensis* ssp. *rubens*
Cheat grass	*Bromus tectorum*
Mojave suncup	*Camissonia brevipes*
Brown-eyed primrose	*Camissonia claviformis*
Brittlebush	*Encelia farinosa*
California ephedra	*Ephedra californica*
Interior goldenbush	*Ericameria linearifolia*
Rubber rabbitbrush	*Ericameria nauseosa*
Skeleton weed	*Eriogonum deflexum*
California buckwheat	*Eriogonum fasciculatum*
Desert trumpet	*Eriogonum inflatum*
Redstem filaree	*Erodium cicutarium*
Rattlesnake weed	*Euphorbia albomarginata*
Gilia	*Gilia* sp.
Hopsage	*Grayia spinosa*
Cheesebush	*Hymenoclea salsola*
Bladderpod	*Isomeris arborea*
California juniper	*Juniperus californica*
Utah juniper	*Juniperus osteosperma*

TABLE 2
Plants Observed in the Site Boundary

Common Name	Scientific Name
Creosote bush	*Larrea tridentata*
Desert alyssum	*Lepidium fremontii*
Scalebroom	*Lepidospartum squamatum*
Wolfberry	*Lycium andersonii*
Peach thorn	*Lycium cooperi*
Mojave aster	*Machaeranthera tortifolia*
Blazing star	*Mentzelia involucrata*
Beavertail cactus	*Opuntia basilaris*
Silver cholla	*Opuntia echinocarpa*
Penstemon	*Penstemon* sp.
Sandpaper plant	*Petalonyx thurberi*
Phacelia	*Phacelia* sp.
Desert bitterbrush	*Purshia tridentata* var. *glandulosa*
Big galletta	*Pleuraphis rigida*
Desert bitterbrush	*Purshia tridentata* var. *glandulosa*
Paper bag bush	*Salazaria mexicana*
Chia	*Salvia columbariae*
Purple sage	*Salvia dorrii*
Desert mallow	*Sphaeralcea ambigua*
Prince's plume	*Stanleya pinnata*
Tamarisk	*Tamarix* spp.
Mojave cottonthorn	*Tetradymia stenolepis*
Joshua tree	*Yucca brevifolia*
Mojave yucca	*Yucca schidigera*

Classification of the vegetation communities in the project study area are based on the Terrestrial Natural Community Types used by CDFG's Vegetation Classification and Mapping Program and Natural Diversity Database (CDFG, 2003). Descriptions of these types included observations from the field surveys as well as information from the Preliminary List of Terrestrial Natural Communities of California (Holland, 1986) and A Manual of California Vegetation (Sawyer and Keeler-Wolf, 1995).

CH2M HILL biologists identified eight general community types on the site: creosote bush scrub, brittlebush scrub, rabbitbrush scrub, California buckwheat scrub, scalebroom scrub,

desert almond scrub, California juniper woodland, and Joshua tree woodland. Substantial overlap in species composition occurs among the community types and the boundaries are generally diffused with gradual transitions between the mapped community types. Therefore, the vegetation boundaries shown on Figure 3 are intended to show the general distribution of the community types and provide approximate acreages of each type within the project study area (Table 3). The following sections provide a general description of the community types.

TABLE 3
Vegetation Communities and Approximate Acreage in the Site Boundary

Vegetation Community Type	Approximate Acreage
Creosote bush scrub	738
Brittlebush scrub	698
Rabbitbrush scrub	63
California buckwheat scrub	319
Scalebroom scrub	51
Desert almond scrub	10
California juniper woodland	558
Joshua tree woodland	736

3.1 Creosote Bush Scrub

Creosote bush scrub is a common and widespread community found throughout the Mojave Desert and is often the dominant plant community at elevations below 4,000 feet. This community is characterized by creosote bush (*Larrea tridentata*). Creosote bushes are generally widely spaced and range in height from 2 to 10 feet. Ground cover and associated species between the shrubs are highly variable depending on seasonal and local conditions such as moisture availability, soils, and level of disturbance.

In the project study area, this community is widespread along the eastern part of the site boundary, south of Cache Creek, on gentle slopes, and in low lying areas with relatively deep, sandy soils (Figure 3). Creosote shrubs are relatively dense in the central and southern areas and become more scattered to the north and east. Joshua trees (*Yucca brevifolia*) are relatively common but widely spaced and provide relatively low total cover. Diversity and abundance of associated species is variable across the project study area. Relatively common associated shrubs include California buckwheat (*Eriogonum fasciculatum*), California ephedra (*Ephedra californica*), box thorn (*Lyceum* spp.) and narrow-leaf goldenbush (*Ericameria linearifolia*). Disturbance tolerant species such as rubber rabbitbrush (*Ericameria nauseosa*), fiddleneck (*Amsinckia tessellata*), cheat grass (*Bromus tectorum*), red brome (*B. madritensis* ssp. *rubens*) and red-stem filaree (*Erodium cicutarium*) are common in many areas of this community. Despite the relatively high degree of disturbance, native forbs including penstemons (*Penstemon* spp.), desert trumpet (*Eriogonum inflatum*), primrose (*Camissonia*

spp.), purple sage (*Salvia dorrii*), and brittle spineflower (*Chorizanthe brevicornu*) are also present in many of the open areas between the shrubs. This community is similar to the Mojave Mixed Woody Scrub (34210) described by Holland (1986) and most closely resembles the Bladderpod-California ephedra-narrowleaf goldenbush series described by Sawyer and Keeler-Wolf (1995).

3.2 Brittlebush Series

The brittlebush series occurs over large areas within the site boundary (Figure 3). In this series, shrubs are typically less than 10 feet tall, habitat is more-or-less open, and scattered trees of less than 16 feet tall are present in some areas. In many areas, brittlebush is codominant with California buckwheat (*Eriogonum faciculatum*) and/or California ephedra (*Ephedra californica*). Other associated species on the site include California juniper (*Juniperus californica*), white bursage (*Ambrosia dumosa*), silver cholla (*Cylindropuntia echinocarpa*), and Mojave horsebrush (*Tetradymia stenolepis*). Native forbs present include penstemons, desert trumpet, primrose, and desert needlegrass (*Achnatherum speciosum*). Disturbance tolerant species such as those described above (creosote bush scrub) are common in some areas of this community. Soils are well drained and often quite rocky. This community is typically found on alluvial fans, bajadas, upland slopes, and in small washes. The virtual absence of creosote bush in the overstory may be attributable to the disturbance history of the stand (Thomas et al., 2004). It may also be attributable to the steep, rocky nature of the stand. Brittlebush rapidly colonizes burns and other disturbances, both in the south coastal scrub and desert vegetation (Abella, 2010).

3.3 Rabbitbrush Scrub

Small areas of the project site are covered by open stands of rubber rabbitbrush. The shrubs are generally small (less than about 3 feet tall) and well spaced, with a variety of native and non-native herbs covering the ground layer. Rubber rabbitbrush is the dominant shrub, but other shrubs and subshrubs, including interior goldenbush, occur at lower cover values. The associated herbaceous layer is dominated by non-native annual grasses (e.g., cheat grass and red brome) and red-stem filaree. Rabbitbrush scrub on the project site has relatively low (20 to 40 percent) shrub cover overall, with high cover consisting of grasses and herbs. Even so, rabbitbrush is the most visually dominant species, and it makes up the bulk of biomass in the mapped rabbitbrush scrub. Because of its open shrub structure and high herb cover, rabbitbrush scrub on the project site would be expected to support large numbers and diverse populations of reptiles, small mammals, and shrub land or grassland birds and, as a result, to be productive foraging habitat for raptors and mammalian mesopredators.

3.4 California Buckwheat Scrub

The California buckwheat scrub community is characterized by near complete dominance by California buckwheat and California ephedra (Figure 3). This community is found in a single patch along the western side of the site, in an area with shallow, rocky soils. Other low shrubs are present but occur much more widely scattered than in the mixed woody scrub type. Creosote bush (*Larrea tridentata*) and Joshua tree (*Yucca brevifolia*) are very uncommon to nearly absent. Common herbaceous species include Mojave aster (*Xylorhiza tortifolia*), gilia (*Gilia* sp.) and phacelia (*Phacelia* spp.). This community type most closely

resembles the Upper Sonoran subshrub scrub described by Holland (1986) and the California buckwheat series as described by Sawyer and Keeler-Wolf (1995).

3.5 Scalebroom Scrub

Scalebroom scrub is a shrub-dominated community restricted to floodplain habitats. Within the site, this community is found along ephemeral stream channels (Figure 3). Dominant species include scalebroom (*Lepidospartum squamatum*), cheesebush (*Hymenoclea salsola*), rubber rabbitbrush, and California buckwheat. Occasional Joshua trees or California junipers are found in this habitat. The adjacent alluvial benches grade into upland habitats. Scalebroom scrub is a special-status community (CDFG, 2003).

3.6 Desert Almond Scrub

A few small patches of desert transition shrub land along Cache Creek are dominated by spiny shrubs such as desert almond (*Prunus fasciculata*) and peach thorn (*Lycium cooperi*). Other characteristic species in these stands are rubber rabbitbrush and non-native cheat grass. Shrub cover is relatively high, and herb diversity is comparable to that of rabbitbrush scrub. On the project site, desert almond scrub stands seem to be tied to localized soil conditions.

3.7 California Juniper Woodland

California juniper occurs in large patches within the site, generally at the higher elevations (Figure 3). This open community consists of scattered California juniper and Utah juniper (*Juniperus osteosperma*) mixed with a low understory of California buckwheat scrub or brittlebush scrub. Occasional creosote bush shrubs are also present. Understory shrubs provide low to moderate cover.

3.8 Joshua Tree Woodland Classification

Joshua trees occur regularly throughout the site boundary. Within the proposed meteorological tower site, stands of Joshua tree woodland occur in a single patch in the northwestern portion of the site. In this area, Joshua trees are visually dominant, but the understory is composed of moderately dense, low-growing shrubs including white bursage, California buckwheat, California ephedra, brittlebush, and others. Joshua tree woodland is a special-status community (CDFG, 2003).

4.0 Wildlife Habitat

CH2M HILL biologists conducted wildlife habitat surveys on the site concurrently with vegetation community mapping, from May 26 to 28 and June 21 to 25, 2010. All wildlife species documented during the surveys are listed in Table 4. Wildlife habitat types are described below. Classification of the habitat types in the project study area was based on California Department of Forestry's A Guide to Wildlife Habitats of California (Mayer and Laudenslayer, 1998). Based on this classification system, the site boundary consists of three wildlife habitat types: desert scrub, juniper, and Joshua tree.

TABLE 4
Wildlife Species Identified in the Site Boundary

Common name	Scientific name	Observation type
Mammals		
Mule deer	*Odocoileus hemionus*	Scat
Coyote	*Canis latrans*	Scat, den
Fox	*Vulpes velox / Urocyon cinereoargenteus*	Den
American badger	*Taxidea taxus*	Den
Black-tailed jackrabbit	*Lepus californicus*	Direct, scat
Desert woodrat	*Neotoma lepida*	Nest
White-tailed antelope ground squirrel	*Ammospermophilus leucurus*	Direct, scat
Grasshopper mouse	*Onychomys* sp.	Burrows, tail drag marks
Birds		
American kestrel	*Falco sparverius*	Direct
Mourning dove	*Zenaida macroura*	Direct, nest
Hummingbird (unknown, female)	*Calypte spp.*	Direct
Western kingbird	*Tyrannus verticalis*	Direct
Loggerhead shrike	*Lanius ludovicianus*	Direct
Western scrub-jay	*Aphelocoma californica*	Direct
Horned lark	*Eremophila alpestris*	Direct
Cliff swallow	*Hirundo pyrrhonota*	Direct
Rock wren	*Salpinctes obsoletus*	Direct
Cactus wren	*Campylorhynchus brunneicapillus*	Direct
Western bluebird	*Sialia mexicana*	Direct

TABLE 4
Wildlife Species Identified in the Site Boundary

Common name	Scientific name	Observation type
Western tanager	*Piranga ludoviciana*	Direct
Northern mockingbird	*Mimus polyglottos*	Direct
Sage sparrow	*Amphispiza belli*	Direct
Lark sparrow	*Chondestes grammacus*	Direct
Black-throated sparrow	*Amphispiza bilineata*	Direct
European starling	*Sturnus vulgaris*	Direct
Scott's oriole	*Icterus parisorum*	Direct
Western meadowlark	*Sturnella neglecta*	Direct
House finch	*Carpodacus mexicanus*	Direct
Reptiles		
Southern Pacific rattlesnake	*Crotalus oreganus helleri*	Carcass
Side-blotched lizard	*Uta stansburiana*	Direct
Zebra-tailed lizard	*Callisaurus draconoides*	Direct
Sagebrush lizard	*Sceloporus graciosus*	Direct
Western whiptail lizard	*Aspidoscelis tigris*	Direct

4.1 Desert Scrub

Within the site, desert scrub habitat is frequently dominated by brittlebush with a variety of other scrubby species including California ephedra, white bursage, narrow-leaf goldenbush, and rabbitbrush. In disturbed examples of this habitat, the herbaceous layer is frequently dominated by fiddleneck, filaree, red brome, and cheat grass. Because of its open shrub structure and high herb cover, desert scrub on the site is expected to support large numbers and diverse populations of reptiles, small mammals, and shrub land or grassland birds and, as a result, to be productive foraging habitat for raptors and mammalian mesopredators. Wildlife observed in this habitat include black-tailed jackrabbit (*Lepus californicus*), American badger (*Taxidea taxus*), white-tailed antelope squirrel (*Ammospermophilus leucurus*), mourning dove (*Zenaida macroura*), cactus wren (*Campylorhynchus brunneicapillus*), sage sparrow (*Amphispiza belli*), California horned lark (*Eremophila alpestris actia*), western meadowlark (*Sturnella neglecta*), western whiptail (*Cnemidophorous tigris*), and side-blotched lizard (*Uta stansburiana*).

4.2 Juniper

Juniper habitat occurs in the upper elevations of the site where it is generally open with patches of sometime dense trees (Figure 3). Typical species include California juniper, Utah juniper, brittlebush, California buckwheat, California ephedra, narrow-leaf goldenbush,

Cooper's boxthorn, and frequently, non-native weedy species such as cheat grass and red-stem filaree in the herbaceous layer. Habitat structure is similar in many respects to the underlying shrub communities. However, the added structure in this habitat provides additional nesting, roosting, and cover opportunities for wildlife. Juniper berries are an important winter food source for numerous bird species, and several mammal species feed on juniper foliage or berries, also in winter (Chambers et al., 1999). Wildlife observed in this habitat include fox (*Vulpes velox* or *Urocyon cinereoargenteus*), mourning dove (*Zenaida macroura*), sage sparrow (*Amphispiza belli*), California horned lark (*Eremophila alpestris actia*), western meadowlark (*Sturnella neglecta*), and western whiptail (*Cnemidophorous tigris*).

4.3 Joshua Tree

Joshua tree habitat exhibits a patchy distribution in the middle to lower elevations of the site, with an understory of desert scrub (Figure 3). Typical species include Joshua tree, Mojave yucca, brittlebush, California ephedra, narrow-leaf goldenbush, rubber rabbitbrush, creosote bush, and frequently, non-native weedy species such as cheat grass and red-stem filaree in the herbaceous layer. Joshua trees provide vertical habitat structure used as perch and nest sites for a variety of birds, and the sharp leaves offer shelter for smaller mammal, bird, and lizard species. Wildlife observed in this habitat include black-tailed jackrabbit (*Lepus californicus*), white-tailed antelope squirrel (*Ammospermophilus leucurus*), mourning dove (*Zenaida macroura*), cactus wren (*Campylorhynchus brunneicapillus*), sage sparrow (*Amphispiza belli*), California horned lark (*Eremophila alpestris actia*), western whiptail (*Cnemidophorous tigris*), and side-blotched lizard (*Uta stansburiana*).

5.0 Special-status Wildlife and Plant Surveys

5.1 Protocol Surveys

The following biological resource surveys are ongoing or have been completed. The complete results of these surveys will be provided to the BLM as attachments to the Plan of Development.

- Desert tortoise protocol surveys – Five live desert tortoise and one set of remains were identified in the eastern portion of the site boundary during surveys conducted in 2009 (Sundance, 2009).
- Burrowing owl protocol surveys – Two inactive burrowing owl burrows were documented in the eastern portion of the site boundary; no burrowing owls or signs of their presence were observed in the western portion of the site boundary (Phoenix, 2010a; 2010b).
- Avian use surveys – Overall, low use (WEST, 2010a)
- Aerial raptor nest surveys – Two active (one unsuccessful) golden eagle nests located within 10 miles of site boundary (WEST, 2010a).
- Acoustic bat surveys – Overall low use, no areas of concentration (WEST, 2010b).
- Rare plant surveys – Two special-status plants identified: Bakersfield cactus and Adobe yampah (GANDA, 2010; Sycamore, 2010).

5.2 Other Special-status Wildlife Surveys

5.2.1 Mohave Ground Squirrel, Yellow-eared Pocket Mouse, San Joaquin Pocket Mouse, and Tulare Grasshopper Mouse

5.2.1.1 Mohave ground squirrel

The Mohave ground squirrel is a state threatened species. Mohave ground squirrels occur in desert scrub habitats. Activity periods for this species vary, and little is known about their reproduction (Ingles, 1979). Their diet consists of seeds and vegetative parts of desert plants, including fruits of the Joshua tree. Because of the aridity and high temperatures of its environment, the Mohave ground squirrel is a diurnal species spending up to seven months underground (Vanherweg, 2010).

In 2006, Vanherweg conducted protocol trapping for Mohave ground squirrels in the eastern portion of the Alta East site boundary (Vanherweg, 2006). No ground squirrels were documented during the trapping surveys. The CNDDB reported three Mohave ground squirrel occurrences within 10 miles of the site boundary. The nearest of these is approximately 0.9 miles northeast of the project and dates from 1987 (CNDDB, 2010).

5.2.1.2 Yellow-eared pocket mouse

The yellow-eared pocket mouse is a California species of special concern. This species has been found in Joshua tree woodland, desert scrub, pinyon-juniper, mixed and montane chaparral, sagebrush, and bunchgrass habitats (Grinnell, 1912 and Williams et al., 1993). It occurs primarily in sandy soils with sparse to moderate shrub cover (Zeiner et al., 1990). Little is known about the ecology of the yellow-eared pocket mouse, but it is expected to be similar to the closely related Great Basin pocket mouse. The Great Basin pocket mouse generally reproduces between March and September, normally producing a single litter each year. The Great Basin pocket mouse forages on seeds and fruit of a variety of grasses, annuals, forbs, and shrubs. Other members of the species group hibernate during the winter, and it is presumed that this species does also (Zeiner et al., 1990).

The CNDDB had no records of this species within 10 miles of the site boundary (CNDDB, 2010).

5.2.1.3 San Joaquin pocket mouse

The San Joaquin pocket mouse is a California species of special concern. This nocturnal species occurs in dry, open grasslands or scrub areas (Grinnel, 1933) on fine-textured soils in the Central and Salinas valleys. San Joaquin pocket mice feed on seeds but also eat green vegetation and soft-bodied insects. They dig burrows for cover. The breeding season for the San Joaquin pocket mouse is from March to July, and the females have at least two litters of four to six young per litter (CDFG, 1995).

The CNDDB had no records of this species within 10 miles of the site boundary, and based on the typical range, this species is not expected to occur within or around the site boundary.

5.2.1.4 Tehachapi pocket mouse

The Tehachapi pocket mouse is a California species of special concern. The Tehachapi pocket mouse typically occupies native and non-native grasslands, Joshua tree woodland, pinyon-juniper woodland, yellow pine woodland, and oak savannah (Williams et al., 1993). It has also been captured in open pine forests at higher elevations (Huey, 1926), in chaparral and coastal sage communities at lower elevations (Best, 1994), and on rangeland and fallow grain fields (Sulentich, 1983). It constructs burrows in loose, sandy soils (Zeiner et al., 1990). Little information is available concerning the ecology of the Tehachapi pocket mouse. Other members of the species group are nocturnal granivores, foraging primarily on seeds of grasses, forbs, and annuals but also on leafy plant material and insects (Verts and Kirkland, 1988). Most other members of the genus exhibit seasonal hibernation (Verts and Kirkland, 1988), and it is expected that the Tehachapi subspecies does also.

The CNDDB had one of this species located approximately 2.6 miles from the site boundary and dating from 1960 (CNDDB, 2010).

5.2.1.5 Tulare grasshopper mouse

The Tulare grasshopper mouse is a California species of special concern. This species typically inhabits arid shrub land communities in hot, arid grassland and shrub land associations (Williams and Kilburn, 1992).The Tulare grasshopper mouse appears to be primarily nocturnal and is active year-round (Williams unpubl. observ. as cited in Bolster,

ed. 1998). Typical prey includes grasshoppers, crickets, caterpillars, moths, scorpions, and beetles (Bailey and Sperry, 1929), but other foods such as seeds, a variety of insects and spiders, reptiles, and salamanders may also be eaten (Horner et al., 1964 and McCarty, 1975). Although grasshopper mice may construct nests in burrows that they excavate, they typically build nests in burrows that have been abandoned by other rodents (Bailey and Sperry, 1929). Currently, Tulare grasshopper mice are known to occur along the western margin of the Tulare Basin, including western Kern County, Carrizo Plain Natural Area, along the Cuyama Valley side of the Caliente Mountains, San Luis Obispo County, and the Ciervo-Panoche Region in Fresno and San Benito Counties (Williams and Kilburn, 1992 and D.F. Williams unpubl. data as cited in Williams et al., 1998).

The CNDDB had one member of this species located approximately 2.6 miles from the site boundary and dating from 1973 (CNDDB, 2010).

A habitat assessment to determine suitability for Mohave ground squirrel, yellow-eared pocket mouse, San Joaquin pocket mouse, and Tulare grasshopper mouse was conducted of the Alta East site boundary on May 19, 2010 (Vanherweg, 2010). The assessment consisted of driving through the site boundary while recording areas with suitable habitat characteristics including geology, soils, and vegetation. It was concluded that the entire site boundary is suitable for these species.

Protocol surveys for special-status small mammals are planned for spring and summer 2011.

5.2.2 American Badger, Loggerhead Shrike, Tehachapi Slender Salamander, Coast Horned Lizard

General surveys for special-status species identified in Table 1, which were not already addressed by focused protocol surveys, were conducted concurrently with vegetation community, wildlife habitat, and the wetland/waters investigation from June 21 to 25, 2010. Biologists walked approximately 100-foot-wide transects of suitable habitats in search of these species, their nests/burrows, and other signs of their presence. Following are species' life history descriptions and occurrence information within and around the site boundary.

5.2.2.1 American badger

The American badger is a California species of special concern. The American badger is an uncommon, carnivorous mammal that occurs in open habitats with herbaceous or dry shrubs (Ahlborn, 2005). Badgers mainly feed on ground squirrels and pocket gophers but also eat other small mammals, eggs, and carrion (Ahlborn, 2005).

The site boundary contains potential habitat for the badger. One den attributed to this species was identified in the southwestern corner of the site boundary during the June 2010 surveys. No individual badgers, scat, tracks, or other signs were observed.

The CNDDB had one record of this species that overlaps the western portion of the site boundary.

5.2.2.2 Loggerhead shrike

The loggerhead shrike is a California species of special concern. This species inhabits open habitats where it uses shrubs, trees, posts, fences, and low utility lines for perches (Ehrlich et al., 1988).

The site boundary contains suitable habitat for this species. Five loggerhead shrikes were documented in the site boundary during the June 2010 surveys. One of the observations was of a pair, indicating the likely location of a breeding territory. No nests for this species were observed.

The CNDDB had two records of this species within 10 miles of the site boundary. The closest record is approximately 8.7 miles southeast of the site boundary.

5.2.2.3 Coast horned lizard

The California coast horned lizard is a California species of special concern that may occur in the site boundary. Horned lizards may be found in a variety of habitats, which include scrub land, grassland, coniferous forests, and broadleaf woodlands (Stebbins, 2003).

The site boundary contains suitable habitat for this species. One individual was documented during the June 2010 surveys in the eastern part of the site boundary in creosote bush habitat.

CNDDB had one record of this species located approximately 5.2 miles northwest of the site boundary (CNDDB, 2010).

5.2.2.4 Tehachapi slender salamander

The Tehachapi slender salamander is California state listed as threatened and occurs in the Piute and Tehachapi mountains in Kern County and in the Sequoia National Forest in Tulare County (BLM, n.d.). This species is typically found at elevations of 2,000 to 4,600 feet and occurs in moist canyons, ravines, and north-facing talus slopes in oak and mixed pine-oak woodlands (Zeiner et al., 1988 and Stebbins, 2003). Because Tehachapi slender salamanders require year-round moisture, they are often found under rocks and beneath rotting logs, especially in areas with considerable leaf litter (Stebbins, 2003).

No suitable habitat for the Tehachapi slender salamander exists in the site boundary, and this species was not observed.

The CNDDB had no record of this species within 10 miles of the site boundary (CNDDB, 2010).

6.0 Wetlands and Waters

An assessment of waters of the U.S. and the State was conducted concurrently with vegetation community and special-status species surveys from June 21 to 25, 2010. All drainages and washes considered potentially jurisdictional by CDFG, the California Regional Water Quality Control Board, and/or the U.S. Army Corps of Engineers (Corps) were identified. Methods followed those described in the Corp's 1987 Wetland Delineation Manual (Environmental Laboratory, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Corps, 2008). Recorded data included UTM coordinates, bed width and substrate, channel depth, vegetation, and flow direction. Points were taken at 40 locations where ephemeral features were noted that may fall under CDFG's jurisdiction. Streams on the north side of Highway 58 flow into Cache Creek, which eventually flows into Koehn Lake, a playa, located approximately 20 miles northeast of the site boundary. Streams on the south side of Highway 58 generally flow from northwest to southeast across the site, eventually terminating on the eastern side of Highway 14. No streams or wetlands under the jurisdiction of the Corps were identified. Descriptions of each sampled stream location are provided below. Stream locations are depicted on Figure 3. Photos of each stream location are included as Appendix A.

6.1 ST-1 and ST-2

Points ST-1 and ST-2 represent an ephemeral feature shown as a blue line on the U.S. Geological Service (USGS) topographic quadrangle (quad). The bed of this channel is 5 to 10 feet wide and 3 to 6 feet deep, with a sandy substrate and one well-defined terrace in the center of the bed. The banks are steep but highly eroded in areas. Vegetation at the top of the bank is scalebroom scrub. Some annuals and shrubs have become established on the terraces, but there is no vegetation in the bed. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.2 ST-3

Point ST-3 was taken at an ephemeral feature. The bed of this channel is 3 to 5 feet wide and 4 to 6 feet deep, with a sandy substrate. The banks are well defined but sloping. Vegetation at the top of the bank is California juniper woodland. Some annuals and shrubs have become established at the edge of the bed, suggesting that this feature conveys very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.3 ST-4

Point ST-4 was taken at an ephemeral feature. The bed of this channel is 3 feet wide and 6 to 9 feet deep, with a silty/sandy/gravelly substrate. The banks are fairly unconsolidated and sloping. Vegetation at the top of the bank is California juniper woodland. Some annuals and shrubs have become established at the bottom of the bank. This feature appears to convey

very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.4 ST-5

Point ST-5 was taken at an ephemeral feature. The bed of this channel is 1 to 5 feet wide and 1.5 to 3 feet deep, with a sandy/gravelly/bedrock substrate. The banks are well-defined and v-shaped. Vegetation at the top of the bank is California juniper woodland. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.5 ST-6

Point ST-6 represents an ephemeral feature shown as a blue line on the USGS quad. The bed of this channel is 4 to 6 feet wide and 0.5 to 3 feet deep, with a sandy substrate. The banks are well-defined but sloping. Vegetation at the top of the bank is scalebroom scrub. Some annuals and shrubs have become established at the edge of the bed. This feature appears to convey very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.6 ST-7

Point ST-7 represents an ephemeral feature shown as a blue line on the USGS quad. The bed of this channel is 6 to 10 feet wide and 3 to 4 inches deep, with a sandy/gravelly substrate and a few shallow terraces. The banks are well defined and sloping in places. Vegetation at the top of the bank is brittlebush scrub. Some annuals and shrubs have become established on the terraces, but otherwise the bed is devoid of vegetation. This feature appears to convey very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.7 ST-8

Point ST-8 represents a narrow, incised, ephemeral feature. The bed of this channel is 2 to 3 feet wide and 5 to 6 feet deep, with a gravelly substrate. The banks are well defined and sloping in places. Vegetation at the top of the bank is California buckwheat scrub. This feature appears to convey very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.8 ST-9

Point ST-9 represents a narrow, ephemeral feature shown as a blue line on the USGS quad. The bed of this channel is 2 to 4 feet wide and 1 to 3 feet deep, with a sandy/gravelly/bedrock substrate. The sloped banks are quite steep in places where granitic outcrops become bedrock. Vegetation at the top of the bank is California buckwheat scrub. This feature appears to convey very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.9 ST-10

Point ST-10 is a large, ephemeral drainage in the northern part of the site boundary (Figure 3). This feature is shown as a blue line on the USGS quad. The bed of this channel is 60 feet wide and 5 to 8 feet deep and has a sandy/gravelly/cobbled substrate with several defined terraces. The banks are well defined but sloping. Vegetation at the top of the bank is primarily creosote bush scrub with scalebroom scrub on the terraces. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.10 ST-11

Point ST-11 is an ephemeral feature in the northern part of the site boundary. The bed of this feature is 5 to 8 feet wide and 1 foot deep and has a gravelly substrate supporting shrubs and herbaceous species. The banks are weakly defined. Vegetation at the top of the bank is California buckwheat scrub. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.11 ST-12

Point ST-12 is a shallow, ephemeral feature in the northern part of the site boundary. The bed of this feature is 10 to 15 feet wide and 4 to 6 inches deep, with terraces and a gravelly/cobbled substrate. Shrubs and herbaceous species are growing on the terraces. The banks are weakly defined. Vegetation at the top of the bank is California buckwheat scrub. No riparian vegetation is present.

6.12 ST-13

Point ST-13 is a shallow, ephemeral feature in the northern part of the site boundary. The bed of this feature is 10 to 15 feet wide and 4 to 6 inches deep, with terraces and a gravelly/cobbled substrate. Shrubs and herbaceous species are growing on the terraces. The banks are weakly defined. Vegetation at the top of the bank is California buckwheat scrub. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.13 ST-14

Point ST-14 is a generally narrow, ephemeral feature shown as a blue line on the USGS quad and is in the northern part of the site boundary. The bed of this feature is 1 to 7 feet wide and 1 to 4 feet deep, with terraces and a gravelly/cobbled substrate. The banks are steep, incised, and undercut in places. No vegetation is present in the bed. This feature appears to convey infrequent, flashy flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is scalebroom scrub. No riparian vegetation is present.

6.14 ST-15

Point ST-15 is an ephemeral feature in the northern part of the site boundary. The bed of this feature is 1to 7 feet wide and 1 to 4 feet deep, with a gravelly/cobbled substrate. The banks are steep, incised, and undercut in places. Vegetation at the top of the bank is scalebroom scrub. No vegetation exists in the bed. This feature appears to convey infrequent, flashy flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.15 ST-17

Point ST-17 is a shallow, ephemeral feature in the northern part of the site boundary. The bed of this feature is 7 to 12 feet wide and 2 to 4 feet deep, with terraces and a sandy/gravelly substrate. Shrubs and herbaceous species are growing on the terraces. The banks are sloped. Vegetation at the top of the bank is creosote bush scrub. Some annuals are growing in the bed. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.16 ST-18

Point ST-18 is an ephemeral feature in the northern part of the site boundary. The bed of this feature is 6 to 10 feet wide and 1 to 3 feet deep, with terraces and a sandy/gravelly substrate. Shrubs and herbaceous species are growing on the terraces. The banks are weakly defined and sloping. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is creosote bush scrub. No riparian vegetation is present.

6.17 ST-19

Point ST-19 is a wide, braided, ephemeral feature in the eastern portion of the site boundary shown as a blue line on the USGS quad. The bed of this feature is 40 to 50 feet wide and 4 to 6 feet deep, with terraces and a sandy/gravelly substrate. Shrubs and herbaceous species are growing on the terraces. This feature is used as a road, as evidenced by the presence of tire tracks in the bed. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is Joshua tree woodland with a creosote bush scrub understory. No riparian vegetation is present.

6.18 ST-20

Point ST-20 is a meandering, ephemeral feature in the eastern portion of the site boundary. The bed of this feature is 2 to 5 feet wide and 1 to 4 feet deep, with terraces and a silty substrate. Annuals are growing on the terraces. The banks are weakly defined. No vegetation is in the bed. This feature appears to convey very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is creosote bush scrub. No riparian vegetation is present.

6.19 ST-21

Point ST-21 is a narrow, ephemeral feature shown as a blue line on the USGS quad and is in the southeastern part of the site boundary. The bed of this feature is 1to 3 feet wide and 1 to 5 feet deep and has a silty/gravelly substrate. The banks are incised with undercutting in places. Vegetation at the top of the bank is creosote bush scrub. No vegetation is in the bed. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.20 ST-22

Point ST-22 is an ephemeral feature in the eastern part of the site boundary. The bed of this feature is 2 to 4 feet wide and 1 to 5 feet deep and has a silty/gravelly substrate. Shrubs and herbaceous species are growing on the terraces. The banks range from very steep to deeply eroded. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is creosote bush scrub. No riparian vegetation is present.

6.21 ST-23

Point ST-23 is a shallow, ephemeral feature shown as a blue line on the USGS quad. The bed of this feature is 10 to 15 feet wide and 2 to 4 feet deep, with well developed terraces and a sandy/gravelly substrate. The banks are sloped. This feature appears to convey very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is creosote bush scrub. No riparian vegetation is present. This feature is used as a road, as evidenced by tire tracks in the bed.

6.22 ST-24

Point ST-24 is an ephemeral feature in the eastern part of the site boundary. The bed of this feature is 5 to 10 feet wide and 0 to 8 feet deep, with terraces and a sandy/gravelly substrate. The terraces are vegetated with *Bromus* sp. The banks are steep and eroded. This feature appears to convey very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank consists of non-native weedy species. No riparian vegetation is present. This feature is extensively disturbed by recreational off-road vehicle use.

6.23 ST-25

Point ST-25 is a narrow, shallow, ephemeral feature shown as a blue line on the USGS quad and is in the eastern part of the site boundary. The bed of this feature is 1 to 3 feet wide and 6 inches to 3 feet deep and has a sandy/gravelly substrate. The banks are weakly defined. This feature appears to convey very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is Joshua tree woodland with a creosote bush scrub understory. No riparian vegetation is present.

6.24 ST-26

Point ST-26 is a shallow, ephemeral feature shown as a blue line on the USGS quad and is in the eastern part of the site boundary. The bed of this feature is 10 to 15 feet wide and 1 to 2 feet deep and has a gravelly/cobbled substrate. The banks are weakly defined. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is creosote bush scrub. No riparian vegetation is present.

6.25 ST-27

Point ST-27 is a very shallow, ephemeral feature shown as a blue line on the USGS quad. The bed of this feature is 10 to 15 feet wide and 0 to 3 feet deep and has a sandy/gravelly substrate. Annual and perennial herbs are growing in the bed. The banks are weakly defined. This feature appears to convey very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is scalebroom scrub. No riparian vegetation is present.

6.26 ST-28

Point T-28 represents an ephemeral feature in the western part of the site boundary. The bed of this feature is 2 to 3 feet wide and 3 to 12 feet deep, with terraces and a sandy/gravelly/cobbled substrate. Shrubs and herbaceous species are growing on the terraces. The banks are steep and deeply incised. This feature appears to convey infrequent, flashy flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is scalebroom scrub. No riparian vegetation is present.

6.27 ST-29

Point ST-29 is an ephemeral feature shown as a blue line on the USGS quad. The bed of this feature is 12 to 20 feet wide and 2 to 5 feet deep, with a sandy/gravelly substrate and defined terraces. The banks are steep on the western side and highly eroded on the eastern side. Vegetation at the top of the bank is scalebroom scrub. Some annuals and shrubs have become established on the terraces, but there is no vegetation in the bed. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.28 ST-30

Point ST-30 is a narrow, ephemeral feature in the western part of the site boundary. The bed of this feature is 2 to 3 feet wide and 5 to 6 feet deep, with terraces and a gravelly/cobbled substrate. Annual herbs are growing on the terraces. The banks are deeply incised with sloping in places. This feature appears to convey infrequent, flashy flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is scalebroom scrub. No riparian vegetation is present.

6.29 ST-31

Point ST-31 is an ephemeral feature that is a tributary to ST-32 (described below). The bed of this feature is 2 to 5 feet wide and 3 to 7 feet deep, with terraces and a gravelly/cobbled substrate. Shrubs and herbaceous species are growing on the terraces. The banks are very steep and incised with sloping in places. This feature appears to convey very infrequent, flashy flow. Annual and perennial herbs are established in the bed. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is California buckwheat scrub. No riparian vegetation is present.

6.30 ST-32

Point ST-32 is an ephemeral feature shown as a blue line on the USGS quad in the western portion of the site boundary. The bed of this feature is 2 to 4 feet wide and 3 to 5 feet deep, with a sandy/gravelly/cobbled substrate. The banks are very steep and incised in places and deeply eroded in others. This feature appears to convey infrequent, flashy flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is scalebroom scrub. No riparian vegetation is present.

6.31 ST-33

Point ST-33 is a narrow, ephemeral feature in the western part of the site boundary. The bed of this feature is 1 to 1.5 feet wide and 3 to 7 feet deep and has a gravelly/cobbled substrate. The banks are deeply incised. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is scalebroom scrub. No riparian vegetation is present.

6.32 ST-35

Point ST-35 is an ephemeral feature in the western part of the site boundary. The bed of this feature is 2 to 4 feet wide and 1 to 3 feet deep and has a sandy/gravelly substrate. A few annual herbs are growing along the edge of the bed. The sandy banks are weakly defined and sloping. This feature appears to convey very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is California buckwheat scrub. No riparian vegetation present.

6.33 ST-36

Point ST-36 is a shallow, ephemeral feature in the western part of the site boundary. The bed of this feature is 3 to 8 feet wide and has a silty/gravelly/cobbled substrate. The bed is devoid of vegetation. The banks are weakly defined, measuring only 0 to 1 foot high. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is California juniper woodland with a California buckwheat scrub understory. No riparian vegetation is present.

6.34 ST-37

Point ST-37 is a shallow, ephemeral feature in the western part of the site boundary. The bed of this feature is 1 to 4 feet wide and 1 to 3 feet deep and has a gravelly/cobbled substrate. A few annual herbs are growing in the bed. The banks are eroded and sloping. This feature appears to convey very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is California juniper woodland with a California buckwheat scrub understory. No riparian vegetation is present.

6.35 ST-38

Point ST-38 is an ephemeral feature shown as a blue line on the USGS quad. The bed width is 2 to 4 feet with a silty/gravelly substrate. The bank height varies from 1 to 5 feet. The banks are sloped and eroded with some undercutting. Vegetation on the banks consists of Juniper woodland with a California buckwheat scrub understory. No vegetation is in the bed. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.36 ST-39

Point ST-39 is an ephemeral feature shown as a blue line on the USGS quad. The bed width is 3 to 4 feet with a sandy/gravelly substrate. The banks are shallow, measuring 12 to 18 inches high, which is consistent with the eroded, sloping profile. Vegetation at the top of the bank is scalebroom scrub, which grades into California juniper woodland and California buckwheat scrub. Terraces in the bed support perennial herbs and shrubs, but the bed is free of vegetation. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.37 ST-40

Point ST-40 is an ephemeral feature shown as a blue line on the USGS quad and is in the southwestern part of the site boundary. The bed width is 5 to 7 feet with a sandy/gravelly substrate. The bank height varies from 1 to 9 feet. The banks are generally sloped and eroded but quite steep in some areas. Vegetation on the banks consists of brittlebush scrub. Extensive vegetation is in the bed of the channel (i.e., brittlebush and cheat grass). This feature appears to convey very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.38 ST-41

Point ST-41 represents Cache Creek, a very wide, shallow, and ephemeral stream shown as a blue line on the USGS quad and paralleling Highway 58. The bed of this feature is approximately 110 feet wide and 10 feet deep, with terraces and a sandy/gravelly substrate. Despite the size of this feature, it is not a tributary to a perennial stream. Shrubs and herbaceous species are established on the terraces. The banks tend to be quite steep on the southern side and deeply eroded and sloping on the northern side. This feature appears to convey infrequent flow. During heavy rain events, flow is from the east to the west. Vegetation at the top of the bank is scalebroom scrub. No riparian vegetation is present.

Cache Creek flows east along Highway 58 and north past California Valley before apparently flowing into Koehn Lake, a playa, in the Fremont Valley.

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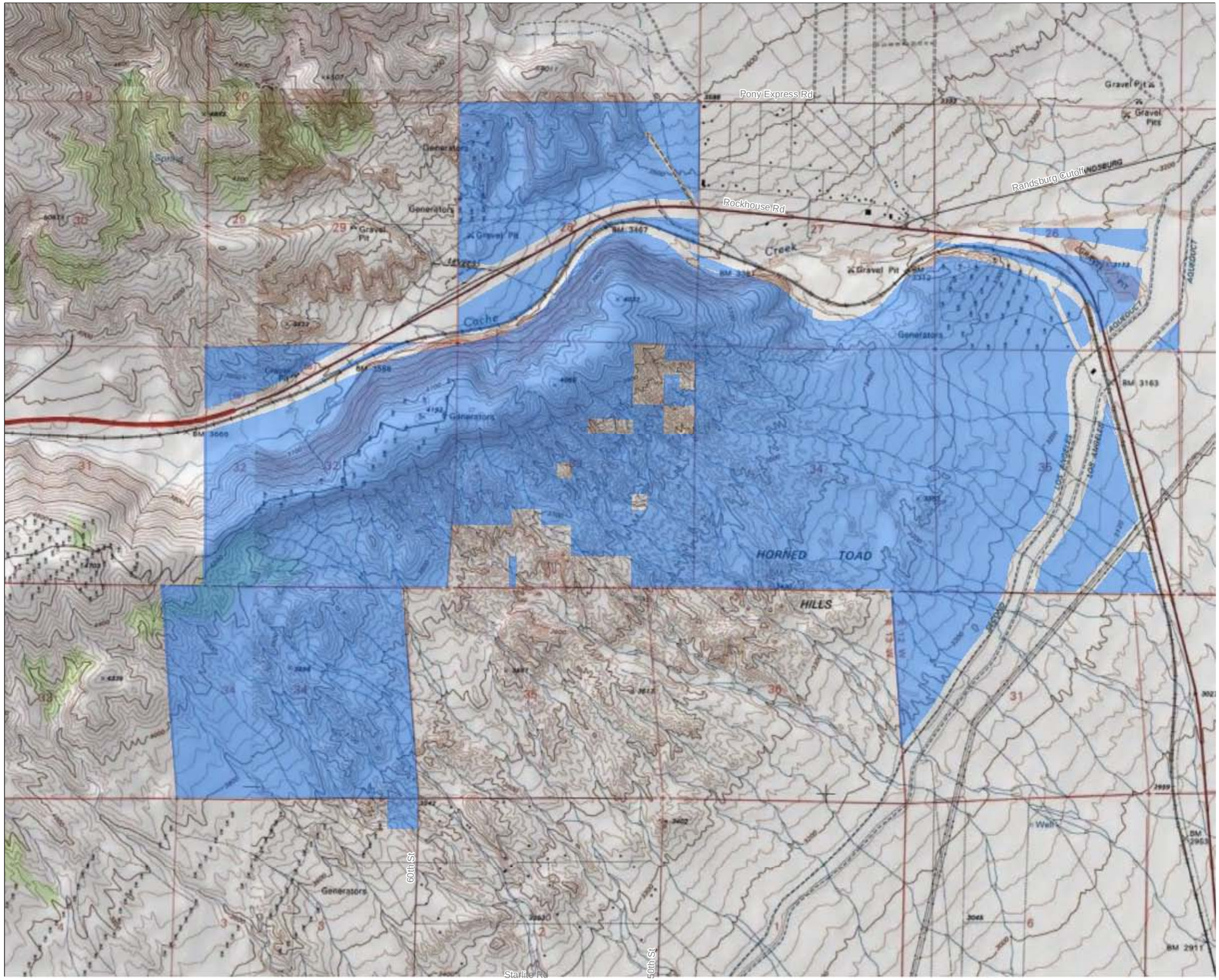
Figures



VICINITY MAP

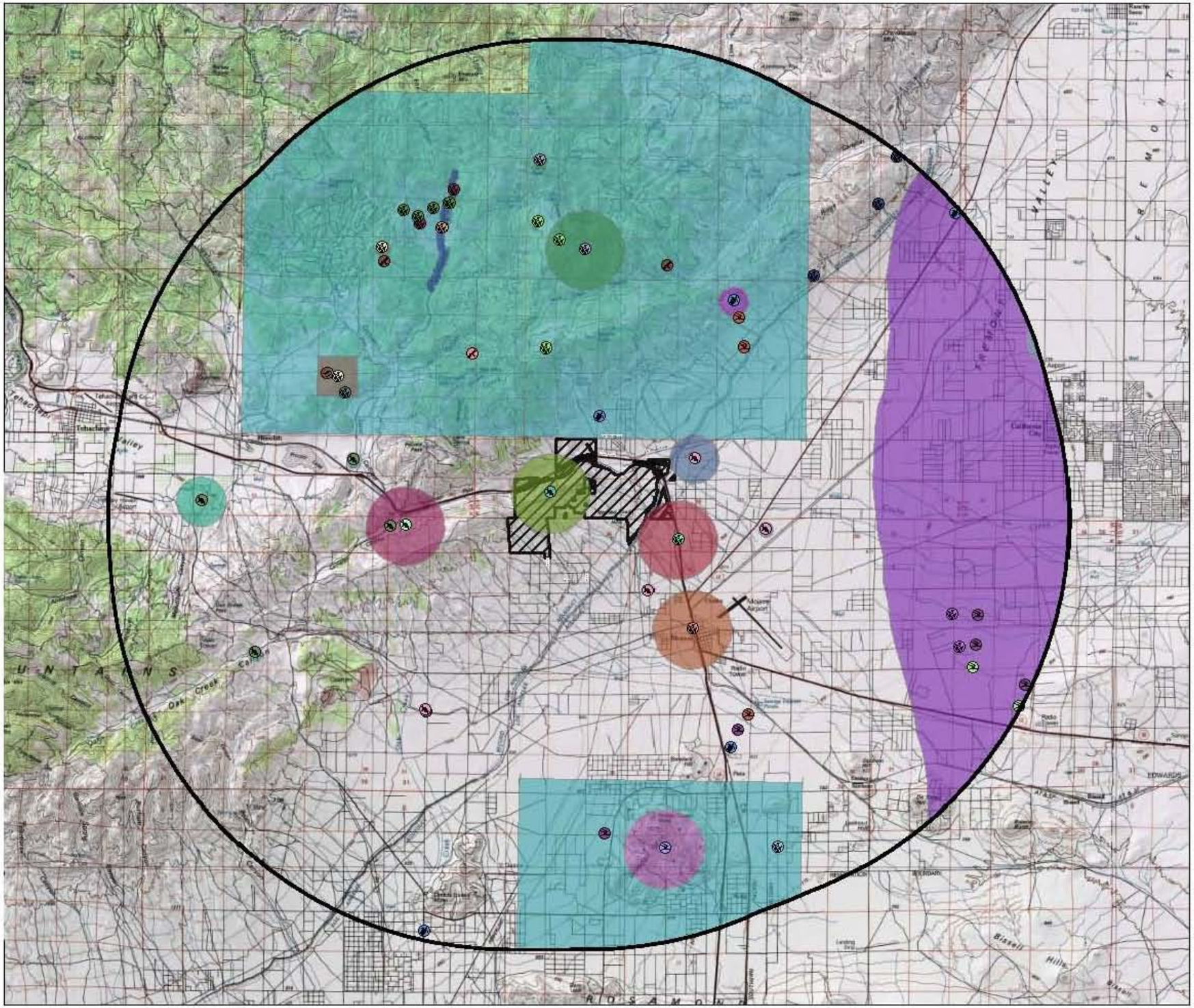
LEGEND

Project Area

N

0 1,000 2,000
Feet

FIGURE 1
Site Overview
Biological Resource Study
Alta East Wind Project
Alta Wind Energy Center Project



VICINITY MAP

LEGEND

Project Area

10-Mile

CNDDB OCCURRENCES

Plants

- Barstow woolly sunflower
- Charlotte's phacelia
- Kern buckwheat
- Palmer's mariposa-lily
- Piute Mountains jewel-flower
- Spanish Needle onion
- Spjut's bristle moss
- calico monkeyflower
- golden violet
- pale-yellow layia
- sagebrush loeflingia
- white pygmy-poppy

Wildlife

- American badger
- California horned lark
- Mohave ground squirrel
- San Joaquin pocket mouse
- Tehachapi pocket mouse
- Townsend's big-eared bat
- Tulare grasshopper mouse
- burrowing owl
- coast horned lizard
- desert tortoise
- golden eagle
- loggerhead shrike
- prairie falcon

Plants

- Piute Mountains jewel-flower
- Spjut's bristle moss
- alkali mariposa-lily
- golden violet
- pale-yellow layia
- white pygmy-poppy

Wildlife

- American badger
- Mohave ground squirrel
- San Joaquin pocket mouse
- Tehachapi pocket mouse
- Townsend's big-eared bat
- Tulare grasshopper mouse
- desert tortoise
- prairie falcon

N

0 5,000 10,000 20,000 30,000

Feet

FIGURE 2
California Natural Diversity Database (CNDDB)

Biological Resource Study
Alta East Wind Project
Alta Wind Energy Center Project

CH2MHILL

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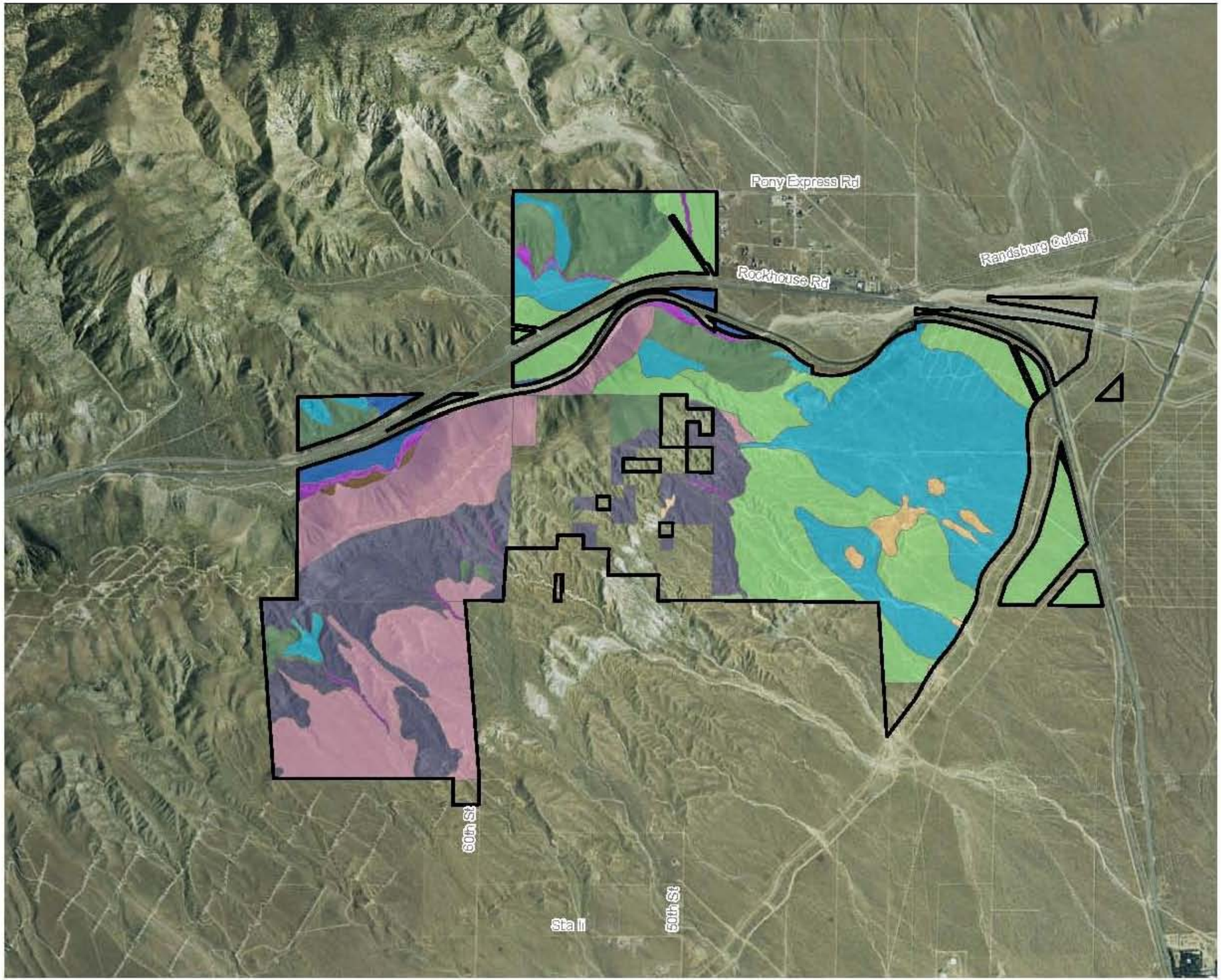

LEGEND

Project Area

Vegetation Type

- Brittlebush Scrub (698.4 acres)
- California Buckwheat Scrub (319.2 acres)
- California Juniper Woodland (557.7 acres)
- Creosote Brush Scrub (737.9 acres)
- Desert Almond Scrub (9.6 acres)
- Disturbed/Ruderal (47.9 acres)
- Joshua Tree Woodland (736.2 acres)
- Rabbitbrush Scrub (62.5 acres)
- Scalebroom Scrub (51.4 acres)

N

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Feet

FIGURE 3
Vegetation Communities
Biological Resource Study
Alta East Wind Project
Alta Wind Energy Center Project

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Appendix A
Site Photographs

Photo 1 Point ST-1 looking upstream (northwest).

Photo 2 Point St-3 looking downstream (southeast).

Photo 3 Point ST-4 looking downstream (southeast).

Photo 4 Point ST-5 looking downstream (SE).

Photo 5 Point ST-6 Looking downstream (SE).

Photo 6 Point ST-7 looking downstream (SE).

Photo 7 Point ST-8 looking downstream (SE).

Photo 8 Point ST-9 looking downstream (SE).

Photo 9 Point ST-10 looking downstream (SE).

Photo 10 Point ST-11 looking downstream (SE).

Photo 11 Point ST-12 looking downstream (SE).

Photo 12. Point ST-13 looking downstream (SE).

Photo 13. Point ST-14 looking downstream (SE).

Photo 14. Point ST15 looking downstream (SE).

Photo 15. Point ST-17 looking downstream (SE).

Photo 16. Point ST-18 looking downstream (SE).

Photo 17. Point ST-19 looking downstream (SE).

Photo 18. Point ST-20 looking downstream (SE).

Photo 19. Point ST-21 looking downstream (SE).

Photo 20. Point ST-22 looking downstream (SE).

Photo 21. Point ST-23 looking downstream (SE).

Photo 22. Point ST-24 looking downstream (SW).Z

Photo 23. Point ST-25 looking downstream (SE).

Photo 24. Point ST-26 looking downstream (SE).

Photo 25. Point ST-27 looking downstream (SE).

Photo 26. Point ST-28 looking downstream (SE).

Photo 27. Point ST-29 looking downstream (SE).

Photo 28. Point ST-30 looking downstream (SE).

Photo 29. Point ST-31 looking downstream (SE).

Photo 30. Point ST-32 looking downstream (SE).

Photo 31. Point ST-33 looking downstream (SE).

Photo 32. Point ST-35 looking downstream (SE).

Photo 33. Point ST-36 looking downstream (SE).

Photo 34. Point ST-37 looking downstream (SE).

Photo 35. Point ST-38 looking downstream (SE).

Photo 36. Point ST-39 looking downstream (SE).

Photo 37. Point ST-40 looking upstream (NW).

Photo 38. Point ST-41 (Cache Creek) looking downstream (east).

Appendix D-2

Vegetation Mapping and Wildlife Assessment

Vegetation Mapping and General Wildlife Assessment for the Alta Wind Center, Sun Creek Subarea Project in Kern County, California

TO: Robert Skaggs, Alta Windpower Development, LLC

FROM: Bridget Canty , Russell Huddleston and Corinna Lu, CH2M HILL

DATE: September 29, 2009

Introduction

Alta Windpower Development, LLC is proposing to develop a wind-energy facility in the Sun Creek Subarea, located in Kern County, California. The Project is located in Kern County, California, in the western Mojave Desert (see Figure 1, located at the end of this document).

The majority of the project study area is located in sections 26, 27, 28, 33, 34 and 35 in Township 32 south, Range 35 east of the Mount Diablo Meridian. Section 31 of township 12 north, Range 12 west of the San Bernardino Meridian as well as small areas of the adjacent sections are also included. The project is located in the northwest corner of the Mojave and northeast corner of the Monolith United States Geological Service 7.5 minute Quadrangle maps. The center of the project is located at approximately 118° 13′ 08″west longitude and 35° 06′ 35″ north latitude.

This memorandum documents the general vegetation communities and habitat types present in the project study area, discusses the potential special-status plant and wildlife species that may be present on project study area, and provides recommendations for additional biological resource evaluations that would be necessary to fully characterize the presence or absence of certain species to support project permitting.

Methods

An information review was conducted using the following resources:

- The California Natural Diversity Database (CNDDB) (CNDDB 2009)
- The California Native Plant Society (CNPS) on-line inventory (CNPS 2009) (Attachment 1)
- U.S. Fish and Wildlife Service's (USFWS) Federally Listed Threatened and Endangered Species that May Occur in Kern County, California (USFWS 2009) (Attachment 2)
- BLM's Final Environmental Impact Report and Statement for the West Mojave Plan (BLM 2005).

The vegetation mapping and wildlife habitat surveys were conducted between May 26 and 28, 2009. Biologists used aerial photographs and topographic maps in conjunction with Holland's Preliminary Vegetation Descriptions of California (1986) to broadly classify vegetation communities within the project study area. Wildlife habitat types were classified using the California Wildlife Habitat Relationships (CWHR) system (CDFG 2009). In addition, wildlife observations were recorded including habitats used; behaviors; locations of nests, burrows, caves, and other habitat features; as well as indirect signs (i.e. tracks, scat, bones) of use. Most of the project study area was covered by pedestrian survey; however, some areas were surveyed by automobile.

Results

Vegetation Communities

Classification of the vegetation communities in the project study area are based on the Terrestrial Natural Community Types used by the California Department of Fish and Game's Vegetation Classification and Mapping Program and Natural Diversity Database (CDFG 2003). Descriptions of these types included observations from the field reconnaissance surveys as well as information from the Preliminary list of terrestrial natural communities of California (Holland 1986) and A Manual of California Vegetation (Sawyer and Keeler-Wolf 1995). Three general community types were identified in the project study area: creosote bush scrub; Mojave Mixed Woody Scrub and California Buckwheat Scrub. Substantial overlap in species composition occurs among the community types and the boundaries are generally diffuse with gradual transitions between the mapped community types. Therefore the vegetation boundaries shown on Figure 2 are intended to show the general distribution of the three community types and provide relative percentages of each type within the project study area. The majority of the habitat is highly disturbed as a result of past wind project development, construction of the California aqueduct, various access roads, railroad tracks and extensive, ongoing off-road vehicle use throughout this area. The following sections provide a general description of the community types followed by a discussion of the Joshua Tree Woodland classification. Plant species observed during the vegetation mapping and general wildlife assessment are listed in Attachment 3.

Creosote Bush Scrub (33.010.00)[1]

Creosote bush scrub is a common and widespread community found throughout the Mojave Desert and is often the dominant plant community at elevations below 4,000 feet. This community is characterized by creosote bush (*Larrea tridentata*), that are generally widely spaced and range in height from 2 to 10 feet. Ground cover and associated species between the shrubs is highly variable depending on seasonal and local conditions such as moisture availability, soils and level of disturbance.

In the project study area this community is widespread along the eastern part of the project study area, south of Cache Creek, on gentle slopes and in low lying areas with relatively deep, sandy soils (Figure 2). Creosote shrubs are relatively dense in the central and southern areas and become generally more scattered to the north and east. Joshua trees

[1] Number refers to the numerical code associated with the *List of California Terrestrial Natural Communities* used by the California Department of Fish and Game (CDFG 2003b).

(*Yucca brevifolia*) are relatively common, but widely spaced and provide relatively low total cover. Diversity and abundance of associated species is variable across the project study area. Relatively common associated shrubs include California buckwheat (*Eriogonum faciculatum*), California ephedra (*Ephedra californica.*), box thorn (*Lyceum* spp.) and interior goldenbush (*Ericameria linearifolia*). Disturbance tolerant species such as rabbit brush (*Chrysothamnus* spp.), fiddleneck (*Amsinckia tessellata*), cheat grass (*Bromus tectorum*), red brome (*Bromus madritensis* ssp. *rubens*) and filaree (*Erodium cicutarium*) are common in many areas of this community. Despite the relatively high degree of disturbance, native forbs including *Penstemon* spp., desert trumpet (*Eriogonum inflatum*), primrose (*Camissonia* spp.), purple sage (*Salvia dorii*), and brittle spineflower (*Chorizanthe brevicornu*) are also present in many of the open areas between the shrubs. This community is similar to the Mojave Mixed Woody Scrub (34210) described by Holland (1986) and most closely resembles the Bladderpod-California ephedra-narrowleaf goldenbush series described by Sawyer and Keeler-Wolf (1995).

Mojave Mixed Woody Scrub (32.211.00)

The Mojave mixed woody scrub community is characterized by open, generally low shrubs with occasional Joshua trees often present in some areas. This community tends to occur on excessively drained soils on rolling hills and steep slopes with low water holding capacity and slightly alkaline soils. Mojave mixed woody scrub habitat is widely scattered along the eastern Sierra Nevada from the Owens Valley southward along the Tehachapi, San Gabriel, San Bernardino, San Jacinto, and Peninsular ranges.

This community type is found on the gently sloping alluvial fans, lower slopes and terraces on the north side of Cache Creek (Figure 2). Within the project study area this community is characterized by low shrubs such as California buckwheat and California ephedra. Other common associates include box thorn, interior goldenbush, bladderpod (*Isomeris arborea*), and brittlebush (*Encelia farinosa*). Beavertail cactus (*Opuntia basilaris*), buckhorn cholla (*Opuntia acanthocarpa*) and Chaparral yucca (*Yucca whipplei*) are found in scattered locations. Creosote bush and Joshua tree are also common associates within this community type along sandy alluvial fans and low terraces in the project study area. Herbaceous vegetation includes species such as cheat grass, red brome, Mediterranean grass (*Schismus barbatus*), and filaree in the more disturbed areas. Common native forbs include desert mallow (*Sphaeralcea* spp.) and purple sage. This community is similar to the Mojave Mixed Woody Scrub (34210) described by Holland (1986) and most closely resembles the Bladderpod-California ephedra-narrowleaf goldenbush series described by Sawyer and Keeler-Wolf (1995).

California Buckwheat Scrub (32.040.00)

California buckwheat scrub is very similar to the Mojave mixed wood scrub described above, but is distinguished by the near complete dominance by California buckwheat and California ephedra (Figure 2). This community is found along the upper slopes and ridge tops of the project study area generally along the northern and western parts of the study area, presumably in areas with shallow, rocky soils. Other low shrubs are present, but occur much more widely scattered than in the mixed woody scrub type. Creosote bush and Joshua tree are very uncommon to nearly absent. Common herbaceous species include Mojave aster (*Xylorhiza tortifolia*), gilia (*Gilia* sp.) and Phacelia (*Phacelia* spp.). This

community type most closely resembles the Upper Sonoran sub-shrub scrub described by Holland (1986) and the California buckwheat series as described by Sawyer and Keeler-Wolf (1995).

Joshua Tree Woodland Classification

Habitats in which Joshua trees are a conspicuous component of the community are often recognized as Joshua Tree Woodlands; however, the floristic validity of such a distinction has been questioned in areas with low cover that are characterized by shrubs that often occur without Joshua trees (Barbour et al. 2007). In addition Joshua trees are frequently described as components of other Mojave shrub communities types in Holland (1986). Sawyer and Keeler–Wolf (2006) distinguish the Joshua tree series as characterized by dense Joshua trees and note habitats in which other trees are more common, the most dominant tree species should be used to define the series even though Joshua trees may be common associates. On the other hand, recent vegetation studies in the Mojave Desert suggest that despite low total cover values (frequently only 1 to 2 percent) areas with evenly spaced Joshua trees may represent distinct associations, the most commonly occurring being types associated with creosote bush as a dominant shrub component (Barbour et al. 2007).

Within the project study area Joshua trees are common and widely distributed, although they account for a low percentage of the total cover (less than 5 percent). Therefore the community types were classified based on the Holland (1986) and Sawyer and Keeler-Wolf (1995) community types rather than described as Joshua Tree Woodland types. Habitats in which Joshua tree cover exceeds 10 percent are uncommon (Barbour et al. 2007). Based on the initial site surveys and visual estimates the maximum density of Joshua trees within the creosote bush scrub habitat does not appear to exceed 5 percent total.

Wildlife

Wildlife Habitat

The project study area is comprised of one CWHR wildlife habitat type, desert scrub. Within the project study area, this habitat is frequently dominated by creosote bush with a variety of other scrubby species including: interior goldenbush, California ephedra, box thorn, and rabbitbrush. In some areas, this habitat includes pockets of Joshua trees. In disturbed examples of this habitat, the herbaceous layer is frequently dominated by fiddleneck, filaree, red brome, and cheat grass. This shrub-dominated habitat provides important cover, forage, and nesting opportunities for a variety of mammals, birds, and reptiles. Areas of desert scrub with Joshua tree provide somewhat higher habitat values due to the increased structural complexity represented by the Joshua trees. Rabbitbrush-dominated areas, which frequently develop in disturbed areas (i.e. grazed areas and roadsides), provide somewhat lower habitat values for many wildlife species as they often form monotypic stands that lack the relative diversity of cover, forage and nesting opportunities associated with more structurally diverse habitats. Wildlife species observed during the vegetation mapping and general wildlife assessment are listed in Attachment 4.

Special-status Species

A list of special-status plants and wildlife that occur or potentially occur in the project study area was developed based on available occurrence data in the California Natural Diversity

Data Base (CDFG 2009) the California Native Plant Society's (CNPS) Electronic Inventory of Rare and Endangered Plants of California (CNPS 2009), the U.S. Fish and Wildlife Service list of threatened and endangered species for Kern County (USFWS 2009) and BLM's West Mojave Plan (2005) (Attachment 5). A map of the CNDDB occurrences within 2 miles of the project study area is shown in Figure 1.

Special-status species include those species that are considered to be rare, threatened or endangered in California and elsewhere in their known range. For the purpose of this evaluation a species was considered to have special status if it met one or more of the following criteria:

- Currently listed as threatened or endangered under the federal ESA;
- Currently listed as rare, threatened, or endangered under the California ESA or the California Native Plant Protection Act;
- Proposed or candidate for listing as threatened or endangered under either the federal or state ESA;
- Included on the California Native Plant Society's (CNPS) list of rare, threatened or endangered plants of California; or
- Included as a Kern County species of interest in the West Mojave Plan (BLM 2005)

Plants

The initial database search resulted in a total of 24 species, of which six were considered to have at least some potential for occurrence in the project study area (Attachment 3). No special-status plant species were detected during the vegetation mapping. Following is a brief discussion of each of the six plant species, their habitat requirements and likelihood of occurrence in the project study area.

Alkali mariposa-lily (*Calochortus striatus*) CNPS 1B.2. Alkali mariposa lily is a perennial herb in the Lily family (Liliaceae) found in Kern, Los Angeles, San Bernardino and Tulare counties in southern California and in western Nevada at elevation generally between 200 and 5,000 feet. In Kern County It is generally found in moist alkali meadows and seeps associated with saltgrass (*Distichlis spicata*), creeping wildrye (*Leymus triticoides*), alkali sacaton (*Sporibilis airoides*), rushes (*Juncus* spp.) and spiny saltbush (*Atriplex spinifera*). It has also been reported to occur in ephemeral washes and Joshua tree woodland habitat at Edwards Air Force Base (CDFG 2009). The pale lavender to pinkish purple flowers typically bloom between April and early June. The nearest known occurrence is located on Edwards Air Force Base approximately 9 miles south of the project study area.

Barstow wooly sunflower (*Eriophyllum mohavense*) CNPS 1B.2. Barstow wooly sunflower is an annual herb in the sunflower family (Asteraceae) and is endemic to California. This species is found at elevations ranging form 1,600 to 3,200 feet in Fresno, Kern, Los Angeles and San Bernardino Counties. Clusters of yellow flowers bloom in April and May. It is typically associated with moist sites and playas in chenopod scrub, Mojave Desert Scrub and Joshua Tree Woodland habitats. The nearest known population is approximately 6.5 miles east of the project study area at the Hyundai test track site southwest of California City.

Charlotte's Phacelia (*Phacelia nashiana*) CNPS 1B.2. Charlotte's phacelia is a California endemic annual plant in the waterleaf family (Hydrophyllaceae). Showy blue flowers are generally present between March and June. This species is found in Inyo, Kern and Tulare Counties at elevations ranging from 1,900 to 7,200 feet. It occurs in Joshua Tree Woodland, Mojave Desert Scrub and Pinyon and Juniper Woodland habitats usually granitic, sandy soils. The nearest reported occurrence to the project study area is approximately 5.5 mile to the north east along a barren ridge approximately 4.5 miles southwest of Pine Tree Canyon.

Red Rock Poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*) CNPS 1B.2. Red rock poppy is an annual herb in the poppy family (Papaveraceae) that is endemic to California. This species is found at elevations ranging from 2,200 to 4,000 feet in Kern and San Bernardino Counties. The showy yellow flowers bloom between March and May. It is generally found in Mojave Desert Scrub habitats on loose sandy or gravelly soils. The nearest reported occurrences are approximately 9 miles southeast of the project study area, on Edwards Air Force Base and approximately 12 miles northeast of the project study area growing on the lower slope of Water Canyon.

Sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*) CNPS 2.2. Sagebrush loeflingia is an annual herb in the pink family (Caryophyllaceae). This species is widely distributed and is found in Inyo, Kern, Lassen, Los Angeles and San Bernardino Counties in California as well as in Nevada, Oregon and Wyoming. It is found in a variety of habitats including Desert Dunes, Great Basin Scrub, and Sonoran Desert Scrub, generally on open, loose sandy soils at elevations between 2,300 and 5,300 feet. In Kern County this species has been found in open sandy areas within creosote bush-Joshua tree and other mix Mojave scrub habitats. The nearest reported occurrence of this species is approximately 7.5 miles south of the project study area.

White pygmy –poppy (*Canbya candida*) CNPS 4.2. White pygmy poppy is an annual herb in the poppy family (Papaveraceae) that is endemic to California. This species is found in Imperial, Inyo, Kern, Los Angeles, and San Bernardino Counties at elevations ranging from approximately 1,900 to 5,000 feet. In Kern County this species is typically found in mixed Mojave scrub, saltbush scrub, juniper woodlands and Joshua Tree Woodlands, typically on sandy soils. Clusters of small white flowers bloom between March and June. There are 16 reported occurrences of this species in Kern County. The nearest record to the project study area is a 1934 collection from 2 miles north of Mojave.

Wildlife

Twenty-five special-status wildlife species with the potential to occur in the project vicinity were identified during the information review. Special-status wildlife species observed during the surveys included: the state and federal threatened desert tortoise (*Gopherus agasazii*) and the state species of special concern loggerhead shrike (*Lanius ludovicianus*). In addition, potentially suitable habitat was identified for three other special-status species: Mohave ground squirrel *(Spermophilus mohavensis),* burrowing owl (*Athene cunicularia*), and Le Conte's thrasher (*Toxostoma lecontei*). Following is a brief discussion of the wildlife species with potential to occur in the project study area.

American badger (*Taxidea taxus)* State Species of Special Concern. The American badger is a primarily nocturnal mammal found in a variety of open, arid, treeless habitats with friable

soils and plentiful rodent prey. This species inhabits burrows where young are born from March to late April. The nearest CNDDB occurrence of this species overlaps the southwest portion of the project study area. However, this record dates from 1925 and the species may no longer be present. One potential badger burrow was identified during the general wildlife assessment. Potentially suitable habitat is present on the project study area for this species.

Mohave Ground Squirrel (*Spermophilus mohavensis*), State Threatened. The Mohave ground squirrel occupies burrows in sandy to gravelly soils in open desert scrub, alkali scrub, Joshua Tree Woodlands, and annual grasslands of the Mojave Desert. The nearest CNDDB occurrence of this species is 0.88 mile south of the project study area and dates from 1987 (CNDDB 2009). The project study area is located near the extreme western edge of this species' range (Stewart 2005). A protocol-level survey for this species was conducted in portions of the project study area in 2006 (Vanderweg 2006). Although the species was not observed during these surveys, anecdotal reports suggest that it may still be present in low numbers. No Mohave ground squirrels were observed during wildlife surveys conducted between April 2007 and December 2008 (MHWA 2008).

San Joaquin pocket mouse (*Perognathus inornatus inornatus*) BLM sensitive. This species occurs in arid grasslands and open scrub in the Central and Salinas valleys at elevations ranging from 1,000 to 2,000 feet. This habitat is absent from the project study area. The nearest CNDDB occurrence is documented 0.84 mile southwest of the project study area (CNDDB 2009). This species was not observed during wildlife surveys conducted between April 2007 and December 2008 (MHWA 2008).

Tulare grasshopper mouse (*Onychomys torridus tularensis*) State Species of Special Concern, BLM sensitive. This species occurs in low, open scrub and semi-scrub habitats of the southern San Joaquin Valley south to the foothills of the Tehachapi Mountains at elevations ranging from 279 to 2,650 feet. However, the nearest CNDDB occurrence is documented 0.84 mile southwest of the Subarea at an elevation of 3,900 feet. This species was not observed during wildlife surveys conducted between April 2007 and December 2008 (MHWA 2008). Potentially suitable habitat for this species is present on the project study area.

Bat Species. There are 24 species of bats in California, of which 18 have ranges in or near the project study area (Bat Conservation International [BCI] 2006 in WEST 2009a). Of these, only nine species are likely to occur in the Tehachapi Pass area, and none of these are likely to occur in substantial concentrations (Bureau of Land Management [BLM] pers. comm. 2004 in WEST 2009a). Six species that are considered either a species of special concern by CDFG (CDFG 2009) or a BLM sensitive species have the potential to occur in the project area. Most of the bat species potentially occurring in the project study area are considered resident, non-migratory species. Acoustic monitoring is currently being conducted at the site.

Sensitive bat species with the potential to occur in the project area include:

- Pallid bat (*Antrozus pallidus*) BLM sensitive, State species of special concern
- Townsend's big-eared bat (*Corynorhinus townsendii*) BLM sensitive, State species of special concern
- California myotis (*Myotis californicus*) BLM sensitive

- California leaf-nosed bat (*Macrotus californicus*), BLM sensitive, State species of special concern
- Big brown bat (*Eptesicus fuscus*) BLM sensitive
- Western pipistrelle (*Pipistrellus hesperus*) BLM sensitive

Burrowing Owl (*Athene cunicularia*) State Species of Special Concern, BLM Sensitive. This species is typically associated with open desert habitat similar to that of desert tortoise and Mohave ground squirrel. No potential burrows for this species and no burrowing owls were identified during the general wildlife habitat survey; however, the species was documented in the project study area incidentally during non-protocol desert tortoise surveys conducted by M.H. Wolfe and Associates (MHWA) in 2007 as well as during bat acoustics surveys in 2008 (MHWA 2007a and 2007b). The CNDDB had no record of this species within the site vicinity. Suitable open habitat is present.

California Condor (*Gymnogyps californianus*) Federal and State Endangered, Fully Protected. The California condor is the largest flying bird in North America. It forages in open grassland areas and nests in habitats ranging from chaparral to forested montane regions. After reaching a population low of 22 wild birds in 1982, a recovery program was implemented in 1987 and as of 2008 the total population in the world is 320, with 80 wild birds in California.

There are no CNDDB occurrences of this species within the project vicinity, but one condor was observed approximately 25 miles southwest of the project study area. This species was not observed during wildlife surveys conducted by MHWA (2008) for CPC East, CPC Proper or Ward or by WEST (2009b) in the Sun Creek project area. The Mojave Desert is out of the historical range of this species and any birds that may occur in the area would likely be migrants.

Ferruginous Hawk (*Buteo regalis*) BLM Sensitive. The ferruginous hawk is found in arid and semi-arid grasslands of North America. The project is not within the nesting range for this hawk. This species is a winter migrant in the Mojave Desert and is not expected to nest in the project study area. There are no CNDDB occurrences within the project vicinity and none were observed during surveys conducted by MHWA (2008) and WEST (2009b), although suitable wintering habitat is present.

Prairie falcon (*Falco mexicanus*) State Watch List, BLM sensitive. Prairie falcons inhabit open, arid habitats including grasslands, desert steppe, and canyons. They require cliffs or other structures for nesting. The species was not observed during the general wildlife assessment; however, one individual of this species was observed at the project study area during wildlife surveys conducted from April 2007 to December 2008 (MHWA 2008). In addition, the CNDDB documents its occurrence 1.6 miles west of the project study area. Potentially suitable foraging habitat is present at the project study area for this species.

Le Conte's Thrasher (*Toxostoma lecontei*) State Species of Special Concern, BLM Sensitive. Le Conte's Thrasher inhabits desert flats, washes and alluvial fans with sandy and/or alkaline soil and scattered shrubs. The nest typically is placed in a cactus, thorny shrub, or small tree, chosen to offer protection from predators and sun. Creosote bush does not provide the structure necessary for nest placement. The CNDDB had several records of this species

within the site vicinity. The nearest CNDDB occurrence was located approximately 3.75 miles southwest of the project study area. This species was not observed during the general wildlife habitat survey; however, several Le Conte's thrashers were observed on the project study area during wildlife surveys conducted from April 2007 to December 2008(MHWA 2008) and also during studies conducted by WEST in 2009.

Loggerhead shrike (*Lanius ludovicianus*) State Species of Special Concern, BLM Sensitive. Loggerhead shrikes inhabit open terrain with suitable perching sites including fence posts, transmission lines, and barbed wire fences from which they hunt large insects, reptiles, small mammals, and small birds. Nests are hidden in large clumps of shrubs or low trees and are often located in the transition zone between two habitat types. The CNDDB had no record of this species within the site vicinity. Two loggerhead shrikes were identified during the general wildlife habitat survey and several individuals of this species were observed on the project study area during wildlife surveys conducted by from April 2007 to December 2008 (MHWA 2008) and also during studies conducted by WEST in 2009. Suitable nesting and foraging habitat is present at the project study area for this species.

Desert Tortoise (*Gopherus agassizii*) Federal and State Threatened. The desert tortoise is native to the Mojave Desert and Sonoran Desert of the southwestern United States and northern Mexico. They are frequently found in alluvial fans, washes, and canyons in the Mojave Desert and spend at least 95 percent of its life in burrows. The nearest CNDDB occurrence of this species is approximately 0.44 mile north of the project study area. Six tortoise occurrences were documented within the project study area boundaries during protocol-level surveys in the project study area conducted during the spring of 2009. While the USFWS has designated critical habitat for this species, the project study area does not lie within the designated critical habitat area. The nearest critical habitat unit is located approximately 22 miles northeast of the project study area (USFWS 2009b).

Surveys In Progress or Already Completed

The following surveys are either in progress or have already been completed.

Completed Surveys

- Protocol-level desert tortoise surveys (completed in the spring of 2009 by Sundance Biological).

Surveys in Progress

- Avian use surveys (WEST, Inc.)
- Bat acoustics study (WEST, Inc.)

Recommendations for Additional Surveys

Based on the results of the spring 2009 vegetation mapping and general wildlife assessment, the following resource surveys are recommended to support project permitting:

- Protocol-level rare plant surveys

- Protocol-level Mohave ground squirrel surveys. These surveys are recommended because the survey results are valid only for one year and only a portion of the site was trapped.
- Raptor aerial nest surveys

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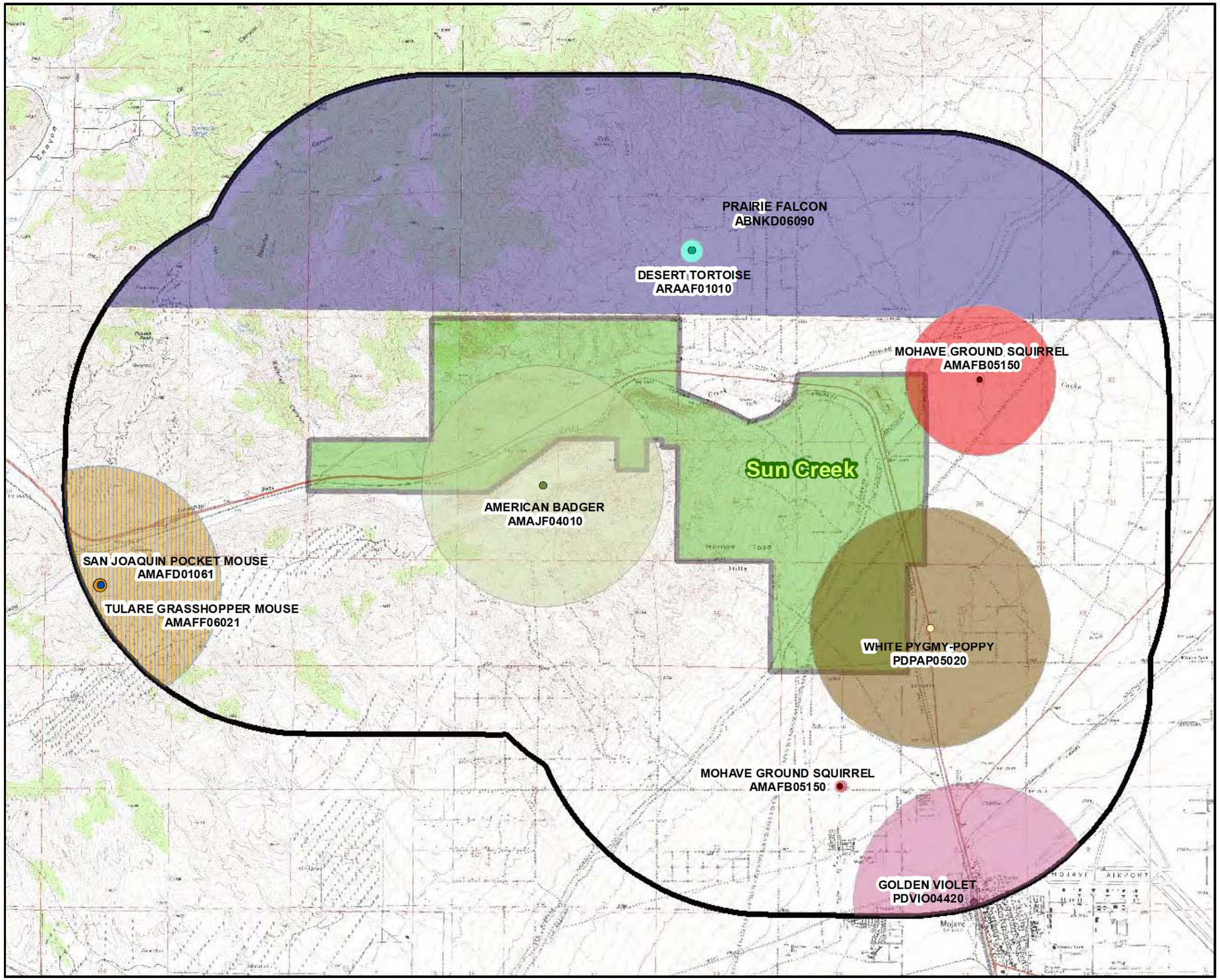
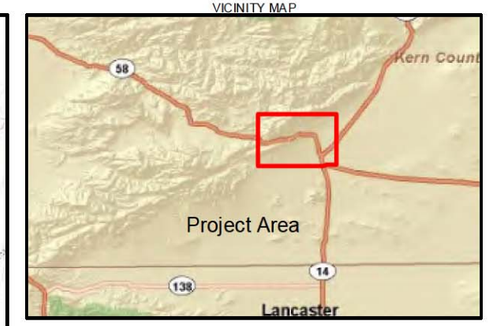


VICINITY MAP



LEGEND

- Tulare grasshopper mouse
- San Joaquin pocket mouse
- American badger
- Mohave ground squirrel
- desert tortoise
- golden violet
- white pygmy-poppy

- Tulare grasshopper mouse
- San Joaquin pocket mouse
- American badger
- Mohave ground squirrel
- desert tortoise
- golden violet
- prairie falcon
- white pygmy-poppy

Project Boundary

- Sun Creek
- Sun Creek 2 Mile Buffer

Notes:
1. A rea of interest subject to change.
2.

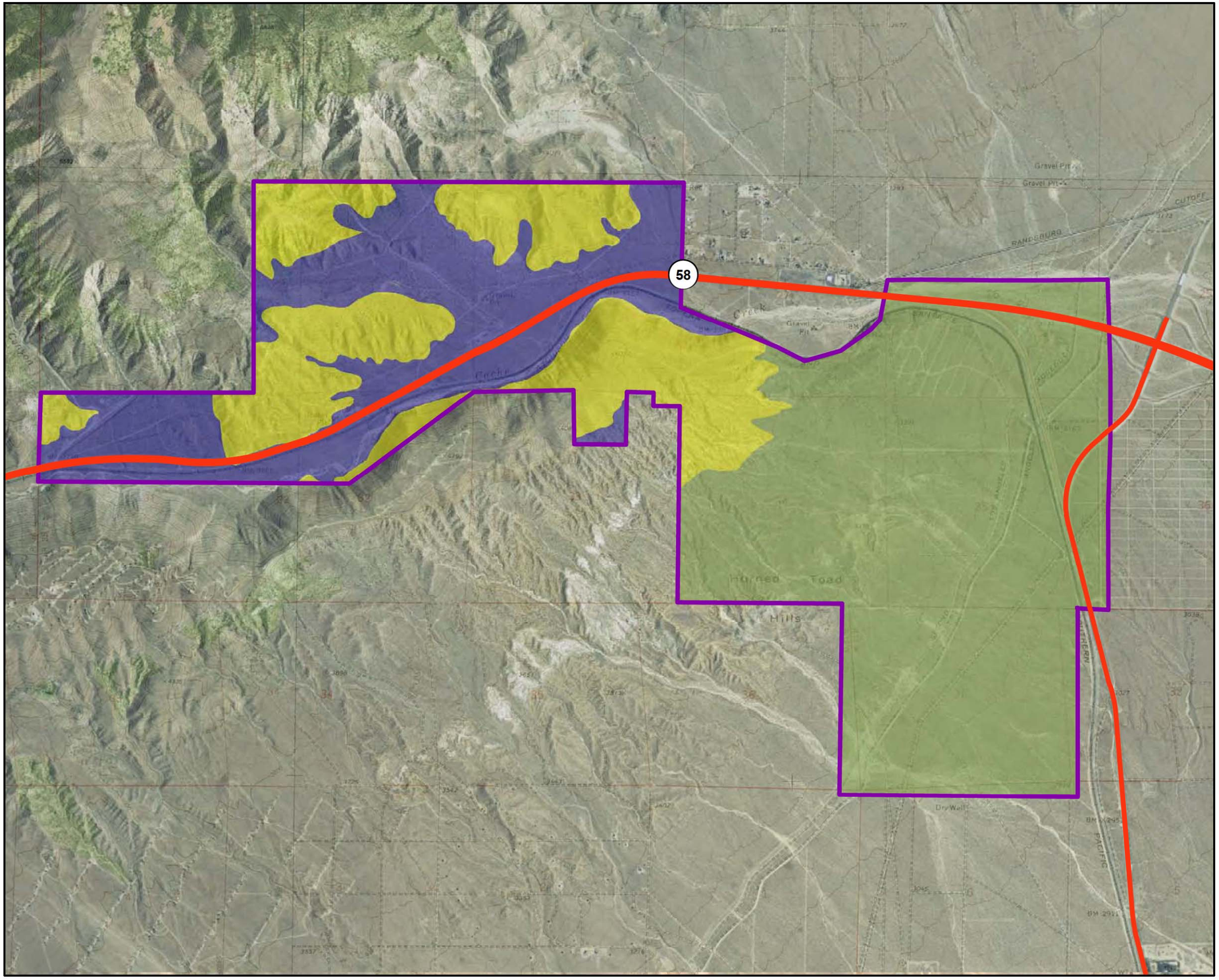
N

0 0.5 1
Miles

FIGURE 1
California Natural Diversity Datab ase (CNDDB)
Sun Creek
Alta Wind Center

SCO \\GALT\PROJ\TERRAGEN\387639AltaWindCenter\MapFiles\AltaWindCenter\SunCreek\SunCreek_CNDDB_11X17.MXD

CH2MHILL



VICINITY MAP

LEGEND

Vegetation Community Type

- Mojave Mixed Woody Scrub
- Creosote Bush Scrub
- California Buckwheat Scrub
- Project Study Area
- Highway

N

0 1,250 2,500 5,000
Feet

FIGURE 2
Vegetation Communities
Sun Creek
Alta Wind Center Project

CH2MHILL

Attachment 1
CNPS Species List

ATTACHMENT 1
CNPS Species List

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	CNPS STATUS	FLOWERING PERIOD
Allium shevockii	Spanish Needle onion			List 1B.3	May-Jun
Astragalus hornii var. hornii	Horn's milk-vetch			List 1B.1	May-Oct
Astragalus leucolobus	Big Bear Valley woollypod			List 1B.2	May-Jul
California macrophylla	round-leaved filaree			List 1B.1	Mar-May
Calochortus palmeri var. palmeri	Palmer's mariposa lily			List 1B.2	Apr-Jul
Calochortus striatus	alkali mariposa lily			List 1B.2	Apr-Jun
Eriastrum tracyi	Tracy's eriastrum		Rare	List 1B.2	Jun-Jul
Eriogonum kennedyi var. pinicola	Kern buckwheat			List 1B.1	May-Jun
Eriophyllum mohavense	Barstow woolly sunflower			List 1B.2	Apr-May
Eschscholzia procera	Kernville poppy			List 3	Jun-Jul(Aug)
Fritillaria brandegeei	Greenhorn fritillary			List 1B.3	Apr-Jun
Lasthenia glabrata ssp. coulteri	Coulter's goldfields			List 1B.1	Feb-Jun
Layia heterotricha	pale-yellow layia			List 1B.1	Mar-Jun
Loeflingia squarrosa var. artemisiarum	sagebrush loeflingia			List 2.2	Apr-May
Mimulus pictus	calico monkeyflower			List 1B.2	Mar-May
Monardella linoides ssp. oblonga	Tehachapi monardella			List 1B.3	Jun-Aug
Navarretia peninsularis	Baja navarretia			List 1B.2	Jun-Aug
Navarretia setiloba	Piute Mountains navarretia			List 1B.1	Apr-Jul
Orthotrichum spjutii	Spjut's bristle moss			List 1B.3	
Phacelia nashiana	Charlotte's phacelia			List 1B.2	Mar-Jun
Streptanthus cordatus var. piutensis	Piute Mountains jewel-flower			List 1B.2	May-Jul
Viola aurea	golden violet			List 2.2	Apr-Jun

ATTORNEY WORK PRODUCT – PRIVILEGED AND CONFIDENTIAL

Attachment 2
USFWS Species List for Kern County

Ventura Fish & Wildlife Office
California/Nevada Regional Office
United States Department of the Interior
FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

Federally Listed Threatened & Endangered Species
Which May Occur In Kern County, CA

Bird

California Condor	Gymnogyps californianus	E , CH
Least Bell's Vireo	Vireo bellii pusillus	E
Southwestern Willow Flycatcher	Empidonax trallii extimus	E
Yellow-Billed Cuckoo	Coccyzus americanus	C

Reptile

Desert Tortoise	Gopherus agassizzii	T , CH

E - Endangered	T - Threatened	CH - Critical habitat
PE - Taxa proposed for listing as endangered	PT - Taxa proposed for listing as threatened	PCH - Critical habitat which has been proposed

**** DISCLAIMER NOTICE - The information provided on this page should not be considered an OFFICIAL species list. If you have a proposed project and are in need of an official species list, please mail a detailed request to the address listed at the top of the page. ****

Attachment 3
Plant Species Observed in the Sun Creek Subarea During the Vegetation Mapping and General Wildlife Assessment

ATTACHMENT 3
Plant Species Observed in the Sun Creek Subarea During the Vegetation Mapping and General Wildlife Assessment

Common Name	Scientific Name
Trees	
California juniper	*Juniperus californica*
Cacti and Yucca	
Beavertail cactus	*Opuntia basilaris*
Buckhorn cholla	*O. acanthocarpa*
Chaparral yucca	*Y. whipplei*
Joshua tree	*Yucca brevifolia*
Shrubs	
Bladderpod	*Isomeris arborea*
Box thorn	*Lycium* sp.
Brittlebush	*Encelia farinosa*
California buckwheat	*Eriogonum faciculatum*
California ephedra	*Ephedra californica*
Cheesebush	*Hymenoclea salsola*
Creosote bush	*Larrea tridentata*
Narrow-leaf goldenbush	*Ericameria linearifolia*
Pygmy-cedar	*Peucephyllum schottii*
Rabbitbrush	*Chrysothamnus* spp.
Spiny hop-sage	*Grayia spinosa*
White bursage	*Ambrosia dumosa*
Winterfat	*Krascheninnikovia lanata*
Herbs	
Big galleta grass	*Pleuraphis rigida*
Brittle spineflower	*Chorizanthe brevicornu*
Cheat grass	*Bromus tectorum*
Chia	*Salvia columbariae*
Desert trumpet	*Eriogonum inflatum*
Fiddleneck	*Amsinckia tessellate*
Filaree	*Erodium cicutarium*
Gilia	*Gilia* sp.
Mallow	*Sphaeralcea spp.*

ATTACHMENT 3

Plant Species Observed in the Sun Creek Subarea During the Vegetation Mapping and General Wildlife Assessment

Common Name	Scientific Name
Mediterranean grass	*Schismus barbatus*
Mojave aster	*Xylorhiza tortifolia*
Penstemon	*Penstemon* spp.
Phacelia	*Phacelia* spp.
Primrose	*Camissonia spp.*
Purple sage	*Salvia dorii*
Red brome	*Bromus madritensis ssp. rubens*

Attachment 4
Wildlife Species Observed in the Sun Creek Subarea During the Vegetation Mapping and General Wildlife Assessment

ATTACHMENT 4
Wildlife Species Observed in the Sun Creek Subarea During the Vegetation Mapping and General Wildlife Assessment

Common Name	Scientific Name
Mammals	
Black-tailed jackrabbit	*Lepus californicus*
California ground squirrel	*Spermophilus beecheyi*
Cottontail	*Sylvilagus* sp.
Coyote	*Canis latrans*
Desert woodrat	*Neotoma lipida*
Grasshopper mouse	*Onychomys sp.*
Kangaroo rat	*Dipodomys deserti*
White-tailed antelope squirrel	*Ammospermophilus leucurus*
Birds	
American crow	*C. corax*
Ash-throated flycatcher	*Myiarchus cinerascens*
Black phoebe	*Sayornis nigricans*
Black-throated sparrow	*Amphispiza bilineata*
California quail	*Callipepla californica*
Common raven	*Corvus brachyrhynchos*
Horned lark	*Eremophila alpestris*
Lark sparrow	*Chondestes grammicus*
Loggerhead shrike (CDFG species of special concern)	*Lanius ludovicianus*
Mourning dove	*Zenaida macroura*
Western kingbird	*Tyrannus verticalis*
Western meadowlark	*Sturnella neglecta*
Western scrub jay	*Amphelocoma californica*
Reptiles	
Desert horned lizard	*Phrynosoma platyrhinos*
Desert iguana	*Dipsosaurus dorsalis*
Desert tortoise (federal and state threatened)	*Gopherus agasazii*
Great Basin whiptail	*Aspidoscelis tigris tigris*
Long-nosed leopard lizard	*Gambelia wislizenii*
Pacific gopher snake	*Pituophis catenifer catenifer*
Red coachwhip	*Masticophis flagellum piceus*

ATTACHMENT 4
Wildlife Species Observed in the Sun Creek Subarea During the Vegetation Mapping and General Wildlife Assessment

Common Name	Scientific Name
Side-blotch lizard	*Uta stansburiana*
Zebra-tailed lizard	*Callisaurus draconoides*

Attachment 5
Special Status Species that Occur or Potentially Occur within 2 Miles of the Alta Wind Center Sun Creek Subarea

ATTACHMENT 5

Special Status Species that Occur or Potentially Occur within 2 Miles of the Alta Wind Center Sun Creek Subarea

Species	Federal Status	State Status / CNPS List	Occurrence within 2 miles of Project study area / Comments
Mammals			
American badger *Taxidea taxus*	--	SC	Yes. Nearest documented occurrence (1925 record) overlaps southwest portion of Subarea. Moderate potential to occur in the project study area.
Mohave ground squirrel *Spermophilus mohavensis*	--	T	Yes. Nearest occurrence overlaps northeast portion of Subarea. Species is also documented 0.88 mile south of Subarea (CNDDB 2009). None found during trapping conducted in eastern portion of Subarea in 2006. Moderate potential to occur in the project study area.
Yellow-eared pocket mouse *Perognathus xanthonotus*	BLM	--	No. The project study area is out of the range of this species (CA Gap Analysis Project http://depts.washington.edu/ natmap/maps/CA_maphtml/m090.html)
San Joaquin pocket mouse *Perognathus inornatus inornatus*	BLM	--	Yes. Nearest occurrence documented 0.84 mile southwest of Subarea.
Tulare grasshopper mouse *Onychomys torridus tularensis*	BLM	SC	Yes. Nearest occurrence documented 0.84 mile southwest of Subarea.
Pallid bat *Antrozus pallidus*	BLM	SC	No. Suitable habitat is present for this species. Moderate potential to occur.
Townsend's big-eared bat *Corynorhinus townsendii*	BLM	SC	No. Suitable habitat is present for this species. Moderate potential to occur.
California myotis *Myotis californicus*	BLM	--	No. Suitable habitat is present for this species. Moderate potential to occur.
California leaf-nosed bat *Macrotus californicus*	BLM	SC	No. Suitable habitat is present for this species. Moderate potential to occur.
Big brown bat *Eptesicus fuscus*	BLM	--	No. Suitable habitat is present for this species. Moderate potential to occur.
Western pipistrelle *Pipistrellus Hesperus*	BLM	--	No. Suitable habitat is present for this species. Moderate potential to occur.
Birds			
Western snowy plover *Charadrius alexandrinus nivosus*	T, CH; BLM	SC	No. prefers sandy beaches and dunes. No suitable habitat present.
California condor *Gymnogyps californianus*	E, CH	E, FP	No. The closest known occurrence is approximately 25 miles away. Mojave Desert is not within the historical range of the species. Low potential to occur.
Ferruginous hawk *Buteo regalis*	BLM	WL	No. Winter migrant in the Mojave Desert. Moderate potential to occur.

