FINAL ENVIRONMENTAL IMPACT REPORT
FOR THE
REVISED COMMERCIAL WECS 20 PERMIT PROJECT

Submitted pursuant to the requirements of the
California Environmental Quality Act

by the

CITY OF DESERT HOT SPRINGS

and

ENERGY UNLIMITED, INCORPORATED

State Clearinghouse No.
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*Revised in or Added to October 2007 DEIR

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The Revised Commercial WECS 20 Permit Project (Project) is intended to further develop the wind energy resources of the City of Desert Hot Springs (City) by constructing, operating, and maintaining eight (8) new GE 1.5 megawatt (MW) wind turbine generators in a single north-south row (with the two end turbines at a total height of approximately 329 feet and the six turbines in between at a total height of approximately 340 feet), along with wiring, conduit, and appurtenances; removing sixteen (16) existing smaller Bonus 65 kilowatt (kW) wind turbine generators; constructing a single-story (40 foot by 100 foot) storage building; and the expansion of an existing outdoor storage area within the existing 160-acre (approximate size) WECS 20 Wind Park.

The WECS 20 Wind Park is located in an area designated by the City as an I-E District (Industrial-Scale Energy Production District) and is intended to promote the development and harvesting of the City's wind energy and other energy resources in the western areas of the City.

The Environmental Impact Report for the Revised Commercial WECS 20 Permit Project was prepared as part of a thorough environmental analysis performed in order to determine whether the Project may have significant effects on the environment as defined by the California Environmental Quality Act (CEQA) and the State CEQA Guidelines (§15000 *et seq*).

The Project, as determined by the environmental analysis described herein, will not have a significant effect on the environment with the incorporation of the mitigation measures set forth in Section 10 of this Final Environmental Impact Report (FEIR).

FINAL ENVIRONMENTAL IMPACT REPORT

1. INTRODUCTION

A. General

Desert Hot Springs and the Coachella Valley have substantial and important renewable energy resources, which include the San Gorgonio Wind Resource Area within the San Gorgonio Pass, extending into the City of Desert Hot Springs (City) and its Sphere-of-Influence. The west end of the City is a proven wind energy resource area, where there are approximately 160 acres zoned for wind farm development, a portion of which is currently developed and operating as a wind farm.

The San Gorgonio Pass is one of five major wind resource areas in California. The San Gorgonio Wind Resource Study (Wagstaff and Brady and Robert Odland Associates, 1982) and subsequent analyses delineate those portions of the wind resource area that offer an economically viable (developable) wind resource. The continued development of commercial-scale wind turbine generator (wind turbine or turbine) projects in the City and western Sphere-of-Influence areas indicate the viability of additional City lands for continued commercial-scale wind turbine generator development. Wind energy development started in the San Gorgonio Pass area in the early 1980s, and was originally regulated by the U.S. Bureau of Land Management and the County of Riverside. During the mid-1990s, the cities of Desert Hot Springs and Palm Springs each annexed wind farms into their incorporated areas.

The annexed area, referenced above, was designated I-E within the City of Desert Hot Springs. The I-E (Industrial-Scale Energy Production) District in the City, as described in the City of Desert Hot Springs Zoning Ordinance (2000), is intended to promote the development and harvesting of the City's wind energy and other energy resources in the western areas of the City, while ensuring compatibility with adjacent land uses. Additionally, this land use district provides for the development of interim uses including, but not limited to, properly screened equipment storage yards, plant nurseries, recreation (non-structural), etc., which do not impair the long-term ability to develop and harvest wind energy and other energy resources.

The Revised Commercial WECS 20 Permit Project (Project) site is located within the existing 160-acre (approximate size) WECS 20 Wind Park. The existing WECS 20 Wind Park comprises 69 existing wind turbines. The proposed Project is intended to further develop the City's wind energy resources by constructing, operating, and maintaining eight (8) new GE 1.5 megawatt (MW) wind turbine generators in a single north-south row (with the two end turbines at a total height of approximately 329 feet and the six turbines in between at a total height of approximately 340 feet), along with wiring, conduit, and appurtenances; removing sixteen (16) existing smaller Bonus 65 kW wind turbine generators; constructing a single-story (40 foot by 100 foot) storage building; and the expansion of an existing outdoor storage area within the existing WECS 20 Wind Park, which is located in the I-E District, described above, in the City. The Project does not include an expansion of the WECS 20 Wind Park boundaries.

B. Background

Energy Unlimited, Incorporated (EUI) was formed in 1980 with the aim of developing and operating wind projects. EUI has owned and/or managed about 50 MW of projects in the San Gorgonio Pass, Colorado, and Pennsylvania, with several hundred megawatts in new projects now in various stages of development.

EUI's existing WECS 20 Wind Park was approved by the County of Riverside in 1985 for the development of 128 65-kilowatt (kW) Bonus wind turbine generators. Construction of the wind park commenced in 1985 with the erection of 65 Bonus wind turbine generators by the end of the year. A second phase of construction in 1992 added an additional 8 Bonus Mark 3 120 kW wind turbines. Although WECS 20 was approved for 128 wind turbines, a lesser number of turbines was constructed for technical and economic reasons. The WECS 20 Wind Park has been operated continuously by EUI since its inception. To date, of the 73 wind turbines constructed, 4 of the original 65 Bonus wind turbines were decommissioned and removed. It is anticipated that additional Bonus wind turbines will be retired and removed from the wind park as these turbines reach the end of their useful lives. The area that includes the WECS 20 Wind Park was annexed to the City in 1994. The existing WECS 20 Permit expires in 2015.

In November of 2000, EUI submitted applications with the City to install eight new wind turbines within the existing WECS 20 Wind Park. The Conditional Use Permit and accompanying Variance were approved in January, 2001. Construction of the turbines had not commenced by the time the permits expired two years after their issuance. In April, 2003, EUI applied with the City to have the permits re-approved; however, their request was denied by the City Planning Commission, who directed EUI to provide additional information regarding potential environmental impacts. EUI completed and submitted these additional reports, which became part of a Planning Commission Hearing on November 9, 2004. At a hearing on January 19, 2005, the City Council determined that an Environmental Impact Report would be required for the Project. Areas to be analyzed in greater detail are: aesthetics, air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, public services, transportation and traffic, and utilities and service systems.

C. Purpose and Scope of EIR

The purpose of this Final Environmental Impact Report (FEIR) is to provide decision-makers, public agencies, and the general public with an objective and informational document that fully discloses the potential environmental effects of the Project and to address the comments received during the public review period. The Environmental Impact Report (EIR) process is designed to facilitate the objective evaluation of potentially significant environmental impacts (direct, indirect, and cumulative) of the Project and its alternatives. The EIR also identifies mitigation measures intended to reduce the potential adverse environmental impacts of the Project to a level of insignificance.

The City of Desert Hot Springs (City) is the Lead Agency for subject Project. As Lead Agency, the City is principally responsible for preparing California Environmental Quality Act (CEQA) documents for the Project and determining whether an EIR is required. Based on the Environmental Assessment prepared by the City, the City has determined that the Project may result in potentially significant environmental impacts, and has required that an EIR be prepared in order to provide an analysis of such impacts.

The Project applicant, Energy Unlimited, Incorporated (EUI), has applied with the City for Variance No. 05-04 (a request to exceed the 200-foot height limit, as specified in Section 159.08.030(2)(J)(e)(1)(a) of the Desert Hot Springs Municipal Zoning Ordinance, in order to allow construction of the proposed turbines with a total height of approximately 340 feet), Conditional Use Permit No. 09-04 (a request to construct the Project within the existing WECS 20 Wind Park), Development Permit No. 24-04, and Design Review No. 22-04 (for the design and location of the storage building and outdoor storage area that will be developed in conjunction with the wind turbines), of which approvals are required in order to implement the Project.

The CEQA, California Public Resources Code sections 21000 et seq., requires the preparation of an EIR for any action that has the potential to significantly affect the quality of the environment. This FEIR for the Energy Unlimited, Incorporated Revised Commercial WECS 20 Permit Project (Project) has been prepared by Krieger & Stewart, Incorporated, under contract with EUI, for the City, in order to comply with the provisions of CEQA.

This is a public information document. Information contained herein is intended to address the environmental impacts expected to result from the Project, and to satisfy the disclosure requirements of CEQA and the State CEQA Guidelines.

D. Agencies That May Use This Document

- City of Desert Hot Springs Planning Commission and City Council
  - Variance No. 05-04
  - Conditional Use Permit No. 09-04
  - Development Permit No. 24-04
  - Design Review No. 22-04

- California Regional Water Quality Control Board
  - National Pollution Discharge Elimination System (NPDES) Permit

- California Department of Fish and Game
  - Permits related to jurisdictional waters, if applicable

- United States Department of Fish and Wildlife
  - Permits related to federal endangered or threatened species, if applicable

E. Environmental Impact Review Process

A Notice of Preparation (NOP) was distributed to the State Clearinghouse (Governor's Office of Planning and Research), public agencies, and other interested parties on October 26, 2005. A copy of the NOP and comments received in response thereto are contained in Appendix I. A scoping meeting was also held at the City of Desert Hot Springs on November 14, 2005.

Upon completion of the Draft EIR, the City filed a Notice of Completion/Notice of Availability of the Draft Environmental Impact Report (NOC/NOA) with the State Clearinghouse, copies of which were also mailed to those who were sent a copy of the NOP, as well as other interested parties who were subsequently added to the distribution list. A copy of the NOC/NOA is included in Appendix J of this FEIR.

In accordance with the State CEQA guidelines, a 45-day public review period was provided from March 26, 2007 through May 10, 2007. Comments received during the public review period, and responses to said comments, are included in Appendix K.

2. SUMMARY

A. Potentially Significant Effects and Proposed Mitigation

Summary of Potential Impacts	Mitigation Measure	Level of Significance After Mitigation
Aesthetics		
Impact: The Project may adversely impact scenic viewsheds.	**1.** The eight wind turbines will be painted white, with a matte or galvanized finish. The storage building will be painted in an earth-tone, such as beige.	**Impact is mitigated below a level of significance.**
	2. All Project grading will comply with the City's regulations in order to minimize adverse impacts to viewsheds.	
	3. Upon removal of the 16 Bonus wind turbines, the area where each individual Bonus wind turbine was located shall be remedied. The site shall be evaluated and any soil contamination shall be removed, structural foundations (cutting to six feet below grade) and all manmade debris shall be removed from the site, and the area shall be replanted with plant material native to the Coachella Valley. Monitoring of all such activities shall be undertaken by a qualified biological monitor, who shall file a written report of findings to the City upon completion of the site remediation as outlined above.	
	4. During ongoing operation and maintenance of the Project, only surplus turbine parts too large to be stored in the storage building will be stored in the open storage area. Prior to storing any additional items in the open storage area which are not large turbine parts, a list of said items will be submitted in writing to the City for approval. Decommissioned wind turbines, including inoperable or wrecked machinery, motor vehicles, construction equipment, and construction debris will not be stored onsite.	
	5. The outdoor storage area shall be inspected annually by the City.	
	6. No advertising sign or logo shall be placed or painted on any commercial WECS.	
	7. No commercial WECS shall be located where the center of the tower is within 1320 feet (0.25 mile) of State Route 62.	
	8. All aspects of the Project's development shall adhere to Wind Energy Conversion Systems (WECS) requirements as adopted in Section 159.08.030(2)(J) of the City's Municipal Zoning Ordinance.	

Summary of Potential Impacts	Mitigation Measure	Level of Significance After Mitigation
Impact: The Project may adversely impact light in night skies and nighttime illumination in residential areas.	**9.** All lighting equipment and devices will be shielded or recessed so that direct light and glare are contained within the boundaries of the Project site, away from adjoining properties and public rights-of-way.	**Impact is mitigated below a level of significance.**
	10. Project development shall comply with the City's adopted outdoor lighting standards as specified in Section 159.20.030 of the Desert Hot Springs Municipal Zoning Code.	
	11. Lighting plans indicating proposed lighting levels and methods to minimize impact on adjacent properties shall be reviewed and approved by the City prior to installation. Modification, alteration, or addition to any approved lighting shall not be undertaken prior to approval by the City.	
Air Quality		
Impact: The Project may have short-term adverse PM10 and NOX emissions during construction.	**12.** Prior to commencement of any demolition, grading, or construction activities, the Project applicant will prepare and submit for City Engineering Department review and approval a Fugitive Dust (PM_{10}) Mitigation Plan.	**Impact is mitigated below a level of significance.**
	13. Traffic speeds of no greater than 15 miles per hour will be observed on all unpaved roadways.	
	14. All grading operations will be suspended when wind speed (as instantaneous gusts) exceeds 25 miles per hour.	
	15. Trucks importing and/or exporting soil or other loose material will be covered and/or watered down prior to entering public streets to minimize potential fugitive dust.	
	16. Soil binders will be spread on unpaved roads and parking areas, and/or AQMD-approved soil stabilizers will be applied according to manufacturer's specifications to all inactive construction areas (previously graded areas that remain inactive for 96 hours).	
	17. SCAQMD Rule 403 shall be adhered to, ensuring the clean-up of construction-related dirt on approach routes to the site.	

Summary of Potential Impacts	Mitigation Measure	Level of Significance After Mitigation
Biological Resources		
Impact: The Project may result in adverse effects on sensitive plant and/or animal species in the area.	**18.** Thirty days prior to commencement of construction, the Project site shall be re-surveyed by a qualified biologist for the presence of sensitive species. Additionally, a qualified biological monitor will be onsite during all construction activities. The biological monitor will have the authority to halt or divert construction activities which may be in violation of the stipulations herein. The biological monitor will file a final report with the City Planning Department at the conclusion of construction.	**Impact is mitigated below a level of significance.**
	19. All construction personnel will participate in a biological awareness training program prior to commencement of construction activities, and a report verifying same will be provided to the City Planning Department.	
Impact: The Project may result in adverse effects on native plant communities at the Project site.	**20.** Upon removal of the 16 Bonus wind turbines, the area where each individual Bonus wind turbine was located shall be remedied. The site shall be evaluated and any soil contamination shall be removed, structural foundations (cutting to six feet below grade) and all manmade debris shall be removed from the site, and the area shall be replanted with plant material native to the Coachella Valley. Monitoring of all such activities shall be undertaken by a qualified biological monitor, who shall file a written report to the City of findings upon completion of the site remediation as outlined above.	**Impact is mitigated below a level of significance.**
	21. All barrel cacti located in areas anticipated to be impacted by the Project will be transplanted into portions of the property that will remain as natural open space. The transplantation sites will, as closely as possible, match the original barrel cacti locations with regards to soils, slope, and aspect.	
	22. All turbine sites will be clearly marked prior to grading in order to limit damage to adjacent vegetation. Grading and vegetation removal will be limited to construction areas.	
	23. Construction and maintenance traffic will utilize existing roads, and vehicle parking will be limited to existing disturbed areas.	
	24. Grading onsite will be limited to construction areas only. All tower sites and access road locations will be clearly marked prior to the initiation of any ground-disturbing activity. No construction activities shall occur adjacent to Super Creek. All staging areas shall occur on previously-disturbed areas.	

Summary of Potential Impacts	Mitigation Measure	Level of Significance After Mitigation
	25. During construction and ongoing maintenance operations, wind farm personnel will be restricted to approved dirt roads only. No unauthorized grading of the site will be permitted.	
	26. Applicant will be responsible for controlling and removing all trash and/or windblown debris generated on the site during construction and routine maintenance operations.	
	27. All construction personnel will participate in a biological awareness training program prior to commencement of construction activities, and a report verifying same will be provided to the City Planning Department.	
Impact: The Project has the potential to impact desert tortoise, which is listed as threatened by the United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG).	**28.** In order to ensure that no desert tortoises are harmed and that the tortoises can continue to utilize the Project site during the operation and maintenance phases of the Project, a desert tortoise survey will be performed within 24 hours prior to commencement of construction, and all construction activities will be monitored by a qualified biologist. A California Endangered Species Act (CESA) Permit will be obtained from the California Department of Fish and Game.	**Impact is mitigated below a level of significance.**
	29. No construction activities will occur within 100 feet of desert tortoise. If a desert tortoise is found onsite, construction activities should cease within 100 feet of the animal. The desert tortoise will be allowed to move offsite of its own volition.	
	30. No construction activities will occur within 100 feet of desert tortoise burrows. Any burrows located during preconstruction desert tortoise surveys should be fenced with temporary fencing to provide a 100-foot buffer around the burrow. Fences should consist of a non-breachable barrier and support structures.	
	31. Construction activities (including parking and laydown areas) will utilize existing access roads and previously-disturbed areas to the maximum extent feasible. Temporary exclusion fencing will be placed around staging areas.	
	32. The biological monitor will supervise and approve the construction and placement of desert tortoise exclusion fence around burrows and staging areas. The biological monitor will inspect the temporary fencing at least weekly. Corrective actions will be taken promptly to maintain the integrity of the tortoise barrier. Fencing should be dismantled and removed following Project completion.	
	33. The biological monitor will maintain a complete record of all desert tortoises encountered. The record shall include: location, date and time, life history, general condition, and identification numbers.	

Summary of Potential Impacts	Mitigation Measure	Level of Significance After Mitigation
	34. Any Project-related vehicle or equipment operating on unpaved roads should not exceed a speed limit of 25 miles per hour.	
	35. Contractor will be required to keep all vehicles on existing roads. No cross-country travel will be authorized except under emergency situations.	
	36. Employees will inspect beneath parked vehicles and equipment prior to traveling. If an employee discovers a tortoise, the employee shall notify the biological monitor.	
	37. All trash will be contained in raven- and coyote-proof containers. All trash will be transported offsite on a weekly basis.	
	38. No pets or firearms will be allowed within the Project's construction boundaries, or other associated work areas, at any time.	
	39. The Project will reduce water usage during construction to the extent possible, such that excess water does not act as an attractant to tortoises.	
	40. All construction materials, vehicles, and equipment will be removed from the site upon completion of the Project.	
Impact: The Project has the potential to impact burrowing owl, which is considered a Federal Species of Special Concern by USFWS and a California Species of Special Concern by CDFG.	**41.** Within 30 days prior to any construction activities, a focused burrowing owl survey will be conducted (using California Department of Fish and Game protocol) on the areas of the Project site anticipated to be disturbed (approximately 1.35 acres), plus a buffer area as recommended by the Project biologist. If ground-disturbing activities are delayed or suspended for more than 30 days after the survey, the site shall be resurveyed. A survey report for the Project shall be prepared and submitted to the California Department of Fish and Game for review and to the City for review and approval.	**Impact is mitigated below a level of significance.**
	42. Any burrowing owl burrows that cannot be avoided shall be mitigated at a 2:1 ratio with artificial burrows located in an adjacent protected area that provides a minimum 0.61 acres of protected habitat. The configuration of the protected habitat shall be approved by the California Department of Fish and Game. If required by the California Department of Fish and Game, the Project applicant shall provide funding for long-term management and monitoring of the protected lands.	
	43. If burrowing owls must be moved away from the disturbance areas, passive relocation techniques shall be used and only during the non-breeding season (September 1 to January 31). If impacts to burrowing owls are approved, then a relocation program shall be developed pursuant to California Department of Fish and Game and United States Fish and Wildlife Service review and approval.	

Summary of Potential Impacts	Mitigation Measure	Level of Significance After Mitigation
	44. Should the Project affect the foraging areas of any owls located adjacent to the Project, then the same mitigation ratio and acreage would also be recommended.	
	45. Applicant will avoid impacts to washes and wash vegetation.	
	46. All proposed development will incorporate the maximum amount of existing onsite natural open space and native vegetation into the Project and landscaping.	
	47. Applicant will salvage desirable desert plant species that would be destroyed by Project implementation, for use in landscaped areas.	
	48. Applicant shall provide to all employees an educational brochure that describes the sensitive nature of indigenous plants, animals, and ecosystems. A copy of said educational brochure shall be submitted to the City for approval prior to issuance of any building permits.	
	49. Prior to grading, the applicant shall develop a plan to reduce the impact of night lighting on open space and/or mitigation areas adjacent to the Project site.	
Impact: The Project has the potential to impact Coachella Valley round tailed ground squirrel, which is considered a Federal Species of Special Concern by USFWS and a California Species of Special Concern by CDFG.	**50.** Within 30 days prior to construction, a preconstruction survey for Coachella Valley round-tailed ground squirrel will be conducted on the areas of the Project site anticipated to be disturbed (approximately 1.35 acres), plus a buffer area as recommended by the Project biologist. If ground-disturbing activities are delayed or suspended for more than 30 days after the preconstruction survey, the site shall be resurveyed. A survey report for the Project shall be prepared and submitted to the California Department of Fish and Game for review and to the City for review and approval.	**Impact is mitigated below a level of significance.**
	51. If found on the Project site, any squirrels must be moved away from the disturbance areas, and a relocation program shall be developed pursuant to California Department of Fish and Game review and approval.	
	52. Applicant will avoid impacts to washes and wash vegetation.	
	53. All proposed development will incorporate the maximum amount of existing onsite natural open space and native vegetation into the Project and landscaping.	
	54. Applicant will provide to all employees an educational brochure that describes the sensitive nature of indigenous plants, animals, and ecosystems. A copy of said educational brochure shall be submitted to the City for approval prior to issuance of any building permits.	
	55. Prior to grading, the applicant must develop a plan to reduce the impact of night lighting on open space and/or mitigation areas adjacent to the Project site.	

Summary of Potential Impacts	Mitigation Measure	Level of Significance After Mitigation
Cultural Resources / Paleontological Resources		
Impact: Project grading may result in the discovery of previously unknown cultural and/or paleontological resources.	**56.** An approved Tribal Cultural Resource Monitor shall be present during any survey and/or any ground-disturbing activities. Should buried cultural deposits be encountered, the Monitor may request that destructive construction halt and the Monitor shall notify a Qualified (Secretary of the Interior's Standards and Guidelines) Archaeologist to investigate and, if necessary, prepare a mitigation plan for submission to the State Historic Preservation Officer, the Agua Caliente Tribal Historic Preservation Office, the Morongo Band of Mission Indians, and the Soboba Band of Luiseño Indians.	**Impact is mitigated below a level of significance.**
	57. If buried cultural materials are discovered during any earth-moving operation associated with the Project, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds. The archaeologist shall be empowered to temporarily stop or redirect grading activities to allow removal of abundant or large artifacts. The archaeologist shall also be required to curate specimens in a repository with permanent retrievable storage and submit a written report to the Planning Director for review and approval prior to occupancy of the first building on the site.	
	58. Once artifact analysis is completed, a final written report detailing the results of all research procedures and interpretation of the site shall be submitted to the Development Director for review and approval prior to occupancy of the first building on the site.	
	59. A qualified paleontologist shall review the Project construction plans and shall create a plan for periodic monitoring in order to determine the presence or absence of older Pleistocene-age sediments that may contain fossils. If earth-moving activities reach potentially fossilliferous sediments and/or exceed 10 feet in depth, then continuous monitoring for paleontological resources, along with a program to mitigate impacts to those resources, will be implemented. The monitor should be prepared to quickly salvage fossils as they are unearthed to avoid construction delays.	

Summary of Potential Impacts	Mitigation Measure	Level of Significance After Mitigation
	60. If buried paleontological materials are discovered during any earth-moving operations associated with the Project, all work in that area will be halted or diverted until a qualified paleontological monitor can evaluate the nature and significance of the finds. The paleontological monitor will be empowered to temporarily stop or redirect grading activities to allow removal of abundant or large artifacts. The paleontological monitor shall also be required to curate specimens in a repository with permanent retrievable storage and submit a written report and inventory to the Development Director for review and approval prior to occupancy of the first building on the site. The report should include a discussion of the significance of all recovered specimens. The report and inventory, when submitted to the Development Director, would signify completion of the Program to mitigate impacts to paleontological resources.	
	61. If human remains are encountered at the Project site during construction, the County Coroner will be notified immediately, and all construction activities will be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.	
Geology and Soils		
Impact: Strong ground motion resulting from earthquake activity may impact the site during the anticipated life of the Project. Additionally, the site is highly susceptible to being impacted by rock falls and seismically-induced landslides.	**61.** As recommended in the Update to Geotechnical Engineering Report (2000) by Earth Systems Southwest, additional geologic and geotechnical studies will be performed prior to commencement of construction, which are to include additional soil borings to a depth of 40 feet or refusal along the alignment of the turbines. At least three soil borings will be performed to evaluate the soil conditions to support the wind turbines. The additional studies will also include an analysis of Project wind turbine foundation compliance with the current Uniform Building Code.	**Impact is mitigated below a level of significance.**
	63. The minimum seismic design of the Project will comply with the current edition of the Uniform Building Code for non-building structures.	
	64. Site development shall be in conformance with all recommendations as specified in the Update to Geotechnical Engineering Report (2000) by Earth Systems Southwest.	

Summary of Potential Impacts	Mitigation Measure	Level of Significance After Mitigation
Hazards and Hazardous Materials		
Impact: The turbines have the potential to leak oil, which could seep into the soil.	**65.** The WECS 20 Wind Park will continue to operate in compliance with permits issued by the County of Riverside Department of Environmental Health and by the California Department of Toxic Substances Control.	**Impact is mitigated below a level of significance.**
	66. Monitoring of all turbines for oil leakage will be performed on a monthly basis, and monthly reports will be submitted to the City Planning Department.	
	67. Any oil leakage or spills will be reported immediately to the City Planning Department.	
	68. All new turbines will be equipped with oil pans or other oil containment devices in order to catch any oil in the event of a leak.	
Impact: The Project site is in a high fire hazard area.	**69.** All new turbine nacelle covers will have fire retardant applied for containment.	**Impact is mitigated below a level of significance.**
	70. Turbine rotor blades will be equipped with lightning protection, which will bring to the ground, and then dissipate, the current.	
	71. The two roads in between the turbines and nearby residences shall be maintained by EUI free of vegetation in order to serve as fire breaks.	
	72. The Project will comply with all Fire Department requirements and conditions.	
	73. The following areas will be cleared of vegetation and maintained by EUI as a fire/fuel break for as long as the turbines are in operation: • Thirty (30) feet around the periphery of the Project. Access roads that completely surround the Project may satisfy this requirement, if approved by the fire department. • Ten (10)-radius feet around all transformers and wind turbine towers. • Thirty (30) feet around all buildings. • All buildings or equipment enclosures of substantial size containing control panels, switching equipment, or transmission equipment, and no regular human occupancy, shall be equipped with an automatic fire extinguishing system. Plans for such systems must be submitted to the Fire Department for review or approval.	

Summary of Potential Impacts	Mitigation Measure	Level of Significance After Mitigation
	74. No permit shall be issued for the construction or placing of any structure onsite for the purpose of habitation or human occupancy without first establishing fire protection requirements as a condition of such permit. This requirement includes the establishment of a minimum fire flow per Division VIII of Riverside County Ordinance 546.	
	75. Service vehicles assigned to regular maintenance or construction at the Project site shall be equipped with a portable fire extinguisher of a 4A40 BC rating. All motor driven equipment shall be equipped with an approved spark arrestor.	
Impact: The Project may create a navigational flight hazard.	**76.** The Project will comply with current FAA standards for structures, and any required FAA permits or approvals, including a "Determination of No Hazard to Air Navigation", shall be obtained prior to construction. The most recent lighting standards for wind turbines are published in the November 2005 report, Obstruction Lighting Standards for Wind Turbine Farms (DOT/FAA/AR-TN05/50). Pursuant to these standards, the Project will have one red light mounted on top of the northernmost wind turbine in the Project, and one red light mounted on top of the southernmost wind turbine in the Project. These two red lights will be utilized only at night, and will be simultaneously flashing. The Project will utilize fixtures that will minimize impacts to neighboring residents, such as red light emitting diode or rapid discharge style L-864 fixtures. Since the wind turbines will be painted white, daytime lighting is not recommended.	**Impact is mitigated below a level of significance.**
Hydrology		
Impact: Development of this Project will increase impermeable surfaces and landscape areas, which could produce additional runoff.	**77.** A hydrology study, drainage plan, and erosion control plan will be prepared and submitted to the City Engineer for review and approval. The Project will adhere to all recommendations based on the findings of said study and plans, which will be completed prior to issuance of a grading permit.	**Impact is mitigated below a level of significance.**
	78. For sites greater than one (1) acre in size, the Project applicant will obtain coverage under the State Water Resources Control Board's General National Pollutant Discharge Elimination System (NPDES) permit for construction storm water discharges through the Regional Water Quality Control Board (RWQCB), Colorado River Basin Region prior to commencement of construction. A Notice of Intent, a Storm Water Pollution Prevention Plan (SWPPP), and a Monitoring Plan will be prepared as requirements of the NPDES permit. The SWPPP will include Best Management Practices (BMPs) in compliance with the NPDES program	

Summary of Potential Impacts	Mitigation Measure	Level of Significance After Mitigation
	requirements.	
	79. The Project applicant will obtain all necessary permits, agreements, and approvals from appropriate agencies (such as the RWQCB and Mission Springs Water District) related to water quality and nuisance water issues.	
Noise		
Impact: Exterior noise levels have the potential to impact residential uses in the vicinity of the Project site.	**80.** In order to demonstrate that the Project will remain safely below the City CNEL criterion for WECS, acoustical analyses of the Project will be performed quarterly, commencing with construction and continuing until one year after completion, and reports of said analyses will be submitted to the City Planning Department. The applicant shall bear the cost of these analyses. Should any of these analyses indicate that noise levels are above allowed thresholds, steps shall be taken immediately to bring noise levels within acceptable thresholds.	**Impact is mitigated below a level of significance.**
	81. All construction activities, including the repair and maintenance of construction equipment on the Project site, shall comply with Section 130.03 of the City of Desert Hot Springs Municipal Code.	
	82. Noise-generating construction equipment operated on the Project site shall be equipped with effective noise control devices (i.e. mufflers, lagging, and/or motor enclosures).	
	83. All equipment shall be properly maintained to assure that no unnecessary noise, due to worn or improperly maintained parts, will be generated.	
	84. Truck deliveries and haul-offs shall only be permitted between the hours of 7:00 a.m. and 5:00 p.m. weekdays and 8:00 a.m. and 5:00 p.m. Saturdays. The haul routes shall be approved by the City Engineer.	
Public Services		
Impact: The Project may incrementally increase the demand for police, fire, public schools, and library services in the Project area.	**85.** The Project applicant will submit any and all required impact fees to the City, which may include but are not limited to the fire facilities impact fee, the police facilities impact fee, the general facilities impact fee, and the storm drain impact fee, as part of building permit fees.	**Impact is mitigated below a level of significance.**

Summary of Potential Impacts	Mitigation Measure	Level of Significance After Mitigation
Transportation / Traffic		
Impact: The Project will generate vehicular trips associated with installation of the turbines.	**86.** Prior to issuance of grading permits, a traffic plan to minimize traffic flow interference from construction activities shall be submitted for review and approval to the City Engineer.	**Impact is mitigated below a level of significance.**
	87. Project construction, operation, and maintenance activities will adhere to the recommendations described in the Energy Unlimited, Incorporated WECS 20 Wind Park Revised Permit Application Offsite Road and Traffic Impact Plan, prepared by Krieger & Stewart.	
Utilities and Service Systems		
Impact: The Project will generate construction waste.	**88.** All solid waste generated during Project construction will be disposed of in compliance with all State, Federal, and local statutes regulating solid waste (as set forth in City Ordinance No. 2005-14).	**Impact is mitigated below a level of significance.**

B. Areas of Controversy

The following are those areas of controversy known to the Lead Agency, including issues raised by agencies, members of the public, or both.

- Aesthetics

  - ***"The new turbines are too tall."*** The taller turbines are a current industry standard, and they allow for fewer and quieter turbines, while the smaller turbines are not cost-competitive in today's wind energy market. Additionally, the eight new turbines will be visible from less than 1% of residences within the City and the City's Sphere-of-Influence.

  - ***"There are too many turbines already."*** Two existing turbines in the WECS 20 Wind Park will be removed for each of the new turbines constructed (in accordance with City requirements); therefore, the Project will result in a net reduction of eight turbines. Additionally, visual impacts are minimized by constructing the turbines within the existing WECS 20 Wind Park, an area already populated by wind turbines. Removal of more than two existing turbines for each new turbine would decrease the efficiency of the wind park by removing currently operating, productive equipment from the existing wind park.

  - ***"Wind turbines are ugly and are an eyesore."*** The Project includes removing sixteen existing smaller turbines from, and adding eight new larger turbines to, the existing WECS 20 Wind Park, which will result in a net reduction of eight wind turbines in the WECS 20 Wind Park. Additionally, aesthetic impacts are minimized by constructing the turbines within the existing WECS 20 Wind Park, an area already populated by wind turbines; by painting the turbines in light environmental colors (white) to blend with the surrounding turbines and surrounding natural environment; and by revegetating the sites of the removed turbines.

- ***"Wind farms are not maintained, and they look like 'junk yards'."*** EUI has always maintained their wind farms, including the WECS 20 Wind Park, and will continue to do so upon construction of the eight new wind turbines. Parts, tools, and other equipment will be stored only in approved locations on the site, and decommissioned or inoperable wind turbines will not be stored onsite. Additionally, the Project site will be inspected monthly for compliance with maintenance and storage requirements, and monthly reports will be submitted to the City Planning Department.