ATTACHMENT 5
Special Status Species that Occur or Potentially Occur within 2 Miles of the Alta Wind Center Sun Creek Subarea

Species	Federal Status	State Status / CNPS List	Occurrence within 2 miles of Project study area / Comments
Prairie falcon *Falco mexicanus*	BLM	WL	Yes. Documented during 2007 avian surveys. Nearest CNDDB occurrence occurs adjacent to northern boundary of Subarea. Known to occur in the project study area.
Burrowing owl *Athene cunicularia*	BLM	SC	Yes. Documented during 2007 desert tortoise and 2008 bat surveys. Potential burrows also identified during 2007 tortoise surveys. Nearest CNDDB occurrence ~4 miles away. Known to occur in the project study area.
Long-eared owl *Asio otus*	BLM	SC	No. Found in riparian areas. No suitable habitat present.
Least Bell's vireo *Vireo belli pusillus*	E, CH	E	No Prefers riparian areas. No suitable habitat present.
Gray vireo *V. vicinior*	BLM	SC	No. Found in chaparral or pinyon-juniper woodland. No suitable habitat present.
Loggerhead shrike *Lanius ludovicianus*	--	SC	Yes. Documented during 2007 avian surveys and during spring 2009 general habitat survey. Known to occur in the project study area.
Yellow-billed cuckoo *Coccyzus americanus*	C	E	No. No suitable habitat present.
Le Conte's thrasher *Toxostoma lecontei*	BLM	SC	Yes. Documented during 2007, 2008 and 2009 avian surveys. Nearest CNDDB occurrence ~ 3.75 miles away. Known to occur in the project study area.
Southwestern willow flycatcher *Empidonax trailli extimus*	E, CH	--	No. Prefers riparian areas. No suitable habitat present.
Amphibians and Reptiles			
Desert tortoise *Gopherus agassizzii*	T , CH	T	Yes. Documented in Subarea during spring 2009 general habitat survey. Nearest CNDDB documented occurrence 0.44 mile north of Subarea. Five identified in Subarea during spring 2009 protocol surveys. Known to occur in the project study area.
Southwestern pond turtle *Actinemys marmorata pallida*	BLM	SC	No. No suitable habitat present.
Plants			
Alkali mariposa lily *Calochortus striatus*	BLM	1B.2	No. Low potential to occur.
White pygmy-poppy	--	4.2	Yes. Nearest documented occurrence (1935 record) overlaps southeast portion of

ATTACHMENT 5

Special Status Species that Occur or Potentially Occur within 2 Miles of the Alta Wind Center Sun Creek Subarea

Species	Federal Status	State Status / CNPS List	Occurrence within 2 miles of Project study area / Comments
Canbya candida			subarea. Moderate potential to occur.
Barstow woolly sunflower *Eriophyllum mohavense*	BLM	1B.2	No. Low potential to occur.
Red Rock poppy *Eschscholzia minutiflora* ssp. *twisselmannii*	BLM	1B.2	No. High potential to occur.
Sagebrush loeflingia Loeflingia squarrosa var. Artemisiarum	BLM	2.2	No. Moderate potential to occur.
Charlotte's phacelia *Phacelia nashiana*	BLM	1B.2	No. Moderate potential to occur.

-- = No status

Regulatory Status

Federal Status:

T Listed as Threatened by the USFWS
E Listed as Endangered by the USFWS
C Listed as being a Candidate Species by the USFWS
CH Critical Habitat has been designated
BLM Designated as BLM Sensitive

State Status:

E Listed as Endangered by the CDFG
T Listed as Threatened by the CDFG
SC CDFG Species of Special Concern
SR CDFG Rare
FP CDFG Fully Protected Species
WL CDFG Watch List Species

California Native Plant Society (CNPS) List:

1A Plants presumed extinct in California
1B Plants rare, threatened, or endangered in California and elsewhere
2 Plants rare, threatened, or endangered in California, but more common elsewhere
3 Plants about which we need more information - a review list
4 Plants of limited distribution - a watch list

Appendix D-3

Avian Baseline Studies 2010

Avian Baseline Studies at the Sun Creek Wind Resource Area Kern County, California

Final Report
May 2009 – May 2010

Prepared for:

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WEST, Inc.

September 30, 2010

EXECUTIVE SUMMARY

Alta Windpower Development, LLC has proposed a wind-energy facility in Kern County, California, known as the Sun Creek Wind Resource Area. CH2M HILL contracted Western EcoSystems Technology, Inc. to conduct surveys and monitor avian resources in the Sun Creek Wind Resource Area to estimate the impacts of facility construction and operation on birds. The following document presents results of fixed-point bird use surveys, raptor nest surveys, and incidental wildlife observations.

The principal objectives of the study were to: 1) provide site-specific avian resource and use data that would be useful in evaluating potential impacts from the proposed wind-energy facility, 2) provide information that could be used in project planning and design of the facility to minimize impacts to birds, and 3) recommend further studies or potential mitigation measures, if warranted.

The objective of the fixed-point bird use surveys was to estimate the seasonal, spatial, and temporal use of the Sun Creek Wind Resource Area by birds, particularly raptors. Bird use surveys were conducted from May 11, 2009, through May 6, 2010, at six points established throughout the Sun Creek Wind Resource Area. Sixty-one unique bird species were identified over the course of 311 30-minute surveys, representing 2,581 individuals within 1,044 groups. A total of 43 raptors were observed, representing six species.

Bird use by species was calculated as the mean number of birds per 30-minute survey. Among large birds, common raven had the highest use of any other species across all seasons (spring 1.56 birds/plot/30-minute survey; summer, 0.44; fall, 1.29; and winter, 0.89). Waterbird use was recorded only during spring (0.73 birds/plot/30-minute survey), while vultures use was recorded during spring (1.04) and fall (0.23). Raptor use was highest during the winter (0.20 birds/plot/30-minute survey) and lowest during the summer (0.10). A total of 43 individual raptors, representing six unique species, were observed during surveys, with red-tailed hawk and golden eagle being the most commonly observed raptor species. Use by passerines was higher in winter (7.26 birds/plot/30-minute survey) and spring (7.07), compared to fall (5.23) and summer (2.28). However small bird observations were limited to a 100-m viewshed, thus use estimates for small birds are not directly comparable to use estimates for large bird types.

During the study, 220 groups of large birds totaling 559 individuals were observed flying during fixed-point bird use surveys. For all large bird species combined, 57.6% of flying birds were observed below the likely rotor-swept height, 22.7% were flying within the rotor-swept height, and 19.7% were above the rotor-swept height for typical turbines that could be used in the Sun Creek Wind Resource Area. Bird types most often observed flying within the turbine rotor-swept height were vultures (58.3%) and raptors (23.1%). For small birds, 423 groups totaling 1,339 individuals were recorded flying within the 100-m viewsheds. The majority of flying passerines (94.4%) were observed below the rotor-swept heights, and the remaining 5.6% were observed flying within the rotor-swept height.

A relative exposure index was calculated for each bird species based on initial flight height observations and relative abundance (defined as the use estimate). Turkey vulture and common raven had the highest exposure indices of any large bird species (0.19 and 0.16, respectively). All other large bird species had an exposure index of 0.02 or less. The only raptor species with exposure indices greater than zero were golden eagle (0.02) and red-tailed hawk (0.01). Of the small bird species, house finch has the highest exposure index (0.12), followed by horned lark (0.08). All other small bird species had exposure indices of 0.01 or less.

Levels of bird use varied within the study area by point. For all large bird species combined, use was highest at point three (2.98 birds/30-minute survey), with use ranging from 1.27 to 2.41 at other points. Relatively high large bird use at point three was primarily due to higher use by vultures (1.98 birds/30-minute survey) at this point. Raptor use was highest at points four, five, and six, and was comprised primarily of use by buteos and eagles. Passerine use was highest at point one (9.40 birds/30-minute survey), with use ranging from 3.38 to 7.15 at the remaining points.

The annual mean raptor use estimate (number of raptors divided by the number of plots and the total number of surveys) in the Sun Creek Wind Resource Area was compared to mean raptor use estimates from 39 other studies that implemented similar protocols to the present study and had data for three or four different seasons. Based on fixed-point bird use data collected at the Sun Creek Wind Resource Area, mean annual raptor use was 0.09 raptors/plot/20-minute survey, ranking second lowest compared to raptor use at the other wind resource areas.

A regression analysis of raptor use and raptor collision mortality for 13 new-generation wind-energy facilities where similar methods were used to obtain raptor use estimates showed a significant (R^2 = 69.9%) correlation between raptor use and raptor collision mortality. Using this regression to predict raptor collision mortality the Sun Creek Wind Resource Area yields an estimated fatality rate of less than 0.01 fatalities/megawatt/year, or less than one raptor per year for each 100-megawatt of wind-energy development. However, the 90% prediction interval may provide a more realistic estimate of potential raptor mortality. Based on this prediction interval, up to 19 raptor fatalities per 100 megawatts per year could occur within the Sun Creek Wind Resource Area. Based on species composition of the most common raptor fatalities at other western wind-energy facilities and species composition of raptors observed at the Sun Creek Wind Resource Area during the surveys, the majority of the fatalities of diurnal raptors will likely consist of red-tailed hawks. Based on the seasonal use estimates, it is expected that risk to raptors would be unequal across seasons, with higher risk during the winter and relatively low risk during other times of the year.

Aerial raptor nest surveys were conducted via helicopter on April 13 and May 24, 2010 at the Sun Creek Wind Resource Area. The survey area for golden eagle nests included all eagle nesting habitat within a 10-mile buffer of the Sun Creek Wind Resource Area, while the survey area for all other raptor and large bird nests included a two-mile buffer. One active golden eagle nest was observed on a cliff ledge approximately three miles from the northwestern boundary of the Sun Creek Wind Resource Area, and a second active golden eagle nest was observed in a gray pine approximately one mile outside of the western edge of the 10-mile buffer. No active raptor nests were located within the boundary of the Sun Creek Wind Resource Area, or within

the surrounding two-mile buffer of the study area. However, nine inactive nests, and a single active common raven nests were identified within two miles of the study area. While conducting surveys for golden eagles within the 10-mile buffer of the Sun Creek Wind Resource Area, and over the course of other fieldwork conducted during the spring of 2010, a number of active raptor nests were identified in the region including two active red-tailed hawk nests, and three active great horned owl nests. Additionally, seven active common raven nests and 23 inactive nests were identified within 10-miles of the Sun Creek Wind Resource Area.

Some species considered to be sensitive or of conservation concern were observed within the Sun Creek Wind Resource Area. During all surveys and incidental observations, one state and federal threatened species, desert tortoise (one individual), was observed incidentally in the study area. Five additional state sensitive bird species were recorded including four California species of special concern (loggerhead shrike, Vaux's swift, northern harrier, and burrowing owl) and one state fully-protected species (golden eagle). This is a tally that in some cases represents repeated observations of the same individual. Loggerhead shrikes and burrowing owls are also considered federal species of concern, golden eagles are further protected under the Federal Bald and Golden Eagle Protection Act, and the others are protected under the Migratory Bird Treaty Act.

STUDY PARTICIPANTS

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REPORT REFERENCE

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TABLE OF CONTENTS

EXECUTIVE SUMMARY i
INTRODUCTION 1
STUDY AREA 1
METHODS 2
Fixed-Point Bird Use Surveys 2
Survey Plots 2
Survey Methods 2
Observation Schedule 3
Raptor Nest Survey 3
Survey Methods 3
Incidental Wildlife Observations 4
Statistical Analysis 4
Quality Assurance and Quality Control 4
Data Compilation and Storage 4
Fixed-Point Bird Use Surveys 4
Bird Diversity and Species Richness 4
Bird Use, Percent Composition, and Frequency of Occurrence 5
Bird Flight Height and Behavior 5
Bird Exposure Index 5
Spatial Use 5
RESULTS 5
Fixed-Point Bird Use Surveys 6
Bird Diversity and Species Richness 6
Bird Use, Percent Composition, and Frequency of Occurrence 6
Waterbirds 6
Raptors 6
Vultures 7
Upland Game Birds 7
Large Corvids 7
Greater Roadrunners 7
Passerines 7
Swifts and Hummingbirds 8
Woodpeckers 8
Bird Flight Height and Behavior 8
Bird Exposure Index 9
Spatial Use 9
Sensitive Species Observations 9
Raptor Nest Surveys 10
Golden Eagle Nests 10
Other Raptor Nests 10
Incidental Wildlife Observations 10

DISCUSSION AND IMPACT ASSESSMENT 11
Bird Impacts 11
Direct Effects 11
Raptor Use and Exposure Risk 11
Non-Raptor Use and Exposure Risk 13
Sensitive Species Use and Exposure Risk 14
Indirect Effects 14
CONCLUSIONS AND RECOMMENDATIONS 15
REFERENCES 16

LIST OF TABLES

Table 1. The land cover types, coverage, and composition within the Sun Creek Wind Resource Area. 25

Table 2. Summary of species richness (species/plot[a]/30-min survey) and sample size, by season and overall, during the fixed-point bird use surveys at the Sun Creek Wind Resource Area, May 11, 2009, to May 6, 2010. 26

Table 3. Summary of individuals (# obs) and group observations (# grps), by bird type or species, for fixed-point bird use surveys at the Sun Creek Wind Resource Area[a], May 11, 2009, to May 6, 2010. 27

Table 4a. Mean bird use (number of birds/800-meter plot/30-minunte survey), percent of total composition (%), and frequency of occurrence (%) for each large bird type and species by season during the fixed-point bird use surveys at the Sun Creek Wind Resource Area, May 11, 2009, to May 6, 2010. 30

Table 4b. Mean bird use (number of birds/100-meter plot/30-minute survey), percent of total composition (%), and frequency of occurrence (%) for each small bird type and species by season during the fixed-point bird use surveys at the Sun Creek Wind Resource Area, May 11, 2009, to May 6, 2010. 32

Table 5. Flight height characteristics by bird type during fixed-point bird use surveys at the Sun Creek Wind Resource Area, May 11, 2009, to May 6, 2010. Large bird observations were limited to within an 800-meter (m) radius and small bird observations were limited to within a 100-m radius. 34

Table 6a. Relative exposure index and flight characteristics for large bird species during the fixed-point bird use surveys at the Sun Creek Wind Resource Area, May 11, 2009, to May 6, 2010. 35

Table 6b. Relative exposure index and flight characteristics for small bird species during the fixed-point bird use surveys at the Sun Creek Wind Resource Area, May 11, 2009, to May 6, 2010. 36

Table 7. Summary of sensitive species observed at the Sun Creek Wind Resource Area during fixed-point bird use surveys (FP) and as incidental wildlife observations (Inc.) from May 11, 2009, to May 6, 2010. 38

Table 8. Comparison of raptor use estimates and raptor mortality between the Sun Creek Wind Resource Area and other wind-energy facilities in North America. 39

LIST OF FIGURES

Figure 1. Overview of the Sun Creek Wind Resource Area. 41

Figure 2. Location of the Sun Creek Wind Resource Area. 42

Figure 3. The land cover types and coverage within the Sun Creek Wind Resource Area (USGS NLCD 2001). 43

Figure 4. Fixed-point bird use survey points at the Sun Creek Wind Resource Area. 44

Figure 5. Mean bird use (number of birds/30-minute survey) at each fixed-point bird use point for all birds, major bird types, and raptor subtypes at the Sun Creek Wind Resource Area. 45

Figure 6a. Spatial use by flight paths of waterbirds at the Sun Creek Wind Resource Area. 53

Figure 6b. Spatial use by flight paths of accipiters at the Sun Creek Wind Resource Area. 54

Figure 6c. Spatial use by flight paths of buteos at the Sun Creek Wind Resource Area. 55

Figure 6d. Spatial use by flight paths of miscellaneous raptors at the Sun Creek Wind Resource Area. 56

Figure 6e. Spatial use by flight paths of vultures at the Sun Creek Wind Resource Area. 57

Figure 7. Location of raptor nests at the Sun Creek Wind Resource Area. 58

Figure 8. Locations of sensitive species observed incidentally within the Sun Creek Wind Resource Area. 59

Figure 9. Comparison of annual raptor use between the Sun Creek Wind Resource Area and other wind-energy facilities in the United States. 60

Figure 10. Regression analysis comparing raptor use estimations versus estimated raptor mortality. 61

INTRODUCTION

Alta Windpower Development, LLC has proposed a wind-energy facility in Kern County, California (Figures 1 and 2). CH2M HILL contracted Western EcoSystems Technology, Inc. (WEST) to conduct surveys and monitor avian resources in the Sun Creek Wind Resource Area (SCWRA) to estimate the impacts of wind-energy facility construction and operation on birds.

The principal objectives of the study were to: 1) provide site-specific avian resource and use data that would be useful in evaluating potential impacts from the proposed wind-energy facility; 2) provide information that could be used in project planning and design of the facility to minimize impacts to birds; and 3) recommend further studies or potential mitigation measures, if warranted. The protocols for the baseline study are similar to those used at other studies in California and throughout the western US with modifications to accommodate site-specific characteristics of the SCWRA. Additionally, the protocols follow guidance of the California Wind Energy Guidelines (CEC and CDFG 2007) and the National Wind Coordinating Collaborative (NWCC; Anderson et al. 1999), and are based on WEST's experience studying wildlife at proposed wind-energy facilities throughout the US.

Baseline surveys were conducted from May 11, 2009, through May 6, 2010, at the SCWRA, and consisted of fixed-point bird use surveys, aerial raptor nest surveys, and incidental wildlife observations. Acoustic bat surveys were also conducted at the SCWRA, and will be presented in a separate report. In addition to site-specific data, this report presents existing information and results of studies conducted at other wind-energy facilities. The ability to estimate potential avian mortality at the proposed SCWRA is greatly enhanced by operational monitoring data collected at existing facilities. For several wind-energy facilities, standardized data on fixed-point bird use surveys were collected in association with standardized post-construction (operational) monitoring, allowing comparisons of bird use with bird mortality. Where possible, comparisons with regional and local studies were made.

STUDY AREA

The proposed SCWRA is located in southeastern Kern County, approximately two miles (3.2 kilometers [km]) north-northwest of the unincorporated city of Mojave and 10 miles (16 km) east of the city of Tehachapi (Figure 1). The study area is comprised of undeveloped rangeland on a combination of privately-owned land and land administered by the Bureau of Land Management (BLM). The SCWRA falls within the high desert plains and hills on the western edge of the Mojave Desert. The existing natural conditions of the region are complex as the Tehachapi Mountains to the north and west transition into Mojave Desert to the south and east. Elevations within the study area range from approximately 3,100 – 4,200 feet (ft; 940 – 1,280 meters [m]) above sea level, with the highest elevations occurring in the northwestern portion of the study area (Figure 1). The habitat ranges from lowland creosote (*Larrea tridentata*) scrub and Joshua tree (*Yucca brevifolia*) woodland in the southeast to juniper (*Juniperus* spp.) shrubland on the steeper, rocky slopes in the north and west. Wetlands within the SCWRA are limited to a network of ephemeral drainages; there are no perennial water sources within the study area. Highway 58 bisects the SCWRA, an underground portion of the Los Angeles Aqueduct runs

along the southeast corner of the study area, and a network of dirt roads and off-highway vehicle (OHV) trails run throughout the study area.

According to the National Land Cover Dataset (USGS NLCD 2001), the dominant cover type within the SCWRA is scrub-shrub, which comprises 96.7% of the study area (Table 1; Figure 3). Grasslands and low intensity developed areas comprise a further 1.3% and 1.0% of the study area, respectively. The remaining land cover types, developed open space, evergreen forest, and barren land, comprise just over one percent of the SCWRA, combined.

METHODS

Baseline avian studies at the SCWRA consisted of the following components: 1) fixed-point bird use surveys, 2) raptor nest surveys, and 3) incidental wildlife observations.

Fixed-Point Bird Use Surveys

The objective of the fixed-point bird use surveys was to estimate the seasonal and spatial use of the study area by birds, particularly raptors (defined here as kites, accipiters, buteos, harriers, eagles, osprey, and falcons). Fixed-point bird surveys (variable circular plots) were conducted using methods described by Reynolds et al. (1980).

Survey Plots

Six points were selected to survey representative habitats and topography within the SCWRA, while achieving relatively even coverage of the study area (Figure 4). After the initial establishment of the six survey points, the SCWRA boundary was adjusted such that points four and five no longer fell within the proposed project boundary; however these points continued to be surveyed for the duration of the study (see Figure 4). Each survey plot was a 2,625-ft (800-m) radius circle centered on the point.

Survey Methods

All species of birds observed during each 30-minute (min) fixed-point bird use survey were recorded. Observations of large birds beyond the 800-m radius were recorded, but were not included in the statistical analyses; for small birds, observations beyond a 328-ft (100-m) radius were excluded. A unique observation number was assigned to each observation.

The date, start, and end time of the survey period and weather information (e.g., temperature, wind speed, wind direction, and cloud cover) were recorded for each survey. Species or best possible identification, number of individuals, sex and age class (if possible), distance from plot center when first observed, closest distance, altitude above ground, activity (behavior), and habitat(s) were recorded for each observation. The behavior of each bird observed and the vegetation type in which (or over which) the bird occurred were recorded based on the point of first observation. Approximate flight height and distance from plot center at first observation were recorded to the nearest 16-ft (5-m) interval. Other information recorded about the observation included whether or not the observation was auditory only and the 10-min interval of the 30-min survey in which it was initially noted.

The location of species of interest (e.g., raptors, species of concern, and other large birds) seen during the fixed-point bird use surveys were recorded on field maps by unique observation number. Flight paths and perched locations were digitized using ArcGIS 9.3. Any comments were recorded in the comments section of the data sheet.

Observation Schedule

Sampling intensity was designed to document bird use and behavior by habitat and season within the SCWRA. Fixed-point bird use surveys were conducted from May 11, 2009, through May 6, 2010, with surveys conducted approximately once per week during each season: spring (March 1 to May 31), summer (June 1 to August 31), fall (September 1 to November 15), and winter (November 16 to February 28). Surveys were carried out during daylight hours, and survey periods varied to approximately cover all daylight hours during a season. To the extent practical, each point was surveyed about the same number of times.

Raptor Nest Survey

A raptor nest survey was conducted throughout the SCWRA during the spring of 2010. The objective of the survey was to locate nests that may be subject to disturbance and/or displacement effects from the wind-energy facility construction and/or operation. While active and inactive nests of all raptor species were recorded, the survey specifically targeted golden eagles and was consistent with the USFWS *Interim Golden Eagle Technical Guidance: Inventory and Monitoring Protocols; and other Recommendations in Support of Golden Eagle Management and Permit Issuance* (Pagel et al. 2010). Golden eagles (*Aquila chrysaetos*) are protected by the Bald and Golden Eagle Protection Act (BGEPA 1940) and are also a fully-protected species in California (CDFG, Fish and Game Code, Section 3511).

Survey Methods

Two aerial surveys were conducted via helicopter by two observers during the spring breeding period. The first aerial survey was flown on April 13, and the second survey was flown on May 24. Surveys for golden eagles included all suitable eagle nesting habitat within the study area, as well as the area within an approximate 10-mile buffer of the study area. For all other raptor and other large bird species (e.g., hawks, falcons, owls, and ravens), the survey area included all potential nesting habitat within two miles of the study area.

Aerial survey methods involved a comprehensive search of suitable nesting areas and substrate (e.g., isolated trees, open woodland and savanna, rocky outcrops, cliffs, and other nest platforms such as power poles and transmission towers). During surveys, the helicopter was flown at an altitude of tree-top level to approximately 250 ft (76 m) above ground level. If a nest was observed, the helicopter was moved to a position where nest status and species present could be determined. Efforts were made to minimize disturbance to breeding raptors, including keeping the helicopter a maximum distance from the nest at which the species could be identified, with distances varying depending upon nest location and wind conditions. Data recorded for each nest location included species occupying the nest, nest status (i.e., inactive, bird incubating, young present, eggs present, adult present, or unknown), nest substrate (e.g., pine, cottonwood, rocky outcrop, cliff or power line), number of young present, time and date of observation. All raptor and other large bird nests regardless of nest status were recorded with a Trimble Geo XH global positioning system (GPS) unit with sub-meter accuracy and mapped on a GIS ArcView project

utilizing USGS topographic maps (1:24000 scale) as the base. Locations of inactive nests were recorded as they could be occupied during subsequent years.

Ground-based surveys were also conducted in conjunction with fixed-point bird use surveys during the peak of the breeding season (March – June), when target species would be actively incubating eggs or attending young. If nesting species, status, or outcome could not be determined from aerial surveys, ground-based follow-up visits were made provided the nest site could be accessed from the ground.

Incidental Wildlife Observations

The objective of incidental wildlife observations was to record wildlife seen outside of the standardized surveys. All unusual or unique birds and sensitive species were recorded. A unique observation number and the date, time, species, number of individuals, sex and age class, distance from observer, activity, height above ground (for bird species), and habitat were recorded for each incidental observation. The location of any sensitive species or other species of interest was recorded by UTM coordinates collected using a hand-held GPS unit.

Statistical Analysis

Quality Assurance and Quality Control

Quality assurance and quality control (QA/QC) measures were implemented at all stages of the study, including in the field, during data entry and analysis, and report writing. Following field surveys, observers were responsible for inspecting data forms for completeness, accuracy, and legibility. A sample of records from an electronic database was compared to the raw data forms, and any errors detected were corrected. Irregular codes or data suspected as questionable were discussed with the observer and/or project manager. Errors, omissions, or problems identified in later stages of analysis were traced back to the raw data forms, and appropriate changes were made in all affected steps.

Data Compilation and Storage

A Microsoft® ACCESS database was developed to store, organize, and retrieve survey data. Data were keyed into the electronic database using a pre-defined format to facilitate subsequent QA/QC and data analyses. All data forms, field notebooks, and electronic data files were retained for reference.

Fixed-Point Bird Use Surveys

<u>Bird Diversity and Species Richness</u>
Bird diversity was illustrated by the total number of unique species observed. Species lists (with the number of observations and the number of groups) were generated by season and included all observations of birds detected, regardless of their distance from the observer. Species richness was calculated as the mean number of species observed per plot per survey (number of species/plot/30-min survey). Species diversity and richness were compared among seasons for fixed-point bird use surveys.

Bird Use, Percent Composition, and Frequency of Occurrence

For the standardized fixed-point bird use estimates, only observations of large birds detected within the 2,625-ft (800-m) radius plot were used; small bird observations were limited to 328 ft (100 m). Estimates of mean bird use (number of birds/plot/30-min survey) were used to compare and contrast among bird types, seasons, and other wind-energy facilities.

Percent composition was calculated as the proportion of the overall mean use for a particular bird type or species, and the frequency of occurrence was calculated as the percent of surveys in which a particular bird type or species was observed. Frequency of occurrence and percent composition provide relative estimates of species exposure to the proposed wind-energy facility. For example, a particular species might have high use estimates for the study area based on just a few observations of large groups. However, the frequency of occurrence would indicate that the species only occurred during a few of the surveys, therefore the species would be less likely to be affected by the wind-energy facility or transmission corridor.

Bird Flight Height and Behavior

To calculate potential risk to bird species, the first flight height recorded was used to estimate the percentages of birds flying within the likely RSH for collision with turbine blades of 115 to 427 ft (35 to 130 m) above ground level, which is the blade height of typical turbines that could be used at the SCWRA.

Bird Exposure Index

A relative index of collision exposure (R) was calculated for bird species observed during the fixed-point bird use surveys using the following formula:

$$R = A*P_f*P_t$$

Where A equals mean relative use for species *i* (large bird observations within 2,625 ft [800 m] of the observer or 328 ft [100 m] for small birds) averaged across all surveys; P_f equals the proportion of all observations of species *i* where activity was recorded as flying (an index to the approximate percentage of time species *i* spends flying during the daylight period); and P_t equals the proportion of all initial flight height observations of species *i* within the likely RSH.

Spatial Use

To determine spatial use within the SCWRA, data were analyzed by comparing use among plots. Mapped flight paths were qualitatively compared to study area features (e.g., topographic features). The objective of mapping observed bird locations and flight paths was to look for areas of concentrated use by raptors and other large birds and/or consistent flight patterns within the study area. This information can be useful in turbine layout design or adjustments of individual turbines for micro-siting.

RESULTS

Surveys were conducted at the SCWRA from May 11, 2009, through May 6, 2010, during which 62 bird species and one reptile species were identified. Results of the fixed-point surveys, raptor nest surveys, and incidental wildlife observations are discussed in the sections below.

Fixed-Point Bird Use Surveys

A total of 311 30-minute (min) fixed-point bird use surveys were conducted at the SCWRA during 52 site visits (Table 2). Two different viewsheds were utilized when calculating the different statistics (species richness, use, percent composition, percent frequency, and exposure index): 800 m for large birds and 100 m for small birds.

Bird Diversity and Species Richness

Sixty-one unique species were observed during the fixed-point bird use surveys, with a mean of 0.66 large bird species/800-m plot/30-min survey and 1.95 small bird species/100-m plot/30-min survey (Table 2). Bird diversity (number of unique species) was much greater in the spring (50 species) than in the winter (30), fall (28), and summer (22; Table 2). Large bird species richness (mean number of species per survey) was highest in the spring (0.90 species/survey, respectively), followed by fall (0.70), winter (057), and summer (0.50; Table 2). For small birds, higher species richness was observed in the fall and spring (2.42 and 2.37 species/survey), compared to winter (1.73) and summer (1.39; Table 2). A total of 2,581 individual bird observations within 1,044 separate groups were recorded during the fixed-point bird surveys (Table 3). Cumulatively, regardless of bird size, six species (9.8% of all species) composed 70.6% of the observations: white-crowned sparrow (*Zonotrichia leucophrys*), house finch (*Carpodacus mexicanus*), common raven (*Corvus corax*), horned lark (*Eremophila alpestris*), sage sparrow (*Amphispiza belli*), and turkey vulture (*Cathartes aura*). Individually, all other species comprised less than four percent of the observations. A total of 43 individual raptors were recorded within the SCWRA, representing six species: Cooper's hawk (*Accipiter cooperii*), sharp-shined hawk (*Accipiter striatus*), red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*), golden eagle, and American kestrel (*Falco sparverius*; Table 3).

Bird Use, Percent Composition, and Frequency of Occurrence

Mean bird use, percent composition, and frequency of occurrence were calculated by season for each bird type and species (Tables 4a and 4b). Large bird use (within 800-m plot) was much higher in the spring (3.64 birds/plot/30-min survey) than in other seasons (fall 1.86, winter 1.43, and summer 1.08; Table 4a). For small birds (i.e., passerines, swifts/hummingbirds, and woodpeckers), use (within 100-m plot) was highest in the winter and spring (7.27 and 7.25 birds/plot/30-min survey, respectively), and lower in fall (5.30) and summer (2.39; Table 4b). Because different viewsheds were used in the analyses for large and small birds, use estimates calculated for the two groups are not directly comparable.

<u>Waterbirds</u>

Waterbirds were observed only during spring surveys, with a use estimate of 0.73 birds/800-m plot/30-min survey during this period (Table 4a). Waterbird use at the SCWRA was attributable to a single group of California gulls (*Larus californicus*) comprising 60 individuals, and a single great egret (*Ardea alba*). Although waterbirds comprised 19.9% of the overall large bird use in spring, they were observed during only 2.4% of spring surveys (Table 4a).

<u>Raptors</u>

Raptor use was highest during the winter (0.20 birds/800-m plot/30-min survey), with relatively similar use in other seasons (spring 0.13, fall 0.11, and summer 0.10; Table 4a). Higher use in

the winter was primarily due to higher use of the area by red-tailed hawks (0.08 birds/plot/30-min survey) and golden eagles (0.07), and these species also comprised the majority of raptor use in the fall (0.05 for each). Red-tailed hawk had the highest use of any raptor species in summer (0.07), while use in spring was attributable to low use by Cooper's hawk, red-tailed hawk, golden eagle, and American kestrel, each with 0.01 birds/ plot/30-min survey. Raptors comprised 14.0% of overall large bird use in winter, 9.0% in summer, 5.7% in fall, and 3.6% in spring. Raptors were observed more frequently during winter and spring (13.3% and 13.1% of surveys, respectively) than during summer and fall (9.7% and 7.6% of surveys, respectively; Table 4a).

Vultures

Vultures were observed only in spring and winter with use estimates of 1.04 and 0.23 birds/800-m plot/30-min survey during those seasons, respectively (Table 4a). Turkey vulture was the only vulture species observed during surveys. Vultures comprised 28.4% of overall large bird use in spring and 16.4% in winter. Vultures were observed during 7.1% of spring surveys and 1.1% of winter surveys (Table 4a).

Upland Game Birds

Use by upland game birds was higher in the summer and fall (0.38 birds/800-m plot/30-min survey during each) than in the winter (0.10) and spring (0.06; Table 4a). Chukar (*Alectoris chukar*) comprised all upland game bird use in summer, fall, and winter, while California quail (*Callipepla californica*) comprised the majority of upland game bird use in the spring (0.05 birds/plot/30-min survey). Upland game birds comprised 34.6% of overall large bird use in summer, 20.3% in fall, 7.0% in winter, and 1.6% in spring. Upland game birds were observed during 6.1% of fall surveys, and less than five percent of surveys during other seasons (Table 4a).

Large Corvids

Use by large corvids was higher in the spring and fall (1.54 and 1.29 bird/800-m plot/30-min survey, respectively), compared to winter and summer (0.89 and 0.44, respectively; Table 4a). Common raven was the only large corvid species observed. Across all seasons large corvids comprised a greater proportion of the overall large bird use than any other bird type: 69.1% of use in fall, 62.6% in winter, 42.8% in spring, and 41.0% in summer. Large corvids were observed during 54.8% of spring surveys, 47.0% of fall surveys, 40.2% of winter surveys, and 25.0% of summer surveys (Table 4a).

Greater Roadrunners

Greater roadrunners (*Geococcyx californianus*) were observed only during summer and fall surveys with use estimates of 0.04 and 0.02 birds/800-m plot/30-min survey during these periods, respectively (Table 4a). Greater roadrunners comprised 3.8% of overall large bird use in summer and less than one percent in fall. Greater roadrunners were observed during 2.8% of surveys in summer and 1.5% in fall (Table 4a).

Passerines

Use by passerines was highest in winter (7.26 birds/100-m plot/30-min survey) and spring (7.07), within intermediate use in fall (5.23) and low use in summer (2.28; Table 4b). House finch had the highest use of any passerine species in the fall and winter (1.85 and 2.44 birds/plot/30-min

survey, respectively), while white-crowned sparrow had the highest use in spring (2.62), and horned lark had the highest use in summer (0.50). Passerines comprised over 95% of overall small birds use in any given season and were observed during more than 70% of the surveys during each season (Table 4b).

Swifts and Hummingbirds

Use by swifts and hummingbirds was highest in spring (0.15 birds/100-m plot/30-min survey) followed by summer (0.08), and fall (0.06); no swifts or hummingbirds were observed in winter (Table 4b). Swifts and hummingbirds comprised less than four percent of overall small bird use in any given season, and were observed during 6.0% of spring surveys, 4.2% of summer surveys, and 3.0% of fall surveys (Table 4b).

Woodpeckers

Woodpecker use was low throughout the year (0.03 birds/100-m plot/survey in summer, spring 0.02, fall 0.02, and winter 0.01; Table 4b). Woodpeckers comprised less than two percent of overall small bird use during each season and were observed during less than three percent of surveys in any given season (Table 4b).

Bird Flight Height and Behavior

Flight height characteristics were estimated for both bird types and species (Tables 5 and 6). During fixed-point bird use surveys, 220 groups of flying large birds totaling 559 individuals were observed within 800-m plots (Table 5). Overall, 22.7% of flying large birds were observed within the RSH for collision with turbine blades of 115 to 427 feet (35 to 130 m) above ground level, 57.6% were observed below the RSH, and 19.7% were above the RSH (Table 5). Most (53.8%) flying raptors were observed below the RSH, 23.1% were within the RSH, and 23.1% were flying above the RSH. Nearly all flying waterbirds (98.4%) were observed above the RSH; the remaining 1.6% were below the RSH. Vultures had the highest percentage of flying birds within the RSH (58.3%). Raptors had the second highest percentage of birds within the RSH, primarily due to 50.0% of eagle observations and 20.0% buteo observations recorded at this height. Large corvids, doves and pigeons, upland game birds, and greater roadrunners were generally observed flying below the RSH (Table 5). A total of 423 groups of small birds totaling 1,339 individuals were observed flying within the 100-m plots (Table 5). Overall, 5.6% of small birds were observed flying within the estimated RSH. The majority of passerines and swifts/hummingbirds (94.4% and 91.3%, respectively), and all of the woodpeckers were observed flying below the RSH. No small birds were recorded flying above the RSH (Table 5).

Only three large bird species (turkey vulture, common raven and red-tailed hawk) had at least 10 groups observed flying. Of these, only turkey vulture and common raven were recorded flying within the RSH during at least 50% of the observations (84.3% and 51.7%, respectively; Table 6a). Three other species (golden eagle, rock pigeon [*Columba livia*], and sharp-shined hawk) were recorded flying within the likely RSH during at least 50% of the observations (70.0%, 71.4%, and 100%, respectively). However this is based on only a small number of observations (one to six individuals; Table 6a). Of all small bird species, 11 species had at least 10 groups observed flying. However, none of these species were observed within the RSH during greater than 50% of observations (Table 6b).

Bird Exposure Index

A relative exposure index was calculated for each bird species based on initial flight height observations and relative abundance (defined as the use estimate; Tables 6a and 6b). This index does not account for other possible collision risk factors (e.g., foraging or courtship behavior). Turkey vulture and common raven had the highest exposure indices of any large bird species (0.19 and 0.16, respectively). All other large bird species had an exposure index of 0.02 or less. The only raptor species with exposure indices greater than zero were golden eagle (0.02) and red-tailed hawk (0.01; Table 6a). Of the small bird species, house finch has the highest exposure index (0.12), followed by horned lark (0.08). All other small bird species had exposure indices of 0.01 or less (Table 6b).

Spatial Use

For all large bird species combined, use was highest at point three (2.98 birds/30-min survey); large bird use ranged from 1.27 to 2.41 birds/30-min survey at other points (Figure 5). The high mean use estimate for point three was largely due to high vulture use at this point (1.98 birds/30-min survey). Vultures were also observed at points two and four (0.06 and 0.04, respectively). Waterbird use was recorded only at points two (1.15 birds/30-min survey) and one (0.02). Raptor use was highest at point four (0.27 birds/30-min survey), largely due to higher use by buteos, eagles, and northern harriers at this point. Raptor use at other points ranged from 0.02 to 0.19 birds/30-min survey. Upland game bird use was much higher at point four (1.12 birds/30-min survey), and ranged from zero to 0.12 birds/30-min survey at other points. Use by large corvids (common ravens) was highest at point six (1.73 birds/30-min survey), and ranged from 0.71 to 1.10 birds/30-min survey at other points. Greater roadrunners were recorded only at points four, five, and six, with use ranging from 0.02 to 0.04 birds/30-min survey at these points. Passerine use was highest at point one (9.40 birds/30-min survey), and ranged from 3.38 to 7.15 at other points. Swifts/hummingbird use ranged from 0.012 to 0.15 birds/30-min survey, while woodpecker use ranged from zero to 0.06 across points (Figure 5).

Flight paths for waterbirds, raptors, and vultures were digitized and mapped (Figures 6a-e). A qualitative comparison of mapped flight paths across survey points indicate higher use for some raptor species (buteos, eagles, and falcons) at points four, five, and six, in the areas of greater topographic relief. This is particularly evident for golden eagles and can be explained by the proximity of these points to an active golden eagle nest identified during raptor nest surveys (see discussion of raptor nest surveys below). Observations of waterbirds and other raptor species (accipiters and harriers) were too few to make inferences on spatial use of the study area by these species.

Sensitive Species Observations

Four state sensitive bird species (CDFG 2009) were recorded during fixed-point bird use surveys at the SCWRA including three California species of special concern (loggerhead shrike [*Lanius ludovicianus*; 46 observations], Vaux's swift [*Chaetura vauxi*; 13 observations], and northern harrier [two observations]) and one state fully-protected species (golden eagle [11 observations]). Loggerhead shrike is also considered a federal species of concern, and golden eagle is further protected under the BGEPA (1940).

Raptor Nest Surveys

Aerial raptor nest surveys were conducted by two observers via helicopter on April 13 and May 24, 2010. The survey area for golden eagles included all eagle nesting habitat within a 10-mile buffer of the proposed SCWRA, while the survey area for all other raptors and common ravens included a two-mile buffer of the SCWRA.

Golden Eagle Nests

One active golden eagle nest was observed on a cliff ledge approximately three miles from the northwestern boundary of the SCWRA (Figure 7). Two nestlings were observed in the nest on May 24th. A second active golden eagle nest was observed in a live gray pine (*Pinus sabineana*) approximately 1.0 mile outside of the western edge of the 10-mile buffer (Figure 7). During the first survey on April 13, an adult was observed on this nest. On the May 24th flight, both adults were observed perched in the area, but the nest was empty and it was concluded that the nest had failed. Single adult golden eagles were observed at two additional locations within the 10-mile buffer: approximately 7.0 miles northeast of the SCWRA, and approximately 7.5 miles to the south of the SCWRA (Figure 7). Both locations contained evidence of previous golden eagle nesting (old nests) and, based on information provided by the Bureau of Land Management (BLM; Dr. Larry LaPre, pers. comm.) both areas have records of historical nesting. However, no active nests were located during either survey.

Other Raptor Nests

No active raptor nests were located within the boundary of the SCWRA, or within the surrounding two-mile buffer. However, nine inactive nests and a single active common raven nests were identified within two miles of the SCWRA (Figure 7). While conducting surveys for golden eagles within the 10-mile buffer of the SCWRA, and over the course of fieldwork conducted during the spring of 2010, a number of active raptor nests were identified in the region: two active red-tailed hawk nests (one along the transmission line approximately 6.0 miles from the SCWRA, and the other on a rock ledge approximately 8.0 miles from SCWRA), and three active great horned owl nests (two nests in cottonwood [*Populus sp.*] trees approximately 4.5 and 8.0 miles from the SCWRA, and one in a Joshua tree approximately 5.0 miles from the SCWRA; Figure 7). Additionally, seven active common raven nests were identified within the 10-mile buffer and 23 inactive nests were identified. It should be noted that only the area encompassed by a 2-mile buffer of the SCWRA was systematically searched for raptor nests and nests of other large birds. Outside of this area, the survey effort focused on golden eagle nesting habitat; however, any raptor or raven nest encountered was recorded as an incidental observation.

Incidental Wildlife Observations

One desert tortoise (*Gopherus agassizii*), a state and federal threatened species (CDFG 2009, USFWS 2010), and one burrowing owl (*Athene cunicularia*), a California species of special concern (CDFG 2009), were recorded incidentally at the SCWRA (Figure 8).

DISCUSSION AND IMPACT ASSESSMENT

Bird Impacts

Direct Effects

The most probable direct impact to birds from wind-energy facilities is mortality or injury due to collisions with turbines or guy wires of meteorological (met) towers. Collisions may occur with resident birds foraging and flying within the study area or with migrant birds seasonally moving through the study area. Facility construction could affect birds through loss of habitat or potential fatalities from construction equipment. Impacts from the decommissioning of the facility are anticipated to be similar to construction in terms of noise, disturbance, and equipment. Potential mortality from construction equipment is expected to be very low, as equipment used in wind-energy facility construction generally moves at slow rates or is stationary for long periods (e.g., cranes). The risk of direct mortality to birds from construction is most likely potential destruction of a nest for ground- and shrub-nesting species during initial site clearing.

Substantial data on bird mortality at wind-energy facilities are available from studies in California and throughout the West and Midwest. During 12 fatality monitoring studies conducted outside of California, diurnal raptor fatalities comprised approximately 2% of the wind-energy facility-related fatalities and raptor mortality averaged 0.03 fatalities per turbine per year. Passerines (excluding house sparrows [*Passer domesticus*] and European starlings [*Sturnus vulgaris*]) were the most common collision victims, comprising about 82% of the 225 fatalities documented. Of 841 bird fatalities reported from California studies (more than 70% from the Altamont Pass facility in California), about 39% were diurnal raptors, about 19% were passerines (excluding house sparrows and European starlings), and approximately 12% were owls (Erickson et al. 2002b). Non-protected birds (house sparrows, European starlings, and rock pigeons) comprised about 15% of the fatalities. Other bird types generally made up less than 10% of the fatalities (Erickson et al. 2002b). Using mortality data collected during a 10-year period from wind-energy facilities throughout the entire United States, the average number of bird collision fatalities is 3.1 per megawatt (MW) per year, or 2.3 fatalities per turbine per year (NWCC 2004).

<u>Raptor Use and Exposure Risk</u>

Annual mean raptor use (number of raptors divided by the number of 800-m plots and the total number of surveys) at the SCWRA was compared with 39 other wind-energy facilities that implemented similar protocols and had data for three or four seasons. The annual mean raptor use at these wind-energy facilities ranged from 0.09 to 2.34 raptors/plot/20-min survey (Figure 9). Based on the results from these wind-energy facilities, a ranking of seasonal raptor mean use was developed as low (0 – 0.5 raptors/plot/20-min survey), low to moderate (0.5 – 1.0), moderate (1.0 – 2.0), high (2.0 – 3.0), and very high (more than 3.0). Under this ranking, mean raptor use at the SCWRA (0.09 raptors/plot/20-min survey) is considered to be low, ranking second lowest compared to the other wind-energy facilities (Figure 9).

Although high numbers of raptor fatalities have been documented at some wind-energy facilities (e.g., Altamont Pass), a review of studies at wind-energy facilities across the United States reported that only 3.2% of casualties were raptors (Erickson et al. 2001a). Indeed, although

raptors occur in most areas with the potential for wind-energy development, individual species appear to differ from one another in their susceptibility to collision (NRC 2007). Results from Altamont Pass in California suggest that mortality for some species is not necessarily related to abundance (Orloff and Flannery 1992). American kestrels, red-tailed hawks, and golden eagles were killed more often than predicted based on abundance. Thus far, few northern harrier fatalities at existing wind-energy facilities have been reported in publicly available documents, despite the fact they are commonly observed during fixed-point bird counts at these facilities (Erickson et al. 2001a, Whitfield and Madders 2006). Because northern harriers often forage close to the ground, risk of collision with turbine blades is considered low for this species. Additionally, relative use by American kestrels at the High Winds facility is almost six times the use of American kestrels at the Altamont Pass facility, but the fatality rate of American kestrels was lower at the High Winds facility (Erickson et al. 2001a, Kerlinger et al. 2005). It is likely that many factors, in addition to abundance, are important in predicting raptor mortality.

Exposure indices analysis may provide insight into which species might be the most likely turbine casualties. However, the index only considers relative probability of exposure based on abundance, proportion of birds observed flying, and proportion of flight height of each species within the RSH for turbines likely to be used at the wind-energy facility. This analysis is based on observations of birds during the surveys and does not take into consideration behavior (e.g., foraging, courtship), habitat selection, the ability to detect and avoid turbines, and other factors that may vary among species and influence the likelihood of turbine collision. For these reasons, the index is only a relative index among species observed during the surveys and within the SCWRA, and actual risk for some species may be lower or higher than indicated by these data. At the SCWRA, the raptor species with the highest exposure indices were golden eagle (which was influenced by the relatively high proportion of individuals observed within the RSH) and the red-tailed hawk (which was influenced by relatively high use of the SCWRA). Other raptor species ranked much lower, primarily due to the lower use estimates by these species and relatively low proportions of flight heights observed within the RSH.

A regression analysis of raptor use and mortality for 13 new-generation wind-energy facilities, where similar methods were used to estimate raptor use and mortality, found that there was a significant correlation between use and mortality ($R^2 = 69.9\%$; Figure 10). Using this regression to predict raptor collision mortality at the SCWRA (based on an adjusted mean raptor use of 0.09 raptors/20-min survey) yields an estimated fatality rate of < 0.01 fatalities/MW/year or less than one raptor fatality per year for each 100-MW of wind-energy development. A 90% prediction interval around this estimate is zero to 0.19 raptor fatalities per MW per year.

Overall bird use at the SCWRA was compared to other wind-energy facilities in the same geographic region (Western), many of which also had data for raptor mortality (Table 8). Use values at these facilities ranged from 2.34 raptors/plot/20-min survey at the High Winds wind-energy facility in California to 0.21 raptors/plot/20-min survey recorded in 2003 at the Stateline wind-energy facility in Washington and Oregon. Raptor fatality estimates were available at many of these sites, and ranged from 0.87 raptors/MW/year at the Diablo Winds facility to zero raptors/MW/year at the Combine Hills, Vansycle, and Klondike wind-energy facilities in Oregon (Table 8). Assuming a correlation between use and fatality rates exists, fatality rates at the

SCWRA are expected to be much lower than the fatality rates observed at other sites in California, and more similar to fatality rates observed at sites in the Pacific Northwest (Table 8).

Non-Raptor Use and Exposure Risk

Most bird species in the United States are protected by the Migratory Bird Treaty Act (MBTA 1918). Passerines (primarily perching birds) have been the most abundant bird fatality at wind-energy facilities outside California (Erickson et al. 2001a, 2002b), often comprising more than 80% of the bird fatalities. Both migrant and resident passerine fatalities have been observed. Given that passerines made up a large proportion of the birds observed during the baseline study, passerines would be expected to make up the largest proportion of fatalities at the SCWRA. The SCWRA does not appear to provide important stopover habitat for migrant songbirds based on the results of the fixed point bird use surveys. Based on observations within 100 m of the survey point, exposure indices indicate that house finch is the most likely passerine to be exposed to collision from wind turbines at the SCWRA. Other passerine species more at risk based on abundance and flight behavior include horned lark, lesser goldfinch (*Carduelis psaltria*), and Brewer's blackbird (*Euphagus cyanocephalus*; Table 6b).

The project area appears to receive very little use by waterfowl, waterbirds, or shorebirds (only one group of 60 California gulls and a single great egret were observed during surveys), and mortality involving these groups is expected to be inconsequential. The area does receive some use by upland gamebirds (mainly chukar), but these species are not expected to be highly susceptible to turbine collisions because they spend most of their time on the ground and were never observed flying at turbine rotor-swept heights during this study. Despite the high use estimates and high exposure indices calculated for common ravens, which comprised approximately 13% of the individual large birds observed during fixed-point surveys, post-construction fatality studies at other wind resource areas (WRAs) in the Western US reveal relatively low fatality for common ravens, suggesting this species is also not very susceptible to collisions.

Of the large bird species observed flying, turkey vulture had the highest exposure index (0.19). Post-construction avian fatality monitoring studies at WRAs in California have documented very few vulture fatalities, and Orloff and Flannery (1992) suggest that turkey vultures are killed less often than predicted based on abundance at older-generation wind-energy facilities. Out of 127 fatalities at the Tehachapi Pass WRA (Anderson et al. 2004), and 439 fatalities at Altamont Pass WRA (Thelander et al. 2003), there were no documented vulture fatalities. During a two-year study at the new-generation High Winds WRA, only four vultures were found among 301 total fatalities (Kerlinger et al. 2006). While fatality data for new-generation WRAs is limited, Tierney (2007) suggests that turkey vultures may show higher susceptibility to collision at the new-generation facilities than previously believed.

With the exception of turkey vultures and ravens, most non-raptors had relatively low exposure indices due to low use estimates and/or the majority of individuals flying below the RSH. Due to the relatively low exposure risks at SCWRA, it is unlikely that non-raptor populations will be adversely affected by direct mortality from the operation of the wind-energy facility.

Sensitive Species Use and Exposure Risk

Sensitive species observed at the SCWRA are summarized in Table 7. One state and federal threatened species, desert tortoise (one individual; CDFG 2009, USFWS 2010), was observed incidentally in the SCWRA. Six additional state sensitive bird species were recorded within the SCWRA including four California species of special concern (loggerhead shrike, Vaux's swift, northern harrier, Le Conte's thrasher, and burrowing owl; CDFG 2009) and one state fully-protected species (golden eagle; (CDFG 2009). Loggerhead shrikes and burrowing owls are also considered federal species of concern, golden eagles are further protected under the BGEPA (1940), and the others are protected under the MBTA (1918).

The only sensitive bird species with an exposure index greater than zero were golden eagle, which ranked third among large bird species with an index of 0.06, and Vaux's swift, which ranked sixth among small birds with an index of <0.01. While golden eagles are year-round residents of the area, Vaux's swifts were only observed during spring and fall and are likely migrants through the region. With the possible exception of golden eagles, impacts to sensitive avian species are expected to be inconsequential. Golden eagle use of the study area was highest at points four (0.12 birds/30-min survey), five (0.04), and six (0.06; Figures 5 and 6d). While point four lies near the northwest boundary of the SCWRA, points five and six both fall outside of the current project boundary (Figure 4). Furthermore, golden eagle use at point four occurred primarily in the hills to the north of the point, outside of the current project boundary (Figure 6d). No golden eagles were observed at the remaining three points.

Indirect Effects

The presence of wind turbines may alter the landscape so that wildlife use patterns are affected, displacing wildlife away from the project facilities and suitable habitat. Some studies from wind-energy facilities in Europe consider displacement effects to have a greater impact on birds than collision mortality (Gill et al. 1996). The greatest concern with displacement impacts for wind-energy facilities in the United States has been where these facilities have been constructed in grassland or other native habitats (Leddy et al. 1999, Mabey and Paul 2007). Although Crockford (1992) suggests that disturbance appears to impact feeding, resting, and migrating birds, rather than breeding birds, the results from studies at the Stateline wind-energy facility in Washington and Oregon (Erickson et al. 2004) and the Buffalo Ridge wind-energy facility in Minnesota (Johnson et al. 2000a) suggest that breeding birds are also affected by wind-energy facility operations. Studies on habitat displacement caused by wind-energy facilities have primarily concentrated on raptors, grassland passerines, and waterfowl (NRC 2007).

There have been few studies of raptor displacement at wind-energy facilities, and most of these have suggested indirect effects to be negligible or difficult to measure (Howell and Noone 1992; Johnson et al. 2000b, 2003; Madders and Whitfield 2006). Information concerning potential nesting displacement on specific species is limited. A Swainson's hawk (*Buteo swainsonii*) was reported to have nested within 0.25 mile (0.8 km) of the turbine string at a wind-energy facility in Oregon, suggesting little disturbance to this species (Johnson et al. 2003). At the Foote Creek Rim wind-energy facility in southern Wyoming, construction and operation of the facility did not affect density of raptor nests or nest success for three focal species (Young et al. 2003c). At Foote Creek Rim, a pair of red-tailed hawks nested within 0.3 mile (~0.5 km) and a golden eagle pair successfully nested 0.5 mile (800 m) from the wind-energy facility. In addition, seven red-

tailed hawks and one great horned owl nested within one mile (~1.6 km) of the facility (Johnson et al. 2000b). Studies at the Stateline wind-energy facility in Oregon and Washington have not shown any measurable short-term effects to nesting raptors (Erickson et al. 2004). While the nest locations for some species changed, the number of active nests was not significantly different over a three year period from pre-to post-construction (Erickson et al. 2004). These types of observations suggest that there is limited potential for displacement of nesting raptors and, in particular, at the SCWRA where no active raptor nests were located within 2-miles of the proposed development area.

While some displacement effects for non-raptor species could occur at SCWRA, they will likely be immeasurable given the very low relative bird use, and the lack of unique habitats within the SCWRA relative to the surrounding landscape.

CONCLUSIONS AND RECOMMENDATIONS

While higher use by some raptor species, particularly golden eagles, was observed in the northwestern portions of the SCWRA, overall raptor use was lower than nearly all other WRAs evaluated throughout the western and Midwestern US. Additionally, golden eagles recorded during the surveys, were primarily observed outside of the current project boundary. The data collected during this study suggest that the SCWRA is not within a high bird use area or major spring migration pathway. The habitat and features of the SCWRA are not unique to the surrounding landscape, nor are they particularly preferred or critical to migrants. No active raptor nests were located within the boundary of the SCWRA, or within the surrounding two-mile buffer, indicating a very low raptor nest density. This is consistent with other proposed wind-energy sites in the region (Erickson et al. 2009). Use of the area by sensitive species, especially state and federal listed species, appears to be very low as well.

Currently, few published studies are available from California that compare bird use to bird mortality rates at modern wind-energy facilities. Based on research conducted at wind-energy facilities throughout the US, raptor use at the SCWRA is generally lower than use levels recorded at other wind-energy facilities. Bird use and fatality data collected at other sites within the Tehachapi Wind Resource Area by Anderson et al. (2004), while not directly comparable to those collected at the majority of modern wind-energy facilities in the US, also suggest relatively low numbers of raptors and birds use the area. To date, no relationships have been observed between overall use by other bird types, and fatality rates of those bird groups at wind-energy facilities. However, the flight characteristics and foraging habits of some species may result in increased exposure for these species at the SCWRA.

Overall, results of the studies to date do not suggest that a wind development at the SCWRA would have significant impacts to most avian species. The relatively high use of the area by golden eagles and the proximity to golden eagle nests in the surrounding landscape is a concern; however, it appears that the majority of use by golden eagles is occurring to the north and west of the current project boundary. To help address this concern, a second year of avian use studies is ongoing at the SCWRA and scheduled to continue through June of 2011. As more research, including post-construction fatality monitoring, is conducted at facilities in this region of

California, more information regarding the potential direct impacts of wind-energy facilities to bird species will be obtained.

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Table 1. The land cover types, coverage, and composition within the Sun Creek Wind Resource Area.

Habitat	Acres	% Composition
Developed, Open Space	14.80	0.6
Developed, Low Intensity	22.85	1.0
Barren	1.57	0.1
Evergreen Forest	8.67	0.4
Scrub-shrub	2,252.49	96.7
Grassland	30.12	1.3
Total	**2,330.51**	**100**

Data from the National Land Cover Database (USGS NLCD 2001).

Table 2. Summary of species richness (species/plot[a]/30-min survey) and sample size, by season and overall, during the fixed-point bird use surveys at the Sun Creek Wind Resource Area, May 11, 2009, to May 6, 2010.

Season	Number of Visits	# Surveys Conducted	# Unique Species	Species Richness	
				Large Birds	Small Birds
Spring	14	84	50	0.90	2.37
Summer	12	72	22	0.50	1.39
Fall	11	66	28	0.70	2.42
Winter	15	89	30	0.57	1.73
Overall	**52**	**311**	**61**	**0.66**	**1.95**

[a] 800-meter radius for large birds and 100-meter radius for small birds.

Table 3. Summary of individuals (# obs) and group observations (# grps), by bird type or species, for fixed-point bird use surveys at the Sun Creek Wind Resource Area[a], May 11, 2009, to May 6, 2010.

		Spring		Summer		Fall		Winter		Total	
Bird Type or Species	**Scientific Name**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**
Waterbirds		**2**	**61**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**61**
California gull	*Larus californicus*	1	60	0	0	0	0	0	0	1	60
great egret	*Ardea alba*	1	1	0	0	0	0	0	0	1	1
Raptors		**11**	**11**	**7**	**7**	**6**	**7**	**14**	**18**	**38**	**43**
Accipiters		*1*	*1*	*0*	*0*	*0*	*0*	*2*	*2*	*3*	*3*
Cooper's hawk	*Accipiter cooperii*	1	1	0	0	0	0	0	0	1	1
sharp-shinned hawk	*Accipiter striatus*	0	0	0	0	0	0	1	1	1	1
unidentified accipiter		0	0	0	0	0	0	1	1	1	1
Buteos		*8*	*8*	*5*	*5*	*3*	*3*	*6*	*7*	*22*	*23*
red-tailed hawk	*Buteo jamaicensis*	8	8	5	5	3	3	6	7	22	23
Northern Harrier		*0*	*0*	*0*	*0*	*0*	*0*	*2*	*2*	*2*	*2*
northern harrier	*Circus cyaneus*	0	0	0	0	0	0	2	2	2	2
Eagles		*1*	*1*	*1*	*1*	*2*	*3*	*3*	*6*	*7*	*11*
golden eagle	*Aquila chrysaetos*	1	1	1	1	2	3	3	6	7	11
Falcons		*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*4*	*4*
American kestrel	*Falco sparverius*	1	1	1	1	1	1	1	1	4	4
Vultures		**9**	**87**	**0**	**0**	**0**	**0**	**2**	**21**	**11**	**108**
turkey vulture	*Cathartes aura*	9	87	0	0	0	0	2	21	11	108
Upland Game Birds		**4**	**5**	**3**	**27**	**6**	**25**	**1**	**9**	**14**	**66**
California quail	*Callipepla californica*	3	4	0	0	0	0	0	0	3	4
chukar	*Alectoris chukar*	1	1	3	27	6	25	1	9	11	62
Doves/Pigeons		**7**	**11**	**6**	**9**	**4**	**5**	**0**	**0**	**17**	**25**
mourning dove	*Zenaida macroura*	3	3	6	9	4	5	0	0	13	17
rock pigeon	*Columba livia*	4	8	0	0	0	0	0	0	4	8
Large Corvids		**64**	**131**	**23**	**32**	**45**	**85**	**48**	**80**	**180**	**328**
common raven	*Corvus corax*	64	131	23	32	45	85	48	80	180	328

Table 3. Summary of individuals (# obs) and group observations (# grps), by bird type or species, for fixed-point bird use surveys at the Sun Creek Wind Resource Area[a], May 11, 2009, to May 6, 2010.

		Spring		Summer		Fall		Winter		Total	
Bird Type or Species	**Scientific Name**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**
Greater Roadrunners		**0**	**0**	**2**	**3**	**1**	**1**	**0**	**0**	**3**	**4**
greater roadrunner	*Geococcyx californianus*	0	0	2	3	1	1	0	0	3	4
Passerines		**222**	**706**	**103**	**164**	**211**	**345**	**223**	**700**	**759**	**1,915**
ash-throated flycatcher	*Myiarchus cinerascens*	4	4	4	4	0	0	0	0	8	8
Bewick's wren	*Thryomanes bewickii*	4	4	0	0	5	7	7	8	16	19
black-throated sparrow	*Amphispiza bilineata*	7	9	18	24	2	2	4	16	31	51
blue-gray gnatcatcher	*Polioptila caerulea*	0	0	0	0	1	1	0	0	1	1
Brewer's blackbird	*Euphagus cyanocephalus*	5	23	0	0	2	7	0	0	7	30
Brewer's sparrow	*Spizella breweri*	3	6	0	0	0	0	0	0	3	6
cactus wren	*Campylorhynchus brunneicapillus*	4	4	12	16	3	5	11	16	30	41
California towhee	*Pipilo crissalis*	0	0	0	0	0	0	2	2	2	2
Cassin's vireo	*Vireo cassinii*	1	1	0	0	0	0	0	0	1	1
chipping sparrow	*Spizella passerina*	1	10	0	0	0	0	0	0	1	10
dark-eyed junco	*Junco hyemalis*	1	1	0	0	0	0	3	41	4	42
dusky flycatcher	*Empidonax oberholseri*	1	1	0	0	0	0	0	0	1	1
European starling	*Sturnus vulgaris*	4	6	0	0	1	2	3	4	8	12
fox sparrow	*Passerella iliaca*	1	1	0	0	0	0	0	0	1	1
horned lark	*Eremophila alpestris*	28	63	7	36	27	43	37	122	99	264
house finch	*Carpodacus mexicanus*	40	107	16	27	67	122	71	220	194	476
house wren	*Troglodytes aedon*	1	1	0	0	0	0	0	0	1	1
lark sparrow	*Chondestes grammacus*	8	10	0	0	0	0	0	0	8	10
Le Conte's thrasher	*Toxostoma lecontei*	0	0	0	0	0	0	1	1	1	1
lesser goldfinch	*Carduelis psaltria*	1	5	0	0	3	6	1	1	5	12
Lincoln's sparrow	*Melospiza lincolnii*	1	1	0	0	0	0	0	0	1	1
loggerhead shrike	*Lanius ludovicianus*	6	8	16	18	9	9	11	11	42	46
northern mockingbird	*Mimus polyglottos*	15	20	5	8	1	1	1	1	22	30
rock wren	*Salpinctes obsoletus*	8	11	9	9	34	43	15	20	66	83
ruby-crowned kinglet	*Regulus calendula*	0	0	0	0	0	0	2	2	2	2

Table 3. Summary of individuals (# obs) and group observations (# grps), by bird type or species, for fixed-point bird use surveys at the Sun Creek Wind Resource Area[a], May 11, 2009, to May 6, 2010.

		Spring		Summer		Fall		Winter		Total	
Bird Type or Species	**Scientific Name**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**
sage sparrow	*Amphispiza belli*	26	40	8	13	26	39	30	53	90	145
savannah sparrow	*Passerculus sandwichensis*	0	0	0	0	2	2	0	0	2	2
Say's phoebe	*Sayornis saya*	2	2	0	0	0	0	2	2	4	4
Scott's oriole	*Icterus parisorum*	0	0	1	1	0	0	0	0	1	1
Townsend's warbler	*Dendroica townsendi*	1	1	0	0	0	0	0	0	1	1
tree swallow	*Tachycineta bicolor*	1	2	0	0	0	0	0	0	1	2
unidentified sparrow		1	1	0	0	0	0	0	0	1	1
unidentified swallow		1	1	0	0	1	1	0	0	2	2
verdin	*Auriparus flaviceps*	1	1	0	0	0	0	1	1	2	2
violet-green swallow	*Tachycineta thalassina*	1	1	0	0	1	5	0	0	2	6
western bluebird	*Sialia mexicana*	0	0	0	0	1	1	1	8	2	9
western kingbird	*Tyrannus verticalis*	5	10	4	4	0	0	0	0	9	14
western meadowlark	*Sturnella neglecta*	8	10	0	0	4	9	4	6	16	25
western scrub-jay	*Aphelocoma californica*	3	4	3	4	0	0	0	0	6	8
western tanager	*Piranga ludoviciana*	2	2	0	0	0	0	0	0	2	2
white-crowned sparrow	*Zonotrichia leucophrys*	15	323	0	0	4	12	16	165	35	500
Wilson's warbler	*Wilsonia pusilla*	2	2	0	0	0	0	0	0	2	2
yellow-rumped warbler	*Dendroica coronata*	9	10	0	0	17	28	0	0	26	38
Swifts/Hummingbirds		**7**	**14**	**4**	**6**	**2**	**4**	**1**	**1**	**14**	**25**
Costa's hummingbird	*Calypte costae*	1	1	1	1	0	0	0	0	2	2
unidentified hummingbird		1	1	1	1	0	0	0	0	2	2
Vaux's swift	*Chaetura vauxi*	3	9	0	0	2	4	0	0	5	13
white-throated swift	*Aeronautes saxatalis*	2	3	2	4	0	0	1	1	5	8
Woodpeckers		**2**	**2**	**2**	**2**	**1**	**1**	**1**	**1**	**6**	**6**
ladder-backed woodpecker	*Picoides scalaris*	2	2	2	2	0	0	0	0	4	4
northern flicker	*Colaptes auratus*	0	0	0	0	1	1	1	1	2	2
Overall		**328**	**1,028**	**150**	**250**	**276**	**473**	**290**	**830**	**1,044**	**2,581**

[a] Regardless of distance from observer.

Table 4a. Mean bird use (number of birds/800-meter plot/30-minunte survey), percent of total composition (%), and frequency of occurrence (%) for each large bird type and species by season during the fixed-point bird use surveys at the Sun Creek Wind Resource Area, May 11, 2009, to May 6, 2010.

	Mean Use				Percent Composition				Frequency of Occurrence			
Bird Type or Species	**Spring**	**Summer**	**Fall**	**Winter**	**Spring**	**Summer**	**Fall**	**Winter**	**Spring**	**Summer**	**Fall**	**Winter**
Waterbirds	**0.73**	**0**	**0**	**0**	**19.9**	**0**	**0**	**0**	**2.4**	**0**	**0**	**0**
California gull	0.71	0	0	0	19.6	0	0	0	1.2	0	0	0
great egret	0.01	0	0	0	0.3	0	0	0	1.2	0	0	0
Raptors	**0.13**	**0.10**	**0.11**	**0.20**	**3.6**	**9.0**	**5.7**	**14.0**	**13.1**	**9.7**	**7.6**	**13.3**
Accipiters	*0.01*	*0*	*0*	*0.02*	*0.3*	*0*	*0*	*1.6*	*1.2*	*0*	*0*	*2.2*
Cooper's hawk	0.01	0	0	0	0.3	0	0	0	1.2	0	0	0
sharp-shinned hawk	0	0	0	0.01	0	0	0	0.8	0	0	0	1.1
unidentified accipiter	0	0	0	0.01	0	0	0	0.8	0	0	0	1.1
Buteos	*0.10*	*0.07*	*0.05*	*0.08*	*2.6*	*6.4*	*2.4*	*5.5*	*9.5*	*6.9*	*4.5*	*5.6*
red-tailed hawk	0.10	0.07	0.05	0.08	2.6	6.4	2.4	5.5	9.5	6.9	4.5	5.6
Northern Harrier	*0*	*0*	*0*	*0.02*	*0*	*0*	*0*	*1.6*	*0*	*0*	*0*	*2.2*
northern harrier	0	0	0	0.02	0	0	0	1.6	0	0	0	2.2
Eagles	*0.01*	*0.01*	*0.05*	*0.07*	*0.3*	*1.3*	*2.4*	*4.7*	*1.2*	*1.4*	*3.0*	*3.3*
golden eagle	0.01	0.01	0.05	0.07	0.3	1.3	2.4	4.7	1.2	1.4	3.0	3.3
Falcons	*0.01*	*0.01*	*0.02*	*0.01*	*0.3*	*1.3*	*0.8*	*0.8*	*1.2*	*1.4*	*1.5*	*1.1*
American kestrel	0.01	0.01	0.02	0.01	0.3	1.3	0.8	0.8	1.2	1.4	1.5	1.1
Vultures	**1.04**	**0**	**0**	**0.23**	**28.4**	**0**	**0**	**16.4**	**7.1**	**0**	**0**	**1.1**
turkey vulture	1.04	0	0	0.23	28.4	0	0	16.4	7.1	0	0	1.1
Upland Game Birds	**0.06**	**0.38**	**0.38**	**0.10**	**1.6**	**34.6**	**20.3**	**7.0**	**4.8**	**4.2**	**6.1**	**1.1**
California quail	0.05	0	0	0	1.3	0	0	0	3.6	0	0	0
chukar	0.01	0.38	0.38	0.10	0.3	34.6	20.3	7.0	1.2	4.2	6.1	1.1
Doves/Pigeons	**0.13**	**0.12**	**0.08**	**0**	**3.6**	**11.5**	**4.1**	**0**	**8.3**	**8.3**	**6.1**	**0**
mourning dove	0.04	0.12	0.08	0	1.0	11.5	4.1	0	3.6	8.3	6.1	0
rock pigeon	0.10	0	0	0	2.6	0	0	0	4.8	0	0	0
Large Corvids	**1.56**	**0.44**	**1.29**	**0.89**	**42.8**	**41.0**	**69.1**	**62.6**	**54.8**	**25.0**	**47.0**	**40.2**
common raven	1.56	0.44	1.29	0.89	42.8	41.0	69.1	62.6	54.8	25.0	47.0	40.2

Table 4a. Mean bird use (number of birds/800-meter plot/30-minunte survey), percent of total composition (%), and frequency of occurrence (%) for each large bird type and species by season during the fixed-point bird use surveys at the Sun Creek Wind Resource Area, May 11, 2009, to May 6, 2010.

	Mean Use				Percent Composition				Frequency of Occurrence			
Bird Type or Species	**Spring**	**Summer**	**Fall**	**Winter**	**Spring**	**Summer**	**Fall**	**Winter**	**Spring**	**Summer**	**Fall**	**Winter**
Greater Roadrunners	**0**	**0.04**	**0.02**	**0**	**0**	**3.8**	**0.8**	**0**	**0**	**2.8**	**1.5**	**0**
greater roadrunner	0	0.04	0.02	0	0	3.8	0.8	0	0	2.8	1.5	0
Overall	**3.64**	**1.08**	**1.86**	**1.43**	**100**	**100**	**100**	**100**				

Table 4b. Mean bird use (number of birds/100-meter plot/30-minute survey), percent of total composition (%), and frequency of occurrence (%) for each small bird type and species by season during the fixed-point bird use surveys at the Sun Creek Wind Resource Area, May 11, 2009, to May 6, 2010.

	Mean Use				Percent Composition				Frequency of Occurrence			
Bird Type or Species	**Spring**	**Summer**	**Fall**	**Winter**	**Spring**	**Summer**	**Fall**	**Winter**	**Spring**	**Summer**	**Fall**	**Winter**
Passerines	**7.07**	**2.28**	**5.23**	**7.26**	**97.5**	**95.3**	**98.6**	**99.8**	**77.4**	**70.8**	**93.9**	**83.1**
ash-throated flycatcher	0.04	0.06	0	0	0.5	2.3	0	0	3.6	5.6	0	0
Bewick's wren	0.05	0	0.11	0.09	0.7	0	2.0	1.2	3.6	0	6.1	6.7
black-throated sparrow	0.11	0.33	0.03	0.18	1.5	14.0	0.6	2.4	7.1	19.4	3.0	4.4
blue-gray gnatcatcher	0	0	0.02	0	0	0	0.3	0	0	0	1.5	0
Brewer's blackbird	0.27	0	0.11	0	3.8	0	2.0	0	6.0	0	1.5	0
Brewer's sparrow	0.07	0	0	0	1.0	0	0	0	3.6	0	0	0
cactus wren	0.04	0.22	0.08	0.11	0.5	9.3	1.4	1.6	3.6	16.7	4.5	6.9
California towhee	0	0	0	0.01	0	0	0	0.2	0	0	0	1.1
Cassin's vireo	0.01	0	0	0	0.2	0	0	0	1.2	0	0	0
chipping sparrow	0.12	0	0	0	1.6	0	0	0	1.2	0	0	0
dark-eyed junco	0.01	0	0	0.46	0.2	0	0	6.3	1.2	0	0	2.2
dusky flycatcher	0.01	0	0	0	0.2	0	0	0	1.2	0	0	0
European starling	0.07	0	0.03	0.03	1.0	0	0.6	0.5	4.8	0	1.5	2.2
fox sparrow	0.01	0	0	0	0.2	0	0	0	1.2	0	0	0
horned lark	0.75	0.50	0.65	1.31	10.3	20.9	12.3	18.0	25.0	9.7	34.8	30.4
house finch	1.27	0.38	1.85	2.44	17.6	15.7	34.9	33.5	42.9	20.8	65.2	51.6
lark sparrow	0.12	0	0	0	1.6	0	0	0	9.5	0	0	0
lesser goldfinch	0.06	0	0.09	0.01	0.8	0	1.7	0.2	1.2	0	4.5	1.1
Lincoln's sparrow	0.01	0	0	0	0.2	0	0	0	1.2	0	0	0
loggerhead shrike	0.08	0.25	0.14	0.07	1.1	10.5	2.6	1.0	6.0	22.2	10.6	7.3
northern mockingbird	0.23	0.11	0.02	0	3.1	4.7	0.3	0	15.5	5.6	1.5	0
rock wren	0.11	0.12	0.65	0.22	1.5	5.2	12.3	3.1	8.3	11.1	40.9	13.3
ruby-crowned kinglet	0	0	0	0.02	0	0	0	0.3	0	0	0	2.2
sage sparrow	0.48	0.18	0.59	0.44	6.6	7.6	11.1	6.0	25.0	8.3	25.8	23.8
savannah sparrow	0	0	0.03	0	0	0	0.6	0	0	0	3.0	0
Say's phoebe	0.02	0	0	0.01	0.3	0	0	0.2	2.4	0	0	1.1

Table 4b. Mean bird use (number of birds/100-meter plot/30-minute survey), percent of total composition (%), and frequency of occurrence (%) for each small bird type and species by season during the fixed-point bird use surveys at the Sun Creek Wind Resource Area, May 11, 2009, to May 6, 2010.

	Mean Use				Percent Composition				Frequency of Occurrence			
Bird Type or Species	**Spring**	**Summer**	**Fall**	**Winter**	**Spring**	**Summer**	**Fall**	**Winter**	**Spring**	**Summer**	**Fall**	**Winter**
Scott's oriole	0	0.01	0	0	0	0.6	0	0	0	1.4	0	0
Townsend's warbler	0.01	0	0	0	0.2	0	0	0	1.2	0	0	0
tree swallow	0.02	0	0	0	0.3	0	0	0	1.2	0	0	0
unidentified sparrow	0.01	0	0	0	0.2	0	0	0	1.2	0	0	0
unidentified swallow	0.01	0	0.02	0	0.2	0	0.3	0	1.2	0	1.5	0
verdin	0.01	0	0	0	0.2	0	0	0	1.2	0	0	0
violet-green swallow	0.01	0	0.08	0	0.2	0	1.4	0	1.2	0	1.5	0
western bluebird	0	0	0.02	0	0	0	0.3	0	0	0	1.5	0
western kingbird	0.12	0.06	0	0	1.6	2.3	0	0	6.0	5.6	0	0
western meadowlark	0.12	0	0.14	0.02	1.6	0	2.6	0.3	9.5	0	3.0	2.2
western scrub-jay	0.02	0.06	0	0	0.3	2.3	0	0	2.4	4.2	0	0
western tanager	0.02	0	0	0	0.3	0	0	0	2.4	0	0	0
white-crowned sparrow	2.62	0	0.18	1.83	36.1	0	3.4	25.2	13.1	0	6.1	15.6
Wilson's warbler	0.02	0	0	0	0.3	0	0	0	2.4	0	0	0
yellow-rumped warbler	0.12	0	0.42	0	1.6	0	8.0	0	10.7	0	19.7	0
Swifts/Hummingbirds	**0.15**	**0.08**	**0.06**	**0**	**2.1**	**3.5**	**1.1**	**0**	**6.0**	**4.2**	**3.0**	**0**
Costa's hummingbird	0.01	0.01	0	0	0.2	0.6	0	0	1.2	1.4	0	0
unidentified hummingbird	0.01	0.01	0	0	0.2	0.6	0	0	1.2	1.4	0	0
Vaux's swift	0.11	0	0.06	0	1.5	0	1.1	0	2.4	0	3.0	0
white-throated swift	0.02	0.06	0	0	0.3	2.3	0	0	1.2	2.8	0	0
Woodpeckers	**0.02**	**0.03**	**0.02**	**0.01**	**0.3**	**1.2**	**0.3**	**0.2**	**2.4**	**2.8**	**1.5**	**1.1**
ladder-backed woodpecker	0.02	0.03	0	0	0.3	1.2	0	0	2.4	2.8	0	0
northern flicker	0	0	0.02	0.01	0	0	0.3	0.2	0	0	1.5	1.1
Overall	**7.25**	**2.39**	**5.30**	**7.27**	**100**	**100**	**100**	**100**				

Table 5. Flight height characteristics by bird type during fixed-point bird use surveys at the Sun Creek Wind Resource Area, May 11, 2009, to May 6, 2010. Large bird observations were limited to within an 800-meter (m) radius and small bird observations were limited to within a 100-m radius.

Bird Type	# Groups Flying	# Obs Flying	Mean Flight Height (m)	% Obs Flying	% Within Flight Height Categories		
					0 - 35 m	35 - 130 m[a]	> 130 m
Waterbirds	2	61	255.00	100	1.6	0	98.4
Raptors	34	39	73.82	90.7	53.8	23.1	23.1
Accipiters	*3*	*3*	*80.00*	*100*	*66.7*	*0*	*33.3*
Buteos	*19*	*20*	*49.47*	*87.0*	*70.0*	*20.0*	*10.0*
Northern Harrier	*2*	*2*	*6.50*	*100*	*100*	*0*	*0*
Eagles	*6*	*10*	*179.17*	*90.9*	*0*	*50.0*	*50.0*
Falcons	*4*	*4*	*60.50*	*100*	*75.0*	*0*	*25.0*
Vultures	11	108	82.27	100	28.7	58.3	13.0
Upland Game Birds	3	31	2.67	47.0	100	0	0
Doves/Pigeons	16	24	10.69	96.0	83.3	16.7	0
Large Corvids	153	294	45.30	89.6	73.5	17.3	9.2
Greater Roadrunners	1	2	0	50.0	100	0	0
Large Birds Overall	**220**	**559**	**50.16**	**88.0**	**57.6**	**22.7**	**19.7**
Passerines	408	1,313	11.53	75.1	94.4	5.6	0
Swifts/Hummingbirds	12	23	14.33	100	91.3	8.7	0
Woodpeckers	3	3	4.00	50.0	100	0	0
Small Birds Overall	**423**	**1,339**	**11.55**	**75.3**	**94.4**	**5.6**	**0**

[a] the likely rotor-swept heights for potential collision with a turbine blade or 115 - 427 feet (35 – 130 m) above ground level.

Table 6a. Relative exposure index and flight characteristics for large bird species during the fixed-point bird use surveys at the Sun Creek Wind Resource Area, May 11, 2009, to May 6, 2010.

Species	# Groups Flying	Overall Mean Use	% Flying	% Flying Within RSH[a] Based on Initial Obs	Exposure Index	% Flying Within RSH at Anytime
turkey vulture	11	0.33	100	58.3	0.19	84.3
common raven	153	1.03	89.6	17.3	0.16	51.7
golden eagle	6	0.04	90.9	50.0	0.02	70.0
red-tailed hawk	19	0.07	87.0	20.0	0.01	45.0
rock pigeon	3	0.02	87.5	57.1	0.01	71.4
chukar	2	0.21	46.8	0	0	0
California gull	1	0.18	100	0	0	0
mourning dove	13	0.06	100	0	0	5.9
greater roadrunner	1	0.01	50.0	0	0	0
American kestrel	4	0.01	100	0	0	25.0
California quail	1	0.01	50.0	0	0	0
northern harrier	2	<0.01	100	0	0	50.0
sharp-shinned hawk	1	<0.01	100	0	0	100
unidentified accipiter	1	<0.01	100	0	0	0
Cooper's hawk	1	<0.01	100	0	0	0
great egret	1	<0.01	100	0	0	0

[a] RSH - The likely rotor-swept heights for potential collision with a turbine blade or 115 - 427 feet (35 - 130 meters) above ground level.

Table 6b. Relative exposure index and flight characteristics for small bird species during the fixed-point bird use surveys at the Sun Creek Wind Resource Area, May 11, 2009, to May 6, 2010.

Species	# Groups Flying	Overall Mean Use	% Flying	% Flying Within RSH[a] Based on Initial Obs	Exposure Index	% Flying Within RSH at Anytime
house finch	144	1.50	83.9	9.6	0.12	31.7
horned lark	53	0.83	72.3	13.5	0.08	45.4
lesser goldfinch	2	0.04	75.0	44.4	0.01	44.4
Brewer's blackbird	6	0.09	50.0	26.7	0.01	26.7
European starling	6	0.03	81.8	22.2	<0.01	22.2
Vaux's swift	5	0.04	100	15.4	<0.01	30.8
white-crowned sparrow	18	1.23	93.7	0	0	0
sage sparrow	39	0.41	49.6	0	0	0
rock wren	11	0.26	17.3	0	0	0
black-throated sparrow	17	0.17	70.6	0	0	0
dark-eyed junco	2	0.13	95.2	0	0	0
loggerhead shrike	15	0.13	47.5	0	0	0
yellow-rumped warbler	17	0.12	71.1	0	0	3.7
cactus wren	10	0.11	58.8	0	0	0
northern mockingbird	14	0.09	78.6	0	0	0
western meadowlark	6	0.06	57.1	0	0	0
Bewick's wren	10	0.06	63.2	0	0	0
western kingbird	7	0.04	85.7	0	0	0
chipping sparrow	1	0.03	100	0	0	0
lark sparrow	5	0.03	60.0	0	0	0
ash-throated flycatcher	3	0.02	42.9	0	0	0
western scrub-jay	3	0.02	66.7	0	0	0
white-throated swift	3	0.02	100	0	0	0
violet-green swallow	2	0.02	100	0	0	0
Brewer's sparrow	0	0.02	0	0	0	0
ladder-backed woodpecker	1	0.01	25.0	0	0	0
Say's phoebe	1	<0.01	33.3	0	0	100

Table 6b. Relative exposure index and flight characteristics for small bird species during the fixed-point bird use surveys at the Sun Creek Wind Resource Area, May 11, 2009, to May 6, 2010.

Species	# Groups Flying	Overall Mean Use	% Flying	% Flying Within RSH[a] Based on Initial Obs	Exposure Index	% Flying Within RSH at Anytime
Costa's hummingbird	2	<0.01	100	0	0	0
unidentified hummingbird	2	<0.01	100	0	0	0
ruby-crowned kinglet	2	<0.01	100	0	0	0
northern flicker	2	<0.01	100	0	0	0
savannah sparrow	2	<0.01	100	0	0	50.0
unidentified swallow	2	<0.01	100	0	0	50.0
tree swallow	1	<0.01	100	0	0	0
western tanager	2	<0.01	100	0	0	0
Wilson's warbler	0	<0.01	0	0	0	0
Scott's oriole	0	<0.01	0	0	0	0
California towhee	0	<0.01	0	0	0	0
blue-gray gnatcatcher	1	<0.01	100	0	0	0
western bluebird	0	<0.01	0	0	0	0
Cassin's vireo	1	<0.01	100	0	0	0
dusky flycatcher	1	<0.01	100	0	0	0
fox sparrow	0	<0.01	0	0	0	0
Lincoln's sparrow	1	<0.01	100	0	0	0
Townsend's warbler	1	<0.01	100	0	0	0
unidentified sparrow	1	<0.01	100	0	0	0
verdin	1	<0.01	100	0	0	0

[a] RSH - The likely rotor-swept heights for potential collision with a turbine blade or 115 - 427 feet (35 - 130 meters) above ground level.

Table 7. Summary of sensitive species observed at the Sun Creek Wind Resource Area during fixed-point bird use surveys (FP) and as incidental wildlife observations (Inc.) from May 11, 2009, to May 6, 2010.

			FP		Inc.		Total	
Species	**Scientific Name**	**Status**	**# of grps**	**# of obs**	**# of grps**	**# of obs**	**# of grps**	**# of obs**
loggerhead shrike	*Lanius ludovicianus*	SSC; FSOC	42	46	0	0	**42**	**46**
Vaux's swift	*Chaetura vauxi*	SSC	5	13	0	0	**5**	**13**
golden eagle	*Aquila chrysaetos*	EA	7	11	0	0	**7**	**11**
northern harrier	*Circus cyaneus*	SSC	2	2	0	0	**2**	**2**
burrowing owl	*Athene cunicularia*	SSC; FSOC	0	0	1	1	**1**	**1**
Bird Subtotal	**5 Species**		**57**	**73**	**1**	**1**	**57**	**73**
desert tortoise	*Gopherus agassizii*	ST; FT	0	0	1	1	**1**	**1**
Total	**7 Species**		**57**	**73**	**2**	**2**	**58**	**74**

FSOC - federal species of concern (USFWS 2010);
FT - federal threatened (USFWS 2010);
ST - state threatened (CDFG 2009);
SSC - state species of concern (CDFG 2009);
EA - Bald and Golden Eagle Protection Act (BGEPA 1940).

Table 8. Comparison of raptor use estimates and raptor mortality between the Sun Creek Wind Resource Area and other wind-energy facilities in North America.

Wind-Energy Facility	Use Estimate[a]	Raptor Mortality[b]	# of Turbines	Total Megawatts (MW)
Sun Creek, CA	0.09			
Western				
Diablo Winds, CA	2.16	0.87	31	20
SMUD, CA		0.53		15
High Winds, CA	2.34	0.39	90	162
Leaning Juniper, OR	0.52	0.21	67	100.5
Big Horn, WA	0.51	0.15	133	199.5
Hopkins Ridge, WA	0.70	0.14	83	150
Klondike II, OR	0.50	0.11	50	75
Stateline, OR/WA (2002)	0.23	0.09	454	300
Stateline, OR/WA (2003)	0.21	0.09	454	300
Wild Horse, WA	0.29	0.09	127	229
Klondike III, OR		0.06	122	375
Zintel, WA	0.43	0.05	38	50
Nine Canyon, WA	0.35	0.05	37	48
Combine Hills, OR	0.75	0	41	41
Vansycle, OR	0.66	0	38	24.9
Klondike, OR	0.50	0	16	24
Dillon, CA		0	45	45
Rocky Mountains				
Summerview, Alb. (2005/2006)		0.11	39	70.2
Judith Gap, MT		0.09	90	135
Foote Creek Rim, WY (Phase I; 1999)		0.08	69	41.4
Foote Creek Rim, WY (Phase I; 2000)		0.05	69	41.4
Foote Creek Rim, WY (Phase I; 2001/2002)		0	69	41.4
Midwest				
NPPD Ainsworth, NE		0.06	36	59.4
Wolfe Island, Ont.		0.04	86	197.8
Buffalo Ridge, MN	0.64	0.02	281	210.75
Southern Plains				
Buffalo Gap, TX		0.10	67	134

Table 8. Comparison of raptor use estimates and raptor mortality between the Sun Creek Wind Resource Area and other wind-energy facilities in North America.

Northeastern			
Noble Ellenburg, NY (2009)	0.49	54	80
Noble Ellenburg, NY (2008)	0.32	54	80
Noble Clinton, NY (2008)	0.29	67	100.5
Maple Ridge, NY (2007)	0.25	195	321.75
Noble Clinton, NY (2009)	0.24	67	100
Noble Bliss, NY (2008)	0.19	67	100
Noble Bliss, NY (2009)	0.18	67	100
Maple Ridge, NY (2006)	0.04	120	198
Buffalo Mountain, TN (2006)	0	18	29
Buffalo Mountain, TN (2000-2003)	0	3	1.98
Mount Storm, WV (2008)	0	82	164

[a] = number of raptors/800-meter plot/20-minute survey
[b] = number of fatalities/MW/year
Data from the following sources:

Diablo Winds, CA	WEST 2006	WEST 2008a	Foote Creek Rim, WY (Phase I; 99)		Young et al. 2003c
SMUD, CA		URS et al. 2005	Foote Creek Rim, WY (Phase I; 00)		Young et al. 2003c
High Winds, CA	Kerlinger et al. 2005	Kerlinger et al. 2006	Foote Creek Rim, WY (Phase I; 01/02)		Young et al. 2003c
Leaning Juniper, OR	Kronner et al. 2005	Gritski et al. 2008	NPPD Ainsworth, NE		Derby et al. 2007
Big Horn, WA	Johnson and Erickson 2004	Kronner et al. 2008	Wolfe Island, Ont.		Stantec Ltd. 2010
Hopkins Ridge, WA	Young et al. 2003a	Young et al. 2007a	Buffalo Ridge, MN	Erickson et al. 2002b	Erickson et al. 2002b
Klondike II, OR	Johnson 2004	NWC and WEST 2007	Buffalo Gap, TX		Tierney 2007
Stateline, OR/WA (02)	Erickson et al. 2002b	Erickson et al. 2004	Noble Ellensburg, NY (09)		Jain et al. 2010c
Stateline, OR/WA (03)	Erickson et al. 2003b	Erickson et al. 2004	Noble Ellensburg, NY (08)		Jain et al. 2009a
Wild Horse, CA	Erickson et al. 2003d	Erickson et al. 2008	Noble Clinton, NY (2008)		Jain et al. 2009b
Klondike III, OR		Gritski et al. 2009	Maple Ridge, NY (07)		Jain et al. 2008
Zintel, WA	Erickson et al. 2002a	Erickson et al. 2008	Noble Clinton, NY (09)		Jain et al. 2010b
Nine Canyon, WA	Erickson et al. 2001b	Erickson et al. 2003c	Noble Bliss, NY (08)		Jain et al. 2009c
Combine Hills, OR	Young et al. 2003d	Young et al. 2006	Noble Bliss, NY (09)		Jain et al. 2010a
Vansycle, OR	WCIA and WEST 1997	Erickson et al. 2000	Maple Ridge, NY (06)		Jain et al. 2007
Klondike, OR	Johnson et al. 2002	Johnson et al. 2003	Buffalo Mountain, TN (06)		Fiedler et al. 2007
Dillon, CA		Chatfield et al. 2009	Buffalo Mountain, TN (00-03)		Nicholson 2003, 2005
Summerview, Alb. (05/06)		Brown and Hamilton 2006	Mount Storm, WV (08)		Young et al. 2009
Judith Gap, MT		TRC 2008			

Figure 1. Overview of the Sun Creek Wind Resource Area.