- ***"Flashing lights on the tops of turbines are a nuisance and cannot be mitigated."*** Current Federal Aviation Administration (FAA) regulations require that, for navigational safety, a red light is to be mounted on top of the southernmost turbine and the northernmost turbine in the Project, and that the lights are to be flashing simultaneously. The FAA reports that studies suggest that the use of red light emitting diode or rapid discharge style L-864 fixtures are effective in reducing impacts on neighboring communities, as the fixtures' exposure time is minimal, thus creating less of a nuisance than many other types of fixtures. The Project will utilize lights that minimize impacts to neighboring communities, while meeting all FAA requirements. Since the lights will be flashing only at night and will be hundreds of feet above any residence, the lighting required by the FAA is not anticipated to have a significant effect on residences in the vicinity. All required permits or approvals will be obtained from the FAA prior to issuance of building permits.

Refer to Section 10 for a detailed description of mitigation measures intended to reduce potential impacts upon aesthetics to a level of insignificance.

- Biological Resources

  - ***"Wind turbines are a hazard to migratory birds."*** AMEC (2004) has concluded that the potential for bird mortality resulting from the eight proposed wind turbines is low, but not zero; however, risk factors associated with bird collisions are minimized by location, bird abundance, and turbine design. A recent (2005) California Energy Commission staff report on avian mortality from wind turbines compared the high-mortality areas of Altamont Pass and Solano County with the lower-mortality areas of Tehachapi Pass, San Gorgonio Pass, and Pacheco Pass. The staff findings and suggested policy options included: "The studies that have been completed report lower bird use and fatality rates in these wind areas [Tehachapi, San Gorgonio, and Pacheco]. Based on research results it may be appropriate for the Energy Commission to encourage re-powering and expansion in these areas." Lowering the number of turbines here and elsewhere in the San Gorgonio Pass as a result of re-powering may decrease cumulative impacts to birds from collisions. See Biological Resources under Section 5 for a complete discussion of potential impacts upon migratory birds. Refer to Section 10 for a description of mitigation measures intended to reduce potential impacts upon biological resources to a level of insignificance.

- Hazards and Hazardous Materials

  - ***"Wind turbines are a fire hazard."*** In over twenty years of operation, EUI has had no turbine fires, and there have been no fires reported on any of the new GE wind turbines proposed for the Project. A records search dated October 4, 2006, performed by the Riverside County Fire Department, yielded results of no fire hazard or vegetation growth violations at the Project site for 2004-2005. The new turbine nacelle covers will have fire retardant applied for containment, and the new blades will be equipped with lightning protection to bring to the ground, and then dissipate, the current. Additionally, the WECS 20 Wind Park

has two roads, with no vegetation, in between the turbines and the residences, which will be maintained free of vegetation by EUI to serve as fire breaks. The Project will comply with all Fire Department requirements and conditions.

- ***"If a wind turbine falls off a truck during transport to the Project site, it may block the only road into the site."*** The access route to the WECS 20 Wind Park is relatively flat, does not have any sharp turns, and proceeds generally away from residences in the area. In the unlikely event of a turbine falling off of a truck, the turbine would likely remain entirely on EUI property. The access road is for use only by EUI, its associates, and Metropolitan Water District, as the WECS 20 Wind Park is the sole destination of this road. EUI has utilized this access route without incident for over twenty years, and any temporary blockage thereof has no potential to impact the residential community or others in the Project area.

- ***"Wind turbines leak oil, which contaminates the soil and ground water."*** The existing turbines in the WECS 20 Wind Park are equipped with oil pans, which will catch any oil that may leak from the turbines. The soil below the turbines has not been contaminated with oil. The eight new turbines will also be equipped with oil pans or other oil containment devices. Because oil will not leak into the soil, the Project has no potential to contaminate the ground water. The use and management of the oil is regulated by the County of Riverside Department of Environmental Health, who has issued a Hazardous Materials Management Permit (Facility Number 89040), and the California Department of Toxic Substances Control has issued a permanent California EPA identification number for the Project site (CAL000237812). A records search performed by the Hazardous Materials Management Division of the Riverside County Department of Environmental Health yielded results of no reports found of complaints or violations pertaining to hazardous materials at the Project site. Additionally, EUI staff routinely check for oil leaks, and any leaks are

immediately remedied. Upon completion of construction, monthly inspections for oil leaks will be performed, and monthly reports will be submitted to the City Planning Department.

- ***"Does EUI have an easement to use the roads on Metropolitan Water District (MWD) property?"*** EUI has an easement to use the roads on MWD property. A copy of the easement is on file and may be viewed at the City Planning Department.

- ***"The access roads may not be sufficient to support the trucks and construction equipment."*** Nearby residents have raised concerns regarding the adequacy of the access roads to handle the trucks and construction equipment to be used during construction of the turbines. To ensure safety during construction operations, minor improvements may be performed as needed to the roads on MWD property and EUI's private access roads.

- ***"There is no grading plan submitted with this Project."*** EUI will submit a grading plan for City's review and approval prior to any earth-moving activities. All Project grading will be performed in accordance with the approved grading plan.

Refer to Section 10 for a description of mitigation measures intended to reduce potential impacts relating to hazards and hazardous materials to a level of insignificance.

- Noise

- ***"Wind turbines generate too much noise, which is a nuisance to local residents."*** The Project is in compliance with the noise and land use compatibility standards as set forth in the City of Desert Hot Springs Comprehensive General Plan (2000), and is in compliance with the noise standards for commercial WECS as set forth in County of Riverside Ordinance 348. Operation of the Project is anticipated to result in only a

1 decibel (dB) increase over existing noise levels produced by the WECS 20 Wind Park (Hersh Walker Acoustics, 2004).

According to the acoustical study by Hersh Walker Acoustics (2004), maximum noise levels anticipated to be generated by the Project are 47-48 dB at the nearest residence. This level is within the range (≤55 dB) of "Normally Acceptable: with no special noise reduction requirements, assuming standard construction" (City of Desert Hot Springs Comprehensive General Plan, 2000). The anticipated noise levels also meet County of Riverside noise requirements for Commercial WECS as set forth in Ordinance 348, which require that noise levels to each receptor be at or below 55 dB.

C. Issues to be Resolved

All potential environmental impacts, which are summarized above and described in detail in Section 5, will be mitigated to a level of insignificance as described above and by the proposed mitigation measures described in Section 10.

The only feasible alternative to the Project is the No Project Alternative, as the potential environmental impacts of the Project as proposed are either less than or similar to those of each of the alternatives (see Sections 5 and 11). The Project as proposed is environmentally superior to the No Project Alternative because it allows for improved efficiency of the existing WECS 20 Wind Park by constructing, operating, and maintaining eight GE 1.5 MW wind turbine generators, while removing sixteen of the older 65 kW Bonus wind turbine generators. The sites of the removed turbines will either be included as part of one of the new turbine sites, or will be revegetated with native species, and will not be used for wind energy production in the future. Any potential environmental impacts of the Project will be mitigated to a level of insignificance as described in Section 10. Therefore, there are no issues remaining to be resolved.

3. PROJECT DESCRIPTION

A. Proposed Project

The Energy Unlimited, Incorporated Revised Commercial WECS 20 Permit Project (Project) consists of the construction, operation, and maintenance of eight (8) new GE 1.5 MW wind turbine generators in a single north-south row, downhill from the primary ridgeline of Whitewater Canyon, in the existing WECS 20 Wind Park. The wind turbines on the end of each row will be 100.25 meters (329 feet) tall (65-meter [213-foot] tower, 35.25-meter [116-foot] blade), and the six wind turbines in between will be 103.50 meters (340 feet) tall (65-meter [213-foot] tower, 38.50-[126-foot] blade), along with wiring, conduit, and appurtenances (such as switchgear). The project also includes the removal of 16 existing Bonus 65 kW wind turbines, the construction of a single-story (40 foot by 100 foot) storage building for parts and tools, and the expansion of an existing outdoor storage area for spare parts for the turbines. All structures will be constructed within the existing WECS 20 Wind Park. The Project does not include an expansion of the WECS 20 Wind Park Boundaries. See Figures 2, 3, and 5.

Project construction is anticipated to include grading, construction of turbine foundations (which will consist of the proprietary Patrick and Henderson tensionless pier using a large diameter, cast-in-place pier); erection of the wind turbine generators; electrical cable excavation and installation; and minor improvements to existing, unpaved, private access roads as necessary to ensure safety during construction. No improvements will be performed on paved, public roads. All grading will be consistent with an approved grading plan, which will be submitted to the City for review and approval prior to any Project grading. The Project is anticipated to temporarily disturb approximately 0.74 acre and permanently disturb approximately 0.61 acre of the approximately 160-acre site. For a detailed description of wind turbine equipment, see Wind Turbine Generator Technical Data in Appendix H.

Project operation and maintenance is anticipated to include maintenance of access roads and fire breaks free of vegetation and visits to each turbine site by EUI employees approximately once daily to visually check for equipment failure, oil leaks, and to ensure that all equipment is operating properly. Gearbox oil will be replaced in the turbines

periodically, and the used oil will be stored onsite in four 55-gallon aboveground drums, which will be removed from the site approximately twice annually by a licensed waste oil recycling company. Any oil leaks or equipment failure will be addressed promptly by EUI.

B. Land Use and Zoning

Land use of the Project site is designated I-E (Energy-Related Industrial) by the City of Desert Hot Springs Comprehensive General Plan (General Plan, 2000). The Project site is within the I-E District (Industrial-Scale Energy Production District of the City of Desert Hot Springs Zoning Ordinance (2000). The General Plan designations, zoning, and current land uses of the parcels adjacent to the Project site are summarized in the following table:

Surrounding Land Uses		
Direction	**Zoning**	**Current Land Use**
North	Open Space Mountain Reserve (OS/MR)	Vacant
South	Open Space Mountain Reserve (OS/MR & Residential Estate R-E-5)	Vacant/Scattered Single Family Residences
West	Open Space Mountain Reserve (OS/MR)	Vacant
East	Open Space Mountain Reserve (OS/MR)	Vacant/Aqueduct

Land to the north and west consists of open space. Land to the south consists of open space with scattered single-family residences beyond. Land to the east consists of open space, with the Colorado River Aqueduct traversing southwesterly along the easterly boundary of the Project site. State Route 62 is located approximately 0.5 mile easterly of the easterly boundary of the Project site, with open space and single family residences beyond.

The 80-acre parcel immediately northerly of the Project site was approved for the installation of wind turbines as part of the original Commercial Wind Energy Conversion Systems (WECS) Permit 20 in 1985, is currently undeveloped, and the approval has expired. The property beyond the Project site to the west and northwest is undeveloped,

hilly land. There are scattered single-family residences, the majority of which are single-level structures, easterly and southerly of the Project site.

Immediately southwest of and adjacent to the Project site there are 98 turbines in the north half of Sections 1 and 2, and 10 of those 98 turbines are 1 MW wind turbines. There are also 228 wind turbines in the south half of Section 1. The Section 1 turbines have been operating for approximately 22 years, and the Section 1 permit is scheduled to expire in 2026. Seven additional megawatt-sized wind turbines have been approved for construction on the north half of Section 1 by the County of Riverside for operation until the year 2026, but have not yet been constructed. Just south of Section 1, on Whitewater Hill, there are 234 wind turbines, of which 47 are 1.5 MW wind turbines. In addition, two 3.0 MW turbines were approved by Riverside County in June 2006.

Another proposed wind project within County of Riverside jurisdiction is located in Section 5, Township 3 South, Range 4 East and proposes to construct 22 wind turbines of up to 327 feet in height, with the nearest turbine being approximately 4.5 miles southeasterly of the southeasterly corner of the existing WECS 20 Wind Park.

The Project is consistent with the land uses permitted by the City of Desert Hot Springs zoning and land use designations for the Project site.

C. Objectives

The Project objectives are as follows:

- Improve the productivity of the existing WECS 20 Wind Park by removing sixteen of the existing older wind turbines and constructing eight newer, more efficient wind turbines.

- Allow the existing WECS 20 Wind Park to improve its use of the local wind resource within existing site boundaries, thereby increasing the amount of renewable energy available for use without increasing the area of the WECS 20 Wind Park.

- Remove older, less efficient wind turbines, and restore the old turbine sites by revegetating the sites with native plant species, thus reducing the area of habitat taken by the wind turbines.

4. PROJECT'S ENVIRONMENTAL SETTING

A. Location

The Project site is located on approximately 160 acres in the southwest quarter of Section 31, Township 2 South, Range 4 East, San Bernardino Meridian, in the City of Desert Hot Springs, Riverside County, California, at an elevation of approximately 1,800 feet above mean sea level (MSL). The Project site is recorded with the County of Riverside as Assessor's Parcel Number 667-160-001. The City of Desert Hot Springs is located in the foothills of the San Bernardino Mountains, in the Coachella Valley, approximately 110 miles east of Los Angeles. The elevation of the City of Desert Hot Springs is approximately 1,185 feet above MSL. The Project site is located approximately 0.5 mile westerly of State Route 62, and approximately 2 miles northerly of Interstate 10.

The topography of the Project site is highly irregular, consisting of eastward and southward sloping ridges and stream channels. The overall effect is that of a highly dissected alluvial fan surface. Regional slope on the ridge tops is 5 degrees to the southwest. Approximately half of the site consists of slopes that are of 25 percent or greater grade. The ground surface is characterized by desert pavement, consisting of very coarse sands, gravels, and cobbles. Boulders to 3 feet in diameter are scattered on the surface, but are generally confined to the ridgetop areas.

The Project site is located within the existing WECS 20 Wind Park, which has been operating as a wind farm since 1985, and currently contains 69 wind turbines and unpaved maintenance roads (refer to Primary Exhibit Plot Plan/Site Disturbance Plan). The Project site is located several hundred feet above the surrounding desert basin in a very windy area of the San Gorgonio Pass, which is one of the windiest regions in California. There are thousands of wind turbines of various sizes located throughout the San Gorgonio Pass.

The 80-acre parcel immediately northerly of the Project site was approved for the installation of wind turbines as part of the original Commercial Wind Energy Conversion Systems (WECS) Permit 20 in 1985, is currently undeveloped, and the approval is expired. The property beyond the Project site to the west and northwest is undeveloped,

hilly land. There are scattered single-family residences, the majority of which are single-level structures, easterly and southerly of the Project site.

Immediately southwest of and adjacent to the Project site there are 98 turbines in the northerly halves of Sections 1 and 2, and ten of those 98 turbines are 1 MW wind turbines. There are also 228 wind turbines in the south half of Section 1. The Section 1 turbines have been operating for approximately 22 years, and the Section 1 permit is scheduled to expire in 2026. Seven additional megawatt-sized wind turbines have been approved for construction on the north half of Section 1 by the County of Riverside for operation until the year 2026, and are not yet constructed. Just south of Section 1, on Whitewater Hill, there are 234 wind turbines, of which 47 are 1.5 MW wind turbines. In addition, two 3.0 MW wind turbines were approved by Riverside County in June 2006.

The existing WECS 20 Wind Park is comprised of 69 individual wind turbines with related existing transmission lines, which are located both on and off the Project site. Those transmission lines located offsite are within Southern California Edison Company-owned easements. All of the power generated from these wind turbines is sold to Southern California Edison Company under contract until the year 2015. The Project site will be used for wind energy production for the foreseeable future. The precise location, boundaries, and access routes of the Project site are shown in Figures 1, 2, 3, and 4. Visual simulations depicting the Project site with the proposed turbines installed are included in Appendix D.

B. Climate and Air Quality

The climate of Desert Hot Springs is characterized by temperatures ranging from average annual maximum temperatures of approximately 89 degrees Fahrenheit to average annual minimum temperatures of approximately 57 degrees Fahrenheit, and an average annual rainfall of approximately 5.5 inches (Western Regional Climate Center [WRCC] data for Palm Springs, California for the period of record 01/01/1927 to 10/31/2006). The warm summer months are tempered by low humidity. Desert Hot Springs and the entire Coachella Valley comprise a geographically and meteorologically unique area wholly contained within the Salton Sea Air Basin.

The region is currently impacted by significant air pollution levels caused by the transport of pollutants from coastal air basins to the west, primarily ozone, and by locally generated PM_{10}. The Coachella Valley is classified as a "severe-17" ozone non-attainment area under the Federal Clean Air Act (2000), and as a serious non-attainment area for PM_{10} in the Final 2003 Coachella Valley PM10 State Implementation Plan prepared by the South Coast Air Quality Management District.

C. Geology

The Project site is located at the eastern end of the San Gorgonio Pass. The San Andreas Fault Zone is the most significant potential seismic source in the Project vicinity. The nearest known seismic source is the San Andreas Fault (southern), which is classified as a Type A fault (moment magnitude ≥ 7.0 and slip rate ≥ 5), and is located less than 2 kilometers (<1.2 miles) from the Project site (Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada, Division of Mines and Geology, 1998).

The Project site is located on a ridge that is underlain by the Pleistocene-aged Cabazon Fanglomerate. This formation consists of semi-consolidated, poorly-bedded, poorly-sorted, pebbly to bouldery conglomerate. These deposits are alluvial in origin (deposited by flowing water) and have been uplifted by tectonic forces related to movements along the San Andreas Fault. The rugged topography at the site is primarily the result of the dissection of these deposits by erosion along currently active stream channels.

D. Soils

The Soil Survey of the Coachella Valley Area, prepared by the United States Department of Agriculture Soil Conservation Service, identifies the following soil types at the Project site (AMEC, 2000):

- Carsitas gravelly sand – a moderately sloping soil associated with alluvial fans.

- Chuckawalla cobbly fine sandy loam (9-30% slopes) – also associated with alluvial fans and remnants emanating from the San Gorgonio Mountains.

- Chuckawalla cobbly fine sandy loam (2-9% slopes) – on remnants of old alluvial fans emanating from the San Gorgonio Mountains.

- Lithic Torripsamments – rock outcrop complexes on the hillsides.

- Carsitas fine sand (0-5% slopes) – fine sandy soil on alluvial fans and valley fill.

E. Vegetation

Based on the AMEC report (2000), the Project site consists mainly of typical creosote bush scrub, dominated by creosote bush (*Larrea tridentata*), burrobush (*Ambrosia dumosa*), indigo bush (*Psorothamnus fremontii*), and brittlebush (*Encelia farinosa*). Several species of cacti were found on the site, including California barrel cactus (*Ferocactus cylindraceus*). The washes contained the highest number and variety of plant species. Plants common to these areas included catclaw (*Acacia greggii*), sweetbush (*Bebbia juncea*), and Mormon tea (*Ephedra californica*).

F. Wildlife Habitat

The Project site is located within the Upper Mission Creek/Big Morongo Canyon Conservation Area of the Recirculated Draft Coachella Valley Multiple Species Habitat Conservation Plan and Natural Communities Conservation Plan (CVMSHCP, 2007). According to the CVMSHCP, desert tortoise (*Gopherus agassizii*) is anticipated to occur on the Project site, and Sonoran creosote bush scrub and Sonoran mixed woody & succulent scrub communities have been determined present at the Project site. The Project site is not located within the Coachella Valley Fringe-Toed Lizard Fee Area.

The San Gorgonio Pass is a high-use nocturnal flyway for migratory songbirds. Both the spring and fall seasons have shown extensive bird flights. McCrary *et al.* (1983) estimated that 32 million birds flew through the Coachella Valley during spring of 1982, and 37 million birds during fall of 1982 (McCrary *et al.* 1984). Traffic rates of 5,000 to 10,000 birds per hour were recorded with radar equipment. Study sites ranged over a larger area than just the San Gorgonio Pass, extending to Palm Canyon, the Whitewater

floodplain, and Thousand Palms. Golden eagles have been recorded nesting at Whitewater Canyon, and are present in low numbers in the winter. Occasional turkey vultures are recorded in the San Gorgonio Pass, as are red-tailed hawks and a variety of less common raptors.

Potentially significant impacts of the Project on avian species and other biological resources are described in Section 5.

5. ENVIRONMENTAL EFFECTS OF THE PROPOSED PROJECT

A. Aesthetics

A project may have a significant impact on Aesthetics if it: (a) adversely affects a scenic vista or state scenic highway; (b) substantially damages scenic resources; (c) substantially degrades the existing visual character or quality of the site or its surroundings; or (d) creates a new source of substantial light or glare that would adversely affect day or nighttime views in the area. The Project consists of the construction, operation, and maintenance of eight 1.5 MW wind turbine generators in a single north-south row (with the two end turbines at a total height of approximately 329 feet, and the six turbines in between at a total height of approximately 340 feet), the removal of sixteen existing 65 kW Bonus wind turbine generators, the construction of one single-story (40 foot by 100 foot) storage building, and the expansion of an existing outdoor storage area. The outdoor storage area will be utilized for storage of large items such as turbine towers, blades, and nacelles; is screened by surrounding steep slopes (greater than 25 percent); and is not visible from any residences or from State Route 62.

Existing Conditions

The Project site, the existing WECS 20 Wind Park, is located approximately 0.5 mile westerly of State Route 62 (an officially designated State Scenic Highway), on the easterly side of the San Bernardino Mountains, and just westerly of the Colorado River Aqueduct. The vicinity of the Project site is characterized by hilly terrain, drainages interspersed among the hillsides, and scattered native vegetation. Additional wind farms approved by the County of Riverside and containing hundreds of wind turbines are located to the southwest, south, and southeast of the Project site, with more wind turbines visible in areas beyond. The Project site itself contains an existing wind farm, including 69 operating wind turbines and dirt roads that traverse the property providing access to all of these existing wind turbines.

Proposed Conditions

The Project proposes to remove sixteen of the existing wind turbines and replace them with eight new, taller turbines. The new turbines would be located on a ridgeline, downhill from the primary ridgeline of Whitewater Canyon. The new turbines would be arranged in a single north-south row. The older existing turbines are approximately 125 feet in height, while the proposed new turbines would be up to 340 feet tall. In addition to the wind turbines, an outdoor storage area and a 100-foot by 40-foot single-story storage facility are proposed.

Scenic Vista/Scenic Highway Impacts

The proposed turbines will be taller, extending further above the ridgeline, than the existing turbines, and would be visible from State Route 62 (a designated State Scenic Highway), as are the existing wind turbines. The City of Desert Hot Springs General Plan EIR (General Plan EIR) considered visual impacts and potential visual clutter related to Wind Energy Conversion Systems (WECS), and noted that visual resources in the area have already been impacted by existing turbines in the vicinity. The General Plan EIR notes that potential visual impacts are expected to be limited to short distances and will take a subordinate position in relation to the surrounding landscape (page III-135 of the General Plan EIR). As views from State Route 62 are already impacted by the existing wind farm as well as additional wind farms located nearby, the impact of taller, but fewer, wind turbines is not expected to be significant in comparison to the existing condition once mitigation measures to ensure minimization of impacts and consistency with the appearance (structure colors, vegetation, etc.) of the existing wind park are implemented.

The proposed structures would also be visible from future residences in the approved Highland Falls residential development located to the northeast of the Project site, as well as to the residences located in County of Riverside jurisdiction to the east and south. However, the existing structures are already visible to both the Highland Falls residential development and the County areas. Further, the primary views for future residences of the Highland Falls development are those views to the east across the valley.

The proposed siting of the structures complies with the scenic setback relating to State Route 62, as set forth in the City of Desert Hot Springs Zoning Ordinance (2000), which states, "No commercial WECS shall be located where the center of the tower is within 1,320 feet (0.25 mile) of State Route 62." A visual impact analysis was prepared for the Project and is included in Appendix D. Existing and proposed views from the new Highland Falls residential development are shown on Plates 5 and 6 in Appendix D.

Disturbed areas resulting from the removal of existing turbines could create visual impacts if left disturbed and untreated after removal is completed. To ensure that disturbed areas are returned to their natural state, a biologist will oversee revegetation of such areas.

Implementation of the Project will introduce new light sources on the Project site, which consist of illumination associated with onsite structures (such as the storage building), interior and exterior lighting, lights at the tops of the towers (as required by the Federal Aviation Administration [FAA]), and light from vehicles on the roadways and parking areas. The FAA requires that one red light be mounted atop both the northernmost wind turbine in the Project and the southernmost wind turbine in the Project, and that the lights flash simultaneously.

Since the Project site is located within the existing WECS 20 Wind Park, and the additional eight wind turbines will be maintained as part of the WECS 20 Wind Park, there will not be a significant increase in light from vehicles on the roadways and parking areas. Mitigation measures intended to reduce potential impacts upon aesthetics to a level of insignificance are listed below and are described in detail in Section 10.

- The eight wind turbines will be painted white, with a matte or galvanized finish. The storage building will be painted in an earth-tone, such as beige.

- All Project grading will comply with the City's regulations in order to minimize adverse impacts to viewsheds.

- Upon removal of the 16 Bonus wind turbines, the area where each individual Bonus wind turbine was located shall be remedied. The site shall be evaluated

and any soil contamination shall be removed, structural foundations (cutting to six feet below grade) and all manmade debris shall be removed from the site and the area shall be replanted with plant material native to the Coachella Valley. Monitoring of all such activities shall be undertaken by a qualified biologist, who shall file a report to the City of findings upon completion of the site remediation as outlined above.

- During ongoing operation and maintenance of the Project, only surplus turbine parts too large to be stored in the storage building will be stored in the open storage area. Prior to storing any additional items in the open storage area which are not large turbine parts, a list of said items will be submitted in writing to the City for approval. Decommissioned wind turbines, including inoperable or wrecked machinery, motor vehicles, construction equipment, and construction debris will not be stored onsite.

- The outdoor storage area shall be inspected annually by the City.

- No advertising sign or logo shall be placed or painted on any commercial WECS.

- No commercial WECS shall be located where the center of the tower is within 1320 feet (0.25 mile of State Route 62).

- All aspects of the Project's development shall adhere to Wind Energy Conversion Systems (WECS) requirements as adopted in Section 159.08.030(2)(J) of the City's Municipal Zoning Ordinance.

- All lighting equipment and devices will be shielded or recessed so that direct light and glare are contained within the boundaries of the Project site, away from adjoining properties and public rights-of-way.

- Project development shall comply with the City's adopted outdoor lighting standards as specified in Section 159.20.030 of the Desert Hot Springs Municipal Zoning Code.

- Lighting plans indicating proposed lighting levels and methods to minimize impact on adjacent properties shall be reviewed and approved by the City prior to installation. Modification, alteration, or addition to any approved lighting shall not be undertaken prior to approval by the City.

B. Agriculture Resources

A project may have a significant impact on Agriculture Resources if it: (a) converts Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural uses; (b) conflicts with existing zoning for agricultural use, or a Williamson Act contract; or (c) involves other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use.

The City of Desert Hot Springs Comprehensive General Plan (2000) indicates that there is no prime agricultural farmland, no Farmland of Statewide Importance, no Unique Farmland, and no Williamson Act contract in place within the City limits or the City's Sphere-of-Influence; therefore, the Project will have no impact upon agricultural resources, and no mitigation measures relating to agriculture resources are required.

C. Air Quality

A Project may have a significant impact on Air Quality if it will: (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; (d) expose sensitive receptors to substantial pollutant concentrations; or (e) create objectionable odors affecting a substantial number of people.

Global warming and greenhouse gases (GHGs) are an environmental issue being raised on statewide, national, and global levels. Currently, there is no regulatory guidance for analysis of GHGs. Evaluation of any potential global warming effects resulting from the

Project, including modeling and gauging the potential impacts associated with trip generation and the effect on the greenhouse effect or global warming, would be entirely speculative since no modeling protocol or significance criteria have been established.

The following criteria are identified as thresholds for determining the significance of air quality impacts, if the project were to:

- Result in an adverse effect on existing air quality (e.g., 500 or more dwelling units).

- Result in an adverse effect to a sensitive use (e.g., school) located near a major air pollutant emission source.

Presented in the South Coast Air Quality Management District (SCAQMD) CEQA Air Quality Handbook (1993) is both a methodology for the quantification of project related air quality impacts and recommended thresholds to evaluate the significance of these emissions. In Chapter 6 of the SCAQMD CEQA Air Quality Handbook, the SCAQMD has established two types of air pollution thresholds (i.e., emission thresholds and additional indicators) to assist local governmental agencies in determining whether the projected emissions from the operational phase of a project will be significant. As stated in the SCAQMD CEQA Air Quality Handbook, "if the lead agency finds that the operational phase of a project has the potential to exceed either of the air pollution thresholds, the project should be considered significant." Both types of threshold factors are discussed below.

The Project region is currently impacted by significant air pollution levels. Coachella Valley is classified as a "severe-17" ozone non-attainment area under the Federal Clean Air Act (2000), and as a serious non-attainment area for PM_{10} in the Final 2003 Coachella Valley PM10 State Implementation Plan prepared by the South Coast Air Quality Management District. As indicated in the SCAQMD CEQA Air Quality Handbook, "The District considers a project to be mitigated to a level of insignificance if its impact is mitigated below the thresholds defined in Chapter 6 of the SCAQMD CEQA Air Quality Handbook."

The SCAQMD recommends that "additional indicators" (secondary effects) be used as screening criteria with respect to air quality. Relevant additional factors identified in the SCAQMD CEQA Air Quality Handbook include the following significance (criteria: 1) interference with the attainment of the Federal or State ambient air quality standards by either violating or contributing to an existing or projected air quality violation; 2) generation of vehicle trips that cause a CO "hot spot"; 3) creation of, or subject receptors to, an objectionable odor onsite that could result in an accidental release of air toxic emissions or acutely hazardous materials posing a threat to public health and safety; 5) emissions of an air toxic contaminant regulated by SCAQMD rules or included on a Federal or State air toxic list; 6) the burning of hazardous, medical, or municipal waste as in waste-to-energy facilities; and/or, 7) emissions of carcinogenic or toxic air contaminants that individually or cumulatively exceed the maximum individual cancer risk of 10 in 1 million.

The SCAQMD CEQA Air Quality Handbook states that if a project generates emissions on an individual day during construction or operations phases exceeding 75 pounds per day for ROC, 100 pounds per day for NO_x, 550 pounds per day for CO, or 150 pounds per day for either PM_{10} or SO_x, then the project should be considered significant. The Project is anticipated to generate temporary, short-term increases in air pollutants during Project construction; however, the Project is not expected to exceed the daily significance thresholds described above. Additionally, contract documents will require construction contractors to equip all machinery and equipment with suitable air pollution control devices, and to use dust palliatives (such as water) to control dust emissions created by construction activities. Refer to Tables 1 through 4, Estimated Construction Air Pollutant Emissions, and Table 5, Estimated Operation and Maintenance Air Pollutant Emissions, for a detailed description of the estimated total daily air pollutant emissions anticipated during construction and operation of the Project. Because daily emission thresholds will not be exceeded by the Project, and the Project will not result in any of the "additional indicators" (secondary effects) described above, no further studies are needed. Mitigation measures intended to reduce potential impacts upon air quality

are listed below and are described in detail in Section 10.

- Prior to commencement of any demolition, grading, or construction activities, the Project applicant will prepare and submit for City Engineering Department review and approval a Fugitive Dust (PM_{10}) Mitigation Plan.

- Traffic speeds of no greater than 15 miles per hour will be observed on all unpaved roadways.

- All grading operations will be suspended when wind speed (as instantaneous gusts) exceeds 25 miles per hour.

- Trucks importing and/or exporting soil or other loose material will be covered and/or watered down prior to entering public streets to minimize potential fugitive dust.

- Soil binders will be spread on unpaved roads and parking areas, and/or AQMD-approved soil stabilizers will be applied according to manufacturer's specifications to all inactive construction areas (previously graded areas that remain inactive for 96 hours).

- SCAQMD Rule 403 shall be adhered to, ensuring the clean-up of construction-related dirt on approach routes to the site.

D. Biological Resources

A project has a significant effect on Biological Resources if it will: (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 CDFG or USFWS; (b) have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFG or USFWS; (c) have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act, 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; or (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.

Project actions are also evaluated in terms of impacts to species that do not fall into one of the above categories, but which nevertheless are protected by federal or state regulations. Most often, such cases involve nests of birds, such as red-tailed hawks, which are not rare, but are still protected under the federal Migratory Bird Treaty Act and the California Department of Fish and Game Code.

The term "rare" species is usually interpreted to mean species that are on lists prepared by federal, state, or private organizations but are of lower sensitivity status than threatened or endangered species. Thus, the term "rare" refers to species listed by the California Native Plant Society, federal / state Species of Special Concern, or species considered sensitive by a local jurisdiction.

Evaluation of significance is typically different between threatened/endangered species as compared to non-listed or rare species. Any loss of threatened or endangered species or their habitat is considered a significant impact in relation to federal and state endangered species regulations. However, thresholds of significance for loss of rare species have not been codified in federal or state regulations. Generally, the term is interpreted in terms of whether the project action would jeopardize the continued persistence or viability of individuals or populations of the species in question.

The Project site, the WECS 20 Wind Park, has been operating as a wind farm since 1985. The site has been previously disturbed by the construction of wind turbines and maintenance roads. Based on the AMEC reports (2000, 2004), sensitive species and habitat that occur at the project site may be significantly impacted by the Project;

however, such impacts will be reduced to a level of insignificance by incorporating the mitigation measures described in Section 10.