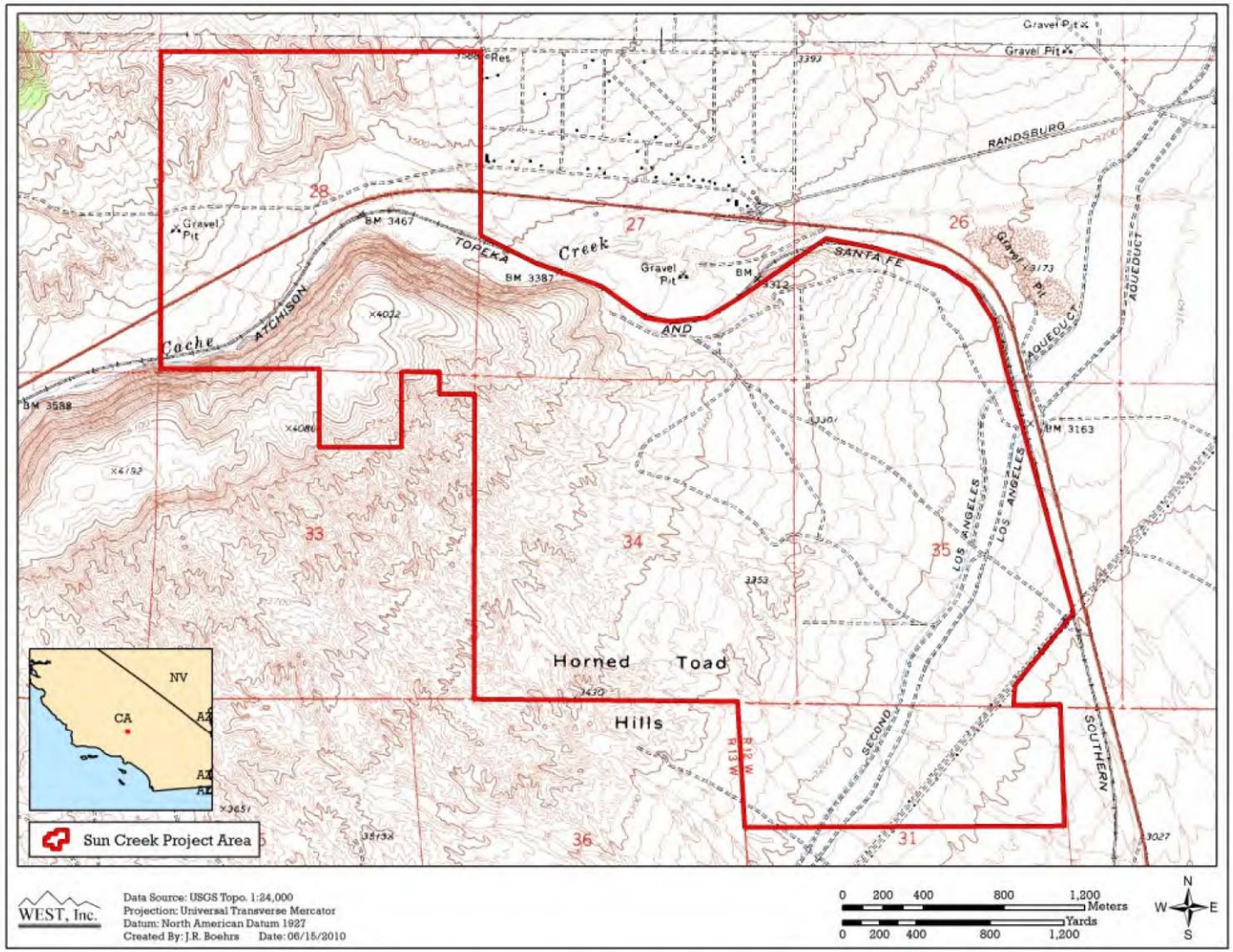


Figure 2. Location of the Sun Creek Wind Resource Area.

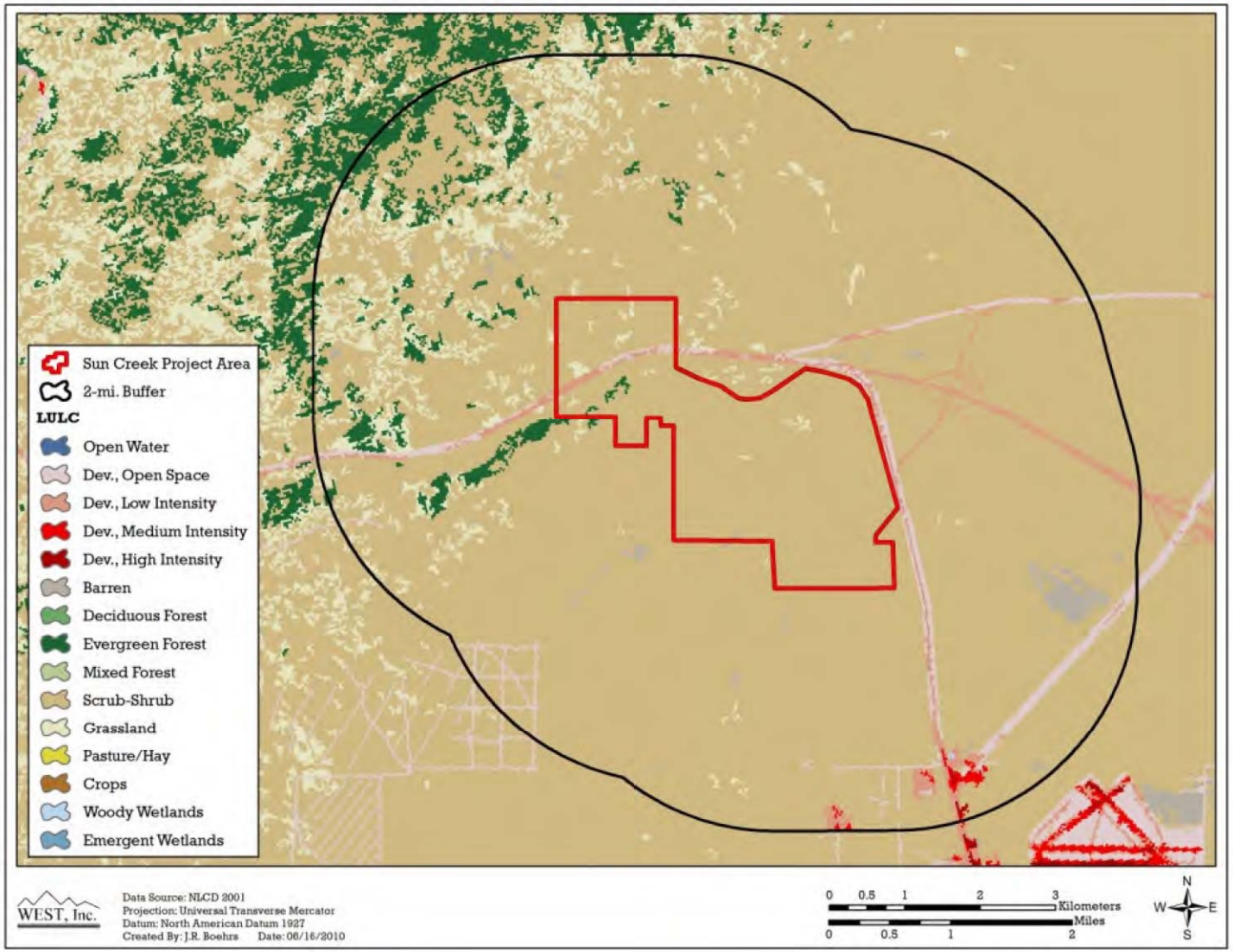


Figure 3. The land cover types and coverage within the Sun Creek Wind Resource Area (USGS NLCD 2001).

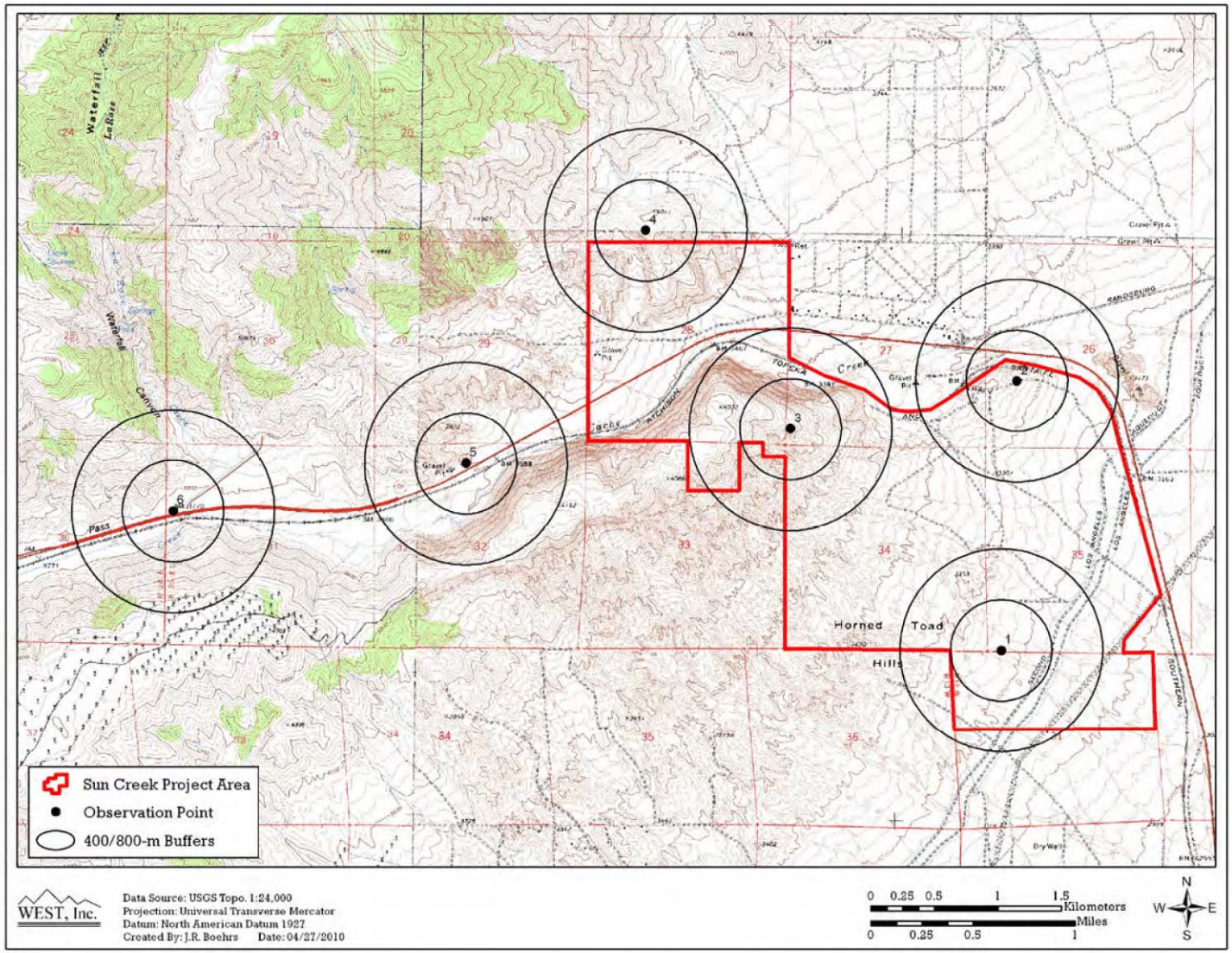


Figure 4. Fixed-point bird use survey points at the Sun Creek Wind Resource Area.

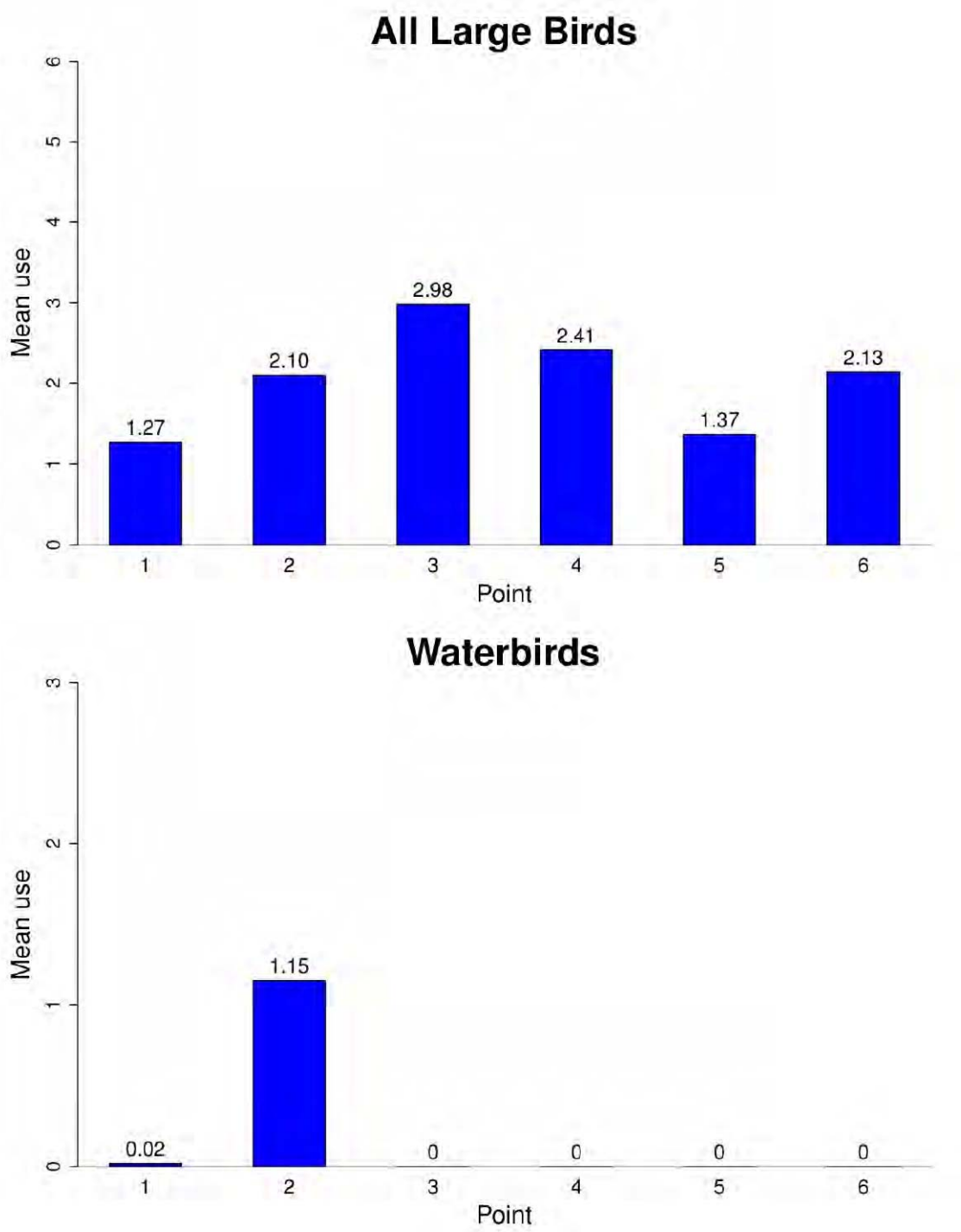


Figure 5. Mean bird use (number of birds/30-minute survey) at each fixed-point bird use point for all birds, major bird types, and raptor subtypes at the Sun Creek Wind Resource Area.

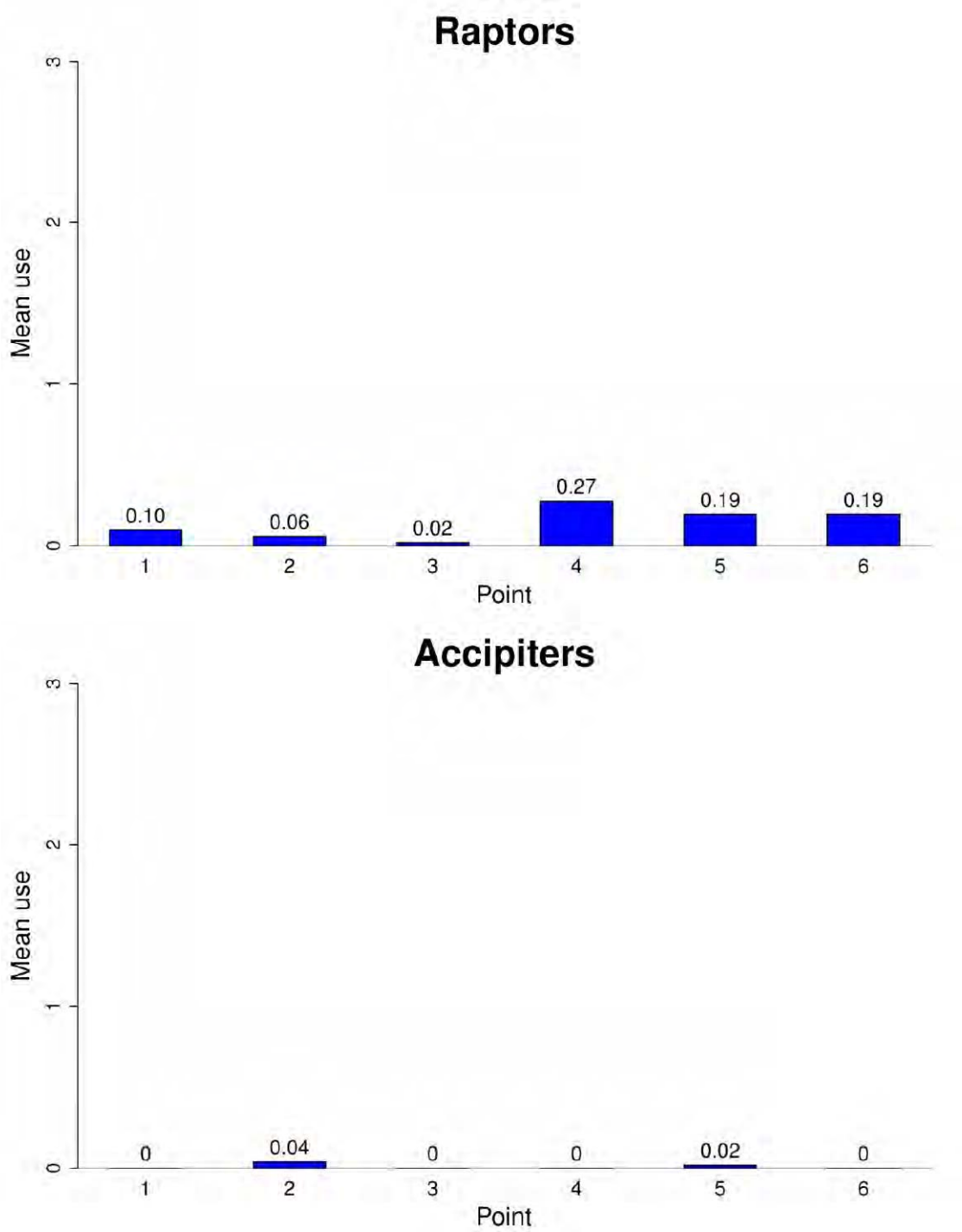


Figure 5 (*continued*). Mean bird use (number of birds/30-minute survey) at each fixed-point bird use point for all birds, major bird types, and raptor subtypes at the Sun Creek Wind Resource Area.

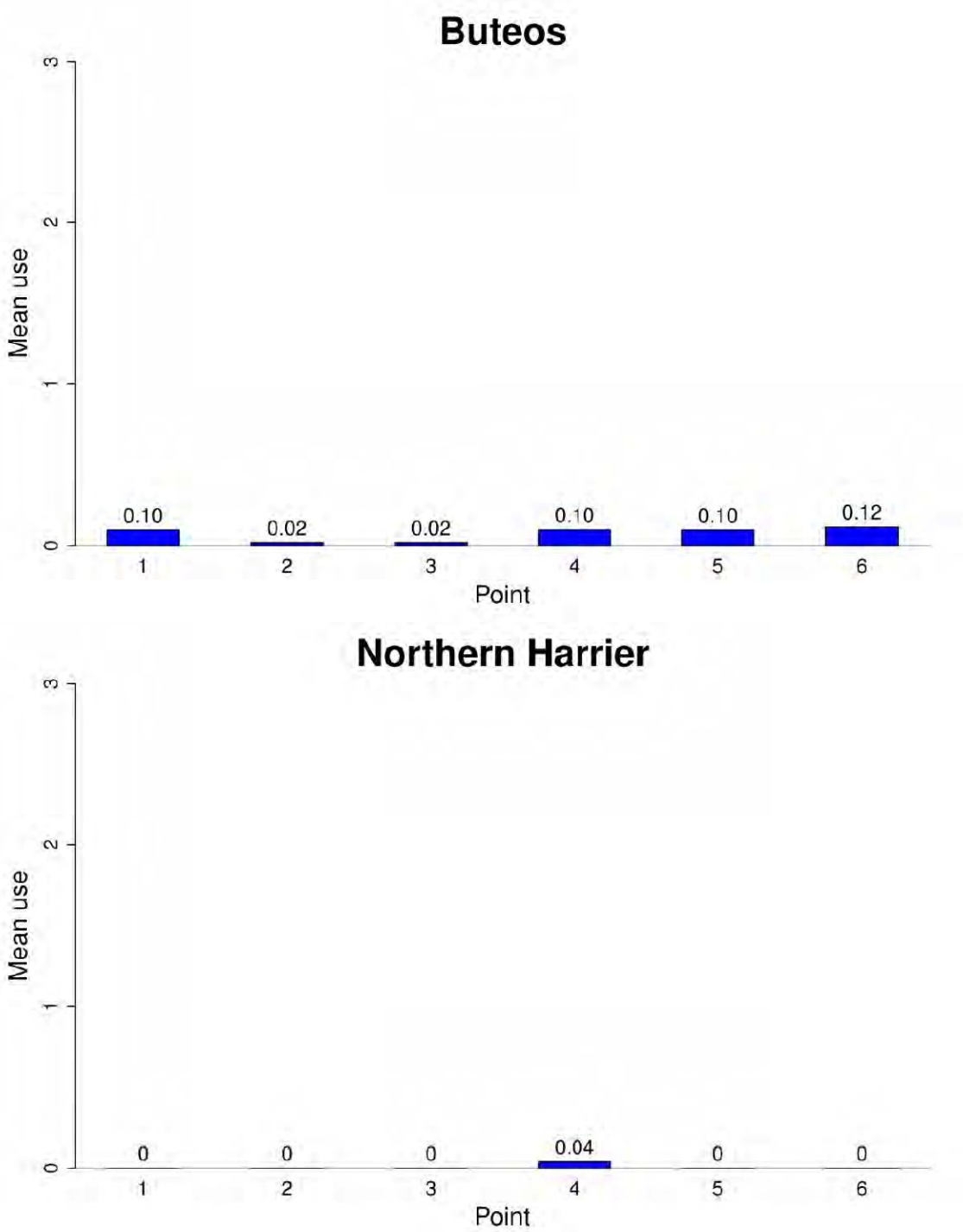


Figure 5 (*continued*). Mean bird use (number of birds/30-minute survey) at each fixed-point bird use point for all birds, major bird types, and raptor subtypes at the Sun Creek Wind Resource Area.

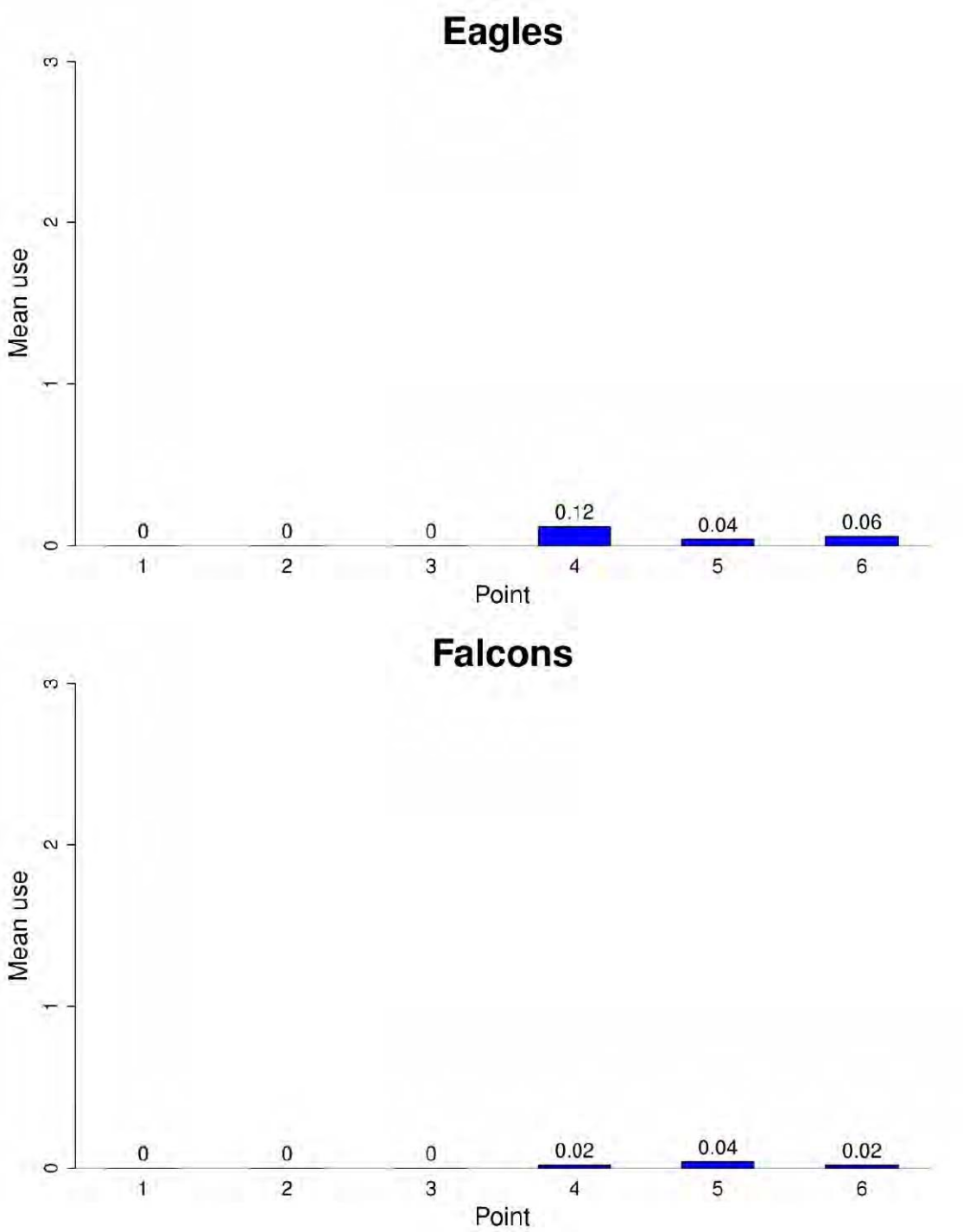


Figure 5 (*continued*). Mean bird use (number of birds/30-minute survey) at each fixed-point bird use point for all birds, major bird types, raptor subtypes at the Sun Creek Wind Resource Area.

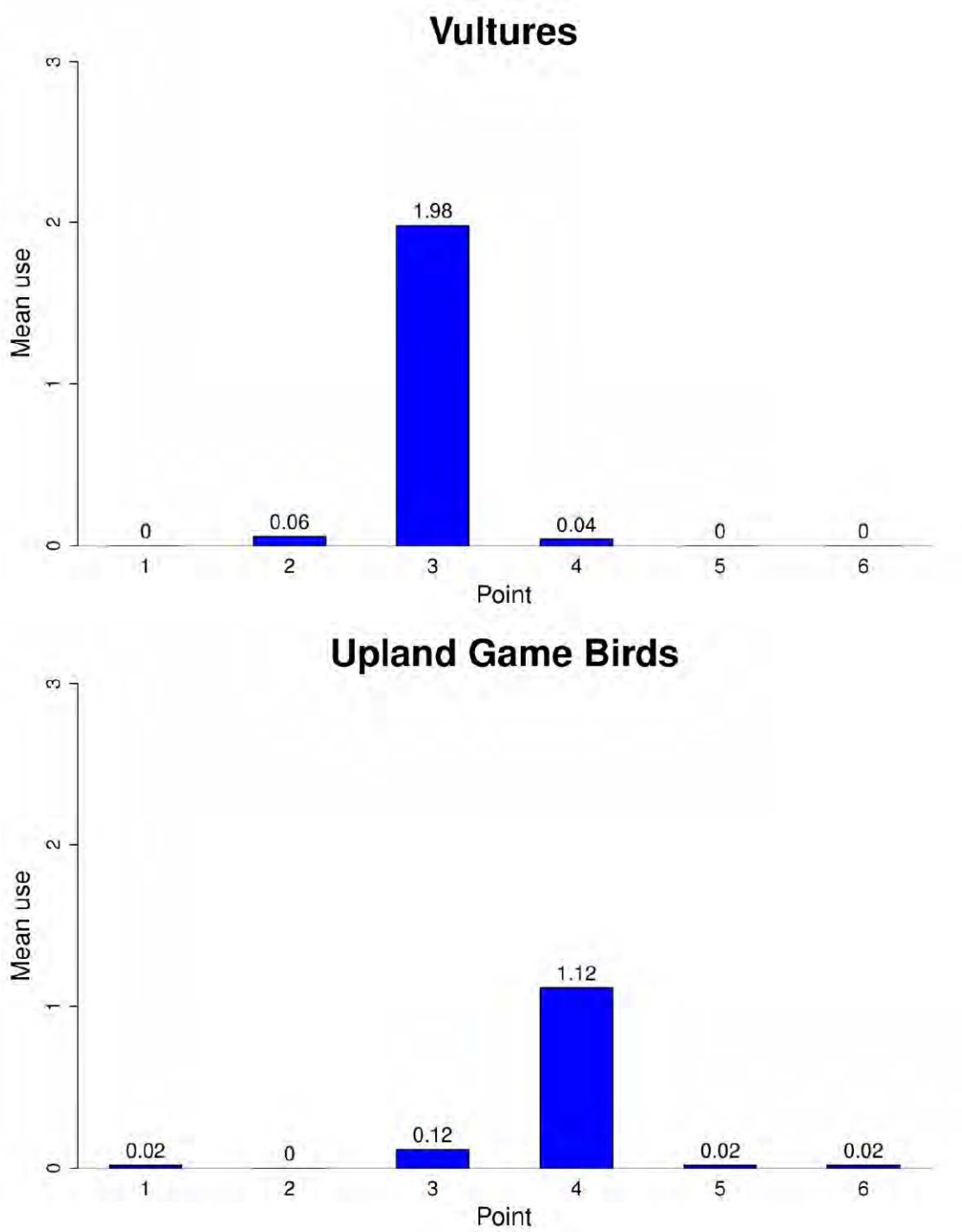
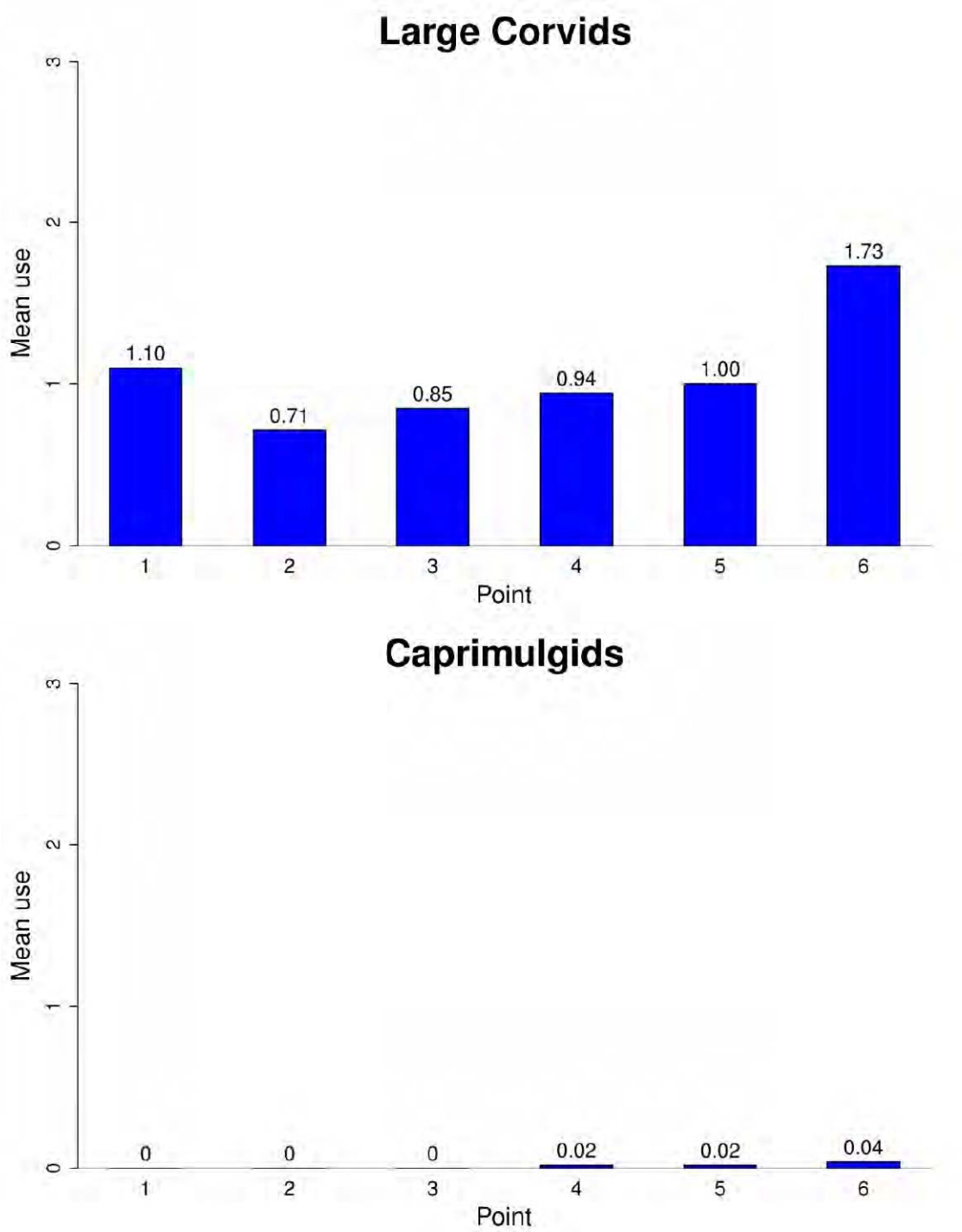


Figure 5 (*continued*). Mean bird use (number of birds/30-minute survey) at each fixed-point bird use point for all birds, major bird types, and raptor subtypes at the Sun Creek Wind Resource Area. Observations of passerines and other small birds were focused within 100-m viewsheds.



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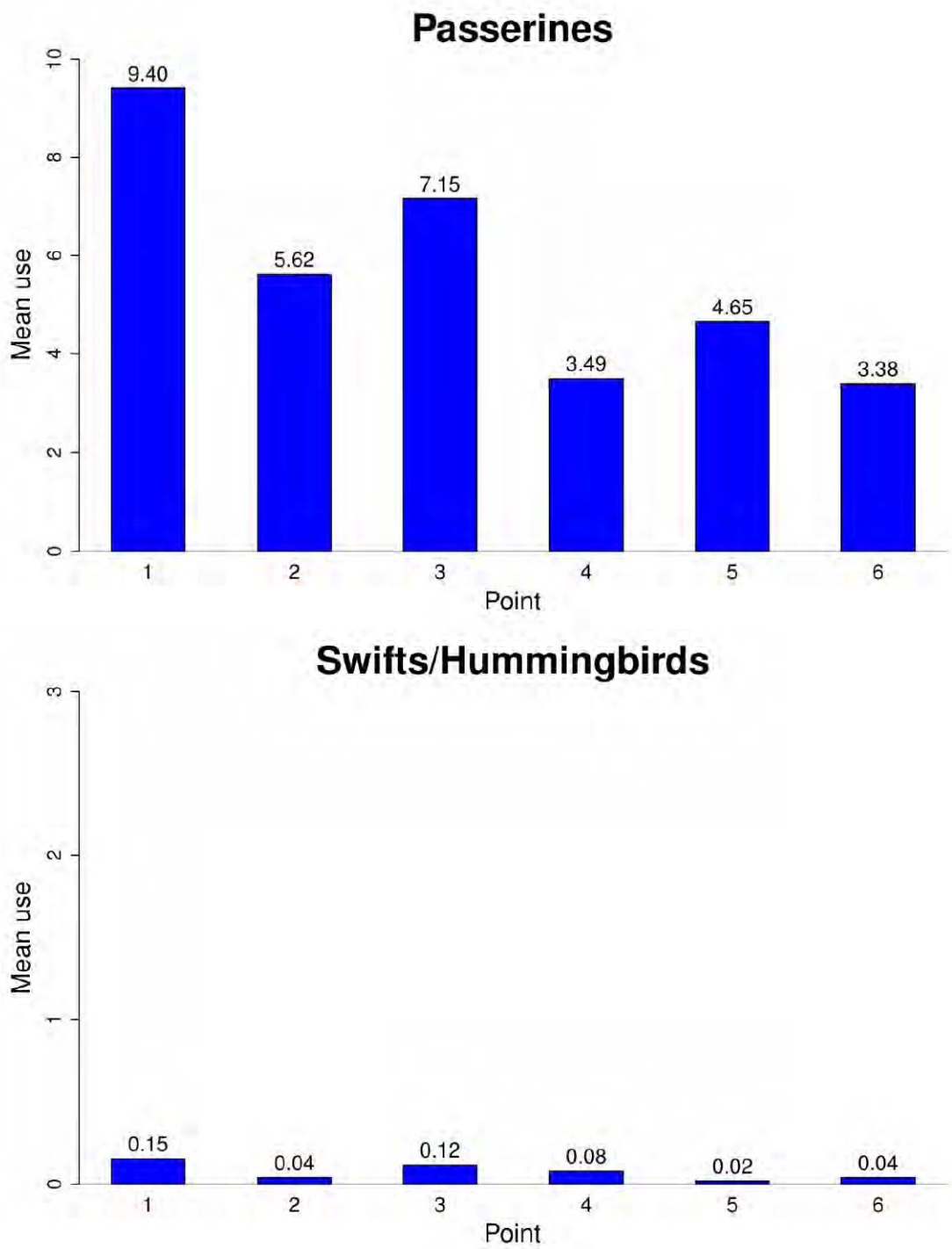
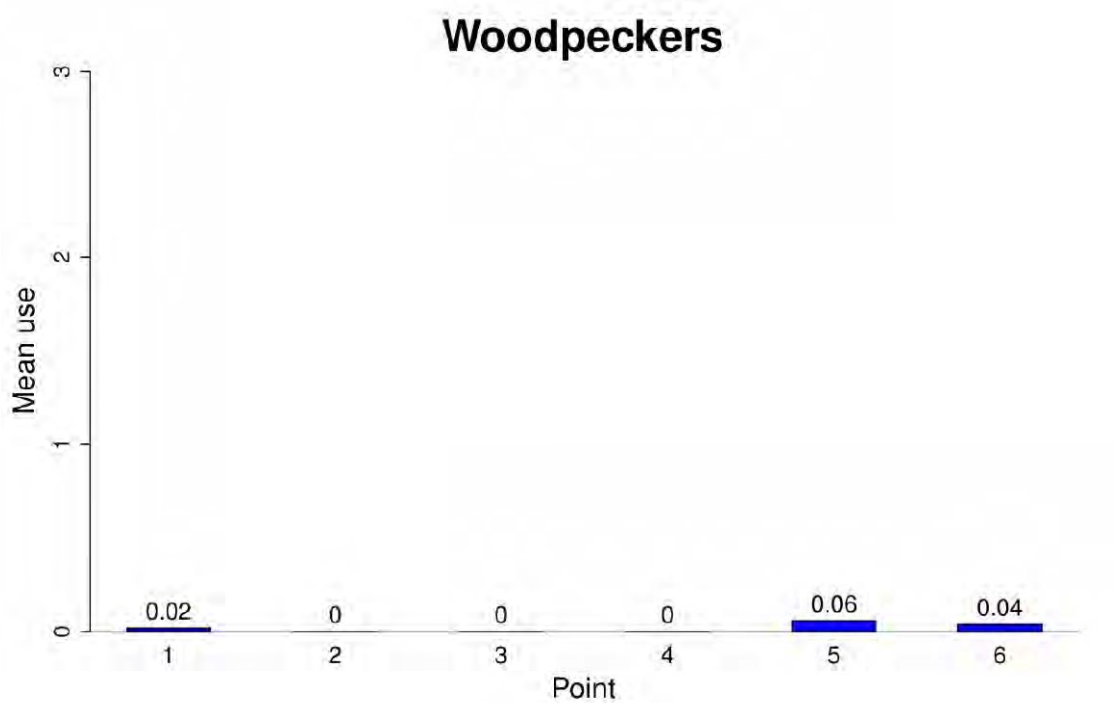


Figure 5 (*continued*). Mean bird use (number of birds/30-minute survey) at each fixed-point bird use point for all birds, major bird types, and raptor subtypes at the Sun Creek Wind Resource Area. Small bird observations were focused within 100-meter viewsheds.



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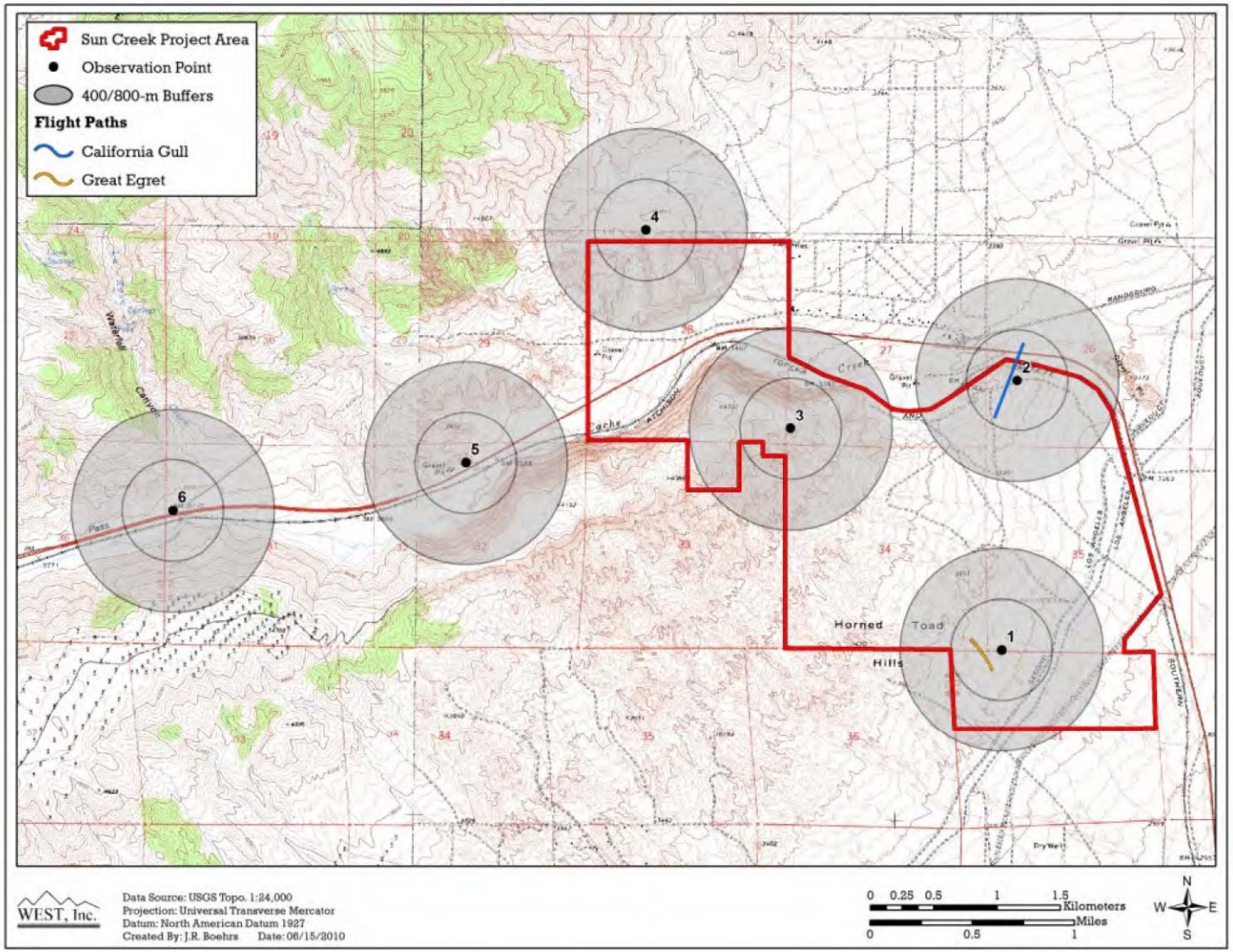


Figure 6a. Spatial use by flight paths of waterbirds at the Sun Creek Wind Resource Area.

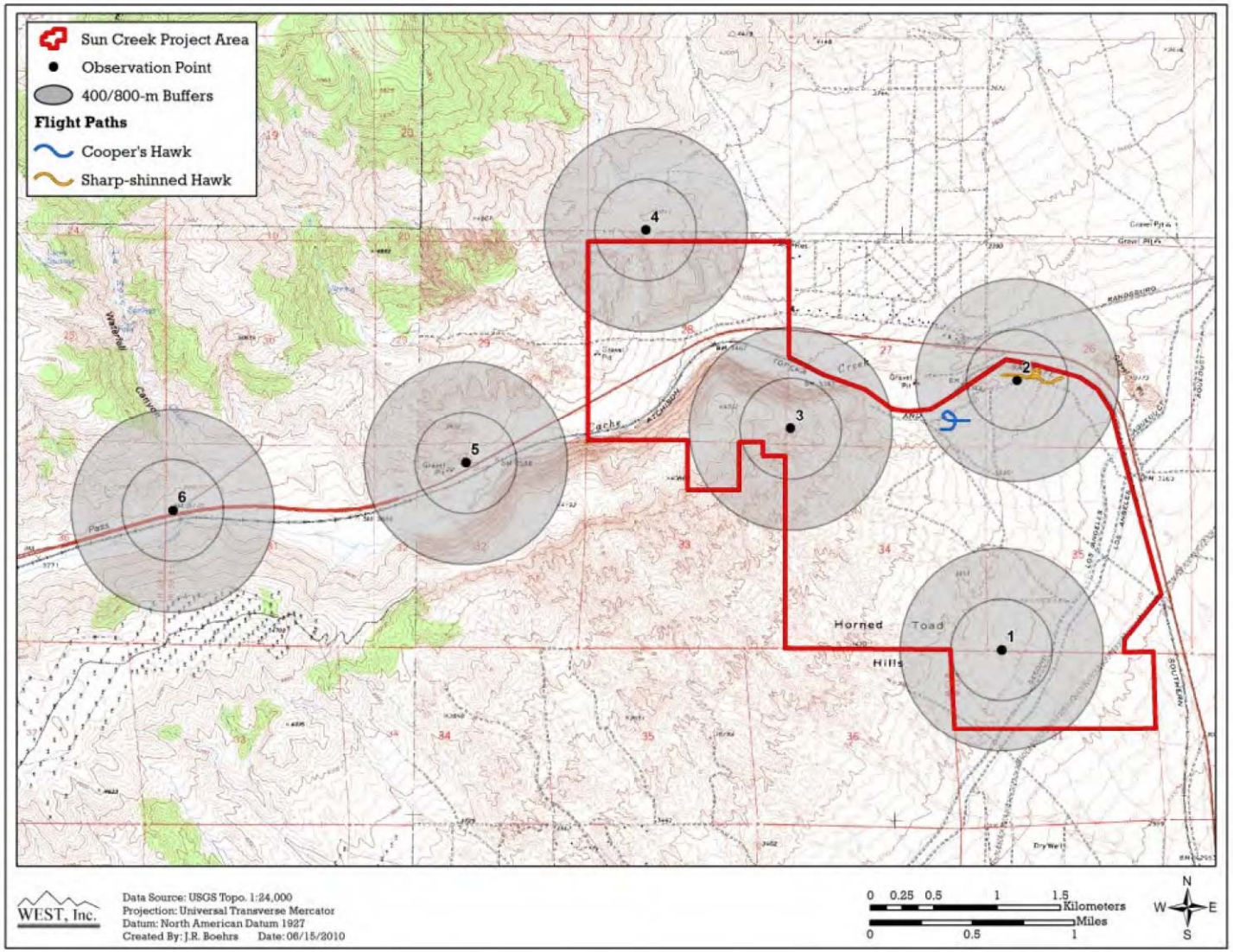


Figure 6b. Spatial use by flight paths of accipiters at the Sun Creek Wind Resource Area.

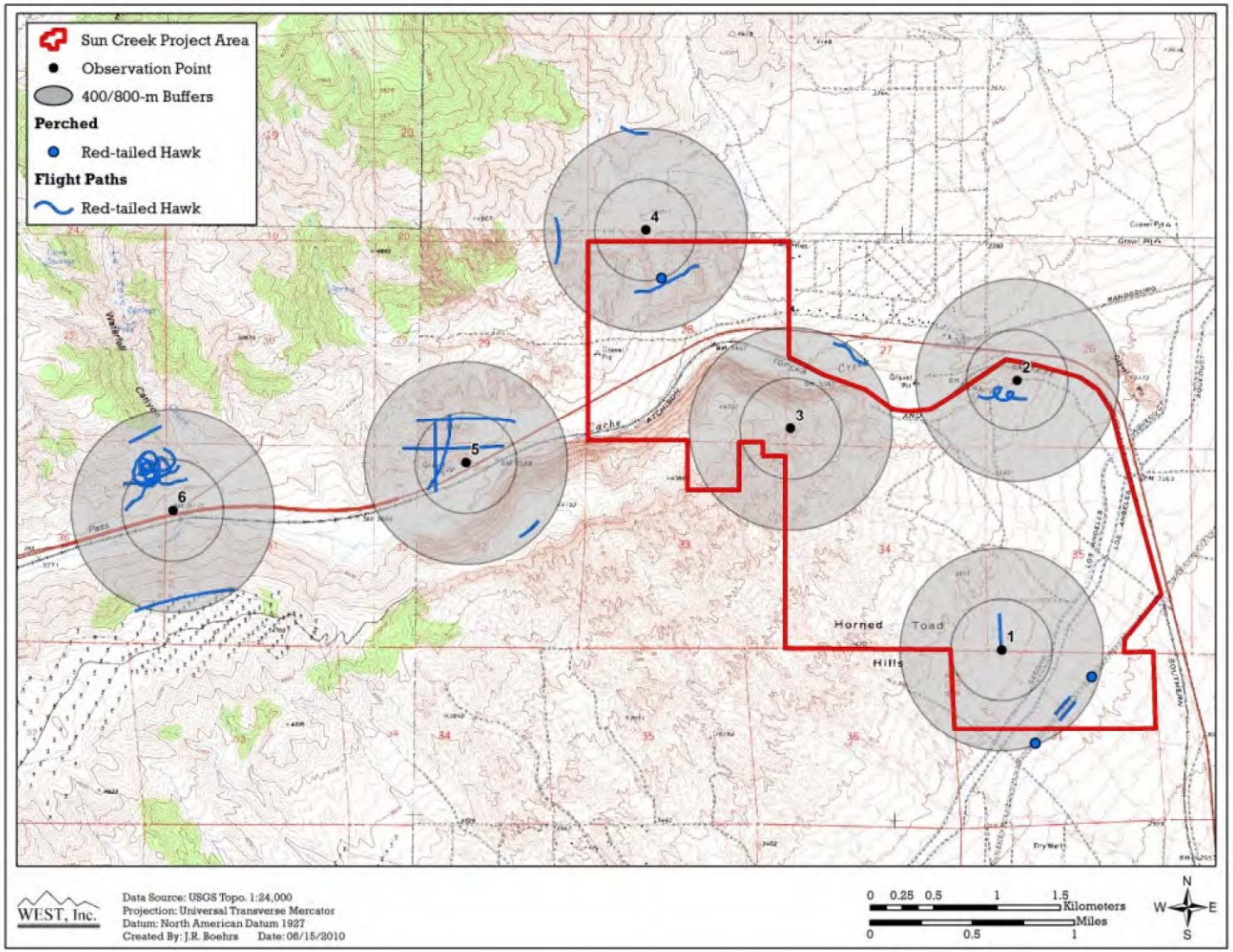


Figure 6c. Spatial use by flight paths of buteos at the Sun Creek Wind Resource Area.

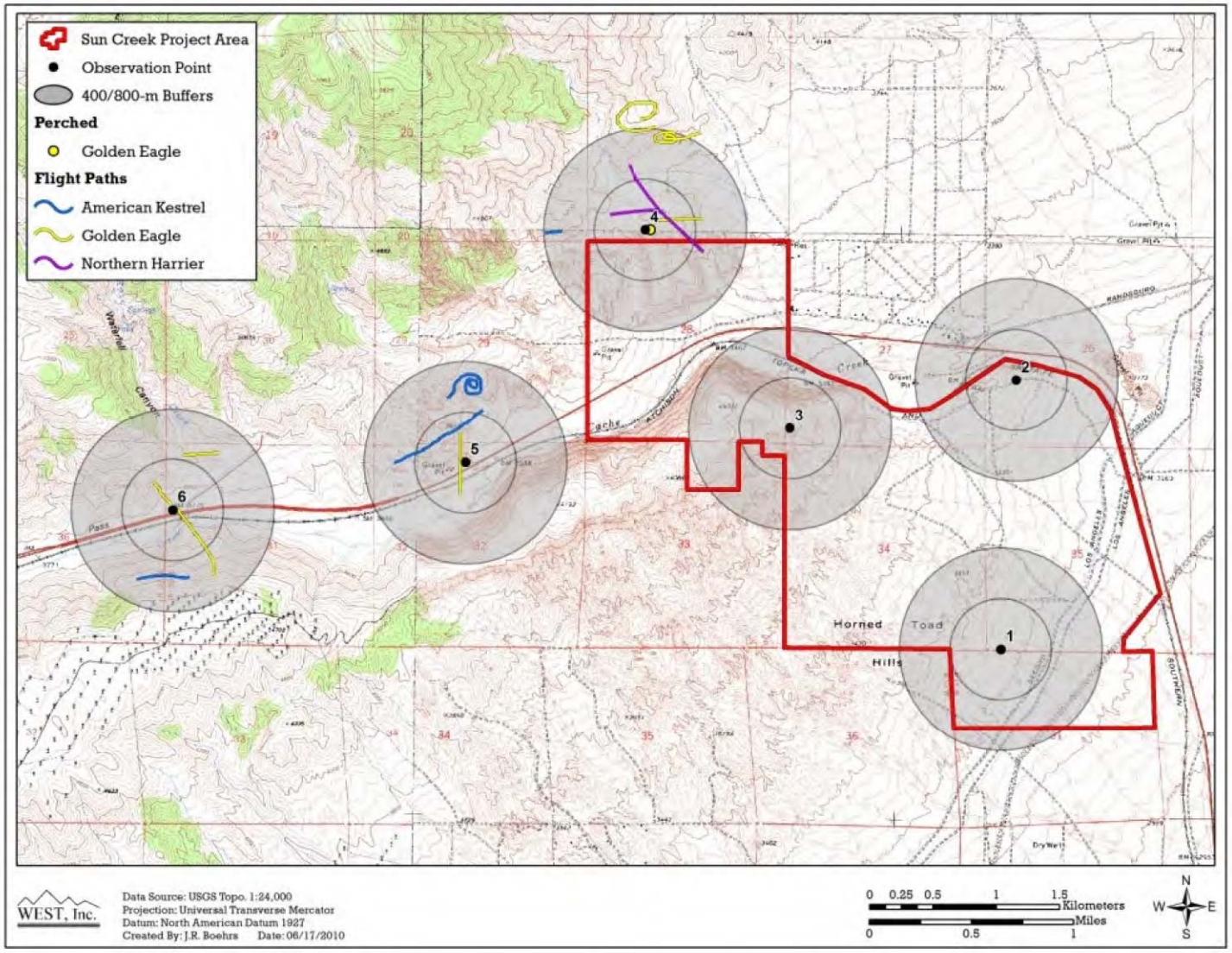


Figure 6d. Spatial use by flight paths of miscellaneous raptors at the Sun Creek Wind Resource Area.

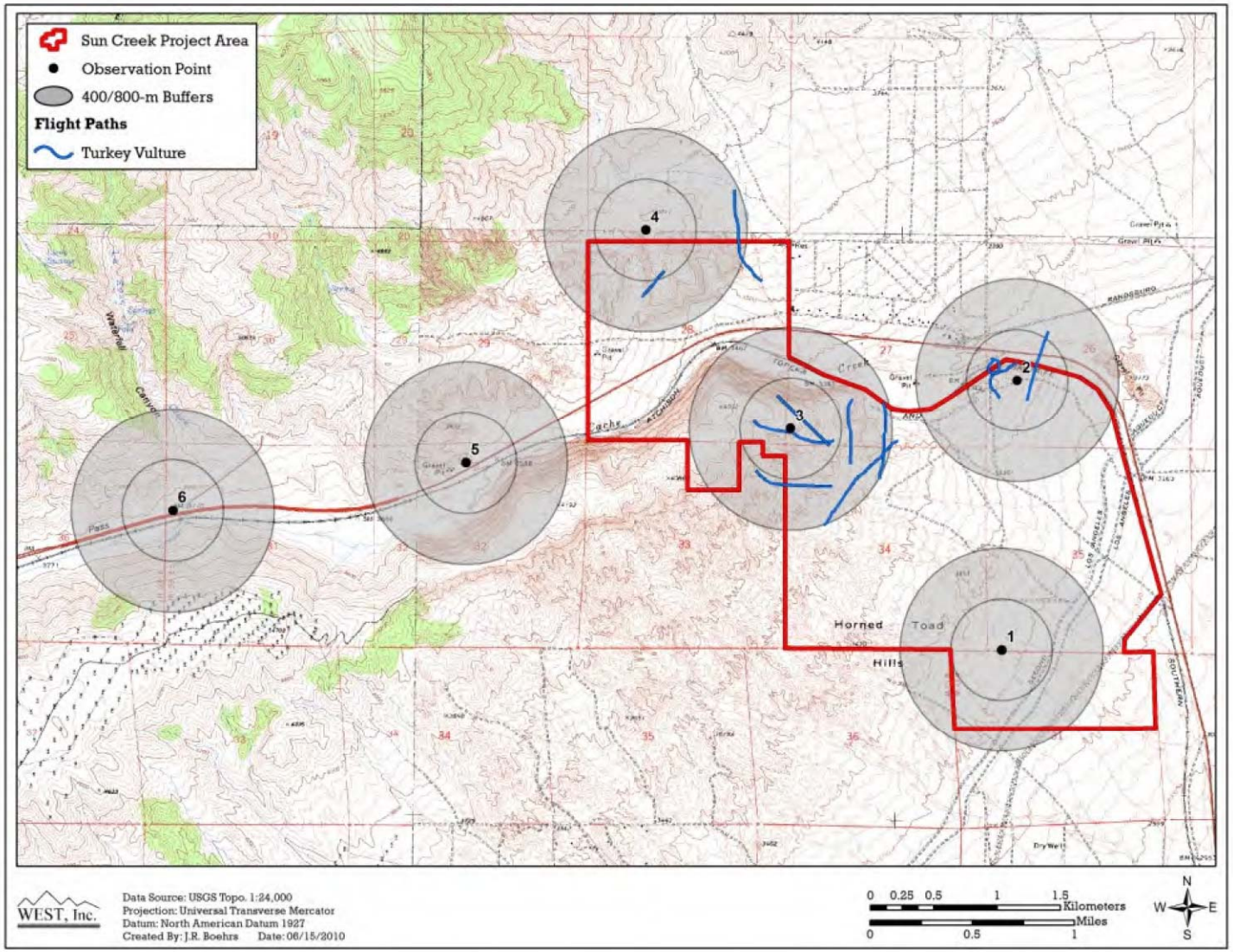


Figure 6e. Spatial use by flight paths of vultures at the Sun Creek Wind Resource Area.

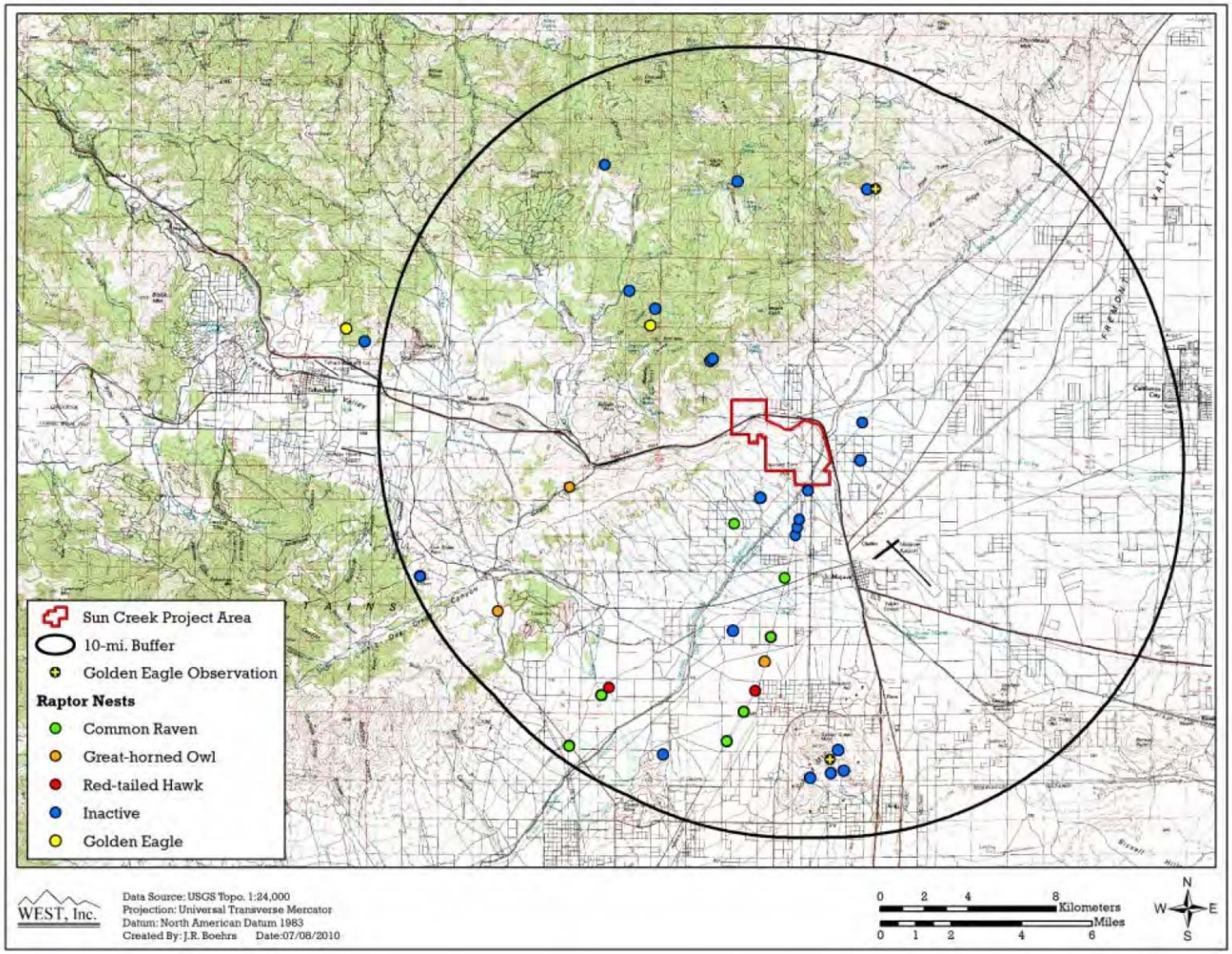


Figure 7. Location of raptor nests at the Sun Creek Wind Resource Area.

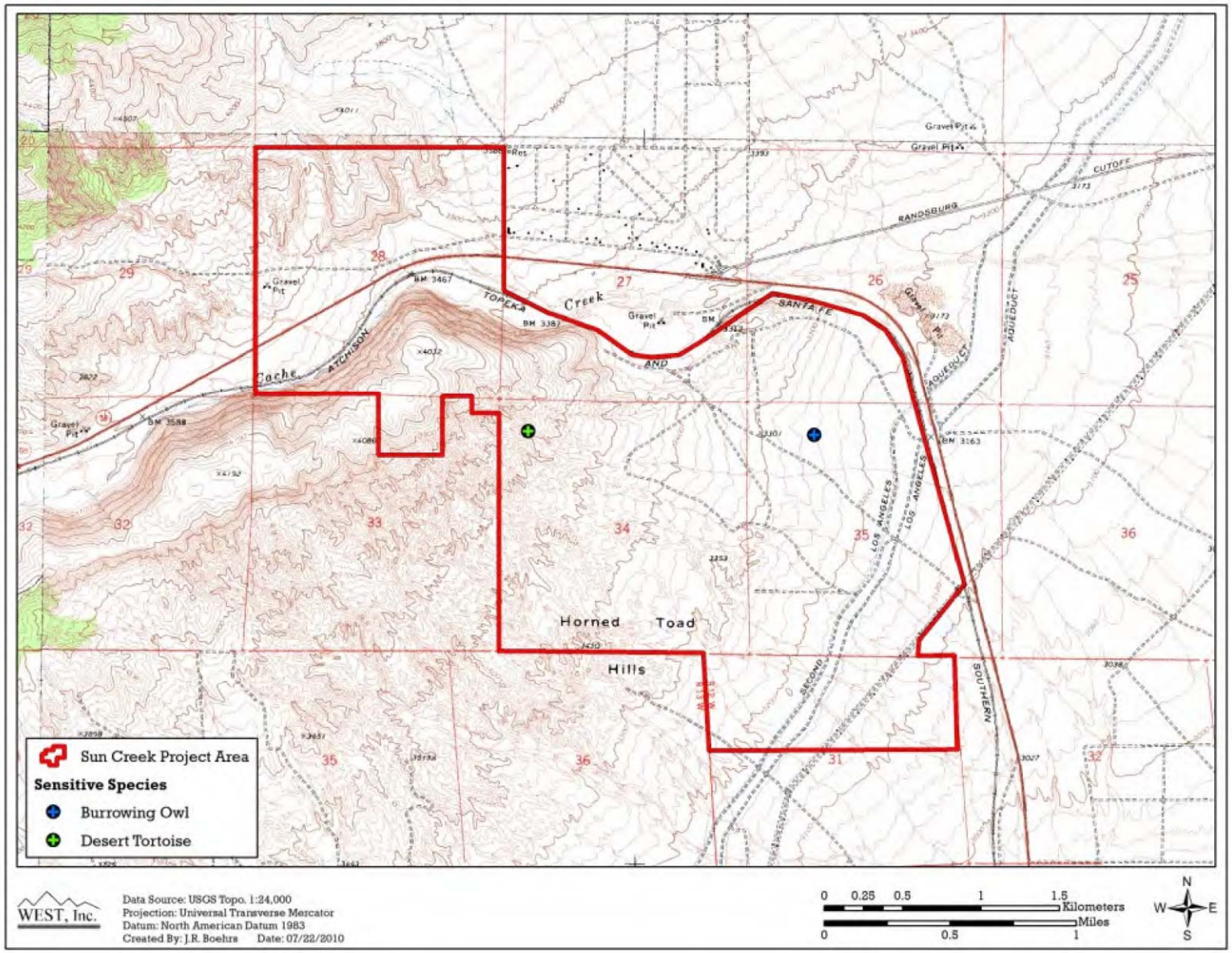


Figure 8. Locations of sensitive species observed incidentally within the Sun Creek Wind Resource Area.

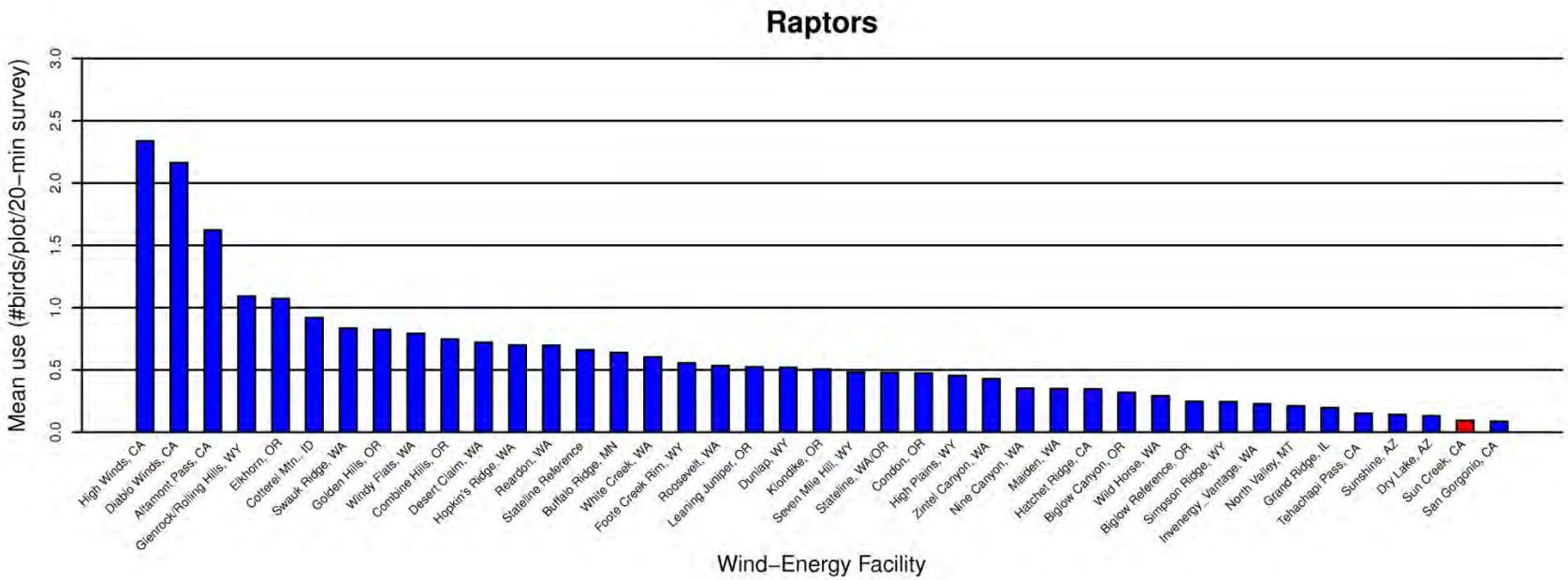
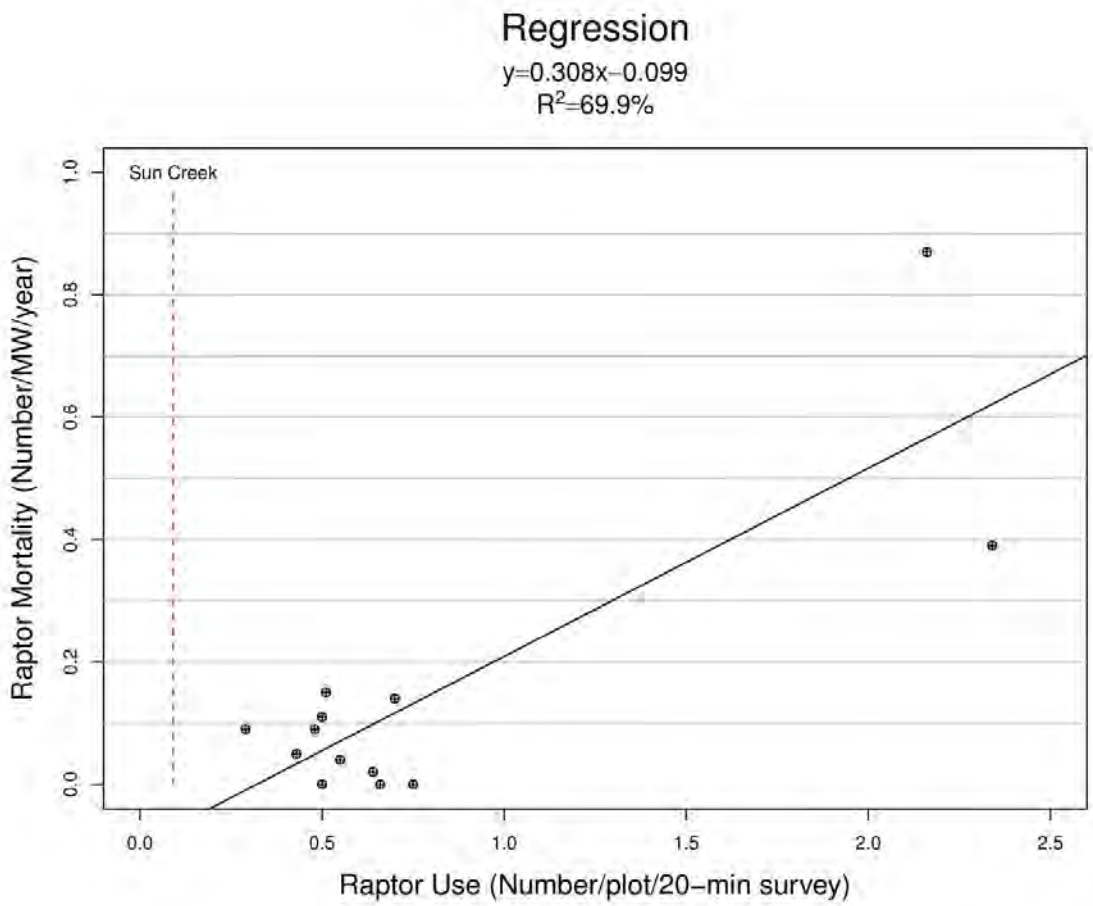


Figure 9. Comparison of annual raptor use between the Sun Creek Wind Resource Area and other wind-energy facilities in the United States.

Data from the following sources:

Wind-Energy Facility	Reference	Wind-Energy Facility	Reference	Wind-Energy Facility	Reference
Sun Creek, CA	This study.				
High Winds, CA	Kerlinger et al. 2005	Stateline Reference	URS et al. 2001	Nine Canyon, WA	Erickson et al. 2001b
Diablo Winds, CA	WEST 2006	Buffalo Ridge, MN	Erickson et al. 2002b	Maiden, WA	Erickson et al. 2002b
Altamont Pass, CA	Erickson et al. 2002b	White Creek, WA	NWC and WEST 2005	Hatchet Ridge, CA	Young et al. 2007b
Glenrock/Rolling Hills, WY	Johnson et al. 2008a	Foote Creek Rim, WY	Erickson et al. 2002b	Biglow Canyon, OR	WEST 2005c
Elkhorn, OR	WEST 2005a	Roosevelt, WA	NWC and WEST 2004	Wild Horse, WA	Erickson et al. 2003d
Cotterel Mtn., ID	BLM 2006	Leaning Juniper, OR	Kronner et al. 2005	Biglow Reference, OR	WEST 2005c
Swauk Ridge, WA	Erickson et al. 2003a	Dunlap, WY	Johnson et al. 2009a	Simpson Ridge, WY	Johnson et al. 2000b
Golden Hills, OR	Jeffrey et al. 2008	Klondike, OR	Johnson et al. 2002	Invenergy_Vantage, WA	WEST 2007
Windy Flats, WA	Johnson et al. 2007	Seven Mile Hill, WY	Johnson et al. 2008b	Grand Ridge, IL	Derby et al. 2009
Combine Hills, OR	Young et al. 2003d	Stateline, WA/OR	Erickson et al. 2002b	Tehachapi Pass, CA	Erickson et al. 2002b
Desert Claim, WA	Young et al. 2003b	Condon, OR	Erickson et al. 2002b	Sunshine, AZ	WEST and the CPRS 2006
Hopkin's Ridge, WA	Young et al. 2003a	High Plains, WY	Johnson et al. 2009b	Dry Lake, AZ	Young et al. 2007c
Reardon, WA	WEST 2005b	Zintel Canyon, WA	Erickson et al. 2002a	San Gorgonio, CA	Erickson et al. 2002b



Overall Raptor Use 0.09
Predicted Fatality Rate < 0.01 fatalities/MW/year
90.0% Prediction Interval (0, 0.20 fatalities/MW/year)

Figure 10. Regression analysis comparing raptor use estimations versus estimated raptor mortality.

Data from the following sources:

Wind-Energy Facility	Raptor Use (birds/plot /20-min survey)	Reference	Raptor Mortality (fatalities/MW/yr)	Reference
Buffalo Ridge, MN	0.64	Erickson et al. 2002b	0.02	Erickson et al. 2002b
Combine Hills, OR	0.75	Young et al. 2003d	0.00	Young et al. 2006
Diablo Winds, CA	2.161	WEST 2006	0.87	WEST 2008b
Foote Creek Rim, WY	0.55	Johnson et al. 2000b	0.04	Young et al. 2003c
High Winds, CA	2.34	Kerlinger et al. 2005	0.39	Kerlinger et al. 2006
Hopkins Ridge, WA	0.70	Young et al. 2003a	0.14	Young et al. 2007a
Klondike II, OR	0.50	Johnson 2004	0.11	NWC and WEST 2007
Klondike, OR	0.50	Johnson et al. 2002	0.00	Johnson et al. 2003
Stateline, WA/OR	0.48	Erickson et al. 2004	0.09	Erickson et al. 2002b
Vansycle, OR	0.66	WCIA and WEST 1997	0.00	Erickson et al. 2000
Wild Horse, WA	0.29	Erickson et al. 2003d	0.09	Erickson et al. 2008
Zintel, WA	0.43	Erickson et al. 2002a	0.05	Erickson et al. 2002b
Bighorn, WA	0.51	Johnson and Erickson 2004	0.15	Kronner et al. 2008

Appendix D-4

Avian Interim Report Summer 2010

Baseline Avian Studies for the Alta East Wind Resource Area Kern County, California

Interim Report
July 10 – August 31, 2010

Prepared for:

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Prepared by:

Andrea Chatfield and Kimberly Bay

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October 15, 2010

WEST Inc.
Environmental & Statistical Consultants

NATURAL RESOURCES ◆ SCIENTIFIC SOLUTIONS

Draft Pre-Decisional Document – Privileged and Confidential – Not For Distribution

EXECUTIVE SUMMARY

In July of 2010 Western EcoSystems Technology, Inc. initiated a second year of avian studies in the Alta East Wind Resource Area (AEWRA) in Kern County, California. The results of the first year of avian studies conducted in 2009-2010 suggested that a wind development at the AEWRA would not have significant impacts to most avian species. During the 2009/2010 surveys, two golden eagle nests and golden eagle use were documented in areas outside the project boundary. The use by golden eagles was occurring to the north, northeast, and west of the current project boundary and the nests were located approximately 3.5 and 11 miles from the project boundary. Therefore, a second year of avian study was initiated to better understand the potential risks that the proposed project would pose to eagles, as well as to continue to better understand avian use of the project site in general. The second year of avian use studies was initiated at the AEWRA on July 10, 2010 and is scheduled to continue through June of 2011. This interim report presents the results of fixed-point bird use surveys conducted during the summer of 2010. Seasonal interim reports are designed to give CH2M HILL and Alta Windpower, LLC, an early warning of relatively high wildlife use or if sensitive species are observed within the study area.

A total of 54 30-minute (min) fixed-point bird use surveys were conducted within the AEWRA over the course of nine visits from July 10 to August 31, 2010. Sixteen unique bird species were observed, and a total of 219 individual birds within 83 separate groups were recorded.

Upland game birds were the most abundant bird type recorded, accounting for 50.7% of the total observations. This was due to relatively high numbers of California quail (84 individuals) and chukar (27 individuals). Passerines were the second most abundant bird type recorded during surveys, comprising 39.3% of the total observations. The most abundant passerine species recorded included sage sparrow (34 individuals) and cactus wren (24 individuals). Only two raptors were observed during surveys (0.9% of total bird observations); a red-tailed hawk and an unidentified accipiter.

A comparison of the adjusted mean raptor use (number of raptors divided by the number of 800-meter [2,625-foot] plots and the total number of surveys) was made between the AEWRA and 41 other existing and proposed wind energy facilities with similar data. During the summer observation period, mean raptor use in AEWRA was low (0.02 raptors/plot/20-min survey), ranking lower than all of the 41 other wind resource areas with data for the summer season. This is consistent with the results of the 2009/2010 studies.

Two sensitive species were recorded within the AEWRA during fixed-point surveys, loggerhead shrike (12 individuals) and Le Conte's thrasher (two individuals). Loggerhead shrike is a California species of special concern while Le Conte's thrasher is a federal species of concern. No golden eagles or California condors were documented in or near the project during summer 2010, indicating that summer use of the project by eagles during this period is limited to nonexistent.

TABLE OF CONTENTS

EXECUTIVE SUMMARY i
INTRODUCTION 1
STUDY AREA 1
METHODS 4
Fixed-Point Bird Use Surveys 4
Bird Use Survey Plots 4
Bird Survey Methods 4
Observation Schedule 4
RESULTS 5
Fixed-Point Bird Use Surveys 5
DISCUSSION 6
Bird Use Surveys 6
Comparison of Seasonal Raptor Use 6
REFERENCES 9

LIST OF TABLES

Table 1. Total number of individuals and groups for each bird type and species during the fixed-point bird use surveys at the Alta East Wind Resource Area, July 10 – August 31, 2010. 5

LIST OF FIGURES

Figure 1. Study area map showing locations of fixed-point survey stations in the Alta East Wind Resource Area. 3
Figure 2. Comparison of summer raptor use between the Alta East Wind Resource Area and other United States wind energy facilities. 8

STUDY PARTICIPANTS

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REPORT REFERENCE

Chatfield, A., and K. Bay. 2010. Baseline Avian Studies for the Alta East Wind Resource Area, Kern County, California. Interim Report: July 10 – August 31, 2010. Prepared for CH2M HILL, Oakland, California. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming.

INTRODUCTION

Terra Gen Power is proposing to develop the Alta East Wind Project, a wind energy facility located in Kern County, California. CH2M HILL, a contractor to Terra Gen Power, contracted Western EcoSystems Technology, Inc. (WEST) to develop and implement a standardized protocol for baseline avian studies in the Alta East Wind Project and surrounding area, defined in this report as the Alta East Wind Resource Area (AEWRA), with the purpose of estimating impacts of the proposed wind energy facility on birds and to assist with siting turbines to minimize impacts to avian resources. The protocols for the baseline study are similar to those used at other studies in California and throughout the western US with modifications to accommodate site-specific characteristics of the AEWRA. Additionally, the protocols follow guidance of the California Wind Energy Guidelines (CEC and CDFG 2007) and the US Fish and Wildlife Service (USFWS) Wind Turbine Guidelines Advisory Committee (WTGAC 2010).

The purpose of the following interim report is to discuss the results of fixed-point bird use surveys conducted at the AEWRA from July 10 to August 31, 2010, and to bring items of biological interest to the attention of CH2M HILL and Alta Windpower, LLC, such as seasonal raptor use and the presence of sensitive or special-status species. This current survey effort is scheduled to continue through the spring of 2011 and is designed to supplement a previous year-long avian use study conducted at the AEWRA (previously known as the Sun Creek Wind Resource Area) in 2009-2010 (see Chatfield et al. 2010). While the results of the first year of surveys suggested that a wind development at the AEWRA would not have significant impacts to most avian species, use of the adjacent area by golden eagles and golden eagle nests located in the surrounding landscape was documented. Therefore, a second year of avian study was initiated to better understand the potential risks that the proposed project would pose to eagles, as well as to continue to better understand avian use of the project site in general.

STUDY AREA

The proposed AEWRA is located in southeastern Kern County, approximately two miles (3.2 kilometers [km]) north-northwest of the unincorporated city of Mojave and 10 miles (16 km) east of the city of Tehachapi (Figure 1). The study area is comprised of undeveloped rangeland on a combination of privately-owned land and land administered by the Bureau of Land Management (BLM) within the Alta East Wind Project and surrounding area. The AEWRA falls within the high desert plains and hills on the western edge of the Mojave Desert. The existing natural conditions of the region are complex as the Tehachapi Mountains to the north and west transition into Mojave Desert to the south and east. Elevations within the study area range from approximately 3,100 to 4,200 feet (ft; 940 to 1,280 meters [m]) above sea level, with the highest elevations occurring in the northwestern portion of the study area (Figure 1). The habitat ranges from lowland creosote (*Larrea tridentata*) scrub and Joshua tree (*Yucca brevifolia*) woodland in the southeast to juniper (*Juniperus* spp.) shrubland on the steeper, rocky slopes in the north and west. Wetlands within the AEWRA are limited to a network of ephemeral drainages; there are no perennial water sources within the study area. Highway 58 bisects the AEWRA, an

underground portion of the Los Angeles Aqueduct runs along the southeast corner of the study area, and a network of dirt roads and off-highway vehicle trails run throughout the study area.

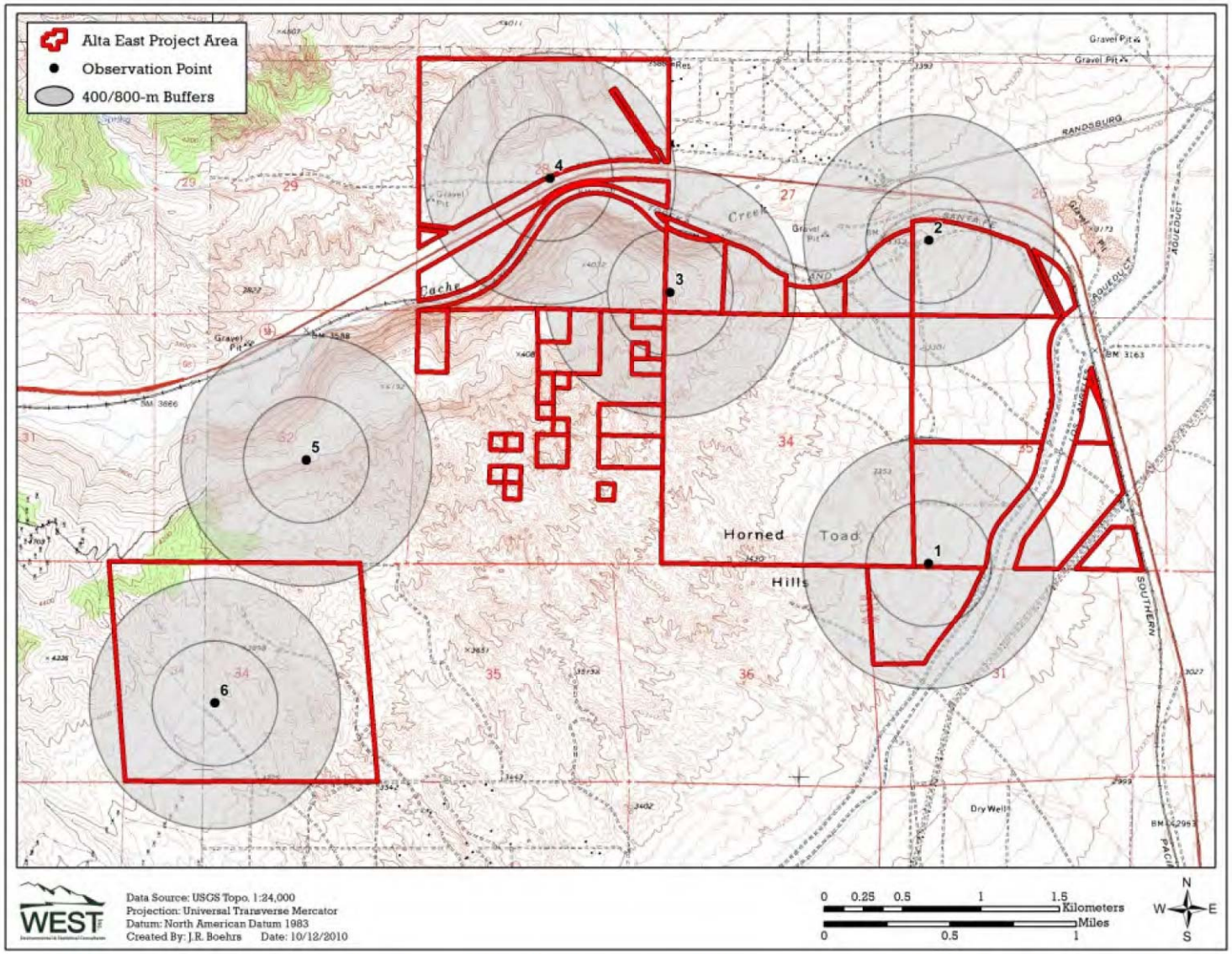

Figure 1. Study area map showing locations of fixed-point survey stations in the Alta East Wind Resource Area during Summer 2010.

METHODS

Fixed-Point Bird Use Surveys

The objective of the fixed-point bird use surveys was to estimate the seasonal and spatial use of the study area by birds, particularly diurnal raptors, defined here as kites, accipiters, buteos, harriers, eagles, and falcons. Fixed-point surveys (variable circular plots) were conducted using methods described by Reynolds et al. (1980). All birds seen during each 30-minute (min) fixed-point survey were recorded.

Bird Use Survey Plots

Six points were selected to survey representative habitats and topography of the study area while providing relatively even coverage (Figure 1). To the extent possible, survey stations were selected to be consistent with locations used in the 2009-2010 survey effort at the AEWRA (Chatfield et al. 2010). However, due to changes to land access and changes within the boundary of the AEWRA, several new points were established. Each survey plot was an 800-m (2,625-ft) radius circle centered on the point.

Bird Survey Methods

All species of birds observed during fixed-point surveys were recorded. Observations of large birds beyond the 800-m radius were recorded, but were not included in the statistical analyses. For small birds, observations beyond a 100-m (328-ft) radius were excluded from the analysis.

The date, start, and end time of the survey period, and weather information, such as temperature, wind speed, wind direction, and cloud cover, were recorded for each survey. Species or best possible identification, number of individuals, sex and age class (if possible), distance from plot center when first observed, closest distance, altitude above ground, activity (behavior), and habitat(s) were recorded for each observation. Behavior and habitat type were recorded based on the point of first observation. Approximate flight height and flight direction at first observation were recorded to the nearest 5-m (16-ft) interval. Other information recorded included whether or not the observation was auditory only and the 10-min interval of the 30-min survey in which the observation was initially noted.

Observation Schedule

Sampling intensity was designed to document bird use and behavior by habitat and season within the study area. Surveys were conducted weekly during the summer (July 10 to August 31). Surveys were conducted during daylight hours and survey periods varied to approximately cover all daylight hours during a season. Each point was surveyed the same number of times during the season.

RESULTS

This interim report presents the results of fixed-point bird use surveys conducted at the AEWRA from July 10 to August 31, 2010.

Fixed-Point Bird Use Surveys

A total of 54 30-min fixed-point bird use surveys were conducted within the AEWRA during nine visits from July 10 to August 31, 2010.

Sixteen unique bird species were observed during fixed-point bird use surveys, and a total of 219 individual birds within 83 separate groups were recorded (Table 1). Upland game birds were the most frequently observed bird type, accounting for 50.7% of all observations. This was primarily due to relatively high numbers of California quail (*Callipepla californica*; 84 observations) and chukar (*Alectoris chukar*; 27 observations). Passerines were the second most abundant bird type observed in the study area, representing 39.3% of all observations. The most common passerine species observed during the surveys included sage sparrow (*Amphispiza bellii*; 34 observations) and cactus wren (*Camphylorhynchus brunneicapillus*; 24 observations; Table 1). Raptors accounted for 0.9% of all individuals observed and the only raptors recorded during surveys were a single red-tailed hawk (*Buteo jamaicensis*) and a single unidentified accipiter (Table 1).

Table 1. Total number of individuals and groups for each bird type and species during the fixed-point bird use surveys at the Alta East Wind Resource Area, July 10 – August 31, 2010.

		Summer		Total	
Species/Type	**Scientific Name**	**# grps**	**# obs**	**# grps**	**# obs**
Raptors		**2**	**2**	**2**	**2**
Accipiters		*1*	*1*	*1*	*1*
unidentified accipiter		1	1	1	1
Buteos		*1*	*1*	*1*	*1*
red-tailed hawk	*Buteo jamaicensis*	1	1	1	1
Upland Game Birds		**9**	**111**	**9**	**111**
California quail	*Callipepla californica*	8	84	8	84
chukar	*Alectoris chukar*	1	27	1	27
Doves/Pigeons		**8**	**9**	**8**	**9**
mourning dove	*Zenaida macroura*	8	9	8	9
Large Corvids		**5**	**7**	**5**	**7**
common raven	*Corvus corax*	5	7	5	7
Passerines		**55**	**86**	**55**	**86**
cactus wren	*Campylorhynchus brunneicapillus*	21	24	21	24
Le Conte's thrasher	*Toxostoma lecontei*	2	2	2	2
loggerhead shrike	*Lanius ludovicianus*	9	12	9	12
sage sparrow	*Amphispiza belli*	17	34	17	34
unidentified sparrow		1	1	1	1
unidentified swallow		1	7	1	7
western meadowlark	*Sturnella neglecta*	3	5	3	5
western scrub-jay	*Aphelocoma californica*	1	1	1	1

Table 1. Total number of individuals and groups for each bird type and species during the fixed-point bird use surveys at the Alta East Wind Resource Area, July 10 – August 31, 2010.

		Summer		Total	
Species/Type	**Scientific Name**	**# grps**	**# obs**	**# grps**	**# obs**
Other Birds		**3**	**3**	**3**	**3**
unidentified hummingbird		2	2	2	2
white-throated swift	*Aeronautes saxatalis*	1	1	1	1
ladder-backed woodpecker	*Picoides scalaris*	1	1	1	1
Overall		**83**	**219**	**83**	**219**

Two sensitive bird species were recorded during fixed-point bird use surveys at the AEWRA: loggerhead shrike (*Lanius ludovicianus*; 12 observations), a state species of special concern (CDFG 2009), and Le Conte's thrasher (*Toxostoma lecontei*; two observations), a federal species of concern (USFWS 2008; Table 1).

DISCUSSION

The current study was designed to supplement previous avian studies conducted at the AEWRA in 2009-2010 (Chatfield et al. 2010). The results of those studies suggested that a wind development at the AEWRA would not have significant impacts to most avian species; however, the use of adjacent areas by golden eagles and the location of golden eagle nests within approximately 3.25 and 11 miles of the project boundary warranted additional evaluation.

Based on the bird use surveys conducted during the summer of 2010, no golden eagles were observed within the AEWRA during this period, indicating that summer use of the project by eagles during this period is limited to nonexistent. These surveys are part of a larger one-year study effort, and are scheduled to continue through June of 2011.

Bird Use Surveys

Species diversity of birds observed during fixed-point bird use surveys generally reflected the desert scrub habitats comprising the AEWRA, and are generally consistent with results from the previous year of bird surveys (see Chatfield et al. 2010). Resident, breeding birds of dry, open shrubland and Joshua tree woodland were dominant. Upland game birds, such as California quail and chukar, and passerines, such as sage sparrow, cactus wren, loggerhead shrike, and common raven, were commonly observed throughout the summer. Other bird types, including raptors, were rarely observed during the study period. Loggerhead shrike (state species of special concern [CDFG 2009]) and Le Conte's thrasher (federal species of concern [USFWS 2008]) were the only sensitive species observed during the surveys. No eagles or condors were observed during the summer 2010 study.

Comparison of Seasonal Raptor Use

Based on the results from other wind resource areas with similar data, mean adjusted raptor use (number of raptors divided by the number of 800-m plots and the total number of surveys) in the AEWRA during the summer of 2010 was very low (0.02 raptors/plot/20-min survey) relative to data collected at 41 other existing and proposed wind energy facilities with data for the

summer season (Figure 2). These results are similar to those reported during the first year of studies covering all seasons at the AEWRA (see Chatfield et al. 2010).