Vegetation and Habitats. According to the AMEC report (2000), no sensitive plant species occur or have a high probability of occurrence at the Project site. Vegetation at the Project site consists mainly of typical creosote bush scrub. In addition, barrel cactus is widespread at the Project site, and construction at the proposed turbine sites will result in the removal of several barrel cactus individuals. Although barrel cactus is not considered a sensitive species, it is of biological interest due to its longevity and slow growth rate of approximately one centimeter per year. It has been estimated that several barrel cactus individuals on the Project site are well in excess of one hundred years old. Mitigation measures intended to reduce potential impacts upon vegetation and habitats to a level of insignificance are listed below and are described in detail in Section 10.

- Thirty days prior to construction, the Project site shall be re-surveyed by a qualified biologist for the presence of sensitive species. Additionally, a qualified biological monitor will be onsite during all construction activities. The biological monitor will have the authority to halt or divert construction activities which may be in violation of the stipulations herein. The biological monitor will file a final report with the City Planning Department at the conclusion of construction.

- All construction personnel will participate in a biological awareness training program prior to commencement of construction activities, and a report verifying same will be provided to the City Planning Department.

- Upon removal of the 16 Bonus wind turbines, the area where each individual Bonus wind turbine was located shall be remedied. The site shall be evaluated, and any soil contamination shall be removed, structural foundations (cutting to six feet below grade) and all manmade debris shall be removed from the site and the area regraded and landscaped with plant material native to the region (i.e. the Coachella Valley). Monitoring of such activities shall be undertaken by a qualified biological monitor, who shall file a written report of findings to the City upon completion of the site remediation as outlined above.

- All barrel cacti located in areas anticipated to be impacted by the Project will be transplanted into portions of the property that will remain as natural open space. The transplantation sites will, as closely as possible, match the original barrel cacti locations with regards to soils, slope, and aspect.

- All turbine sites will be clearly marked prior to grading in order to limit damage to adjacent vegetation. Grading and vegetation removal will be limited to construction areas.

- Construction and maintenance traffic will utilize existing roads, and vehicle parking will be limited to existing disturbed areas.

- Grading onsite will be limited to construction areas only. All tower sites and access road locations will be clearly marked prior to the initiation of any ground-disturbing activity. No construction activities shall occur adjacent to Super Creek. All staging areas shall occur on previously-disturbed areas.

- During construction and ongoing maintenance operations, wind farm personnel will be restricted to approved dirt roads only. No unauthorized grading of the site will be permitted.

- Applicant will be responsible for controlling and removing all trash and/or windblown debris generated on the site during construction and routine maintenance operations.

- All construction personnel will participate in a biological awareness training program prior to commencement of construction activities, and a report verifying same will be provided to the City Planning Department.

Desert Tortoise. The Project may result in a potentially significant impact on the desert tortoise. During AMEC's survey (2000), a single desert tortoise burrow was observed immediately north of one of the proposed turbine locations (C41); however, all of the proposed turbine locations contain suitable desert tortoise habitat. Because desert

tortoises could wander into construction areas, potential impacts could include the loss of a tortoise from activities associated with ground clearing or construction, or by vehicle collision. Conversely, tortoises are known to construct burrows under the concrete bases of wind turbines on Painted Hill. The turbines are compatible with tortoise populations as long as appropriate mitigation measures are observed for tortoise protection. Mitigation measures intended to reduce potential impacts upon the desert tortoise to a level of insignificance are listed below and are described in detail in Section 10.

- In order to ensure that no desert tortoises are harmed and that the tortoises can continue to utilize the Project site during the operation and maintenance phases of the Project, a desert tortoise survey will be performed within 24 hours prior to commencement of construction, and all construction activities will be monitored by a qualified biologist. A California Endangered Species Act (CESA) Permit will be obtained from the California Department of Fish and Game.

- No construction activities will occur within 100 feet of desert tortoise. If a desert tortoise is found onsite, construction activities should cease within 100 feet of the animal. The desert tortoise will be allowed to move offsite of its own volition.

- No construction activities will occur within 100 feet of desert tortoise burrows. Any burrows located during preconstruction desert tortoise surveys should be fenced with temporary fencing to provide a 100-foot buffer around the burrow. Fences should consist of a non-breachable barrier and support structures.

- Construction activities (including parking and laydown areas) will utilize existing access roads and previously-disturbed areas to the maximum extent feasible. Temporary exclusion fencing will be placed around staging areas.

- The biological monitor will supervise and approve the construction and placement of desert tortoise exclusion fence around burrows and staging areas. The biological monitor will inspect the temporary fencing at least weekly. Corrective actions will be taken promptly to maintain the integrity of the tortoise

barrier. Fencing should be dismantled and removed following Project completion.

- The biological monitor will maintain a complete record of all desert tortoises encountered. The record shall include: location, date and time, life history, general condition, and identification numbers.

- Any Project-related vehicle or equipment operating on unpaved roads shall not exceed a speed limit of 25 miles per hour.

- Contractor will be required to keep all vehicles on existing roads. No cross-country travel will be authorized except under emergency situations.

- Employees will inspect beneath parked vehicles and equipment prior to traveling. If an employee discovers a tortoise, the employee shall notify the biological monitor.

- All trash will be contained in raven- and coyote-proof containers. All trash will be transported offsite on a weekly basis.

- No pets or firearms will be allowed within the Project's construction boundaries, or other associated work areas, at any time.

- The Project will reduce water usage during construction to the extent possible, such that excess water does not act as an attractant to tortoises.

- All construction materials, vehicles, and equipment will be removed from the site upon completion of the Project.

Coachella Valley Round-Tailed Ground Squirrel. The Coachella Valley round-tailed ground squirrel (*Spermophilus tereticaudus chlorus)*, a California Species of Special Concern and a Federal Species of Concern, has a high probability of occurrence at the Project site. The Coachella Valley round-tailed ground squirrel (CVRGS) occurs in the flatter, sandy portions of the Coachella Valley, preferring habitat that is open and flat,

with fine-textured sandy soils for burrowing. CVRGS hibernates from September to January, but is otherwise active during the day, avoiding the hot part of the day during summer. This small squirrel constructs burrows at the base of shrubs where it nests, with young from a single litter emerging in May. A single CVRGS was observed by AMEC during a 1999 survey of adjacent Section 1, identifying a burrow at the base of a creosote bush near a row of existing wind turbines. CVRGS have average home ranges of approximately 1.85 acres and can occur in densities as high as 100 squirrels per acre; therefore, it is likely that additional individuals inhabit the Project site. Mitigation measures intended to reduce potential impacts relating to the Coachella Valley round-tailed ground squirrel to a level of insignificance are listed below and are described in detail in Section 10.

- Within 30 days prior to any construction activities, a preconstruction survey for Coachella Valley round-tailed ground squirrel will be conducted on areas of the Project site anticipated to be disturbed (approximately 1.35 acres), plus a buffer area as recommended by the Project biologist. If ground-disturbing activities are delayed or suspended for more than 30 days after the preconstruction survey, the site shall be resurveyed. A survey report for the Project shall be prepared and submitted to the California Department of Fish and Game for review and to the City for review and approval.

- If found on the Project site, any squirrels must be moved away from the disturbance areas and a relocation program shall be developed pursuant to California Department of Fish and Game review and approval.

- Applicant will avoid impacts to washes and wash vegetation.

- All proposed development will incorporate the maximum amount of existing onsite natural open space and native vegetation into the Project and landscaping.

- Applicant will provide to all employees an educational brochure that describes the sensitive nature of indigenous plants, animals, and ecosystems. A copy of said educational brochure shall be submitted to the City for approval prior to issuance of any building permits.

- Prior to grading, the applicant must develop a plan to reduce the impact of night lighting on open space and/or mitigation areas adjacent to the Project site.

Bird Species. According to AMEC (2000), the prairie falcon (*Falco mexicanus*, a California Species of Special Concern), and the golden eagle (*Aquila chrysaetos*, a California Species of Special Concern) have a high probability of foraging, but not nesting, on the Project site. Le Conte's thrasher (*Toxostoma lecontei*, a California Species of Special Concern and a Federal Species of Concern) has a high probability of occurrence at the Project site, and the burrowing owl (*Speotyto cunicularia*, a California Species of Special Concern and a Federal Species of Concern) has a moderate probability of occurrence at the Project site. Both Le Conte's thrasher and the burrowing owl were recorded at an adjacent site by AMEC during a previous survey (1984, 1999). Loggerhead shrike (*Lanius ludovicianus*, a California Species of Special Concern and a Federal Species of Concern) was observed at the Project site during AMEC's survey in 2000. Mitigation measures intended to reduce potential impacts upon bird species to a level of insignificance are listed below and are described in detail in Section 10.

- Burrowing Owl

  - Within 30 days prior to any construction activities, a focused burrowing owl survey will be conducted (using California Department of Fish and Game protocol) on the areas of the Project site anticipated to be disturbed (approximately 1.35 acres), plus a buffer area as recommended by Project biologist. If ground-disturbing activities are delayed or suspended for more than 30 days after the survey, the site shall be resurveyed. A survey report for the Project shall be prepared and submitted to the Department of Fish and Game for review and to the City for review and approval.

  - Any burrowing owl burrows that cannot be avoided shall be mitigated at a 2:1 ratio with artificial burrows located in an adjacent protected area that provides a minimum 0.61 acres of protected habitat. The configuration of the protected habitat shall be approved by the California

Department of Fish and Game. If required by the California Department of Fish and Game, the Project applicant shall provide funding for long-term management and monitoring of the protected lands.

- If burrowing owls must be moved away from the disturbance areas, passive relocation techniques shall be used and only during the non-breeding season (September 1 to January 31). If impacts to burrowing owls are approved, then a relocation program shall be developed pursuant to California Department of Fish and Game and United States Fish and Wildlife Service review and approval.

- Should the Project affect the foraging areas of any owls located adjacent to the Project, then the same mitigation ratio and acreage would also be recommended.

- <u>LeConte's Thrasher and Loggerhead Shrike</u>

  - Applicant will avoid impacts to washes and wash vegetation.

  - All proposed development will incorporate the maximum amount of existing onsite natural open space and native vegetation into the Project and landscaping.

  - Applicant will salvage desirable desert plant species that would be destroyed by Project implementation, for use in landscaped areas.

  - Applicant shall provide to all employees an educational brochure that describes the sensitive nature of indigenous plants, animals, and ecosystems. A copy of said educational brochure shall be submitted to the City for approval prior to issuance of any building permits.

  - Prior to grading, the applicant shall develop a plan to reduce the impact of night lighting on open space and/or mitigation areas adjacent to the Project site.

- Potential for Avian Collisions and Mortality

In order to further analyze impacts on avian species, and in response to comments received by the Lead Agency with concerns regarding turbine-related avian mortality, a Biological Assessment Update, which focuses on impacts to avian species, has been prepared by AMEC Earth and Environmental (2004), and is included in Appendix B. Additionally, a response to comments from CDFG (some pertaining to avian mortality issues) on the March 2007 DEIR is included in Appendix K, along with CDFG's comment letter.

Since the beginnings of large-scale commercial wind energy production in the early 1980s, the potential for adverse environmental impacts in the form of bird mortality has been recognized. The American Wind Industry Association initiated studies of these potential impacts, followed by a number of state and federal agencies, notably the California Energy Commission. In 1994, the National Wind Coordinating Committee (NWCC) was formed as a collaborative endeavor, composed of representatives of electric utilities, state utility commissions, equipment suppliers, consumer advocates, and environmental interests. The NWCC formed an Avian Subcommittee to better understand and coordinate research on the risk of bird collisions with wind turbines, and has published the results of several studies and symposia, most of which are available on the internet.

Local governments, utilities, and land managers have sponsored site-specific studies of bird migration and collision potential in the San Gorgonio Pass. Riverside County and the Federal Bureau of Land Management assessed all environmental risks prior to approval of the initial wind turbine developments in the San Gorgonio Pass in the early 1980s. Southern California Edison Company sponsored technical studies using radar equipment to determine the intensity of bird migration through the San Gorgonio Pass. Both Riverside County and the California Energy Commission have performed monitoring studies to attempt to quantify the magnitude of the bird collision issue in the San Gorgonio Pass Wind Resource Area. The results of these technical studies are described below.

The California Energy Commission, in response to the Notice of Preparation for the March 2007 DEIR (see Appendix I), recommended completion of baseline studies on the avian use of the Project site, post-construction monitoring for at least 3 years, the formation of a Technical Advisory Committee that would interpret the results of the monitoring surveys, and performance of a risk assessment of the potential for avian mortality at the site. Such baseline studies are intended for the siting of large new facilities rather than subject Project, which includes constructing, operating, and maintaining eight 1.5 MW turbines within the existing WECS 20 Wind Park, as well as removing sixteen of the existing 65 kW turbines from the WECS 20 Wind Park. The existing WECS 20 Wind Park currently contains sixty-nine wind turbines; implementation of the Project will reduce this number by eight. The opportunity to conduct a site assessment of avian use conditions prior to wind energy development (which is the intent of NWCC and U.S. Fish and Wildlife Service guidelines) no longer exists at the Project site, since the Project site has already been operating as a wind farm for over twenty years. The Project involves the addition of only eight new turbines in a single row into the existing WECS 20 Wind Park, as well as the removal of 16 existing turbines from the WECS 20 Wind Park, resulting in a net reduction of eight wind turbines in the WECS 20 Wind Park; therefore, any increases in turbine-related bird mortality resulting from the Project will be biologically insignificant, and no further studies are necessary.

AMEC (2004) has concluded that the potential for bird mortality resulting from the eight proposed wind turbines is low, but not zero; however, risk factors associated with bird collisions are minimized by location, bird abundance, and turbine design. A recent (2005) California Energy Commission staff report on avian mortality from wind turbines compared the high-mortality areas of Altamont Pass and Solano County with the lower-mortality areas of Tehachapi Pass, San Gorgonio Pass, and Pacheco Pass. The staff findings and suggested policy options included: "The studies that have been completed report lower bird use and fatality rates in these wind areas [Tehachapi, San Gorgonio, and Pacheco]. Based on research results it may be appropriate for the Energy Commission to encourage repowering and expansion in these areas." Lowering

the number of turbines here and elsewhere in the San Gorgonio Pass as a result of repowering may decrease cumulative impacts to birds from collisions.

The San Gorgonio Pass is a high-use nocturnal flyway for migratory songbirds. McCrary et al. (1983) estimated that 32 million birds flew through the Coachella Valley during spring of 1982, and 37 million birds during the fall of 1982 (McCrary et al., 1984). Traffic rates of 5,000 to 10,000 birds per hour were recorded with radar equipment. The study site included the San Gorgonio Pass, extending to Palm Canyon, the Whitewater floodplain, and Thousand Palms. A majority of these migratory birds generally flew at heights of 200 to 400 meters (approximately 660 to 1,310 feet) above the ground, which is much higher than the tallest turbines. A smaller proportion (11%) flew below 127 meters (approximately 417 feet). On very windy nights, however, birds can be blown down closer to the ground or may seek shelter at ground level. In these instances, the turbines present a risk of collision.

Based on the AMEC report (2004), recorded mortality in the San Gorgonio Pass Wind Resource Area is small. County-sponsored mortality studies detected a small (<1%) mortality rate for migratory birds in the San Gorgonio Pass. According to San Gorgonio Wind Resource Area: Impacts of Commercial Wind Turbine Generators on Birds (McCrary et al. 1986), approximately 6,800 birds were killed annually in the area based on 38 dead birds found while monitoring nocturnal migrants; these included 25 species. Considering the number of nocturnal migrants relative to fatalities, the authors concluded that this level of mortality was biologically insignificant. The California Energy Commission (Anderson *et al.* 2000) documented 42 fatalities during quarterly searches of 360 turbines. The highest mortality occurred at turbines near water. The NWCC estimated that a total of 2.3 birds per tower per year would be killed in the San Gorgonio Wind Resource Area, based on a turbine count of 2,900.

- Risk Factors

The Project minimizes impacts by avoiding several risk factors involved with turbine placement. The primary factors influencing risk of collision and

mortality to birds from wind turbines are location, bird abundance, and tower design. Location refers to the placement of a wind turbine with respect to local topography, vegetation, and water. Turbines placed on top of a ridge are more likely to be in the path of both migratory birds and resident soaring birds. Turbines placed near or over water present an even greater risk of bird collisions. Turbines adjacent to riparian vegetation or other areas with extensive bird use, such as forests and woodlands, present a greater risk of bird mortality.

The abundance of birds utilizing a migratory flyway is also an important factor in collision frequency. Areas that experience high passage rates are more at risk of collision than areas where migrants are less concentrated. Large soaring birds, such as hawks, eagles, and vultures are most at risk of collision with wind turbines. These birds utilize updrafts at the edge of canyon walls as a source of lift. With regards to turbine design, turbines using guy wires are more likely to present a risk of bird mortality than those without supporting cables. Turbines with fast-moving blades present a higher mortality risk than those with slow blade movement. The use of warning lights on the tops of turbines may increase the attraction of nocturnal birds, including night migrants, to the turbines. Taller towers are more likely to encounter migratory birds than are shorter towers.

The location of the eight proposed wind turbines is downhill from the primary ridgeline of Whitewater Canyon, which is the safest location relative to the risk of bird collisions. The turbines are not near or over open water or near riparian vegetation, and the Desert Hot Springs location is not considered a high-use area for soaring birds. The Project site is located within a very high use migration corridor; however, bird passage takes place at higher altitudes. The proposed turbine models have tubular towers and do not employ guy wires, which places them among the safest designs relative to avian mortality. Additionally, as with most newer turbine models, the blades of the proposed wind turbines are slow-moving and are considered a lower risk to birds than those with fast-moving blades. The taller turbines are part of a current industry standard, and are being proposed in order to increase the efficiency of the WECS 20 Wind Park, and to maximize use of the wind resource available at the Project site.

As stated in AMEC's Biological Assessment Update (2004; Appendix B of the DEIR), "the potential for bird mortality from the eight turbines in the Energy Unlimited proposal is low, but not zero. Risk factors associated with bird collisions are minimized by location, bird abundance, and turbine design. The impact to birds in the Desert Hot Springs area will be biologically insignificant."

This conclusion is supported by the recent fatality studies referenced in AMEC's Response to CDFG Comments (2007; Attachment C – Impacts to Birds). The recent fatality studies on new-generation wind farms in the western United States have revealed low avian fatality rates. For the reasons stated above, the Project is not likely to significantly impact avian species. (AMEC 2007)

As discussed above, the available evidence from avian collision studies in the San Gorgonio Pass to date indicates that impacts to birds in the Desert Hot Springs area resulting from the Project will be biologically insignificant; therefore, no mitigation measures for bird collisions and mortality are required for the Project.

- Bats

Eight bat species, all California species of special concern, have the potential to be present in the Project vicinity. The pallid bat (*Antrozous pallidus*), spotted bat (*Eudermamaculatum*), California mastiff bat (*Eumops perotis californicus*), California leaf-nosed bat (*Macrotus californicus*), pocketed free-tailed bat (*Nyctinomops femorosacca*), big free-tailed bat (*Nyctinomops macrotis*), and Townsend's big-eared bat (*Plecotustownsendii*) roost in buildings, crevices, abandoned mines, rock outcrops, caves, or tree-holes. The southern yellow bat (*Lasiurus ega*) prefers wooded, riparian, and residential areas with untrimmed palm trees.

The Project area does not have open water, tree-roosting habitat, or other preferred nesting/roosting/foraging habitat features that would tend to attract bats. No bats or bat sign were observed during field surveys, so the probability

of their occurrence in the Project area is low. Therefore, the Project is not likely to significantly impact bat species. (AMEC 2007)

Coachella Valley Multiple-Species Habitat Conservation Plan. The Project site is located within the Upper Mission Creek/Big Morongo Canyon Conservation Area of the Recirculated Draft Coachella Valley Multiple Species Habitat Conservation Plan and Natural Communities Conservation Plan (CVMSHCP, 2007). According to the CVMSHCP, desert tortoise (*Gopherus agassizii*) is anticipated to occur on the Project site, and Sonoran creosote bush scrub and Sonoran mixed woody & succulent scrub communities have been determined present at the Project site. The Project site is not located within the Coachella Valley Fringe-Toed Lizard Fee Area.

The CVMSHCP (Section 9: Species Accounts and Conservation Measures), the Coachella Valley Fringe-Toed Lizard Habitat Conservation Plan, and the San Gorgonio Wind Resource Study all consider wind energy development to be compatible with species conservation, providing that appropriate mitigation measures are implemented. Copies of the Coachella Valley Fringe-Toed Lizard Habitat Conservation Plan and the San Gorgonio Wind Resource Study are available for review at the City Planning Department office. The CVMSHCP may be viewed on the internet at the following address: www.cvmshcp.org. With the incorporation of the mitigation measures pertaining to biological resources described in Section 10, the Project is compatible with the CVMSHCP.

E. Cultural Resources

A project may significantly impact Cultural Resources if it will: (a) cause a substantial adverse change in the significance of a historical resource as defined in §15064.5; (b) cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5; (c) directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or (d) disturb any human remains, including those interred outside of formal cemeteries.

According to the Historical/Archaeological Resources Survey Report prepared by CRM TECH, dated September 29, 2005, no known historical resources exist within or adjacent

to the Project site; therefore, the Project as currently proposed will cause no substantial adverse change to any known historical or archaeological resources. No further cultural resources investigation is recommended for the Project. If buried cultural materials are discovered during earthmoving operations associated with the Project, all work in that area will be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds. The Agua Caliente Band of Cahuilla Indians Tribal Historic Preservation Office (THPO) and the Soboba Band of Luiseño Indians indicate that the Project area is on lands included within their Tribal Traditional Use Areas and that there is always a possibility of encountering buried cultural resources during construction-related excavations. Mitigation measures intended to reduce potential impacts to historical and archaeological resources to a level of insignificance are listed below and are described in detail in Section 10.

- An approved Tribal Cultural Resource Monitor shall be present during any survey and/or any ground-disturbing activities. Should buried cultural deposits be encountered, the Monitor may request that destructive construction halt and the Monitor shall notify a Qualified (Secretary of the Interior's Standards and Guidelines) Archaeologist to investigate and, if necessary, prepare a mitigation plan for submission to the State Historic Preservation Officer, the Agua Caliente Tribal Historic Preservation Office, the Morongo Band of Mission Indians, and the Soboba Band of Luiseño Indians.

- If buried cultural materials are discovered during any earth-moving operation associated with the Project, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds. The archaeologist shall be empowered to temporarily stop or redirect grading activities to allow removal of abundant or large artifacts. The archaeologist shall also be required to curate specimens in a repository with permanent retrievable storage and submit a written report to the Planning Director for review and approval prior to occupancy of the first building on the site.

- Once artifact analysis is completed, a final written report detailing the results of all research procedures and interpretation of the site shall be submitted to the

Development Director for review and approval prior to occupancy of the first building on the site.

- If human remains are encountered at the Project site during construction, the County Coroner will be notified immediately, and all construction activities will be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.

According to the Paleontological Sensitivity Study prepared by CRM TECH, dated September 29, 2005, the Project's potential impact on paleontological resources is determined to be high. Surface geology in the Project area has been previously identified as **Tph**, **Qc**, and **Qt**. **Tph**, known as the Painted Hills Formation, is described as a "sandy well rounded conglomerate". **Qc**, known as the Cabazon Fanglomerate, is described as a "sandy ill-sorted light-brown conglomerate". **Qt** is described as terrace deposits of late Pleistocene age. Although the rock conditions are not the best for the preservation of vertebrate fossil remains, the rocks date to both the early and late Pleistocene Epoch, and there may be gravelly sand lenses within the conglomerates where fossil remains may be preserved. Therefore, significant nonrenewable fossil remains may be encountered during construction. Mitigation measures intended to reduce potential impacts to paleontological resources to a level of insignificance are listed below and are described in detail in Section 10.

- A qualified paleontologist shall review the Project construction plans and shall create a plan for periodic monitoring in order to determine the presence or absence of older Pleistocene-age sediments that may contain fossils. If earth-moving activities reach potentially fossilliferous sediments and/or exceed 10 feet in depth, then continuous monitoring for paleontological resources, along with a program to mitigate impacts to those resources, will be implemented. The monitor should be prepared to quickly salvage fossils as they are unearthed to avoid construction delays.

- If buried paleontological materials are discovered during any earth-moving operations associated with the Project, all work in that area will be halted or diverted until a qualified paleontological monitor can evaluate the nature and

significance of the finds. The paleontological monitor will be empowered to temporarily stop or redirect grading activities to allow removal of abundant or large artifacts. The paleontological monitor shall also be required to curate specimens in a repository with permanent retrievable storage and submit a written report and inventory to the Development Director for review and approval prior to occupancy of the first building on the site. The report should include a discussion of the significance of all recovered specimens. The report and inventory, when submitted to the Development Director, would signify completion of the Program to mitigate impacts to paleontologic resources.

F. Geology and Soils

A project will have a significant impact upon Geology and Soils issues if it will: (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, (ii) strong seismic ground shaking, (iii) seismic-related ground failure, including liquefaction, or (iv) landslides; (b) if it will result in substantial soil erosion or the loss of topsoil; (c) if it will 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 offsite landslide, lateral spreading, subsidence, liquefaction or collapse; (d) if it will be located on expansive soil, creating substantial risks to life or property; or (e) if it will have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for disposal of wastewater.

According to the Update to Geotechnical Engineering Report, dated November 10, 2000, prepared by Earth Systems Southwest (ESSW), the Project site is not located within a currently delineated California Alquist-Priolo Earthquake Fault Zone; therefore, the potential for active fault rupture at the Project site is low and is therefore considered less than significant.

The nearest known seismic source is the San Andreas Fault (southern), which is classified as a Type A fault (moment magnitude $\geq$7.0 and slip rate $\geq$5) and is less than two kilometers (<1.2 miles) from the Project site (Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada, Division of Mines and

Geology, 1998); therefore, strong ground motion resulting from earthquake activity may impact the site during the anticipated life of the Project. Additionally, the City of Desert Hot Springs Comprehensive General Plan (2000) indicates that the site is highly susceptible to being impacted by rock falls and seismically-induced landsliding. To reduce potential impacts relating to geology and soils to a level of insignificance, the Project will adhere to the mitigation measures listed below (described in detail in Section 10), and the recommendations described in the ESSW report; see Section 10 and Appendix E.

Secondary hazards related to ground shaking include soil liquefaction, ground deformation, subsidence, tsunamis, and seiches. The Project site is far inland, so the hazard from tsunamis is nonexistent. No water storage reservoir, dam, or levee is located in the Project vicinity, thus the potential hazard of seiches is insignificant, and flood hazards to the site from catastrophic reservoir, dam, or levee failure are also insignificant. Previous soils studies indicate that, of secondary seismic hazards such as surface rupture, liquefaction, settlement, or seismically-triggered rockslides, only seismically-triggered rockslides might affect the site. However, it was noted that these slides would be very local in nature, and that actual run out of the boulders down the slope faces would probably be on the order of less than 5 feet. Therefore, potential impacts would be less than significant.

- As recommended in the Update to Geotechnical Engineering Report (2000) by Earth Systems Southwest, additional geologic and geotechnical studies will be performed prior to commencement of construction, which are to include additional soil borings to a depth of 40 feet or refusal along the alignment of the turbines. At least three soil borings will be performed to evaluate the soil conditions to support the wind turbines. The additional studies will also include an analysis of Project wind turbine foundation compliance with the current Uniform Building Code.

- The minimum seismic design of the Project will comply with the current edition of the Uniform Building Code for non-building structures.

- Site development shall be in conformance with all recommendations as specified in the Update to Geotechnical Engineering Report (2000) by Earth Systems Southwest.

G. Hazards and Hazardous Materials

A project may cause significant Hazards and Hazardous Materials impacts if it will: (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 create a significant hazard to the public or the environment; (e) result in a safety hazard for people residing or working in a project area located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport, public use airport; or private airstrip; (f) result in a safety hazard for people residing or working in a project area located within the vicinity of a private airstrip; (g) impair implementation of or physically interfere with an adopted emergency response plan or adopted emergency evacuation plan; or (h) expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Used lubricants are the only hazardous waste associated with the Project. Used lubricants are currently generated by the existing WECS 20 Wind Park, and will continue to be generated at the site upon implementation of the Project. The lubricant (gearbox oil) that is replaced during maintenance is a controlled hazardous waste. When the gearbox oil is changed, it is taken from the gearboxes and stored onsite in metal containers until a used oil recycler comes to the site to remove the oil for processing offsite. Approximately 200 gallons of gearbox oil is stored on the Project site in four 55-gallon above-ground drums, and is removed from the site approximately twice per year by a waste oil recycling company. No hazardous waste is, or will be, disposed of or

burned at the Project site. The Project site is not located within one-quarter mile of an existing or proposed school and is not on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

Concerns have been raised regarding the possibility of oil dripping down from the turbines in the WECS 20 Wind Park. A records search performed in October 2006 by the Hazardous Materials Management Division of the Riverside County Department of Environmental Health yielded results of no reports found of complaints or violations pertaining to hazardous materials at the Project site. The existing WECS 20 turbines are equipped with oil pans in order to prevent any oil from reaching the underlying soil in the event of a leak. The eight proposed GE wind turbines will also be equipped with oil pans or other oil containment devices to catch any oil in the unlikely event of a leak. EUI employees routinely check for leaks and spills, and any leaks or spills found are immediately remedied.

The use and management of the lubricants is regulated by the County of Riverside Department of Environmental Health, who has issued a Hazardous Materials Management Permit to EUI (Facility Number 89040). Additionally, a permanent California EPA ID number (CAL 000237812) has been assigned to the WECS 20 Wind Park by the California Department of Toxic Substances Control. The WECS 20 Wind Park operates in compliance with these permits and will continue to comply with these permits upon implementation of the Project.

The following table provides a summary of the typical lubricants associated with maintenance and repair of the Project. Gear oil changes are carried out on an as-needed basis as confirmed during regular and routine oil analysis for each unit. A gear oil change is carried out by EUI using a pump truck. A transfer/acceptance certificate for the disposal of waste generated during routine maintenance and repair will be issued to EUI by a facility authorized to accept such wastes (AMEC 2007).

Lubricants List

Component	Amount of Waste (m^3)	Exchange Cycle (months)	Annual Amount (m^3/a)	Form	Recycle Process
Generator bearing	0.00015	6	0.0003	Paste	Local agency recycling requirements will be complied with on an ongoing basis.
Brake hydraulic	0.00300	36	0.0010	Fluid	
Main bearing	0.00086	6	0.0017	Paste	
Main bearing	0.00087	6	0.0017	Paste	
Transmission	0.37500	36	0.1250	Fluid	
Yaw bearing	0.00044	6	0.0009	Paste	
Pitch bearing	0.00133	6	0.0027	Paste	
Pitch bearing	0.00128	5	0.0031	Paste	
Yaw bearing	0.00043	6	0.0009	Paste	
Pitch transmission	0.02100	24	0.0105	Fluid	
Pitch toothing	0.00158	6	0.0032	Paste	
Yaw toothing	0.00158	6	0.0032	Paste	
Yaw transmission	0.06000	24	0.0300	Fluid	
Transformer	0.72900	NA	0.0000	Fluid	

Excerpted from Attachment 3 of "Response To Comment from Mission Springs Water District on Draft Environmental Impact Report For The Revised Commercial WECS 20 Permit Project (SCH#2005101120)" (AMEC 2007), which is included in its entirety in Appendix K of this FEIR.

Each of the sixteen existing wind turbines proposed for removal contains approximately five to seven gallons of lubricants listed in the Lubricants List above. The lubricants are contained in the nacelle of each existing turbine, which will be modified prior to any disruption or removal from the site to reduce the potential for lubricant spills during the removal of sixteen of the existing wind turbines. Also, the transformers contain small quantities of lubricants. Prior to removal from the Project site and transport for disposal offsite at facilities licensed to accept them, the sixteen existing turbines to be removed will be modified by removing and plugging the gearbox vents on each turbine and plugging the hydraulic system vent.

Prior to assembly of each of the eight new turbines, the Project will generate the following packaging waste materials, which are collected separately and are disposed of by a local specialist waste disposal firm:

- Paper and cardboard packaging
- Plastic packaging
- Wooden packaging
- Ferrous metals

The components of the eight new wind turbines, including the gearbox and transformers, are shipped with the listed lubricants in place and are ready for assembly. Therefore, the lubricants are initially delivered to the site via truck and are located within and/or on their intended wind turbine component. When the wind turbine nacelle and transformers are loaded off the truck, they are placed on a flat area covered by an oil-resistant tarp to reduce the potential for constituent migration from an accidental lubricant spill. The transformer is separate from the nacelle and is ground-mounted inside a one- to two-foot containment wall, which is constructed prior to assembly of the wind turbines. The containment wall is designed to contain any oil which may escape from the transformer.

During construction and onsite assembly of the new turbines, standard operating procedures are followed to ensure that lubricants do not escape to the surrounding area (e.g. the nacelle will be positioned at a proper level and angle during mounting, lubricant levels will be checked to make sure they are not excessive). In addition, it should be noted that other large components of the wind turbines, such as rotor blades, are manufactured with reusable transport equipment and do not include lubricants in quantities that could escape to the surrounding environment.