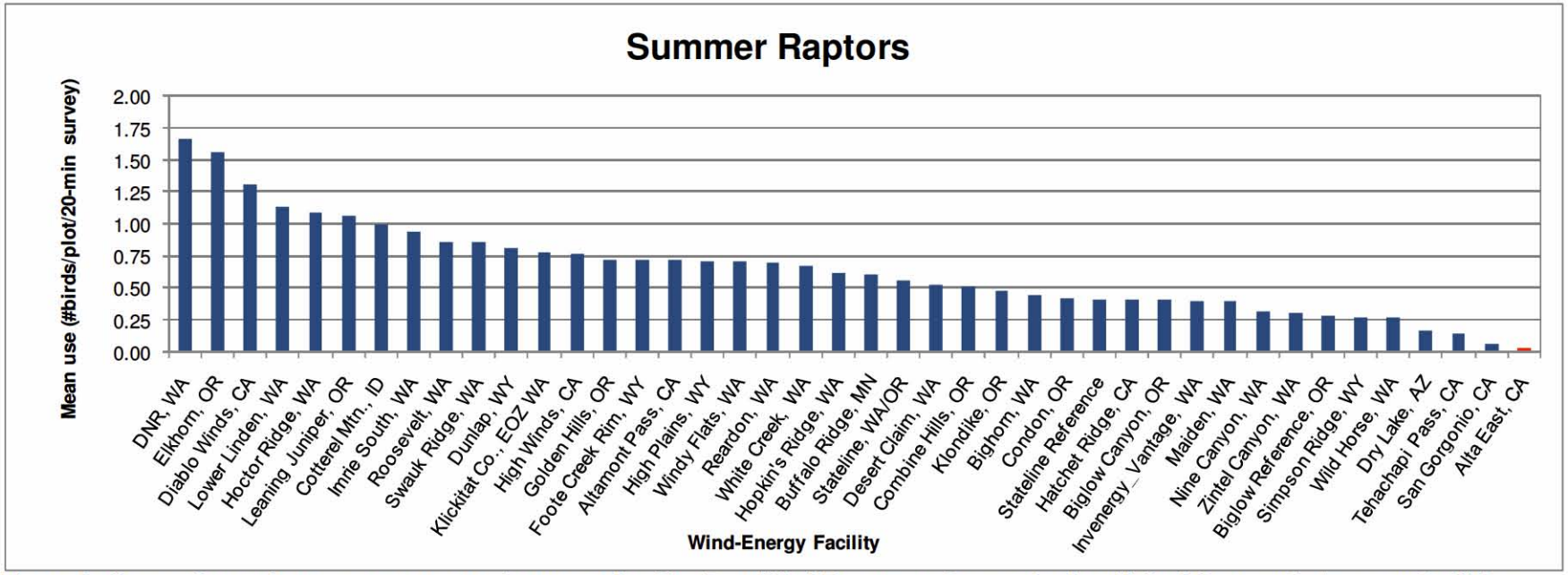

Figure 2. Comparison of summer raptor use between the Alta East Wind Resource Area and other United States wind energy facilities.
Data from the following sources:

Alta East, CA	This study.				
DNR, WA	Johnson et al. 2006a	Windy Flats, WA	Johnson et al. 2007b	Zintel Canyon, WA	Erickson et al. 2002a
Elkhorn, OR	WEST 2005a	Reardon, WA	WEST 2005b	Biglow Reference, OR	WEST 2005c
Diablo Winds, CA	WEST 2006	White Creek, WA	NWC and WEST 2005	Simpson Ridge, WY	Johnson et al. 2000
Lower Linden, WA	Johnson et al. 2007a	Hopkin's Ridge, WA	Young et al. 2003a	Stateline Reference	URS et al. 2001
Hoctor Ridge, WA	Johnson et al. 2006b	Buffalo Ridge, MN	Erickson et al. 2002b	Hatchet Ridge, CA	Young et al. 2007a
Leaning Juniper, OR	Kronner et al. 2005	Stateline, WA/OR	Erickson et al. 2002b	Biglow Canyon, OR	WEST 2005c
Cotterel Mtn., ID	BLM 2006	Desert Claim, WA	Young et al. 2003b	Invenergy_Vantage, WA	WEST 2007
Imrie South, WA	Johnson et al. 2006c	Combine Hills, OR	Young et al. 2003c	Maiden, WA	Erickson et al. 2002b
Roosevelt, WA	NWC and WEST 2004	Klondike, OR	Johnson et al. 2002	Nine Canyon, WA	Erickson et al. 2001
Swauk Ridge, WA	Erickson et al. 2003a	Bighorn, WA	Johnson and Erickson 2004	Zintel Canyon, WA	Erickson et al. 2002a
Dunlap, WY	Johnson et al. 2009a	Condon, OR	Erickson et al. 2002b	Biglow Reference, OR	WEST 2005c
Klickitat Co., EOZ WA	WEST and NWC 2003	Stateline Reference	URS et al. 2001	Simpson Ridge, WY	Johnson et al. 2000
High Winds, CA	Kerlinger et al. 2005	Hatchet Ridge, CA	Young et al. 2007a	Wild Horse, WA	Erickson et al. 2003b
Golden Hills, OR	Jeffrey et al. 2008	Biglow Canyon, OR	WEST 2005c	Dry Lake, AZ	Young et al. 2007b
Foote Creek Rim, WY	Erickson et al. 2002b	Invenergy_Vantage, WA	WEST 2007	Tehachapi Pass, CA	Erickson et al. 2002b
Altamont Pass, CA	Erickson et al. 2002b	Maiden, WA	Erickson et al. 2002b	San Gorgonio, CA	Erickson et al. 2002b
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Appendix D-5

Avian Baseline Studies Summer Fall Interim Report July – November 2010

Avian Baseline Studies for the Alta East Wind Resource Area Kern County, California

Summer - Fall Interim Report
July 10 – November 12, 2010

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NATURAL RESOURCES ◆ SCIENTIFIC SOLUTIONS

Draft Pre-Decisional Document - Privileged and Confidential - Not For Distribution

EXECUTIVE SUMMARY

In July of 2010 Western EcoSystems Technology, Inc. initiated a second year of avian studies in the Alta East Wind Resource Area (AEWRA) in Kern County, California. The results of the first year of avian studies conducted in 2009 - 2010 suggested that a wind development with appropriate avoidance and mitigation measures at the AEWRA would not have significant impacts to any avian species. During the 2009/2010 surveys, two golden eagle nests and golden eagle use were documented in areas outside the project boundary. The use by golden eagles was occurring to the north, northeast, and west of the current project boundary and the nests were located approximately 3.5 and 11 miles from the project boundary. Therefore, a second year of avian study was initiated to better understand the potential risks that the proposed project would pose to eagles, as well as to continue to better understand avian use of the project area in general. The second year of avian use studies was initiated at the AEWRA on July 10, 2010 and is scheduled to continue through June of 2011. This interim report presents the results of fixed-point bird use surveys conducted during the summer and fall of 2010. Seasonal interim reports are designed to give CH2M HILL and Alta Windpower, LLC, an early warning of relatively high wildlife use or if special-status species are observed within the study area.

A total of 114 30-minute fixed-point bird use surveys were conducted within the Alta East Wind Resource Area during 19 visits from July 10 to November 12, 2010. Fifty-four surveys were conducted in the summer during nine visits, and 60 surveys were conducted in the fall during ten visits. Twenty-nine unique bird species were observed, and a total of 743 individual birds within 269 separate groups were recorded.

Passerines (excluding large corvids) were the most frequently recorded bird type, accounting for 59.6% of observations. This was primarily due to relatively high numbers of sage sparrow (206 observations), house finch (49 observations), western meadowlark (49 observations), and cactus wren (31 observations). These four species represented only 13.8% of all species observed, yet they accounted for 45.1% of the total bird observations. Large corvids (common raven; 144 observations) were the second most frequently observed bird type, comprising 19.4% of total bird observations. Raptors accounted for 1.9% of all observations, with the red-tailed hawk and American kestrel being the most commonly observed raptor species (six and five individuals, respectively). Upland game birds were more commonly observed in the summer (89.5% of observations), while the majority of passerines, large covids, and raptors were recorded in the fall (80.6%, 95.1%, and 85.7%, respectively).

Two special-status species were observed during surveys: a single golden eagle, protected under the federal Bald and Golden Eagle Protection Act and a state fully-protected species, and fifteen observations of loggerhead shrike, a federal species of concern and a state species of special concern.

Mean raptor use (number of raptors divided by the number of 800-meter [2,625-foot] plots and the total number of surveys) was compared between the AEWRA and other existing and proposed wind energy facilities. During the summer and fall observation periods, mean raptor use in AEWRA was low (0.02 and 0.12 raptors/plot/20-minute survey, respectively) relative to the other wind resource areas with summer or fall data.

TABLE OF CONTENTS

EXECUTIVE SUMMARY i

INTRODUCTION 1

STUDY AREA 1

METHODS 2

Fixed-Point Bird Use Surveys 2
Bird Use Survey Plots 2
Bird Survey Methods 3
Observation Schedule 3

RESULTS 3

Fixed-Point Bird Use Surveys 3

DISCUSSION 5

Bird Use Surveys 6
Sensitive Species 6
Comparison of Seasonal Raptor Use 6

REFERENCES 9

LIST OF TABLES

Table 1. Summary of group and individual observations by species and bird type for summer, fall, and overall seasons from fixed-point bird use surveys at the Alta East Wind Resource Area[a], July 10 to November 12, 2010. 4

LIST OF FIGURES

Figure 1. Study area map and fixed-point bird use observation locations for the Alta East Wind Resource Area. 2

Figure 2. Comparison of summer raptor use between the Alta East Wind Resource Area and other US wind energy facilities. 7

Figure 3. Comparison of fall raptor use between the Alta East Wind Resource Area and other US wind energy facilities. 8

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REPORT REFERENCE

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INTRODUCTION

Alta Windpower, LLC is proposing to develop the Alta East Wind Project, a wind energy facility located in Kern County, California. CH2M HILL, a contractor to Alta Windpower, LLC, contracted Western EcoSystems Technology, Inc. (WEST) to develop and implement a standardized protocol for baseline avian studies in the Alta East Wind Project and surrounding area, defined in this report as the Alta East Wind Resource Area (AEWRA), with the purpose of estimating impacts of the proposed wind energy facility on birds and to assist with siting turbines to minimize impacts to avian resources. The protocols for the baseline study are similar to those used at other studies in California and throughout the western US with modifications to accommodate site-specific characteristics of the AEWRA. Additionally, the protocols follow guidance of the California Wind Energy Guidelines (CEC and CDFG, 2007) and the US Fish and Wildlife Service (USFWS) Wind Turbine Guidelines Advisory Committee (WTGAC 2010).

The purpose of the following interim report is to discuss the results of fixed-point bird use surveys conducted at the AEWRA from July 10 to November 12, 2010, and to bring items of biological interest to the attention of CH2M HILL and Alta Windpower, LLC, such as seasonal raptor use and the presence of special-status species (i.e., species considered to be of conservation concern at the state and/or federal level). This current survey effort is scheduled to continue through the spring of 2011 and is designed to supplement a previous year-long avian use study conducted at the AEWRA (previously known as the Sun Creek Wind Resource Area) in 2009-2010 (see Chatfield et al. 2010). While the results of the first year of surveys suggested that a wind development at the AEWRA would not have significant impacts to avian species, use of the adjacent area by golden eagles (*Aquila chrysaetos*) and golden eagle nests located in the surrounding landscape was documented. Therefore, a second year of avian study was initiated to better understand the potential risks that the proposed project would pose to eagles, as well as to continue to better understand avian use of the project site in general.

STUDY AREA

The proposed AEWRA is located in southeastern Kern County, approximately two miles (3.2 kilometers [km]) north-northwest of the unincorporated city of Mojave and 10 miles (16 km) east of the city of Tehachapi (Figure 1). The study area is comprised of undeveloped rangeland on a combination of privately-owned land and land administered by the Bureau of Land Management (BLM) within the Alta East Wind Project and surrounding area. The AEWRA falls within the high desert plains and hills on the western edge of the Mojave Desert. The existing natural conditions of the region are complex as the Tehachapi Mountains to the north and west transition into Mojave Desert to the south and east. Elevations within the study area range from approximately 3,100 to 4,200 feet (ft; 940 to 1,280 meters [m]) above sea level, with the highest elevations occurring in the northwestern portion of the study area (Figure 1). The habitat ranges from lowland creosote (*Larrea tridentata*) scrub and Joshua tree (*Yucca brevifolia*) woodland in the southeast to juniper (*Juniperus* spp.) shrubland on the steeper, rocky slopes in the north and west. Wetlands within the AEWRA are limited to a network of ephemeral drainages; there are

no perennial water sources within the study area. Highway 58 bisects the AEWRA, an underground portion of the Los Angeles Aqueduct runs along the southeast corner of the study area, and a network of dirt roads and off-highway vehicle trails run throughout the study area.

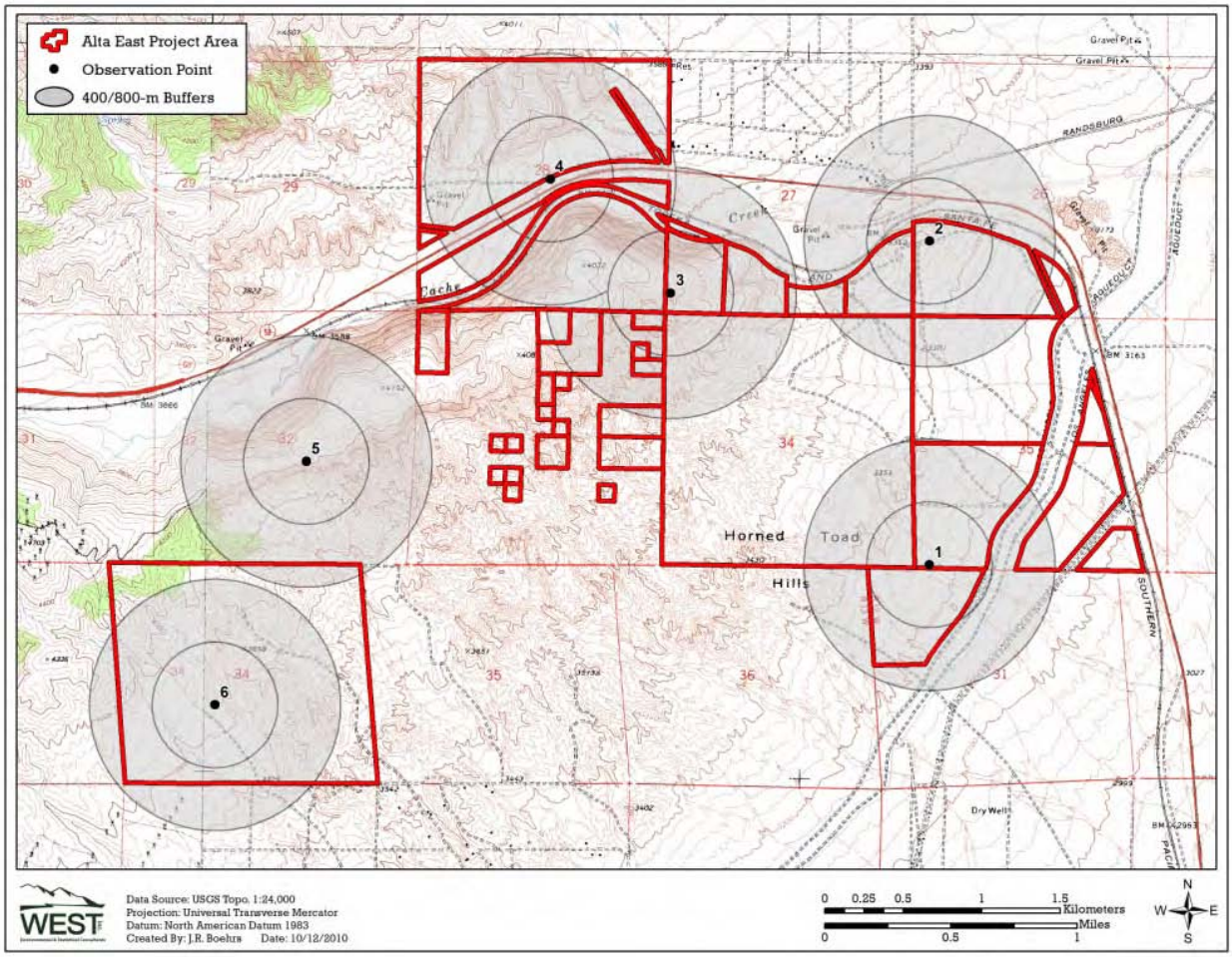

Figure 1. Study area map showing locations of fixed-point bird use survey stations conducted at the Alta East Wind Resource Area from July 10, 2010 through November 12, 2010.

METHODS

Fixed-Point Bird Use Surveys

The objective of the fixed-point bird use surveys was to estimate the seasonal and spatial use of the study area by birds, particularly diurnal raptors, defined here as kites, accipiters, buteos, harriers, eagles, and falcons. Fixed-point surveys (variable circular plots) were conducted using methods described by Reynolds et al. (1980). All birds seen during each 30-minute (min) fixed-point survey were recorded.

Bird Use Survey Plots

Six points were selected to survey representative habitats and topography of the study area while providing relatively even coverage (Figure 1). To the extent possible, survey stations were

selected to be consistent with locations used in the 2009 - 2010 survey effort at the AEWRA (Chatfield et al. 2010). However, due to changes to land access and changes within the boundary of the AEWRA, several new points were established. Each survey plot was an 800-m (2,625-ft) radius circle centered on the point.

Bird Survey Methods

All species of birds observed during fixed-point surveys were recorded. Observations of large birds beyond the 800-m radius were recorded, but were not included in the statistical analyses. For small birds, observations beyond a 100-m (328-ft) radius were excluded from the analysis.

The date, start, and end time of the survey period, and weather information, such as temperature, wind speed, wind direction, and cloud cover, were recorded for each survey. Species or best possible identification, number of individuals, sex and age class (if possible), distance from plot center when first observed, closest distance, altitude above ground, activity (behavior), and habitat(s) were recorded for each observation. Behavior and habitat type were recorded based on the point of first observation. Approximate flight height and flight direction at first observation were recorded to the nearest 5-m (16-ft) interval. Other information recorded included whether or not the observation was auditory only and the 10-min interval of the 30-min survey in which the observation was initially noted.

Observation Schedule

Sampling intensity was designed to document bird use and behavior by habitat and season within the study area. Surveys were conducted weekly during the summer (July 10 to August 31) and fall (September 1 to November 12). Surveys were conducted during daylight hours and survey periods varied to approximately cover all daylight hours during a season. Each point was surveyed the same number of times during the season.

RESULTS

This interim report presents the results of fixed-point bird use surveys conducted at the AEWRA from July 10 to November 12, 2010.

Fixed-Point Bird Use Surveys

A total of 114 30-min fixed-point bird use surveys were conducted within AEWRA during 19 visits from July 10 to November 12, 2010. Fifty-four fixed-point surveys were conducted in the summer during nine visits, and 60 surveys were conducted in the fall during ten visits.

Twenty-nine unique bird species were observed during fixed-point bird use surveys, and a total of 743 individual birds within 269 separate groups were recorded (Table 1). Passerines were the most frequently observed bird type, accounting for 59.6% of all observations. This was primarily due to relatively high numbers of sage sparrow (*Amphispiza belli*; 206 observations), house finch (*Carpodacus mexicanus*; 49 observations), western meadowlark (*Sturnella neglecta*; 49 observations), and cactus wren (*Campylorhynchus brunneicapillus*; 31 observations). These

four species represented only 13.8% of all species observed, yet they accounted for 45.1% of the total bird observations. The majority (80.6%) of passerines were observed during the fall. Large corvids, comprised solely of common ravens (*Corvus corax*; 144 observations), were the second most frequently observed bird type, accounting for 19.4% of all observations (Table 1). The majority (95.1%) of common ravens were recorded during fall surveys. Upland game birds, comprised of California quail (*Callipepla californica*) and chukar (*Alectoris chukar*), accounted for a further 16.7% of total bird observations. The majority (89.5%) of upland game birds were recorded in the summer. A total of 14 raptors representing four distinct species were observed during surveys, accounting for 1.9% of all bird observations. The majority (85.7%) of raptors were recorded in the fall, with red-tailed hawk (*Buteo jamaicensis*) and American kestrel (*Falco sparverius*) being the most commonly observed raptor species (six and five observations, respectively; Table 1). A single golden eagle and a single unidentified hawk were also observed in the fall. In the summer only a single red-tailed hawk and a single unidentified accipiter were recorded.

Two special-status species were observed during surveys: a single golden eagle, protected under the federal Bald and Golden Eagle Protection Act (BGEPA 1940, MSU 2009) and a state fully-protected species, and fifteen observations of loggerhead shrike (*Lanius ludovicianus*), a federal species of concern and a state species of special concern (SDGFP 2006).

Table 1. Summary of group and individual observations by species and bird type for summer, fall, and overall seasons from fixed-point bird use surveys at the Alta East Wind Resource Area[a], July 10 to November 12, 2010.

		Summer		Fall		Overall	
Species	**Scientific Name**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**
Diurnal Raptors		**2**	**2**	**12**	**12**	**14**	**14**
Accipiters		*1*	*1*	*0*	*0*	*1*	*1*
unidentified accipiter		1	1	0	0	1	1
Buteos		*1*	*1*	*5*	*5*	*6*	*6*
red-tailed hawk	*Buteo jamaicensis*	1	1	5	5	6	6
Eagles		*0*	*0*	*1*	*1*	*1*	*1*
golden eagle	*Aquila chrysaetos*	0	0	1	1	1	1
Falcons		*0*	*0*	*5*	*5*	*5*	*5*
American kestrel	*Falco sparverius*	0	0	5	5	5	5
Other Raptors		*0*	*0*	*1*	*1*	*1*	*1*
unidentified hawk		0	0	1	1	1	1
Upland Game Birds		**9**	**111**	**3**	**13**	**12**	**124**
California quail	*Callipepla californica*	8	84	1	1	9	85
chukar	*Alectoris chukar*	1	27	2	12	3	39
Doves/Pigeons		**8**	**9**	**2**	**2**	**10**	**11**
mourning dove	*Zenaida macroura*	8	9	2	2	10	11
Large Corvids		**5**	**7**	**40**	**137**	**45**	**144**
common raven	*Corvus corax*	5	7	40	137	45	144
Large Cuckoos		**0**	**0**	**2**	**2**	**2**	**2**
greater roadrunner	*Geococcyx californianus*	0	0	2	2	2	2

Table 1. Summary of group and individual observations by species and bird type for summer, fall, and overall seasons from fixed-point bird use surveys at the Alta East Wind Resource Area[a], July 10 to November 12, 2010.

		Summer		Fall		Overall	
Species	**Scientific Name**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**
Passerines		**55**	**86**	**126**	**357**	**181**	**443**
ash-throated flycatcher	*Myiarchus cinerascens*	0	0	1	1	1	1
cactus wren	*Campylorhynchus brunneicapillus*	21	24	6	7	27	31
chipping sparrow	*Spizella passerina*	0	0	4	21	4	21
dark-eyed junco	*Junco hyemalis*	0	0	3	7	3	7
horned lark	*Eremophila alpestris*	0	0	6	9	6	9
house finch	*Carpodacus mexicanus*	0	0	8	49	8	49
Le Conte's thrasher	*Toxostoma lecontei*	2	2	1	1	3	3
loggerhead shrike	*Lanius ludovicianus*	9	12	3	3	12	15
rock wren	*Salpinctes obsoletus*	0	0	1	1	1	1
sage sparrow	*Amphispiza belli*	17	34	64	172	81	206
Say's phoebe	*Sayornis saya*	0	0	1	1	1	1
unidentified sparrow		1	1	0	0	1	1
unidentified swallow		1	7	1	7	2	14
unidentified warbler		0	0	1	1	1	1
western bluebird	*Sialia mexicana*	0	0	2	5	2	5
western meadowlark	*Sturnella neglecta*	3	5	11	44	14	49
western scrub-jay	*Aphelocoma californica*	1	1	1	1	2	2
white-crowned sparrow	*Zonotrichia leucophrys*	0	0	11	25	11	25
yellow-rumped warbler	*Dendroica coronata*	0	0	1	2	1	2
Swifts/Hummingbirds		**3**	**3**	**1**	**1**	**4**	**4**
unidentified hummingbird		2	2	1	1	3	3
white-throated swift	*Aeronautes saxatalis*	1	1	0	0	1	1
Woodpeckers		**1**	**1**	**0**	**0**	**1**	**1**
ladder-backed woodpecker	*Picoides scalaris*	1	1	0	0	1	1
Overall		**83**	**219**	**186**	**524**	**269**	**743**

[a] regardless of distance from observer.

DISCUSSION

The current study was designed to supplement previous avian studies conducted at the AEWRA in 2009 - 2010 (Chatfield et al. 2010). The results of this study are consistent with conclusions from earlier studies, which indicate that wind development at the AEWRA would not have significant impacts to avian species.

Only a single golden eagle was observed during the summer and fall of 2010, indicating that summer and fall use of the project by eagles during this period is very limited. These surveys are part of a larger one-year study effort, and are scheduled to continue through June of 2011.

Bird Use Surveys

Species diversity of birds observed during fixed-point bird use surveys generally reflected the desert scrub habitats comprising the AEWRA, and is consistent with results from the previous year of bird surveys (see Chatfield et al. 2010). Resident, breeding birds of dry, open shrubland and Joshua tree woodland were dominant in the summer. Upland game birds, such as California quail and chukar, and passerines, such as sage sparrow, cactus wren, loggerhead shrike, and common raven, were commonly observed throughout the summer season. During the fall, the number and diversity of species increased; over twice the number of birds were observed during the fall (524 observations; 24 species) compared to the summer (219; 13) even though the number of surveys conducted at each point were similar (nine in summer and ten in fall). During the fall, more passerines, ravens, and raptors, and fewer upland game birds were recorded. Approximately 80% of passerines were observed during the fall with migrating and/or wintering species such as chipping sparrow (*Spizella passerina*), dark-eyed junco (*Junco hyemalis*), house finch (*Carpodacus mexicanus*), western bluebird (*Sialia mexicana*), and white-crowned sparrow (*Zonotrichia leucophrys*) commonly recorded during the fall season. Twelve of the 14 raptors observed during surveys were recorded during the fall with red-tailed hawk and American kestrel being the most commonly observed raptor species.

Special-Status Species

The loggerhead shrike is a year-round resident of the area and was more commonly observed during summer surveys. The single golden eagle was observed near the center of the project during fall surveys (an adult observed soaring at Point 3 on October 7, 2010).

Comparison of Seasonal Raptor Use

Based on the results from other wind resource areas with similar data, mean adjusted raptor use (number of raptors divided by the number of 800-m plots and the total number of surveys) in the AEWRA during the summer and fall of 2010 was low (0.02 and 0.12 raptors/plot/20-min survey, respectively) relative to data collected at other existing and proposed wind energy facilities with data for summer or fall seasons (Figures 2 and 3). These results are similar to those reported during the first year of studies covering all seasons at the AEWRA (see Chatfield et al. 2010).

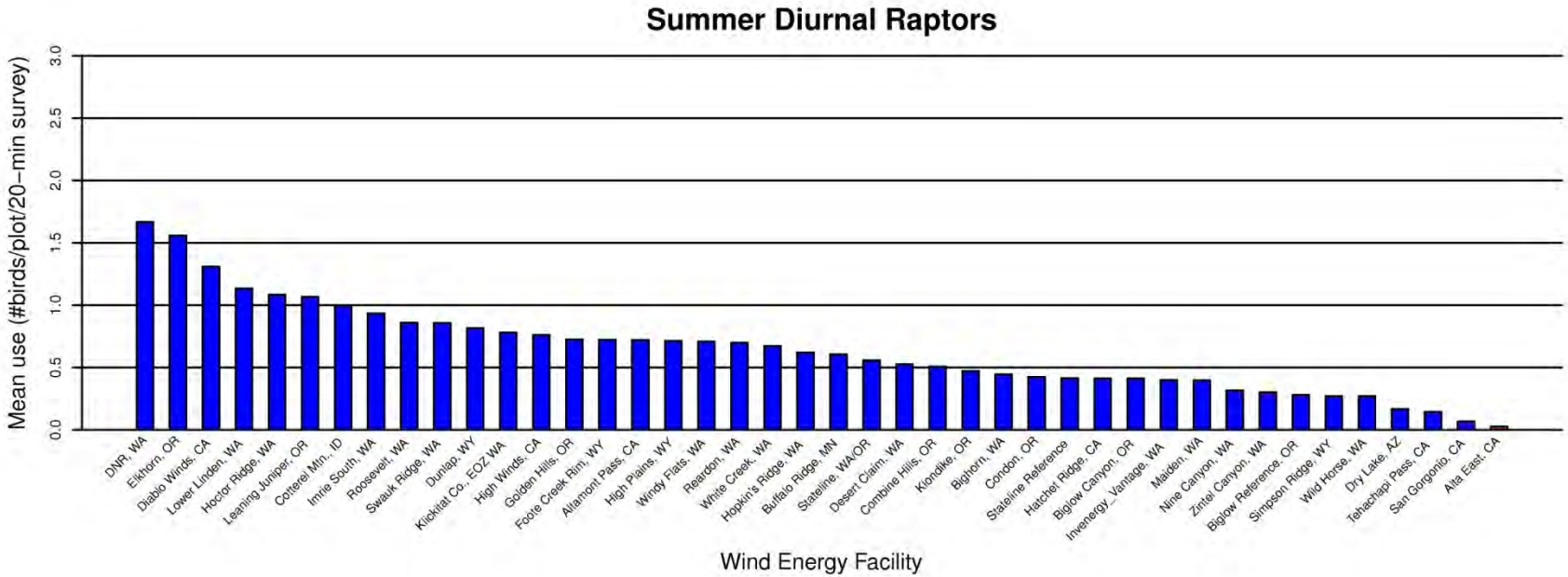

Figure 2. Comparison of summer raptor use between the Alta East Wind Resource Area and other US wind energy facilities. Data from the following sources

Alta East, CA, xx	This study.				
DNR, WA	Johnson et al. 2006b	Foote Creek Rim, WY	Erickson et al. 2002b	Stateline Reference	URS et al. 2001
Elkhorn, OR	WEST 2005a	Altamont Pass, CA	Ericksonet al. 2002b	Hatchet Ridge, CA	Young et al. 2007a
Diablo Winds, CA	WEST 2006	High Plains, WY	Johnson et al. 2009b	Biglow Canyon, OR	WEST 2005c
Lower Linden, WA	Johnson et al. 2007a	Windy Flats, WA	Johnson et al. 2007b	Invenergy_Vantage, WA	WEST 2007
Hoctor Ridge, WA	Johnson et al. 2006c	Reardon, WA	WEST 2005b	Maiden, WA	Ericksonet al. 2002b
Leaning Juniper, OR	Kronner et al. 2005	White Creek, WA	NWC and WEST 2005	Nine Canyon, WA	Erickson et al. 2001
Cotterel Mtn., ID	BLM 2006	Hopkin's Ridge, WA	Young et al. 2003a	Zintel Canyon, WA	Erickson et al. 2002a
Imrie South, WA	Johnson et al. 2006d	Buffalo Ridge, MN	Ericksonet al. 2002b	Biglow Reference, OR	WEST 2005c
Roosevelt, WA	NWC and WEST 2004	Stateline, WA/OR	Ericksonet al. 2002b	Simpson Ridge, WY	Johnson et al. 2000
Swauk Ridge, WA	Erickson et al. 2003a	Desert Claim, WA	Young et al. 2003b	Wild Horse, WA	Erickson et al. 2003b
Dunlap, WY	Johnson et al. 2009a	Combine Hills, OR	Young et al. 2003c	Dry Lake, AZ	Young et al. 2007b
Klickitat Co., EOZ WA	WEST and NWC 2003	Klondike, OR	Johnson et al. 2002	Tehachapi Pass, CA	Ericksonet al. 2002b
High Winds, CA	Kerlinger et al. 2005	Bighorn, WA	Johnson and Erickson 2004	San Gorgonio, CA	Ericksonet al. 2002b
Golden Hills, OR	Jeffrey et al. 2008	Condon, OR	Ericksonet al. 2002b		

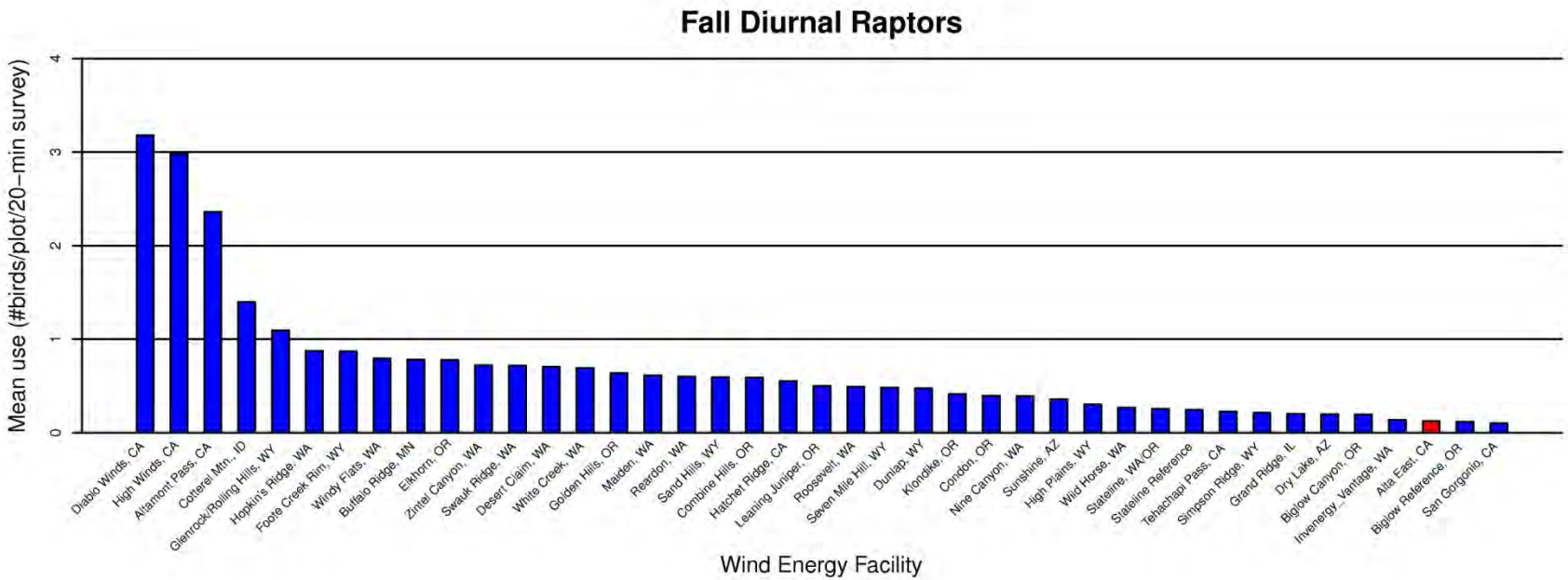

Figure 3. Comparison of fall raptor use between the Alta East Wind Resource Area and other US wind energy facilities.
Data from the following sources:

Alta East, CA	This study.				
Diablo Winds, CA	WEST 2006	Golden Hills, OR	Jeffreyet al. 2008	High Plains, WY	Johnsonet al. 2009b
High Winds, CA	Kerlingeret al. 2005	Maiden, WA	Ericksonet al. 2002b	Wild Horse, WA	Ericksonet al. 2003b
Altamont Pass, CA	Ericksonet al. 2002b	Reardon, WA	WEST 2005b	Stateline, WA/OR	Ericksonet al. 2002b
Cotterel Mtn., ID	BLM 2006	Sand Hills, WY	Johnson et al. 2006a	Stateline Reference	URS et al. 2001
Glenrock/Rolling Hills, WY	Johnson et al. 2008a	Combine Hills, OR	Younget al. 2003c	Tehachapi Pass, CA	Ericksonet al. 2002b
Hopkin's Ridge, WA	Younget al. 2003a	Hatchet Ridge, CA	Younget al. 2007a	Simpson Ridge, WY	Johnsonet al. 2000
Foote Creek Rim, WY	Ericksonet al. 2002b	Leaning Juniper, OR	Kronneret al. 2005	Grand Ridge, IL	Derby et al. 2009
Windy Flats, WA	Johnsonet al. 2007b	Roosevelt, WA	NWC and WEST 2004	Dry Lake, AZ	Younget al. 2007b
Buffalo Ridge, MN	Ericksonet al. 2002b	Seven Mile Hill, WY	Johnson et al. 2008b	Biglow Canyon, OR	WEST 2005c
Elkhorn, OR	WEST 2005a	Dunlap, WY	Johnsonet al. 2009a	Invenergy_Vantage, WA	WEST 2007
Zintel Canyon, WA	Ericksonet al. 2002a	Klondike, OR	Johnsonet al. 2002	Biglow Reference, OR	WEST 2005c
Swauk Ridge, WA	Ericksonet al. 2003a	Condon, OR	Ericksonet al. 2002b	San Gorgonio, CA	Ericksonet al. 2002b
Desert Claim, WA	Younget al. 2003b	Nine Canyon, WA	Ericksonet al. 2001		
White Creek, WA	NWC and WEST 2005	Sunshine, AZ	WEST and CPRS 2006		

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Appendix D-6

Avian Interim Report Spring 2011

Avian Baseline Studies for the Alta East Wind Resource Area Kern County, California

Late Summer – Early Spring Report
July 10, 2010 – May 4, 2011

Prepared for:

CH2M HILL

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May 19, 2011

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NATURAL RESOURCES ◆ SCIENTIFIC SOLUTIONS

Draft Pre-Decisional Document - Privileged and Confidential - Not For Distribution

EXECUTIVE SUMMARY

In July of 2010, on behalf of CH2M HILL and Alta Windpower, LLC (Alta Windpower), Western EcoSystems Technology, Inc. (WEST) initiated a second year of avian studies in the Alta East Wind Resource Area (AEWRA) in Kern County, California. The results of the first year of avian studies conducted at the proposed wind energy facility in 2009 and 2010 indicated that a facility at the AEWRA, with appropriate avoidance and mitigation measures, would not have significant impacts to any avian species.

During the 2009 – 2010 surveys, use by golden eagles and two golden eagle nests were documented in areas outside the AEWRA boundary. The use by golden eagles occurred to the north, northeast, and west of the current AEWRA boundary, while the nests were located approximately 3.5 and 11 miles (5.6 and 17.7 kilometers [km]) from the boundary. Therefore, a second year of avian study was initiated to evaluate further the proposed wind-energy facility's potential effects on eagles, as well as to improve understanding of avian use of the AEWRA in general.

The second year of avian use studies was initiated at the AEWRA on July 10, 2010, and is scheduled to continue through June of 2011. This report presents the results of fixed-point bird use surveys conducted during the late summer and fall of 2010, the winter of 2010/2011, and the early spring of 2011. Seasonal reports are designed to provide CH2M HILL and Alta Windpower with an assessment of avian use within the study area.

A total of 119 hours of bird use surveys were conducted within the AEWRA during weekly visits to six observation points from July 10, 2010, to May 4, 2011. During these surveys, 44 unique bird species were observed, and a total of 2,390 individual bird observations within 694 separate groups were recorded. Passerines were the most frequently observed bird type, accounting for 69.5% of all observations. This was primarily due to relatively high numbers of sage sparrow, white-crowned sparrow, western bluebird, and western meadowlark. These four species represented only 9.1% of all species observed, yet accounted for 52.6% of the total bird observations. Large corvids (i.e., common ravens) were the second most frequently observed bird type, accounting for 18.8% of all observations.

Raptors accounted for 1.9% of all bird observations. Nine species of raptors were recorded during surveys, with red-tailed hawk (n=16), golden eagle (n=8), and American kestrel (n=7) comprising 67.4% of the overall diurnal raptor observations. All eagle observations were recorded from October 7, 2010, to February 25, 2011, suggesting a potential seasonal relationship with winter. Other raptors recorded in relatively low numbers (one to two individuals) included: Cooper's hawk, Swainson's hawk, northern harrier, peregrine falcon, prairie falcon, and osprey. During the summer, fall, winter, and spring observation periods, the adjusted mean diurnal raptor use in the AEWRA was low (0.02, 0.12, 0.18, and 0.16 raptors/plot/20-minute survey, respectively) relative to the other wind resource areas with data collected using similar methods during the same seasons.

No federally listed bird species were recorded during surveys; however, most are protected under the Federal Migratory Bird Treaty Act. A single state-listed species was recorded, Swainson's hawk (n=1; state-threatened). Five additional species designated as having special conservation status at the state and/or federal level were recorded. These included: loggerhead shrike (n=36), golden eagle (n=8), Le Conte's thrasher (n 3), northern harrier (n 2), and peregrine falcon (n=1).

TABLE OF CONTENTS

EXECUTIVE SUMMARY i

INTRODUCTION 1

STUDY AREA 1

METHODS 3

Fixed-Point Bird Use Surveys 3
Bird Use Survey Plots 3
Bird Survey Methods 3
Observation Schedule 4

RESULTS 4

Fixed-Point Bird Use Surveys 4
Sensitive Species 13

DISCUSSION 13

Fixed Point Bird Use Surveys 13
Sensitive Species 14
Comparison of Seasonal Raptor Use 15

REFERENCES 20

LIST OF TABLES

Table 1. Total number of individuals and groups for each bird type and species, by season and overall, during the fixed-point bird use surveys at the Alta East Wind Resource Area from July 10, 2010, to May 4, 2011. 6

Table 2. Summary of sensitive species (number of groups [# grps] and number of individuals [# obs]) observed at the Alta East Wind Resource Area during fixed-point bird use surveys from July 10, 2010, to May 4, 2011. 13

LIST OF FIGURES

Figure 1. Study area map showing locations of fixed-point bird use survey stations conducted at the Alta East Wind Resource Area from July 10, 2010, through May 4, 2011. 2

Figure 2a. Flight paths of raptors observed during fixed-point bird use surveys conducted in summer (July 10 – August 31, 2010) at the Alta East Wind Resource Area. 9

Figure 2b. Flight paths of raptors observed during fixed-point bird use surveys conducted in fall (September 1 – November 15, 2010) at the Alta East Wind Resource Area. 10

Figure 2c. Flight paths of raptors observed during fixed-point bird use surveys conducted in winter (November 16, 2010 – February 28, 2011) at the Alta East Wind Resource Area. 11

Figure 2d. Flight paths of raptors observed during fixed-point bird use surveys conducted in spring (March 1 – May 4, 2011) at the Alta East Wind Resource Area.....12

Figure 3. Comparison of summer raptor use between the Alta East Wind Resource Area and other US wind energy facilities. Data from the Alta East Wind Resource Area for this study is highlighted in red, and the data from the previous study is green. 16

Figure 4. Comparison of fall raptor use between the Alta East Wind Resource Area and other US wind energy facilities. Data from the Alta East Wind Resource Area for this study is highlighted in red, and the data from the previous study is green. 17

Figure 5. Comparison of winter raptor use between the Alta East Wind Resource Area and other US wind energy facilities. Data from the Alta East Wind Resource Area for this study is highlighted in red, and the data from the previous study is green. 18

Figure 6. Comparison of spring raptor use between the Alta East Wind Resource Area and other US wind energy facilities. Data from the Alta East Wind Resource Area for this study is highlighted in red, and the data from the previous study is green. 19

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REPORT REFERENCE

Chatfield, A. and K. Bay. 2011. Avian Baseline Studies for the Alta East Wind Resource Area, Kern County, California. Late Summer – Early Spring Interim Report: July 10, 2010 – May 4, 2011. Prepared for CH2M HILL, Oakland, California. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming.

INTRODUCTION

Alta Windpower, LLC is proposing to develop the Alta East Wind Project, a wind energy facility located in Kern County, California. CH2M HILL, a contractor to Alta Windpower, LLC, contracted Western EcoSystems Technology, Inc. (WEST) to develop and implement a standardized protocol for baseline avian studies in the Alta East Wind Project and surrounding area, defined in this report as the Alta East Wind Resource Area (AEWRA), with the purpose of documenting avian use patterns, identifying potential risk issues, and assisting with siting turbines to minimize impacts to avian resources. The protocols for the baseline study are similar to those used at other studies in California and throughout the western US with modifications to accommodate site-specific characteristics of the AEWRA. Additionally, the protocols follow guidance of the California Wind Energy Guidelines (CEC and CDFG 2007) and the US Fish and Wildlife Service (USFWS) Wind Turbine Guidelines Advisory Committee (WTGAC 2010).

The purpose of this report is to discuss the results of fixed-point bird use surveys conducted at the AEWRA from July 10, 2010, to May 4, 2011, and to bring items of biological interest to the attention of CH2M HILL and Alta Windpower, LLC, such as seasonal raptor use and the presence of special-status species. This current survey effort is scheduled to continue through June of 2011 and is designed to supplement a previous year-long avian use study conducted at the AEWRA (previously known as the Sun Creek Wind Resource Area) in 2009-2010 (see Chatfield et al. 2010a). The results of the first year of surveys indicated that a wind development at the AEWRA would not have significant impacts to avian species. Because use of adjacent areas by golden eagles (*Aquila chrysaetos*) was documented and golden eagle nests were located in the surrounding landscape, a second year of avian study was initiated to evaluate further the proposed project's potential effects on eagles, as well as to continue to better understand avian use of the project site in general.

STUDY AREA

The proposed AEWRA is located in southeastern Kern County, approximately two miles (3.2 kilometers [km]) north-northwest of the unincorporated city of Mojave, and 10 miles (16 km) east of the city of Tehachapi (Figure 1). The study area comprises undeveloped rangeland on a combination of privately-owned land and land administered by the Bureau of Land Management (BLM) within the proposed project and the surrounding area. The AEWRA falls within the high desert plains and hills on the western edge of the Mojave Desert. The Tehachapi Mountains are located to the north and west of the project area and transition into Mojave Desert towards the south and east.

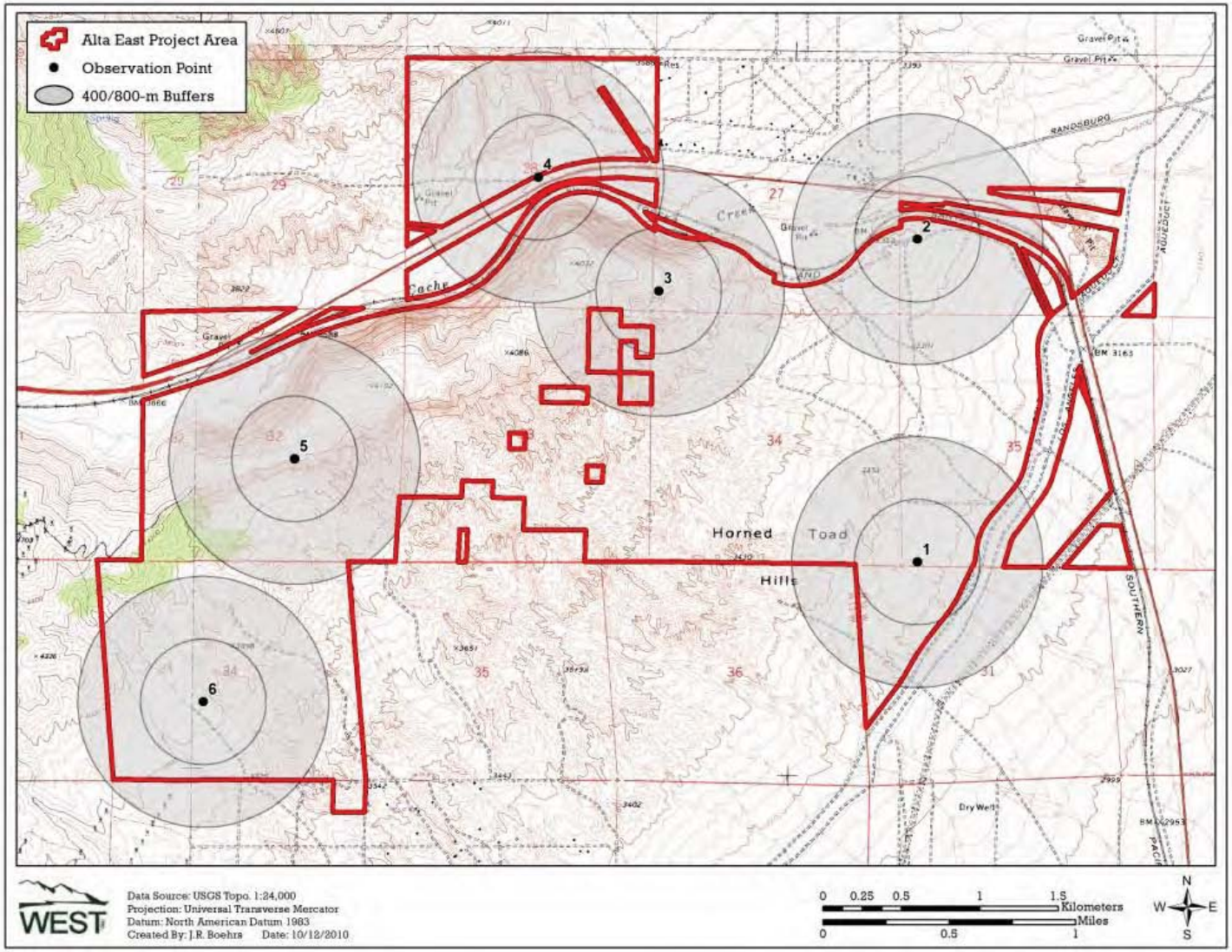

Figure 1. Study area map showing locations of fixed-point bird use survey stations conducted at the Alta East Wind Resource Area from July 10, 2010, through May 4, 2011.

Elevations within the study area range from approximately 3,100 to 4,200 feet (ft; 940 to 1,280 meters [m]) above sea level, with the highest elevations occurring in the northwestern portion of the study area (Figure 1). The habitat ranges from lowland creosote (*Larrea tridentata*) scrub and Joshua tree (*Yucca brevifolia*) woodland in the southeast to juniper (*Juniperus* spp.) shrubland on the steeper, rocky slopes in the north and west. Water within the AEWRA is limited to a network of ephemeral drainages; there are no perennial surface water sources within the study area. Highway 58 bisects the AEWRA, an underground portion of the Los Angeles Aqueduct runs along the southeast corner of the study area, and a network of dirt roads and off-highway vehicle (OHV) trails run throughout the study area.

METHODS

Fixed-Point Bird Use Surveys

The objective of the fixed-point bird use surveys was to estimate the seasonal and spatial use of the study area by birds, particularly diurnal raptors, defined here as kites, accipiters, buteos, harriers, eagles, falcons, and ospreys. Fixed-point surveys (variable circular plots) were conducted using methods described by Reynolds et al. (1980). All birds seen during each 30-minute (min) fixed-point survey were recorded.

Bird Use Survey Plots

Six points were selected to survey representative habitats and topography of the study area while providing relatively even coverage (Figure 1). Each survey plot was an 800-m (2,625-ft) radius circle centered on the point. To the extent possible, survey stations were selected to be consistent with locations used in the 2009 – 2010 survey effort at the AEWRA (see Chatfield et al. 2010a). However, due to changes to land access and changes to the project boundary, points 4, 5, and 6 were relocated for the July 2010 through May 2011 survey period to more accurately assess the area currently planned for wind turbine installation (Figure 1).

Bird Survey Methods

All species of birds observed during fixed-point surveys were recorded. Observations of large birds beyond the 800-m radius were recorded, but were not included in the statistical analyses. For small birds, observations beyond a 100-m (328-ft) radius were excluded from the analysis. Large birds include waterbirds, waterfowl, rails/coots, shorebirds, diurnal raptors, owls, vultures, upland game birds, doves/pigeons, large corvids (e.g., common raven [*Corvus corax*]), goatsuckers, and large cuckoos (e.g., greater roadrunner [*Geococcyx californianus*]). Passerines (excluding large corvids), swifts/hummingbirds, and woodpeckers are considered small birds.

The date, start, and end time of the survey period, and weather information, such as temperature, wind speed, wind direction, and cloud cover, were recorded for each survey. Species or best possible identification, number of individuals, sex and age class (if possible), distance from plot center when first observed, closest distance, altitude above ground, activity (behavior), and habitat(s) were recorded for each observation. Behavior and habitat type were

recorded based on the point of first observation. Approximate flight height and flight direction at first observation were recorded to the nearest 5-m (16-ft) interval. Other information recorded included whether or not the observation was auditory only and the 10-min interval of the 30-min survey in which the observation was initially noted.

Mean raptor use estimates (number of raptors divided by the number of 800-m plots) were calculated for the late summer, fall, winter, and early spring survey periods. To allow comparison with data collected at other US wind resource areas, raptor use estimates from this study were adjusted from 30-min to 20-min, by including only those raptors observed during the first 20-minutes of the survey period.

Observation Schedule

Sampling intensity was designed to document bird use by habitat and season within the study area. Surveys were conducted weekly during the summer (July 10 to August 31), fall (September 1 to November 15), winter (November 16 to February 28), and spring (March 1 to May 4). Surveys were conducted during daylight hours, and survey periods varied to approximately cover all daylight hours during a season. To the extent feasible, each point was surveyed the same number of times during the season.

RESULTS

This report presents the results of fixed-point bird use surveys conducted at the AEWRA from July 10, 2010, to May 4, 2011.

Fixed-Point Bird Use Surveys

A total of 119 hours of bird use surveys were conducted within AEWRA during weekly visits made to six survey stations from July 10, 2010, to May 4, 2011. A total of 54 fixed-point surveys were conducted in the summer during nine visits, 60 surveys were conducted in the fall during 10 visits, 76 surveys were conducted in the winter during 15 visits, and 48 surveys were conducted in the spring during nine visits.

Forty-four unique bird species were observed during fixed-point bird use surveys, and a total of 2,390 individual bird observations within 694 separate groups (defined as one or more individuals) were recorded (Table 1). Passerines were the most frequently observed bird type, accounting for 69.5% of all observations. This was primarily due to relatively high numbers of white-crowned sparrow (*Zonotrichia leucophrys*; n=398), sage sparrow (*Amphispiza belli*; n=390), western meadowlark (*Sturnella neglecta*; n 256), and western bluebird (*Sialia mexicana*; n 214). These four species represented only 9.1% of all species observed, yet together accounted for 52.6% of the total bird observations. The highest proportion (45.7%) of passerines was observed during the winter compared to the fall (21.5%), summer (5.2%), and spring (27.7%; Table 1). Large corvids, comprised solely of common ravens (*Corvus corax*; n=449), were the second most frequently observed bird type, accounting for 18.8% of all observations (Table 1). The majority (56.3%) of common ravens were recorded during winter surveys. Upland game birds, comprised of California quail (*Callipepla californica*) and chukar

(*Alectoris chukar*), accounted for 6.2% of the total bird observations. The majority (75.0%) of upland game birds were recorded in the summer.

Table 1. Total number of individuals and groups for each bird type and species, by season and overall, during the fixed-point bird use surveys at the Alta East Wind Resource Area from July 10, 2010, to May 4, 2011.

		Summer		Fall		Winter		Spring		Total	
Species/Type	**Scientific Name**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**
Diurnal Raptors		**2**	**2**	**12**	**12**	**21**	**22**	**10**	**10**	**45**	**46**
Accipiters		*1*	*1*	*0*	*0*	*0*	*0*	*1*	*1*	*2*	*2*
Cooper's hawk	*Accipiter cooperii*	0	0	0	0	0	0	1	1	1	1
unidentified accipiter		1	1	0	0	0	0	0	0	1	1
Buteos		*1*	*1*	*5*	*5*	*7*	*7*	*4*	*4*	*17*	*17*
red-tailed hawk	*Buteo jamaicensis*	1	1	5	5	7	7	3	3	16	16
Swainson's hawk	*Buteo swainsoni*	0	0	0	0	0	0	1	1	1	1
Northern Harrier		*0*	*0*	*0*	*0*	*2*	*2*	*0*	*0*	*2*	*2*
northern harrier	*Circus cyaneus*	0	0	0	0	2	2	0	0	2	2
Eagles		*0*	*0*	*1*	*1*	*6*	*7*	*0*	*0*	*7*	*8*
golden eagle	*Aquila chrysaetos*	0	0	1	1	6	7	0	0	7	8
Falcons		*0*	*0*	*5*	*5*	*2*	*2*	*3*	*3*	*10*	*10*
American kestrel	*Falco sparverius*	0	0	5	5	0	0	2	2	7	7
peregrine falcon	*Falco peregrinus*	0	0	0	0	1	1	0	0	1	1
prairie falcon	*Falco mexicanus*	0	0	0	0	1	1	1	1	2	2
Osprey		*0*	*0*	*0*	*0*	*0*	*0*	*1*	*1*	*1*	*1*
osprey	*Pandion haliaetus*	0	0	0	0	0	0	1	1	1	1
Other Raptors		*0*	*0*	*1*	*1*	*4*	*4*	*1*	*1*	*6*	*6*
unidentified hawk		0	0	1	1	4	4	1	1	6	6
Vultures		**0**	**0**	**0**	**0**	**0**	**0**	**3**	**22**	**3**	**22**
turkey vulture	*Cathartes aura*	0	0	0	0	0	0	3	22	3	22
Upland Game Birds		**9**	**111**	**3**	**13**	**4**	**10**	**7**	**14**	**23**	**148**
California quail	*Callipepla californica*	8	84	1	1	4	10	7	14	20	109
chukar	*Alectoris chukar*	1	27	2	12	0	0	0	0	3	39
Doves/Pigeons		**8**	**9**	**2**	**2**	**1**	**1**	**1**	**1**	**12**	**13**
mourning dove	*Zenaida macroura*	8	9	2	2	0	0	1	1	11	12
rock pigeon	*Columba livia*	0	0	0	0	1	1	0	0	1	1
Large Corvids		**5**	**7**	**40**	**137**	**79**	**253**	**24**	**52**	**148**	**449**
common raven	*Corvus corax*	5	7	40	137	79	253	24	52	148	449
Large Cuckoos		**0**	**0**	**2**	**2**	**0**	**0**	**0**	**0**	**2**	**2**
greater roadrunner	*Geococcyx californianus*	0	0	2	2	0	0	0	0	2	2
Passerines		**55**	**86**	**126**	**357**	**144**	**759**	**127**	**460**	**452**	**1,662**
ash-throated flycatcher	*Myiarchus cinerascens*	0	0	1	1	0	0	0	0	1	1
barn swallow	*Hirundo rustica*	0	0	0	0	0	0	1	4	1	4
black-throated sparrow	*Amphispiza bilineata*	0	0	0	0	0	0	1	2	1	2
Brewer's blackbird	*Euphagus cyanocephalus*	0	0	0	0	0	0	1	2	1	2

Table 1. Total number of individuals and groups for each bird type and species, by season and overall, during the fixed-point bird use surveys at the Alta East Wind Resource Area from July 10, 2010, to May 4, 2011.

		Summer		Fall		Winter		Spring		Total	
Species/Type	**Scientific Name**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**
cactus wren	*Campylorhynchus brunneicapillus*	21	24	6	7	6	7	5	7	38	45
chipping sparrow	*Spizella passerina*	0	0	4	21	5	14	0	0	9	35
dark-eyed junco	*Junco hyemalis*	0	0	3	7	7	75	1	2	11	84
European starling	*Sturnus vulgaris*	0	0	0	0	3	6	9	12	12	18
horned lark	*Eremophila alpestris*	0	0	6	9	0	0	3	7	9	16
house finch	*Carpodacus mexicanus*	0	0	8	49	0	0	9	25	17	74
lark sparrow	*Chondestes grammacus*	0	0	0	0	0	0	2	7	2	7
Le Conte's thrasher	*Toxostoma lecontei*	2	2	1	1	0	0	0	0	3	3
loggerhead shrike	*Lanius ludovicianus*	9	12	3	3	15	16	5	5	32	36
rock wren	*Salpinctes obsoletus*	0	0	1	1	2	5	1	1	4	7
sage sparrow	*Amphispiza belli*	17	34	64	172	19	63	20	121	120	390
savannah sparrow	*Passerculus sandwichensis*	0	0	0	0	0	0	1	1	1	1
Say s phoebe	*Sayornis saya*	0	0	1	1	0	0	0	0	1	1
Scott's oriole	*Icterus parisorum*	0	0	0	0	0	0	1	1	1	1
tree swallow	*Tachycineta bicolor*	0	0	0	0	0	0	1	8	1	8
unidentified gnatcatcher		0	0	0	0	1	1	0	0	1	1
unidentified sparrow		1	1	0	0	0	0	0	0	1	1
unidentified swallow		1	7	1	7	0	0	1	1	3	15
unidentified warbler		0	0	1	1	0	0	1	1	2	2
western bluebird	*Sialia mexicana*	0	0	2	5	16	199	1	10	19	214
western meadowlark	*Sturnella neglecta*	3	5	11	44	22	112	27	95	63	256
western scrub-jay	*Aphelocoma californica*	1	1	1	1	0	0	2	2	4	4
white-crowned sparrow	*Zonotrichia leucophrys*	0	0	11	25	43	239	32	134	86	398
yellow-rumped warbler	*Dendroica coronata*	0	0	1	2	5	22	2	12	8	36
Swifts/Hummingbirds		**3**	**3**	**1**	**1**	**0**	**0**	**1**	**1**	**5**	**5**
unidentified hummingbird		2	2	1	1	0	0	1	1	4	4
white-throated swift	*Aeronautes saxatalis*	1	1	0	0	0	0	0	0	1	1
Woodpeckers		**1**	**1**	**0**	**0**	**0**	**0**	**1**	**1**	**2**	**2**
ladder-backed woodpecker	*Picoides scalaris*	1	1	0	0	0	0	1	1	2	2
Unidentified Birds		**0**	**0**	**0**	**0**	**2**	**41**	**0**	**0**	**2**	**41**
unidentified small bird		0	0	0	0	2	41	0	0	2	41
Overall		**83**	**219**	**186**	**524**	**251**	**1,086**	**174**	**561**	**694**	**2,390**

A total of 46 diurnal raptors, representing nine distinct species, were recorded during surveys, accounting for 1.9% of all bird observations. The greatest proportion (46.2%) of raptors was recorded in the winter, with red-tailed hawk (*Buteo jamaicensis*; n 7) and golden eagle (n=7) being the most frequently observed raptor species during winter. Other diurnal raptors observed in winter included northern harrier (*Circus cyaneus*; n=2), peregrine falcon (*Falco peregrinus*; n=1), and prairie falcon (*Falco mexicanus*; n=1; Table 1). During the summer, only a single red-tailed hawk and a single unidentified accipiter (*Accipiter* spp.) were observed, while during the fall, red-tailed hawk (n=5) and American kestrel (*Falco sparverius*; n=5) were the most frequently observed diurnal raptors (Table 1). During spring, relatively low numbers of red-tailed hawk (n=3), American kestrel (n=2), Cooper's hawk (*Accipiter cooperii*; n=1), osprey (*Pandion haliaetus*; n=1), prairie falcon (n 1), and Swainson's hawk (*Buteo swainsoni*; n=1) were recorded. Vultures, comprised solely of turkey vultures (*Cathartes aura*), were observed only during the spring (n 22; Table 1).

Flight paths for all diurnal raptor observations were digitized and mapped by season (Figures 2a-d).

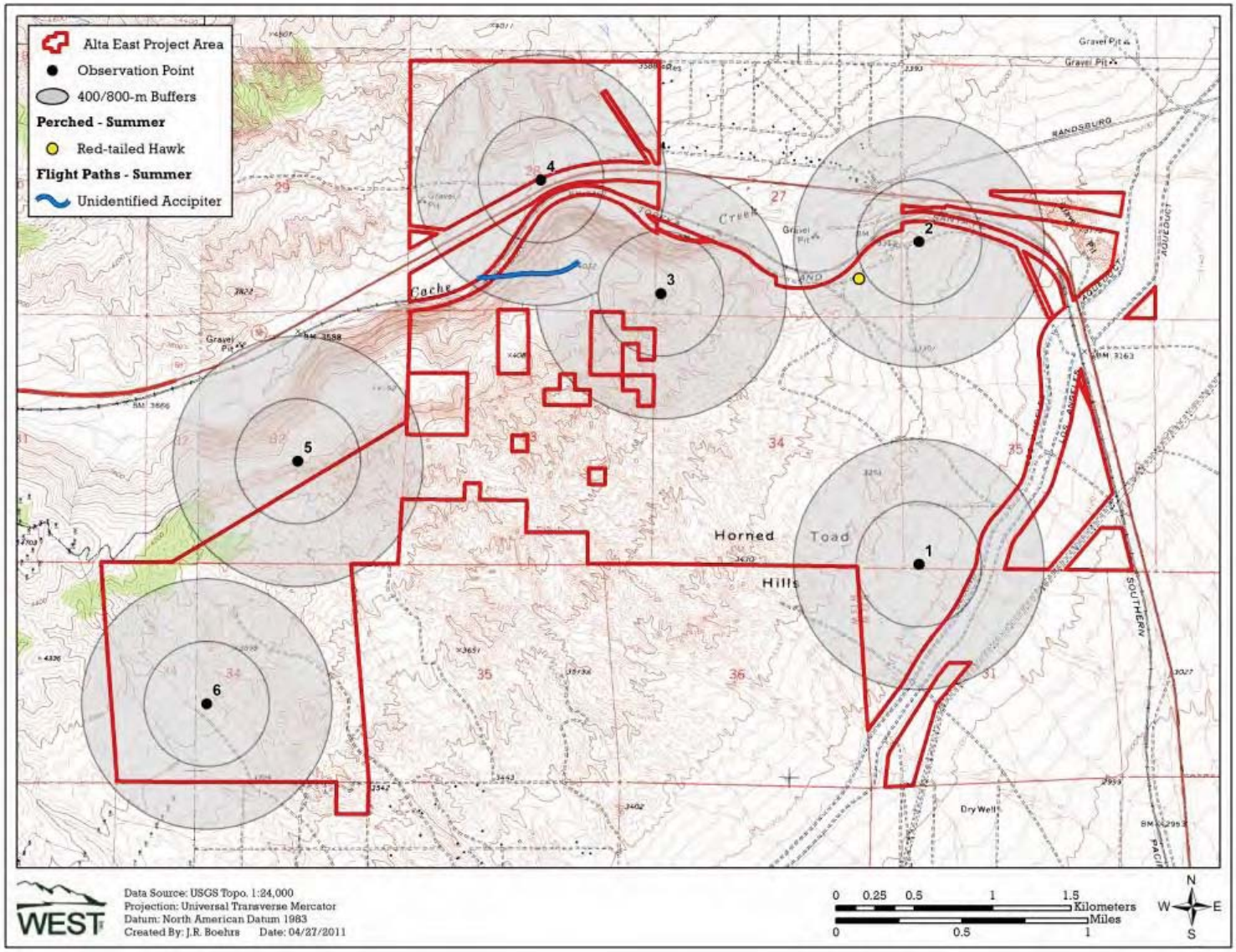

Figure 2a. Flight paths of raptors observed during fixed-point bird use surveys conducted in summer (July 10 – August 31, 2010) at the Alta East Wind Resource Area.

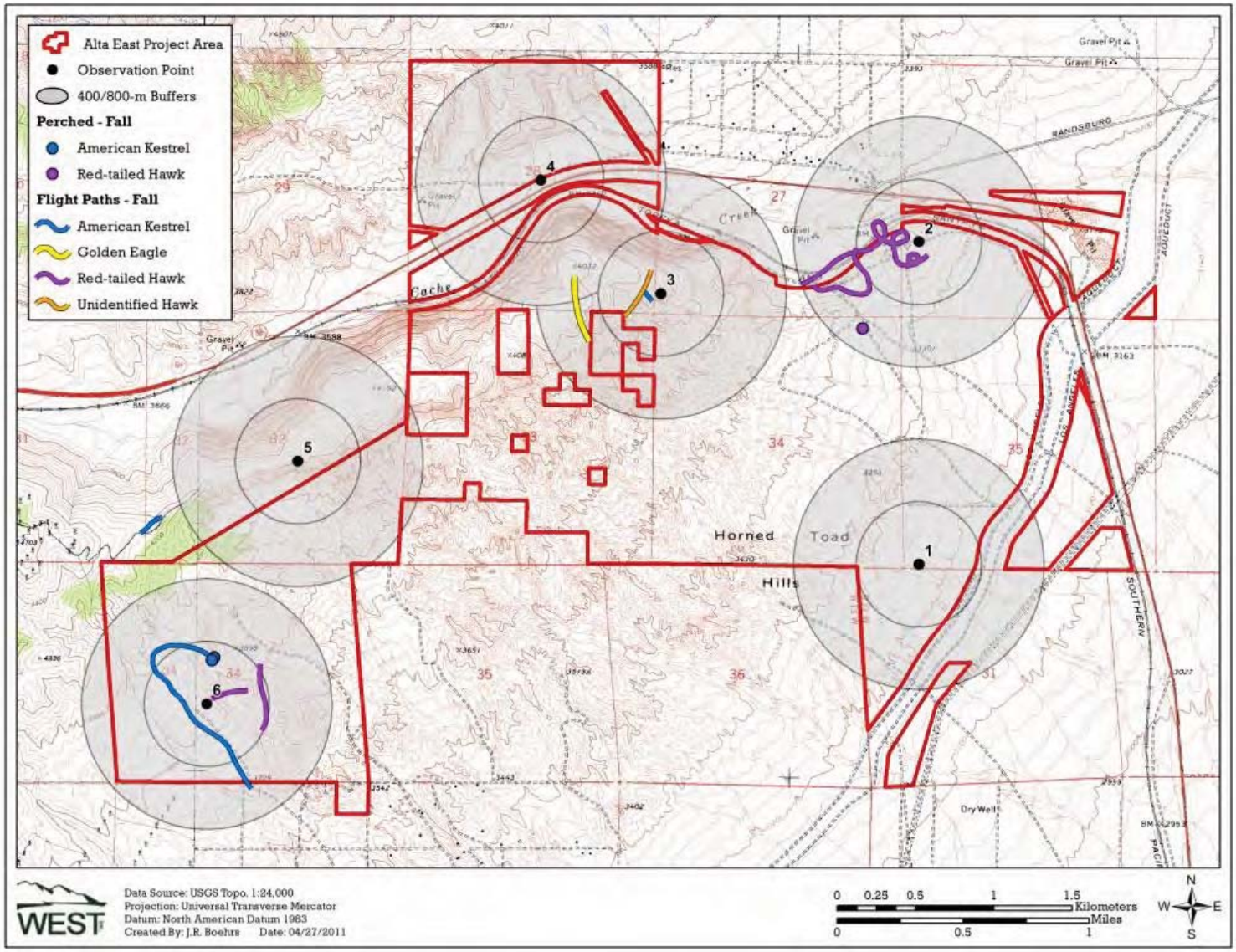

Figure 2b. Flight paths of raptors observed during fixed-point bird use surveys conducted in fall (September 1 – November 15, 2010) at the Alta East Wind Resource Area.

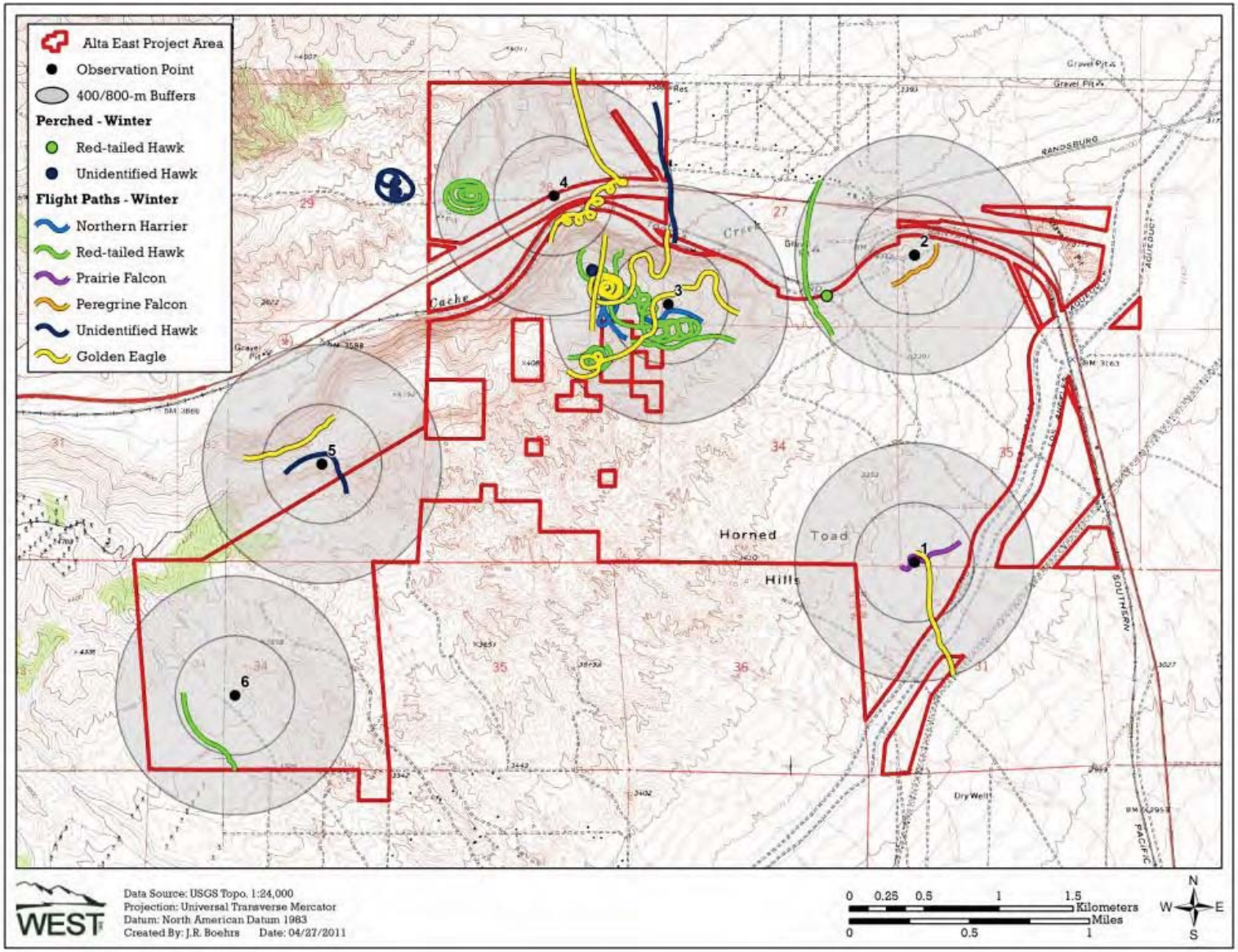

Figure 2c. Flight paths of raptors observed during fixed-point bird use surveys conducted in winter (November 16, 2010 – February 28, 2011) at the Alta East Wind Resource Area.

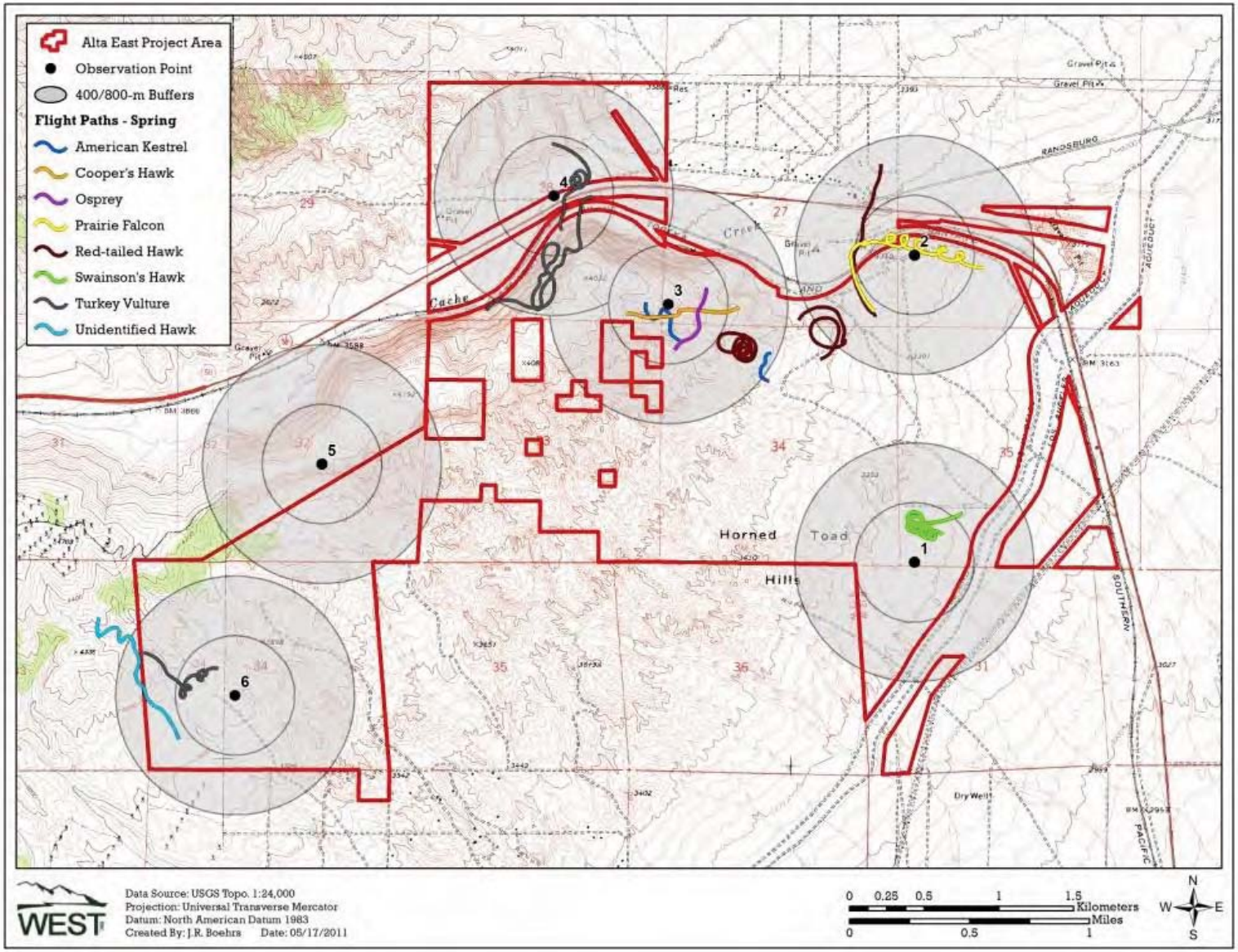

Figure 2d. Flight paths of raptors observed during fixed-point bird use surveys conducted in spring (March 1 – May 4, 2011) at the Alta East Wind Resource Area.

Sensitive Species

Six species designated as having special conservation status at the state and/or federal level (BGEPA 1940, CDFG 2011, USFWS 2011) were recorded (Table 2). These included loggerhead shrike (*Lanius ludovicianus*), golden eagle, Le Conte's thrasher (*Toxostoma lecontei*), northern harrier, peregrine falcon, and Swainson's hawk.

Table 2. Summary of sensitive species (number of groups [# grps] and number of individuals [# obs]) observed at the Alta East Wind Resource Area during fixed-point bird use surveys from July 10, 2010, to May 4, 2011.

Species	Scientific Name	Status	# of grps	# of obs
loggerhead shrike	*Lanius ludovicianus*	SSC, FSC	32	36
golden eagle	*Aquila chrysaetos*	SFP, EA	7	8
Le Conte's thrasher	*Toxostoma lecontei*	FSC	3	3
northern harrier	*Circus cyaneus*	SSC	2	2
peregrine falcon	*Falco peregrinus*	SFP, FSC	1	1
Swainson's hawk	*Buteo swainsoni*	ST	1	1
Total	**6 species**		**46**	**51**

SSC= State species of special concern (CDFG 2011)
FSC= Federal species of concern (USFWS 2011)
SFP=State fully-protected species (CDFG 2011)
EA=Protected under the federal Bald and Golden Eagle Protection Act (1940)
ST=State Threatened (CDFG 2011)

DISCUSSION

This study was designed to supplement a previous year of avian surveys conducted at the AEWRA in 2009 – 2010 (Chatfield et al. 2010a). The results reported in this document are part of a larger one-year study effort, and surveys are scheduled to continue through June of 2011. Data from the previous study indicated that wind energy development within the AEWRA, with appropriate avoidance and mitigation measures, would not have significant impacts to avian species. The current study found use of the AEWRA by golden eagles during late fall and winter, which was not detected during the 2009 – 2010 surveys; however, the results of this study are consistent with other wind energy facilities in the area that have documented low use by golden eagles (Chatfield et al. 2009; 2010b), with use occurring primarily in the fall and winter.

Fixed Point Bird Use Surveys

Species diversity of birds observed during fixed-point bird use surveys was consistent with the expected avian community occurring in the desert scrub habitats comprising the AEWRA and is consistent with results from the previous year of bird surveys (see Chatfield et al. 2010a). Resident, breeding birds of dry, open shrubland and Joshua tree woodland were dominant in the summer. Upland game birds, such as California quail and chukar, and passerines, such as sage sparrow, cactus wren (*Campylorhynchus brunneicapilus*), and loggerhead shrike were commonly observed throughout the summer season. The only raptors observed during the summer were a single red-tailed hawk and a single unidentified accipiter.

During the fall, the number and diversity of species increased from the summer. South-bound migrants pass through the region at this time, and many species are arriving on their desert wintering grounds. Approximately 22% of recorded passerines were observed during the fall, with migrating and/or wintering species (e.g., chipping sparrow [*Spizella passerina*], house finch [*Carpodacus mexicanus*], sage sparrow, and white-crowned sparrow [*Zonotrichia leucophrys*]), commonly recorded during the fall season. Twelve of the 46 raptor observations were recorded during the fall, with red-tailed hawk and American kestrel being the most frequently recorded diurnal raptors during this season.

While species diversity again decreased during the winter (20 unique species observed during winter versus 28 in fall), the total number of observations more than doubled (1,086 individual observations in the winter versus 524 in fall). This was primarily due to relativley large numbers of wintering common ravens, dark-eyed juncos (*Junco hyemalis*), western bluebirds, western meadowlarks, and white-crowned sparrows, which together comprised approximately 80% of the total bird observations in winter. Twenty-two of the 46 raptors observed during the study were recorded during the winter, with red-tailed hawk and golden eagle being the most frequently observed during this season.

Species diversity was highest during the spring season (32 unique species); however, the overall number of observations decreased from the winter (561 observations in spring versus 1,086 in winter). Approximately 23% of all bird observations were recorded in spring. Ten of the 46 raptor observations, representing six distinct species, were recorded during this season. All of the 22 vultures observed during the study, were recorded during the spring.

Sensitive Species

The loggerhead shrike (a state species of special concern and a federal species of concern; CDFG 2011, USFWS 2011), a common year-round resident of the area, was observed frequently during all seasons, while Le Conte's thrasher (a state species of special concern; USFWS 2011), also a year-round resident, was observed on only three occasions (twice in summer and once in fall). A single golden eagle (a state fully-protected species and protected under the BGEPA; BGEPA 1940, CDFG 2011) was observed during fall surveys, while the remaining seven golden eagle observations were made during the winter surveys. Two northern harriers (a state species of special concern; CDFG 2011) and a single peregrine falcon (a state fully-protected species and a federal species of concern; CDFG 2011, USFWS 2011) were observed during the winter surveys. Both of these species are likely migrants and occasional winter visitors to the AEWRA. The single Swainson's hawk (state-threatened species; CDFG 2011) recorded during the surveys was observed in the spring (April 1, 2011) near point 1 (Figure 2d). Due to the timing of this observations and the fact that this was the only Swainson's hawk recorded in the study area, this individual was likely a migrant passing through the study area.

Comparison of Seasonal Raptor Use

Based on the results from other wind resource areas with similar data, mean adjusted raptor use (number of raptors divided by the number of 800-m plots and the total number of surveys) in the AEWRA during the summer (0.02 raptors/plot/20-min survey), fall (0.12 raptors/plot/20-min survey), winter (0.18 raptors/plot/20-min survey),and spring (0.16 raptor/plot/20-min survey) was low relative to data similarly collected at other existing and proposed wind energy facilities with data for these same seasons (Figures 3, 4, 5, and 6). The results from the current study are similar to those reported during the first year of studies covering all seasons at the AEWRA (see Chatfield et al. 2010a).

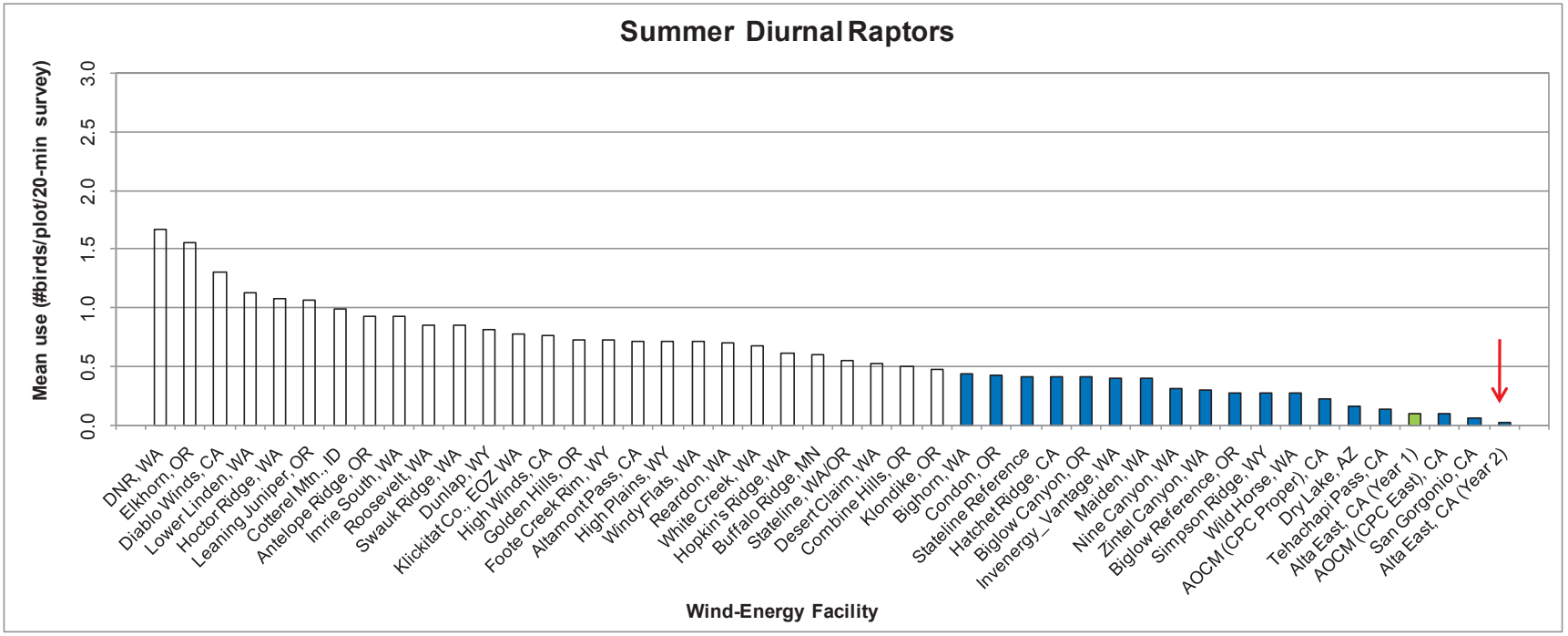

Figure 3. Comparison of summer raptor use between the Alta East Wind Resource Area and other US wind energy facilities. Data from the Alta East Wind Resource Area for this study is highlighted in red, and the data from the previous study is green.

Data from the following sources

Alta East, CA (Year 2)	**This study.**				
Alta East, CA (Year 1)	Chatfield et al. 2010a				
DNR, WA	Johnson et al. 2006c	Foote Creek Rim, WY	Erickson et al. 2002b	Hatchet Ridge, CA	Young et al. 2007a
Elkhorn, OR	WEST 2005a	Altamont Pass, CA	Erickson et al. 2002b	Biglow Canyon, OR	WEST 2005c
Diablo Winds, CA	WEST 2006	High Plains, WY	Johnson et al. 2009b	Invenergy_Vantage, WA	WEST 2007
Lower Linden, WA	Johnson et al. 2007a	Windy Flats, WA	Johnson et al. 2007b	Maiden, WA	Erickson et al. 2002b
Hoctor Ridge, WA	Johnson et al. 2006d	Reardon, WA	WEST 2005b	Nine Canyon, WA	Erickson et al. 2001
Leaning Juniper, OR	Kronner et al. 2005	White Creek, WA	NWC and WEST 2005	Zintel Canyon, WA	Erickson et al. 2002a
Cotterel Mtn., ID	BLM 2006	Hopkin's Ridge, WA	Young et al. 2003a	Biglow Reference, OR	WEST 2005c
Antelope Ridge, OR	WEST 2009	Buffalo Ridge, MN	Erickson et al. 2002b	Simpson Ridge, WY	Johnson et al. 2000
Imrie South, WA	Johnson et al. 2006e	Stateline, WA/OR	Erickson et al. 2002b	AOCM (CPC Proper), CA	Chatfield et al. 2009
Roosevelt, WA	NWC and WEST 2004	Desert Claim, WA	Young et al. 2003b	Wild Horse, WA	Erickson et al. 2003b
Swauk Ridge, WA	Erickson et al. 2003a	Combine Hills, OR	Young et al. 2003c	Dry Lake, AZ	Young et al. 2007b
Dunlap, WY	Johnson et al. 2009a	Klondike, OR	Johnson et al. 2002	Tehachapi Pass, CA	Erickson et al. 2002b
Klickitat Co., EOZ WA	WEST and NWC 2003	Bighorn, WA	Johnson and Erickson 2004	AOCM (CPC East), CA	Chatfield et al. 2009
High Winds, CA	Kerlinger et al. 2005	Condon, OR	Erickson et al. 2002b	San Gorgonio, CA	Erickson et al. 2002b
Golden Hills, OR	Jeffrey et al. 2008	Stateline Reference	URS et al. 2001		

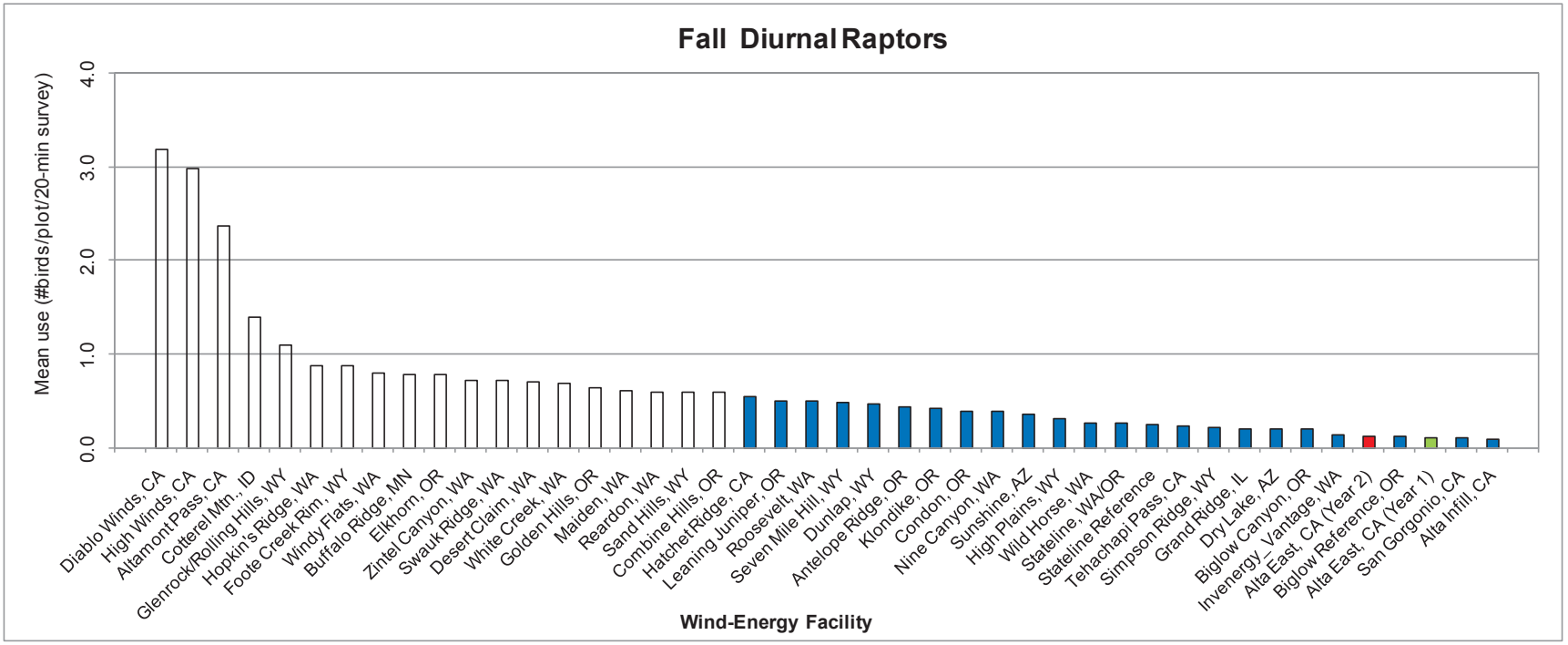

Figure 4. Comparison of fall raptor use between the Alta East Wind Resource Area and other US wind energy facilities. Data from the Alta East Wind Resource Area for this study is highlighted in red, and the data from the previous study is green.

Data from the following sources:

Alta East, CA (Year 2)	**This study.**				
Alta East, CA (Year 1)	Chatfield et al. 2010a				
Diablo Winds, CA	WEST 2006	Golden Hills, OR	Jeffrey et al. 2008	Sunshine, AZ	WEST and CPRS 2006
High Winds, CA	Kerlinger et al. 2005	Maiden, WA	Erickson et al. 2002b	High Plains, WY	Johnson et al. 2009b
Altamont Pass, CA	Erickson et al. 2002b	Reardon, WA	WEST 2005b	Wild Horse, WA	Erickson et al. 2003b
Cotterel Mtn., ID	BLM 2006	Sand Hills, WY	Johnson et al. 2006a	Stateline, WA/OR	Erickson et al. 2002b
Glenrock/Rolling Hills, WY	Johnson et al. 2008a	Combine Hills, OR	Young et al. 2003c	Stateline Reference	URS et al. 2001
Hopkin's Ridge, WA	Young et al. 2003a	Hatchet Ridge, CA	Young et al. 2007a	Tehachapi Pass, CA	Erickson et al. 2002b
Foote Creek Rim, WY	Erickson et al. 2002b	Leaning Juniper, OR	Kronner et al. 2005	Simpson Ridge, WY	Johnson et al. 2000
Windy Flats, WA	Johnson et al. 2007b	Roosevelt, WA	NWC and WEST 2004	Grand Ridge, IL	Derby et al. 2009
Buffalo Ridge, MN	Erickson et al. 2002b	Seven Mile Hill, WY	Johnson et al. 2008b	Dry Lake, AZ	Young et al. 2007b
Elkhorn, OR	WEST 2005a	Dunlap, WY	Johnson et al. 2009a	Biglow Canyon, OR	WEST 2005c
Zintel Canyon, WA	Erickson et al. 2002a	Antelope Ridge, OR	WEST 2009	Invenergy_Vantage, WA	WEST 2007
Swauk Ridge, WA	Erickson et al. 2003a	Klondike, OR	Johnson et al. 2002	Biglow Reference, OR	WEST 2005c
Desert Claim, WA	Young et al. 2003b	Condon, OR	Erickson et al. 2002b	San Gorgonio, CA	Erickson et al. 2002b
White Creek, WA	NWC and WEST 2005	Nine Canyon, WA	Erickson et al. 2001	Alta Infill, CA	Chatfield et al. 2010b

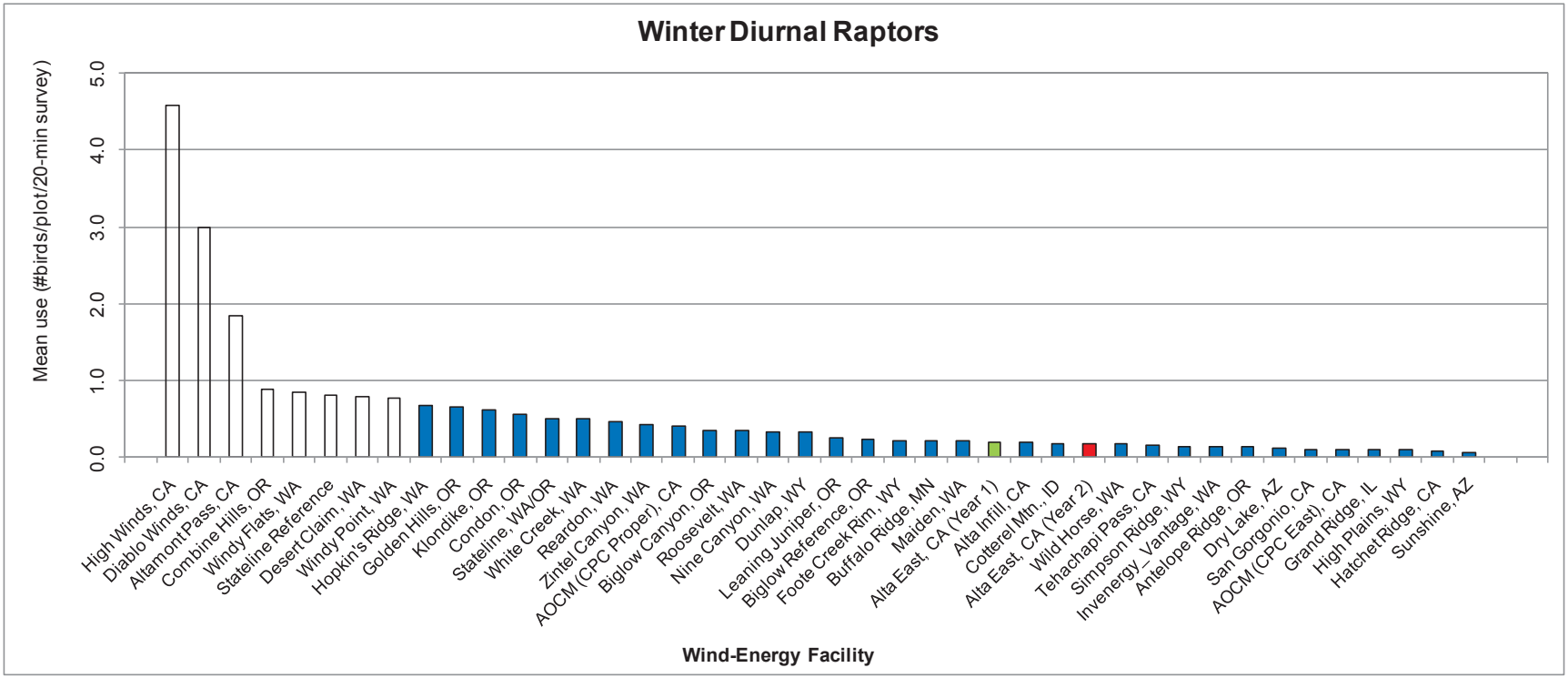

Figure 5. Comparison of winter raptor use between the Alta East Wind Resource Area and other US wind energy facilities. Data from the Alta East Wind Resource Area for this study is highlighted in red, and the data from the previous study is green.

Data from the following sources:

Alta East, CA (Year 2)	**This study.**				
Alta East, CA (Year 1)	Chatfield et al. 2010a				
High Winds, CA	Kerlinger et al. 2005	Reardon, WA	WEST 2005b	Wild Horse, WA	Erickson et al. 2003b
Diablo Winds, CA	WEST 2006	Zintel Canyon, WA	Erickson et al. 2002a	Tehachapi Pass, CA	Erickson et al. 2002b
Altamont Pass, CA	Erickson et al. 2002b	AOCM (CPC Proper), CA	Chatfield et al. 2009	Simpson Ridge, WY	Johnson et al. 2000
Combine Hills, OR	Young et al. 2003c	Biglow Canyon, OR	WEST 2005c	Invenergy_Vantage, WA	WEST 2007
Windy Flats, WA	Johnson et al. 2007b	Roosevelt, WA	NWC and WEST 2004	Antelope Ridge, OR	WEST 2009
Stateline Reference	URS et al. 2001	Nine Canyon, WA	Erickson et al. 2001	Dry Lake, AZ	Young et al. 2007b
Desert Claim, WA	Young et al. 2003b	Dunlap, WY	Johnson et al. 2009a	San Gorgonio, CA	Erickson et al. 2002b
Windy Point, WA	Johnson et al. 2006b	Leaning Juniper, OR	Kronner et al. 2005	AOCM (CPC East), CA	Chatfield et al. 2009
Hopkins Ridge, WA	Young et al. 2003a	Biglow Reference, OR	WEST 2005c	Grand Ridge, IL	Derby et al. 2009
Golden Hills, OR	Jeffrey et al. 2008	Foote Creek Rim, WY	Erickson et al. 2002b	High Plains, WY	Johnson et al. 2009b
Klondike, OR	Johnson et al. 2002	Buffalo Ridge, MN	Erickson et al. 2002b	Hatchet Ridge, CA	Young et al. 2007a
Condon, OR	Erickson et al. 2002b	Maiden, WA	Erickson et al. 2002b	Sunshine, AZ	WEST and CPRS 2006
Stateline, WA/OR	Erickson et al. 2002b	Alta Infill, CA	Chatfield et al. 2010b		
White Creek, WA	NWC and WEST 2005	Cotterel Mtn., ID	BLM 2006		

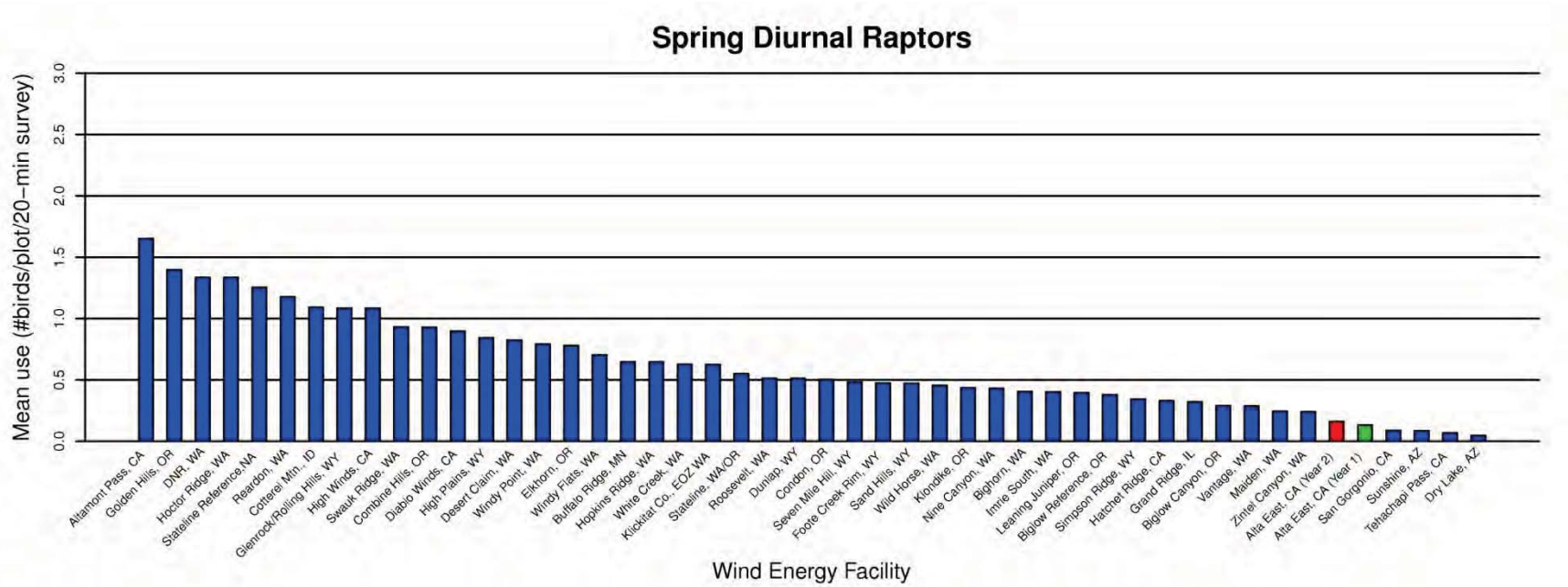

Figure 6. Comparison of spring raptor use between the Alta East Wind Resource Area and other US wind energy facilities. Data from the Alta East Wind Resource Area for this study is highlighted in red, and the data from the previous study is green.

Data from the following sources:

Alta East, CA (Year 2)	**This study.**				
Alta East, CA (Year 1)	Chatfield et al. 2010a				
High Winds, CA	Kerlinger et al. 2005	Reardon, WA	WEST 2005b	Wild Horse, WA	Erickson et al. 2003b
Diablo Winds, CA	WEST 2006	Zintel Canyon, WA	Erickson et al. 2002a	Tehachapi Pass, CA	Erickson et al. 2002b
Altamont Pass, CA	Erickson et al. 2002b	AOCM (CPC Proper), CA	Chatfield et al. 2009	Simpson Ridge, WY	Johnson et al. 2000
Combine Hills, OR	Young et al. 2003c	Biglow Canyon, OR	WEST 2005c	Invenergy_Vantage, WA	WEST 2007
Windy Flats, WA	Johnson et al. 2007b	Roosevelt, WA	NWC and WEST 2004	Antelope Ridge, OR	WEST 2009
Stateline Reference	URS et al. 2001	Nine Canyon, WA	Erickson et al. 2001	Dry Lake, AZ	Young et al. 2007b
Desert Claim, WA	Young et al. 2003b	Dunlap, WY	Johnson et al. 2009a	San Gorgonio, CA	Erickson et al. 2002b
Windy Point, WA	Johnson et al. 2006b	Leaning Juniper, OR	Kronner et al. 2005	AOCM (CPC East), CA	Chatfield et al. 2009
Hopkins Ridge, WA	Young et al. 2003a	Biglow Reference, OR	WEST 2005c	Grand Ridge, IL	Derby et al. 2009
Golden Hills, OR	Jeffrey et al. 2008	Foote Creek Rim, WY	Erickson et al. 2002b	High Plains, WY	Johnson et al. 2009b
Klondike, OR	Johnson et al. 2002	Buffalo Ridge, MN	Erickson et al. 2002b	Hatchet Ridge, CA	Young et al. 2007a
Condon, OR	Erickson et al. 2002b	Maiden, WA	Erickson et al. 2002b	Sunshine, AZ	WEST and CPRS 2006
Stateline, WA/OR	Erickson et al. 2002b	Alta Infill, CA	Chatfield et al. 2010b		
White Creek, WA	NWC and WEST 2005	Cotterel Mtn., ID	BLM 2006		

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Appendix D-7

Avian Interim Report Fall 2011

Avian Baseline Studies for the Alta East Wind Resource Area Kern County, California

Summer – Fall Interim Report
July 10 – November 12, 2010

Prepared for:

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December 30, 2010

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NATURAL RESOURCES ◆ SCIENTIFIC SOLUTIONS

EXECUTIVE SUMMARY

In July of 2010 Western EcoSystems Technology, Inc. initiated a second year of avian studies in the Alta East Wind Resource Area (AEWRA) in Kern County, California. The results of the first year of avian studies conducted in 2009 - 2010 suggested that a wind energy facility at the AEWRA, with appropriate avoidance and mitigation measures, would not have significant impacts to any avian species. During the 2009/2010 surveys, two golden eagle nests and golden eagle use were documented in areas outside the project boundary. The use by golden eagles was occurring to the north, northeast, and west of the current project boundary and the nests were located approximately 3.5 and 11 miles from the project boundary. Therefore, a second year of avian study was initiated to better understand the potential risks that the proposed project would pose to eagles, as well as to continue to better understand avian use of the project area in general. The second year of avian use studies was initiated at the AEWRA on July 10, 2010 and is scheduled to continue through June of 2011. This interim report presents the results of fixed-point bird use surveys conducted during the summer and fall of 2010. Seasonal interim reports are designed to give CH2M HILL and Alta Windpower, LLC, an assessment of wildlife use and if special-status species are observed within the study area.

A total of 114 30-minute fixed-point bird use surveys were conducted within the Alta East Wind Resource Area during 19 visits from July 10 to November 12, 2010. Fifty-four surveys were conducted in the summer during nine visits, and 60 surveys were conducted in the fall during ten visits. Twenty-nine unique bird species were observed, and a total of 743 individual birds within 269 separate groups were recorded.

Passerines (excluding large corvids) were the most frequently recorded bird type, accounting for 59.6% of observations. This was primarily due to relatively high numbers of sage sparrow (206 observations), house finch (49 observations), western meadowlark (49 observations), and cactus wren (31 observations). These four species represented only 13.8% of all species observed, yet they accounted for 45.1% of the total bird observations. Large corvids (common raven; 144 observations) were the second most frequently observed bird type, comprising 19.4% of total bird observations. Raptors accounted for 1.9% of all observations, with the red-tailed hawk and American kestrel being the most commonly observed raptor species (six and five individuals, respectively). Upland game birds were more commonly observed in the summer (89.5% of observations), while the majority of passerines, large covids, and raptors were recorded in the fall (80.6%, 95.1%, and 85.7%, respectively).

Two special-status species were observed during surveys: a single golden eagle, protected under the federal Bald and Golden Eagle Protection Act and a state fully-protected species, and fifteen observations of loggerhead shrike, a federal species of concern and a state species of special concern.

The results of this study are consistent with conclusions from earlier studies, which indicate that wind development at the AEWRA would not have significant impacts to avian species. Mean

raptor use (number of raptors divided by the number of 800-meter [2,625-foot] plots and the total number of surveys) was compared between the AEWRA and other existing and proposed wind energy facilities. During the summer and fall observation periods, mean raptor use in AEWRA was low (0.02 and 0.12 raptors/plot/20-minute survey, respectively) relative to the other wind resource areas with summer or fall data.

TABLE OF CONTENTS

EXECUTIVE SUMMARY i

INTRODUCTION 1

STUDY AREA 1

METHODS 2

Fixed-Point Bird Use Surveys 2
Bird Use Survey Plots 2
Bird Survey Methods 3
Observation Schedule 3

RESULTS 3

Fixed-Point Bird Use Surveys 3

DISCUSSION 5

Bird Use Surveys 6
Special-Status Species 6
Comparison of Seasonal Raptor Use 6

REFERENCES 9

LIST OF TABLES

Table 1. Summary of group and individual observations by species and bird type for summer, fall, and overall seasons from fixed-point bird use surveys at the Alta East Wind Resource Area[a], July 10 to November 12, 2010. 4

LIST OF FIGURES

Figure 1. Study area map showing locations of fixed-point bird use survey stations conducted at the Alta East Wind Resource Area from July 10, 2010 through November 12, 2010. 2

Figure 2. Comparison of summer raptor use between the Alta East Wind Resource Area and other US wind energy facilities. 7

Figure 3. Comparison of fall raptor use between the Alta East Wind Resource Area and other US wind energy facilities. 8

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REPORT REFERENCE

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INTRODUCTION

Alta Windpower, LLC is proposing to develop the Alta East Wind Project, a wind energy facility located in Kern County, California. CH2M HILL, a contractor to Alta Windpower, LLC, contracted Western EcoSystems Technology, Inc. (WEST) to develop and implement a standardized protocol for baseline avian studies in the Alta East Wind Project and surrounding area, defined in this report as the Alta East Wind Resource Area (AEWRA), with the purpose of estimating impacts of the proposed wind energy facility on birds and to assist with siting turbines to minimize impacts to avian resources. The protocols for the baseline study are similar to those used at other studies in California and throughout the western US with modifications to accommodate site-specific characteristics of the AEWRA. Additionally, the protocols follow guidance of the California Wind Energy Guidelines (CEC and CDFG, 2007) and the US Fish and Wildlife Service (USFWS) Wind Turbine Guidelines Advisory Committee (WTGAC 2010).

The purpose of the following interim report is to discuss the results of fixed-point bird use surveys conducted at the AEWRA from July 10 to November 12, 2010, and to bring items of biological interest to the attention of CH2M HILL and Alta Windpower, LLC, such as seasonal raptor use and the presence of special-status species (i.e., species considered to be of conservation concern at the state and/or federal level). This current survey effort is scheduled to continue through the spring of 2011 and is designed to supplement a previous year-long avian use study conducted at the AEWRA (previously known as the Sun Creek Wind Resource Area) in 2009-2010 (see Chatfield et al. 2010). The results of the first year of surveys indicated that a wind development at the AEWRA would not have significant impacts to avian species. Because use of the adjacent area by golden eagles (*Aquila chrysaetos*) and golden eagle nests located in the surrounding landscape was documented, a second year of avian study was initiated to better understand the potential risks that the proposed project would pose to eagles, as well as to continue to better understand avian use of the project site in general.

STUDY AREA

The proposed AEWRA is located in southeastern Kern County, approximately two miles (3.2 kilometers [km]) north-northwest of the unincorporated city of Mojave and 10 miles (16 km) east of the city of Tehachapi (Figure 1). The study area is comprised of undeveloped rangeland on a combination of privately-owned land and land administered by the Bureau of Land Management (BLM) within the Alta East Wind Project and surrounding area. The AEWRA falls within the high desert plains and hills on the western edge of the Mojave Desert. The existing natural conditions of the region are complex as the Tehachapi Mountains to the north and west transition into Mojave Desert to the south and east. Elevations within the study area range from approximately 3,100 to 4,200 feet (ft; 940 to 1,280 meters [m]) above sea level, with the highest elevations occurring in the northwestern portion of the study area (Figure 1). The habitat ranges from lowland creosote (*Larrea tridentata*) scrub and Joshua tree (*Yucca brevifolia*) woodland in the southeast to juniper (*Juniperus* spp.) shrubland on the steeper, rocky slopes in the north and west. Wetlands within the AEWRA are limited to a network of ephemeral drainages; there are

no perennial water sources within the study area. Highway 58 bisects the AEWRA, an underground portion of the Los Angeles Aqueduct runs along the southeast corner of the study area, and a network of dirt roads and off-highway vehicle trails run throughout the study area.

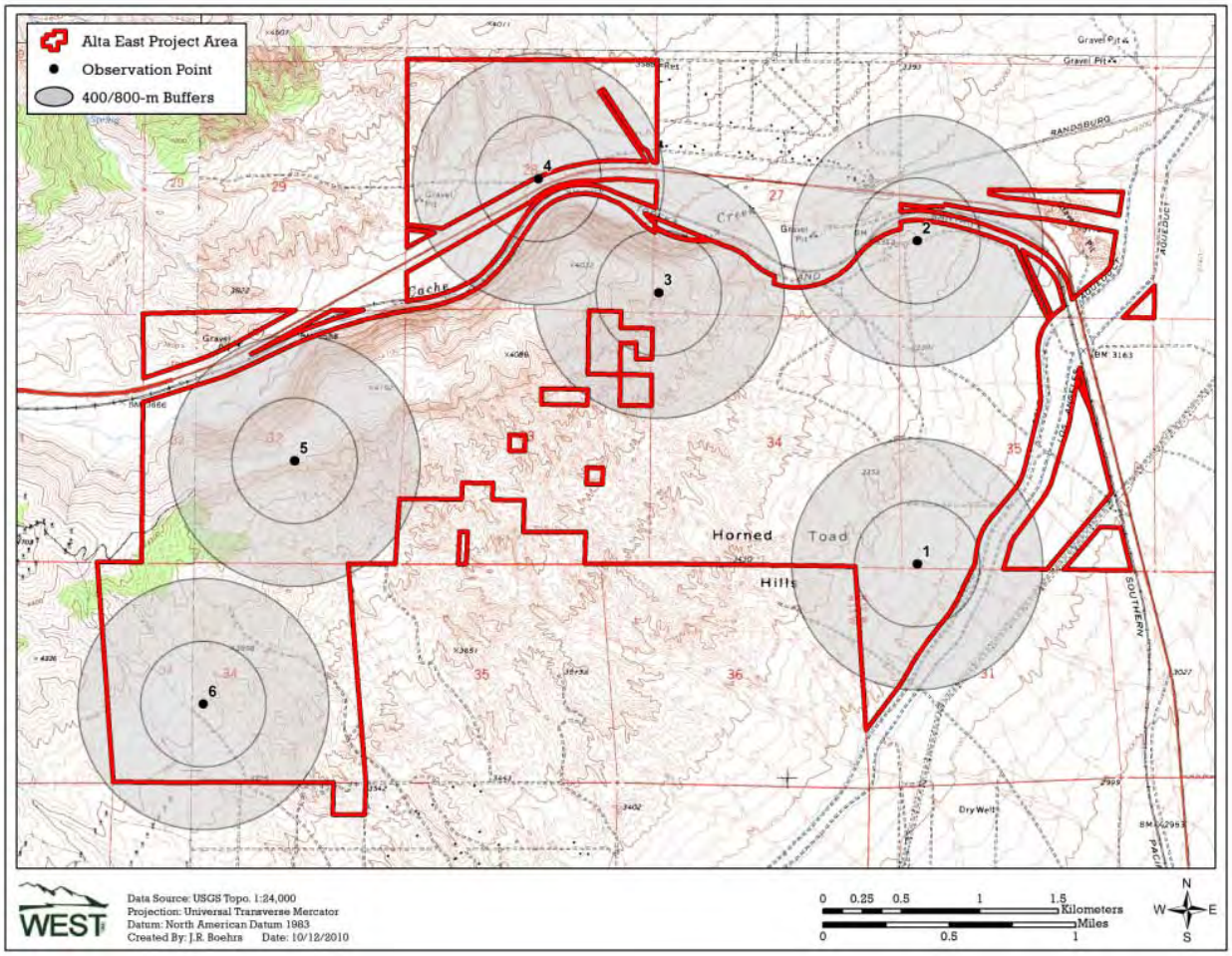

Figure 1. Study area map showing locations of fixed-point bird use survey stations conducted at the Alta East Wind Resource Area from July 10, 2010 through November 12, 2010.

METHODS

Fixed-Point Bird Use Surveys

The objective of the fixed-point bird use surveys was to estimate the seasonal and spatial use of the study area by birds, particularly diurnal raptors, defined here as kites, accipiters, buteos, harriers, eagles, and falcons. Fixed-point surveys (variable circular plots) were conducted using methods described by Reynolds et al. (1980). All birds seen during each 30-minute (min) fixed-point survey were recorded.

Bird Use Survey Plots

Six points were selected to survey representative habitats and topography of the study area while providing relatively even coverage (Figure 1). To the extent possible, survey stations were

selected to be consistent with locations used in the 2009 - 2010 survey effort at the AEWRA (Chatfield et al. 2010). However, due to changes to land access and changes within the boundary of the AEWRA, several new points were established. Each survey plot was an 800-m (2,625-ft) radius circle centered on the point.

Bird Survey Methods

All species of birds observed during fixed-point surveys were recorded. Observations of large birds beyond the 800-m radius were recorded, but were not included in the statistical analyses. For small birds, observations beyond a 100-m (328-ft) radius were excluded from the analysis.

The date, start, and end time of the survey period, and weather information, such as temperature, wind speed, wind direction, and cloud cover, were recorded for each survey. Species or best possible identification, number of individuals, sex and age class (if possible), distance from plot center when first observed, closest distance, altitude above ground, activity (behavior), and habitat(s) were recorded for each observation. Behavior and habitat type were recorded based on the point of first observation. Approximate flight height and flight direction at first observation were recorded to the nearest 5-m (16-ft) interval. Other information recorded included whether or not the observation was auditory only and the 10-min interval of the 30-min survey in which the observation was initially noted.

Observation Schedule

Sampling intensity was designed to document bird use and behavior by habitat and season within the study area. Surveys were conducted weekly during the summer (July 10 to August 31) and fall (September 1 to November 12). Surveys were conducted during daylight hours and survey periods varied to approximately cover all daylight hours during a season. Each point was surveyed the same number of times during the season.

RESULTS

This interim report presents the results of fixed-point bird use surveys conducted at the AEWRA from July 10 to November 12, 2010.

Fixed-Point Bird Use Surveys

A total of 114 30-min fixed-point bird use surveys were conducted within AEWRA during 19 visits from July 10 to November 12, 2010. Fifty-four fixed-point surveys were conducted in the summer during nine visits, and 60 surveys were conducted in the fall during ten visits.

Twenty-nine unique bird species were observed during fixed-point bird use surveys, and a total of 743 individual birds within 269 separate groups were recorded (Table 1). Passerines were the most frequently observed bird type, accounting for 59.6% of all observations. This was primarily due to relatively high numbers of sage sparrow (*Amphispiza belli*; 206 observations), house finch (*Carpodacus mexicanus*; 49 observations), western meadowlark (*Sturnella neglecta*; 49 observations), and cactus wren (*Campylorhynchus brunneicapillus*; 31 observations). These

four species represented only 13.8% of all species observed, yet they accounted for 45.1% of the total bird observations. The majority (80.6%) of passerines were observed during the fall. Large corvids, comprised solely of common ravens (*Corvus corax*; 144 observations), were the second most frequently observed bird type, accounting for 19.4% of all observations (Table 1). The majority (95.1%) of common ravens were recorded during fall surveys. Upland game birds, comprised of California quail (*Callipepla californica*) and chukar (*Alectoris chukar*), accounted for a further 16.7% of total bird observations. The majority (89.5%) of upland game birds were recorded in the summer. A total of 14 raptors representing four distinct species were observed during surveys, accounting for 1.9% of all bird observations. The majority (85.7%) of raptors were recorded in the fall, with red-tailed hawk (*Buteo jamaicensis*) and American kestrel (*Falco sparverius*) being the most commonly observed raptor species (six and five observations, respectively; Table 1). A single golden eagle and a single unidentified hawk were also observed in the fall. In the summer only a single red-tailed hawk and a single unidentified accipiter were recorded.

Two special-status species were observed during surveys: a single golden eagle, protected under the federal Bald and Golden Eagle Protection Act (BGEPA 1940, MSU 2009) and a state fully-protected species, and fifteen observations of loggerhead shrike (*Lanius ludovicianus*), a federal species of concern and a state species of special concern (SDGFP 2006).

Table 1. Summary of group and individual observations by species and bird type for summer, fall, and overall seasons from fixed-point bird use surveys at the Alta East Wind Resource Area[a], July 10 to November 12, 2010.

		Summer		Fall		Overall	
Species	**Scientific Name**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**
Diurnal Raptors		**2**	**2**	**12**	**12**	**14**	**14**
Accipiters		*1*	*1*	*0*	*0*	*1*	*1*
unidentified accipiter		1	1	0	0	1	1
Buteos		*1*	*1*	*5*	*5*	*6*	*6*
red-tailed hawk	*Buteo jamaicensis*	1	1	5	5	6	6
Eagles		*0*	*0*	*1*	*1*	*1*	*1*
golden eagle	*Aquila chrysaetos*	0	0	1	1	1	1
Falcons		*0*	*0*	*5*	*5*	*5*	*5*
American kestrel	*Falco sparverius*	0	0	5	5	5	5
Other Raptors		*0*	*0*	*1*	*1*	*1*	*1*
unidentified hawk		0	0	1	1	1	1
Upland Game Birds		**9**	**111**	**3**	**13**	**12**	**124**
California quail	*Callipepla californica*	8	84	1	1	9	85
chukar	*Alectoris chukar*	1	27	2	12	3	39
Doves/Pigeons		**8**	**9**	**2**	**2**	**10**	**11**
mourning dove	*Zenaida macroura*	8	9	2	2	10	11
Large Corvids		**5**	**7**	**40**	**137**	**45**	**144**
common raven	*Corvus corax*	5	7	40	137	45	144
Large Cuckoos		**0**	**0**	**2**	**2**	**2**	**2**
greater roadrunner	*Geococcyx californianus*	0	0	2	2	2	2

Table 1. Summary of group and individual observations by species and bird type for summer, fall, and overall seasons from fixed-point bird use surveys at the Alta East Wind Resource Area[a], July 10 to November 12, 2010.

		Summer		Fall		Overall	
Species	**Scientific Name**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**
Passerines		**55**	**86**	**126**	**357**	**181**	**443**
ash-throated flycatcher	*Myiarchus cinerascens*	0	0	1	1	1	1
cactus wren	*Campylorhynchus brunneicapillus*	21	24	6	7	27	31
chipping sparrow	*Spizella passerina*	0	0	4	21	4	21
dark-eyed junco	*Junco hyemalis*	0	0	3	7	3	7
horned lark	*Eremophila alpestris*	0	0	6	9	6	9
house finch	*Carpodacus mexicanus*	0	0	8	49	8	49
Le Conte's thrasher	*Toxostoma lecontei*	2	2	1	1	3	3
loggerhead shrike	*Lanius ludovicianus*	9	12	3	3	12	15
rock wren	*Salpinctes obsoletus*	0	0	1	1	1	1
sage sparrow	*Amphispiza belli*	17	34	64	172	81	206
Say's phoebe	*Sayornis saya*	0	0	1	1	1	1
unidentified sparrow		1	1	0	0	1	1
unidentified swallow		1	7	1	7	2	14
unidentified warbler		0	0	1	1	1	1
western bluebird	*Sialia mexicana*	0	0	2	5	2	5
western meadowlark	*Sturnella neglecta*	3	5	11	44	14	49
western scrub-jay	*Aphelocoma californica*	1	1	1	1	2	2
white-crowned sparrow	*Zonotrichia leucophrys*	0	0	11	25	11	25
yellow-rumped warbler	*Dendroica coronata*	0	0	1	2	1	2
Swifts/Hummingbirds		**3**	**3**	**1**	**1**	**4**	**4**
unidentified hummingbird		2	2	1	1	3	3
white-throated swift	*Aeronautes saxatalis*	1	1	0	0	1	1
Woodpeckers		**1**	**1**	**0**	**0**	**1**	**1**
ladder-backed woodpecker	*Picoides scalaris*	1	1	0	0	1	1
Overall		**83**	**219**	**186**	**524**	**269**	**743**

[a] regardless of distance from observer.

DISCUSSION

The current study was designed to supplement previous avian studies conducted at the AEWRA in 2009 - 2010 (Chatfield et al. 2010). The results of this study are consistent with conclusions from earlier studies, which indicate that wind-energy development within the AEWRA, with appropriate avoidance and mitigation measures, would not have significant impacts to avian species.

Only a single golden eagle was observed during the summer and fall of 2010, indicating that summer and fall use of the project by eagles during this period is very limited. These surveys are part of a larger one-year study effort, and are scheduled to continue through June of 2011.

Bird Use Surveys

Species diversity of birds observed during fixed-point bird use surveys generally reflected the desert scrub habitats comprising the AEWRA, and is consistent with results from the previous year of bird surveys (see Chatfield et al. 2010). Resident, breeding birds of dry, open shrubland and Joshua tree woodland were dominant in the summer. Upland game birds, such as California quail and chukar, and passerines, such as sage sparrow, cactus wren, loggerhead shrike, and common raven, were commonly observed throughout the summer season.

During the fall, the number and diversity of species increased, which is typical of the season, particularly in desert environments. Cooling temperatures in the fall allow birds to be more active throughout the day and many species become more mobile during the post-breeding season, allowing for higher rates of detection. South-bound migrants pass through the region at this time and many species are arriving on their desert wintering grounds. Over twice the number of birds were observed during the fall (524 observations; 24 species) compared to the summer (219; 13) even though the number of surveys conducted at each point were similar (nine in summer and ten in fall). During the fall, more passerines, ravens, and raptors, and fewer upland game birds were recorded. Approximately 80% of passerines were observed during the fall with migrating and/or wintering species such as chipping sparrow (*Spizella passerina*), dark-eyed junco (*Junco hyemalis*), house finch (*Carpodacus mexicanus*), western bluebird (*Sialia mexicana*), and white-crowned sparrow (*Zonotrichia leucophrys*) commonly recorded during the fall season. Twelve of the 14 raptors observed during surveys were recorded during the fall with red-tailed hawk and American kestrel being the most commonly observed raptor species.

Special-Status Species

The loggerhead shrike is a year-round resident of the area and was more commonly observed during summer surveys. The single golden eagle was observed near the center of the project during fall surveys (an adult observed soaring at Point 3 on October 7, 2010).

Comparison of Seasonal Raptor Use

Based on the results from other wind resource areas with similar data, mean adjusted raptor use (number of raptors divided by the number of 800-m plots and the total number of surveys) in the AEWRA during the summer and fall of 2010 was low (0.02 and 0.12 raptors/plot/20-min survey, respectively) relative to data collected at other existing and proposed wind energy facilities with data for summer or fall seasons (Figures 2 and 3). These results are similar to those reported during the first year of studies covering all seasons at the AEWRA (see Chatfield et al. 2010).

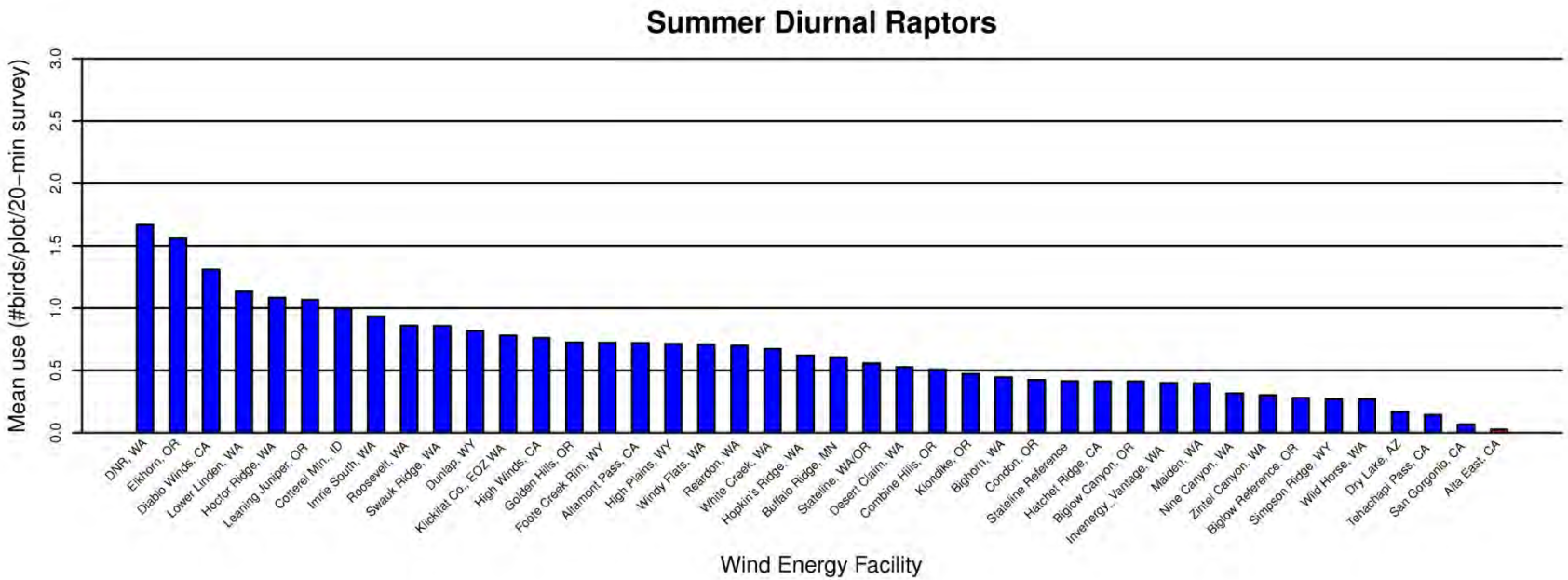

Figure 2. Comparison of summer raptor use between the Alta East Wind Resource Area and other US wind energy facilities. Data from the following sources

Alta East, CA, xx	This study.				
DNR, WA	Johnson et al. 2006b	Foote Creek Rim, WY	Erickson et al. 2002b	Stateline Reference	URS et al. 2001
Elkhorn, OR	WEST 2005a	Altamont Pass, CA	Ericksonet al. 2002b	Hatchet Ridge, CA	Young et al. 2007a
Diablo Winds, CA	WEST 2006	High Plains, WY	Johnson et al. 2009b	Biglow Canyon, OR	WEST 2005c
Lower Linden, WA	Johnson et al. 2007a	Windy Flats, WA	Johnson et al. 2007b	Invenergy_Vantage, WA	WEST 2007
Hoctor Ridge, WA	Johnson et al. 2006c	Reardon, WA	WEST 2005b	Maiden, WA	Ericksonet al. 2002b
Leaning Juniper, OR	Kronner et al. 2005	White Creek, WA	NWC and WEST 2005	Nine Canyon, WA	Erickson et al. 2001
Cotterel Mtn., ID	BLM 2006	Hopkin's Ridge, WA	Young et al. 2003a	Zintel Canyon, WA	Erickson et al. 2002a
Imrie South, WA	Johnson et al. 2006d	Buffalo Ridge, MN	Ericksonet al. 2002b	Biglow Reference, OR	WEST 2005c
Roosevelt, WA	NWC and WEST 2004	Stateline, WA/OR	Ericksonet al. 2002b	Simpson Ridge, WY	Johnson et al. 2000
Swauk Ridge, WA	Erickson et al. 2003a	Desert Claim, WA	Young et al. 2003b	Wild Horse, WA	Erickson et al. 2003b
Dunlap, WY	Johnson et al. 2009a	Combine Hills, OR	Young et al. 2003c	Dry Lake, AZ	Young et al. 2007b
Klickitat Co., EOZ WA	WEST and NWC 2003	Klondike, OR	Johnson et al. 2002	Tehachapi Pass, CA	Ericksonet al. 2002b
High Winds, CA	Kerlinger et al. 2005	Bighorn, WA	Johnson and Erickson 2004	San Gorgonio, CA	Ericksonet al. 2002b
Golden Hills, OR	Jeffrey et al. 2008	Condon, OR	Ericksonet al. 2002b		

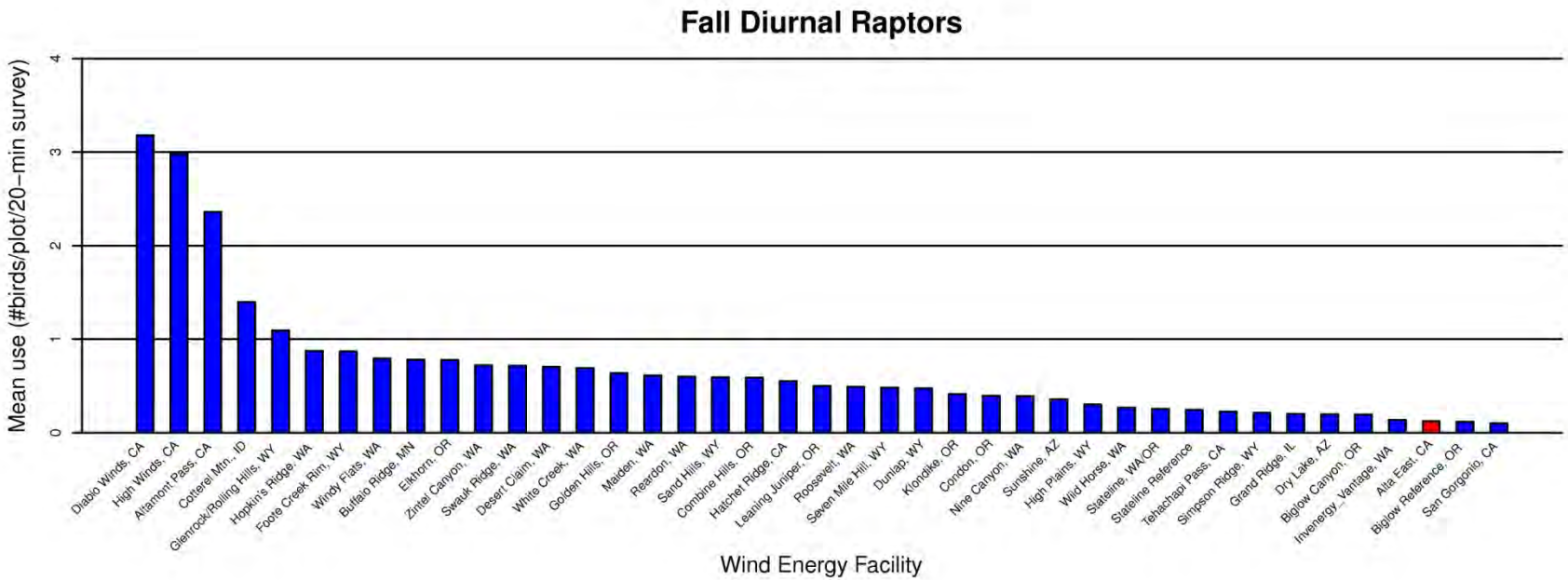

Figure 3. Comparison of fall raptor use between the Alta East Wind Resource Area and other US wind energy facilities.
Data from the following sources:

Alta East, CA	This study.				
Diablo Winds, CA	WEST 2006	Golden Hills, OR	Jeffreyet al. 2008	High Plains, WY	Johnsonet al. 2009b
High Winds, CA	Kerlingeret al. 2005	Maiden, WA	Ericksonet al. 2002b	Wild Horse, WA	Ericksonet al. 2003b
Altamont Pass, CA	Ericksonet al. 2002b	Reardon, WA	WEST 2005b	Stateline, WA/OR	Ericksonet al. 2002b
Cotterel Mtn., ID	BLM 2006	Sand Hills, WY	Johnson et al. 2006a	Stateline Reference	URS et al. 2001
Glenrock/Rolling Hills, WY	Johnson et al. 2008a	Combine Hills, OR	Younget al. 2003c	Tehachapi Pass, CA	Ericksonet al. 2002b
Hopkin's Ridge, WA	Younget al. 2003a	Hatchet Ridge, CA	Younget al. 2007a	Simpson Ridge, WY	Johnsonet al. 2000
Foote Creek Rim, WY	Ericksonet al. 2002b	Leaning Juniper, OR	Kronneret al. 2005	Grand Ridge, IL	Derby et al. 2009
Windy Flats, WA	Johnsonet al. 2007b	Roosevelt, WA	NWC and WEST 2004	Dry Lake, AZ	Younget al. 2007b
Buffalo Ridge, MN	Ericksonet al. 2002b	Seven Mile Hill, WY	Johnson et al. 2008b	Biglow Canyon, OR	WEST 2005c
Elkhorn, OR	WEST 2005a	Dunlap, WY	Johnsonet al. 2009a	Invenergy_Vantage, WA	WEST 2007
Zintel Canyon, WA	Ericksonet al. 2002a	Klondike, OR	Johnsonet al. 2002	Biglow Reference, OR	WEST 2005c
Swauk Ridge, WA	Ericksonet al. 2003a	Condon, OR	Ericksonet al. 2002b	San Gorgonio, CA	Ericksonet al. 2002b
Desert Claim, WA	Younget al. 2003b	Nine Canyon, WA	Ericksonet al. 2001		
White Creek, WA	NWC and WEST 2005	Sunshine, AZ	WEST and CPRS 2006		

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Appendix D-8

Avian Baseline Studies 2011

Avian Baseline Studies at the Alta East Wind Resource Area Kern County, California

Final Report
July 10, 2010 – June 1, 2011

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NATURAL RESOURCES ◆ SCIENTIFIC SOLUTIONS

EXECUTIVE SUMMARY

In July of 2010, on behalf of CH2M HILL Engineers, Inc. and Alta Windpower, LLC (Alta Windpower), Western EcoSystems Technology, Inc. (WEST) initiated a second year of avian studies in the Alta East Wind Resource Area (AEWRA) in Kern County, California. The results of the first year of avian studies conducted at the proposed wind energy facility in 2009 and 2010 indicated that a facility at the AEWRA, with appropriate avoidance and mitigation measures, would not have significant impacts to any avian species. During the 2009 – 2010 surveys, use by golden eagles and two golden eagle nests were documented in areas outside the AEWRA boundary. The use by golden eagles occurred to the north, northeast, and west of the current AEWRA boundary, while the nests were located approximately 3.5 and 11 miles (5.6 and 17.7 kilometers [km]) from the boundary. The project boundary was modified to avoid this area of documented use by eagles and a second year of avian study was initiated. The following document presents results of fixed-point bird use surveys and raptor nest surveys conducted during the second year of baseline avian studies at the AEWRA in 2010 - 2011.

The objective of the fixed-point bird use surveys was to estimate the seasonal, spatial, and temporal use of the Alta East Wind Resource Area by birds, particularly raptors. Bird use surveys were conducted weekly from July 10, 2010, through June 1, 2011, at six points established throughout the AEWRA. A total of 2,493 individuals within 745 separate groups were recorded during surveys, and 48 unique bird species were identified.

Bird use by species was calculated as the mean number of birds per 30-minute survey. Among large birds, common raven had the highest use of any species during spring (0.74 birds/plot/30-minute survey), fall (2.28), and winter (4.00), while California quail had the highest use in the summer (1.56). A total of 48 individual diurnal raptor observations, representing nine unique species, were recorded during surveys. Overall, red-tailed hawk and golden eagle were the most frequently observed diurnal raptors; however, golden eagles were observed only during the fall (n=1) and winter (n=7) survey periods. Diurnal raptor use was highest during the winter (0.27 birds/plot/30-minute survey) and lowest during the summer (0.04). Use by turkey vultures was recorded only during spring (0.40). Among the small birds, use by passerines was higher in spring (7.61 birds/plot/30-minute survey) and winter (7.39), compared to fall (5.33) and summer (1.57). No California condors were observed during fixed point surveys (130 hours of observation) or at other times while biologists were onsite for other purposes or travelling between fixed-point survey locations.

The annual mean raptor use estimate (number of raptors divided by the number of plots and the total number of surveys) in the AEWRA was compared to mean raptor use estimates from 42 other wind resource areas, located in the western and Midwestern U.S., that implemented similar protocols to the present study and had data for three or four different seasons. Based on fixed-point bird use data collected at the AEWRA, the adjusted mean annual raptor use was 0.12 raptors/plot/20-minute survey, ranking third lowest compared to raptor use at these other wind resource areas.

A relative exposure index was calculated for each bird species based on initial flight height observations and relative abundance (defined as the use estimate). Common raven had the highest exposure index of any large bird species (0.85), followed by turkey vulture (0.07). The diurnal raptor species with the highest exposure indices were red-tailed hawk (0.03) and golden eagle (0.01). Of the small bird species, white crowned sparrow had the highest exposure index (0.13), followed by sage sparrow (less than 0.01). All other small bird species had exposure indices of zero.

A regression analysis of raptor use and raptor collision mortality for 16 new-generation wind-energy facilities where similar methods were used to obtain raptor use estimates showed a significant (R^2 = 66.4%) correlation between raptor use and raptor collision mortality. Using this regression to predict raptor collision mortality the AEWRA yields an estimated fatality rate of less than 0.01 fatalities/megawatt/year, or approximately three raptors per year for the proposed 318 MW wind-energy development. Based on species composition of the most common raptor fatalities at other western wind-energy facilities and species composition of raptors observed at the AEWRA during the surveys, the majority of the fatalities of diurnal raptors would likely consist of red-tailed hawks. Based on the seasonal use estimates, it is expected that risk to raptors would be unequal across seasons, with higher risk during the winter and relatively low risk during other times of the year.

Aerial raptor nest surveys were conducted at the AEWRA on February 22, April 12, and June 1-2, 2011. The survey area for golden eagle nests included all suitable eagle nesting habitat within a 10-mile buffer of the AEWRA, while the survey area for all other raptor and large bird nests included a two-mile buffer. Three active golden eagle nests were observed within the 10-mile buffer. These were located 3.0 miles to the northwest, 3.8 miles to the north, and 6.8 miles to the north of the AEWRA. Additionally, 10 inactive golden eagle nests were identified within 10 miles of the AEWRA. No active raptor nests were located within the boundary of the AEWRA or within the surrounding two-mile buffer; however, two active common raven nests, one inactive raptor, and one inactive golden eagle nest were identified within two miles of the study area.

Six species designated as having special conservation status at the state and/or federal levelwere recorded during surveys. These included one state-threatened species (Swainson's hawk), two state fully-protected species (golden eagle and peregrine falcon), two state species of special concern (loggerhead shrike and northern harrier), and three federal species of concern (loggerhead shrike, peregrine falcon, and Le Conte's thrasher). Additionally, the golden eagle receives further protection under the federal Bald and Golden Eagle Protection Act.

Results from the second year of baseline avian surveys at the AEWRA were generally consistent with those from the initial year of study, with both years of surveys indicating low use of the area by raptors and a low density of nesting raptors. The current study found use of the AEWRA by golden eagles during late fall and winter, which was not detected during the 2009 – 2010 surveys; however, the results of this study are consistent with other wind energy facilities in the area that have documented low use by golden eagles, with use occurring primarily in the

fall and winter. Although multiple raptor species would potentially be at risk of collision mortality during operation of this project, the frequency with which they were documented using the site during two years of study suggests that fatality rates would be very low and unlikely to be significant at the population level. With no nesting raptors documented within three miles of the project during two years of study, take associated with nest abandonment or disturbance impacts on nesting adults, nestlings, or fledglings is not likely to occur during construction or operation of the project.

STUDY PARTICIPANTS

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TABLE OF CONTENTS

EXECUTIVE SUMMARY i
INTRODUCTION 1
STUDY AREA 1
METHODS 3
Fixed-Point Bird Use Surveys 3
Bird Use Survey Plots 3
Bird Survey Methods 3
Observation Schedule 4
Raptor Nest Survey 4
Survey Methods 4
Statistical Analysis 5
Quality Assurance and Quality Control 5
Data Compilation and Storage 5
Fixed-Point Bird Use Surveys 5
Bird Diversity and Species Richness 5
Bird Use, Percent Composition, and Frequency of Occurrence 6
Bird Flight Height and Behavior 6
Bird Exposure Index 6
Spatial Use 6
RESULTS 7
Fixed-Point Bird Use Surveys 7
Bird Diversity and Species Richness 7
Bird Use, Percent Composition, and Frequency of Occurrence 8
Diurnal Raptors 12
Vultures 12
Upland Game Birds 12
Doves/Pigeons 12
Large Corvids 13
Large Cuckoos 13
Passerines 13
Swifts/Hummingbirds 13
Woodpeckers 13
Bird Flight Height and Behavior 13
Bird Exposure Index 17
Spatial Use 18
Sensitive Species Observations 18
Raptor Nest Surveys 19
Golden Eagle Nests 19
Other Raptor Nests 21

DISCUSSION AND IMPACT ASSESSMENT 21
Potential Impacts 21
Direct Effects 21
Raptor Use and Exposure Risk 24
Non-Raptor Use and Exposure Risk 29
Indirect Effects 30
Raptor Displacement 30
Displacement of Non-Raptor Bird Species 31
CONCLUSIONS AND RECOMMENDATIONS 31
REFERENCES 32

LIST OF TABLES

Table 1. Summary of species richness (species/plot[a]/30-min survey) and sample size, by season and overall, during the fixed-point bird use surveys at the Alta East Wind Resource Area, July 10, 2010 to June 1, 2011. 7

Table 2a. Mean bird use (number of birds/800-meter plot/30-minunte survey), percent of total composition (%), and frequency of occurrence (%) for each large bird type and species by season during the fixed-point bird use surveys at the Alta East Wind Resource Area from July 10, 2010 – June 1, 2011. 9

Table 2b. Mean bird use (number of birds/100-meter plot/30-minute survey), percent of total composition (%), and frequency of occurrence (%) for each small bird type and species by season during the fixed-point bird use surveys at the Alta East Wind Resource Area from July 10, 2010 – June 1, 2011. 10

Table 3. Flight height characteristics by bird type during fixed-point bird use surveys at the Alta East Wind Resource Area from July 10, 2010 – June 1, 2011. Large bird observations were limited to within an 800-meter (m) radius and small bird observations were limited to within a 100-m radius. 15

Table 4a. Relative exposure index and flight characteristics for large bird species during the fixed-point bird use surveys at the Alta East Wind Resource Area from July 10, 2010 – June 1, 2011 16

Table 4b. Relative exposure index and flight characteristics for small bird species during the fixed-point bird use surveys at the Alta East Wind Resource Area from July 10, 2010 – June 1, 2011 17

Table 5. Summary of sensitive species observed at the Alta East Wind Resource Area during fixed-point bird use surveys (FP) from July 10, 2010 – June 1, 2011. 19

Table 6. Wind energy facilities in California and the Pacific Northwest with fatality data for all bird species 23

Table 7. Wind-energy facilities in North America with fatality data for raptor species, grouped by geographic region. 28

LIST OF FIGURES

Figure 1. Study area map showing locations of fixed-point bird use survey stations conducted at the Alta East Wind Resource Area from July 10, 2010 – June 1, 2011. 2

Figure 2. Location of raptor nests at the Alta East Wind Resource Area. 20

Figure 3. Comparison of annual raptor use between the Alta East Wind Resource Area and other wind-energy facilities in the western and Midwestern United States. 25

Figure 4. Regression analysis comparing raptor use estimations versus estimated raptor mortality.....27

LIST OF APPENDICES

Appendix A. Summary of Individuals and Group Observations, by Bird Type or Species, for Fixed-Point Bird Use Surveys at the Alta East Wind Resource Area from July 10, 2010 – June 1, 2011

Appendix B. Mean Use by Point for All Birds, Major Bird Types, and Raptor Subtypes Observed at the Alta East Wind Resource Area During Fixed-Point Bird Use Surveys from July 10, 2010 – June 1, 2011

Appendix C. Flight Paths of Raptors and Vultures Observed During Fixed-Point Bird Use Surveys Conducted During Each Season at the Alta East Wind Resource Area

Appendix D. North American Fatality Comparison Tables

Appendix E. Comparison of Seasonal Raptor Use Between the Alta East Wind Resource Area and Other Wind Energy Facilities in the United States

INTRODUCTION

Alta Windpower, LLC is proposing to develop the Alta East Wind Project, a wind energy facility located in Kern County, California. CH2M HILL Engineers, Inc., a contractor to Alta Windpower, LLC, contracted Western EcoSystems Technology, Inc. (WEST) to develop and implement a standardized protocol for baseline avian studies in the Alta East Wind Project and surrounding area, defined in this report as the Alta East Wind Resource Area (AEWRA), with the purpose of documenting avian use patterns, identifying potential risk issues, and assisting with siting turbines to minimize impacts to avian resources. The protocols for the baseline study are similar to those used at other studies in California and throughout the western US with modifications to accommodate site-specific characteristics of the AEWRA. Additionally, the protocols follow guidance of the California Wind Energy Guidelines (CEC and CDFG 2007) and the US Fish and Wildlife Service (USFWS) Wind Turbine Guidelines Advisory Committee (WTGAC 2010).

The purpose of this report is to discuss the results of fixed-point bird use surveys conducted at the AEWRA from July 10, 2010 to June 1, 2011, and raptor nest surveys conducted during the spring of 2011. Acoustic bat surveys are ongoing at the AEWRA, and will be presented in a separate report. This current survey effort was designed to supplement a previous year-long avian use study conducted at the AEWRA (previously known as the Sun Creek Wind Resource Area) in 2009-2010 (see Chatfield et al. 2010c). The results of the first year of surveys indicated that a wind development at the AEWRA would not have significant impacts to avian species. Because use of adjacent areas by golden eagles (*Aquila chrysaetos*) was documented and golden eagle nests were located in the surrounding landscape, a second year of avian study was initiated to evaluate further the proposed project's potential effects on eagles, as well as to continue to better understand avian use of the project site in general.

In addition to site-specific data, this report presents existing information and results of studies conducted at other wind-energy facilities. The ability to estimate potential avian mortality at the proposed AEWRA is greatly enhanced by operational monitoring data collected at existing facilities. For several wind-energy facilities, standardized data on fixed-point bird use surveys were collected in association with standardized post-construction (operational) monitoring, allowing comparisons of bird use with bird mortality. Where possible, comparisons with regional and local studies were made.

STUDY AREA

The proposed AEWRA is located in southeastern Kern County, approximately two miles (3.2 kilometers [km]) north-northwest of the unincorporated city of Mojave, and 10 miles (16 km) east of the city of Tehachapi (Figure 1). The study area comprises undeveloped rangeland on a combination of privately-owned land and land administered by the Bureau of Land Management (BLM) within the proposed project and the surrounding area.

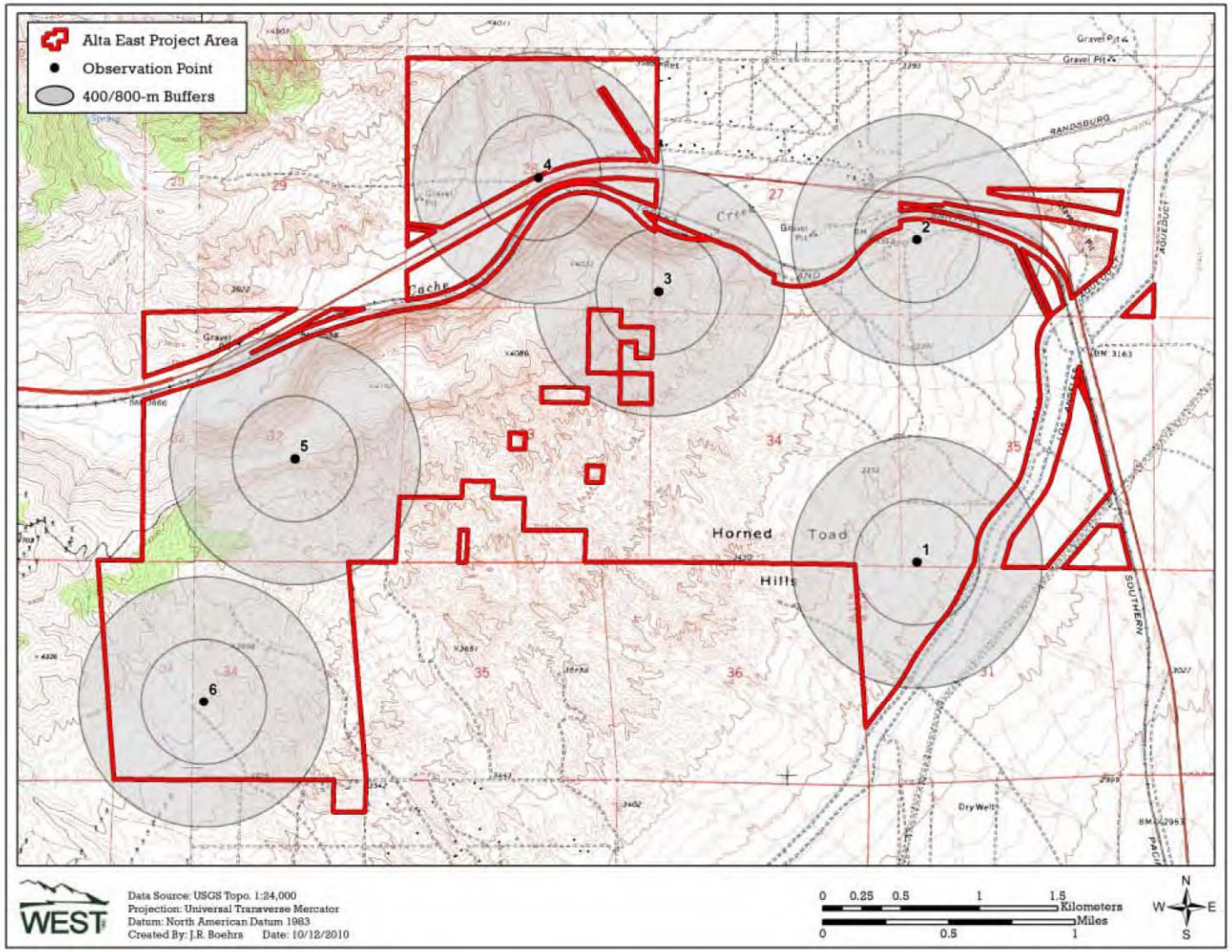


Figure 1. Study area map showing locations of fixed-point bird use survey stations conducted at the Alta East Wind Resource Area from July 10, 2010 – June 1, 2011.

The AEWRA falls within the high desert plains and hills on the western edge of the Mojave Desert. The Tehachapi Mountains are located to the north and west of the project area and transition into Mojave Desert towards the south and east. Elevations within the study area range from approximately 3,100 to 4,200 feet (ft; 940 to 1,280 meters [m]) above sea level, with the highest elevations occurring in the northwestern portion of the study area (Figure 1). The habitat ranges from lowland creosote (*Larrea tridentata*) scrub and Joshua tree (*Yucca brevifolia*) woodland in the southeast to juniper (*Juniperus* spp.) shrubland on the steeper, rocky slopes in the north and west. Water within the AEWRA is limited to a network of ephemeral drainages; there are no perennial surface water sources within the study area. Highway 58 bisects the AEWRA, an underground portion of the Los Angeles Aqueduct runs along the southeast corner of the study area, and a network of dirt roads and off-highway vehicle (OHV) trails run throughout the study area (Figure 1).

METHODS

Baseline avian studies at the AEWRA consisted of two components: 1) fixed-point bird use surveys, and 2) raptor nest surveys.

Fixed-Point Bird Use Surveys

The objective of the fixed-point bird use surveys was to estimate the seasonal and spatial use of the study area by birds, particularly diurnal raptors, defined here as kites, accipiters, buteos, harriers, eagles, falcons, and ospreys. Fixed-point surveys (variable circular plots) were conducted using methods described by Reynolds et al. (1980). All birds seen during each 30-minute (min) fixed-point survey were recorded.

Bird Use Survey Plots

Six points were selected to survey representative habitats and topography of the study area while providing relatively even coverage (Figure 1). Each survey plot was an 800-m (2,625-ft) radius circle centered on the point. To the extent possible, survey stations were selected to be consistent with locations used in the 2009 – 2010 survey effort at the AEWRA (see Chatfield et al. 2010c). However, due to changes to land access and changes to the project boundary, points 4, 5, and 6 were relocated for the July 2010 through May 2011 survey period to more accurately assess the area currently planned for wind turbine installation (Figure 1).

Bird Survey Methods

All species of birds observed during fixed-point surveys were recorded. Observations of large birds beyond the 800-m radius were recorded, but were not included in the statistical analyses. For small birds, observations beyond a 100-m (328-ft) radius were excluded from the analysis. Large birds included waterbirds, waterfowl, rails/coots, shorebirds, diurnal raptors, owls, vultures, upland game birds, doves/pigeons, large corvids (e.g., common raven [*Corvus corax*]), goatsuckers, and large cuckoos (e.g., greater roadrunner [*Geococcyx californianus*]). Passerines (excluding large corvids), swifts/hummingbirds, and woodpeckers were considered small birds.

The date, start, and end time of the survey period, and weather information, such as temperature, wind speed, wind direction, and cloud cover, were recorded for each survey. Species or best possible identification, number of individuals, sex and age class (if possible), distance from plot center when first observed, closest distance, altitude above ground, activity (behavior), and habitat(s) were recorded for each observation. Behavior and habitat type were recorded based on the point of first observation. Approximate flight height and flight direction at first observation were recorded to the nearest 5-m (16-ft) interval. Other information recorded included whether or not the observation was auditory only and the 10-min interval of the 30-min survey in which the observation was initially noted.

Observation Schedule

Sampling intensity was designed to document bird use by habitat and season within the AEWRA. Fixed-point bird use surveys were conducted from July 10, 2010, through June 1, 2011, with surveys conducted approximately once per week during each season: spring (March 1 to May 31), summer (June 1 to August 31), fall (September 1 to November 15), and winter (November 16 to February 28). Surveys were carried out during daylight hours, and survey periods varied to approximately cover all daylight hours during a season. To the extent practical, each point was surveyed about the same number of times.

Raptor Nest Survey

A raptor nest survey was conducted throughout the AEWRA during the spring of 2011. The objective of the survey was to locate nests that may be subject to disturbance and/or displacement effects from the wind-energy facility construction and/or operation. While active and inactive nests of all raptor species were recorded and emphasis was placed on their detection within two miles of the project, the survey specifically targeted golden eagles in the area within 10 miles of the project and was consistent with the USFWS *Interim Golden Eagle Technical Guidance: Inventory and Monitoring Protocols; and other Recommendations in Support of Golden Eagle Management and Permit Issuance* (Pagel et al. 2010). Golden eagles are protected by the Bald and Golden Eagle Protection Act (BGEPA 1940) and are also a fully-protected species in California (CDFG, Fish and Game Code, Section 3511).

Survey Methods

Three aerial surveys were conducted via helicopter by two observers (not including the pilot) during the spring 2011 breeding period. Aerial surveys were flown on February 22, April 12, and June 1-2. Surveys for golden eagles included all suitable eagle nesting habitat within the AEWRA boundary, as well as the area within an approximate 10-mile buffer of the AEWRA. For all other raptor and other large bird species (e.g., hawks, falcons, owls, and ravens), the survey area included all potential nesting habitat within two miles of the AEWRA.

Aerial survey methods involved a comprehensive search of suitable nesting areas and substrate (e.g., isolated trees, open woodland and savanna, rocky outcrops, cliffs, and other nest platforms such as power poles and transmission towers). During surveys, the helicopter was flown at an altitude of tree-top level to approximately 250 ft (76 m) above ground level. If a nest

was observed, the helicopter was moved to a position where nest status and species present could be determined. Efforts were made to minimize disturbance to breeding raptors, including keeping the helicopter a maximum distance from the nest at which the species could be identified, with distances varying depending upon nest location and wind conditions. Data recorded for each nest location included species occupying the nest, nest status (i.e., inactive, bird incubating, young present, eggs present, adult present, or unknown), nest substrate (e.g., pine, cottonwood, rocky outcrop, cliff or power line), number of young present, time and date of observation. All raptor and other large bird nests regardless of nest status were recorded with a Trimble Geo XH global positioning system (GPS) unit with sub-meter accuracy and mapped on a GIS ArcView project utilizing USGS topographic maps (1:24000 scale) as the base. Locations of inactive nests were recorded as they could be occupied during subsequent years.

Ground-based surveys were also conducted in conjunction with fixed-point bird use surveys during the peak of the breeding season (March – June), when target species would be actively incubating eggs or attending young. If nesting species, status, or outcome could not be determined from aerial surveys, ground-based follow-up visits were made provided the nest site could be accessed from the ground.

Statistical Analysis

Quality Assurance and Quality Control

Quality assurance and quality control (QA/QC) measures were implemented at all stages of the study, including in the field, during data entry and analysis, and report writing. Following field surveys, observers were responsible for inspecting data forms for completeness, accuracy, and legibility. A sample of records from an electronic database was compared to the raw data forms, and any errors detected were corrected. Irregular codes or data suspected as questionable were discussed with the observer and/or project manager. Errors, omissions, or problems identified in later stages of analysis were traced back to the raw data forms, and appropriate changes were made in all affected steps.

Data Compilation and Storage

A Microsoft® ACCESS database was developed to store, organize, and retrieve survey data. Data were keyed into the electronic database using a pre-defined format to facilitate subsequent QA/QC and data analyses. All data forms, field notebooks, and electronic data files were retained for reference.

Fixed-Point Bird Use Surveys

Bird Diversity and Species Richness

Bird diversity was illustrated by the total number of unique species observed. Species lists (with the number of observations and the number of groups) were generated by season and included all observations of birds detected, regardless of their distance from the observer. Species richness was calculated as the mean number of species observed per plot per survey (number of species/plot/30-min survey). Species diversity and richness were compared among seasons for fixed-point bird use surveys.

Bird Use, Percent Composition, and Frequency of Occurrence

For the standardized fixed-point bird use estimates, only observations of large birds detected within the 800-m radius plot were used; small bird observations were limited to 100 m. Estimates of mean bird use (number of birds/plot/30-min survey) were used to compare and contrast among bird types and seasons. Mean raptor use estimates (number of raptors divided by the number of 800-m plots) were calculated for each season. To allow comparison with data collected at other US wind resource areas (WRAs), raptor use estimates from this study were adjusted from 30-min to 20-min, by including only those raptors observed during the first 20-min of the survey period.

Percent composition was calculated as the proportion of the overall mean use for a particular bird type or species, and the frequency of occurrence was calculated as the percent of surveys in which a particular bird type or species was observed. Frequency of occurrence and percent composition provide relative estimates of species exposure to the proposed wind-energy facility. For example, a particular species might have high use estimates for the study area based on just a few observations of large groups. However, the frequency of occurrence would indicate that the species only occurred during a few of the surveys, therefore the species would be less likely to be affected by the wind-energy facility or transmission corridor.

Bird Flight Height and Behavior

To calculate potential risk to bird species, the first flight height recorded was used to estimate the percentages of birds flying within the likely RSH for collision with turbine blades of 115 to 427 ft (35 to 130 m) above ground level, which is the blade height of typical turbines that could be used at the AEWRA.

Bird Exposure Index

A relative index of collision exposure (R) was calculated for bird species observed during the fixed-point bird use surveys using the following formula:

$$R = A*P_f*P_t$$

Where A equals mean relative use for species *i* (large bird observations within 800 m of the observer or 100 m for small birds) averaged across all surveys; P_f equals the proportion of all observations of species *i* where activity was recorded as flying (an index to the approximate percentage of time species *i* spends flying during the daylight period); and P_t equals the proportion of all initial flight height observations of species *i* within the likely RSH.

Spatial Use

To determine spatial use within the AEWRA, data were analyzed by comparing use among plots. Mapped flight paths were qualitatively compared to study area features (e.g., topographic features). The objective of mapping observed bird locations and flight paths was to look for areas of concentrated use by raptors and other large birds and/or consistent flight patterns

within the study area. This information can be useful in turbine layout design or adjustments of individual turbines for micro-siting.

RESULTS

Fieldwork for the baseline studies was conducted at the AEWRA from July 10, 2010, through June 1, 2011, during which 48 bird species were identified. Results of the fixed-point bird use surveys and raptor nest surveys are discussed in the sections below.

Fixed-Point Bird Use Surveys

A total of 260 30-minute (min) fixed-point bird use surveys were conducted at the AEWRA during 47 site visits (Table 1). Two different viewsheds were utilized when calculating the different statistics (species richness, use, percent composition, percent frequency, and exposure index): 800 m for large birds and 100 m for small birds.

Table 1. Summary of species richness (species/plot[a]/30-min survey) and sample size, by season and overall, during the fixed-point bird use surveys at the Alta East Wind Resource Area, July 10, 2010 to June 1, 2011.

Season	Number of Visits	# Surveys Conducted	# Unique Species	Species Richness Large Birds	Species Richness Small Birds
Spring	13	70	38	0.69	2.03
Summer	9	54	16	0.35	0.91
Fall	10	60	26	0.67	1.28
Winter	15	76	20	0.94	1.26
Overall	**47**	**260**	**48**	**0.67**	**1.37**

[a] 800-meter radius for large birds and 100-meter radius for small birds.

Bird Diversity and Species Richness

Forty-eight unique species were observed during the fixed-point bird use surveys, with a mean of 0.67 large bird species/800-m plot/30-min survey and 1.37 small bird species/100-m plot/30-min survey (Table 1). Bird diversity (number of unique species) was greater in the spring (38 species) than in the fall (26), winter (20), and summer (16; Table 1). Large bird species richness (mean number of species per survey) was highest in the winter (0.94 species/survey), followed by spring (0.69), fall (0.67), and summer (0.35; Table 1). For small birds, the highest species richness was observed in the spring (2.03 species/survey), followed by fall (1.28), winter (1.26) and summer (0.91; Table 1). A total of 2,493 individual birds within 745 separate groups were recorded during the fixed-point bird surveys (Appendix A). Cumulatively, regardless of bird size, six species (12.5% of all species) composed 74.6% of total observations: common raven (*Corvus corax*; 451 observations), sage sparrow (*Amphispiza belli*; 409), white-crowned sparrow (*Zonotrichia leucophrys*; 404), western meadowlark (*Sturnella neglecta*; 269), western bluebird (*Sialia Mexicana*; 214), and California quail (*Callipepla californica*; 112). All other species composed less than 4% of total observations, individually. A total of 48 individual raptors were recorded within the AEWRA, representing nine species: Cooper's hawk (*Accipiter cooperii*; one observations), red-tailed hawk (*Buteo jamaicensis*; 18), Swainson's hawk (*Buteo swainsoni*; one), northern harrier (*Circus cyaneus*; two), golden eagle (*Aquila chrysaetos*; eight), American

kestrel (*Falco sparverius*; seven), peregrine falcon (*Falco peregrines*; one), prairie falcon (*Falco mexicanus*; two), and osprey (*Pandion haliaetus*; one; Appendix A). Unidentified accipiter (one observation) and unidentified hawk (six) were also observed during surveys.

Bird Use, Percent Composition, and Frequency of Occurrence

Mean bird use, percent composition, and frequency of occurrence were calculated by season for each bird type and species (Tables 2a and 2b). Large bird use (within 800-m plot) was highest in the winter (4.41 birds/plot/30-min survey), followed by fall (2.75), summer (2.39), and spring (1.64; Table 2a). For small birds (i.e., passerines, swifts/hummingbirds, and woodpeckers), use (within 100-m plots) was highest in the spring and winter (7.70 and 7.41 birds/plot/30-min survey, respectively), and lower in fall (5.35) and summer (1.65; Table 2b). Because different viewsheds were used in the analyses for large and small birds, use estimates calculated for the two groups are not directly comparable.

Table 2a. Mean bird use (number of birds/800-meter plot/30-minunte survey), percent of total composition (%), and frequency of occurrence (%) for each large bird type and species by season during the fixed-point bird use surveys at the Alta East Wind Resource Area from July 10, 2010 – June 1, 2011.

	Mean Use				Percent Composition				Frequency of Occurrence			
Bird Type or Species	**Spring**	**Summer**	**Fall**	**Winter**	**Spring**	**Summer**	**Fall**	**Winter**	**Spring**	**Summer**	**Fall**	**Winter**
Diurnal Raptors	**0.19**	**0.04**	**0.18**	**0.27**	**11.7**	**1.6**	**6.7**	**6.0**	**13.8**	**3.7**	**13.3**	**22.7**
Accipiters	*0.02*	*0.02*	*0*	*0*	*0.9*	*0.8*	*0*	*0*	*1.5*	*1.9*	*0*	*0*
Cooper's hawk	0.02	0	0	0	0.9	0	0	0	1.5	0	0	0
unidentified accipiter	0	0.02	0	0	0	0.8	0	0	0	1.9	0	0
Buteos	*0.09*	*0.02*	*0.08*	*0.09*	*5.7*	*0.8*	*3.0*	*2.0*	*9.4*	*1.9*	*8.3*	*8.9*
red-tailed hawk	0.08	0.02	0.08	0.09	4.8	0.8	3.0	2.0	7.8	1.9	8.3	8.9
Swainson's hawk	0.02	0	0	0	0.9	0	0	0	1.5	0	0	0
Northern Harrier	*0*	*0*	*0*	*0.03*	*0*	*0*	*0*	*0.7*	*0*	*0*	*0*	*3.0*
northern harrier	0	0	0	0.03	0	0	0	0.7	0	0	0	3.0
Eagles	*0*	*0*	*0.02*	*0.08*	*0*	*0*	*0.6*	*1.9*	*0*	*0*	*1.7*	*7.1*
golden eagle	0	0	0.02	0.08	0	0	0.6	1.9	0	0	1.7	7.1
Falcons	*0.06*	*0*	*0.07*	*0.02*	*3.5*	*0*	*2.4*	*0.6*	*3.8*	*0*	*3.3*	*2.4*
American kestrel	0.04	0	0.07	0	2.3	0	2.4	0	1.9	0	3.3	0
peregrine falcon	0	0	0	0.01	0	0	0	0.3	0	0	0	1.1
prairie falcon	0.02	0	0	0.01	1.2	0	0	0.3	1.9	0	0	1.3
Osprey	*0.01*	*0*	*0*	*0*	*0.8*	*0*	*0*	*0*	*1.3*	*0*	*0*	*0*
Osprey	0.01	0	0	0	0.8	0	0	0	1.3	0	0	0
Other Raptors	*0.01*	*0*	*0.02*	*0.04*	*0.8*	*0*	*0.6*	*0.9*	*1.3*	*0*	*1.7*	*3.9*
unidentified hawk	0.01	0	0.02	0.04	0.8	0	0.6	0.9	1.3	0	1.7	3.9
Vultures	**0.40**	**0**	**0**	**0**	**24.1**	**0**	**0**	**0**	**5.0**	**0**	**0**	**0**
turkey vulture	0.40	0	0	0	24.1	0	0	0	5.0	0	0	0
Upland Game Birds	**0.29**	**2.06**	**0.22**	**0.14**	**17.5**	**86.0**	**7.9**	**3.1**	**12.8**	**11.1**	**5.0**	**5.4**
California quail	0.24	1.56	0.02	0.14	14.8	65.1	0.6	3.1	12.8	9.3	1.7	5.4
chukar	0.04	0.50	0.20	0	2.7	20.9	7.3	0	2.8	1.9	3.3	0
Doves/Pigeons	**0.02**	**0.17**	**0.03**	**0.01**	**0.9**	**7**	**1.2**	**0.3**	**1.5**	**13.0**	**3.3**	**1.1**
mourning dove	0.02	0.17	0.03	0	0.9	7	1.2	0	1.5	13.0	3.3	0
rock pigeon	0	0	0	0.01	0	0	0	0.3	0	0	0	1.1
Large Corvids	**0.74**	**0.13**	**2.28**	**4.00**	**44.9**	**5.4**	**83.0**	**90.6**	**28.3**	**7.4**	**40.0**	**62.6**
common raven	0.74	0.13	2.28	4.00	44.9	5.4	83.0	90.6	28.3	7.4	40.0	62.6
Large Cuckoos	**0.01**	**0**	**0.03**	**0**	**0.8**	**0**	**1.2**	**0**	**1.3**	**0**	**3.3**	**0**
greater roadrunner	0.01	0	0.03	0	0.8	0	1.2	0	1.3	0	3.3	0
Overall	**1.64**	**2.39**	**2.75**	**4.41**	**100**	**100**	**100**	**100**				

Table 2b. Mean bird use (number of birds/100-meter plot/30-minute survey), percent of total composition (%), and frequency of occurrence (%) for each small bird type and species by season during the fixed-point bird use surveys at the Alta East Wind Resource Area from July 10, 2010 – June 1, 2011.

	Mean Use				Percent Composition				Frequency of Occurrence			
Bird Type or Species	**Spring**	**Summer**	**Fall**	**Winter**	**Spring**	**Summer**	**Fall**	**Winter**	**Spring**	**Summer**	**Fall**	**Winter**
Passerines	**7.61**	**1.57**	**5.33**	**7.39**	**98.8**	**95.5**	**99.7**	**99.8**	**88.5**	**59.3**	**70**	**77.3**
ash-throated flycatcher	0	0	0.02	0	0	0	0.3	0	0	0	1.7	0
barn swallow	0.05	0	0	0	0.7	0	0	0	1.3	0	0	0
cactus wren	0.10	0.43	0.07	0.08	1.3	25.8	1.2	1.1	6.9	33.3	5.0	6.9
chipping sparrow	0	0	0.35	0.18	0	0	6.5	2.4	0	0	5.0	3.6
common grackle	0.02	0	0	0	0.2	0	0	0	1.5	0	0	0
dark-eyed junco	0.03	0	0.12	0.92	0.4	0	2.2	12.5	1.5	0	1.7	8.7
European starling	0.16	0	0	0.03	2.0	0	0	0.5	10.4	0	0	1.7
horned lark	0.47	0	0.13	0	6.2	0	2.5	0	13.8	0	8.3	0
house finch	0.39	0	0.82	0	5.1	0	15.3	0	12.3	0	6.7	0
lark sparrow	0.09	0	0	0	1.2	0	0	0	2.8	0	0	0
Le Conte's thrasher	0	0.04	0.02	0	0	2.2	0.3	0	0	3.7	1.7	0
loggerhead shrike	0.08	0.22	0.05	0.1	1.0	13.5	0.9	1.4	8.1	13	5.0	10.0
rock wren	0.01	0	0	0.05	0.2	0	0	0.7	1.3	0	0	1.3
ruby-crowned kinglet	0.03	0	0	0	0.4	0	0	0	1.5	0	0	0
sage sparrow	2.05	0.63	2.70	0.76	26.6	38.2	50.5	10.3	33.3	24.1	55.0	17.6
savannah sparrow	0.01	0	0	0	0.2	0	0	0	1.3	0	0	0
Say's phoebe	0	0	0.02	0	0	0	0.3	0	0	0	1.7	0
Scott's oriole	0.01	0	0	0	0.2	0	0	0	1.3	0	0	0
Townsend's warbler	0.02	0	0	0	0.2	0	0	0	1.5	0	0	0
tree swallow	0.10	0	0	0	1.3	0	0	0	1.3	0	0	0
unidentified flycatcher	0.02	0	0	0	0.2	0	0	0	1.5	0	0	0
unidentified gnatcatcher	0	0	0	0.01	0	0	0	0.2	0	0	0	1.3
unidentified sparrow	0	0.02	0	0	0	1.1	0	0	0	1.9	0	0
unidentified swallow	0.01	0.13	0	0	0.2	7.9	0	0	1.3	1.9	0	0
unidentified warbler	0.01	0	0.02	0	0.2	0	0.3	0	1.3	0	1.7	0
western bluebird	0.15	0	0.08	0.72	2.0	0	1.6	9.7	1.5	0	3.3	11.4
western kingbird	0.02	0	0	0	0.2	0	0	0	1.5	0	0	0
western meadowlark	1.55	0.09	0.48	0.91	20.1	5.6	9.0	12.3	35.9	3.7	13.3	13.3
western scrub-jay	0.05	0.02	0.02	0	0.6	1.1	0.3	0	4.6	1.9	1.7	0
white-crowned sparrow	1.93	0	0.42	3.36	25.0	0	7.8	45.4	41.7	0	13.3	44.2
yellow-rumped warbler	0.25	0	0.03	0.25	3.2	0	0.6	3.4	5.6	0	1.7	4.7

Table 2b. Mean bird use (number of birds/100-meter plot/30-minute survey), percent of total composition (%), and frequency of occurrence (%) for each small bird type and species by season during the fixed-point bird use surveys at the Alta East Wind Resource Area from July 10, 2010 – June 1, 2011.

	Mean Use				Percent Composition				Frequency of Occurrence			
Bird Type or Species	**Spring**	**Summer**	**Fall**	**Winter**	**Spring**	**Summer**	**Fall**	**Winter**	**Spring**	**Summer**	**Fall**	**Winter**
Swifts/Hummingbirds	**0.04**	**0.06**	**0.02**	**0**	**0.6**	**3.4**	**0.3**	**0**	**4.4**	**5.6**	**1.7**	**0**
Anna's hummingbird	0.02	0	0	0	0.2	0	0	0	1.5	0	0	0
unidentified hummingbird	0.03	0.04	0.02	0	0.4	2.2	0.3	0	2.8	3.7	1.7	0
white-throated swift	0	0.02	0	0	0	1.1	0	0	0	1.9	0	0
Woodpeckers	**0.02**	**0.02**	**0**	**0**	**0.2**	**1.1**	**0**	**0**	**1.5**	**1.9**	**0**	**0**
ladder-backed woodpecker	0.02	0.02	0	0	0.2	1.1	0	0	1.5	1.9	0	0
Unidentified Birds	**0.03**	**0**	**0**	**0.02**	**0.4**	**0**	**0**	**0.2**	**1.5**	**0**	**0**	**1.7**
unidentified bird (small)	0.03	0	0	0.02	0.4	0	0	0.2	1.5	0	0	1.7
Overall	**7.70**	**1.65**	**5.35**	**7.41**	**100**	**100**	**100**	**100**				

Diurnal Raptors

Diurnal Raptor use was highest during the winter (0.27 birds/800-m plot/30-min survey), with spring and fall having moderate use (0.19 and 0.18, respectively) and summer having considerably lower use (0.04; Table 2a). Higher use in the winter was primarily due to higher use of the area by red-tailed hawk (0.09 birds/plot/30-min survey) and golden eagle (0.08). Red tailed hawk and American kestrel comprised the majority of raptor use during both spring (0.08 and 0.04 birds/plot/3-min survey; respectively) and fall (0.08 and 0.07; respectively). Diurnal raptor use in summer was attributed entirely to a single red-tailed hawk and a single unidentified accipiter. Diurnal raptors comprised 11.7% of overall large bird use in spring, 6.7% in fall, 6.0% in winter, and 1.6% in summer. Diurnal raptors were observed during 13.8% of spring surveys, 3.7% of summer surveys, 13.3% of fall surveys, and 22.7% of winter surveys (Table 2a).

Due to the age of the eagles observed during fall/winter, it is evident that at least three separate individuals were recorded; however, it cannot be determined whether these detections were of unique nomadic individuals or repeat observations of local/resident birds. All eight of these fall and winter observations were of flying eagles, indicating movement through the project area and possible foraging. No perching eagles, or those actually feeding on prey items, have been recorded within or near the project boundary.

Vultures

Vultures, comprised entirely of turkey vultures (*Cathartes aura*), were observed only during spring with a use estimate of 0.40 birds/800-m plot/30-min (Table 2a). Vultures comprised 24.1% of overall large bird use in spring and were observed during 5.0% of spring surveys (Table 2a).

Upland Game Birds

Use by upland game birds was much higher in the summer (2.06 birds/800-m plot/30-min survey) compared to spring (0.29), fall (0.22), and winter (0.14; Table 2a). California quail encompassed the majority of upland game bird use in spring, summer, and winter, while use by chukar (*Alectoris chukar*) was dominant in the fall. Upland game birds comprised 86.0% of overall large bird use in summer, 17.5% in spring, 7.9% in fall, and 3.1% in winter. Upland game birds were observed during 12.8% of spring surveys, 11.1% of summer surveys, 5.4% of winter surveys, and 5.0% of fall surveys (Table 2a).

Doves/Pigeons

Use by doves/pigeons was highest in summer (0.17 birds/800-m plot/30-min survey), followed by fall (0.03), spring (0.02), and winter (0.01; Table 2a). Mourning dove (*Zenaida macroura*) was the only dove/pigeon species observed during spring, summer, and fall, while rock pigeon (*Columba livia*) was the only dove/pigeon species observed during winter. Dove/pigeons comprised 7.0% of overall large bird use during summer, but less than 2% of use during other seasons. Doves/pigeons were observed during 13.0% of summer surveys, and during less than 4% of survey during other seasons (Table 2a).

Large Corvids

Use by large corvids, comprised entirely of common raven, was higher in the winter and fall (4.00 and 2.28 bird/800-m plot/30-min survey, respectively), compared to spring and summer (0.74 and 0.13, respectively; Table 2a). Large corvids comprised 90.6% of overall large bird use in winter, 83.0% in fall, 44.9% in spring, and 5.4% in summer. Large corvids were observed during 62.6% of winter surveys, 40.0% of fall surveys, 28.3% of spring surveys, and 7.4% of summer surveys (Table 2a).

Large Cuckoos

Large cuckoos, comprised solely of greater roadrunner (*Geococcyx californianus*), were observed only during fall and spring surveys with seasonal use estimates of 0.03 and 0.01 birds/800-m plot/30-min survey, respectively (Table 2a). Large cuckoos comprised 1.2% of overall large bird use in fall and 0.8% in spring. Greater roadrunners were observed during 3.3% of fall surveys and 1.3% of spring surveys (Table 2a).

Passerines

Use by passerines was highest in spring (7.61 birds/100-m plot/30-min survey) and winter (7.39), with intermediate use in fall (5.33) and low use in summer (1.57; Table 2b). Sage sparrow had the highest use of any passerine species in the spring, summer, and fall (2.05, 2.70, and 0.63 birds/plot/30-min survey, respectively), while white-crowned sparrow had the highest use in winter (3.36). Passerines comprised over 95% of overall small bird use during all four seasons. Passerines were recorded during 88.5% of spring surveys, 59.3% of summer surveys, 70.0% of fall surveys, and 77.3% of winter surveys (Table 2b).

Swifts/Hummingbirds

Swifts/hummingbirds had low use throughout the year (0.06 birds/100-m plot/30-min survey in summer, 0.04 in spring, and 0.02 in fall); no swifts/hummingbirds were observed in winter (Table 2b). Swifts/hummingbirds comprised less than 4% of overall small bird use during each season, and were observed during less than 6% of surveys during each season (Table 2b).

Woodpeckers

Use by woodpeckers was observed during only the spring (0.02 birds/100-m plot/30-min plot) and summer (0.02; Table 2b). Ladder-backed woodpecker (*Picoides scalaris*) was the only woodpecker species observed during surveys (Appendix A). Woodpeckers comprised less than 2% of overall small bird use during each season and were observed during less than 2% of surveys (Table 2b).

Bird Flight Height and Behavior

Flight height characteristics were estimated for both bird types and species (Tables 4 and 5). During fixed-point bird use surveys, 181 groups of large birds totaling 585 individuals were observed flying within 800-m plots (Table 3). Overall, 41.0% of flying large birds were observed within the RSH for collision with turbine blades of 115 to 427 feet (35 to 130 m) above ground level, while 49.1% were observed below the RSH, and 9.9% were above the RSH (Table 3). The large bird types with the greatest percentage of observations within the RSH were vultures

(68.2%) and large corvids (48.9%). For diurnal raptors, 44.4% were observed flying within the RSH, while 50.0% were below the RSH and 5.6% were flying above the RSH. Of the raptor subtypes, red-tailed hawk was observed most frequently within the RSH (61.5%).

Table 3. Flight height characteristics by bird type during fixed-point bird use surveys at the Alta East Wind Resource Area from July 10, 2010 – June 1, 2011. Large bird observations were limited to within an 800-meter (m) radius and small bird observations were limited to within a 100-m radius.

Bird Type	# Groups Flying	# Obs Flying	Mean Flight Height (m)	% Obs Flying	% Within Flight Height Categories		
					0 - 35 m	35 - 130 m[a]	> 130 m
Diurnal Raptors	35	36	43.26	78.3	50.0	44.4	5.6
Accipiters	*2*	*2*	*34.00*	*100*	*50.0*	*50.0*	*0*
Buteos	*13*	*13*	*57.15*	*68.4*	*30.8*	*61.5*	*7.7*
Northern Harrier	*2*	*2*	*11.00*	*100*	*100*	*0*	*0*
Eagles	*7*	*8*	*66.43*	*100*	*37.5*	*50.0*	*12.5*
Falcons	*6*	*6*	*13.33*	*66.7*	*83.3*	*16.7*	*0*
Osprey	*1*	*1*	*25.00*	*100*	*100*	*0*	*0*
Other Raptors	*4*	*4*	*27.75*	*80.0*	*50.0*	*50.0*	*0*
Vultures	3	22	100	100	4.5	68.2	27.3
Upland Game Birds	3	92	1.00	59.7	100	0	0
Doves/Pigeons	8	9	8.62	69.2	88.9	11.1	0
Large Corvids	131	425	59.11	94.2	39.3	48.9	11.8
Large Cuckoos	1	1	0	33.3	100	0	0
Large Birds Overall	**181**	**585**	**53.20**	**84.9**	**49.1**	**41.0**	**9.9**
Passerines	152	679	3.22	45.1	94.7	5.3	0
Swifts/Hummingbirds	6	6	8.50	85.7	100	0	0
Woodpeckers	1	1	2.00	50.0	100	0	0
Unidentified Birds	0	0	0	0	0	0	0
Small Birds Overall	**159**	**686**	**3.42**	**45.2**	**94.8**	**5.2**	**0**

[a] the likely rotor-swept heights for potential collision with a turbine blade or 115 - 427 feet (35 – 130 m) above ground level.

Doves/pigeons, upland game birds, and large cuckoos were generally observed flying below the RSH (Table 3). A total of 159 groups of small birds totaling 686 individuals were observed flying within the 100-m plots (Table 3). Overall, 5.2% of small birds were observed flying within the estimated RSH. The majority (94.7%) of passerines, and all (100%) of the woodpeckers and swifts/hummingbirds were observed flying below the RSH. No small birds were recorded flying above the RSH (Table 3).

Among large bird types, four species (common raven, red-tailed hawk, golden eagle, and mourning dove) had at least five groups observed flying. Of these, golden eagle had the greatest percentage of observations within the RSH (87.5%), followed by common raven (75.0%), and red-tailed hawk (73.4%; Table 4a). Four other species (osprey, Copper's hawk, Swainson's hawk, and rock pigeon) were recorded flying within the RSH during 100% of the observations; however this was based on only a single observation (Table 4a). Among small bird types, nine species had at least five groups observed flying. Of these, the only species observed flying within the RSH were white-crowned sparrow (21.6% of observations) and sage sparrow (3.1%; Table 4b).

Table 4a. Relative exposure index and flight characteristics for large bird species during the fixed-point bird use surveys at the Alta East Wind Resource Area from July 10, 2010 – June 1, 2011.

Species	# Groups Flying	Overall Mean Use	% Flying	% Flying Within RSH[a] Based on Initial Obs	Exposure Index	% Flying Within RSH at Anytime
common raven	131	1.84	94.2	48.9	0.85	73.4
turkey vulture	3	0.10	100	68.2	0.07	72.7
red-tailed hawk	12	0.07	66.7	58.3	0.03	75.0
golden eagle	7	0.03	100	50.0	0.01	87.5
unidentified hawk	4	0.02	80.0	50.0	<0.01	75.0
prairie falcon	2	<0.01	100	50.0	<0.01	50.0
Swainson's hawk	1	<0.01	100	100	<0.01	100
Cooper's hawk	1	<0.01	100	100	<0.01	100
rock pigeon	1	<0.01	100	100	<0.01	100
California quail	1	0.50	48.2	0	0	0
chukar	2	0.18	90.5	0	0	0
mourning dove	7	0.05	66.7	0	0	0
American kestrel	3	0.02	50.0	0	0	33.3
greater roadrunner	1	0.01	33.3	0	0	0
northern harrier	2	<0.01	100	0	0	0
unidentified accipiter	1	<0.01	100	0	0	0
osprey	1	<0.01	100	0	0	100
peregrine falcon	1	<0.01	100	0	0	0

[a] RSH - The likely rotor-swept heights for potential collision with a turbine blade or 115 - 427 feet (35 - 130 meters) above ground level.

Table 4b. Relative exposure index and flight characteristics for small bird species during the fixed-point bird use surveys at the Alta East Wind Resource Area from July 10, 2010 – June 1, 2011.

Species	# Groups Flying	Overall Mean Use	% Flying	% Flying Within RSH[a] Based on Initial Obs	Exposure Index	% Flying Within RSH at Anytime
white-crowned sparrow	34	1.54	58.6	14.8	0.13	21.6
sage sparrow	39	1.46	39.8	0.6	<0.01	3.1
western meadowlark	12	0.78	16.5	0	0	0
dark-eyed junco	3	0.30	81.0	0	0	0
house finch	11	0.27	63.3	0	0	0
western bluebird	5	0.26	30.6	0	0	0
cactus wren	6	0.17	20.0	0	0	0
horned lark	3	0.15	13.6	0	0	0
yellow-rumped warbler	5	0.14	59.5	0	0	0
chipping sparrow	4	0.12	40.0	0	0	0
loggerhead shrike	7	0.12	25.0	0	0	0
European starling	6	0.05	53.8	0	0	0
unidentified swallow	2	0.04	100	0	0	12.5
tree swallow	1	0.03	100	0	0	0
lark sparrow	2	0.02	100	0	0	0
unidentified hummingbird	4	0.02	80.0	0	0	0
western scrub-jay	1	0.02	20.0	0	0	0
rock wren	2	0.02	100	0	0	0
barn swallow	1	0.01	100	0	0	0
Le Conte's thrasher	0	0.01	0	0	0	0
unidentified bird (small)	0	0.01	0	0	0	0
ladder-backed woodpecker	1	<0.01	50	0	0	0
ruby-crowned kinglet	1	<0.01	100	0	0	0
unidentified warbler	2	<0.01	100	0	0	0
white-throated swift	1	<0.01	100	0	0	0
unidentified sparrow	0	<0.01	0	0	0	0
western kingbird	0	<0.01	0	0	0	0
unidentified flycatcher	1	<0.01	100	0	0	0
Townsend's warbler	1	<0.01	100	0	0	0
common grackle	1	<0.01	100	0	0	0
Anna's hummingbird	1	<0.01	100	0	0	0
unidentified gnatcatcher	0	<0.01	0	0	0	0
Say's phoebe	0	<0.01	0	0	0	0
ash-throated flycatcher	0	<0.01	0	0	0	0
Scott's oriole	1	<0.01	100	0	0	0
savannah sparrow	1	<0.01	100	0	0	0

[a] RSH - The likely rotor-swept heights for potential collision with a turbine blade or 115 - 427 feet (35 - 130 meters) above ground level.