The Lubricants List table above identifies oils or other chemicals or compounds used during long-term operation of the wind turbines. All of the listed substances are used to lubricate the wind turbine components, and none of the substances are combusted. Used lubricants from the gearbox, and absorbents and filter materials (including oil filters, wiping cloths, and protective clothing that have been contaminated with hazardous substances) are the only hazardous wastes generated by maintenance of the Project. One to two times per year, lubricant levels are checked and, if needed, are filled. When executing service work, EUI will collect any of the wastes mentioned above, which will then be consigned to a specialist waste disposal firm for material or energetic recycling or disposal pursuant to statutory requirements of the California EPA and the County of Riverside permits issued for the facility.

Gearbox lubricants are replaced based on need as confirmed by oil tests conducted on a bi-annual basis. A gearbox oil change is carried out by EUI using a pump truck. A

specialist waste disposal facility will issue a transfer /acceptance certificate to EUI for each oil change performed. During replacement for an oil change, a hose is run from the gearbox in the nacelle down to the used oil containment vessel. The used lubricant is collected in the oil containment vessel and is later disposed of at a facility licensed to accept the quantities and types of lubricants associated with the Project. Replacement lubricant is then poured directly into the gearbox. As an added precaution against the possibility of oil spills and with the permission of the turbine manufacturer, EUI will install its patent-pending "Tower Topper" beneath the nacelle. The Tower Topper is designed to collect any lubricants that may escape from the nacelle and to direct the lubricants to a containment vessel for proper disposal.

The used gearbox oil that is replaced during maintenance is a controlled hazardous waste. The used oil generated during oil changes and related materials, such as used filters, are stored onsite in metal containers until a used oil recycler comes to the site and removes the materials offsite for processing elsewhere.

The use and management of oil wastes from the existing wind farm (and oil from the Project) is regulated by the County of Riverside Department of Environmental Health through issuance of a Hazardous Materials Management Permit to EUI (Facility Permit# 89040). A permanent California Environmental Protection Agency (EPA) Identification Number also has been assigned to the WECS 20 Wind Park (CAL 000237812). The existing WECS 20 Wind Park is operated in compliance with these permits. Without the EPA facility number, the used oil recycler will not accept used oil and hazardous materials. Proof of disposal or transfer/acceptance certificates are available for inspection at the Project site.

During construction, routine maintenance, and long-term operation, there is potential for small amounts of oil and grease to be released to the soils surrounding the windmills. In the unlikely event of a spill, the anticipated release is expected to be less than three gallons, but in the worst case up to 55 gallons per unit. Typical chemical products likely to be used in association with the Project wind turbines are listed in the Lubricants List table above and consist of various types of oils and greases, which are insoluble to negligibly soluble by their nature. As such, when released to the environment, these oils and greases are bound to surface sediment and soil and can be easily removed prior to

reaching the groundwater table pursuant to the procedures identified in the Mitigation Measures and the statutory requirements of the County of Riverside Department of Environmental Health and the California Department of Toxic Substances Control under the authority of permits for the existing Project. Therefore, potential individual and cumulative impacts of the Project on groundwater are not significant.

In the unlikely event of an accidental release of 55 gallons of oil or grease, the impact would be localized, and the City's standard protocol for constituent cleanup will adequately mitigate any potential significant individual or cumulative impacts. The hazardous materials permits for the site issued by the County of Riverside Department of Environmental Health and by the California Department of Toxic Substances Control limit the types and amounts of materials that can be stored and used for the Project and are accepted by the EPA as effective in addressing the amounts and types of constituents associated with this Project in minimizing the environmental effects of the use and storage of hazardous materials.

In addition to Project design and mitigation measures, which will reduce impacts to less than significance, there are existing conditions of the Project site and groundwater table which indicate less than significant potential for individual or cumulative impacts on the groundwater table from the Project. According to the California Department of Water Resources (DWR), February 27, 2004, California's Groundwater Bulletin 118, Hydrologic Region Colorado River, Coachella Valley Groundwater Basin, Mission Creek Subbasin, the depth to groundwater for the Mission Creek Subbasin, which underlies the Project site, averages 372 feet below ground surface. Since the site lies on a ridge, the depth to groundwater below the Project site is estimated to be at least 372 feet below ground surface, if not greater (DWR 2004). Furthermore, the volume of groundwater recharge from the Project site is negligible due to the sloped topography of the Project site and the annual precipitation in this area being approximately six inches per year (DWR 2006). For the reasons stated above, the use of the Project site for generation of wind energy is not anticipated to contribute to the groundwater table.

The City Fire Department has identified that the Project site is located within a high fire area. The Project consists of the construction, operation, and maintenance of eight wind turbines that are in the vicinity of residences intermixed with wildlands. Project

implementation may expose people or structures to a significant risk involving wildland fires. A records search dated October 4, 2006, performed by the Riverside County Fire Department, yielded results of no fire hazard or vegetation growth violations at the Project site for 2004-2005. However, in order to reduce potential impacts resulting from fire hazards to a level of insignificance, a number of mitigation measures will be undertaken. The new turbine nacelle covers will have fire retardant applied for containment, and the new turbine rotor blades will be equipped with lightning protection, which will bring to the ground, and then dissipate, the current. The two roads in between the turbines and nearby residences will be maintained by EUI free of vegetation to serve as fire breaks. Additional Fire Department conditions to address potential fire protection impacts are provided below.

In order to avoid potential navigational hazards, the Project will comply with current Federal Aviation Administration (FAA) standards, which are published in the FAA report, Obstruction Lighting Standards for Wind Turbine Farms (DOT/FAA/AR-TN05/50), dated November 2005. Pursuant to these standards, one red light will be mounted on top of the northernmost wind turbine in the Project, and one red light will be mounted on top of the southernmost wind turbine in the Project. These two red lights will be simultaneously flashing. The FAA reports that studies suggest that the use of red light emitting diode or rapid discharge style L-864 fixtures are effective in reducing impacts on neighboring communities, as the fixtures' exposure time is minimal, thus creating less of a nuisance than many other types of fixtures. Since the wind turbines will be painted white, daytime lighting is not recommended. Any applicable FAA approvals, including a "Determination of No Hazard to Air Navigation", will be obtained prior to issuance of construction permits.

The mitigation measures listed below will reduce potential impacts relating to hazards and hazardous materials issues to a level of insignificance and are described in detail in Section 10.

- The WECS 20 Wind Park will continue to operate in compliance with permits issued by the County of Riverside Department of Environmental Health and by the California Department of Toxic Substances Control.

- Monitoring of all turbines for oil leakage will be performed on a monthly basis, and monthly reports will be submitted to the City Planning Department.

- Any oil leakage or spills will be reported immediately to the City Planning Department.

- All new turbines will be equipped with oil pans or other oil containment devices in order to catch any oil in the event of a leak.

- All new turbine nacelle covers will have fire retardant applied for containment.

- Turbine rotor blades will be equipped with lightning protection, which will bring to the ground, and then dissipate, the current.

- The two roads in between the turbines and nearby residences shall be maintained by EUI free of vegetation in order to serve as fire breaks.

- The Project will comply with all Fire Department requirements and conditions.

- The following areas will be cleared of vegetation and maintained by EUI as a fire/fuel break for as long as the turbines are in operation:

    - Thirty (30) feet around the periphery of the Project. Access roads that completely surround the Project may satisfy this requirement, if approved by the Fire Department.

    - Ten (10)-radius feet around all transformers and wind turbine towers.

    - Thirty (30) feet around all buildings.

    - All buildings or equipment enclosures of substantial size containing control panels, switching equipment, or transmission equipment, and no regular human occupancy, shall be equipped with an automatic fire

extinguishing system. Plans for such systems must be submitted to the Fire Department for review or approval.

- No permit shall be issued for the construction or placing of any structure onsite for the purpose of habitation or human occupancy without first establishing fire protection requirements as a condition of such permit. This requirement includes the establishment of a minimum fire flow per Division VIII of Riverside County Ordinance 546.

- Service vehicles assigned to regular maintenance or construction at the Project site shall be equipped with a portable fire extinguisher of a 4A40 BC rating. All motor driven equipment shall be equipped with an approved spark arrestor.

- The Project will comply with current FAA standards for structures, and any required FAA permits or approvals, including a "Determination of No Hazard to Air Navigation", shall be obtained prior to construction. The most recent lighting standards for wind turbines are published in the November 2005 report, Obstruction Lighting Standards for Wind Turbine Farms (DOT/FAA/AR-TN05/50). Pursuant to these standards, the Project will have one red light mounted on top of the northernmost wind turbine in the Project, and one red light mounted on top of the southernmost wind turbine in the Project. These two red lights will be utilized only at night, and will be simultaneously flashing. The Project will utilize fixtures that will minimize impacts to neighboring residents, such as red light emitting diode or rapid discharge style L-864 figures. Since the wind turbines will be painted white, daytime lighting is not recommended.

H. Hydrology and Water Quality

A project may have a significant impact on Hydrology and Water Quality if it will: (a) violate any water quality standards or waste discharge requirements; (b) substantially deplete groundwater supplies or interfere substantially with groundwater recharge such there would be a net deficit in aquifer volume or a lowering of the local groundwater table level; (c) substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, in a manner which would

result in substantial erosion or siltation on- or offsite; (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 increasing the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; (e) create or contribute runoff water which would exceed the capacity of existing or planned storm water 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; (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; or (j) expose people or structures to inundation by seiche, tsunami, or mudflow.

The Project does not require significant quantities of water for operations or maintenance, nor will significant quantities of water be discharged on the Project site. As a result, the Project will not violate any water quality standards or cause the depletion of water supplies. For a discussion of hazardous materials anticipated to be used and stored onsite and the handling of said hazardous materials, see "G. Hazards and Hazardous Materials" section above.

In addition to the construction of eight new wind turbines and the removal of sixteen existing wind turbines, the Project includes the use of onsite unpaved roadways and parking areas (approximately one to two vehicles), the construction of a single-story (40 foot by 100 foot) storage building, and the expansion of an existing outdoor storage area for spare parts for the turbines. Since Project construction will disturb a relatively small area of the Project site, the Project is not anticipated to substantially alter the existing drainage pattern of the area or cause additional erosion or siltation on- or offsite. The Project site is located within Flood Zone C (areas of minimal flooding) according to Flood Insurance Rate Map, Community-Panel Number 060245 0900 D, and impacts related to flooding are not considered significant. There are no levees or dams in the Project vicinity, so there are no potential impacts resulting from flooding as a result of dam or levee failure. The Project will not expose people or structures to inundation by seiche, tsunami, or mudflow.

According to the map of the preliminary West Desert Hot Springs Master Drainage Plan (MDP) provided by Riverside County Flood Control and Water Conservation District on July 24, 2007, proposed Line "GS-3" of the preliminary MDP extends southeasterly from the Colorado River Aqueduct (approximately 800 feet easterly of the Project site) to the Garnet Wash. Proposed Line "GS-4" extends southeasterly from the Colorado River Aqueduct (approximately 1,200 feet southerly of the Project site) and terminates at the Garnet Wash. Lines "GS-3" and "GS-4" are the two proposed facilities of the preliminary MDP closest to the Project site, and are not located such that they would be impacted by the Project. As described above, it has been determined that subject Project will not result in potentially significant impacts to the preliminary West Desert Hot Springs Master Drainage Plan.

Implementation of the Project is anticipated to result in the temporary disturbance of approximately 0.74 acres and the permanent disturbance of 0.61 acres of the Project site. Mitigation measures intended to reduce potential impacts upon hydrology and water quality issues to a level of insignificance are listed below and are described in detail in Section 10.

- A hydrology study, drainage plan, and erosion control plan will be prepared and submitted to the City Engineer for review and approval. The Project will adhere

to all recommendations based on the findings of said study and plans, which will be completed prior to issuance of a grading permit.

- For sites greater than one (1) acre in size, the Project applicant will obtain coverage under the State Water Resources Control Board's General National Pollutant Discharge Elimination System (NPDES) permit for construction storm water discharges through the Regional Water Quality Control Board (RWQCB), Colorado River Basin Region prior to commencement of construction. A Notice of Intent, a Storm Water Pollution Prevention Plan (SWPPP), and a Monitoring Plan will be prepared as requirements of the NPDES permit. The SWPPP will include Best Management Practices (BMPs) in compliance with the NPDES program requirements.

- The Project applicant will obtain all necessary permits, agreements, and approvals from appropriate agencies (such as the RWQCB and Mission Springs Water District) related to water quality and nuisance water issues.

I. Land Use and Planning

A project may have a significant impact on Land Use and Planning if it will: (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; or (c) conflict with any applicable habitat conservation plan or natural community conservation plan.

The Project site is located within the existing WECS 20 Wind Park, which has been in operation continuously since 1985. The City of Desert Hot Springs has designated the Project site I-E, Industrial Energy-Related. The I-E land use designation provides for the developing of energy-producing industries, including wind farms. No specific plans have been adopted for the Project site. The Project site is located within the existing WECS 20 Wind Park, the Project does not include an expansion of the WECS 20 Wind Park boundaries, and, with the exception of the height variance (refer to section 1.C on page 3 of this FEIR), the Project is consistent with the City of Desert Hot Springs

Comprehensive General Plan (2000) and the City of Desert Hot Springs Zoning Ordinance (2000). Therefore, the Project will not have any effect on an established community, and it would any applicable land use plans. There are no habitat conservation plans or natural community conservation plans in effect for the Project site.

J. Mineral Resources

A project may have a significant impact on Mineral Resources if it will: (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; or (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.

The Project will not result in a significant impact upon mineral resources. The City of Desert Hot Springs Comprehensive General Plan (2000) identifies the Project site as within Mineral Resource Zone 3 (MRZ-3), which is defined as areas where the available geologic information indicates that unspecified mineral resources may exist. The significance of said mineral resources is undetermined. Future mineral extraction activities in the Project area, if any, will not be restricted or prevented by implementation of the Project. The Project has no potential to impact the quality or availability of any mineral resources; therefore, no mitigation measures related to mineral resources are required for the Project.

K. Noise

A project may have a significant effect in relation to Noise if it will: (a) expose persons to noise hazards or generation of noise levels in excess of standards established by the City of Desert Hot Springs Comprehensive General Plan exterior Community Noise Equivalent Level, or CNEL, of 65 dB (outside nearest dwelling), interior CNEL of 45 dB (inside nearest dwelling) for residential developments and transient lodging; (b) expose persons to generation of excessive groundborne vibration or groundborne noise levels; (c) result in a substantial permanent or temporary increase in ambient noise levels in the project vicinity above levels existing without the project; (d) create a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels

existing without the Project; (e) expose persons residing or working in the project area to excessive noise levels if the project area is within an airport land use plan or within two miles of a public airport; or (f) expose persons residing or working in the Project area to excessive noise levels for a Project within the vicinity of an airport or private airstrip.

The CNEL standard established by the City of Desert Hot Springs Comprehensive General Plan (2000) is a maximum of 65 dB (exterior of nearest dwelling) and 45 dB (inside nearest dwelling) for residential developments and transient lodging. Additionally, the County of Riverside has established a WECS CNEL criterion of maximum 55 dB at each receptor (i.e. habitable dwelling, school, hospital, etc.).

An Acoustical Analysis Report was prepared by Hersh Walker Acoustics, dated May 5, 2004, in order to determine whether the Project would result in any potentially significant noise impacts (see Appendix F). The areas of concern are existing residences southerly and easterly of the Project site. The Acoustical Analysis Report found that, at the two residences nearest the Project site, the Project noise level of the existing turbines combined with the proposed eight 1.5 MW GE turbines was 47 to 48 dB, which is a net increase of approximately 1 dB over the existing noise levels of the WECS 20 Wind Park. The results included an adjustment subtracting background noise from wind in nearby vegetation and structures. The anticipated noise level at the nearest residences, upon implementation of the Project, is safely below the 55 dB requirement. Mitigation measures intended to reduce potential impacts relating to possible future noise issues (increases) to a level of insignificance are listed below and are described in detail in Section 10.

Short-term noise impacts may occur during the construction phase of the Project. This noise would be related to construction traffic (vehicles) and construction equipment and workers. However, this noise would be temporary, and while it would not be considered substantial, measures have been provided to ensure that noise generated during construction is minimized.

Operational noise associated with Project operations and maintenance will consist of an estimated 25 monthly trips to the Project site to perform routine maintenance activities,

such as inspecting the turbines for malfunction and replacing the gear box oil. This minimal amount of activity will not result in significant noise impacts.