Bird Exposure Index

A relative exposure index was calculated for each bird species based on initial flight height observations and relative abundance (defined as the use estimate; Tables 2a and 2b). This index does not account for other possible collision risk factors (e.g., foraging or courtship behavior). Common raven had the highest exposure index of any large bird species (0.85). All other large bird species had an exposure index of 0.07 or less. The diurnal raptor species with the greatest exposure indices were red tailed hawk (0.03) and golden eagle (0.01; Table 4a).

Prairie falcon, Swainson's hawk, and Copper's hawk all had an index less than 0.01. Among the small birds, the only two species with an exposure index greater than zero were white crown sparrow (0.13) and sage sparrow (<0.01, Table 4b).

Spatial Use

For all large bird species combined, use was highest at point three (5.15 birds/30-min survey); large bird use ranged from 0.65 to 3.89 birds/30-min survey at other points (Appendix B). The high mean use estimate for point three was largely due to higher use by large corvids and upland game birds at this point (2.59 and 2.17 birds/30-min survey, respectively). Diurnal raptor use was also highest at point 3 (0.37 birds/30-min plot) and ranged from 0.06 to 0.24 at other points. Relatively high raptor use at point 3 was primarily attributed to use by buteos (0.09 birds/30-min survey) and eagles (0.09); however, the accipiters, northern harrier, and osprey were observed only at point 3. Vultures were observed only at points 4 and 6 (0.45 and 0.02 birds/30-min survey, respectively). Upland game bird use varied greatly among points, ranging from 0.04 birds/30-min survey at point 1 to 2.17 at point 3. Use by large corvids (common ravens) was highest at point four (2.94 birds/30-min survey), and ranged from 0.32 to 2.59 at other points. Among small bird types, use was highest at point 6 (9.53 birds/30-min survey) and lowest at point 4 (2.04; Appendix B).

Flight paths for raptors and vultures were digitized and mapped by season (Appendix C). A qualitative comparison of mapped flight paths across survey points indicate higher use for some raptor species (e.g., red-tailed hawks and golden eagles) at points three and four, in the areas of greater topographic relief, particularly during the winter. Higher use of this area by golden eagles may be explained by the proximity of these points to several active eagle nests identified during raptor nest surveys (see Figure 2). Observations of other raptor species (e.g., falcons, harriers, and accipiters) and turkey vultures were too few to make inferences on spatial use of the study area by these species.

Sensitive Species Observations

Six species designated as having special conservation status at the state and/or federal level (BGEPA 1940, CDFG 2011, USFWS 2011) were recorded (Table 5). These included one state-threatened species (Swainson's hawk [CDFG 2011]), two state fully-protected species (golden eagle and peregrine falcon [CDFG 2011]), two state species of special concern (loggerhead shrike [*Lanius ludovicianus*] and northern harrier [CDFG 2011]), and three federal species of concern (loggerhead shrike, peregrine falcon, and Le Conte's thrasher [*Toxostoma lecontei*]; USFWS 2011). Additionally, the golden eagle receives further protection under the BGEPA (1940) and all are protected under the Migratory Bird Treaty Act (MBTA 1918).

Table 5. Summary of sensitive species observed at the Alta East Wind Resource Area during fixed-point bird use surveys (FP) from July 10, 2010 – June 1, 2011.

Species	Scientific Name	Status	Total # of grps	Total # of obs
loggerhead shrike	*Lanius ludovicianus*	SSC, FSC	32	36
golden eagle	*Aquila chrysaetos*	SFP, EA	7	8
Le Conte's thrasher	*Toxostoma lecontei*	FSC	3	3
northern harrier	*Circus cyaneus*	SSC	2	2
peregrine falcon	*Falco peregrinus*	SFP, FSC	1	1
Swainson's hawk	*Buteo swainsoni*	ST	1	1
Total	**6 Species**		**46**	**51**

SSC - state species of concern (CDFG 2011);
FSC - federal species of concern (USFWS 2011);
SFP – state fully-protected species (CDFG 2011);
EA – federal Bald and Golden Eagle Protection Act (BGEPA 1940);
ST – state threatened (CDFG 2011).

Raptor Nest Surveys

Aerial raptor nest surveys were conducted via helicopter on February 22, April 12, and June 1-2, 2011, at the AEWRA. The survey area for golden eagles included all eagle nesting habitat within a 10-mile buffer of the proposed AEWRA, while the survey area for all other raptors and common ravens included a two-mile buffer of the AEWRA.

Golden Eagle Nests

Three active golden eagle nests were identified within 10 miles of the AEWRA. These nests were located approximately 3.0 miles (4.8 km) to the northwest, 3.8 miles (6.1 km) to the north, and 6.8 miles (10.9 km) to the north of the AEWRA (Figure 2). All three nests were located during the February 22 flight, but were found to be inactive during that time. During the second round of surveys on April 12, adults were observed incubating at each nest. During the final survey on June 1, the nest to the northwest was found to be empty (presumed to have failed), while two young were observed in the northern-most nest and a single nestling was observed on the third nest. The age of the young was estimated to be between seven and eight weeks. Additionally, 10 inactive golden eagle nests were identified within the 10-mile buffer and three additional inactive nests were identified just outside the 10-mile buffer (Figure 2). The closest of these inactive golden eagle nests to the AEWRA is located approximately 1.2 miles (1.9 km) to the northwest.

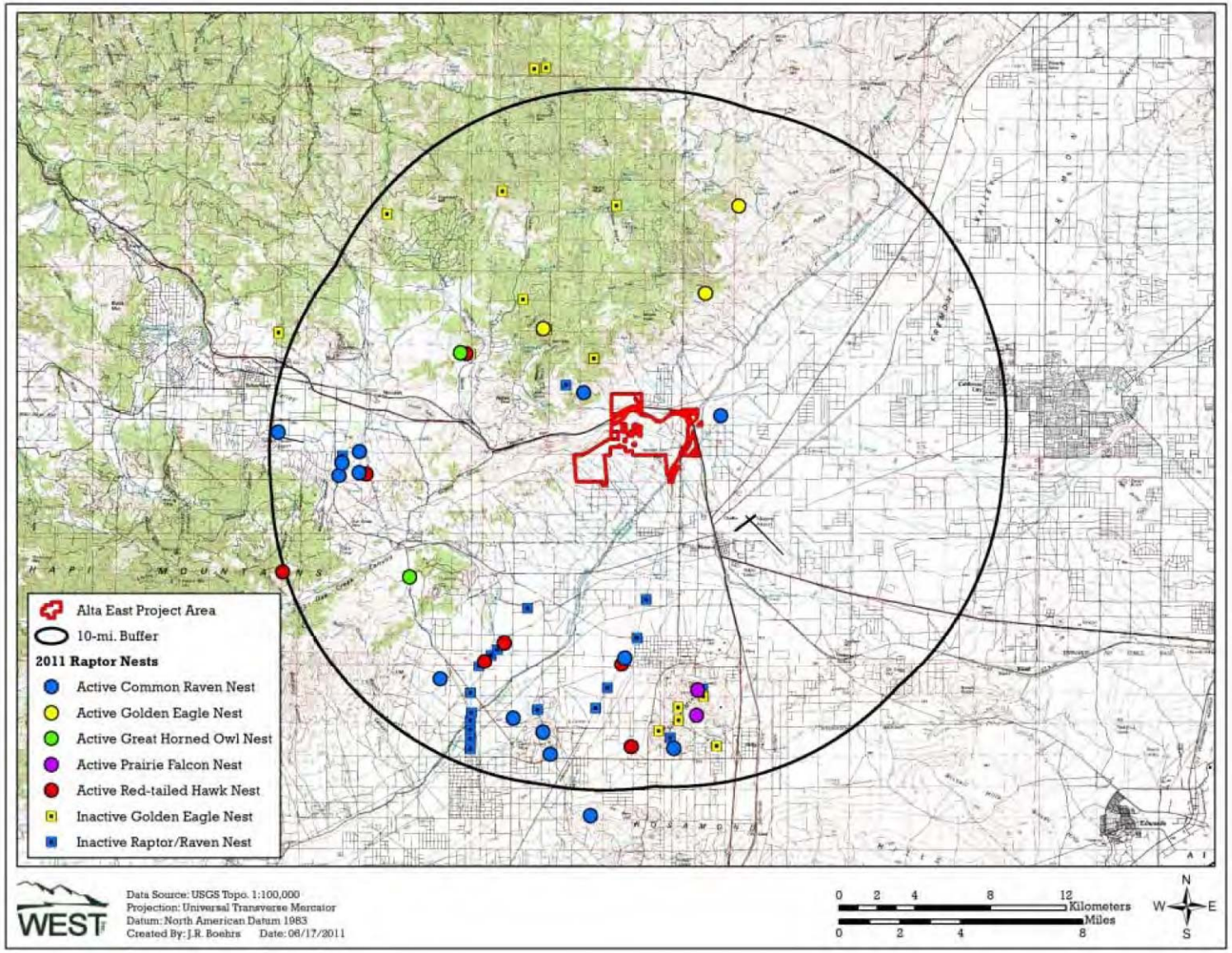


Figure 2. Location of raptor nests at the Alta East Wind Resource Area.

Other Raptor Nests

No active raptor nests were located within the boundary of the AEWRA, or within the surrounding 2-mile buffer. However, one inactive raptor nest and two active common raven nests were identified within two miles of the AEWRA (Figure 2). Additionally, while conducting surveys for golden eagles within the 10-mile buffer, a number of active raptor nests were identified in the region: two great horned owl (*Bubo virginianus*) nests, two prairie falcon nests, and seven red-tailed hawk nests. No Swainson's hawk nests were observed within the survey area. Additionally, thirteen active common raven nests and 28 inactive raptor nests were observed. It should be noted that only the area encompassed by a 2-mile buffer of the AEWRA was systematically searched for raptor nests and nests of other large birds. Outside of this area, the survey effort focused on golden eagle nesting habitat; however, any raptor or raven nest encountered was recorded as an incidental nest observation.

DISCUSSION AND IMPACT ASSESSMENT

Potential Impacts

Impacts to avian resources from wind energy facilities can be direct or indirect. Direct impacts are considered to be the potential for fatalities from construction and operation of the facility. Indirect impacts include the potential to displace wildlife, either temporarily or permanently, during the facility's construction or during the period of operation.

Direct Effects

The most probable direct impact to birds from wind energy facilities is mortality or injury due to collisions with turbines or guy wires of meteorological (met) towers. Collisions may occur with resident birds foraging and flying within the study area or with migrant birds moving seasonally through the study area. Project construction could affect birds through loss of habitat, or potential fatalities from construction equipment. Impacts from the decommissioning of the facility are anticipated to be similar to construction in terms of noise, disturbance, and equipment. Potential mortality from construction equipment is expected to be very low as equipment used in wind energy facility construction generally moves at slow rates or is stationary for long periods (e.g., cranes). The risk of direct mortality to birds from construction is most likely potential destruction of a nest for ground- and shrub-nesting species during initial site clearing.

Substantial data on bird mortality at wind energy facilities are available from studies throughout North America (Appendix D1). For the purpose of comparison with the AEWRA, a list of avian fatality estimates for facilities in California and the Pacific Northwest with publically-available data is presented in Table 6. Mortality rates for all bird species combined has varied greatly at these facilities, ranging from 0.16 birds/MW/year to 9.57 birds/MW/year (Table 6). Not all studies with publically-available fatality data have data on specific species or mortality estimates for avian subtypes. One study looked at 12 fatality studies, primarily in the Pacific Northwest, and found that diurnal raptor fatalities comprised just 2% of the wind-energy facility-related fatalities. Passerines (excluding house sparrows [*Passer domesticus*] and European starlings

[*Sturnus vulgaris*]) were the most common collision victims, comprising 82% of the 225 fatalities documented (Erickson et al. 2002b). Another study, focusing on the western United States, reported passerines were the most common fatalities, comprising 59.3% of all avian fatalities, while raptors comprised 19.4% of all avian fatalities. Upland game birds, shorebirds, waterbirds, and waterfowl were also found as fatalities, but were much less common (Johnson and Stephens 2011).

Table 6. Wind energy facilities in California and the Pacific Northwest with fatality data for all bird species.

Wind Energy Facility	Fatality Estimate[A]	No. of Turbines	Total MW
California			
Altamont Pass, CA	9.57	over 5,000	about 550
Pine Tree, CA	8.30*	90	135
Dillon, CA	4.71	45	45
Diablo Winds, CA	4.29	31	20
High Winds, CA (2004)	1.62	90	162
High Winds, CA (2005)	1.10	90	162
SMUD Solano, CA	0.99		15
Alite, CA	0.55	8	24
Pacific Northwest			
Leaning Juniper, OR	6.66	67	100.5
Stateline, OR/WA (2002)	3.17	454	263
Klondike II, OR	3.10	50	75
Klondike III, OR	3.02	122	375
Hopkins Ridge, WA (2008)	2.99	83	150
Nine Canyon, WA	2.76	37	48
Stateline, OR/WA (2003)	2.68	454	263
Combine Hills, OR	2.56	41	41
Big Horn, WA	2.54	133	199.5
Biglow Canyon, OR (Phase I; 2009)	2.47	76	125.4
Biglow Canyon, OR (Phase I; 2008)	1.76	76	125.4
Wild Horse, WA	1.55	127	229
Stateline II, OR/WA (2006)	1.23	454	263
Hopkins Ridge, WA (2006)	1.23	83	150
Vansycle, OR	0.95	38	24.9
Klondike, OR	0.95	16	24
Elkhorn, OR	0.64	61	101
Marengo I, WA	0.27	78	140.4
Marengo II, WA	0.16	39	70.2

A=number of bird fatalities/MW/study period
*fatality estimate corrected for mathematical error in number reported by BioResource Consultants (2010).
Data from the following sources:

Wind Energy Facility	Fatality Estimate	Wind Energy Facility	Fatality Estimate
ICF 2011	ICF 2011	Stateline, OR/WA (03)	Erickson et al. 2004
BioResource Consultants 2010	BRC 2010	Combine Hills, OR	Young et al. 2006
Dillon, CA	Chatfield et al. 2009	Big Horn, WA	Kronner et al. 2008
Diablo Winds, CA	WEST 2008	Biglow Canyon, OR (Phase I; 09)	Enk et al. 2010
High Winds, CA (04)	Kerlinger et al. 2006	Biglow Canyon I, OR (Phase I; 08)	Jeffrey et al. 2009a
High Winds, CA (05)	Kerlinger et al. 2006	Wild Horse, WA	Erickson et al. 2008
SMUD Solano, CA	Erickson and Sharp 2005	Stateline II, OR/WA	Erickson et al. 2007
Alite, CA	Chatfield et al. 2010 a	Hopkins Ridge, WA (06)	Young et al. 2007a
Leaning Juniper, OR	Gritski et al. 2008	Vansycle, OR	Erickson et al. 2000
Stateline, OR/WA (02)	Erickson et al. 2004	Klondike, OR	Johnson et al. 2003
Klondike II, OR	NWC and WEST 2007	Elkhorn, OR	Jeffrey et al. 2009b
Klondike III, OR	Gritski et al. 2009	Marengo I, WA	URS Corporation 2010a
Hopkins Ridge, WA (08)	Young et al. 2009b	Marengo II, WA	URS Corporation 2010b
Nine Canyon, WA	Erickson et al. 2003c		

Based on studies conducted at newer wind energy facilities, overall bird mortality in California is moderate compared to other sites in the Pacific Northwest (Table 6) and throughout North America (Appendix D1). The Altamont Pass WRA (APWRA), located in west-central California, had the highest mortality rate among facilities in California and the Pacific Northwest, with a rate of 9.57 birds/MW/year (IFC 2011). The APWRA currently contains over 5,000 wind turbines,

with a total capacity of 550 MW. The APWRA uses older, smaller wind turbines that typically range in size from 40 kilowatts (kW) to 300 kW (Arnett 2007), while most recent wind-energy facilities use larger turbines, ranging in size from 600 kW to 2.5 MW. The higher mortality rates observed at the APWRA have not been observed at other old-generation wind farms in California, namely the Tehachapi Pass and San Gorgonio WRAs (Anderson et al. 2004, 2005). A relatively high mortality rate was also observed at the Pine Tree Wind Farm (PTWF) located in southeastern Kern County (8.3 birds/MW/year), during 12 consecutive months of fatality monitoring in 2009-2010 (BRC 2010). According to BRC (2010), the estimated fatality rate at the PTWF may be inflated due to the dual effect of low searcher efficiency and high scavenger removal rates. The Dillon facility in Riverside County (Chatfield et al. 2009) and the Diablo Winds facility in Alameda County (WEST 2008) had more moderate fatality estimates (4.71 and 4.29 birds/MW/year, respectively). Two years of study were conducted at the High Winds facility, with a fatality estimate of 1.62 birds/MW/year in 2004 and 1.10 birds/MW/year in 2005 (Kerlinger et al. 2006). The Alite facility, located several miles to the southwest of the AEWRA, recorded the lowest mortality rate of sites reviewed in California, with an estimate of 0.55 birds/MW/year (Chatfield et al. 2010a; Table 6).

With the possible exception of golden eagles at the APWRA in California, where an estimated 40–70 golden eagles are killed each year (Hunt 2002, Smallwood and Thelander 2004), no wind-energy facilities have been documented to cause population declines of any species (Johnson and Stephens 2011). In the only study to quantitatively assess potential population level impacts, Hunt (2002) conducted a four year radio telemetry study of golden eagles at the APWRA and found that the resident golden eagle population appeared to be self-sustaining despite high levels of fatalities, but the effect of these fatalities on eagle populations wintering within and adjacent to the APWRA was unknown. All 58 territories occupied by golden eagle pairs in the APWRA in 2000 remained active in 2005 (Hunt and Hunt 2006).

Raptor Use and Exposure Risk

Annual mean raptor use (number of raptors divided by the number of 800-m plots and the total number of surveys) at the AEWRA was compared with raptor use at 43 other sites proposed for wind-energy development in the western and Midwestern US that implemented similar protocols and had data for three or four seasons. The annual mean raptor use at these wind-energy facilities ranged from 0.06 to 2.34 raptors/plot/20-min survey (Figure 3). Based on the results from these wind-energy facilities, a ranking of seasonal mean raptor use was developed as low (0 – 0.5 raptors/plot/20-min survey), low to moderate (0.5 – 1.0), moderate (1.0 – 2.0), high (2.0 – 3.0), and very high (more than 3.0). Under this ranking, mean raptor use at the AEWRA (0.12 raptors/plot/20-min survey) is considered to be low, ranking third lowest compared to the other wind-energy facilities (Figure 3). On a seasonal basis, mean raptor use estimates at the AEWRA are consistently low across all seasons when compared with other projects with the highest ranking occurring during the winter, when the AEWRA presents the 13th lowest mean use value out of 41 sites (Appendix E).

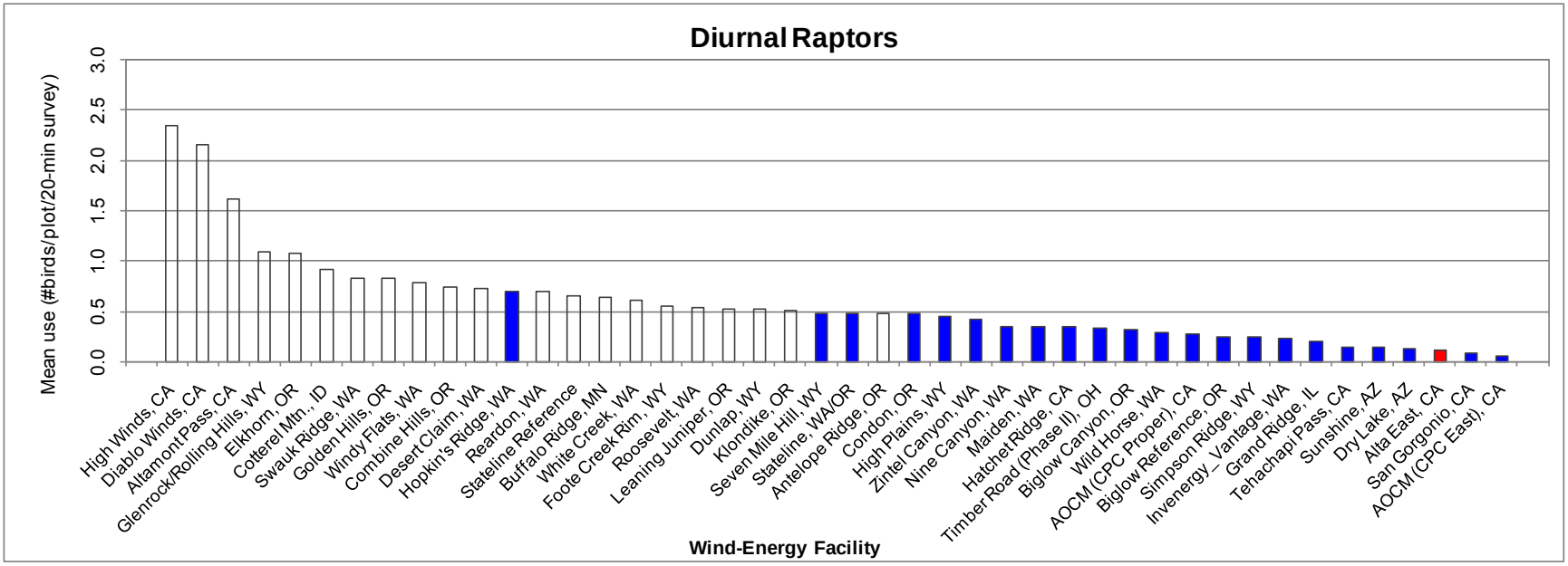


Figure 3. Comparison of annual raptor use between the Alta East Wind Resource Area and other wind-energy facilities in the western and Midwestern United States.

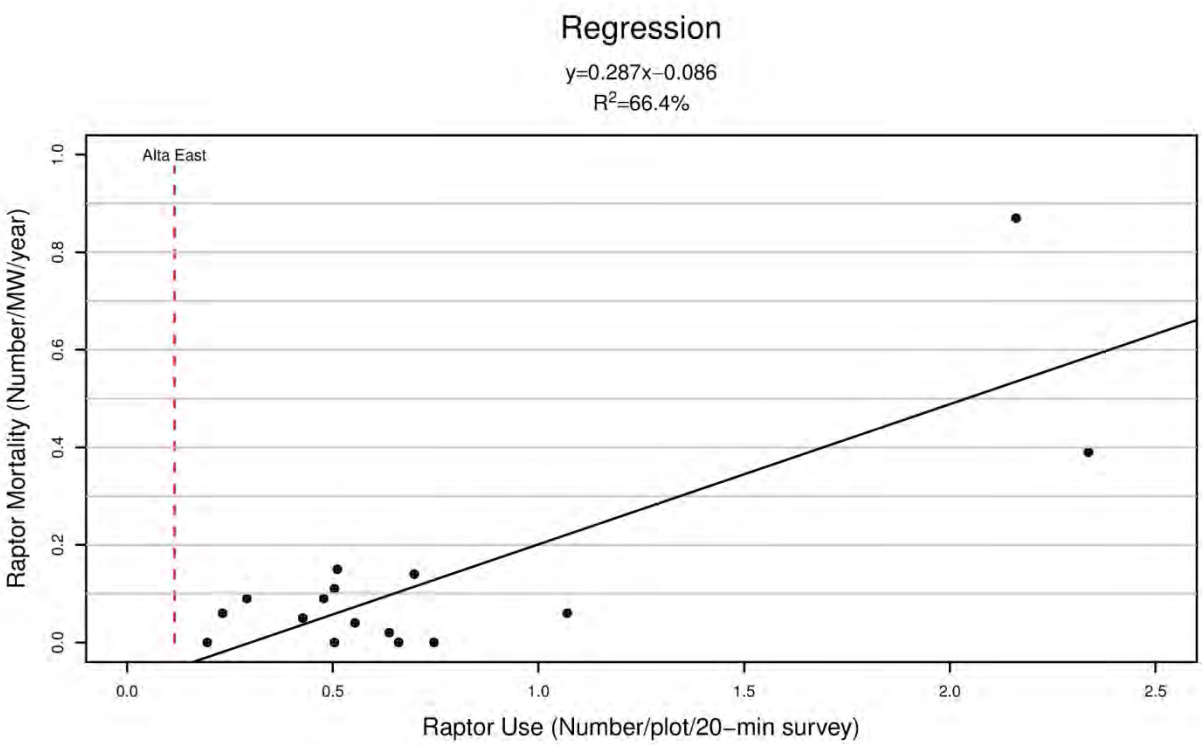
Data from the following sources:

Wind Energy Facility	Reference	Wind Energy Facility	Reference	Wind Energy Facility	Reference
Alta East, CA	This study.				
High Winds, CA	Kerlinger et al. 2005	White Creek, WA	NWC and WEST 2005	Timber Road (Phase II), OH	Good et al. 2010
Diablo Winds, CA	WEST 2006	Foote Creek Rim, WY	Erickson et al. 2002b	Biglow Canyon, OR	WEST 2005d
Altamont Pass, CA	Erickson et al. 2002b	Roosevelt, WA	NWC and WEST 2004	Wild Horse, WA	Erickson et al. 2003d
Glenrock/Rolling Hills, WY	Johnson et al. 2008a	Leaning Juniper, OR	Kronner et al. 2005	AOCM (CPC Proper), CA	Chatfield et al. 2010c
Elkhorn, OR	WEST 2005a	Dunlap, WY	Johnson et al. 2009a	Biglow Reference, OR	WEST 2005d
Cotterel Mtn., ID	BLM 2006	Klondike, OR	Johnson et al. 2002	Simpson Ridge, WY	Johnson et al. 2000b
Swauk Ridge, WA	Erickson et al. 2003a	Seven Mile Hill, WY	Johnson et al. 2008b	Invenergy_Vantage, WA	WEST 2007
Golden Hills, OR	Jeffrey et al. 2008	Stateline, WA/OR	Erickson et al. 2002b	Grand Ridge, IL	Derby et al. 2009
Windy Flats, WA	Johnson et al. 2007b	Antelope Ridge, OR	WEST 2009	Tehachapi Pass, CA	Erickson et al. 2002b
Combine Hills, OR	Young et al. 2003d	Condon, OR	Erickson et al. 2002b	Sunshine, AZ	WEST and the CPRS 2006
Desert Claim, WA	Young et al. 2003b	High Plains, WY	Johnson et al. 2009b	Dry Lake, AZ	Young et al. 2007c
Hopkin's Ridge, WA	Young et al. 2003a	Zintel Canyon, WA	Erickson et al. 2002a	San Gorgonio, CA	Erickson et al. 2002b
Reardon, WA	WEST 2005b	Nine Canyon, WA	Erickson et al. 2001b	AOCM (CPC East), CA	Chatfield et al. 2010c
Stateline Reference	URS et al. 2001	Maiden, WA	Erickson et al. 2002b		
Buffalo Ridge, MN	Erickson et al. 2002b	Hatchet Ridge, CA	Young et al. 2007b		

Although high numbers of raptor fatalities have been documented at some wind-energy facilities (e.g., Altamont Pass), a review of studies at wind-energy facilities across the United States reported that only 3.2% of casualties were raptors (Erickson et al. 2001a). Indeed, although raptors occur in most areas with the potential for wind-energy development, individual species appear to differ from one another in their susceptibility to collision (NRC 2007). Although the data set is limited, it indicates that, while several factors likely influence raptor fatality rates, the level of raptor use may be one factor in estimating raptor mortality.

Exposure indices analysis may provide insight into which species might be the most likely turbine casualties. However, the index only considers relative probability of exposure based on abundance, proportion of birds observed flying, and proportion of flight height of each species within the RSH for turbines likely to be used at the wind-energy facility. This analysis is based on observations of birds during the surveys and does not take into consideration behavior (e.g., foraging, courtship), habitat selection, the ability to detect and avoid turbines, and other factors that may vary among species and influence the likelihood of turbine collision. For these reasons, the index is only a relative index among species observed during the surveys and within the AEWRA, and actual risk for some species may be lower or higher than indicated by these data. At the AEWRA, the raptor species with the highest exposure indices were red-tailed hawk (which was influenced by relatively high use of the AEWRA) and golden eagle (which was influenced by the relatively high proportion (50%) of individuals observed within the RSH).

A regression analysis of raptor use and mortality for 16 new-generation wind-energy facilities, where similar methods were used to estimate raptor use and mortality, found that there was a significant correlation between use and mortality (R^2 = 66.4%; Figure 4). Using this regression to predict raptor collision mortality at the AEWRA (based on an adjusted mean raptor use of 0.12 raptors/20-min survey) yields an estimated fatality rate of less than 0.01 fatalities/MW/year or less than one raptor fatality per year for each 100-MW of wind-energy development. A 90% prediction interval around this estimate is zero to 0.19 raptor fatalities per MW per year.



Overall Raptor Use 0.12
Predicted Fatality Rate < 0.01 fatalities/MW/year
90.0% Prediction Interval (0, 0.19 fatalities/MW/year)

Figure 4. Regression analysis comparing raptor use estimations versus estimated raptor mortality. Data from the following sources:

Wind Energy Facility	Raptor Use (birds/plot /20-min survey)	Reference	Raptor Fatality Rate (fatalities/MW/yr)	Reference
Diablo Winds, CA	2.161	WEST 2006	0.87	WEST 2008
High Winds, CA	2.34	Kerlinger et al. 2005	0.39	Kerlinger et al. 2006
Bighorn, WA	0.51	Johnson and Erickson 2004	0.15	Kronner et al. 2008
Hopkins Ridge, WA	0.70	Young et al. 2003a	0.14	Young et al. 2007a
Klondike II, OR	0.50	Johnson 2004	0.11	NWC and WEST 2007
Stateline, WA/OR	0.48	Erickson et al. 2004	0.09	Erickson et al. 2002b
Wild Horse, WA	0.29	Erickson et al. 2003d	0.09	Erickson et al. 2008
Wessington Springs, SD	0.23	Derby et al. 2008	0.06	Derby et al. 2010f
Elkhorn Valley, OR	1.1	WEST 2005c	0.06	Jeffrey et al. 2009b
Zintel, WA	0.43	Erickson et al. 2002a	0.05	Erickson et al. 2002b
Foote Creek Rim, WY	0.55	Johnson et al. 2000b	0.04	Young et al. 2003c
Buffalo Ridge, MN	0.64	Erickson et al. 2002b	0.02	Erickson et al. 2002b
Combine Hills, OR	0.75	Young et al. 2003d	0.00	Young et al. 2006
Klondike, OR	0.50	Johnson et al. 2002	0.00	Johnson et al. 2003
Vansycle, OR	0.66	WCIA and WEST 1997	0.00	Erickson et al. 2000
Grand Ridge, IL	0.20	Derby et al. 2009	0	Derby et al. 2010g

Mean annual diurnal raptor use at the AEWRA was compared with other wind energy facilities in California and the Pacific Northwest with publically available post-construction fatality data and corresponding raptor use data (Table 7). Raptor mortality rates at these facilities ranged from zero to 2.18 raptors/MW/year (Table 7). Raptor use estimates at these same facilities range

from 0.21 raptors/20-min survey at the Stateline facility in Oregon and Washington (Erickson et al. 2003b), to 2.16 raptors /20-min survey at the Diablo Winds facility in California (WEST 2006).

The annual raptor use estimate for the AEWRA is considerably lower than the two facilities in California, as well as facilities in the Oregon and Washington (Table 7). Assuming a correlation between use and fatality rates exists, raptor mortality at the AEWRA is expected to be lower than mortality observed at sites in California and the Pacific Northwest (Table 7, see Appendix D2). Although multiple raptor species would potentially be at risk of collision mortality during operation of the AEWRA, the frequency with which they were documented using the site during two years of study suggests that fatality rates would be very low and unlikely to be significant at the population level.

Table 7. Wind-energy facilities in North America with fatality data for raptor species, grouped by geographic region.

Wind Energy Facility	Use Estimate[A]	Raptor Fatality[B]	No. of Turbines	Total MW
Alta East, CA, 2010-2011	**0.12**			
Alta East, CA, 2009-1010	0.09			
	California			
Altamont Pass, CA	1.62	2.18	over 5,000	over 550
Diablo Winds, CA	2.16	0.87	31	20
Pine Tree, CA		0.40*	90	135
SMUD Solano, CA		0.53		15
Alite, CA		0.12	8	24
Dillon, CA		0	45	45
	Pacific Northwest			
Leaning Juniper, OR	0.52	0.21	67	100.5
Klondike III, OR		0.15	122	375
Big Horn, WA	0.51	0.15	133	199.5
Hopkins Ridge, WA (2006)	0.70	0.14	83	150
Stateline, OR/WA (2006)		0.11	454	263
Klondike II, OR	0.50	0.11	50	75
Stateline, OR/WA (2002)	0.23	0.09	454	263
Stateline, OR/WA (2003)	0.21	0.09	454	263
Wild Horse, WA	0.29	0.09	127	229
Hopkins Ridge, WA (2008)		0.07	83	150
Elkhorn, OR (2008)		0.06	61	101
Nine Canyon, WA		0.05	37	48
Marengo II, WA (2009)		0.05	39	70.2
Biglow Canyon, WA (Phase I; 2009)		0.04	76	125.4
Biglow Canyon, WA (Phase I; 2008)		0.03	76	125.4
Combine Hills, OR	0.75	0	41	41
Vansycle, OR	0.66	0	38	24.9
Klondike, OR	0.50	0	16	24
Marengo I, WA (2009)		0	78	140.4

A=number of raptors/plot/20min survey
B=number of fatalities/MW/study period
* fatality estimate reported for Pine Tree was for large birds (16-32 inches), not raptors specifically; estimate corrected for mathematical error in fatality estimate (0.2 fatalities/MW/studyperiod) reported by BioResource Consultants (2010).

Table 7. Wind-energy facilities in North America with fatality data for raptor species, grouped by geographic region.

Data from the following sources:

Wind Energy Facility	Use Estimate	Fatality Estimate	Wind Energy Facility	Use Estimate	Fatality Estimate
Alta East, CA (10-11)	This study				
Alta East, CA (09-10)	Chatfield et al. 2010c		Stateline, OR/WA (03)	Erickson et al. 2003b	Erickson et al. 2004
Altamont Pass, CA	Erickson et al. 2002b	ICF 2011	Wild Horse, WA	Erickson et al. 2003d	Erickson et al. 2008
Diablo Winds, CA	WEST 2006	WEST 2008	Hopkins Ridge, WA (08)		Young et al. 2009b
Pine Tree, CA		BRC 2010	Elkhorn, OR		Jeffrey et al. 2009b
SMUD Solano, CA		Erickson and Sharp 2005	Nine Canyon, WA	Erickson et al. 2001b	Erickson et al. 2003c
Alite, CA	Chatfield et al. 2010a		Marengo II, WA		URS Corporation 2010b
Dillon, CA		Chatfield et al. 2009	Biglow Canyon, WA (Phase I; 09)		Enk et al. 2010
Leaning Juniper, OR	Kronner et al. 2005	Gritski et al. 2008	Biglow Canyon, WA (Phase I; 08)		Jeffrey et al. 2009a
Klondike III, OR		Gritski et al. 2009	Combine Hills, OR	Young et al. 2003d	Young et al. 2006
Big Horn, WA	Johnson and Erickson 2004	Kronner et al. 2008	Vansycle, OR	WCIA and WEST 1997	Erickson et al. 2000
Hopkins Ridge, WA (06)	Young et al. 2003a	Young et al. 2007a	Klondike, OR	Johnson et al. 2002	Johnson et al. 2003
Stateline, OR/WA (06)		Young et al. 2007a	Marengo II, WA		URS Corporation 2010b
Klondike II, OR	Johnson 2004	NWC and WEST 2007	Klondike, OR	Johnson et al. 2002	Johnson et al. 2003
Stateline, OR/WA (02)	Erickson et al. 2002b	Erickson et al. 2004	Marengo I, WA		URS Corporation 2010a

Non-Raptor Use and Exposure Risk

Passerines (primarily perching birds) have been the most abundant bird fatality at wind energy facilities outside California (Erickson et al. 2001a, 2002b), often comprising more than 80% of bird fatalities. Both migrant and resident passerine fatalities have been observed. Given that passerines made up a large proportion of the birds observed during the baseline study, passerines would be expected to make up the largest proportion of fatalities at the AEWRA. Of the small birds observed during fixed-point surveys, exposure indices indicate that white-crowned sparrow is the most likely passerine species to be exposed to collision with wind turbines at the AEWRA. At the nearby PTWF, passerines comprised approximately 58% of annual avian mortality, with western scrub-jay (*Aphelocoma californica*) and western meadowlark (*Sturnella neglecta*) the most common passerine fatalities encountered during the study (BRC 2010).

Of the large bird species observed at the AEWRA, common raven had the highest exposure index. Despite the high use estimates and the high exposure index calculated for ravens, which comprised 18.1% of the individual large birds observed during surveys, post-construction fatality studies at other wind energy facilities in the western US reveal relatively low mortality for common ravens, suggesting this species is not very susceptible to collisions. At existing wind energy facilities in the region, ravens comprised 6.3% of fatalities at the Tehachapi WRA (Anderson et al. 2004), 4.2% of fatalities at the PTWF (BRC 2010), and none of the fatalities at the Alite Wind Energy Facility (Chatfield et al. 2010a). Turkey vulture had the second highest exposure index (0.22) at the AEWRA; however, they were only observed during spring. Post-construction avian fatality monitoring studies at facilities in California have documented very few vulture fatalities, and Orloff and Flannery (1992) suggest that turkey vultures are killed less often than predicted based on abundance at older-generation wind-energy facilities. Out of 127 fatalities at the Tehachapi Pass WRA (Anderson et al. 2004), and 439 fatalities at Altamont Pass WRA (Thelander et al. 2003), there were no documented vulture fatalities. During a 2-year study at the new-generation High Winds WRA, only four vultures were found among 301 total fatalities (Kerlinger et al. 2006). While fatality data for new-generation WRAs is limited, Tierney

(2007, 2009) suggests that turkey vultures may show higher susceptibility to collision at the new-generation facilities than previously believed. During post-construction monitoring conducted at the Buffalo Gap Wind Farm in Texas, turkey vultures comprised approximately 52% of total avian fatalities during two year of monitoring (Tierney 2007, 2009).

The project area appears to receive very little use by waterfowl, waterbirds, or shorebirds (none were observed during surveys), and mortality involving these groups is expected to be inconsequential. The area does receive considerable use by upland game birds (mainly California quail and chukar), but these species are not expected to be highly susceptible to turbine collisions because they spend most of their time on the ground and were never observed flying at turbine rotor-swept heights during this study. However, based on the results of other post-construction monitoring in southern California, some mortality is expected. At the nearby PTWF and Alite facilities, upland game birds comprised 25% and 29% of overall avian mortality, respectively (BRC 2010, Chatfield et al. 2010a).

With the exception of ravens and turkey vultures, all non-raptors had relatively low exposure indices due to low use estimates and/or the majority of individuals flying below the RSH. It is unlikely that non-raptor populations will be adversely affected by direct mortality from the operation of the wind-energy facility.

Indirect Effects

The presence of wind turbines may alter the landscape so that wildlife use patterns are affected, displacing wildlife away from the project facilities and suitable habitat. Some studies from wind energy facilities in Europe consider displacement effects to have a greater impact on birds than collision mortality (Gill et al. 1996). The greatest concern with displacement impacts for wind energy facilities in the US has been where these facilities have been constructed in grassland or other native habitats (Leddy et al. 1999, Mabey and Paul 2007). Although Crockford (1992) suggests that disturbance appears to impact feeding, resting, and migrating birds (rather than breeding birds), results from studies at the Stateline wind energy facility in Washington and Oregon (Erickson et al. 2004) and the Buffalo Ridge wind energy facility in Minnesota (Johnson et al. 2000a) suggest that breeding birds are also affected by wind energy facility operations.

<u>Raptor Displacement</u>

Birds displaced from wind energy facilities might move to lower quality habitat with fewer disturbances, with an overall effect of reducing breeding success. Most studies on raptor displacement at wind energy facilities, however, indicate effects to be negligible (Howell and Noone 1992; Johnson et al. 2000a, 2003; Whitfield and Madders 2006). Notable exceptions include a study in Scotland that described territorial golden eagles avoiding the entire wind energy facility area, except when intercepting non-territorial birds (Walker et al. 2005), and a study at the Buffalo Ridge wind energy facility in Minnesota which found evidence of northern harriers avoiding turbines on both a small scale (less than 100 m from turbines) and a larger scale in the year following construction (Johnson et al. 2000a). Two years following construction, however, no large-scale displacement of northern harriers was detected. Additionally, the only published report suggesting avoidance of wind turbines by nesting raptors

was from this same facility in Minnesota, where raptor nest density on 101 mi^2 (262 km^2) of land surrounding the wind energy facility was 5.94 nests/39 mi^2 (101 km^2), yet no nests were present in the 12 mi^2 (31 km^2) facility itself, even though habitat was similar (Usgaard et al. 1997). However, this analysis assumes that raptor nests are uniformly distributed across the landscape (an unlikely event), and only two nests would be expected for an area 12 mi^2 in size if the nests were distributed uniformly.

Based on extensive monitoring using helicopter flights and ground observations, raptors continued to nest at a wind energy facility in eastern Washington at approximately the same levels after construction, and several nests were located within a half-mile of turbines (Erickson et al. 2004). At the Foote Creek Rim wind energy facility in southern Wyoming, one pair of red-tailed hawks nested within 0.3 miles (0.5 km) of the turbine strings, and seven red-tailed hawk nests, one great horned owl nest, and one golden eagle nest located within one mile of the wind energy facility successfully fledged young (Johnson et al. 2000b). The golden eagle pair successfully nested a half-mile from the facility for three different years after it became operational. In Oregon, a Swainson's hawk also nested within a quarter-mile (0.4 km) of a turbine string at the Klondike I wind energy facility after the facility was operational (Johnson et al. 2003). These observations suggest that there will be limited nesting displacement of raptors at the AEWRA, although the creation of a buffer surrounding any known nests when siting turbines will further reduce any impact.

Displacement of Non-Raptor Bird Species

Studies concerning displacement of non-raptor species have concentrated on grassland passerines and waterfowl/waterbirds (Winkelman 1990, Larsen and Madsen 2000, Mabey and Paul 2007). Wind energy facility construction appears to cause small-scale local displacement of grassland passerines and is likely due to the birds avoiding turbine noise and maintenance activities. Construction also reduces habitat effectiveness because of the presence of access roads and large gravel pads surrounding turbines (Leddy 1996, Johnson et al. 2000a). Leddy et al. (1999) surveyed bird densities in Conservation Reserve Program (CRP) grasslands at the Buffalo Ridge wind energy facility in Minnesota, and found mean densities of 10 grassland bird species were four times higher at areas located 180 m (591 ft) from turbines than they were at grasslands nearer turbines. Johnson et al. (2000a) found reduced use of habitat by seven of 22 grassland-breeding birds following construction of the Buffalo Ridge wind energy facility. Results from the Stateline wind energy facility in Oregon and Washington (Erickson et al. 2004) and the Combine Hills wind energy facility in Oregon (Young et al. 2005) suggest a relatively small impact of the wind energy facilities on grassland-nesting passerines. Transect surveys conducted prior to and after construction of the wind energy facilities found that grassland passerine use was significantly reduced within approximately 50 m (164 ft) of turbine strings, but areas further away from turbine strings did not have reduced bird use.

CONCLUSIONS AND RECOMMENDATIONS

While higher use by some raptor species was observed in the northern portion of the AEWRA, overall raptor use was lower than nearly all other WRAs evaluated throughout the western and

Midwestern US. The data collected during this study suggest that the AEWRA is not within a high bird use area or major spring migration pathway. As well, the habitat and features of the AEWRA are not unique to the surrounding landscape, nor do they appear to be particularly preferred or critical to migrants. No active raptor nests were located within the boundary of the AEWRA, or within the surrounding two-mile buffer, indicating a very low raptor nest density. The results of the current study are consistent with the results of the initial year of baseline surveys at the AEWRA, as well as other sites proposed for wind-energy development in the region (Chatfield et al. 2010b, 2010c; Erickson et al. 2009). Use of the area by sensitive species, especially state and federal listed species, appears to be very low as well. A single Swainsons' hawk (state-threatened [CDFG 2011]) was observed within the AEWRA on April 1, 2011, and was likely a migrant passing through the region. Overall, results of the studies to date do not suggest that a wind development at the AEWRA would have significant impacts to avian species.

The use of the area by golden eagles and the proximity to golden eagle nests in the surrounding landscape may warrant consideration. The initial year of baseline surveys documented golden eagle use occurring to the north of the current AEWRA boundary; however, the current study documented golden eagle use within the boundary, concentrated in the north-central portions of the study area. These golden eagle observations were limited to the fall (one observation) and winter (seven observations), suggesting a potential seasonal relationship with golden eagle use at the AEWRA that was not evident during the year one study. Despite several active golden eagle nests identified to the north of the AEWRA, use of the study area by golden eagles was not observed during the breeding season.

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Appendix A. Summary of Individuals and Group Observations, by Bird Type or Species, for Fixed-Point Bird Use Surveys at the Alta East Wind Resource Area from July 10, 2010 – June 1, 2011

Appendix A. Summary of individuals (# obs) and group observations (# grps), by bird type or species, for fixed-point bird use surveys at the Alta East Wind Resource Area[a] from July 10, 2010 – June 1, 2011.

		Spring		Summer		Fall		Winter		Total	
Bird Type or Species	**Scientific Name**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**
Diurnal Raptors		**12**	**12**	**2**	**2**	**12**	**12**	**21**	**22**	**47**	**48**
Accipiters		*1*	*1*	*1*	*1*	*0*	*0*	*0*	*0*	*2*	*2*
Cooper's hawk	*Accipiter cooperii*	1	1	0	0	0	0	0	0	1	1
unidentified accipiter		0	0	1	1	0	0	0	0	1	1
Buteos		*6*	*6*	*1*	*1*	*5*	*5*	*7*	*7*	*19*	*19*
red-tailed hawk	*Buteo jamaicensis*	5	5	1	1	5	5	7	7	18	18
Swainson's hawk	*Buteo swainsoni*	1	1	0	0	0	0	0	0	1	1
Northern Harrier		*0*	*0*	*0*	*0*	*0*	*0*	*2*	*2*	*2*	*2*
northern harrier	*Circus cyaneus*	0	0	0	0	0	0	2	2	2	2
Eagles		*0*	*0*	*0*	*0*	*1*	*1*	*6*	*7*	*7*	*8*
golden eagle	*Aquila chrysaetos*	0	0	0	0	1	1	6	7	7	8
Falcons		*3*	*3*	*0*	*0*	*5*	*5*	*2*	*2*	*10*	*10*
American kestrel	*Falco sparverius*	2	2	0	0	5	5	0	0	7	7
peregrine falcon	*Falco peregrinus*	0	0	0	0	0	0	1	1	1	1
prairie falcon	*Falco mexicanus*	1	1	0	0	0	0	1	1	2	2
Osprey		*1*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*1*
osprey	*Pandion haliaetus*	1	1	0	0	0	0	0	0	1	1
Other Raptors		*1*	*1*	*0*	*0*	*1*	*1*	*4*	*4*	*6*	*6*
unidentified hawk		1	1	0	0	1	1	4	4	6	6
Vultures		**3**	**22**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**22**
turkey vulture	*Cathartes aura*	3	22	0	0	0	0	0	0	3	22
Upland Game Birds		**11**	**20**	**9**	**111**	**3**	**13**	**4**	**10**	**27**	**154**
California quail	*Callipepla californica*	9	17	8	84	1	1	4	10	22	112
chukar	*Alectoris chukar*	2	3	1	27	2	12	0	0	5	42
Doves/Pigeons		**1**	**1**	**8**	**9**	**2**	**2**	**1**	**1**	**12**	**13**
mourning dove	*Zenaida macroura*	1	1	8	9	2	2	0	0	11	12
rock pigeon	*Columba livia*	0	0	0	0	0	0	1	1	1	1
Large Corvids		**26**	**54**	**5**	**7**	**40**	**137**	**79**	**253**	**150**	**451**
common raven	*Corvus corax*	26	54	5	7	40	137	79	253	150	451
Large Cuckoos		**1**	**1**	**0**	**0**	**2**	**2**	**0**	**0**	**3**	**3**
greater roadrunner	*Geococcyx californianus*	1	1	0	0	2	2	0	0	3	3
Passerines		**166**	**548**	**55**	**86**	**126**	**357**	**144**	**759**	**491**	**1,750**
ash-throated flycatcher	*Myiarchus cinerascens*	0	0	0	0	1	1	0	0	1	1
barn swallow	*Hirundo rustica*	1	4	0	0	0	0	0	0	1	4

Appendix A. Summary of individuals (# obs) and group observations (# grps), by bird type or species, for fixed-point bird use surveys at the Alta East Wind Resource Area[a] from July 10, 2010 – June 1, 2011.

		Spring		Summer		Fall		Winter		Total	
Bird Type or Species	**Scientific Name**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**
black-throated sparrow	*Amphispiza bilineata*	1	2	0	0	0	0	0	0	1	2
Brewer's blackbird	*Euphagus cyanocephalus*	1	2	0	0	0	0	0	0	1	2
cactus wren	*Campylorhynchus brunneicapillus*	5	7	21	24	6	7	6	7	38	45
chipping sparrow	*Spizella passerina*	0	0	0	0	4	21	5	14	9	35
common grackle	*Quiscalus quiscula*	1	1	0	0	0	0	0	0	1	1
dark-eyed junco	*Junco hyemalis*	1	2	0	0	3	7	7	75	11	84
European starling	*Sturnus vulgaris*	9	12	0	0	0	0	3	6	12	18
horned lark	*Eremophila alpestris*	11	36	0	0	6	9	0	0	17	45
house finch	*Carpodacus mexicanus*	12	33	0	0	8	49	0	0	20	82
lark sparrow	*Chondestes grammacus*	2	7	0	0	0	0	0	0	2	7
Le Conte's thrasher	*Toxostoma lecontei*	0	0	2	2	1	1	0	0	3	3
loggerhead shrike	*Lanius ludovicianus*	5	5	9	12	3	3	15	16	32	36
rock wren	*Salpinctes obsoletus*	1	1	0	0	1	1	2	5	4	7
ruby-crowned kinglet	*Regulus calendula*	1	2	0	0	0	0	0	0	1	2
sage sparrow	*Amphispiza belli*	28	140	17	34	64	172	19	63	128	409
savannah sparrow	*Passerculus sandwichensis*	1	1	0	0	0	0	0	0	1	1
Say's phoebe	*Sayornis saya*	0	0	0	0	1	1	0	0	1	1
Scott's oriole	*Icterus parisorum*	1	1	0	0	0	0	0	0	1	1
Townsend's warbler	*Dendroica townsendi*	1	1	0	0	0	0	0	0	1	1
tree swallow	*Tachycineta bicolor*	1	8	0	0	0	0	0	0	1	8
unidentified flycatcher		1	1	0	0	0	0	0	0	1	1
unidentified gnatcatcher		0	0	0	0	0	0	1	1	1	1
unidentified sparrow		0	0	1	1	0	0	0	0	1	1
unidentified swallow		1	1	1	7	1	7	0	0	3	15
unidentified warbler		1	1	0	0	1	1	0	0	2	2
western bluebird	*Sialia mexicana*	1	10	0	0	2	5	16	199	19	214
western kingbird	*Tyrannus verticalis*	1	1	0	0	0	0	0	0	1	1
western meadowlark	*Sturnella neglecta*	35	108	3	5	11	44	22	112	71	269
western scrub-jay	*Aphelocoma californica*	3	3	1	1	1	1	0	0	5	5
white-crowned sparrow	*Zonotrichia leucophrys*	36	140	0	0	11	25	43	239	90	404
yellow-rumped warbler	*Dendroica coronata*	4	18	0	0	1	2	5	22	10	42
Swifts/Hummingbirds		**3**	**3**	**3**	**3**	**1**	**1**	**0**	**0**	**7**	**7**
Anna's hummingbird	*Calypte anna*	1	1	0	0	0	0	0	0	1	1
unidentified hummingbird		2	2	2	2	1	1	0	0	5	5
white-throated swift	*Aeronautes saxatalis*	0	0	1	1	0	0	0	0	1	1

Appendix A. Summary of individuals (# obs) and group observations (# grps), by bird type or species, for fixed-point bird use surveys at the Alta East Wind Resource Area[a] from July 10, 2010 – June 1, 2011.

		Spring		Summer		Fall		Winter		Total	
Bird Type or Species	**Scientific Name**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**
Woodpeckers		**1**	**1**	**1**	**1**	**0**	**0**	**0**	**0**	**2**	**2**
ladder-backed woodpecker	*Picoides scalaris*	1	1	1	1	0	0	0	0	2	2
Unidentified Birds		**1**	**2**	**0**	**0**	**0**	**0**	**2**	**41**	**3**	**43**
unidentified bird (small)		1	2	0	0	0	0	2	41	3	43
Overall		**225**	**664**	**83**	**219**	**186**	**524**	**251**	**1,086**	**745**	**2,493**

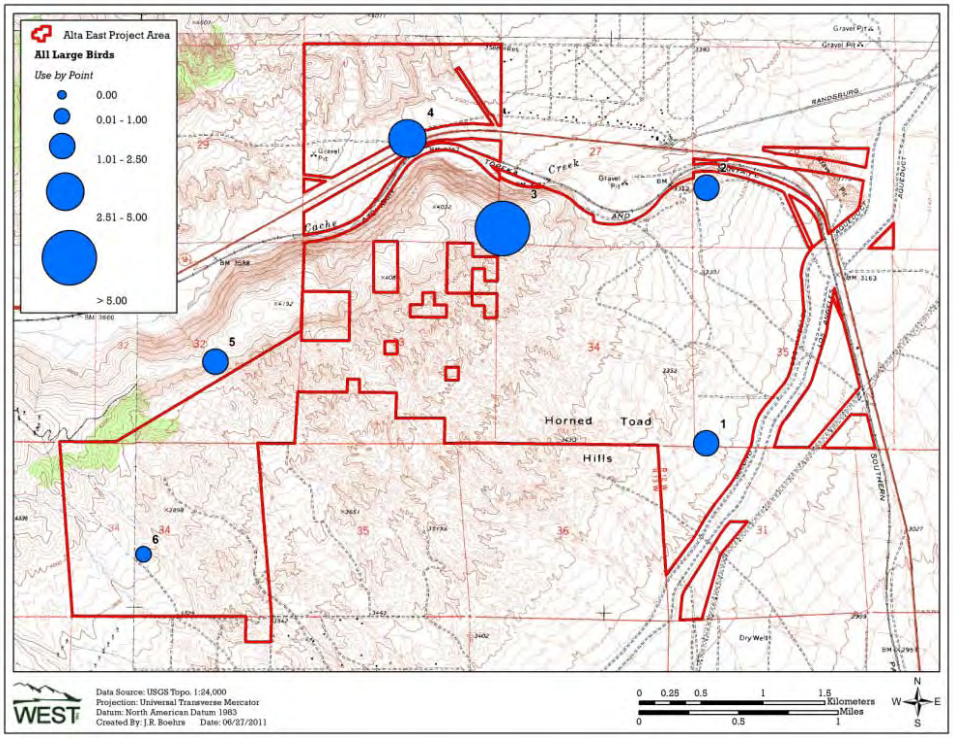
[a] Regardless of distance from observer.

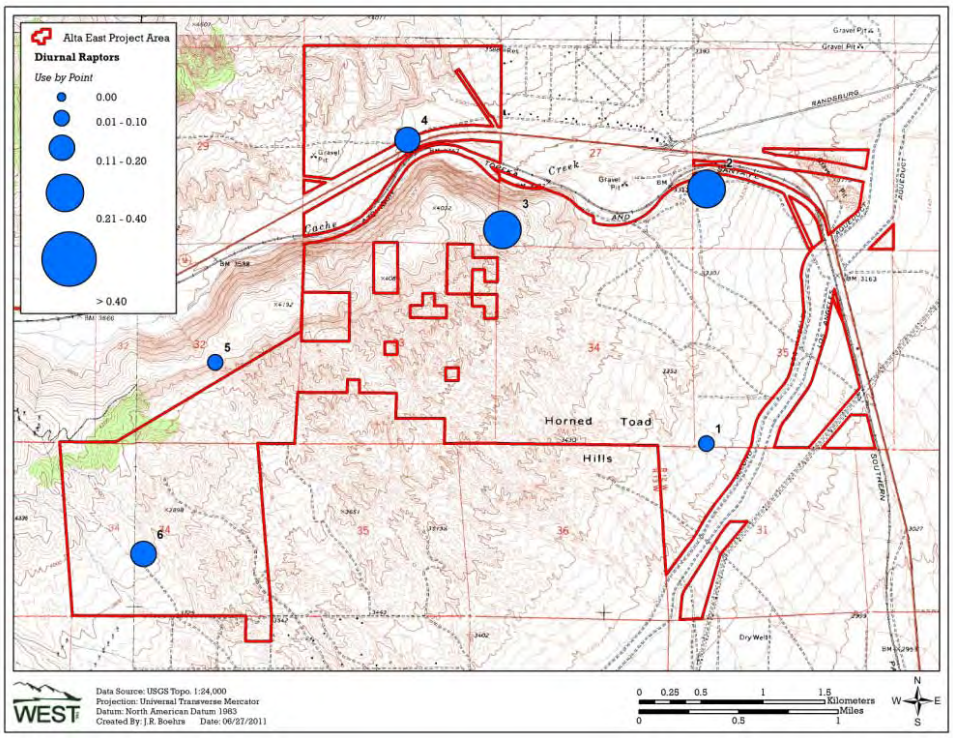
Appendix B. Mean Use by Point for All Birds, Major Bird Types, and Raptor Subtypes Observed at the Alta East Wind Resource Area During Fixed-Point Bird Use Surveys from July 10, 2010 – June 1, 2011

Appendix B1. Mean use (number of birds/20-minute survey) by point for all birds[a], major bird types, and raptor subtypes observed at the Alta East Wind Resource Area during fixed-point bird use surveys from July 10, 2010 – June 1, 2011.

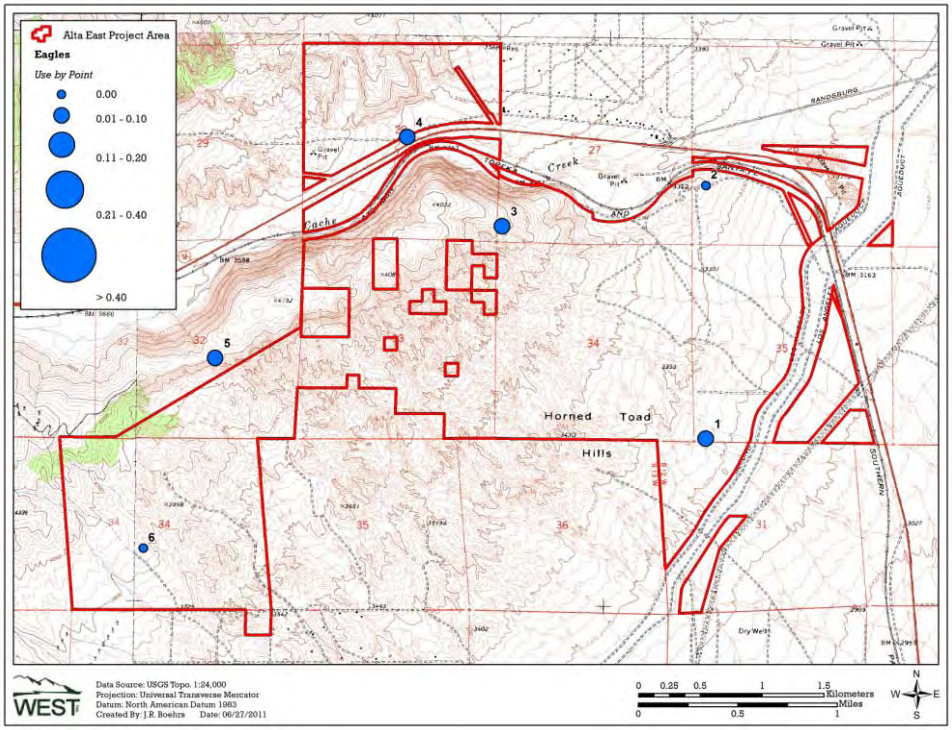
	Survey Point					
Bird Type	**1**	**2**	**3**	**4**	**5**	**6**
Diurnal Raptors	0.07	0.24	0.37	0.11	0.06	0.20
Accipiters	*0*	*0*	*0.04*	*0*	*0*	*0*
Buteos	*0.02*	*0.20*	*0.09*	*0.02*	*0*	*0.10*
Northern Harrier	*0*	*0*	*0.04*	*0*	*0*	*0*
Eagles	*0.02*	*0*	*0.09*	*0.04*	*0.03*	*0*
Falcons	*0.02*	*0.04*	*0.07*	*0*	*0*	*0.08*
Osprey	*0*	*0*	*0.02*	*0*	*0*	*0*
Other Raptors	*0*	*0*	*0.02*	*0.04*	*0.03*	*0.02*
Vultures	0	0	0	0.45	0	0.02
Upland Game Birds	0.04	0.22	2.17	0.23	0.80	0.08
Doves/Pigeons	0.04	0.04	0.02	0.15	0	0.02
Large Corvids	1.70	1.61	2.59	2.94	0.83	0.32
Large Cuckoos	0.02	0.02	0	0.02	0	0
All Large Birds	**1.87**	**2.13**	**5.15**	**3.89**	**1.69**	**0.65**
Passerines	5.35	5.91	8.13	2.04	3.91	9.50
Swifts/Hummingbirds	0.04	0	0.09	0	0.03	0
Woodpeckers	0	0	0	0.02	0	0.02
Unidentified Birds	0	0.04	0	0.02	0	0
All Small Birds	**5.39**	**5.96**	**8.22**	**2.09**	**3.94**	**9.53**

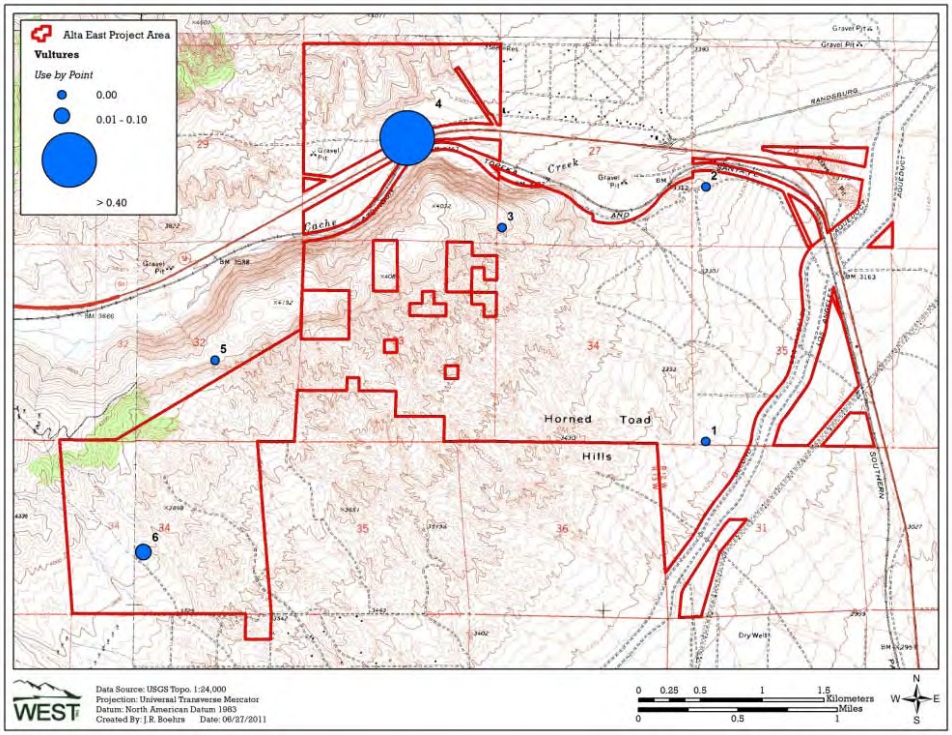
[a.] 800-meter (m) radius plot for large birds, 100-m for small birds.



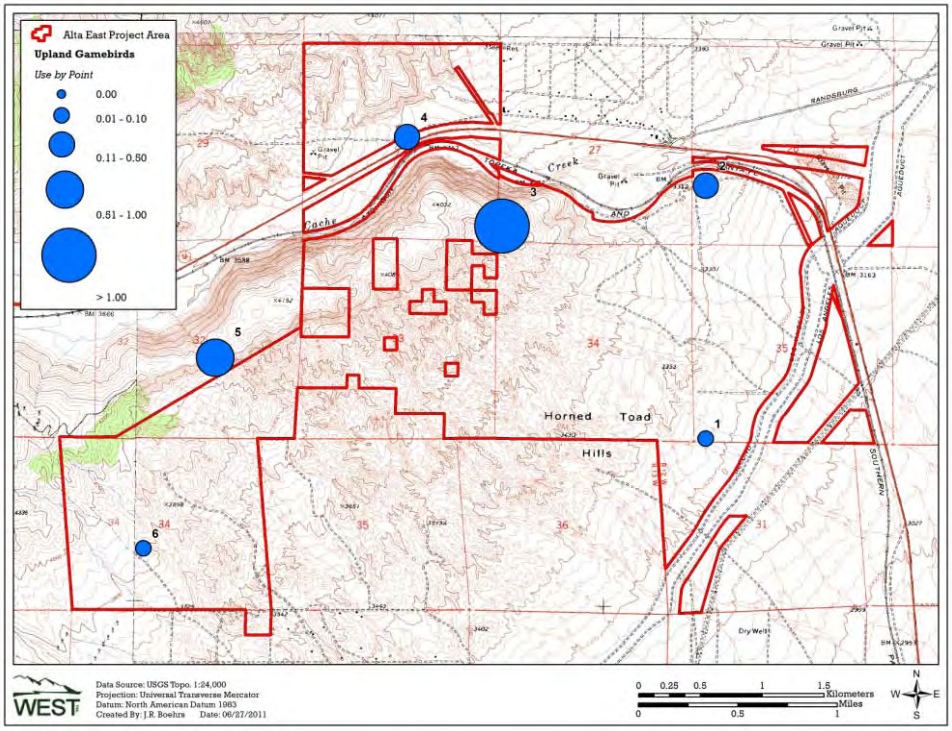


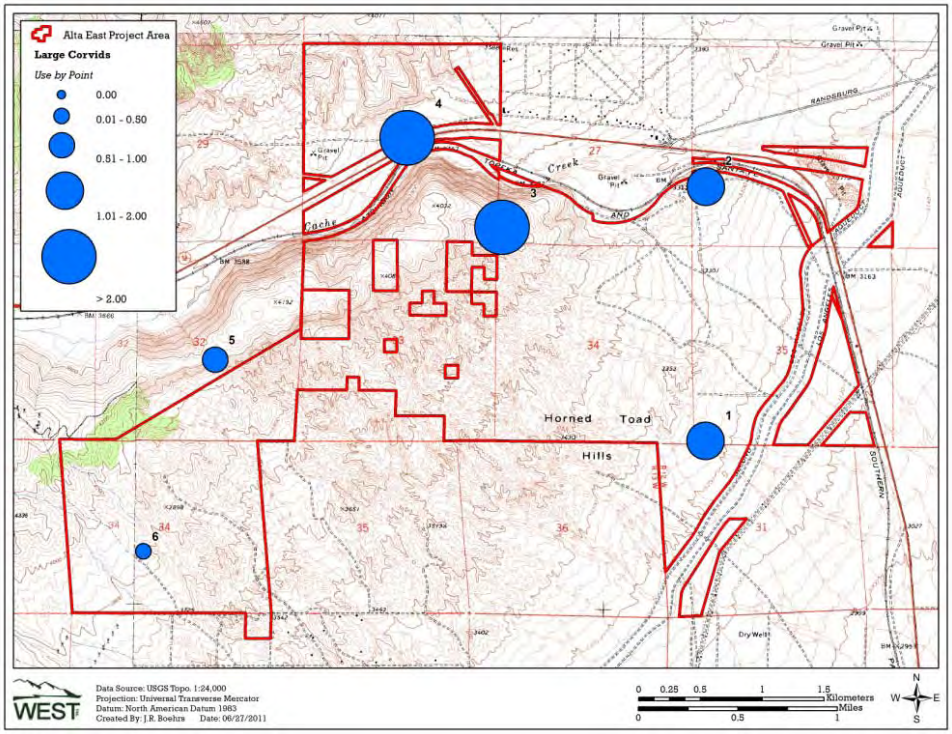
Appendix B2. Mean bird use (number of birds/30-minute survey) at each fixed-point bird use point for all birds and major bird types at the Alta East Wind Resource Area.



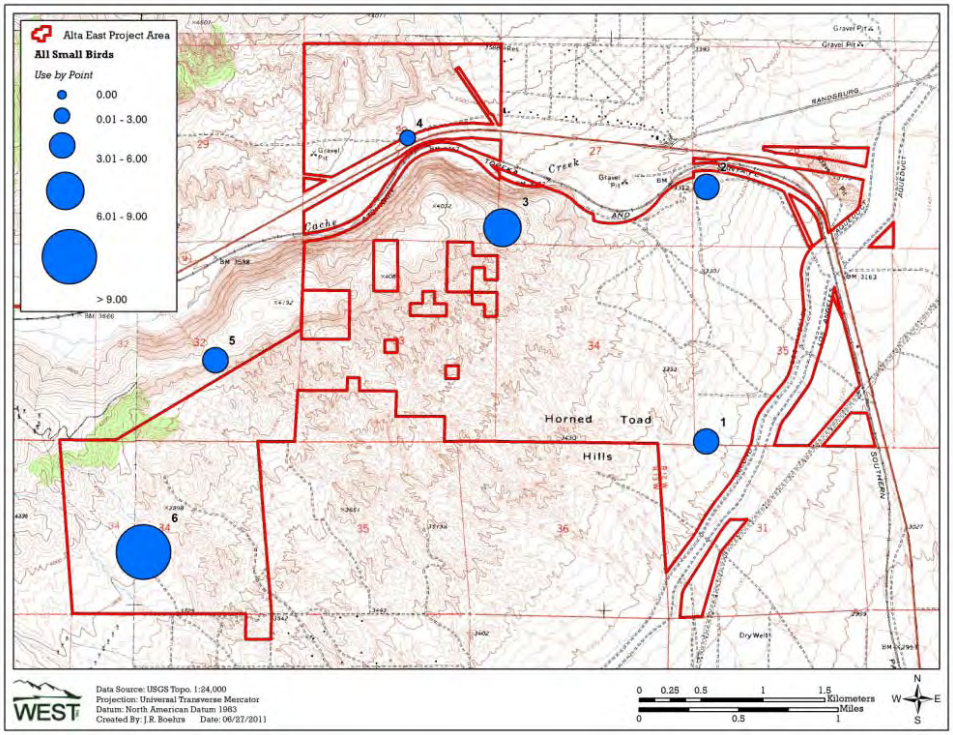


Appendix B2 (*continued*). Mean bird use (number of birds/30-minute survey) at each fixed-point bird use point for all birds and major bird types at the Alta East Wind Resource Area.



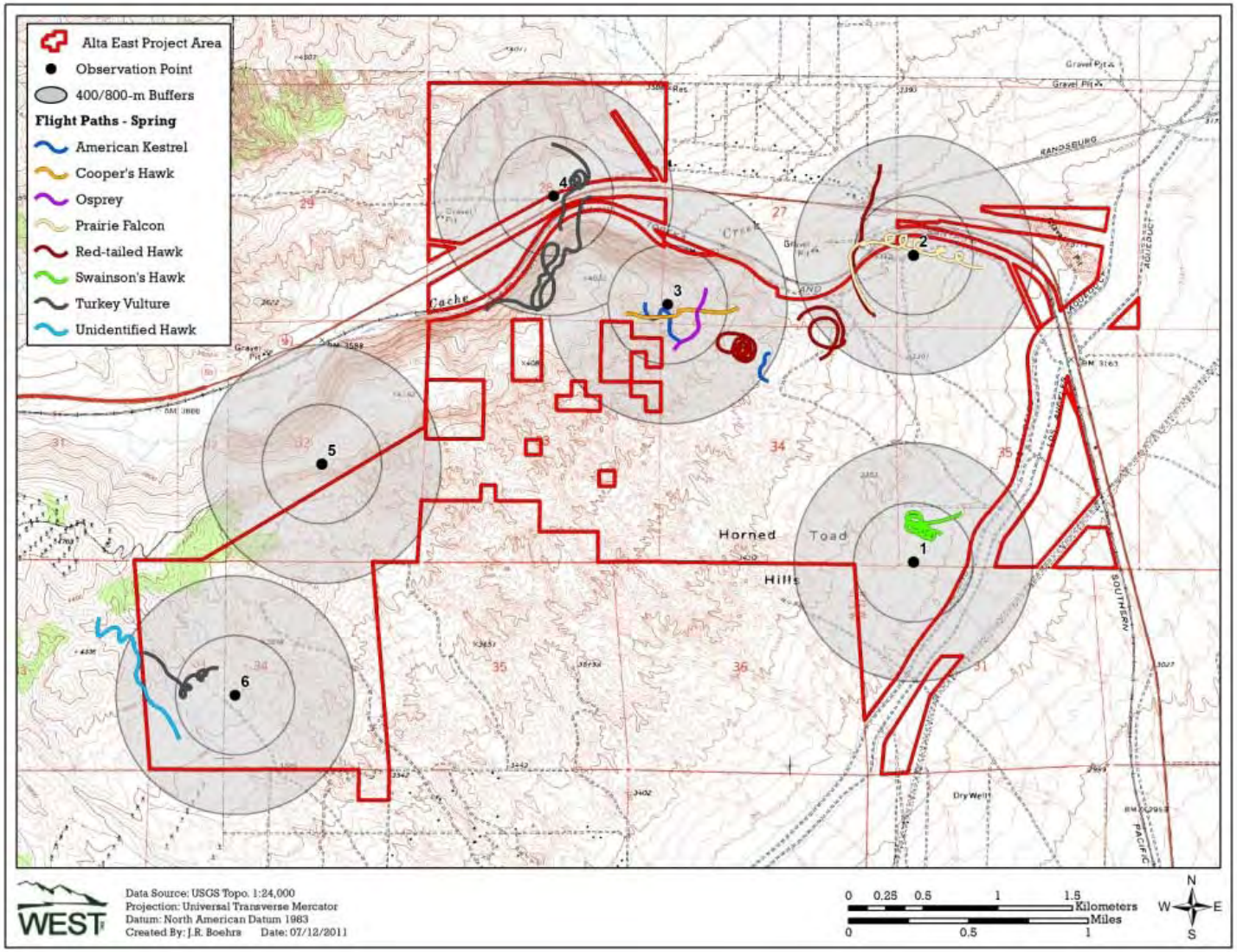


Appendix B2 (*continued*). Mean bird use (number of birds/30-minute survey) at each fixed-point bird use point for all birds and major bird types at the Alta East Wind Resource Area.

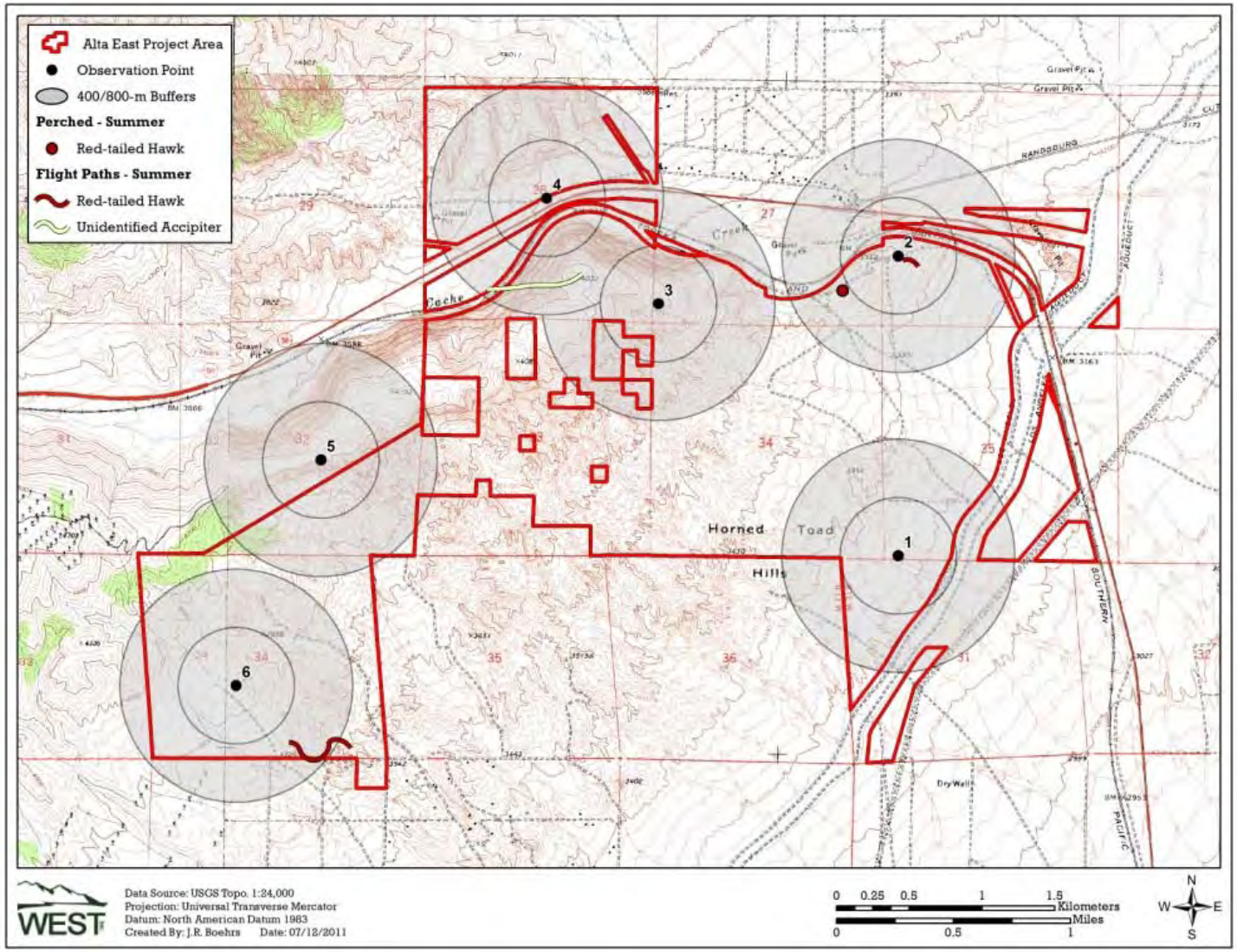


Appendix B2 (*continued*). Mean bird use (number of birds/30-minute survey) at each fixed-point bird use point for all birds and major bird types at the Alta East Wind Resource Area.

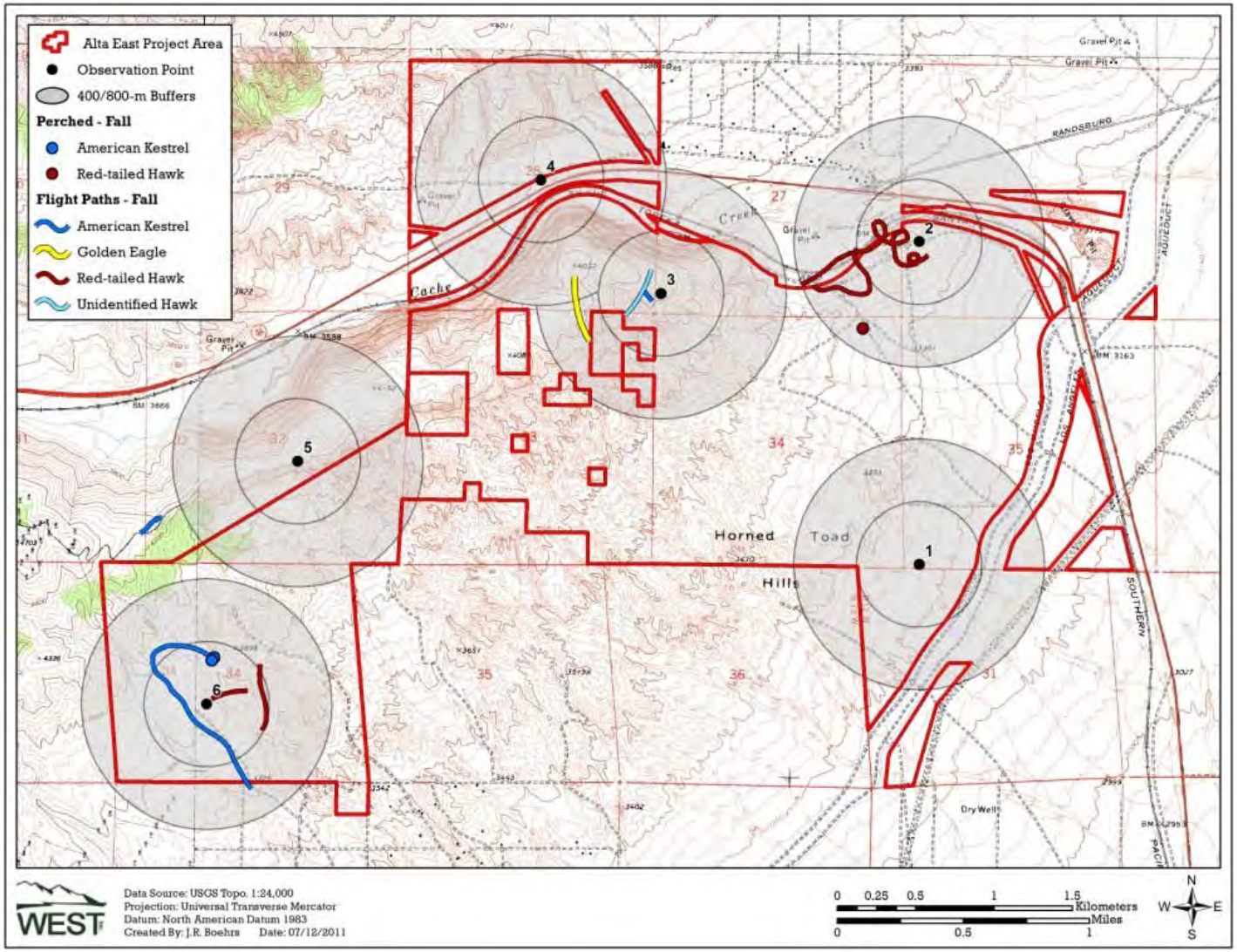
Appendix C. Flight Paths of Raptors and Vultures Observed During Fixed-Point Bird Use Surveys Conducted During Each Season at the Alta East Wind Resource Area



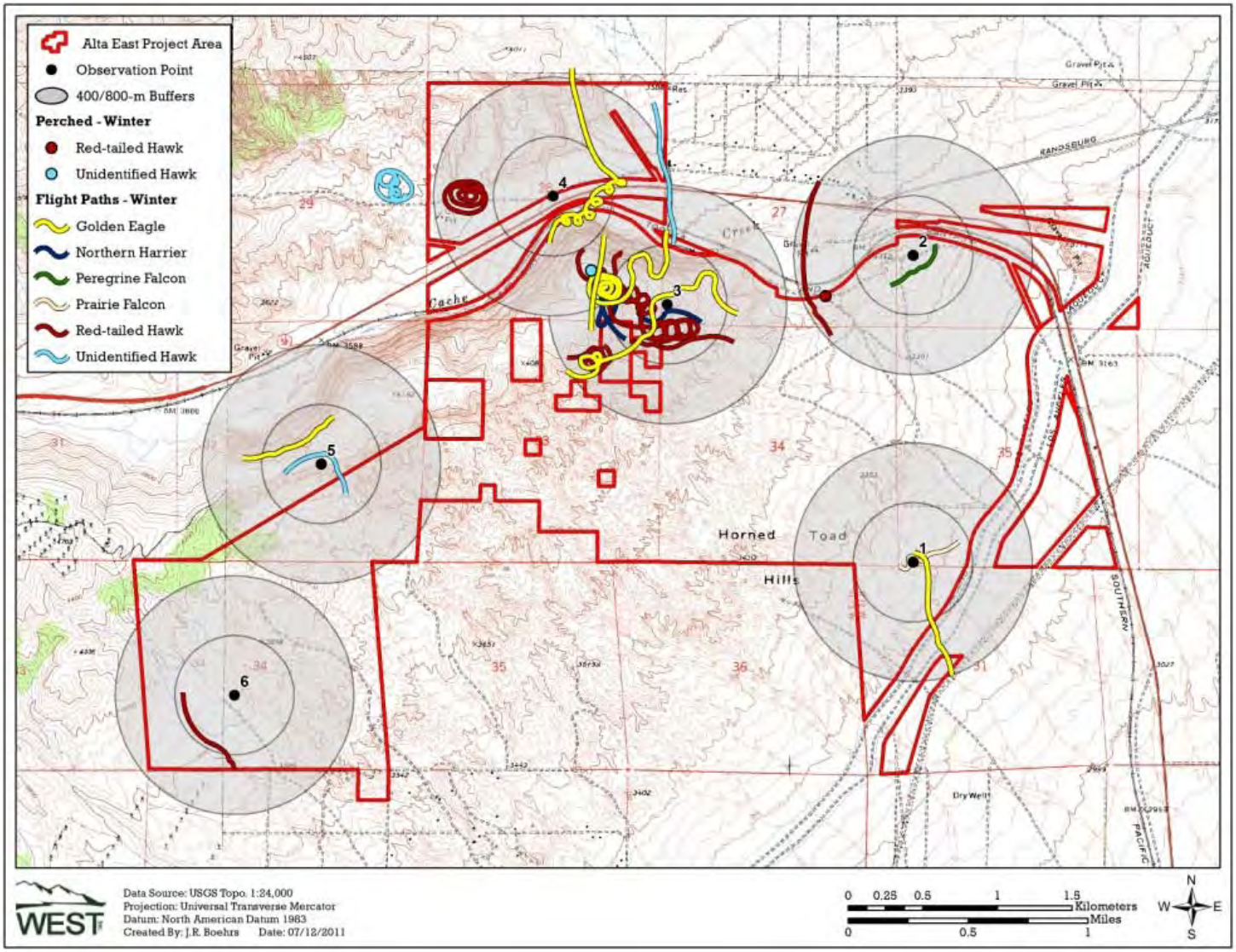
Appendix C1. Flight paths of raptors and vultures observed during fixed-point bird use surveys conducted in spring (March 1 – May 31, 2011) at the Alta East Wind Resource Area.



Appendix C2. Flight paths of raptors and vultures observed during fixed-point bird use surveys conducted in summer (June 1 – August 31, 2010) at the Alta East Wind Resource Area.



Appendix C3. Flight paths of raptors and vultures observed during fixed-point bird use surveys conducted in fall (September 1 – November 15, 2010) at the Alta East Wind Resource Area.



Appendix C4. Flight paths of raptors and vultures observed during fixed-point bird use surveys conducted in winter (November 16, 2010 – February 28, 2011) at the Alta East Wind Resource Area.

Appendix D. North American Fatality Comparison Tables

Appendix D1. Wind energy facilities in North America with fatality data for all bird species, grouped by geographic region.

Wind Energy Facility	Fatality Estimate[A]	No. of Turbines	Total MW
California			
Altamont Pass, CA	9.57	over 5,000	about 550
Pine Tree, CA	8.3*	90	135
Dillon, CA	4.71	45	45
Diablo Winds, CA	4.29	31	20
High Winds, CA (2004)	1.62	90	162
High Winds, CA (2005)	1.10	90	162
SMUD Solano, CA	0.99		15
Alite, CA	0.55	8	24
Pacific Northwest			
Leaning Juniper, OR	6.66	67	100.5
Stateline, OR/WA (2002)	3.17	454	263
Klondike II, OR	3.10	50	75
Klondike III, OR	3.02	122	375
Hopkins Ridge, WA (2008)	2.99	83	150
Nine Canyon, WA	2.76	37	48
Stateline, OR/WA (2003)	2.68	454	263
Combine Hills, OR	2.56	41	41
Big Horn, WA	2.54	133	199.5
Biglow Canyon, OR (Phase I; 2009)	2.47	76	125.4
Biglow Canyon, OR (Phase I; 2008)	1.76	76	125.4
Wild Horse, WA	1.55	127	229
Stateline II, OR/WA (2006)	1.23	454	263
Hopkins Ridge, WA (2006)	1.23	83	150
Vansycle, OR	0.95	38	24.9
Klondike, OR	0.95	16	24
Elkhorn, OR	0.64	61	101
Marengo I, WA	0.27	78	140.4
Marengo II, WA	0.16	39	70.2
Rocky Mountains			
Foote Creek Rim, WY (Phase I; 1999)	3.40	69	41.4
Judith Gap, MT	3.01	90	135
Foote Creek Rim, WY (Phase I; 2000)	2.42	69	41.4
Foote Creek Rim, WY (Phase I; 2001/2002)	1.93	69	41.4
Summerview, Alb. (2006)	1.06	39	70.2
Southern Plains			
Buffalo Gap, TX	1.32	67	134
Oklahoma Wind Energy Center, OK	0.08	68	102

Appendix D1. Wind energy facilities in North America with fatality data for all bird species, grouped by geographic region.

Wind Energy Facility	Fatality Estimate[A]	No. of Turbines	Total MW
Midwest			
Wessington Springs, SD	8.25	34	51
Blue Sky Green Field, WI	7.17	88	145
Cedar Ridge, WI	6.55	41	68
Buffalo Ridge, MN (Phase III; 1999)	5.93	138	103.5
Moraine II, MN	5.59	33	49.5
Buffalo Ridge I, SD	5.06	24	50.4
Winnebago, IA	3.88	10	20
Buffalo Ridge, MN (Phase II; 1999)	3.57	143	107.25
Ripley, Ont.	3.09	38	76
Buffalo Ridge, MN (Phase II; 1998)	2.46	143	107.25
Buffalo Ridge, MN (Phase I; 1996)	2.19	73	25
Kewaunee County, WI	1.98	31	20
Buffalo Ridge, MN (Phase I; 1998)	1.67	73	25
NPPD Ainsworth, NE	1.63	36	59.4
Elm Creek, MN	1.55	67	100
Buffalo Ridge, MN (Phase I; 1997)	1.33	73	25
Crescent Ridge, IL	0.87	33	49.5
Buffalo Ridge, MN (Phase I; 1999)	0.76	73	25
Top of Iowa, IA (2004)	0.73	89	80
Grand Ridge, IL	0.48	66	99
Top of Iowa, IA (2003)	0.42	89	80
Southeast			
Buffalo Mountain, TN (2000-2003)	13.93	3	1.98
Buffalo Mountain, TN (2005)	1.10	18	28.98
Northeast			
Maple Ridge, NY (2006)	5.81	120	198
Mount Storm, WV (2009)	5.73	82	164
Noble Ellenburg, NY (2009)	3.79	54	80
Maple Ridge, NY (2007)	3.44	195	321.75
Casselman, PA (Spring & Fall 2008)	3.13	23	34.5
Wolfe Island, Ont. (Report 1; May- June 2009)	3.04	86	197.8
Mountaineer, WV	3.00	44	66
Noble Bliss, NY (2008)	2.86	67	100
Noble Bliss, NY (2009)	2.81	67	100
Stetson Mountain, ME	2.68	38	57
Noble Clinton, NY (2008)	2.17	67	100
Maple Ridge, NY (2008)	2.07	195	321.75
Mount Storm, WV (2008)	1.91	82	164
Cohocton/Dutch Hill, NY	1.88	50	125
Mars Hill, ME (2008)	1.76	28	42
Mars Hill, ME (2007)	1.67	28	42
Munnsville, NY	1.48	23	34.5
Noble Ellenburg, NY (2008)	1.40	54	80
Noble Clinton, NY (2009)	1.17	67	100

A=number of bird fatalities/MW/study period

*fatality estimate corrected for mathematical error in number reported by BioResource Consultants (2010).

Appendix D1 (*continued*). Wind energy facilities in North America with fatality data for all bird species, grouped by geographic region.

Data from the following sources:

Wind Energy Facility	Fatality Estimate	Wind Energy Facility	Fatality Estimate
Altamont Pass, CA	ICF 2011	Moraine II, MN	Derby et al. 2010e
Pine Tree, CA	BRC 2010	Buffalo Ridge I, SD	Derby et al. 2010b
Dillon, CA	Chatfield et al. 2009	Winnebago, IA	Derby et al. 2010a
Diablo Winds, CA	WEST 2008	Buffalo Ridge, MN (Phase II; 99)	Johnson et al. 2000a
High Winds, CA (04)	Kerlinger et al. 2006	Ripley, Ont.	Jacques Whitford 2009
High Winds, CA (05)	Kerlinger et al. 2006	Buffalo Ridge, MN (Phase II; 98)	Johnson et al. 2000a
SMUD Solano, CA	Erickson and Sharp 2005	Buffalo Ridge, MN (Phase I; 96)	Johnson et al. 2000a
Alite, CA	Chatfield et al. 2010a	Kewaunee County, WI	Howe et al. 2002
Leaning Juniper, OR	Gritski et al. 2008	Buffalo Ridge, MN (Phase I; 98)	Johnson et al. 2000a
Stateline, OR/WA (02)	Erickson et al. 2004	NPPD Ainsworth, NE	Derby et al. 2007
Klondike II, OR	NWC and WEST 2007	Elm Creek, MN	Derby et al. 2010d
Klondike III, OR	Gritski et al. 2009	Crescent Ridge, IL	Kerlinger et al. 2007
Hopkins Ridge, WA (08)	Young et al. 2009b	Buffalo Ridge, MN (Phase I; 97)	Johnson et al. 2000a
Nine Canyon, WA	Erickson et al. 2003c	Buffalo Ridge, MN (Phase I; 99)	Johnson et al. 2000a
Stateline, OR/WA (03)	Erickson et al. 2004	Top of Iowa, IA (04)	Jain 2005
Combine Hills, OR	Young et al. 2006	Grand Ridge, IL	Derby et al. 2010g
Big Horn, WA	Kronner et al. 2008	Top of Iowa, IA (03)	Jain 2005
Biglow Canyon, OR (Phase I; 09)	Enk et al. 2010	Buffalo Mountain, TN (00-03)	Nicholson et al. 2005
Biglow Canyon I, OR (Phase I; 08)	Jeffrey et al. 2009a	Buffalo Mountain, TN (05)	Fiedler et al. 2007
Wild Horse, WA	Erickson et al. 2008	Maple Ridge, NY (06)	Jain et al. 2007
Stateline II, OR/WA	Erickson et al. 2007	Mount Storm, WV (09)	Young et al. 2010
Hopkins Ridge, WA (06)	Young et al. 2007a	Noble Ellenburg, NY (09)	Jain et al. 2010c
Vansycle, OR	Erickson et al. 2000	Maple Ridge, NY (07)	Jain et al. 2008
Klondike, OR	Johnson et al. 2003	Casselman, PA (Spring & Fall 08)	Arnett et al. 2009
Elkhorn, OR	Jeffrey et al. 2009b	Wolfe Island, Ont. (Report 1: May - June 09)	Stantec Ltd. 2010
Marengo I, WA	URS Corporation 2010a	Mountaineer, WV	Kerns and Kerlinger 2004
Marengo II, WA	URS Corporation 2010b	Noble Bliss, NY (08)	Jain et al. 2009e
Foote Creek Rim, WY (Phase I; 99)	Young et al. 2003c	Noble Bliss, NY (09)	Jain et al. 2010a
Judith Gap, MT	TRC 2008	Stetson Mountain, ME	Stantec 2009b
Foote Creek Rim, WY (Phase I; 00)	Young et al. 2003c	Noble Clinton, NY (08)	Jain et al. 2009c
Foote Creek Rim, WY (Phase I; 01/02)	Young et al. 2003c	Maple Ridge, NY (08)	Jain et al. 2009d
Summerview, Alb. (06)	Brown and Hamilton 2006	Mount Storm, WV (08)	Young et al. 2009a
Buffalo Gap, TX	Tierney 2007	Cohocton/Dutch Hill, NY	Stantec 2010
Oklahoma Wind Energy Center, OK	Piorkowski 2006	Mars Hill, ME (08)	Stantec 2009a
Wessington Springs, SD	Derby et al. 2010f	Mars Hill, ME (07)	Stantec 2008a
Blue Sky Green Field, WI	Gruver et al. 2009	Munnsville, NY	Stantec 2008b
Cedar Ridge, WI	BHE Environmental 2010	Noble Ellenburg, NY (08)	Jain et al. 2009b
Buffalo Ridge, MN (Phase III; 99)	Johnson et al. 2000a	Noble Clinton, NY (09)	Jain et al. 2010b

Appendix D2. Comparison of raptor use estimates and raptor fatality estimates between the Alta East Wind Resource Area and other wind energy facilities in North America.

Wind Energy Facility	Use Estimate[A]	Raptor Fatality Rate[B]	# of Turbines	Total (MW)
Alta East, CA (2010-2011)	0.12			
Alta East, CA (2009-2010)	0.09			
California				
Altamont Pass, CA	1.62	2.18	over 5,000	over 550
Diablo Winds, CA	2.16	0.87	31	20
Pine Tree, CA		0.40*	90	135
SMUD Solano, CA		0.53		15
Alite, CA		0.12	8	24
Dillon, CA		0	45	45
Pacific Northwest				
Leaning Juniper, OR	0.52	0.21	67	100.5
Klondike III, OR		0.15	122	375
Big Horn, WA	0.51	0.15	133	199.5
Hopkins Ridge, WA (2006)	0.70	0.14	83	150
Stateline, OR/WA (2006)		0.11	454	263
Klondike II, OR	0.50	0.11	50	75
Stateline, OR/WA (2002)	0.23	0.09	454	263
Stateline, OR/WA (2003)	0.21	0.09	454	263
Wild Horse, WA	0.29	0.09	127	229
Hopkins Ridge, WA (2008)		0.07	83	150
Elkhorn, OR (2008)		0.06	61	101
Nine Canyon, WA		0.05	37	48
Marengo II, WA (2009)		0.05	39	70.2
Biglow Canyon, WA (Phase I; 2009)		0.04	76	125.4
Biglow Canyon, WA (Phase I; 2008)		0.03	76	125.4
Combine Hills, OR	0.75	0	41	41
Vansycle, OR	0.66	0	38	24.9
Klondike, OR	0.50	0	16	24
Marengo I, WA (2009)		0	78	140.4
Rocky Mountains				
Summerview, Alb. (2006)		0.11	39	70.2
Judith Gap, MT		0.09	90	135
Foote Creek Rim, WY (Phase I; 1999)		0.08	69	41.4
Foote Creek Rim, WY (Phase I; 2000)		0.05	69	41.4
Foote Creek Rim, WY (Phase I; 2001-2002)		0	69	41.4
Southern Plains				
Buffalo Gap, TX		0.10	67	134
Oklahoma Wind Energy Center, OK		0	68	102
Midwest				
Moraine II, MN		0.37	33	49.5
Winnebago, IA		0.27	10	20
Buffalo Ridge I, SD		0.20	24	50.4
NPPD Ainsworth, NE		0.06	36	59.4
Grand Ridge, IL	0.20	0	66	99
Blue Sky Green Field, WI		0	88	145
Elm Creek, MN		0	67	100

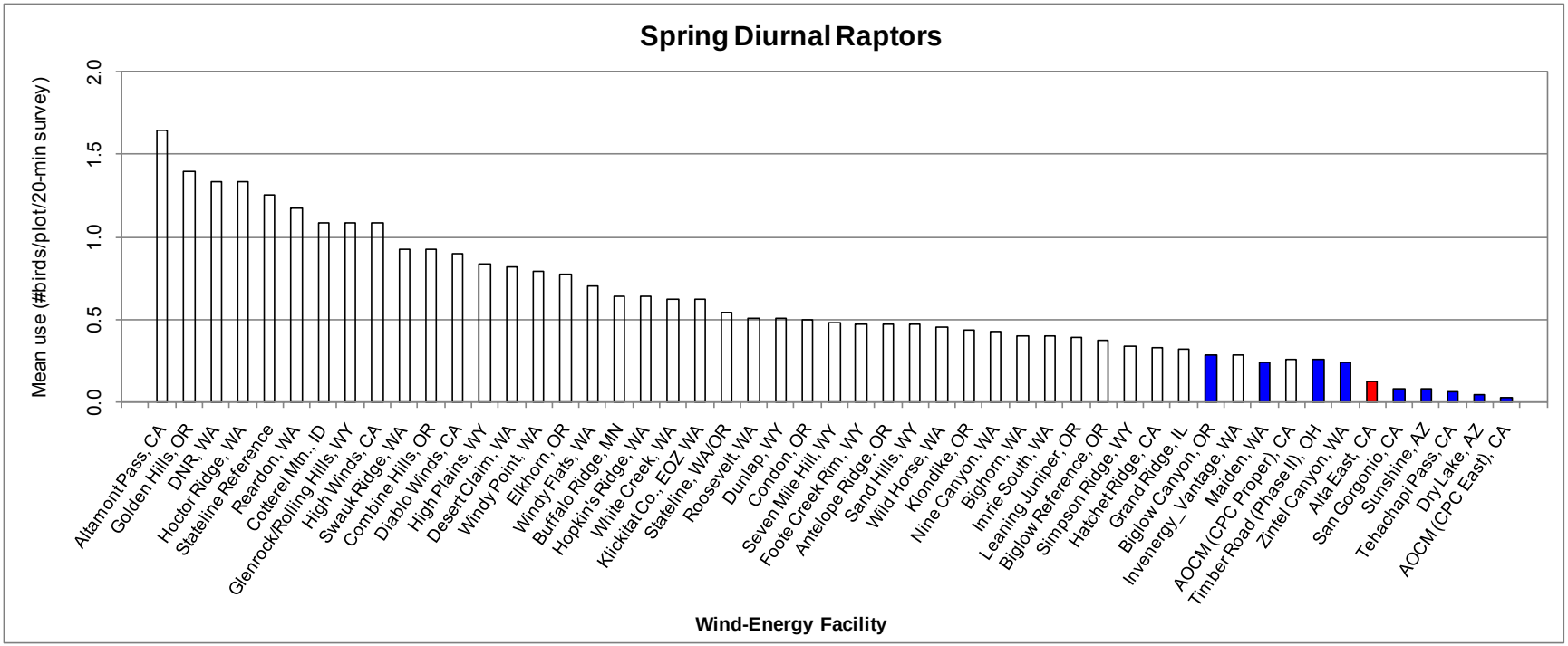
Appendix D2. Comparison of raptor use estimates and raptor fatality estimates between the Alta East Wind Resource Area and other wind energy facilities in North America.

Wind Energy Facility	Use Estimate[A]	Raptor Fatality Rate[B]	# of Turbines	Total (MW)
		Southeast		
Buffalo Mountain, TN (2005)		0	18	29
Buffalo Mountain, TN (2000-2003)		0	3	1.98
		Northeast		
Noble Ellenburg, NY (2009)		0.49	54	80
Noble Ellenburg, NY (2008)		0.32	54	80
Noble Clinton, NY (2008)		0.29	67	100.5
Maple Ridge, NY (2007)		0.25	195	321.75
Noble Clinton, NY (2009)		0.24	67	100
Noble Bliss, NY (2008)		0.19	67	100
Noble Bliss, NY (2009)		0.18	67	100
Maple Ridge, NY (2006)		0.04	120	198
Wolfe Island, Ont. (Report 1; May- June 2009)		0.04	86	197.8
Maple Ridge, NY (2008)		0.03	195	321.75
Mount Storm, WV (2008)		0	82	164

A=number of raptors/plot/20min survey
B=number of fatalities/MW/study period
* fatality estimate reported for Pine Tree was for large birds (16-32 inches), not raptors specifically; estimate corrected for mathematical error in number reported by BioResource Consultants (2010).
Data from the following sources:

Wind Energy Facility	Use Estimate	Fatality Estimate
Alta East, CA (10-11)	This study	
Alta East, CA (09-10)	Chatfield et al. 2010c	
Altamont Pass, CA	Erickson et al. 2002b	ICF 2011
Diablo Winds, CA	WEST 2006	WEST 2008
Pine Tree		BRC 2010
SMUD Solano, CA		Erickson and Sharp 2005
Alite, CA		Chatfield et al. 2010a
Dillon, CA		Chatfield et al. 2009
Leaning Juniper, OR	Kronner et al. 2005	Gritski et al. 2008
Klondike III, OR		Gritski et al. 2009
Big Horn, WA	Johnson and Erickson 2004	Kronner et al. 2008
Hopkins Ridge, WA (06)	Young et al. 2003a	Young et al. 2007a
Stateline, OR/WA (06)		Young et al. 2007a
Klondike II, OR	Johnson 2004	NWC and WEST 2007
Stateline, OR/WA (02)	Erickson et al. 2002b	Erickson et al. 2004
Stateline, OR/WA (03)	Erickson et al. 2003b	Erickson et al. 2004
Wild Horse, WA	Erickson et al. 2003d	Erickson et al. 2008
Hopkins Ridge, WA (08)		Young et al. 2009b
Elkhorn, OR		Jeffrey et al. 2009b
Nine Canyon, WA	Erickson et al. 2001b	Erickson et al. 2003c
Marengo II, WA		URS Corporation 2010b
Biglow Canyon, WA (Phase I; 09)		Enk et al. 2010
Biglow Canyon, WA (Phase I; 08)		Jeffrey et al. 2009a
Combine Hills, OR	Young et al. 2003d	Young et al. 2006
Vansycle, OR	WCIA and WEST 1997	Erickson et al. 2000
Marengo II, WA		URS Corporation 2010b
Klondike, OR	Johnson et al. 2002	Johnson et al. 2003
Marengo I, WA		URS Corporation 2010a
Summerview, Alb. (06)		Brown and Hamilton 2006
Judith Gap, MT		TRC 2008
Foote Creek Rim, WY (Phase I; 99)		Young et al. 2003c
Foote Creek Rim, WY (Phase I; 00)		Young et al. 2003c
Foote Creek Rim, WY (Phase I; 01/02)		Young et al. 2003c
Buffalo Gap, TX		Tierney 2007
Oklahoma Wind Energy Center, OK		Piorkowski 2006
Moraine II, MN		Derby et al. 2010e
Winnebago, IA		Derby et al. 2010a
Buffalo Ridge, SD		Derby et al. 2010b
NPPD Ainsworth, NE		Derby et al. 2007
Grand Ridge, IL	Derby et al. 2009	Derby et al. 2010g
Blue Sky Green Field, WI		Gruver et al. 2009
Elm Creek, MN		Derby et al. 2010c
Buffalo Mountain, TN (05)		Fiedler et al. 2007
Buffalo Mountain, TN (00-03)		Nicholson 2003, Nicholson et al. 2005
Noble Ellenburg, NY (09)		Jain et al. 2010c
Noble Ellenburg, NY (08)		Jain et al. 2009b
Noble Clinton, NY (08)		Jain et al. 2009c
Maple Ridge, NY (07)		Jain et al. 2009a
Noble Clinton, NY (09)		Jain et al. 2010b
Noble Bliss, NY (08)		Jain et al. 2009e
Noble Bliss, NY (09)		Jain et al. 2010a
Maple Ridge, NY (06)		Jain et al. 2007
Wolfe Island, Ont. (Report 1: May - June 09)		Stantec Ltd. 2010
Maple Ridge, NY (08)		Jain et al. 2009d
Mount Storm, WV (08)		Young et al. 2009a

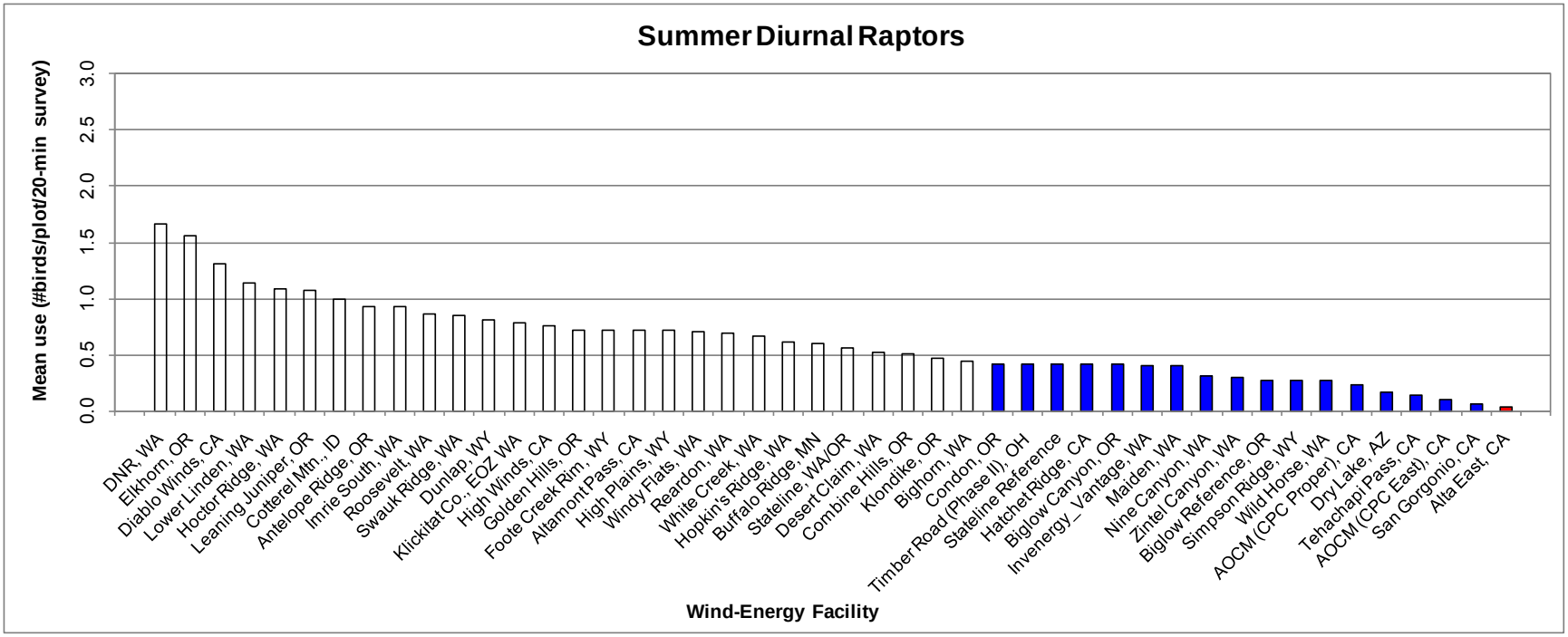
Appendix E. Comparison of Seasonal Raptor Use Between the Alta East Wind Resource Area and Other Wind Energy Facilities in the United States



Appendix E1. Comparison of spring raptor use between the Alta East Wind Resource Area and other wind energy facilities in the United States.

Data from the following sources:

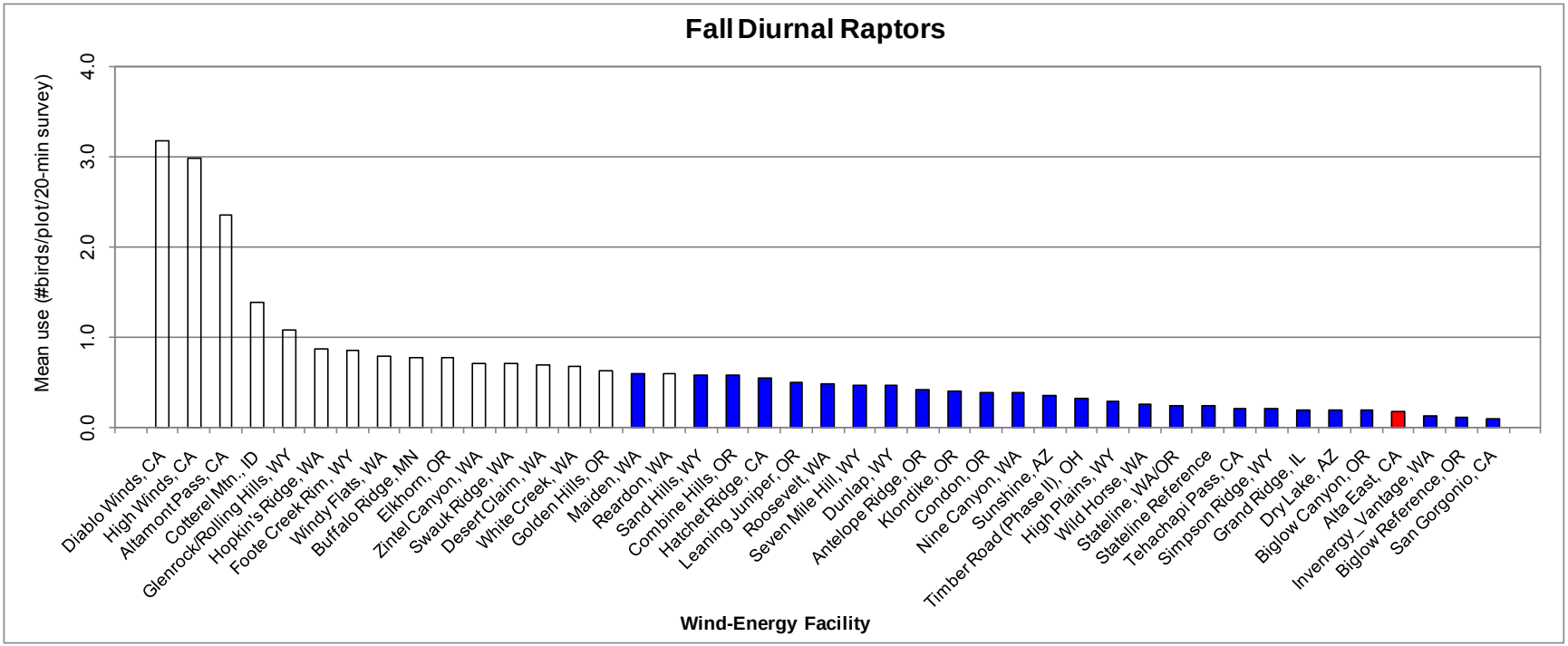
Wind Energy Facility	Reference	Wind Energy Facility	Reference	Wind Energy Facility	Reference
Alta East, CA	This study.				
Altamont Pass, CA	Erickson et al. 2002b	Buffalo Ridge, MN	Erickson et al. 2002b	Leaning Juniper, OR	Kronner et al. 2005
Golden Hills, OR	Jeffrey et al. 2008	Hopkin's Ridge, WA	Young et al. 2003a	Biglow Reference, OR	WEST 2005d
DNR, WA	Johnson et al. 2006c	White Creek, WA	NWC and WEST 2005	Simpson Ridge, WY	Johnson et al. 2000b
Hoctor Ridge, WA	Johnson et al. 2006d	Klickitat Co., EOZ WA	WEST and NWC 2003	Hatchet Ridge, CA	Young et al. 2007b
Stateline Reference	URS et al. 2001	Stateline, WA/OR	Erickson et al. 2002b	Grand Ridge, IL	Derby et al. 2009
Reardon, WA	WEST 2005b	Roosevelt, WA	NWC and WEST 2004	Biglow Canyon, OR	WEST 2005d
Cotterel Mtn., ID	BLM 2006	Dunlap, WY	Johnson et al. 2009a	Invenergy_Vantage, WA	WEST 2007
Glenrock/Rolling Hills, WY	Johnson et al. 2008a	Condon, OR	Erickson et al. 2002b	Maiden, WA	Erickson et al. 2002b
High Winds, CA	Kerlinger et al. 2005	Seven Mile Hill, WY	Johnson et al. 2008b	AOCM (CPC Proper), CA	Chatfield et al. 2010c
Swauk Ridge, WA	Erickson et al. 2003a	Foote Creek Rim, WY	Erickson et al. 2002b	Timber Road (Phase II), OH	Good et al. 2010
Combine Hills, OR	Young et al. 2003d	Sand Hills, WY	Johnson et al. 2006a	Zintel Canyon, WA	Erickson et al. 2002a
Diablo Winds, CA	WEST 2006	Antelope Ridge, OR	WEST 2009	San Gorgonio, CA	Erickson et al. 2002b
High Plains, WY	Johnson et al. 2009b	Wild Horse, WA	Erickson et al. 2003d	Sunshine, AZ	WEST and the CPRS 2006
Desert Claim, WA	Young et al. 2003b	Klondike, OR	Johnson et al. 2002	Tehachapi Pass, CA	Erickson et al. 2002b
Windy Point, WA	Johnson et al. 2006b	Nine Canyon, WA	Erickson et al. 2001b	Dry Lake, AZ	Young et al. 2007c
Elkhorn, OR	WEST 2005a	Bighorn, WA	Johnson and Erickson 2004	AOCM (CPC East, CA)	Chatfield et al. 2010c
Windy Flats, WA	Johnson et al. 2007b	Imrie South, WA	Johnson et al. 2006e		



Appendix E2. Comparison of summer raptor use between the Alta East Wind Resource Area and other wind energy facilities in the United States.

Data from the following sources:

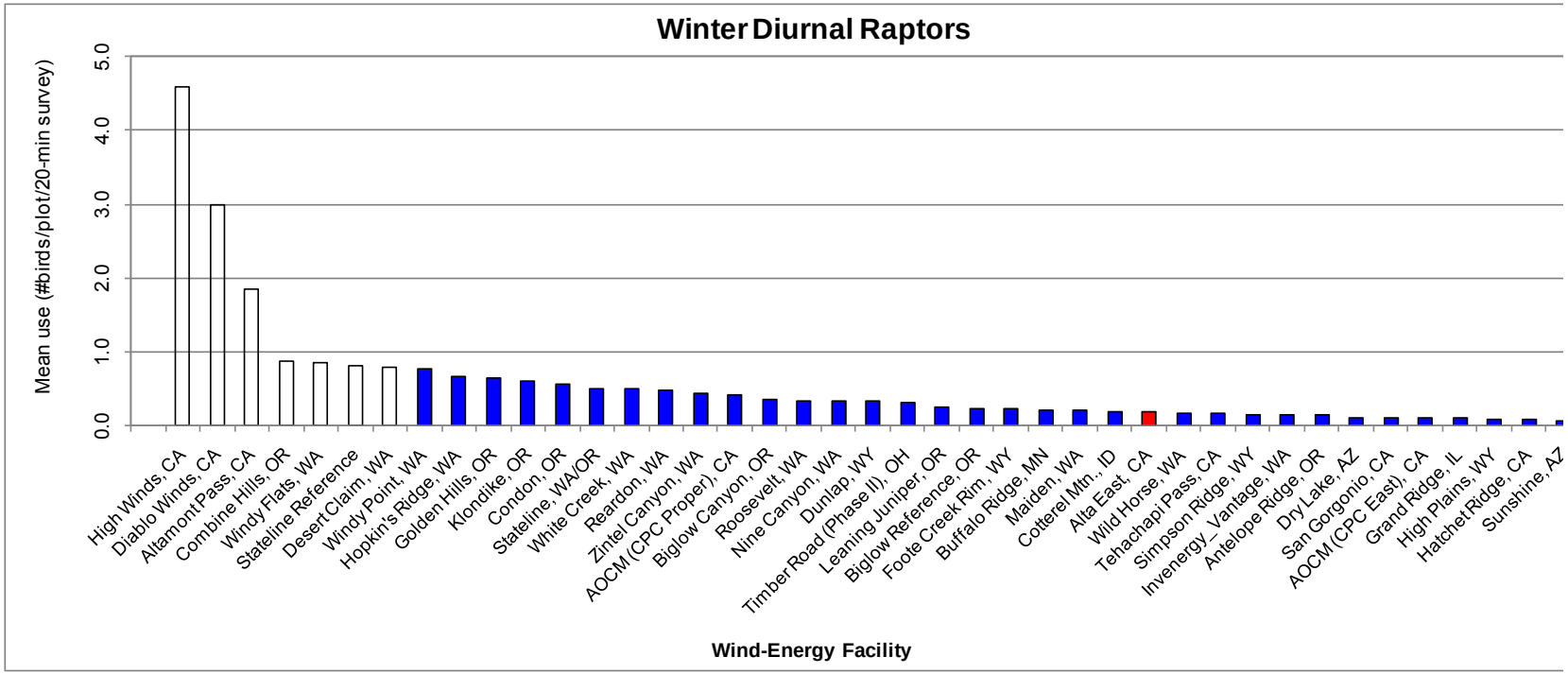
Wind Energy Facility	Reference	Wind Energy Facility	Reference	Wind Energy Facility	Reference
Alta East, CA	This study.				
DNR, WA	Johnson et al. 2006c	Foote Creek Rim, WY	Erickson et al. 2002b	Stateline Reference	URS et al. 2001
Elkhorn, OR	WEST 2005a	Altamont Pass, CA	Erickson et al. 2002b	Hatchet Ridge, CA	Young et al. 2007b
Diablo Winds, CA	WEST 2006	High Plains, WY	Johnson et al. 2009b	Biglow Canyon, OR	WEST 2005d
Lower Linden, WA	Johnson et al. 2007a	Windy Flats, WA	Johnson et al. 2007b	Invenergy_Vantage, WA	WEST 2007
Hoctor Ridge, WA	Johnson et al. 2006d	Reardon, WA	WEST 2005b	Maiden, WA	Erickson et al. 2002b
Leaning Juniper, OR	Kronner et al. 2005	White Creek, WA	NWC and WEST 2005	Nine Canyon, WA	Erickson et al. 2001b
Cotterel Mtn., ID	BLM 2006	Hopkin's Ridge, WA	Young et al. 2003a	Zintel Canyon, WA	Erickson et al. 2002a
Antelope Ridge, OR	WEST 2009	Buffalo Ridge, MN	Erickson et al. 2002b	Biglow Reference, OR	WEST 2005d
Imrie South, WA	Johnson et al. 2006e	Stateline, WA/OR	Erickson et al. 2002b	Simpson Ridge, WY	Johnson et al. 2000b
Roosevelt, WA	NWC and WEST 2004	Desert Claim, WA	Young et al. 2003b	Wild Horse, WA	Erickson et al. 2003d
Swauk Ridge, WA	Erickson et al. 2003a	Combine Hills, OR	Young et al. 2003d	AOCM (CPC Proper), CA	Chatfield et al. 2010c
Dunlap, WY	Johnson et al. 2009a	Klondike, OR	Johnson et al. 2002	Dry Lake, AZ	Young et al. 2007c
Klickitat Co., EOZ WA	WEST and NWC 2003	Bighorn, WA	Johnson and Erickson 2004	Tehachapi Pass, CA	Erickson et al. 2002b
High Winds, CA	Kerlinger et al. 2005	Condon, OR	Erickson et al. 2002b	AOCM (CPC East), CA	Chatfield et al. 2010c
Golden Hills, OR	Jeffrey et al. 2008	Timber Road (Phase II), OH	Good et al. 2010	San Gorgonio, CA	Erickson et al. 2002b



Appendix E3. Comparison of fall raptor use between the Alta East Wind Resource Area and other wind energy facilities in the United States.

Data from the following sources:

Wind Energy Facility	Reference	Wind Energy Facility	Reference	Wind Energy Facility	Reference
Alta East, CA	This study.				
Diablo Winds, CA	WEST 2006	Golden Hills, OR	Jeffrey et al. 2008	Sunshine, AZ	WEST and CPRS 2006
High Winds, CA	Kerlinger et al. 2005	Maiden, WA	Erickson et al. 2002b	Timber Road (Phase II), OH	Good et al. 2010
Altamont Pass, CA	Erickson et al. 2002b	Reardon, WA	WEST 2005b	High Plains, WY	Johnson et al. 2009b
Cotterel Mtn., ID	BLM 2006	Sand Hills, WY	Johnson et al. 2006a	Wild Horse, WA	Erickson et al. 2003d
Glenrock/Rolling Hills, WY	Johnson et al. 2008a	Combine Hills, OR	Young et al. 2003d	Stateline, WA/OR	Erickson et al. 2002b
Hopkin's Ridge, WA	Young et al. 2003a	Hatchet Ridge, CA	Young et al. 2007b	Stateline Reference	URS et al. 2001
Foote Creek Rim, WY	Erickson et al. 2002b	Leaning Juniper, OR	Kronner et al. 2005	Tehachapi Pass, CA	Erickson et al. 2002b
Windy Flats, WA	Johnson et al. 2007b	Roosevelt, WA	NWC and WEST 2004	Simpson Ridge, WY	Johnson et al. 2000b
Buffalo Ridge, MN	Erickson et al. 2002b	Seven Mile Hill, WY	Johnson et al. 2008b	Grand Ridge, IL	Derby et al. 2009
Elkhorn, OR	WEST 2005a	Dunlap, WY	Johnson et al. 2009a	Dry Lake, AZ	Young et al. 2007c
Zintel Canyon, WA	Erickson et al. 2002a	Antelope Ridge, OR	WEST 2009	Biglow Canyon, OR	WEST 2005d
Swauk Ridge, WA	Erickson et al. 2003a	Klondike, OR	Johnson et al. 2002	Invenergy_Vantage, WA	WEST 2007
Desert Claim, WA	Young et al. 2003b	Condon, OR	Erickson et al. 2002b	Biglow Reference, OR	WEST 2005d
White Creek, WA	NWC and WEST 2005	Nine Canyon, WA	Erickson et al. 2001b	San Gorgonio, CA	Erickson et al. 2002b



Appendix E4. Comparison of winter raptor use between the Alta East Wind Resource Area and other wind energy facilities in the United States.

Data from the following sources:

Wind Energy Facility	Reference	Wind Energy Facility	Reference	Wind Energy Facility	Reference
Alta East, CA	This study.				
High Winds, CA	Kerlinger et al. 2005	Reardon, WA	WEST 2005b	Wild Horse, WA	Erickson et al. 2003d
Diablo Winds, CA	WEST 2006	Zintel Canyon, WA	Erickson et al. 2002a	Tehachapi Pass, CA	Erickson et al. 2002b
Altamont Pass, CA	Erickson et al. 2002b	AOCM (CPC Proper), CA	Chatfield et al. 2010c	Simpson Ridge, WY	Johnson et al. 2000b
Combine Hills, OR	Young et al. 2003d	Biglow Canyon, OR	WEST 2005d	Invenergy_Vantage, WA	WEST 2007
Windy Flats, WA	Johnson et al. 2007b	Roosevelt, WA	NWC and WEST 2004	Antelope Ridge, OR	WEST 2009
Stateline Reference	URS et al. 2001	Nine Canyon, WA	Erickson et al. 2001b	Dry Lake, AZ	Young et al. 2007c
Desert Claim, WA	Young et al. 2003b	Dunlap, WY	Johnson et al. 2009a	San Gorgonio, CA	Erickson et al. 2002b
Windy Point, WA	Johnson et al. 2006b	Leaning Juniper, OR	Kronner et al. 2005	AOCM (CPC East), CA	Chatfield et al. 2010c
Hopkins Ridge, WA	Young et al. 2003a	Biglow Reference, OR	WEST 2005d	Grand Ridge, IL	Derby et al. 2009
Golden Hills, OR	Jeffrey et al. 2008	Foote Creek Rim, WY	Erickson et al. 2002b	High Plains, WY	Johnson et al. 2009b
Klondike, OR	Johnson et al. 2002	Buffalo Ridge, MN	Erickson et al. 2002b	Hatchet Ridge, CA	Young et al. 2007b
Condon, OR	Erickson et al. 2002b	Maiden, WA	Erickson et al. 2002b	Sunshine, AZ	WEST and CPRS 2006
Stateline, WA/OR	Erickson et al. 2002b	Cotterel Mtn., ID	BLM 2006		
White Creek, WA	NWC and WEST 2005	Timber Road (Phase II), OH	Good et al. 2010		

Appendix D-9

Bat Acoustic Studies 2010

TECHNICAL MEMORANDUM

Final Results of
Bat Acoustic Surveys at the
Proposed Sun Creek Wind Project
Kern County, California
July 7, 2009 – July 9, 2010

Submitted by:
Western **E**co**S**ystems **T**echnology, Inc.
2003 Central Ave.
Cheyenne, Wyoming 82001

July 23, 2010

INTRODUCTION

Alta Windpower Development, LLC. is proposing to develop a wind-energy facility in Kern County, California. CH2M Hill, a contractor to Alta Windpower, requested that Western EcoSystems Technology, Inc. (WEST) prepare and implement a survey designed to assess bat activity and use of the proposed Sun Creek Wind Project ("Project"). This memorandum is meant to summarize results for the survey period July 7, 2009 to July 9, 2010. Acoustic surveys were also conducted in 2007-2008, and the results are summarized in Solick et al. (2009).

METHODS

The protocol used for this study follows guidelines set forth by the California Energy Commission (CEC and CDFG 2007). The Category 2 project protocol was selected as little is known about potential impacts to bats in the area; the category and protocol can be revised after 1 year of monitoring at Alta Oak has been completed. For Category 2 projects, the guidelines call for continuous monitoring of bat activity at meteorological (met) towers on site for 12 consecutive months. Surveys were initiated July 7, 2009, at two met towers located within the Project (Figure 1). A total of four Anabat™ SD1 bat detectors (Titley™ Scientific, Australia) were deployed during the survey period. Two detectors were elevated 30 meters (m; 98 feet [ft]) on the met towers, while the other detectors were positioned approximately two m (6.5 ft) above the ground at the base of the towers. Raised microphones were encased in a Bat-Hat weatherproof housing (EME Systems, Berkeley, California), and attached to a coaxial cable that transmitted ultrasonic sounds to an Anabat unit at the base of the tower. Detectors were programmed to collect data continuously from 30 minutes (min) before sunset to 30 min after sunrise, the period corresponding to greatest bat activity. A technician checked the detectors every two weeks, collected the data, and swapped power supplies.

Anabat detectors record bat echolocation calls with a broadband microphone. The echolocation sounds are then translated into frequencies audible to humans by dividing the frequencies by a predetermined ratio. A division ratio of eight was used for the study. Bat echolocation detectors also detect other ultrasonic sounds made by insects, raindrops hitting vegetation, and other sources. A sensitivity level of six was used to reduce interference from these other sources of ultrasonic noise. Calls were recorded to a compact flash memory card with large storage capacity. Data were prepared for analysis and analyzed using CFCread v4.2a and AnalookW v3.5r software programs, respectively (Chris Corben, Titley™ Scientific).

The units of bat activity were number of bat passes (Hayes 1997). A pass was defined as a continuous series of two or more call notes produced by an individual bat with no pauses between call notes of more than one second (White and Gehrt 2001, Gannon et al. 2003). The number of bat passes was determined by downloading the data files to a computer and tallying the number of echolocation passes recorded. Total number of passes was corrected for effort by dividing by the number of detector nights. For each station, bat passes were sorted into three groups, based on their minimum frequency, that correspond roughly to species groups of interest. For example, species such as western red bat (*Lasiurus blossevellii*) and those in the genus *Myotis* generally echolocate at frequencies at or above 35 kilohertz (kHz), while species such as silver-haired bat (*Lasionycteris noctivagans*) and hoary bat (*Lasiurus cinereus*) have echolocation frequencies that fall between 15 and 35 kHz, and species such as spotted bat (*Euderma maculatum*) and western mastiff bat (*Eumops perotis*) produce calls with minimum frequencies less than 15 kHz. Therefore, passes were classified as either high-frequency (HF; greater than or equal to 35 kHz), low-frequency (LF; between 15 and 35 kHz), or very low frequency (VLF; less than 15 kHz) passes. To establish which species may have produced passes in each category, a list of species expected to occur in the study area was compiled from range maps (Table 1; Harvey et al. 1999, BCI 2010). Data determined to be noise (produced by a source other than a bat) or call notes that did not meet the pre-specified criteria to be termed a pass were removed from the analysis.

INTERIM RESULTS AND RECOMMENDATIONS

During the period July 7, 2009, to July 9, 2010, we recorded a total of 217 bat passes during 1192 detector-nights, or (mean ± standard error [SE]) 0.19 ± 0.03 bat passes per detector per night (Table 2). Bat activity ranged between 0.08 and 0.32 bat passes per detector-night among stations (Figure 2), and overall activity rates were similar between ground (0.20 bat passes per detector-night) and raised stations (0.19 bat passes per detector-night). Passes attributable to low-frequency bats comprised the majority of bat activity (94.8% of all bat passes; Table 2), suggesting greater relative abundance of species such as silver-haired, hoary, and Mexican free-tailed bat (*Tadarida brasiliensis mexicana*; Table 1). No passes by species in the very low-frequency category were identified.

Bats were active year-round at the Project, with seasonal activity rates ranging from a low of 0.09 bat passes per detector-night in the Winter of 2009 to a high of 0.30 in the Spring of 2010 (Figure 3). On a weekly basis, variation in activity was evident during the year, with most activity concentrated in late October and late April, likely reflecting movement of bats through the area during fall and spring migration (Figure 4). Nightly activity differed between ground

and raised detectors during the fall, with most activity recorded at raised detectors (Figure 5). Patterns of nightly activity were more similar in the spring. These results suggest that bats within the Project tend to fly at higher altitudes during the fall, and may therefore be at greater risk of collision with wind turbines.

Some wind-energy facilities have measured both bat activity and bat fatalities, and so far there appears to be a weak positive correlation between the number of bat passes per detector-night (recorded by ground-based detectors during the fall) and the number of fatalities per megawatt (MW) per year (Table 3). Bat use recorded by ground detectors at the Project (0.20 ± 0.04 bat passes per detector-night) was relatively low compared to that observed at facilities in Minnesota and Wyoming, where bat fatality rates were relatively low, and bat use at the Project was much lower than activity recorded at facilities in eastern US, where bat fatality rates are highest (Table 3). Thus, based on the expected relationship between pre-construction bat activity and post-construction fatalities, and assuming it extends to the American Southwest, bat fatality rates at the Project would be expected to be lower than the 2.4 bats/MW/year reported at the Buffalo Ridge facility in Minnesota. As well, very few bat mortalities have been found during post-construction fatality surveys at existing wind-energy facilities in the immediate vicinity (Anderson et al. 2004, Wolfe 2008; Erickson et al. 2009), further suggesting that fatality rates at the Project will be relatively low.

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Table 1. Bat species determined from range-maps (Harvey et al. 1999, BCI 2010) as likely to occur at the Sun Creek Wind Project, sorted by call frequency.

Common Name	Scientific Name
High-frequency (≥ 35 kHz)	
western red bat[2]	*Lasiurus blossevillii*

California leaf-nosed bat	*Macrotus californicus*
California bat	*Myotis californicus*
western small-footed bat	*Myotis ciliolabrum*
cave bat[3]	*Myotis velifer*
long-legged bat[2]	*Myotis volans*
Yuma bat	*Myotis yumanensis*
canyon bat[2]	*Parastrellus hesperus*
western yellow bat	*Lasiurus xanthinus*
western long-eared bat	*Myotis evotis*
little brown bat[2]	*Myotis lucifugus*
Low-frequency (15 - 35 kHz)	
pallid bat	*Antrozous pallidus*
Townsend's big-eared bat	*Corynorhinus townsendii*
big brown bat[2]	*Eptesicus fuscus*
silver-haired bat[1,2]	*Lasionycteris noctivagans*
hoary bat[1,2]	*Lasiurus cinereus*
fringed bat	*Myotis thysanodes*
pocketed free-tailed bat[3]	*Nyctinomops femorosaccus*
Mexican free-tailed bat[1,2]	*Tadarida brasiliensis mexicana*
Very low-frequency (<15 kHz)	
spotted bat	*Euderma maculatum*
western mastiff bat	*Eumops perotis californicus*

[1]long-distance migrant
[2]species known to have been killed at wind-energy facilities
[3]presence based on one set of range maps

Table 2. Results of acoustic bat surveys conducted at the Sun Creek Wind Project, July 7, 2009 – July 9, 2010, separated by call frequency (HF = high frequency; LF = low frequency).

Anabat Station	Location	# of HF Bat Passes	# of LF Bat Passes	Total Bat Passes	Detector-Nights	Bat Passes/ Night[1]
SC1g	ground	2	26	28	342	0.08 ± 0.02
SC1h	raised	0	47	47	284	0.17 ± 0.03
SC2g	ground	3	65	68	214	0.32 ± 0.07
SC2h	raised	0	74	74	352	0.21 ± 0.04
Total Ground		**5**	**91**	**96**	**556**	**0.20 ± 0.04**
Total Raised		**0**	**121**	**121**	**636**	**0.19 ± 0.03**
Total		**5**	**212**	**217**	**1192**	**0.19 ± 0.03**

[1]± bootstrapped standard error.

Table 3. Wind-energy facilities in North America with mortality data for bat species, grouped by geographic region. Bat activity rates are included where available. To date, no bat fatality estimates or studies from southwestern or southeastern wind-energy facilities have been made public.

Wind-Energy Facility	Bat Use Estimate [a]	Mortality Estimate [b]	No. of Turbines	Total MW
Sun Creek, CA	0.2			
Western				
Stateline, OR/WA (2003)		2.52	454	300
High Winds, CA (2004)		2.51	90	162
Nine Canyon, WA		2.47	37	48
Leaning Juniper, OR		1.98	67	100.5
Big Horn, WA		1.90	133	199.5
Combine Hills, OR		1.88	41	41
High Winds, CA (2005)		1.52	90	162
Stateline, OR/WA (2002)		1.20	454	300
Vansycle, OR		1.12	38	24.9
Klondike, OR		0.77	16	24
Hopkins Ridge, WA		0.63	83	150
Klondike II, OR		0.41	50	75
Wild Horse, WA		0.39	127	229
SMUD, CA		0.07		15
Rocky Mountains				
Summerview, Alb. (2006)	5.3	14.62	39	70.2
Summerview, Alb. (2005/2006)		10.27	39	70.2
Judith Gap, MT		8.93	90	135
Summerview, Alb. (2007)		8.23	39	70.2
Foote Creek Rim, WY (Phase I; 1999)		3.97	69	41.4
Foote Creek Rim, WY (Phase I; 2001/2002)		1.57	69	41.4
Foote Creek Rim, WY (Phase I; 2000)	2.2	1.05	69	41.4
Midwest				
Blue Sky Green Field, WI	7.7[d]	24.57	88	145
Top of Iowa, IA (2004)	34.9[c]	10.27	89	80
Top of Iowa, IA (2003)	34.9[c]	7.16	89	80
Kewaunee County, WI		6.55	31	20
Buffalo Ridge, MN (Phases II & III; 2001)	2.2	4.03	281	210.75
Crescent Ridge, IL		3.27	33	49.5
Buffalo Ridge, MN (Phase III; 1999)		2.72	138	103.5
Buffalo Ridge, MN (Phase II; 1999)		2.59	143	107.25
Buffalo Ridge, MN (Phase II; 1998)		2.16	143	107.25
Buffalo Ridge, MN (Phases II & III; 2002)	1.9	1.73	281	210.75
NPPD Ainsworth, NE		1.16	36	59.4
Buffalo Ridge, MN (Phase I; 1999)		0.76	73	25

Table 3. Wind-energy facilities in North America with mortality data for bat species, grouped by geographic region. Bat activity rates are included where available. To date, no bat fatality estimates or studies from southwestern or southeastern wind-energy facilities have been made public.

Wind-Energy Facility	Bat Use Estimate [a]	Mortality Estimate [b]	No. of Turbines	Total MW
Southern Plains				
Oklahoma Wind Energy Center, OK		0.53	68	102
Buffalo Gap, TX		0.10	67	134
Northeastern				
Buffalo Mountain, TN (2006)		39.70	18	29
Mountaineer, WV	38.3	31.69	44	66
Buffalo Mountain, TN (2000-2003)	23.7	31.54	3	2
Meyersdale, PA		18.00	20	30
Casselman, PA		15.66	23	34.5
Maple Ridge, NY (2006)		15.00	120	198
Noble Bliss, NY		14.66	67	100
Mount Storm, WV (2008)	35.2	12.11	82	164
Maple Ridge, NY (2007)		9.42	195	321.75
Noble Ellenburg, NY		5.45	54	80
Noble Clinton, NY		3.63	67	100.5
Mars Hill, ME (2007)		2.91	28	42
Stetson Mountain, ME	0.30	1.40	38	57

a=bat passes per detector-night
b=number of bat fatalities/MW/year
c=averaged across phases and/or study years, and may not be directly related to mortality estimates
d=bat activity not measured concurrently with bat mortality studies
Data from the following sources:

Wind-Energy Facility	Use Estimate	Mortality Estimate	Wind-Energy Facility	Use Estimate	Mortality Estimate
Stateline, OR/WA (03)		Erickson et al. 2004	Kewaunee County, WI		Howe et al. 2002
High Winds, CA (04)		Kerlinger et al. 2006	Buffalo Ridge, MN (Phase II& III; 01)		Johnson et al. 2004
Nine Canyon, WA		Erickson et al. 2003	Crescent Ridge, IL		Kerlinger et al. 2007
Leaning Juniper, OR		Gritski et al. 2008	Buffalo Ridge, MN (Phase III; 99)		Johnson et al. 2004
Big Horn, WA		Kronner et al. 2008	Buffalo Ridge, MN (Phase II; 99)	Johnson et al. 2000	Johnson et al. 2004
Combine Hills, OR		Young et al. 2006	Buffalo Ridge, MN (Phase II; 98)	Johnson et al. 2000	Johnson et al. 2004
High Winds, CA (05)		Kerlinger et al. 2006	Buffalo Ridge, MN (Phase II& III; 02)		Johnson et al. 2004
Stateline, OR/WA (02)		Erickson et al. 2004	NPPD Ainsworth, NE		Derby et al. 2007
Vansycle, OR		Erickson et al. 2000	Buffalo Ridge, MN (Phase I; 99)		Johnson et al. 2000
Klondike, OR		Johnson et al. 2003	Oklahoma Wind Energy Center, OK		Piorkowski 2006
Hopkins Ridge, WA		Young et al. 2007	Buffalo Gap, TX		Tierney 2007
Klondike II, OR		NWC and WEST 2007	Buffalo Mountain, TN (2006)		
Wild Horse, WA		Erickson et al. 2008	Mountaineer, WV	Arnett (pers comm. 2005)	Kerns and Kerlinger 2004
SMUD, CA		URS et al. 2005	Buffalo Mountain, TN (2000-2003)	Fiedler 2004	Nicholson et al. 2005
Summerview, Alb. (06)		Baerwald 2008	Meyersdale, PA		Arnett et al. 2005
Summerview, Alb. (05/06)		Brown and Hamilton 2006	Casselman, PA		Arnett et al. 2009
Judith Gap, MT		TRC 2008	Maple Ridge, NY (2006)		Jain et al. 2007
Summerview, Alb. (07)		Baerwald 2008	Noble Bliss, NY		Jain et al. 2009c
Foote Creek Rim, WY (Phase I; 99)		Young et al. 2003	Mount Storm, WV (2008)	Young et al. 2009	Young et al. 2009
Foote Creek Rim, WY (Phase I; 01/02)	Gruver 2002	Young et al. 2003	Maple Ridge, NY (2007)		Jain et al. 2008
Foote Creek Rim, WY (Phase I; 00)	Gruver 2002	Young et al. 2003	Noble Ellensburg, NY		Jain et al. 2009a
Blue Sky Green Field, WI	Gruver 2008	Gruver et al. 2009	Noble Clinton, NY		Jain et al. 2009b
Top of Iowa, IA (2004)	Jain 2005	Jain 2005	Mars Hill, ME (2007)		Stantec 2008
Top of Iowa, IA (2003)	Jain 2005	Jain 2005	Stetson Mountain, ME	Stantec 2009	Stantec 2009

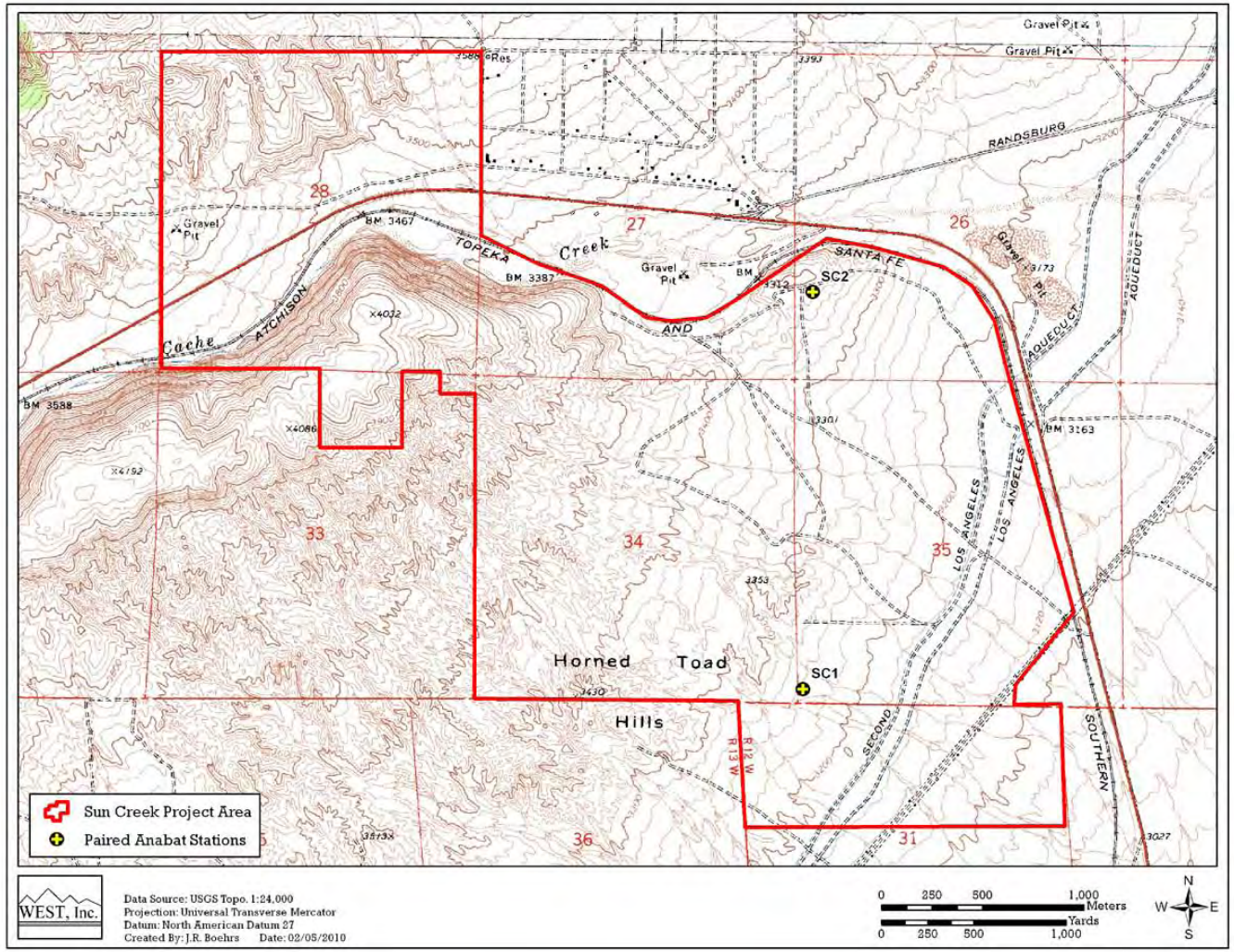

Figure 1. Study map of the Sun Creek Wind Project showing Anabat stations.

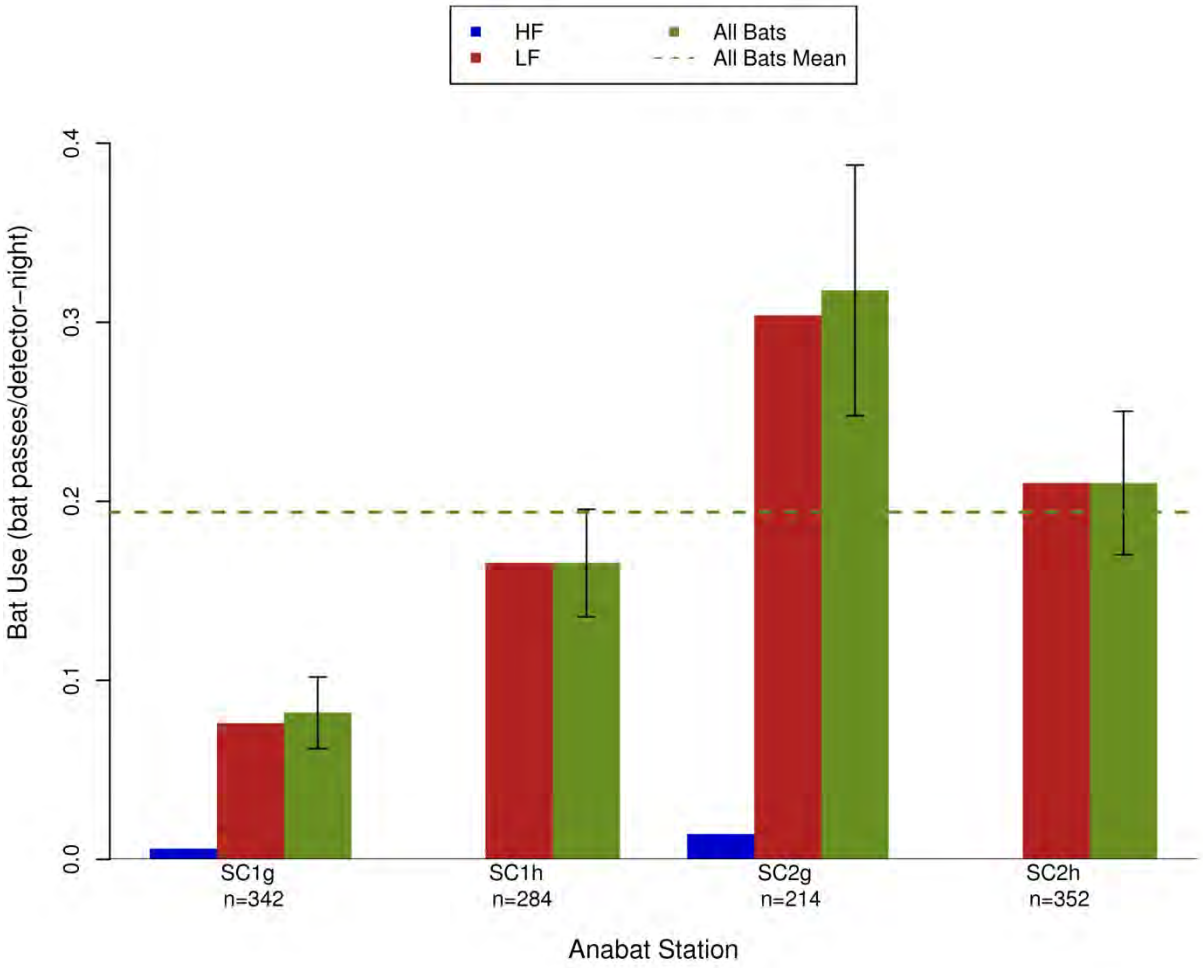

Figure 2. Number of bat passes per detector-night by Anabat station at the Sun Creek Wind Project for the study period July 7, 2009 – July 9, 2010. For this study, stations SC1g and SC2g were ground detectors paired with raised detectors at stations SC1h and SC2h. The bootstrapped standard errors are represented by the black error barson the 'All Bats' columns.

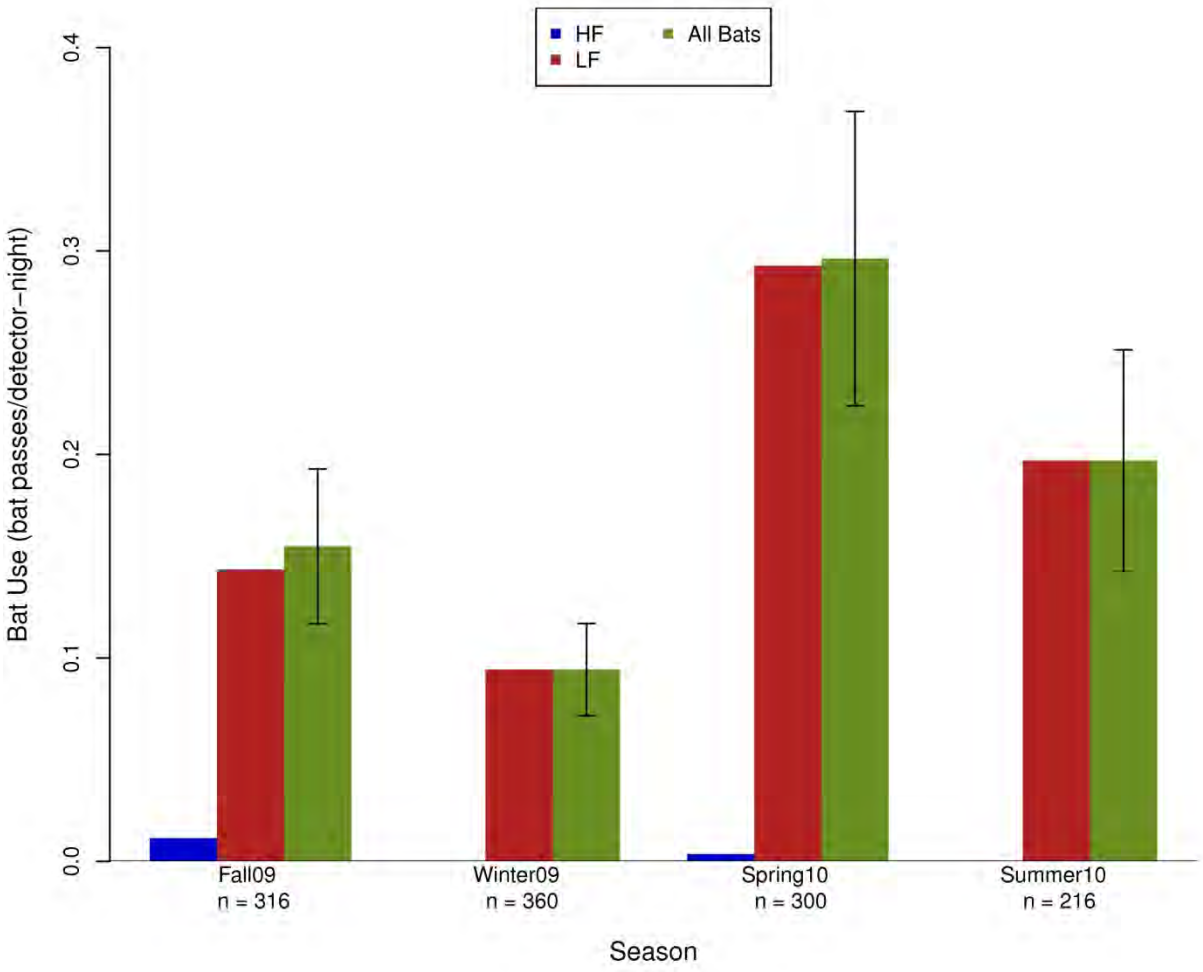

Figure 3. Seasonal bat activity at the Sun Creek Wind Project for the study period July 7, 2009 – July 9, 2010. For this study, seasons were defined as Fall 09 (July 7 - October 31, 2009), Winter 09 (November 1, 2009 - February 28, 2010), Spring 10 (March 1 – May 15, 2010), and Summer 10 (May 16 – July 9, 2010). The bootstrapped standard errors are represented by the black error barson the 'All Bats' columns.

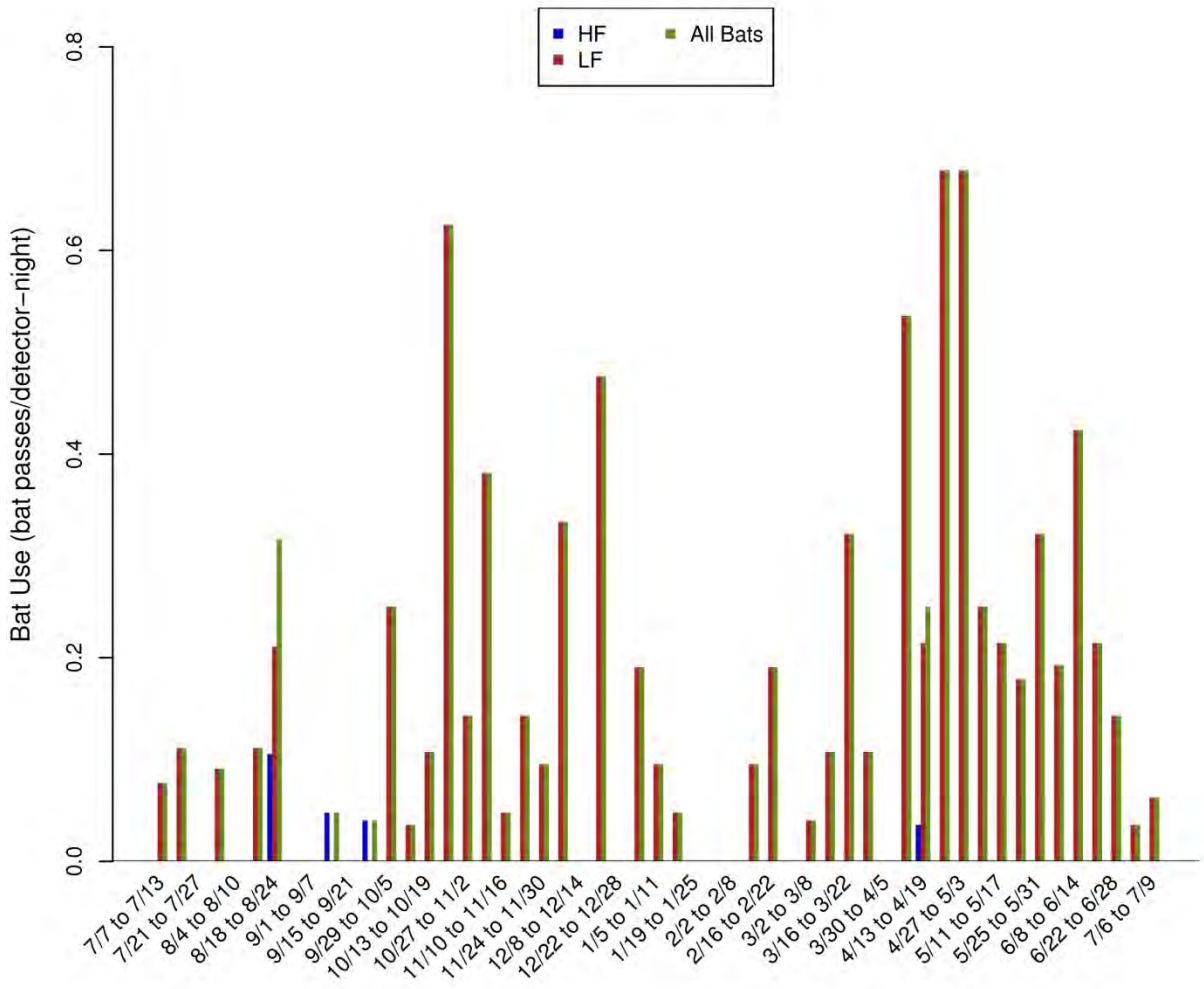

Figure 4. Weekly bat activity by high- frequency (HF) and low-frequency (LF) bats at the Sun Creek Wind Project for the study period July 7, 2009 – July 9, 2010.

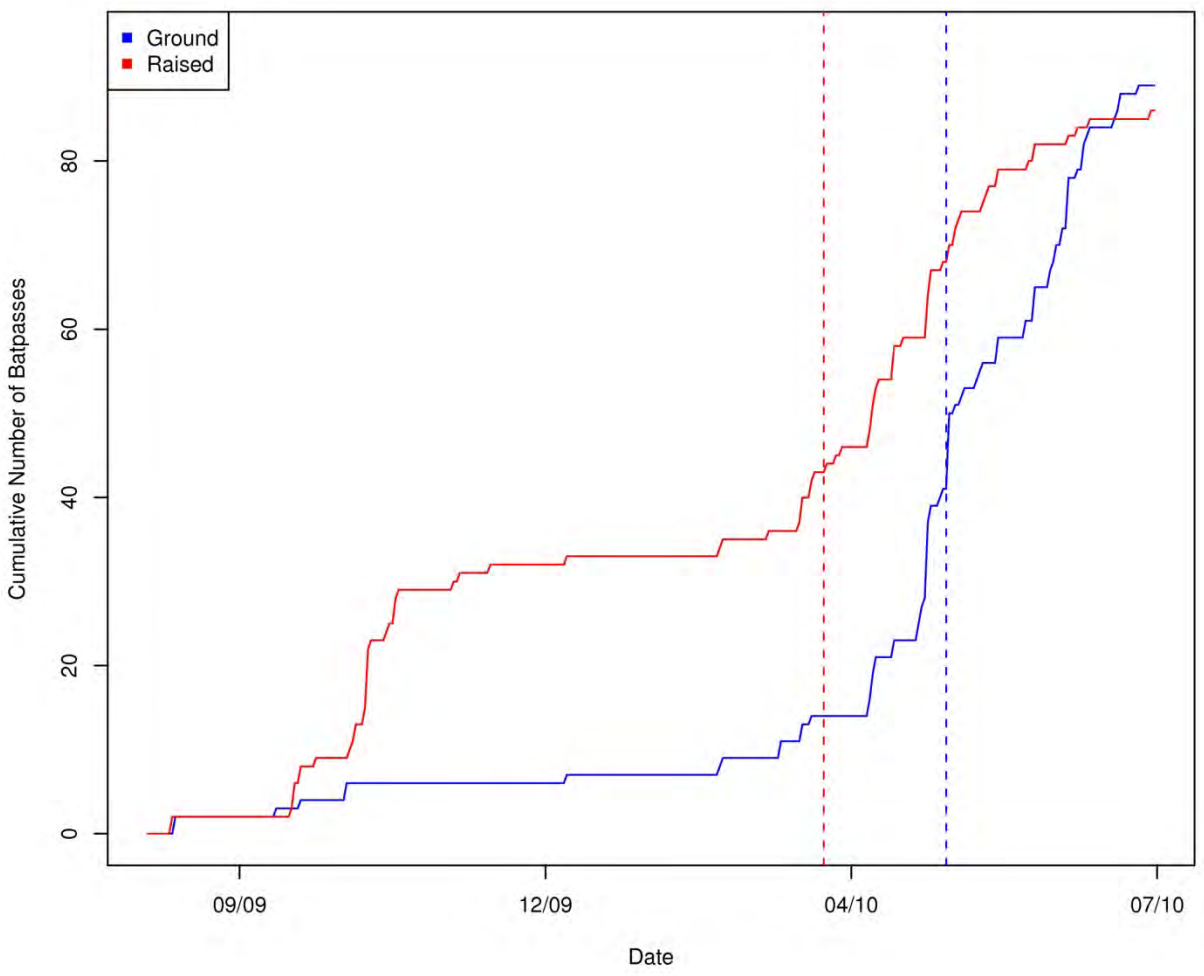

Figure 5. Empirical cumulative distribution of bat passes at ground and raised stations within the Sun Creek Wind Project for the study period July 7, 2009 – July 9, 2010. Dashed vertical lines indicate the point at which 50% of the calls occurred, an indication of the median date of bat activity.

Appendix D-10

Bat Acoustic Studies 2011

NATURAL RESOURCES ◆ SCIENTIFIC SOLUTIONS

Western **E**co**S**ystems **T**echnology, Inc. ◆ 2003 Central Avenue ◆ Cheyenne, Wyoming 82001
Phone: 307.634.1756 ◆ Fax: 307.637.6981 ◆ Website: www.west-inc.com

TECHNICAL MEMORANDUM

Results of
Bat Acoustic Surveys at the
Proposed Alta East Wind Resource Area
Kern County, California

December 13, 2010 – April 11, 2011

Submitted by:
Western EcoSystems Technology, Inc.

May 16, 2011

INTRODUCTION

In December of 2010, on behalf of CH2M HILL and Alta Windpower, LLC (Alta Windpower), Western EcoSystems Technology, Inc. (WEST) initiated a second year of acoustic surveys for bats at the Alta East Wind Resource Area (AEWRA) in Kern County, California. These surveys were designed to supplement an initial year of baseline acoustic monitoring conducted in 2009/2010 (Solick et al. 2010). This second year of the studies involved monitoring bat activity in the southwest corner of the AEWRA (see Figure 1), which was not covered in the previous year of surveys. Thus far the results of the current study are consistent with those results from the first year of studies, indicating that a wind energy facility at the AEWRA would not have a significant impact to bats. This memorandum summarizes results for the survey period from December 13, 2010, through April 11, 2011.

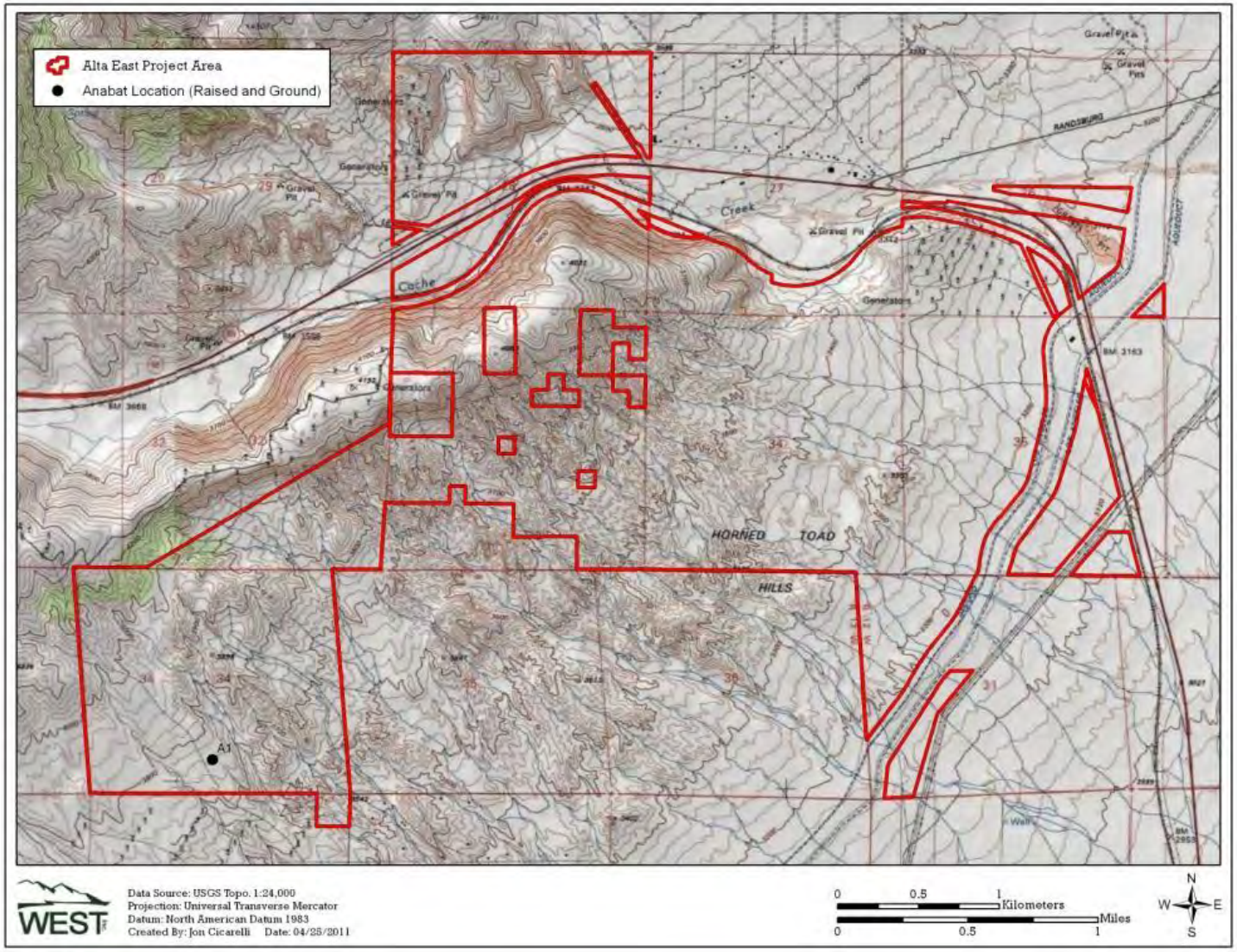

Figure 1. Map of the Alta East Wind Resource Area showing location of the Anabat station.

METHODS

The protocol used for this study follows guidelines set forth by the California Energy Commission (CEC and CDFG 2007). For Category 2 projects, the guidelines call for continuous monitoring of bat activity at meteorological (met) towers on site for 12 consecutive months. Surveys using passive ultrasonic bat detectors were initiated December 13, 2010, at one met tower located within the southwest corner of the AEWRA (Figure 1). Bat detectors are a recommended method to index and compare habitat use by bats. The use of bat detectors for calculating an index to bat impacts is a primary bat risk assessment tool for baseline wind development surveys (Arnett 2007; Kunz et al. 2007a). A total of two Anabat™ SD1 bat detectors (Titley™ Scientific, Australia) were deployed during the survey period at the AEWRA. One of the detectors was elevated 30 meters (m; 98 feet [ft]) on the met tower, while the other detector was positioned approximately 2 m (6.5 ft) above the ground at the base of the tower. The raised microphone was encased in a Bat-Hat weatherproof housing (EME Systems, Berkeley, California), and attached to a coaxial cable that transmitted ultrasonic sounds to an Anabat unit at the base of the tower. Detectors were programmed to collect data continuously from 30 minutes (min) before sunset to 30 min after sunrise, the period corresponding to greatest bat activity. A technician checked the detectors every two weeks, collected the data, and replacedpower supplies.

Anabat detectors record bat echolocation calls with a broadband microphone. The echolocation sounds are translated into frequencies audible to humans by dividing the frequencies by a predetermined ratio. A division ratio of eight was used for the study. Bat echolocation detectors also detect other ultrasonic sounds, such as those sounds made by insects, raindrops hitting vegetation, and other sources. A sensitivity level of six was used to reduce interference from these other sources of ultrasonic noise, as this level of sensitivity is optimal for removing noise while still recording the majority of bat call in range (Brooks and Ford 2005). Calls were recorded to a compact flash memory card with large storage capacity. The detection range of Anabat detectors depends on a number of factors (e.g., echolocation call characteristics, microphone sensitivity, habitat, the orientation of the bat, atmospheric conditions; Limpens and McCracken 2004), but is generally less than 30 m (98 ft) due to atmospheric absorption (attenuation) of echolocation pulses (Fenton 1991). To ensure similar detection ranges among detectors, microphone sensitivities were calibrated using a BatChirp (Tony Messina, Las Vegas, Nevada) ultrasonic emitter as described in Larson and Hayes (2000).

The units of bat activity were number of bat passes (Hayes 1997). A pass was defined as a continuous series of two or more call notes produced by an individual bat with no pauses between call notes of more than one second (White and Gehrt 2001, Gannon et al. 2003). The number of bat passes was determined by downloading the data files to a computer and tallying the number of echolocation passes recorded. Total number of passes was corrected for effort by dividing by the number of detector nights. For each station, bat passes were sorted into three groups, based on their minimum frequency, that correspond roughly to species groups of interest. For example, species such as western red bat (*Lasiurus blossevellii*) and most species

in the genus *Myotis* generally echolocate at frequencies at or above 40 kilohertz (kHz), while species such as little brown bat (*Myotis lucifigus*) and western yellow bat (*Lasiurus xanthinus*) produce calls between 30 and 40 kHz, and silver-haired bat (*Lasionycteris noctivagans*) and hoary bat (*Lasiurus cinereus*) have echolocation frequencies that fall between 15 and 35 kHz. Therefore, passes were classified as either high-frequency (HF; greater than or equal to 40 kHz), mid-frequency (MF; between 30 and 40 kHz), and low-frequency (LF; below 30 kHz) passes. To establish which species may have produced passes in each category, a list of species expected to occur in the study area was compiled from range maps (Table 1; Harvey et al. 1999, BCI 2011). Data determined to be noise (produced by a source other than a bat) or call notes that did not meet the pre-specified criteria to be termed a pass were removed from the analysis.

Table 1. Bat species determined from range-maps (Harvey et al. 1999, BCI 2011) as likely to occur at the Alta East Wind Resource Area, sorted by call frequency.

Common Name	State/Federal Status	Scientific Name
High-Frequency (>40 kHz)		
California bat		*Myotis californicus*
California leaf-nosed bat	SSC	*Macrotus californicus*
canyon bat[1]		*Parastrellus hesperus*
cave bat[1]	SSC	*Myotis velifer*
long-legged bat[1]		*Myotis volans*
western red bat[1]	SSC	*Lasiurus blossevillii*
western small-footed bat		*Myotis ciliolabrum*
Yuma bat		*Myotis yumanensis*
Mid-Frequency (30-40 kHz)		
little brown bat[1]		*Myotis lucifugus*
western long-eared bat[1]		*Myotis evotis*
western yellow bat[1]	SSC	*Lasiurus xanthinus*
Low-Frequency (<30 kHz)		
big brown bat[1]		*Eptesicus fuscus*
fringed bat		*Myotis thysanodes*
hoary bat[1,2]		*Lasiurus cinereus*
Mexican free-tailed bat[1,2]		*Tadarida brasiliensis mexicanus*
pallid bat	SSC	*Antrozous pallidus*
pocketed free-tailed bat[1]	SSC	*Nyctinomops femorosaccus*
silver-haired bat[1,2]		*Lasionycteris noctivagans*
Townsend's big-eared bat	SSC	*Corynorhinus townsendii*
spotted bat	SSC	*Euderma maculatum*
western mastiff bat	SSC	*Eumops perotis califonicus*

[1]species known to have been killed at wind energy facilities
[2]long-distance migrant
Species found as fatalities reported in Anderson et al. 2004, Kunz et al. 2007b, Baerwald 2008, Miller 2008, Chatfield et al. 2009, Piorkowski and O'Connell 2010.
SSC = State Species of Special Concern (CDFG 2011)

Within these categories, an attempt was made to identify passes made by hoary bat and western red bat. Passes that produced a distinct U-shaped sonogram and that exhibited variability in the minimum frequency across the call sequence were identified as belonging to the *Lasiurus* genus (C. Corben, pers comm.). Hoary and western red bats were distinguished based on minimum frequency; hoary bats typically produce calls with minimum frequencies between 18 and 24 kHz, whereas western red bats typically emit calls with minimum

frequencies between 38 and 50 kHz (J. Szewczak, pers comm.). Only sequences containing three or more calls were used for species identification.

INTERIM RESULTS AND RECOMMENDATIONS

During the period December 13, 2010, to April 11, 2011, WEST recorded a total of 95 bat passes during 233 detector-nights, or 0.41 ± 0.31 (mean ± standard error [SE]) bat passes per detector per night (Table 2). Bat activity was higher at the ground station, A1g (0.56 ± 0.50) compared to the raised station, A1h (0.26 ± 0.19; Figure 2).

Passes attributable to LF bats comprised the majority of bat activity (82.1% of all bat passes; Table 2), suggesting greater relative abundance of species such as silver-haired bat and Mexican free-tailed bat (*Tadarida brasiliensis mexicana*; Table 1). Included in these LF bat passes were five hoary bat passes recorded within the AEWRA, with three recorded at the ground station and one at the raised station (Table 2). No western red bat calls were identified. The parameters used to identify hoary and western red bat calls were conservative. Given the high intraspecific variability of bat calls and the number of call files that were too fragmented for proper identification, it is likely that more hoary bat and western red bat calls were recorded during the study than were positively identified.

The remaining calls (17.9%) were given by MF bats, such as little brown bat and western long-eared bat (*Myotis evotis*; Table 2). No HF bat passes were recorded during the study period, indicating that these species are generally absent from the study area during the late winter and spring.

Table 2. Results of acoustic bat surveys conducted at the Alta East Wind Resource Area, December 13, 2010 through April 11, 2011, separated by call frequency (MF= mid frequency; LF = low frequency).

			# of LF Bat Passes				
Anabat Station	**Location**	**# of MF Bat Passes**	**Unkn. LF species**	**Hoary Bats**	**Total Bat Passes**	**Detector-Nights**	**Bat Passes/ Night[1]**
A1g	ground	10	54	3	64	114	0.56±0.50
A1h	raised	7	24	2	31	119	0.26±0.19
Total		**17**	**78**	**5**	**95**	**233**	**0.41±0.31**

[1]± standard error.

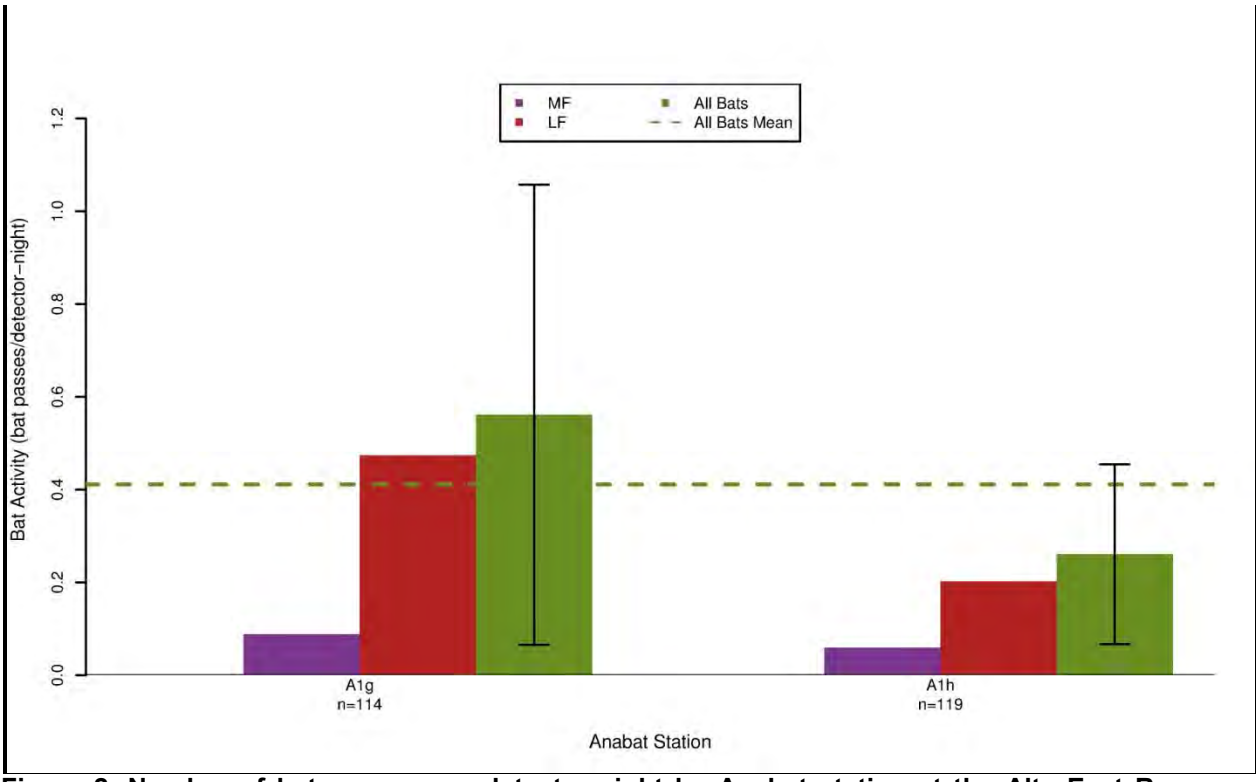

Figure 2. Number of bat passes per detector-night by Anabat station at the Alta East Resource Area for the study period December 13, 2010, through April 11, 2011. The standard errors are represented by the black error barson the 'All Bats' columns.

The highest bat activity occurred during the first week of the study period (December 13 -16, 2010), with an average of 9.88 bat passes per detector-night recorded during that period. Very low levels of activity were recorded throughout the remainder of the winter and the early spring, with average weekly activity rates ranging from zero to 0.36 bat passes per detector-night (Figure 3).

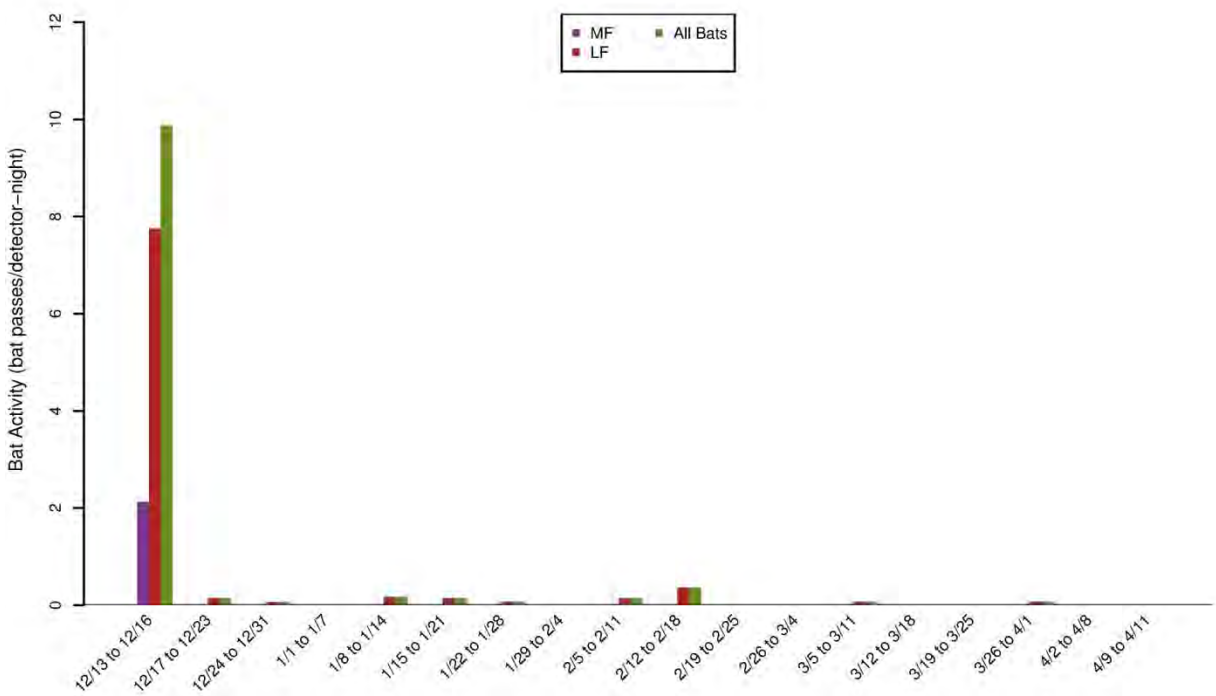

Figure 3. Weekly bat activity by mid-frequency (MF) and low-frequency (LF) bats at the Alta East Wind Resource Area for the study period December 13, 2010 through April 11, 2011.

Due to the differences in study period length, type of equipment, placement of equipment and presentation of data, it is not possible to directly compare the results from the AEWRA with studies conducted at other proposed wind energy facilities; however, some generalizations can be made. In general, reported fatality rates have been highest in the Northeast and lowest in the Northwest, although a high degree of variation in reported fatality rates is present for most regions. For studies that measured activity and fatality, the highest (38.3) and lowest (0.3) mean bat passes per detector night correspond with the highest (31.69) and lowest (1.4) bat fatalities/MW/study period (Table 3). However, the relationship in bat activity and bat fatalities is not consistent. For example, despite high activity at Top of Iowa (34.9; 2003), fatalities were relatively low (7.16), whereas low bat activity at Blue Sky Green Field (7.7) corresponded with a high fatality estimate (24.57; Table 3).

Bat activity recorded at the AEWRA during this study (0.41 ± 0.31 bat passes per detector-night) is relatively very low, and is consistent with bat activity recorded during the previous year of study at the AEWRA (0.22 ± 0.03 bat passes per detector-night; Solick et al. 2010; Table 3). Based on reported fatality rates at wind energy facilities in California and the Pacific Northwest regions of the US, the bat activity observed at the AEWRA during two years of study, and habitats within the project, it is expected that the potential risk to bats from turbine operations to be lower than or similar to the rates observed at other western facilities, and not nearly as high as the rates observed at eastern ridgeline facilities. As well, comparatively very few bat mortalities have been found during post-construction fatality surveys at existing wind energy

facilities in the immediate vicinity (see Anderson et al. 2004, M.H. Wolfe and Associates 2008, Chatfield et al. 2010), further suggesting that fatality rates at the AEWRA will be relatively low.

Table 3. Wind energy facilities in North America with activity and fatality data for bats, grouped by geographic region.

Wind Energy Facility	Bat Activity Estimate[A]	Fatality Estimate[B]	No. of Turbines	Total MW
Alta East, CA (this study)	**0.41**			
Alta East, CA (2009/2010)	0.22			
	California			
High Winds, CA (2004)		2.51	90	162
Dillon, CA		2.17	45	45
High Winds, CA (2005)		1.52	90	162
Alite, CA		0.24	8	24
SMUD Solano, CA		0.07		15
Alta-Oak Creek Mojave, CA	2.5			
	Pacific Northwest			
Stateline, OR/WA (2003)		2.52	454	300
Nine Canyon, WA		2.47	37	48
Biglow Canyon, OR (Phase I; 2008)		1.99	76	125.4
Leaning Juniper, OR		1.98	67	100.5
Big Horn, WA		1.90	133	199.5
Combine Hills, OR		1.88	41	41
Hopkins Ridge, WA (2008)		1.39	83	150
Elkhorn, OR		1.26	61	101
Klondike III, OR		1.26	122	375
Stateline, OR/WA (2002)		1.20	454	300
Vansycle, OR		1.12	38	24.9
Klondike, OR		0.77	16	24
Hopkins Ridge, WA (2006)		0.63	83	150
Biglow Canyon, OR (Phase I; 2009)		0.58	76	125.4
Klondike II, OR		0.41	50	75
Wild Horse, WA		0.39	127	229
Marengo II, WA		0.27	39	70.2
Marengo I, WA		0.17	78	140.4
	Southern Plains			
Oklahoma Wind Energy Center, OK		0.53	68	102
Buffalo Gap, TX		0.10	67	134

Table 3. Wind energy facilities in North America with activity and fatality data for bats, grouped by geographic region.

Wind Energy Facility	Bat Activity Estimate[A]	Fatality Estimate[B]	No. of Turbines	Total MW
	Midwest			
Cedar Ridge, WI		30.6[F]	41	68
Blue Sky Green Field, WI	7.7[D]	24.57	88	145
Top of Iowa, IA (2004)	35.7[C]	10.27	89	80
Fowler Ridge I, IN (2009)		8.09	162	301
Crystal Lake II, IA		7.42[E]	80	200
Top of Iowa, IA (2003)	35.7[C]	7.16	89	80
Kewaunee County, WI		6.55	31	20
Ripley, Ont		4.67	38	76
Winnebago, IA		4.54	10	20
Buffalo Ridge, MN (Phases II & III; 2001)	2.2	4.03	281	210.75
Crescent Ridge, IL		3.27	33	49.5
Buffalo Ridge, MN (Phase III; 1999)		2.72	138	103.5
Buffalo Ridge, MN (Phase II; 1999)		2.59	143	107.25
Moraine II, MN		2.42	33	49.5
Buffalo Ridge, MN (Phase II; 1998)		2.16	143	107.25
Grand Ridge, IL		2.10	66	99
Fowler Ridge III, IN (2009)		1.84[G]	60	99
Buffalo Ridge, MN (Phases II & III; 2002)	1.9	1.73	281	210.75
Elm Creek, MN		1.49	67	100
Wessington Springs, SD	0.18	1.48	34	51
NPPD Ainsworth, NE		1.16	36	59.4
Buffalo Ridge, MN (Phase I; 1999)		0.76	73	25
Buffalo Ridge I, SD		0.16	24	50.4
Timber Road II, OH	2.78			
	Rocky Mountains			
Summerview, Alb. (2006)	5.3	14.62	39	70.2
Summerview, Alb. (2005/2006)		10.27	39	70.2
Judith Gap, MT		8.93	90	135
Summerview, Alb. (2007)		8.23	39	70.2
Foote Creek Rim, WY (Phase I; 1999)		3.97	69	41.4
Foote Creek Rim, WY (Phase I; 2001/2002)		1.57	69	41.4
Foote Creek Rim, WY (Phase I; 2000)	2.2	1.05	69	41.4

Table 3. Wind energy facilities in North America with activity and fatality data for bats, grouped by geographic region.

Wind Energy Facility	Bat Activity Estimate[A]	Fatality Estimate[B]	No. of Turbines	Total MW
	Northeastern			
Buffalo Mountain, TN (2006)		39.70	18	29
Mountaineer, WV	38.3	31.69	44	66
Buffalo Mountain, TN (2000-2003)	23.7	31.54	3	2
Meyersdale, PA		18.00	20	30
Cohocton/Dutch Hill, NY		16.02	50	125
Maple Ridge, NY (2006)		15.00	120	198
Noble Bliss, NY (2008)		14.66	67	100
Cassleman, PA (Spring & Fall 2008)		12.61	23	34.5
Mount Storm, WV (2008)	35.2	12.11	82	164
Casselman, PA (Fall 2008)		9.91	23	34.5
Maple Ridge, NY (2007)		9.42	195	321.75
Noble Clinton, NY (2009)		6.48	67	100
Wolfe Island, Ont.		6.42	86	197.8
Noble Bliss, NY (2009)		5.50	67	100
Noble Ellenburg, NY (2008)		5.45	54	80
Noble Ellenburg, NY (2009)		5.34	54	80
Noble Clinton, NY (2008)		3.63	67	100
Mars Hill, ME (2007)		2.91	28	42
Stetson Mountain, ME	0.30	1.40	38	57
Munnsville, NY		0.46	23	34.5
Mars Hill, ME (2008)		0.45	28	42

A=bat passes per detector night;
B=number of bat fatalities/MW/study period;
C=averaged across phases and/or study years, and may not be directly related to mortality estimates;
D=bat activity not measured concurrently with bat mortality studies;
E=estimate includes incidentals;
F=number of bat fatalities/MW spring and fall survey period only;
G= number of bat fatalities/MW/spring season only

Table 3 (*continued*). Wind energy facilities in North America with activity and fatality data for bats, grouped by geographic region.

Data from the following sources:

Facility	Activity Estimate	Fatality Estimate	Facility	Activity Estimate	Fatality Estimate
Alta East, CA (09/10)	Solick et al. 2010		Buffalo Ridge, MN (Phase II; 98)		Johnson et al. 2004
High Winds, CA (04)		Kerlinger et al. 2006	Grand Ridge, IL		Derby et al. 2010f
Dillon, CA		Chatfield et al. 2009	Fowler Ridge III, IN		Johnson et al. 2010b
High Winds, CA (05)		Kerlinger et al. 2006	Buffalo Ridge, MN (Phase II& III; 02)	Johnson et al. 2004	Johnson et al. 2004
Alite, CA		Chatfield et al. 2010			
SMUD Solano, CA		Erickson and Sharp 2005	Elm Creek, MN		Derby et al. 2010d
Alta-Oak Creek Mojave, CA	Erickson et al. 2009		Wessington Springs, SD	Derby et al. 2008	Derby et al. 2010e
Stateline, OR/WA (03)		Erickson et al. 2004	NPPD Ainsworth, NE		Derby et al. 2007
Nine Canyon, WA		Erickson et al. 2003	Buffalo Ridge, MN (Phase I; 99)		Johnson et al. 2000
Biglow Canyon, OR (Phase I; 08)		Jeffrey et al. 2009a	Buffalo Ridge, SD		Derby et al. 2010c
Leaning Juniper, OR		Gritski et al. 2008	Timber Road II, OH	Good et al. 2009	
Big Horn, WA		Kronner et al. 2008	Summerview, Alb. (06)	Baerwald 2008	Baerwald 2008
Combine Hills, OR		Young et al. 2006	Summerview, Alb. (05/06)		Brown and Hamilton 2006
Hopkins Ridge, WA (06)		Young et al. 2009b	Judith Gap, MT		TRC 2008
Elkhorn, OR		Jeffrey et al. 2009b	Summerview, Alb. (07)		Baerwald 2008
Klondike III, OR		Gritski et al. 2009	Foote Creek Rim, WY (Phase I; 99)		Young et al. 2003
Stateline, OR/WA (02)		Erickson et al. 2004	Foote Creek Rim, WY (Phase I; 01/02)		Young et al. 2003
Vansycle, OR		Erickson et al. 2000	Foote Creek Rim, WY (Phase I; 00)	Gruver 2002	Young et al. 2003
Klondike, OR		Johnson et al. 2003	Buffalo Mountain, TN (06)		Fiedler et al. 2007
Hopkins Ridge, WA (06)		Young et al. 2007	Mountaineer, WV	Arnett (pers comm. 2005)	Kerns and Kerlinger 2004
Biglow Canyon, OR (Phase I; 09)		Enk et al. 2010	Buffalo Mountain, TN (00-03)	Fiedler 2004	Nicholson et al. 2005
Klondike II, OR		NWC and WEST 2007	Meyersdale, PA		Arnett et al. 2005
Wild Horse, WA		Erickson et al. 2008	Cohocton/Dutch Hill, NY		Stantec 2010
Marengo II, WA		URS Corporation 2010b	Maple Ridge, NY (06)		Jain et al. 2007
Marengo I, WA		URS Corporation 2010a	Noble Bliss, NY (08)		Jain et al. 2009d
Oklahoma Wind Energy Center, OK		Piorkowski 2006	Casselman, PA (Spring & Fall 08)		Arnett et al. 2009b
Buffalo Gap, TX		Tierney 2007	Mount Storm, WV (08)	Young et al. 2009a	Young et al. 2009a
Cedar Ridge, WI		BHE Environmental 2010	Casselman, PA (Fall 08)		Arnett et al. 2009a
Blue Sky Green Field, WI	Gruver 2008	Gruver et al. 2009	Maple Ridge, NY (07)		Jain et al. 2008
Top of Iowa, IA (2004)	Jain 2005	Jain 2005	Noble Clinton, NY (09)		Jain et al. 2010b
Fowler Ridge I, IN		Johnson et al. 2010a	Wolfe Island, Ont.		Stantec, Ltd. 2010
Crystal Lake II, IA		Derby et al. 2010a	Maple Ridge, NY (08)		Jain et al. 2009c
Top of Iowa, IA (2003)	Jain 2005	Jain 2005	Noble Bliss, NY (09)		Jain et al. 2010a
Kewaunee County, WI		Howe et al. 2002	Noble Ellenburg, NY (08)		Jain et al. 2009a
Ripley, Ont.		Jacques Whitford 2009	Noble Ellenburg, NY (09)		Jain et al. 2010c
Winnebago, IA		Derby et al. 2010b	Noble Clinton, NY (08)		Jain et al. 2009b
Buffalo Ridge, MN (Phase II& III; 01)	Johnson et al. 2004	Johnson et al. 2004	Mars Hill, ME (07)		Stantec 2008a
Crescent Ridge, IL		Kerlinger et al. 2007	Stetson Mountain, ME	Stantec 2009b	Stantec 2009b
Buffalo Ridge, MN (Phase III; 99)		Johnson et al. 2004	Munnsville, NY		Stantec 2008b
Buffalo Ridge, MN (Phase II; 99)		Johnson et al. 2004	Mars Hill, ME (08)		Stantec 2009a
Moraine II, MN		Derby et al. 2010d			

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Appendix D-11

Summary – Bat Roost Assessment Surveys

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Memorandum

VIA EMAIL

DATE: December 2, 2011

TO: David Phillips
Chuck Blair,
CH2M HILL

FR: Andy Krause
Donald Solick,
WEST, Inc.

RE: Summary — Bat Roost Assessment Surveys, Alta East Wind Energy Project.

The following is a draft summary of bat roost assessment surveys conducted at the Alta East Wind Energy Project in Kern County, California. Surveys were conducted June 27 - 30, 2011.

Introduction

CH2M HILL requested that WEST conduct an assessment for potential bat maternity colonies at the Alta East Wind Energy Project (Project) in Kern County, California (Figure 1).

Bats typically form maternity colonies in the late spring when females emerge from hibernation and begin gestation. These can contain between a few individuals to millions of bats depending on the reproductive needs of the species and the capacity of the roost structure. Roosts used as maternity colonies are selected for specific thermal properties and protection from predators, and they tend to be used for many years. Maternity colonies can occur in a variety of roost structures, including caves, mines, buildings, bridges, trees (live or dead), and rock crevices. Large, stable structures such as caves, mines, buildings, and bridges tend to support large maternity colonies (hundreds to millions of bats) as they contain a wide variety of microclimates and are well-protected from predators. Trees and rock crevices tend to support smaller colonies (a few individuals to a few hundred) as they are more prone to disturbance, contain less room for roosting bats, and have more restricted microclimates. Tree- and rock-

roosting bats tend to switch among a number of structures that provide different roosting options over the course of the reproductive season, and this suite of roosts is returned to for many years.

Structures used as roosts are frequently inaccessible to humans and bats typically choose recessed areas for roosting, which makes it difficult to determine if a potential roost structure is occupied. However, bats may be visible as they exit roost structures at dusk, if roost entrances can be identified. Maternity colonies are most likely to be present and observable from May to August, although the dates will vary by bat species and roost location. In this region of the temperate zone, maternity colonies may be active between mid-April and mid-October. Pups are likely born in June and July, and colonies tend to dissolve by early fall when bats migrate to winter hibernacula or warmer climates. For this survey, WEST attempted to identify and survey structures that may potentially provide roost habitat to maternity colonies within the Project area and surrounding vicinity where access was available.

Methods

A list of species with potential to occur in the Project was compiled from range maps (Table 1: Harvey et al. 1999, BCI 2011) to determine what bat species may be present and therefore what types of roost structures might be occupied by bats. Surveys took place June 27 - 30 2011, and consisted primarily of driving on existing roads and hiking throughout the Project area. The Project occurs in habitats that are relatively open (e.g., desert scrub) and the majority of the project area was readily visible from a vehicle at a distance. A Garmin GPS 76CSx was used to identify project boundaries and record the coordinates of potential roost structures. A small portion of the Project area was inaccessible by vehicle and was therefore surveyed on foot. For portions of the project inaccessible by vehicle or foot, an attempt was made to reach a vantage point where the corridor could be scanned with high-powered binoculars to identify potential roost structures. Any potential roost structures (e.g., caves, mines, buildings, bridges, dead trees, and rocky outcrops) were flagged, inspected for bat sign (e.g., guano deposits, living or dead bats), and documented with written descriptions and photographs. Living trees were not evaluated.

Structures identified as potential roosts were surveyed on August 1, 2011, using night vision goggles and an Anabat® acoustic detector placed near the openings. At this time of year it is expected that young bats would be volant (capable of flying) and would also leave roosts to forage. Therefore, detection of bats via entry/exit counts would indicate active bat colonies that are potential maternity colonies. .

Results and Discussion

Two potential roost structures were identified within the Project area (Table 1, Figure 2, Appendix A). Both were rocky outcrops located in the northern section of the Project. These outcrops contained a large variety of crevices and cavities that could be used by smaller maternity colonies or individually-roosting bats (Lausen and Barclay 2003). Species likely to occupy this roost type in the Project include California bat (*Myotis californicus*), western small-footed bat (*Myotis ciliolabrum*), little brown bat, long-legged bat (*Myotis volans*), canyon bat (*Parastrellus hesperus*), pallid bat, big brown bat, western long-eared bat (*Myotis evotis*), and fringed bat (*Myotis thysanodes*). Spotted bats (*Euderma maculatum*) and western mastiff bats (*Eumops perotis californicus*) also roost in rock crevices, but usually in tall cliff faces or other high structures, and are unlikely to use the outcrops identified here. No bats were seen or recorded exiting either of the structures on August 1 (Table 2). While it is possible that some bats occupy these features at different times of year, the relatively small size of these structures, the lack of bat sign (e.g., guano deposits), and the absence of bats on the night surveyed suggest these outcrops do not serve as important roosting habitat for large maternity colonies.

Conclusions

The bat roost assessment conducted within the Project indicates that potential roosting habitat for large colonies of bats is scarce to nonexistent within the Project boundary, and those few features with potential to be used by roosting bats were confirmed inactive at the time of the study. Therefore, construction activities are unlikely to impact large maternity colonies in this area.

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Table 1. Bat species determined from range-maps (BCI website; Harvey et al. 1999) as likely to occur within the Alta East Wind Energy Project, sorted by call frequency.

Common Name	Scientific Name
High Frequency (HF; ≥ 35 kHz)	
western red bat[2]	*Lasiurus blossevillii*
California leaf-nosed bat[3]	*Macrotus californicus*
California bat	*Myotis californicus*
western small-footed bat	*Myotis ciliolabrum*
little brown bat[2,3]	*Myotis lucifugus*
long-legged bat	*Myotis volans*
Yuma bat	*Myotis yumanensis*
canyon bat[2]	*Parastrellus hesperus*
Low Frequency (LF; 15-35 kHz)	
pallid bat	*Antrozous pallidus*
Townsend's big-eared bat	*Corynorhinus townsendii*
big brown bat[2]	*Eptesicus fuscus*
hoary bat[1,2]	*Lasiurus cinereus*
western long-eared bat	*Myotis evotis*
fringed bat	*Myotis thysanodes*
Mexican free-tailed bat[1,2]	*Tadarida brasiliensis mexicanus*
Very Low Frequency (VLF; < 15 kHz)	
spotted bat	*Euderma maculatum*
western mastiff bat	*Eumops perotis californicus*

[1]long-distance migrant

[2]species known to have been killed at wind-energy facilities

[3]species occurrence based upon a single source

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Table 2. Summary of potential roost structures identified within the Alta East Wind Energy Project. All coordinates are in NAD83.

Potential Roost ID	Date Surveyed	UTM Easting	UTM Northing	Structure Type	# Bats Observed	# Bat Passes Detected
R1	8/01/2011	388467	3887276	Rock Outcrop	0	0
R2	8/01/2011	388431	3887245	Rock Outcrop	0	0

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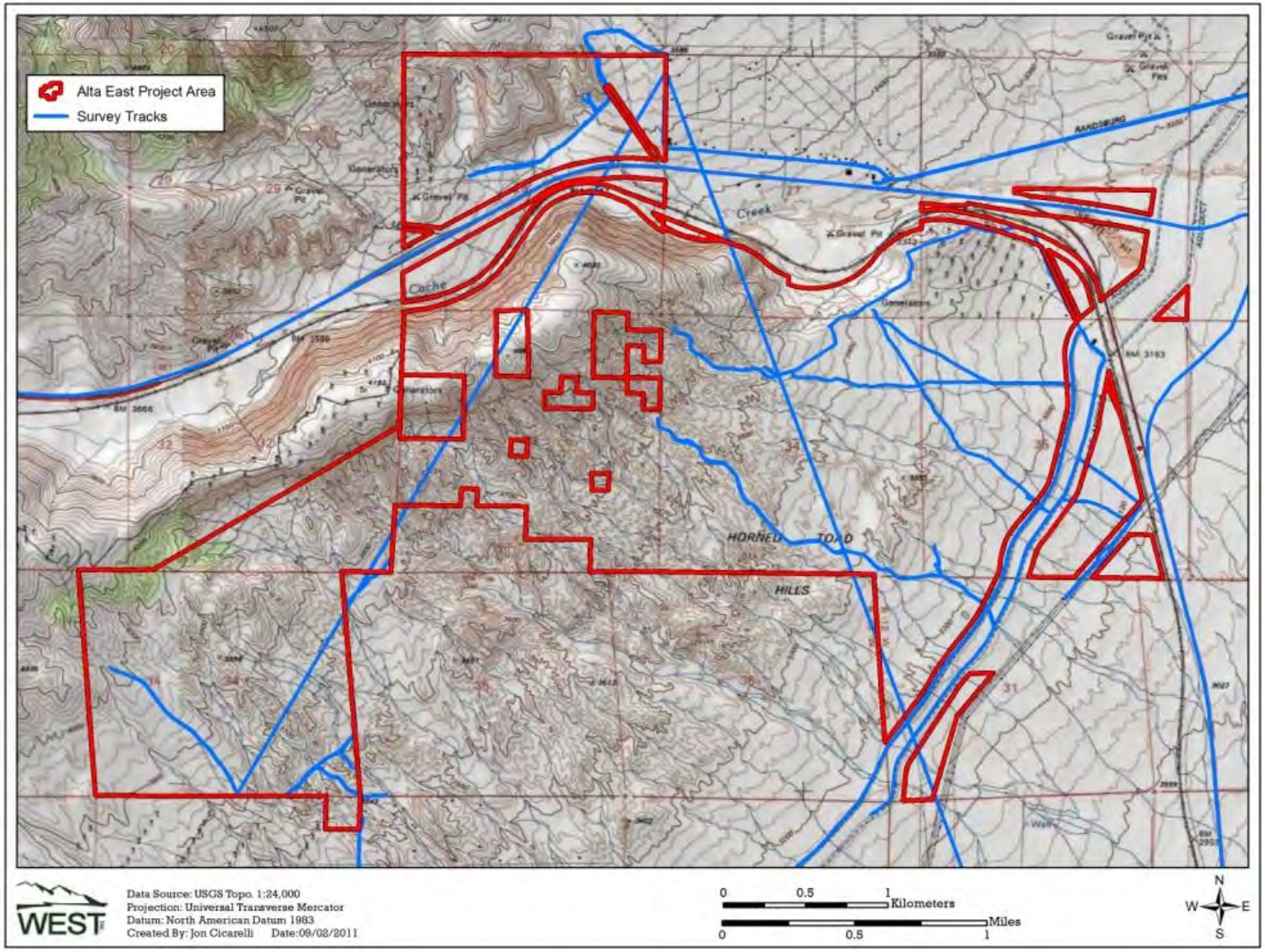

Figure 1. Map of the Alta East Wind Energy Development Project, including GPS tracks documenting survey effort.

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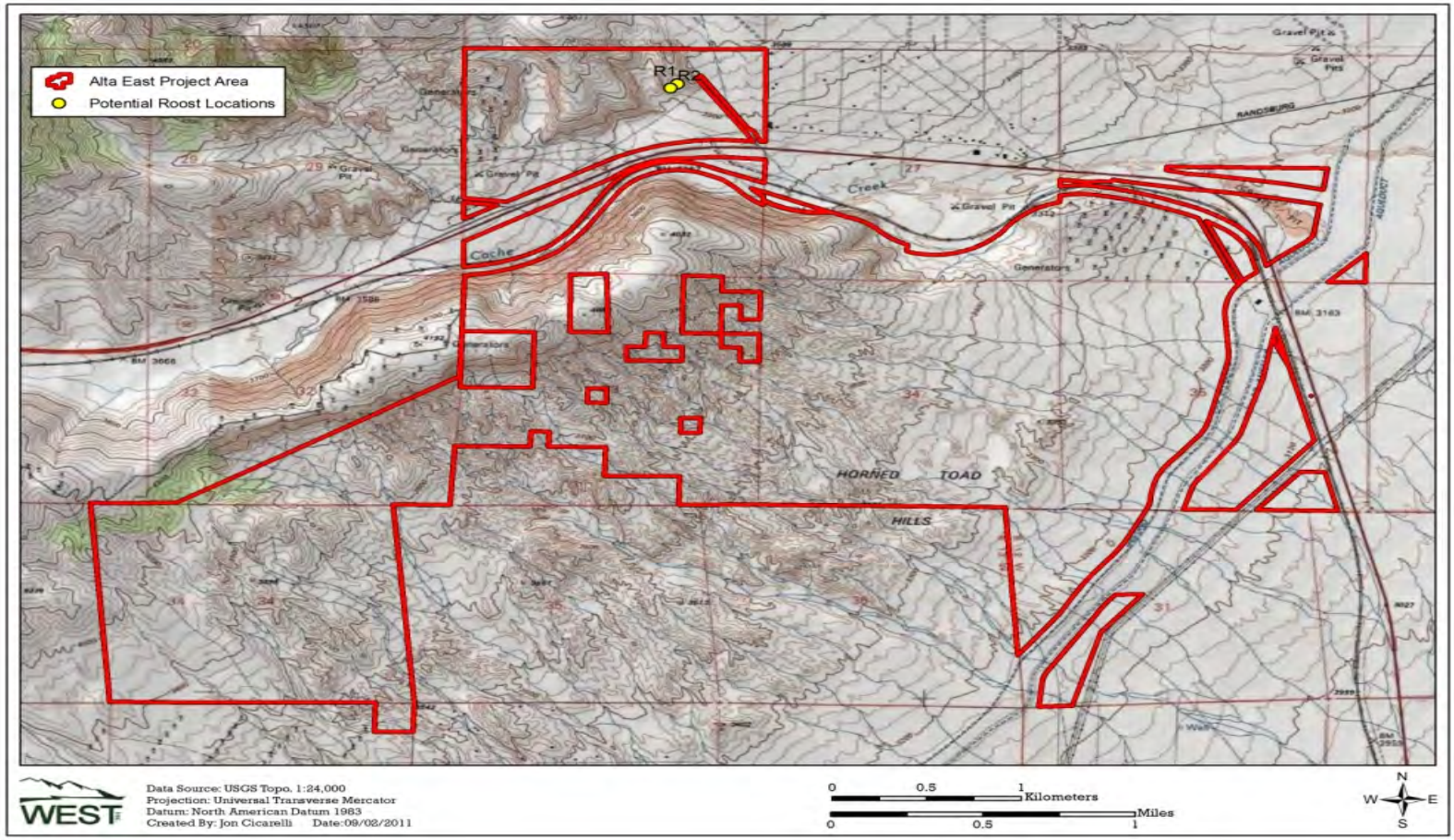

Figure 2. Potential roost structure locations at the Alta East Wind Energy Development Project.

Appendix A. Potential roost structures identified at the Alta East Wind Energy Development Project

R1

R2

Appendix D-12

Technical Memorandum-Results of Bat Acoustic Surveys

NATURAL RESOURCES ◆ SCIENTIFIC SOLUTIONS

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TECHNICAL MEMORANDUM

Results of
Bat Acoustic Surveys at the
Proposed Alta East Wind Resource Area
Kern County, California

December 13, 2010 – November 1, 2011

Submitted by:
Western EcoSystems Technology, Inc.

January 16, 2012

INTRODUCTION

In December of 2010, on behalf of CH2M HILL Engineers, Inc. and Alta Windpower, LLC (Alta Windpower), Western EcoSystems Technology, Inc. (WEST) initiated a second year of acoustic surveys for bats at the Alta East Wind Resource Area (AEWRA) in Kern County, California. These surveys were designed to supplement an initial year of baseline acoustic monitoring conducted in 2009/2010 (Solick et al. 2010). This second year of the studies involved monitoring bat activity in the southwest corner of the AEWRA (see Figure 1), which was not covered in the previous year of surveys. The results of the current study are consistent with those results from the first year of studies, indicating that a wind energy facility at the AEWRA would not have a significant impact to bats. This memorandum summarizes results for the survey period from December 13, 2010, through November 1, 2011.

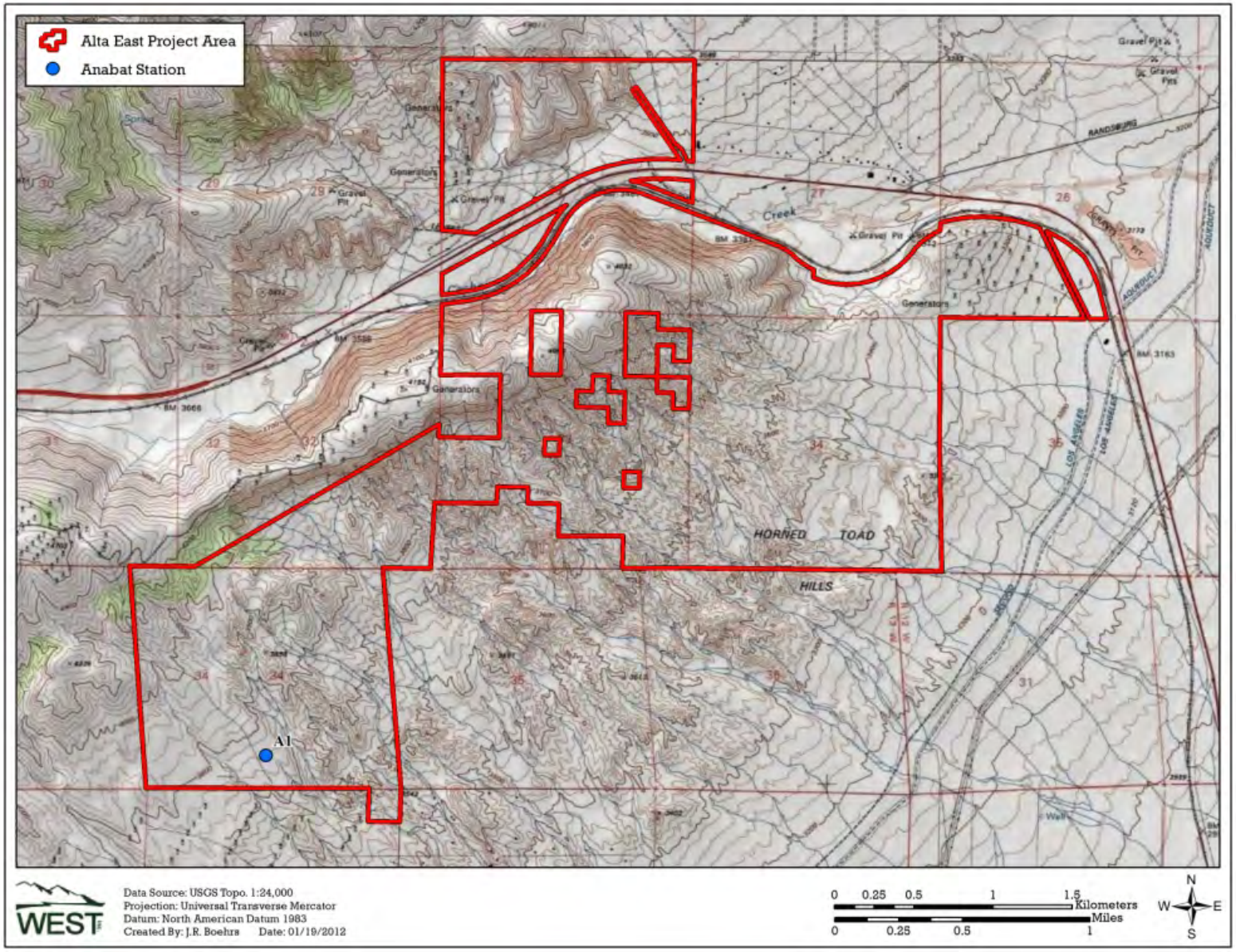

Figure 1. Map of the Alta East Wind Resource Area showing location of the Anabat station.

STUDY AREA

The proposed AEWRA is located in southeastern Kern County, approximately two miles (3.2 kilometers [km]) north-northwest of the unincorporated city of Mojave, and 10 miles (16 km) east of the city of Tehachapi (Figure 1). The study area comprises undeveloped rangeland on a combination of privately-owned land and land administered by the Bureau of Land Management (BLM).

The AEWRA falls within the high desert plains and hills on the western edge of the Mojave Desert. The Tehachapi Mountains are located to the north and west of the study area and transition into Mojave Desert towards the south and east. Elevations within the study area range from approximately 3,100 to 4,200 feet (ft; 940 to 1,280 meters [m]) above sea level, with the highest elevations occurring in the northwestern portion of the study area (Figure 1). The habitat ranges from lowland creosote (*Larrea tridentata*) scrub and Joshua tree (*Yucca brevifolia*) woodland in the southeast to juniper (*Juniperus* spp.) shrubland on the steeper, rocky slopes in the north and west. Water within the AEWRA is limited to a network of ephemeral drainages; there are no perennial surface water sources within the study area. Highway 58 bisects the AEWRA, an underground portion of the Los Angeles Aqueduct runs along the southeast corner of the study area, and a network of dirt roads and off-highway vehicle (OHV) trails run throughout the study area (Figure 1).

METHODS

The protocol used for this study follows guidelines set forth by the California Energy Commission (CEC and CDFG 2007). For Category 2 projects, the guidelines call for continuous monitoring of bat activity at meteorological (met) towers on site for 12 consecutive months. Surveys using passive ultrasonic bat detectors were initiated December 13, 2010, at one met tower located within the southwest corner of the AEWRA (Figure 1). Bat detectors are a recommended method to index and compare habitat use by bats. The use of bat detectors for calculating an index to bat impacts is a primary bat risk assessment tool for baseline wind development surveys (Arnett 2007; Kunz et al. 2007a). A total of two AnaBat™ SD1 bat detectors (Titley™ Scientific, Australia) were deployed at the AEWRA throughout the survey period. One of the detectors was elevated 30 meters (m; 98 feet [ft]) on the met tower, while the other detector was positioned approximately 2 m (6.5 ft) above the ground at the base of the tower. The raised microphone was encased in a Bat-Hat weatherproof housing (EME Systems, Berkeley, California), and attached to a coaxial cable that transmitted ultrasonic sounds to an AnaBat unit at the base of the tower. Detectors were programmed to collect data continuously from 30 minutes (min) before sunset to 30 min after sunrise, the period corresponding to greatest bat activity. A technician checked the detectors every two weeks, collected the data, and replaced power supplies.

Both detectors were deployed on December 13, 2010. On September 8, 2011, after approximately nine months of continuous data collection, fieldwork associated with the AEWRA

was suspended per request by Alta Windpower. At this time, both AnaBat detectors were left in the field but were no longer serviced. The ground-based AnaBat continued to collect data through September 12, 2011, until the storage capacity of the memory card was exceeded, while the raised detector continued to collect data through November 1, 2011. As a result, the sampling period for each detector varies slightly.

AnaBat detectors record bat echolocation calls with a broadband microphone. The echolocation sounds are translated into frequencies audible to humans by dividing the frequencies by a predetermined ratio. A division ratio of eight was used for the study. Bat echolocation detectors also detect other ultrasonic sounds, such as those sounds made by insects, raindrops hitting vegetation, and other sources. A sensitivity level of six was used to reduce interference from these other sources of ultrasonic noise, as this level of sensitivity is optimal for removing noise while still recording the majority of bat calls within range (Brooks and Ford 2005). Calls were recorded to a compact flash memory card with large storage capacity. The detection range of AnaBat detectors depends on a number of factors (e.g., echolocation call characteristics, microphone sensitivity, habitat, the orientation of the bat, atmospheric conditions; Limpens and McCracken 2004), but is generally less than 30 m (98 ft) due to atmospheric absorption (attenuation) of echolocation pulses (Fenton 1991). To ensure similar detection ranges among detectors, microphone sensitivities were calibrated using a BatChirp (Tony Messina, Las Vegas, Nevada) ultrasonic emitter as described in Larson and Hayes (2000).

The units of bat activity were number of bat passes (Hayes 1997). A pass was defined as a continuous series of two or more call notes produced by an individual bat with no pauses between call notes of more than one second (White and Gehrt 2001, Gannon et al. 2003). The number of bat passes was determined by downloading the data files to a computer and tallying the number of echolocation passes recorded. Total number of passes was corrected for effort by dividing by the number of detector nights. For each station, bat passes were sorted into three groups, based on their minimum frequency, that correspond roughly to species groups of interest. For example, species such as western red bat (*Lasiurus blossevellii*) and most species in the genus *Myotis* generally echolocate at frequencies at or above 40 kilohertz (kHz), while species such as little brown bat (*Myotis lucifigus*) and western yellow bat (*Lasiurus xanthinus*) produce calls between 30 and 40 kHz, and silver-haired bat (*Lasionycteris noctivagans*) and hoary bat (*Lasiurus cinereus*) have echolocation frequencies that fall between 15 and 35 kHz. Therefore, passes were classified as either high-frequency (HF; greater than or equal to 40 kHz), mid-frequency (MF; between 30 and 40 kHz), and low-frequency (LF; below 30 kHz) passes. To establish which species may have produced passes in each category, a list of species expected to occur in the study area was compiled from range maps (Table 1; Harvey et al. 1999, BCI 2012). Data determined to be noise (produced by a source other than a bat) or call notes that did not meet the pre-specified criteria to be termed a pass were removed from the analysis.

Table 1. Bat species determined from range-maps (Harvey et al. 1999, BCI 2012) as likely to occur at the Alta East Wind Resource Area, sorted by call frequency.

Common Name	State/Federal Status	Scientific Name
High-Frequency (>40 kHz)		
California bat		*Myotis californicus*
California leaf-nosed bat	SSC	*Macrotus californicus*
canyon bat[1]		*Parastrellus hesperus*
cave bat[1]	SSC	*Myotis velifer*
long-legged bat[1]		*Myotis volans*
western red bat[1]	SSC	*Lasiurus blossevillii*
western small-footed bat		*Myotis ciliolabrum*
Yuma bat		*Myotis yumanensis*
Mid-Frequency (30-40 kHz)		
little brown bat[1]		*Myotis lucifugus*
western long-eared bat[1]		*Myotis evotis*
western yellow bat[1]	SSC	*Lasiurus xanthinus*
Low-Frequency (<30 kHz)		
big brown bat[1]		*Eptesicus fuscus*
fringed bat		*Myotis thysanodes*
hoary bat[1,2]		*Lasiurus cinereus*
Mexican free-tailed bat[1,2]		*Tadarida brasiliensis mexicanus*
pallid bat	SSC	*Antrozous pallidus*
pocketed free-tailed bat[1]	SSC	*Nyctinomops femorosaccus*
silver-haired bat[1,2]		*Lasionycteris noctivagans*
Townsend's big-eared bat	SSC	*Corynorhinus townsendii*
spotted bat	SSC	*Euderma maculatum*
western mastiff bat	SSC	*Eumops perotis califonicus*

[1]species known to have been killed at wind energy facilities
[2]long-distance migrant
Species found as fatalities reported in Anderson et al. 2004, Kunz et al. 2007b, Baerwald 2008, Miller 2008, Chatfield et al. 2009, Piorkowski and O'Connell 2010.
SSC = State Species of Special Concern (CDFG 2011)

Several bat species, particularly those belonging to the *Lasiurus* genus (e.g., hoary bat and eastern red bat [*Lasiurus borealis*]), have been found as fatalities in higher proportions than other species (Arnett et al. 2008). Within the high, mid, and low-frequency categories described above, an attempt was made to identify passes made by hoary bat and western red bat. Passes that produced a distinct U-shaped sonogram and that exhibited variability in the minimum frequency across the call sequence were identified as belonging to the *Lasiurus* genus (C. Corben, pers comm.). Hoary and western red bats were distinguished based on minimum frequency; hoary bats typically produce calls with minimum frequencies between 18 and 24 kHz, whereas western red bats typically emit calls with minimum frequencies between 38 and 50 kHz (J. Szewczak, pers comm.). Only sequences containing three or more calls were used for species identification.

RESULTS

During the period December 13, 2010, to November 1, 2012, WEST recorded a total of 124 bat passes during 557 detector-nights, or 0.23 ± 0.13 (mean ± standard error [SE]) bat passes per detector per night (Table 2). AnaBat units were operational for 86.0% of the sampling period (Figure 2).

Spatial Variation

The ground-based AnaBat station, A1g, recorded nearly twice the activity (0.30 ± 0.23 bat passes per detector-night) as the raised station, A1h (0.16 ± 0.07; Table 2, Figure 3).

Species Composition

Passes attributable to LF bats comprised the majority of bat activity (83.9% of all bat passes; Table 2, Figure 3), suggesting greater relative abundance of species such as big brown bat (*Eptesicus fuscus*) and Mexican free-tailed bat (*Tadarida brasiliensis mexicana*; Table 1). Mid-frequency bats comprised a further 15.3% of activity, and HF bats comprised less than 0.1% of total bat activity (Table 2, Figure 3). Included in the LF bat category were five hoary bat passes, with three recorded at the ground station and six recorded at the raised station (Table 2). No western red bat calls were identified. The parameters used to identify hoary and western red bat calls were conservative. Given the high intraspecific variability of bat calls and the number of call files that were too fragmented for proper identification, it is likely that more hoary bat and western red bat calls were recorded during the study than were positively identified.

Table 2. Results of acoustic bat surveys conducted within the Alta East Wind Resource Area from December 13, 2010 to November 1, 2011. Passes are separated by call frequency: high frequency (HF), medium frequency (MF), and low frequency (LF).

AnaBat Stations	Location	# of HF Bat Passes	# of MF Bat Passes	# of LF Bat Passes	# of Hoary Bat Passes*	Total Bat Passes	Detector-Nights	Bat Passes/ Night**
A1g	ground	1	11	59	3	71	234	0.30±0.23
A1h	raised	0	8	45	6	53	323	0.16±0.07
Total		**1**	**19**	**104**	**9**	**124**	**557**	**0.23±0.13**

*hoary bat passes were included in the low-frequency (LF) category numbers.
**± bootstrapped standard error.

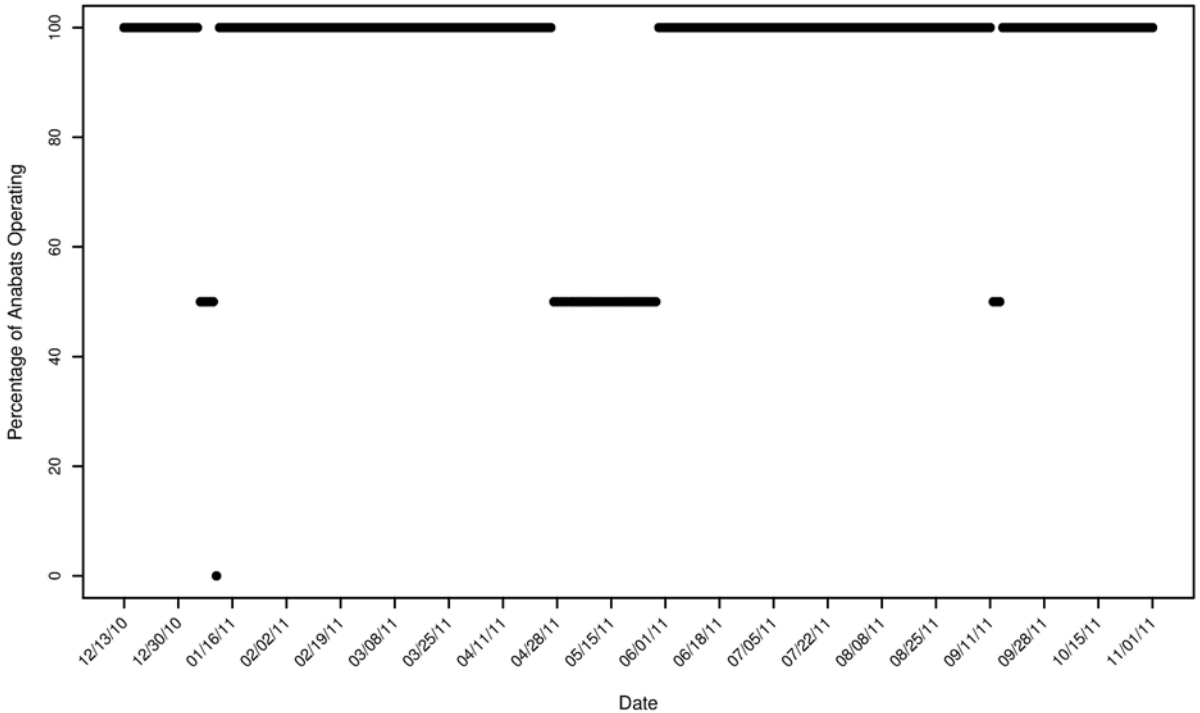

Figure 2. Operational status of AnaBat detectors deployed at the Alta East Wind Resource Area during each night of the study period December 13, 2010 to November 1, 2011.

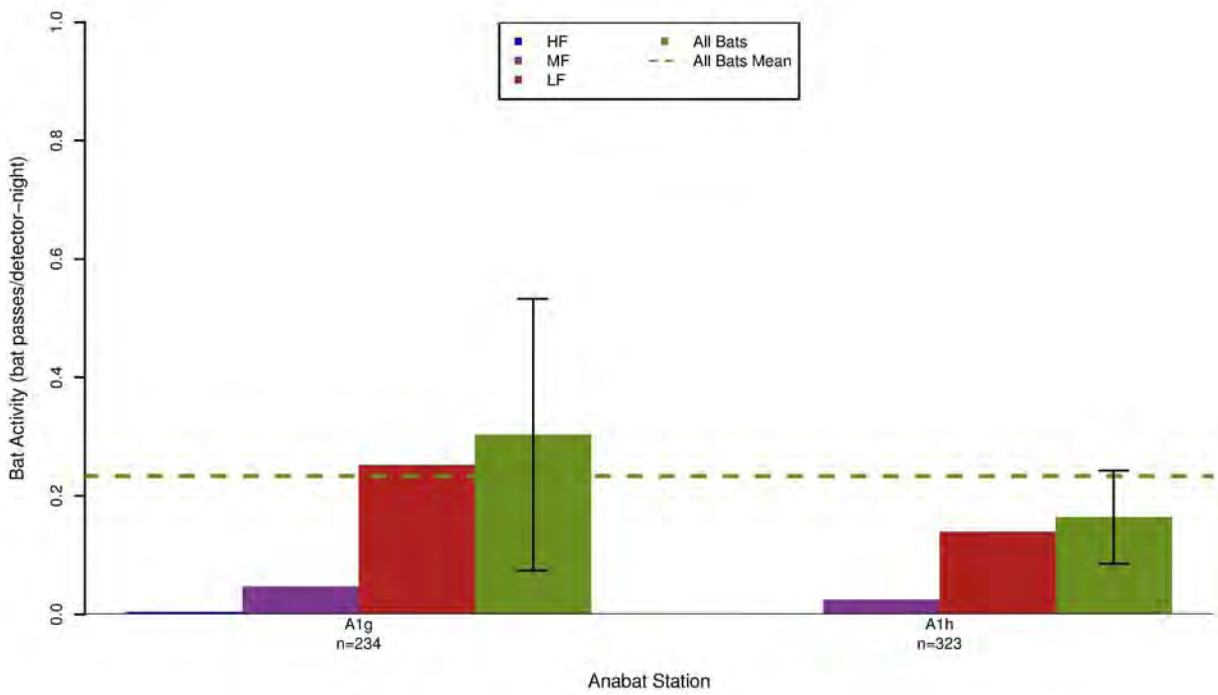

Figure 3. Number of high-frequency (HF), mid-frequency (MF), and low-frequency (LF) bat passes per detector-night recorded at AnaBat stations in the Alta East Wind Resource Area from December 13, 2010 to November 1, 2011. The bootstrapped standard errors are represented by the black error bars on the 'All Bats' columns.

Temporal Variation

Overall, bat activity was greatest in the winter of 2010/2011 (0.64 ± 0.52 passes per detector-night), followed by the fall of 2011 (0.13 ± 0.04; Table 3). Average bat activity during the spring and summer was relatively very low (0.01 ± 0.01 and 0.03 ± 0.02 passes per detector-night, respectively; Table 3, Figure 4). Among individual detectors, the highest seasonal activity rates were also recorded in the winter (0.90 passes per detector-night at A1g, and 0.38 at A1h), with the majority (81.3%) of activity at each station attributed to LF bats (Table 3, Figure 4).

On a weekly basis, bat activity was highest during the first week of the study period (December 13 -19, 2010), with an average of 5.71 bat passes per detector-night, comprised primarily by LF bats (Figure 5). Very low levels of activity were recorded throughout the remainder of the winter, spring, and summer (Figure 5). A second, much smaller peak in activity occurred during early- to mid-September (Figure 5).

Table 3. The number of bat passes per detector-night recorded at the Alta East Wind Resource Area during each season from December 13, 2010 to November 1, 2011 separated by call frequency: high-frequency (HF), medium-frequency (MF), low-frequency (LF), and all bats (AB).

Station	Call Frequency	Winter Dec 13, 2010 – Feb 28, 2011	Spring Mar 1, 2011 – May 31, 2011	Summer Jun 1, 2011 – July 14, 2011	Fall July 15, 2011 – Nov 1, 2011	Fall Migration Jul 30 – Oct 14
A1g	LF	0.76	0	0.02	0.05	0.02
	MF	0.14	0	0	0.02	0.02
	HF		0	0	0.02	0.02
	AB	0.9	0	0.02	0.08	0.07
A1h	LF	0.29	0.02	0.05	0.17	0.18
	MF	0.09	0	0	0.01	0.01
	HF		0	0	0	0
	AB	0.38	0.02	0.05	0.18	0.19
Overall	**LF**	**0.52±0.41**	**0.01±0.01**	**0.03±0.02**	**0.11±0.04**	**0.10±0.05**
	MF	**0.11±0.11**	**0.00±0.00**	**0.00±0.00**	**0.01±0.01**	**0.02±0.02**
	HF	**0.00±0.00**	**0.00±0.00**	**0.00±0.00**	**0.01±0.01**	**0.01±0.01**
	AB	**0.64±0.52**	**0.01±0.01**	**0.03±0.02**	**0.13±0.04**	**0.13±0.06**

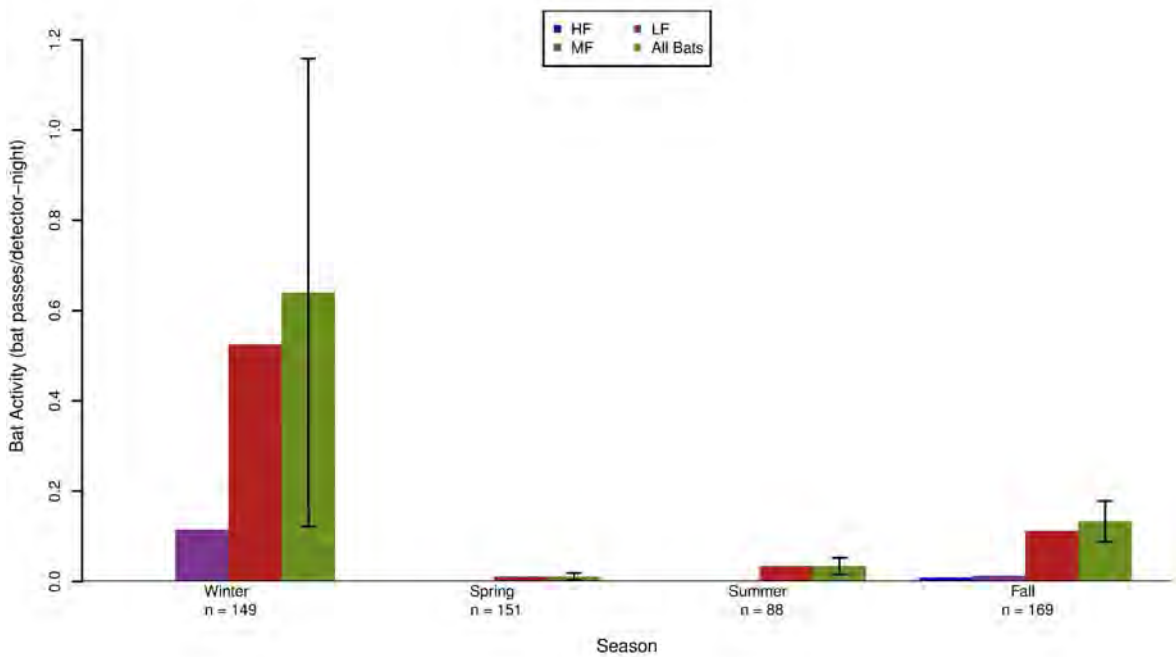

Figure 4. Seasonal bat activity by high-frequency (HF), mid-frequency (MF), low-frequency (LF), and all bats at the Alta East Wind Resource Area from December 13, 2010 to November 1, 2011. The bootstrapped standard errors are represented on the 'All Bats' columns.

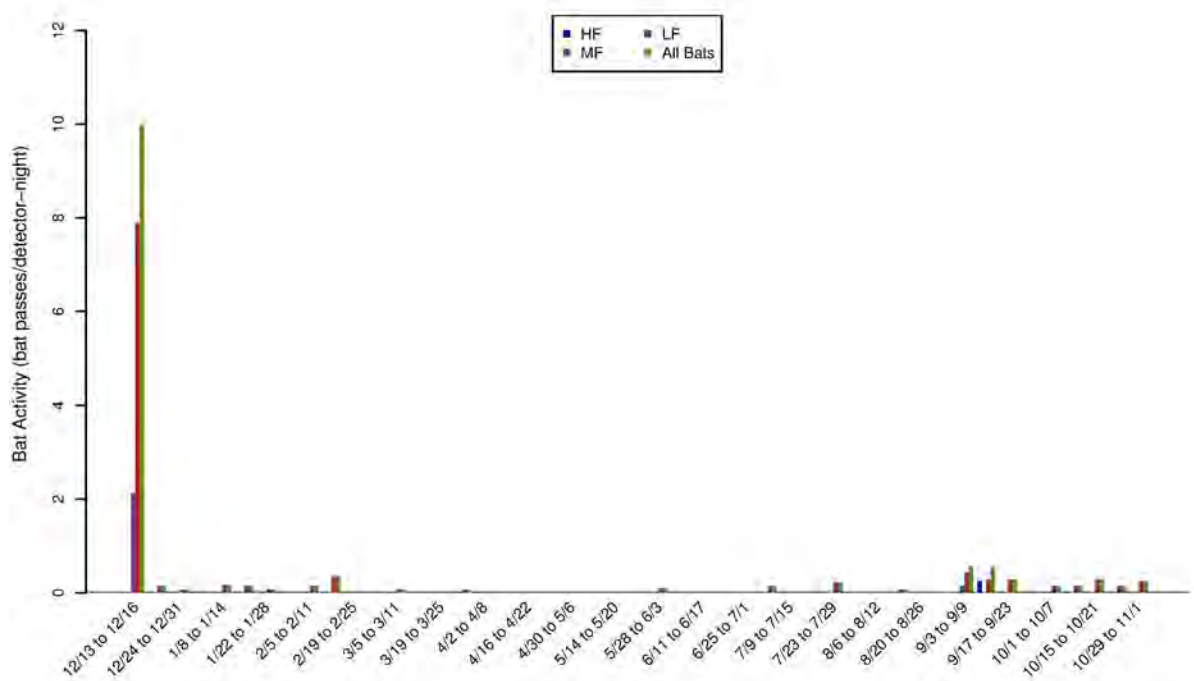

Figure 5. Weekly patterns of bat activity by high-frequency (HF), mid-frequency (MF), low-frequency (LF), and all bats at the Alta East Wind Resource Area for the study period December 13, 2010 to November 1, 2011.

DISCUSSION

Potential Bat Impacts

Assessing the potential impacts of wind energy development to bats at the AEWRA is complicated because the proximate and ultimate causes of bat fatalities at turbines are poorly understood (Kunz et al. 2007a, 2007b; Baerwald et al. 2008; Cryan and Barclay 2009; Long et al. 2010a, 2010b) and monitoring elusive, night-flying animals is inherently difficult (O'Shea et al. 2003). Although installed capacity for wind energy has increased rapidly in recent years, release of study results from these existing wind energy facilities has lagged the influx of newly proposed facilities (Kunz et al. 2007b); therefore, it is often the case that information gleaned from existing wind energy facilities is not available to inform assessments at proposed facilities. To date, post-construction monitoring studies of wind energy facilities suggest that:

1) Bat fatality shows a rough positive correlation with bat activity (Kunz et al. 2007b);

2) The majority of fatalities occur during the post-breeding or fall migration season (August and September; Johnson 2005, Arnett et al. 2008);

3) Migratory tree-roosting species (e.g., western red, hoary, and silver-haired bats) compose approximately 75% of reported bats killed (Arnett et al. 2008, Gruver et al. 2009, 2011), and;

4) The level of bat fatalities depends on many variables, including local environmental characteristics and specific weather conditions, but no single predictive factor has yet been identified. However, some of the highest reported bat fatality rates recorded to date have occurred at wind energy facilities located along forested ridge tops in the eastern and northeastern US and at some wind energy facilities in agricultural regions of the Midwest (Table 4).

Based on these patterns, current guidance to estimate potential fatality levels at a proposed wind energy facility involves evaluation of on-site acoustic monitoring data in terms of activity levels, seasonal variation, and species composition (Kunz et al. 2007b), as well as comparison to regional fatality patterns.

Overall Bat Activity

To date, relatively few studies of wind energy facilities have recorded both bat passes per detector-night and bat fatality rates (Table 4). Although it has been assumed that an association may exist for pre-construction activity and post-construction fatalities, to date such a relationship has not been established empirically due to insufficient data.

For the studies that have measured both activity and fatalities and are used here for comparison (Table 4), most data were collected during the fall using AnaBat detectors placed near the ground and none of the detectors were located near features attractive to bats. Therefore, this report relies on the mean bat activity from the ground-based detector recorded at the AEWRA

during the fall migration period of 2011 (0.07 passes per detector-night), as well as fall data from the 2009/2010 study (0.06; Solick et al. 2010), to assess potential risk of bat fatality at the AEWRA relative to other studies with similar data.

While inconsistencies among studies (e.g., differences in study period length and timing, type of equipment, placement of equipment, and presentation of data) do not allow for direct comparison across studies, some generalizations can be made. For facilities that have estimated pre-construction activity and post-construction fatality rates, the highest (38.3) and one of the lowest (0.3) mean bat passes per detector night generally corresponded with the highest (31.69) and lowest (1.4) bat fatalities/megawatt (MW)/year, but this relationship in bat activity and bat fatalities is not consistent across all studies (Table 4). For example, fatalities were relatively low (7.16 fatalities/MW/study period; Jain 2005) at the Top of Iowa Wind Farm in 2003 despite relatively high activity (35.7 bat passes/detector-night; Jain 2005), and lower bat activity at the Blue Sky Green Field, Wisconsin Wind Energy Center (7.7 bat passes/detector-night; Gruver 2008) corresponded with a relatively high fatality estimate (24.57 fatalities/MW/study period; Gruver et al. 2009; Table 4).

Additionally, it is unclear whether monitoring bat activity near ground level accurately indexes activity at all heights of interest (e.g., hub height), or whether it is an effective method for estimating bat fatality rates. Some of the studies in Table 4 show a general correlation between bat activity and fatalities; however, some researchers have suggested that bat activity near the ground may not adequately predict bat fatality rates (Baerwald and Barclay 2009), and this may be due to differences in species ecologies (e.g., Norberg and Rayner 1987). For example, Hayes and Gruver (2000) found that activity by *Myotis* bats was more common in the lower canopy and activity by LF bats was more common in the upper canopy in the Pacific Northwest. This pattern is consistent with the observations that LF species are more often found as fatatities at wind energy projects than Myotids and other HF bats (Arnett et al. 2008), assuming that flying at greater heights leads to increased risk of turbine-related fatality. In 2011, fall bat activity recorded by the raised detector at the AEWRA (0.16 ± 0.07; Table 2) was nearly half of that recorded by the ground-based detector (0.30 ± 0.23) and may provide a more accurate estimate of potential bat risk. However, data to support this supposition are currently lacking.

Temporal Variation

The highest bat activity rates were recorded during the first week of the study period, December 13-19, 2010, with much lower activity levels recorded throughout the remainder of the study period (Figures 4 and 5). The relatively large spike in activity in December may represent foraging by resident LF species, such as big brown bats, Mexican free-tailed bats, and pallid bats (*Antrozous pallidus*). Due to their larger body size, these species are able to withstand harsher temperatures in the late fall and early winter as they forage throughout the study area in preparation for hibernation. The comparatively very low levels of bat activity in February, March, and April likely indicate that most bats had left the area for winter hibernacula or warmer climates. The much smaller peak in activity in September, particularly by LF species, may represent migration of bats through the area.

Most bat fatality studies at wind energy facilities in the US have shown a peak in fatality in August and September (the fall migration period), generally lower mortality earlier in the summer and very low mortality during the spring (Johnson 2005, Arnett et al. 2008). While the survey effort varied among the different studies, a general association between the timing of increased bat call rates and mortality was suggested in the studies that combine AnaBat and fatality surveys, with call rates and fatalities both peaking during the fall migration period. Based on the available data on timing of fatalities, it is expected that bat fatalities at the AEWRA will be highest in late summer through early fall; however, based on the data collected during this study, fatalities during the winter months are also a possibility.

Species Composition

Twelve of the 21 bat species likely to occur in the AEWRA are known as fatalities at wind energy facilities in North America (Table 1). Acoustic surveys using AnaBat detectors enable bat analysts to classify bat calls to frequency groups and, in some cases, to species. Approximately 84% of passes recorded during the study were from LF bats, suggesting greater relative abundance of species such as Mexican free-tailed bat, hoary bat, and big brown bat (Table 1). These results are consistent with those from the initial year of bat surveys at the AEWRA during which LF species comprised nearly all (99%) of the total bat activity (Solick et al. 2010).

Some low-frequency species, such as hoary bat and silver-haired bat, have been found as fatalities in higher proportions than other species (Arnett et al. 2008). Both species are likely migrants through the AEWRA and will likely have a higher risk of collision risk with project turbines than other species that were detected at the site.

Potential Bat Fatality Rates

Bat fatality rates from studies at wind energy facilities across North America have ranged from 0.16 (Gritski et al. 2009b, Derby et al. 2010b) to 39.70 bat fatalities/MW/year (Fiedler et al. 2007; Table 4). In general, fatality rates have been highest in the northeast, the Midwest, and the southeast, and lowest in the Pacific Northwest and California, although a high degree of variation in fatality rates is present for most regions. To date, some of the highest levels of bat fatalities have been reported from turbines set on forested Appalachian ridges (Arnett et al. 2008), but relatively high rates have also been reported from agricultural regions in the Midwest (e.g., Cedar Ridge [BHE Environmental 2010, 2011] and Blue Sky Green Field [Gruver et al. 2009]). Bat fatality studies have been conducted at four wind energy facilities located in California. However, no corresponding pre-construction activity rates exist for these facilities. Thus far, bat fatality rates at wind energy facilities in California have ranged from 0.24 to 3.92 bats/MW/year (Table 4).

Overall bat activity recorded at the AEWRA during this study (0.23 ± 0.13 bat passes per detector-night) is very low, and is consistent with bat activity recorded during the previous year of study at the AEWRA (0.22 ± 0.03 bat passes per detector-night; Solick et al. 2010; Table 3). Likewise, for purposes of comparison with other studies across the US, fall activity rates recorded by ground-based detectors at the AEWRA was similar between the two years of study (0.07 passes per detector-night in 2010/2011 and 0.06 in 2009/2010; Table 4). Based on reported fatality rates at wind energy facilities in California and the Pacific Northwest regions of

the US, the bat activity observed at the AEWRA during two years of study, as well as the habitats within the study area, it is expected that the potential risk to bats from turbine operations to be lower than or similar to the rates observed at other western facilities, and not nearly as high as the rates observed at eastern ridgeline facilities. As well, comparatively very few bat mortalities have been found during post-construction fatality surveys at existing wind energy facilities in the immediate vicinity (see Anderson et al. 2004, M.H. Wolfe and Associates 2008, BRC 2010, Chatfield et al. 2010), further suggesting that fatality rates at the AEWRA will be relatively low.

Table 4. Wind energy facilities in North America with activity and fatality data for bats, grouped by geographic region.

Wind Energy Facility	Bat Activity Estimate[A]	Fatality Estimate[B]	No. of Turbines	Total MW
Alta East, CA (2010/2011; this study)	**0.07**			
Alta East, CA (2009/2010)	0.06			
California				
Shiloh I, CA		3.92	100	150
High Winds, CA (2004)		2.51	90	162
Dillon, CA		2.17	45	45
High Winds, CA (2005)		1.52	90	162
Alite, CA		0.24	8	24
Pacific Northwest				
Biglow Canyon, OR (Phase II; 2009/2010)		2.71	65	150
Nine Canyon, WA		2.47	37	48.1
Stateline, OR/WA 2003		2.29	454	263
Biglow Canyon, OR (Phase I; 2008)		1.99	76	125.4
Leaning Juniper, OR		1.98	67	100.5
Big Horn, WA		1.90	133	199.5
Combine Hills, OR		1.88	41	41
Pebble Springs, OR		1.55	47	98.7
Hopkins Ridge, WA (2008)		1.39	87	156.6
Elkhorn, OR (2008)		1.26	61	101
Vansycle, OR		1.12	38	24.9
Klondike III, OR		1.11	122	375
Stateline, OR/WA 2002		1.09	454	263
Tuolumne (Windy Point I), WA		0.94	62	136.6
Klondike, OR		0.77	16	24
Hopkins Ridge, WA (2006)		0.63	83	150
Biglow Canyon, OR (Phase I; 2009)		0.58	76	125.4
Hay Canyon, OR		0.53	48	100.8
Klondike II, OR		0.41	50	75
Wild Horse, WA		0.39	127	229
Goodnoe, WA		0.34	47	94
Marengo II, WA (2009)		0.27	39	70.2
Marengo I, WA (2009)		0.17	39	70.2
Klondike IIIa, OR		0.16	125	375

Table 4. Wind energy facilities in North America with activity and fatality data for bats, grouped by geographic region.

Wind Energy Facility	Bat Activity Estimate[A]	Fatality Estimate[B]	No. of Turbines	Total MW
Rocky Mountains				
Summerview, Alb. (2008)	5.3[C]	11.42	39	70.2
Judith Gap, MT		8.93	90	135
Foote Creek Rim, WY (Phase I; 1999)		3.97	69	41.4
Foote Creek Rim, WY (Phase I; 2001-2002)		1.57	69	41.4
Foote Creek Rim, WY (Phase I; 2000)	2.2[C,D]	1.05	69	41.4
Southwest				
Dry Lake, AZ	6.9	4.29	30	63
Midwest				
Cedar Ridge, WI (2009)	9.97[C,D,E,F]	30.61	41	67.6
Blue Sky Green Field, WI	7.7[F]	24.57	88	145
Cedar Ridge, WI (2010)	9.97[C,D,E,F]	24.12	41	68
Forward Energy Center, WI		18.17	86	129
Top of Iowa, IA (2004)	35.7[C]	10.27	89	80
Crystal Lake II, IA		7.42	80	200
Top of Iowa, IA (2003)	35.7[C]	7.16	89	80
Kewaunee County, WI		6.45	31	20.46
Ripley, Ont. (2008)		4.67	38	76
Winnebago, IA		4.54	10	20
Buffalo Ridge, MN (Phase II; 2001/Lake Benton I)	1.9[C]	4.35	143	107.25
Buffalo Ridge, MN (Phase III; 2001/Lake Benton II)	1.9[C]	3.71	138	103.5
Crescent Ridge, IL		3.27	33	54.45
Buffalo Ridge, MN (Phase III; 1999)		2.72	138	103.5
Buffalo Ridge, MN (Phase II; 1999)		2.59	143	107.25
Morraine II, MN		2.42	33	49.5
Buffalo Ridge, MN (Phase II; 1998)		2.16	143	107.25
Prairie Winds (Minot), ND		2.13	80	115.5
Grand Ridge, IL		2.10	66	99
Buffalo Ridge, MN (Phase III; 2002/Lake Benton II)	2.2[C]	1.81	138	103.5
Buffalo Ridge, MN (Phase II; 2002/Lake Benton I)	2.2[C]	1.64	143	107.25
Elm Creek, MN		1.49	67	100
Wessington Springs, SD		1.48	34	51
NPPD Ainsworth, NE		1.16	36	20.5
Buffalo Ridge, MN (Phase I; 1999)		0.74	73	25
Buffalo Ridge I, SD (2010)		0.16	24	50.4
Southern Plains				
Barton Chapel, TX		3.06	60	120
Southeast				
Buffalo Mountain, TN (2005)		39.70	18	28.98
Buffalo Mountain, TN (2000-2003)	23.7[D]	31.54	3	1.98

Table 4. Wind energy facilities in North America with activity and fatality data for bats, grouped by geographic region.

Wind Energy Facility	Bat Activity Estimate[A]	Fatality Estimate[B]	No. of Turbines	Total MW
	Northeast			
Mountaineer, WV	38.3[D]	31.69	44	68
Mount Storm, WV (2009)		24.32	132	264
Mount Storm, WV (2010)		15.18	132	264
Casselman, PA (Spring & Fall 2008)		12.61	23	34.5
Maple Ridge, NY (2006)		11.21	120	198
Maple Ridge, NY (2007)		9.42	195	321.75
Cohocton/Dutch Hill, NY (2009)		8.62	50	125
Noble Bliss, NY (2008)		7.80	67	100
Mount Storm, WV (Fall 2008)	35.2	6.62	82	164
Wolfe Island, Ont (July-December 2009)		6.42	86	197.8
Maple Ridge, NY (2008)		4.96	195	321.75
Noble Clinton, NY (2009)		4.50	67	100
Noble Ellenburg, NY (2009)		3.91	54	80
Noble Bliss, NY (2009)		3.85	67	100
Lempster, NH (2010)		3.57	12	24
Noble Ellenburg, NY (2008)		3.46	54	80
Noble Clinton, NY (2008)		3.14	67	100
Lempster, NH (2009)		3.08	12	24
Mars Hill, ME (2007)		2.91	28	42
Munnsville, NY (2008)		1.93	23	34.5
Stetson Mountain, ME (2009)	0.3[G]	1.40	38	57
Mars Hill, ME (2008)		0.45	28	42

A = Bat passes per detector-night
B = Number of fatalities/MW/year
C = Activity rate was averaged across phases and/or years
D = Activity rate calculated by WEST from data presented in referenced report
E = Activity rate based on data collected at various heights all other activity rates are from ground-based units only
F = Activity rate based on pre-construction monitoring; data for all other activity and fatality rates were collected concurrently
G = Activity rate from one unit placed on a nacelle

Table 4 (*continued*). Wind energy facilities in North America with comparable fatality data for bats, grouped by geographic region.

Data from the following sources:

Project, Location	Activity Reference	Fatality Reference	Project, Location	Activity Reference	Fatality Reference
Alite, CA		Chatfield et al. 2010	Klondike II, OR		NWC and WEST 2007
Barton Chapel, TX		WEST 2011	Klondike III, OR		Gritski et al. 2009a
Big Horn, WA		Kronner et al. 2008	Klondike IIIa, OR		Gritski et al. 2009b
Biglow Canyon, OR (Phase I; 2008)		Jeffrey et al. 2009a	Leaning Juniper, OR		Kronner et al. 2007
Biglow Canyon, OR (Phase I; 2009)		Enk et al. 2010	Lempster, NH (2009)		Tidhar et al. 2010
Biglow Canyon, OR (Phase II; 2009/2010)		Enk et al. 2011	Lempster, NH (2010)		Tidhar et al. 2011
Blue Sky Green Field, WI	Gruver 2008	Gruver et al. 2009	Maple Ridge, NY (2006)		Jain et al. 2007
Buffalo Mountain, TN (2000-2003)	Fiedler 2004	Nicholson et al. 2005	Maple Ridge, NY (2007)		Jain et al. 2009a
Buffalo Mountain, TN (2005)		Fiedler et al. 2007	Maple Ridge, NY (2008)		Jain et al. 2009d
Buffalo Ridge, MN (Phase I; 1999)		Johnson et al. 2000	Marengo I, WA (2009)		URS Corporation 2010b
Buffalo Ridge, MN (Phase II; 1998)		Johnson et al. 2000	Marengo II, WA (2009)		URS Corporation 2010c
Buffalo Ridge, MN (Phase II; 1999)		Johnson et al. 2000	Mars Hill, ME (2007)		Stantec 2008
Buffalo Ridge, MN (Phase II; 2001/Lake Benton I)	Johnson et al. 2004	Johnson et al. 2004	Mars Hill, ME (2008)		Stantec 2009a
Buffalo Ridge, MN (Phase II; 2002/Lake Benton I)	Johnson et al. 2004	Johnson et al. 2004	Moraine II, MN		Derby et al. 2010d
Buffalo Ridge, MN (Phase III; 1999)		Johnson et al. 2000	Mount Storm, WV (Fall 2008)	Young et al. 2009b	Young et al. 2009b
Buffalo Ridge, MN (Phase III; 2001/Lake Benton II)	Johnson et al. 2004	Johnson et al. 2004	Mount Storm, WV (2009)		Young et al. 2009a, 2010a
Buffalo Ridge, MN (Phase III; 2002/Lake Benton II)	Johnson et al. 2004	Johnson et al. 2004	Mount Storm, WV (2010)		Young et al. 2010b, 2011
Buffalo Ridge I, SD (2010)		Derby et al. 2010b	Mountaineer, WV	Arnett et al. 2005, Arnett pers. comm.	Arnett et al. 2005
Casselman, PA (Spring & Fall 2008)		Arnett et al. 2009	Munnsville, NY (2008)		Stantec 2009b
Cedar Ridge, WI (2009)	BHE Environmental 2008	BHE Environmental 2010	Nine Canyon, WA		Erickson et al. 2003
Cedar Ridge, WI (2010)	BHE Environmental 2008	BHE Environmental 2011	Noble Bliss, NY (2008)		Jain et al. 2009e
Cohocton/Dutch Hill, NY (2009)		Stantec 2010	Noble Bliss, NY (2009)		Jain et al. 2010a
Combine Hills, OR		Young et al. 2006	Noble Clinton, NY (2008)		Jain et al. 2009c
Crescent Ridge, IL		Kerlinger et al. 2007	Noble Clinton, NY (2009)		Jain et al. 2010b
Crystal Lake II, IA		Derby et al. 2010a	Noble Ellenburg, NY (2008)		Jain et al. 2009b
Dillon, CA		Chatfield et al. 2009	Noble Ellenburg, NY (2009)		Jain et al. 2010c
Dry Lake, AZ	Thompson et al. 2011	Thompson et al. 2011	NPPD Ainsworth, NE		Derby et al. 2007
Elkhorn, OR (2008)		Jeffrey et al. 2009b	Pebble Springs, OR		Gritski and Kronner 2010b
Elm Creek, MN		Derby et al. 2010c	Prairie Winds (Minot), ND		Derby et al. 2011
Foote Creek Rim, WY (Phase I; 1999)		Young et al. 2003	Ripley, Ont (2008)		Jacques Whitford 2009
Foote Creek Rim, WY (Phase I; 2000)	Gruver 2002	Young et al. 2003	Shiloh I, CA		Kerlinger et al. 2010
Foote Creek Rim, WY (Phase I; 2001-2002)		Young et al. 2003	Stateline, OR/WA 2002		Erickson et al. 2004
Forward Energy Center, WI		Grodsky and Drake 2011	Stateline, OR/WA 2003		Erickson et al. 2004
Goodnoe, WA		URS Corporation 2010a	Stetson Mountain, ME (2009)	Stantec 2009c	Stantec 2009c
Grand Ridge, IL		Derby et al. 2010g	Summerview, Alb (2008)	Baerwald 2008	Baerwald 2008
Hay Canyon, OR		Gritski and Kronner 2010a	Top of Iowa, IA (2003)	Jain 2005	Jain 2005
High Winds, CA (2004)		Kerlinger et al. 2006	Top of Iowa, IA (2004)	Jain 2005	Jain 2005
High Winds, CA (2005)		Kerlinger et al. 2006	Tuolumne (Windy Point I), WA		Enz and Bay 2010
Hopkins Ridge, WA (2006)		Young et al. 2007	Vansycle, OR		Erickson et al. 2000
Hopkins Ridge, WA (2008)		Young et al. 2009c	Wessington Springs, SD		Derby et al. 2010f
Judith Gap, MT		TRC 2008	Wild Horse, WA		Erickson et al. 2008
Kewaunee County, WI		Howe et al. 2002	Winnebago, IA		Derby et al. 2010e
Klondike, OR		Johnson et al. 2003	Wolfe Island, Ont (July-December 2009)		Stantec Ltd. 2010b

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Appendix D-13

Swainson's Hawk Nest Survey 2011

Final

Swainson's Hawk Nest Survey—Alta East Wind Project

TO: Kevin Martin, Director of Environmental Permitting
Terra-Gen Power, LLC

FROM: David Phillips, Project Manager/Senior Biologist
CH2M HILL Engineers, Inc.

Bridget Canty/Wildlife Biologist, CH2M HILL Engineers, Inc.

DATE: May 20, 2011

CH2M HILL Engineers, Inc. (CH2M HILL) completed a survey to determine if nests of Swainson's hawk (SWHA)(*Buteo swainsoni*) are present in or within 5 miles of the proposed Alta East Wind Project site.

Project Description

Alta Windpower Development, LLC (AWD) proposes to construct the Alta East Wind Project in the Tehachapi region of southern California. Portions of the project would be located on land managed by the U.S. Bureau of Land Management (BLM) and privately owned land under the jurisdiction of Kern County. The proposed development is a wind energy facility with a nameplate capacity rating of up to 360 megawatts of wind generation capacity and includes ancillary facilities and supporting infrastructure. Up to 120 wind turbine generators would be installed. The project includes repowering a historical wind power project site north of State Route 58 on BLM lands and infilling existing wind facilities south of SR 58 in the area of Cameron Ridge.

Regulatory Background

SWHA is listed as threatened under the California Endangered Species Act (CESA) and is afforded protection under the Migratory Bird Treaty Act. The California Environmental Quality Act (CEQA) and CESA require consideration of direct, indirect, temporary, permanent, individual project, and cumulative impacts related to such species. CEQA allows approval of projects with significant effects when measures have been included to avoid or mitigate those effects, or specific considerations make such measures infeasible and specific benefits outweigh the significant effects (CEQA Guidelines Section 21081). The CESA regulates the taking of state-listed species. "Take" is defined as to "hunt, pursue, catch, capture, or kill, or to attempt to hunt, pursue, catch, capture, or kill." (Fish and Game Code Section 86). Incidental take authorization requires that all impacts on the species are minimized and fully mitigated and that mitigation is roughly proportional to the extent of the impacts of the taking (14 CCR 783.4).

If SWHA nests are present near the proposed project site, construction and operation activities could cause direct, indirect, individual, or cumulative adverse impacts on the

species. In addition to risk of take during construction and operation activities, potential impacts of the project include loss of foraging habitat and disruption of breeding activities. Therefore, understanding the proximity of nesting SWHAs to the proposed project site is necessary to evaluate potential take or impact risk to nesting members of the regional population, and assessment of SWHA use of the project area via point count methodology is warranted.

Methods

In accordance with the CEC and CDFG 2010 guidance, CH2M HILL completed surveys for SWHA nests within 5 miles of the project site. The objective of the surveys was to identify nests and/or nesting birds, if present, to verify proper avoidance or mitigation actions that could be implemented prior to project design and environmental impact analysis.

CEC and CDFG (2010) recommend that ground surveys for SWHA nests are conducted on foot or by vehicle within 5 miles of the project; however, CH2M HILL and AWD implemented a combination of helicopter surveys and protocol-level surveys because land control is not available outside the project area. Although the detection rate of SWHA nests from helicopter is not expected to be 100 percent, multiple aerial surveys with experienced raptor biologists were completed to optimize effectiveness and ensure adequate survey of areas that would otherwise be missed during restricted ground surveys. The combination of these two techniques differs from those recommended by CEC and CDFG; however, they represent an effective method to determine presence or absence of SWHA nests that does not compromise the integrity of the SWHA nest survey. This method demonstrates reasonable precaution on behalf of AWD to detect potentially nesting pairs, as would be necessary to ensure that all impacts on the species are minimized and mitigated.

Helicopter-based aerial surveys were completed in April and May 2010 prior to the issuance of the CEC and CDFG 2010 protocol. Additional helicopter-based surveys were completed in late February and late March 2011. In accordance with the CEC and CDFG 2010 protocol for Survey Period II (arrival and nest building), CH2M HILL completed three separate ground-based surveys between April 25 and April 30, 2011. The CEC and CDFG protocol recommends that at least two survey periods are evaluated using the ground-based survey techniques; however, CH2M HILL evaluated Survey Period I (prearrival: January to March 31) in February and March 2011, and Survey Period I and Survey Period III (egg laying, incubation: May 1 to May 30) in April and May, 2010 using helicopter-based surveys. Potentially suitable nesting habitats warranting survey were defined as those including Joshua tree woodlands, grasslands, desert scrub communities, agricultural land, riparian habitats, windrows, residential shade trees, and artificial nest structures, such as transmission poles. Steep, mountainous terrain and densely-wooded habitats were excluded from the surveys due to the fact that they are unlikely to support nesting SWHA. All roads and accessible areas containing potential habitat were evaluated according to the CEC and CDFG 2010 protocol during the April 2011 ground-based surveys. In addition, these areas, as well as other areas where vehicle or pedestrian access was unavailable, were visually inspected from helicopter during the aerial surveys.

Before conducting surveys in 2011, CH2M HILL contacted Justin Sloan, Environmental Scientist with CDFG, for up-to-date information on SWHA nests in the area, habitat considerations, approval of participating biologists, and possible refinement of the

recommended survey protocols. No known nests were identified by CDFG within 5 miles of the project site; however, Mr. Sloan mentioned that SWHAs have been confirmed nesting to the south of the survey area closer to Rosamond, California, and that all roads and accessible areas containing potential habitat should be evaluated according to the protocol. As discussed above, all such roads and accessible areas were evaluated. Mr. Sloan also mentioned that evaluation of SWHA use of the project area is necessary to determine if nesting hawks migrate through the project area or use it at other times of the year. Avian use surveys, conducted by Western Ecosystems Technology, Inc. (WEST), have been ongoing on the project site at approximately one-week intervals since May 2009 independent of this SWHA nest survey and one SWHA was recorded on April 1, 2011.

Ground-based surveys were conducted by CH2M HILL wildlife biologists Bridget Canty and Gary Santolo, both of whom are approved by CDFG for implementing the SWHA survey protocol. Helicopter-based surveys were completed by WEST wildlife biologists Andrea Chatfield and Troy Rintz, both of whom are highly qualified and experienced at conducting aerial surveys for raptor nests.

Results

Ground-based survey routes consisted of a combination of paved and dirt public roads and two-track roads through public and private land where access could be obtained. Areas within the project area where road access was not available were inspected on foot. The total survey area consisted of 94,894 acres, of which approximately 67,523 acres supported potentially suitable habitat that was carefully inspected during ground and aerial surveys (Figure 1). Habitats in the survey area were diverse, consisting of grassland and desert shrub communities, irrigated and nonirrigated agricultural fields, areas of rugged topography, and some riparian corridors containing trees. Areas of rugged topography were excluded from the survey area as unsuitable nesting habitat for SWHA as shown in Figure 1.

No SWHAs or nests were observed during the ground-based or aerial surveys completed for the project.

Discussion and Recommendations

SWHA is a highly mobile, opportunistic species; however, placement of nests is dependent on proximity to foraging habitats that can be entirely different from the vegetation selected for nest sites (Woodbridge, 1998). They spend time soaring over open habitats and can be readily detected through patient observation of the type implemented during ground surveys described in this memorandum. During the late April, 2011 ground surveys completed for this project, nesting birds would most likely have been constructing nests or displaying courtship behaviors or, less likely, confined to the nest for egg laying or incubating activities that would have made the birds difficult to detect. However, surveys were completed three times during Survey Period II in 2011 in accordance with the CEC and CDFG (2010) protocol, with each portion of the survey area evaluated at different times of day to enhance probability of detection.

Although SWHA nests are not large or conspicuous, they are detectable from the air. Helicopter surveys for this project were completed prior to leaf-out; therefore, nests in

non-evergreen deciduous trees would have been visible upon careful inspection by surveyors, if present. Although detection rates for SWHA nests are unknown in these habitat types, both the helicopter surveyors and Dave Phillips (CH2M HILL senior biologist and, CDFG-approved SWHA surveyor) have documented many SWHA nests during aerial surveys completed in other parts of the species' range prior to leaf-out from both helicopters and fixed-wing aircraft, suggesting that it is an effective technique to detect nests, if present. AWD's use of this technique to compensate for the limited private land access is a prudent and conservative adaptation of the CEC and CDFG recommended ground-based protocol to identify SWHA nests.

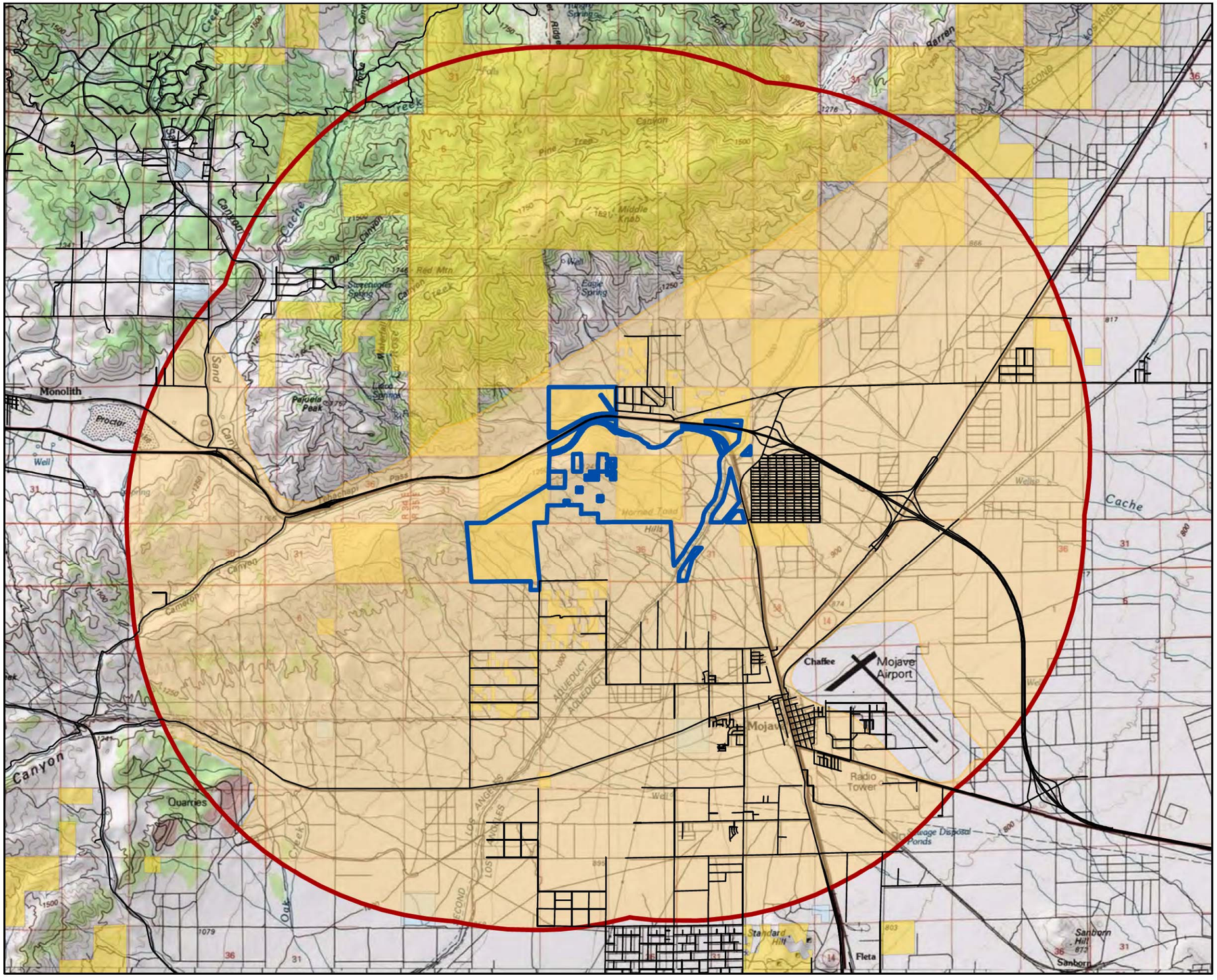
The CEC and CDFG protocol recommends that at least two survey periods be evaluated using the ground-based survey method. However, due to the repeated negative survey results on four separate aerial surveys and the three Period II ground-based protocol surveys completed for this project, it is highly unlikely that nesting SWHAs are present in or near the project area. Although additional surveys completed during Period III (egg laying/incubation) or Period IV (fledging) would strengthen conclusions of absence, it is improbable that nesting birds are present in the project area. The survey area contains some habitat features that could be conducive to nesting; however, historical records and these survey results indicate that nesting SWHAs are highly unlikely to be present in or near the project site and therefore no impact on nesting SWHAs is expected to occur from project construction or operation.

In summary, based on the results of four aerial nest surveys and the recently completed Period II ground-based protocol surveys, the project is unlikely to affect SWHAs or their nests and no mitigation or take permitting associated with impacts to SWHAs or their nests in proximity to the project site would be necessary.

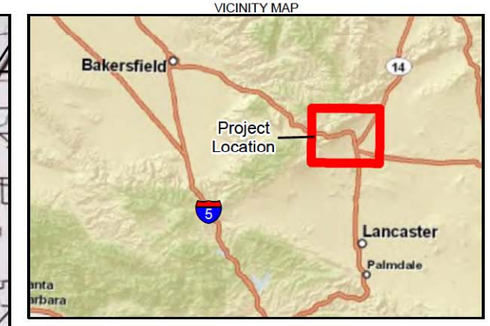
References

California Energy Commission [CEC] and California Department of Fish and Game [CDFG]. 2010. Swainson's hawk survey protocols, impact avoidance, and minimization measures for renewable energy projects in the Antelope Valley of Los Angeles and Kern Counties, California. June 2. Available online at: http://www.dfg.ca.gov/wildlife/nongame/docs/SwainsonsHawkProtocol6-2-10.pdf

Woodbridge, B. 1998. Swainson's Hawk (*Buteo swainsoni*). *In* The Riparian Bird Conservation Plan: a strategy for reversing the decline of riparian-associated birds in California. California Partners in Flight. Available online at: http://www.prbo.org/calpif/htmldocs/riparian_v-2.html



VICINITY MAP



LEGEND

- Kern County Roads
- Alta East Wind Project Area
- 5-Mile Survey Area Buffer
- Potentially Suitable Nesting Habitat

Land Management

- BLM
- Private
- State

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Miles

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FIGURE 1
Swainson's Hawk Nest Survey
Alta East Wind Energy Project
Kern County, California

CH2MHILL

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Appendix D-14

Swainson's Hawk Survey 2011

T-line

Swainson's Hawk Nest Survey of Proposed Transmission Line—Alta East Wind Energy Project

TO: Kevin Martin, Director of Environmental Permitting
Terra-Gen Power, LLC

FROM: David Phillips, Project Manager/Senior Biologist
CH2M HILL Engineers, Inc.

Bridget Canty/Wildlife Biologist, CH2M HILL Engineers, Inc.

DATE: June 2, 2011

CH2M HILL Engineers, Inc. (CH2M HILL) completed a survey to determine if nests of Swainson's hawk (SWHA)(*Buteo swainsoni*) are present in or within 5 miles of the proposed transmission line corridor for the Alta East Wind Energy Project.

Project Description

Alta Windpower Development, LLC (AWD) proposes to construct a transmission line to support the Alta East Wind Energy Project in the Tehachapi region of southern California (see Figure 1). The proposed transmission line is approximately 13.75 miles long, and is located entirely on privately owned land under the jurisdiction of Kern County.

Regulatory Background

SWHA is listed as threatened under the California Endangered Species Act (CESA) and is afforded protection under the Migratory Bird Treaty Act. The California Environmental Quality Act (CEQA) and CESA require consideration of direct, indirect, temporary, permanent, individual project, and cumulative impacts related to such species. CEQA allows approval of projects with significant effects when measures have been included to avoid or mitigate those effects, or specific considerations make such measures infeasible and specific benefits outweigh the significant effects (CEQA Guidelines Section 21081). The CESA regulates the taking of state-listed species. "Take" is defined as to "hunt, pursue, catch, capture, or kill, or to attempt to hunt, pursue, catch, capture, or kill" (Fish and Game Code Section 86). Incidental take authorization requires that all impacts on the species are minimized and fully mitigated and that mitigation is roughly proportional to the extent of the impacts of the taking (14 CCR 783.4).

If SWHA nests are present near the proposed transmission line, construction and maintenance activities as well as the physical presence of the operating line could cause direct, indirect, individual, or cumulative adverse impacts on the species. In addition to risk of take during construction and operation activities of the proposed transmission line, potential impacts include loss of foraging habitat and disruption of breeding activities. Therefore, understanding the proximity of nesting SWHAs to the proposed transmission

line is necessary to evaluate potential take or impact risk to nesting members of the regional population.

Methods

In accordance with the California Energy Commission (CEC) and California Department of Fish and Game (CDFG) 2010 guidance, CH2M HILL completed surveys for SWHA nests within 5 miles of the proposed transmission line. The objective of the surveys was to identify nests and/or nesting birds, if present, to verify proper avoidance or mitigation actions that could be implemented prior to final siting and environmental impact analysis.

CEC and CDFG do not specifically recommend that transmission lines are evaluated in their protocol in evaluate nesting SWHAs for renewable energy projects in the Antelope Valley (CEC and CDFG, 2010); however, AWD included the transmission line as part of its SWHA survey area. CEC and CDFG (2010) recommend that ground surveys for SWHA nests are conducted on foot or by vehicle within 5 miles of the project; however, CH2M HILL and AWD implemented a combination of helicopter surveys and protocol-level surveys. Although the detection rate of SWHA nests from a helicopter is not expected to be 100 percent, multiple aerial surveys with experienced raptor biologists were completed to optimize effectiveness and ensure adequate survey of areas that would otherwise be missed during restricted ground surveys. The combination of these two techniques differs from those recommended by CEC and CDFG; however, they represent an effective method to determine presence or absence of SWHA nests that does not compromise the integrity of the SWHA nest survey. This method demonstrates reasonable precaution on behalf of AWD to detect potentially nesting pairs, as would be necessary to ensure that all impacts on the species are minimized and mitigated.

Helicopter-based aerial surveys were completed in April and May 2010 prior to the issuance of the CEC and CDFG 2010 protocol throughout the majority of the survey area. Additional helicopter-based surveys were completed throughout the survey area in late February and late March 2011. In accordance with the CEC and CDFG 2010 protocol for Survey Period II (arrival and nest building: April 1–30), CH2M HILL completed three separate ground-based surveys between April 25 and April 30, 2011. The CEC and CDFG protocol recommends that at least two survey periods are evaluated using the ground-based survey techniques; however, CH2M HILL evaluated Survey Period I (pre-arrival: January 1 to March 31) in February and March 2011, and Survey Period I and Survey Period III (egg laying, incubation: May 1 to May 30) in April and May 2010 using helicopter-based surveys. Potentially suitable nesting habitats warranting survey were defined as those including Joshua tree woodlands, grasslands, desert scrub communities, agricultural land, riparian habitats, windrows, residential shade trees, and artificial nest structures, such as transmission poles. Steep, mountainous terrain and densely wooded habitats were excluded from the surveys because they are unlikely to support nesting SWHA. All roads and accessible areas containing potential habitat were evaluated according to the CEC and CDFG 2010 protocol during the April 2011 ground-based surveys. In addition, these areas, as well as other areas where vehicle or pedestrian access was unavailable, were visually inspected from a helicopter during the aerial surveys.

Before conducting surveys in 2011, CH2M HILL contacted Justin Sloan, Environmental Scientist with CDFG, for up-to-date information on SWHA nests in the area, habitat

considerations, approval of participating biologists, and possible refinement of the recommended survey protocols. No known nests were identified by CDFG within 5 miles of the proposed transmission line. As discussed, all such roads and accessible areas were evaluated.

Ground-based surveys were conducted by CH2M HILL wildlife biologists Bridget Canty and Gary Santolo, both of whom are approved by CDFG for implementing the SWHA survey protocol. Helicopter-based surveys were completed by Western Ecosystems Technology, Inc. (WEST) wildlife biologists Andrea Chatfield and Troy Rintz, both of whom are highly qualified and experienced at conducting aerial surveys for raptor nests.

Results

Ground-based survey routes consisted of a combination of paved and dirt public roads and two-track roads through public and private land where access could be obtained. Areas within the survey area where road access was not available, but where access to private land control was available were inspected on foot. The total survey area consisted of approximately 114,425 acres, of which approximately 98,041 acres supported potentially suitable nesting habitat for SWHA that was carefully inspected during ground and aerial surveys (see Figure 1). Habitats in the survey area were diverse, consisting of grassland and desert shrub communities, irrigated and nonirrigated agricultural fields, areas of rugged topography, and some riparian corridors containing trees. Areas of rugged topography were excluded from the survey area as unsuitable nesting habitat for SWHA, as shown in Figure 1.

No SWHAs or nests were observed during the ground-based or aerial surveys completed for the proposed transmission line.

Discussion and Recommendations

SWHA is a highly mobile, opportunistic species; however, placement of nests is dependent on proximity to foraging habitats that can be entirely different from the vegetation selected for nest sites (Woodbridge, 1998). They spend time soaring over open habitats and can be readily detected through patient observation of the type implemented during ground surveys described in this memorandum. During the late April 2011 ground surveys completed for the proposed transmission line, nesting birds would most likely have been constructing nests or displaying courtship behaviors or, less likely, confined to the nest for egg laying or incubating activities that would have made the birds difficult to detect. However, surveys were completed three times during Survey Period II in 2011 in accordance with the CEC and CDFG (2010) protocol, with each portion of the survey area evaluated at different times of day to enhance probability of detection.

Although SWHA nests are not large or conspicuous, they are detectable from the air. Helicopter surveys for the proposed transmission line were completed prior to leaf-out; therefore, nests in non-evergreen deciduous trees would have been visible upon careful inspection by surveyors, if present. Although detection rates for SWHA nests are unknown in these habitat types, both the helicopter surveyors and Dave Phillips (CH2M HILL senior biologist and CDFG-approved SWHA surveyor) have documented many SWHA nests during aerial surveys completed in other parts of the species' range prior to leaf-out from

both helicopters and fixed-wing aircraft, suggesting that it is an effective technique to detect nests, if present. AWD's use of this technique to compensate for the limited private land access and large survey area is a prudent and conservative adaptation of the CEC and CDFG recommended ground-based protocol to identify SWHA nests.

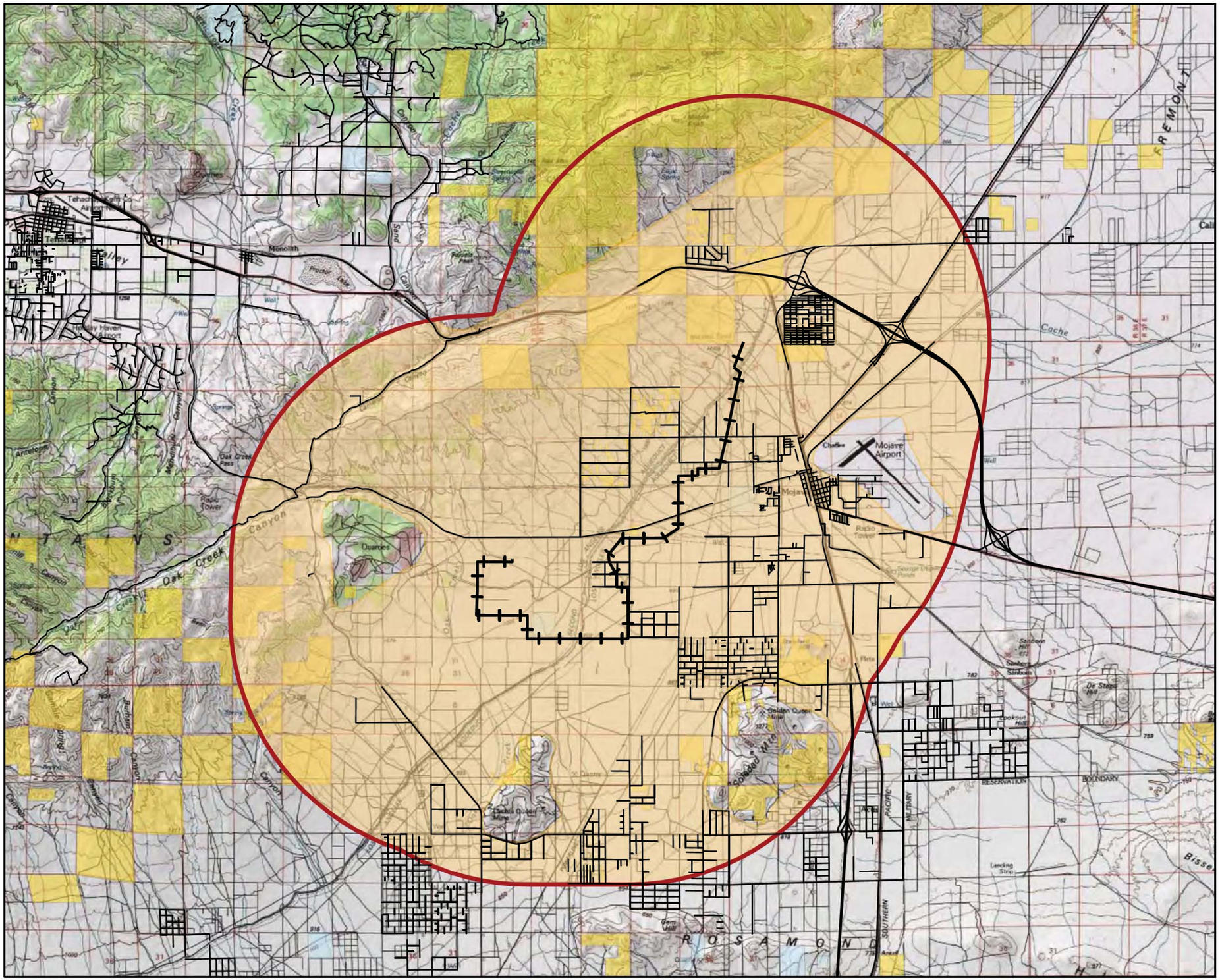
The CEC and CDFG protocol recommends that at least two survey periods be evaluated using the ground-based survey method. However, due to the repeated negative survey results on four separate aerial surveys and the three Period II ground-based protocol surveys completed for this area, it is highly unlikely that nesting SWHAs are present in or near the proposed transmission line. Although additional surveys completed during Period III (egg laying/incubation) or Period IV (fledging; June 1–30) would strengthen conclusions of absence, it is improbable that nesting birds are present near the proposed transmission line route. The survey area contains some habitat features that could be conducive to nesting; however, historical records and these survey results indicate that nesting SWHAs are highly unlikely to be present in or near the proposed transmission line route and therefore no impact on nesting SWHAs is expected to occur from construction or operation of the proposed transmission line.

In summary, based on the results of four aerial nest surveys and the recently completed Period II ground-based protocol surveys, construction and operation of the proposed transmission line is unlikely to affect SWHAs or their nests and no mitigation or take permitting associated with potential impacts to SWHAs or their nests in proximity to the proposed transmission line would be necessary.

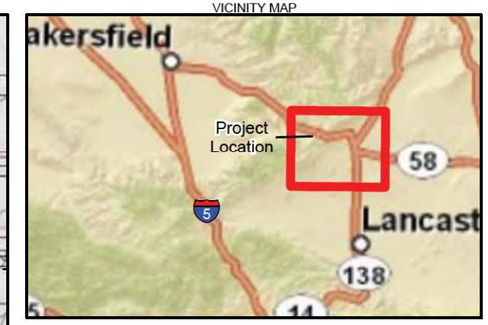
References

California Energy Commission [CEC] and California Department of Fish and Game [CDFG]. 2010. Swainson's hawk survey protocols, impact avoidance, and minimization measures for renewable energy projects in the Antelope Valley of Los Angeles and Kern Counties, California. June 2. Available online at: http://www.dfg.ca.gov/wildlife/nongame/docs/SwainsonsHawkProtocol6-2-10.pdf

Woodbridge, B. 1998. Swainson's Hawk (*Buteo swainsoni*). *In* The Riparian Bird Conservation Plan: a strategy for reversing the decline of riparian-associated birds in California. California Partners in Flight. Available online at: http://www.prbo.org/calpif/htmldocs/riparian_v-2.html



VICINITY MAP



LEGEND

- Kern County Roads
- Transmission Line
- 5-Mile Survey Area Buffer
- Potentially Suitable Nesting Habitat

Land Management

- BLM
- Private
- State

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Miles

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FIGURE 1
Swainson's Hawk Nest Survey
Alta East Wind Energy Project
Kern County, California

CH2MHILL

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Bureau of Land Management