- In order to demonstrate that the Project will remain safely below the City CNEL criterion for WECS, acoustical analyses of the Project will be performed quarterly, commencing with construction and continuing until one year after completion of construction, and reports of said analyses will be submitted to the City Planning Department. The applicant shall bear the cost of these analyses. Should any of these analyses indicate that noise levels are above allowed thresholds, steps shall be taken immediately to bring noise levels within acceptable thresholds.

- All construction activities, including the repair and maintenance of construction equipment on the Project site, shall comply with Section 130.03 of the City of Desert Hot Springs Municipal Code.

- Noise-generating construction equipment operated on the Project site shall be equipped with effective noise control devices, (i.e. mufflers, lagging, and/or motor enclosures).

- All equipment shall be properly maintained to assure that no unnecessary noise, due to worn or improperly maintained parts, will be generated.

- Truck deliveries and haul-offs shall only be permitted between the hours of 7:00 a.m. and 5:00 p.m. weekdays and 8:00 a.m. and 5:00 p.m. Saturdays. The haul routes shall be approved by the City Engineer.

L. Population and Housing

A project may have a significant impact on Population and Housing if it will: (a) directly or indirectly induce substantial population growth in an area; (b) displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or (c) displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

Since implementation of the Project will create and support only two full-time ongoing employment positions and approximately 40 temporary construction jobs that will be phased out upon completion of Project construction, the Project is not anticipated to result in any significant population growth, either directly or indirectly. The Project does not include housing and has no potential to significantly increase or decrease population, housing, or demand for housing in the project area, as the site currently contains a wind park; therefore, the Project will not result in a significant impact upon population and housing issues, and no mitigation measures related to population and housing are required for the Project.

M. Public Services

A project may have a significant impact on Public Services if it results in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities; the 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 other performance objectives for fire protection, police protection, schools, parks, or other public facilities.

The Project may result in incremental increases in the demand for fire protection services and police services. The fire station located at the northeast corner of West Drive and Pierson Boulevard, and the police station located just westerly of the fire station, serve the site. Because the Project does not have the potential to either significantly increase or significantly decrease the Project area's population, the Project will result in little or no impact to schools, parks, or other public facilities, such as libraries and other community facilities. The outdoor storage area will be secured by a controlled-access gate. However, all new projects have some potential to require public services, primarily in the areas of safety and security. Mitigation measures intended to reduce potential impacts to public services to a level of insignificance are listed below and are described in detail in Section 10.

- The Project applicant will submit any and all required impact fees to the City, which may include but are not limited to the fire facilities impact fee, the police

facilities impact fee, the general facilities impact fee, and the storm drain impact fee, as part of building permit fees.

N. Recreation

A project may have a significant impact on Recreation if it increases 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, or if the project includes recreational facilities or requires the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

There are no recreational resources on or adjacent to the Project site. Additionally, implementation of the Project will create and support only two full-time employment positions and approximately 40 temporary construction jobs. The construction jobs will be phased out upon completion of construction of the Project. Due to the limited nature and size of the Project, Project implementation will not result in any significant increase in demand for recreational facilities in the Project area, nor will the Project result in the need for additional or expanded recreational facilities in the area; therefore, the Project will not result in a significant impact upon recreation, and no mitigation measures related to recreation are required for the Project.

O. Transportation and Traffic

A project may be deemed to have a significant effect on Transportation/Traffic if it: (a) causes an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system; (b) exceeds, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways; (c) results 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 increases hazards due to a design feature or incompatible uses; (e) results in inadequate emergency access or parking capacity; or (f) conflicts with adopted policies, plans, or programs supporting alternative transportation.

The proposed access route to the Project site is currently used by operation and maintenance personnel for the existing WECS 20 Wind Park. The Project site will be accessed by exiting from State Route 62 at Dillon Road, continuing westerly to Seeley Street, traveling northerly on Seeley Street to 16th Avenue, continuing westerly on 16th Avenue to Windhaven Road, then traveling northerly on Windhaven Road to EUI's access road, which leads northeasterly to the WECS 20 Wind Park site. The access route to the Project site is shown in Figure 4. An increase in traffic to and from the site during the construction phase of the Project will occur. The current Average Daily Trips (ADT) along the access route has not been established; however, by observation, it appears quite low (well below 7,000 ADT). Therefore, the increase in traffic will have little impact on the ability of the access road system to handle the traffic load, as the volume to capacity ratio on these roads will remain very small. Parking capacity will not be affected by Project traffic, since vehicles used in the construction, operation, and maintenance of the Project will park on private property. Some parking along access roads may occur to allow for the adjustment of delivery loads; however, this will not be the norm, and each occurrence should have little impact on local traffic.

The Project will have no impact on emergency access or access to nearby uses for local residents, and will not impact the local rail traffic (the nearest of which is located approximately 3 miles southerly of the Project site). The Project will not require new or altered road maintenance procedures. The Project will have little or no impact on the transportation capabilities of the community. The Project will adhere to the measures described in the Offsite Road and Traffic Impact Plan prepared for the Project by Krieger & Stewart (see Appendix G). Mitigation measures intended to reduce potential impacts relating to transportation and traffic issues to a level of insignificance are listed below and are described in detail in Section 10.

- Prior to issuance of grading permits, a traffic plan to minimize traffic flow interference from construction activities shall be submitted for review and approval to the City Engineer.

- Project construction, operation, and maintenance activities will adhere to the recommendations described in the Energy Unlimited, Incorporated WECS 20

Wind Park Revised Permit Application Offsite Road and Traffic Impact Plan, prepared by Krieger & Stewart.

P. Utilities and Service Systems

A project may have a significant impact on Utilities and Service Systems if the project would: (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 storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; (d) not have sufficient water supplies available to serve the project from existing entitlements and resources, or require new or expanded entitlements; (e) result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments; (f) be served by a landfill without sufficient permitted capacity to accommodate the project's solid waste disposal needs; or (g) not comply with federal, state, and local statutes and regulations related to solid waste.

There are no commercial or residential structures included in the Project, and Project implementation will result in only two full-time ongoing employment positions and approximately forty temporary construction jobs at the Project site; therefore, no sewer and water lines are included in the Project. The applicant will continue to provide portable toilets and bottled water for employees. Additionally, implementation of the Project will not result in significant areas of impervious surfaces that may result in the need for new or expanded storm water drainage facilities. Some solid waste, such as wood, metal, concrete, etc., will be generated during Project construction, and will be removed from the site by the contractor throughout Project construction. Mitigation measures intended to reduce potential impacts related to utilities and service systems to a level of insignificance are listed below and are described in detail in Section 10.

- All solid waste generated during Project construction will be disposed of in compliance with all State, Federal, and local statutes regulating solid waste (as set forth in City Ordinance No. 2005-14).

6. SIGNIFICANT IRREVERSIBLE CHANGES

The Project does not entail significant irreversible changes to the environment or a significant irretrievable commitment of environmental resources. The proposed wind turbines have a relatively small footprint, and turbine sites from which turbines are removed in the future could be reclaimed as open space or natural habitat.

7. ECONOMIC AND SOCIAL EFFECTS

The Project will result in increased revenues to the City in the form of building fees and property tax revenues. The City Building Department estimates that the City will receive building permit fees of approximately $47,500 from the Project (assuming a Project cost of $8,050,000). The City is also estimated to receive over $6000 in impact fees and over $80,000 in potential benefits from property taxes collected during the first year of the Project. Property tax benefits to the City could potentially total over $1,000,000 over the life of the Project. Additionally, the Project is not likely to require costly services for the City, such as police services, emergency response, etc.

The only social impacts anticipated by the Project are the permanent and temporary employment positions created by the Project. Two full-time employment positions will be created in order to maintain the WECS 20 Wind Park. Approximately forty temporary employment positions will be created in order to construct the Project. The temporary construction positions will be phased out upon completion of the Project.

9. CUMULATIVE IMPACTS

Cumulative impacts are the overall effects on the environment that could result from implementation of a project in combination with other projects and actions in the region. Such effects can result from actions that are individually minor but collectively significant over time.

A. Aesthetics

The aesthetics analysis determined that the Project may result in significant adverse impacts related to scenic views or other aesthetic resources. However, with the implementation of mitigation measures set forth in this FEIR, these impacts are not significant. This determination largely stems from the existing condition of the Project site, which is an existing wind park with 69 operational wind turbines.

The Project is proposed in order to increase the efficiency of the existing WECS 20 Wind Park. Implementation of the Project will result in a net decrease in the total number of turbines in the WECS 20 Wind Park. The Project will, therefore, not result in cumulative impacts upon Project area aesthetics as a result of implementation of the Project.

B. Agriculture Resources

The Project will not result in the conversion of any agricultural lands to developed uses, nor will it affect any agricultural lands or uses. Therefore, there will be no cumulative impacts on agriculture.

C. Air Quality

Although, as discussed herein, there will be an increase in air pollutant emissions during construction of the project, the impact will be temporary and less than significant. Because the turbines included in the Project will be maintained as part of the existing WECS 20 Wind Park, any incremental increases in air pollutants resulting from the ongoing operation and maintenance of the Project are negligible. Therefore, cumulative impacts upon air quality are less than significant.

8. GROWTH-INDUCING IMPACTS

No growth-inducing impacts (individual or cumulative) are anticipated to result from implementation of the Project. The Project consists of the construction, operation, and maintenance of eight wind turbines, the removal of sixteen existing wind turbines, the construction of a single-story storage building, and the expansion of an existing outdoor storage area. The Project does not include any features that have the potential to induce growth in the area. No housing or community facilities are included in, or will be required as a result of, the Project. The Project is anticipated to maintain two full-time employees for the ongoing operation and maintenance of the turbines, as well as approximately forty temporary employees during the construction phase. No aspect of the Project is anticipated to impact the environment by either inducing or hindering growth in the Project area.

D. Biological Resources

Cumulative impacts upon biological resources are less than significant. The Project proposes eight new wind turbines and the removal of sixteen existing wind turbines, resulting in a net decrease in the total number of turbines on the Project site. Upon removal of the sixteen wind turbines, those turbine sites not replaced with one of the eight new turbines will be revegetated with native plant species, and will not be used for wind energy in the future; therefore, the total disturbed surface area will decrease, eventually providing additional habitat. Any increases in impacts over those of the existing wind park are negligible.

E. Cultural Resources

As discussed in Section 5 herein, no known historical or archaeological resources exist at the Project site; however, there is always a possibility of uncovering historical or archaeological resources during ground-disturbing activities. With the incorporation of the Project mitigation measures set forth in Sections 5 and 10 herein, including monitoring by a Tribal Cultural Resource Monitor, the Project will not result in cumulative impacts upon historical or archaeological resources.

Although there are no known paleontological resources located at the Project site, the Paleontological Sensitivity Study prepared for the site by CRM TECH (2005) indicated that the Project's potential to impact paleontological resources is determined to be high, and significant nonrenewable fossil remains may be encountered during construction. With the incorporation of the mitigation measures described in Sections 5 and 10 herein, which include monitoring by a qualified paleontological monitor, the Project will not result in either significant impacts or cumulative impacts upon paleontological resources.

Although there are no known Native American artifacts located at the Project site, comments submitted by the Soboba Band of Luiseño Indians and the Agua Caliente Band of Cahuilla Indians indicated that the Project site is located within the bounds of the Tribal Traditional Use Areas. With the incorporation of the mitigation measures described in Sections 5 and 10 herein, which include monitoring by an approved Tribal

Cultural Resource Monitor, the Project will not result in either significant impacts or cumulative impacts upon cultural resources.

F. Geology and Soils

The Project site is located less than two kilometers (<1.2 miles) from the San Andreas Fault (southern). While the potential for active fault rupture at the Project site is low according to the Update to Geotechnical Engineering Report (2000) prepared by Earth Systems Southwest (ESSW report), the City of Desert Hot Springs Comprehensive General Plan (2000) indicates that the Project site is highly susceptible to being impacted by rock falls and seismically induced landsliding. To reduce potential impacts relating to geology and soils to a level of insignificance, additional geotechnical studies will be performed prior to Project construction, and site development will be in conformance with all recommendations specified in the ESSW report. For the reasons discussed above, the Project will not result in any cumulative impacts relating to geology and soils.

G. Hazards and Hazardous Materials

Potential hazards and hazardous materials impacts consist of possible site contamination with lubricants used on the turbines during operation, potential fire hazards associated with turbine operation, and navigational hazards associated with structures greater than 200 feet in height. Implementation of the Project mitigation measures set forth in Sections 5 and 10 herein will reduce any potential impacts related to hazards and hazardous materials to a level less than significant.

By appropriate use and management of all lubricants used onsite, as well as equipping turbines with oil pans or other oil containment devices to prevent any oil from coming into contact with the underlying soil in the unlikely event of a leak or spill, the Project will not result in significant impacts involving contamination with lubricants.

In order to prevent possible fires during Project operation, the new turbines will be equipped with lightning protection and fire retardant will be applied for containment. Additionally, roads between the turbines and nearby residences will be maintained by

EUI as fire breaks. Therefore, the potential for a fire resulting from turbine operation is reduced to a level less than significant.

Any potential flight hazards will be addressed by obtaining a "Determination of No Hazard to Air Navigation" from the FAA and by the addition of flashing red lights mounted on top of the northernmost and southernmost turbines in the Project, as required by the FAA, thus reducing potential flight hazards to a level of insignificance. For the reasons described above, the Project will not result in potential impacts or potential cumulative impacts related to hazards and hazardous materials.

H. Hydrology and Water Quality

The Project will disturb a total of approximately 1.35 acres of the 160-acre site, and is not expected to substantially alter the existing drainage pattern of the site or area, or cause additional erosion or siltation onsite or offsite. The Project will not result in potentially significant impacts to the preliminary West Desert Hot Springs Master Drainage Plan. With implementation of the mitigation measures set forth in Sections 5 and 10 herein, the Project will not result in significant adverse impacts or cumulative impacts relating to hydrology and water quality.

I. Land Use and Planning

The Project site is located in the existing WECS 20 Wind Park, and the City of Desert Hot Springs has designated the site I-E, Industrial Energy-Related. The I-E land use designation provides for the developing of energy-producing industries, including wind farms. Therefore, the Project will not result in any potential impacts or potential cumulative impacts upon land use and planning.

J. Mineral Resources

According to the City of Desert Hot Springs General Plan (2000), the Project site is located within Mineral Resource Zone 3, which is defined as areas where the available geologic information indicates that unspecified mineral resources may exist. The significance of any potential mineral resources at the site is undetermined. Therefore,

the Project will not cumulatively impact any known mineral resources or mineral resource recovery sites.

K. Noise

Short-term noise impacts may occur during the construction phase of the Project due to construction traffic and construction equipment. Any potential noise impacts resulting from Project construction will be less than significant and short-term, and will not result in cumulative impacts upon the Project area. According to the Acoustical Analysis Report (2004), operational noise has been determined to result in a net increase of only 1 dB over the existing ambient noise level in the area. This is due in part to the fact that the new turbines are quieter and more efficient than the existing older turbines. Further, potential noise associated with Project operations maintenance will consist of an estimated 25 monthly trips to the site to perform routine maintenance activities. This minimal activity will not result in significant noise impacts. For the reasons discussed above, cumulative impacts related to noise are less than significant.

L. Population and Housing

As the Project will create and support only two full-time ongoing employment positions and approximately forty temporary construction jobs, the Project will not result in an increase or decrease in either the Project area's population or demand for housing; therefore, no cumulative impacts upon population and housing are anticipated.

M. Public Services

All new projects have some potential to require public services, particularly in the areas of safety and security. The Project may result in incremental increases in demand for fire protection services and police services; however, EUI will mitigate said possible increases in demand by submitting any and all required impact fees to the City. Therefore, any potential impacts upon public services are rendered neither significant nor cumulatively considerable.

N. Recreation

The Project site is the existing WECS 20 Wind Park, and will create and support only two full-time ongoing employment positions and approximately forty temporary construction jobs. Because of the limited nature and size of the Project, the Project will not result in any significant impacts upon recreation in the area.

O. Transportation and Traffic

An increase in traffic to and from the Project site will occur during the construction phase of the Project; however, the increase in traffic will have little impact on the ability of the access road system to handle the traffic load, as the volume to capacity ratio on these roads will remain very small. To mitigate any potential impacts upon transportation and traffic by construction traffic, EUI will prepare and comply with a traffic impact plan approved by the City Engineer. Traffic for Project operations maintenance operations consist of approximately 25 monthly trips to the Project site. Due to the minimal nature of the potential impacts upon transportation and traffic discussed above, the Project will not result in cumulatively considerable impacts upon transportation and traffic.

P. Utilities and Service Systems

No sewer lines or waterlines are included in the Project; the applicant will continue to provide portable toilets and bottled water for employees. The Project will not result in significant areas of new impervious surfaces and, therefore, will not result in the need for new or expanded storm drain facilities. Project operation is not anticipated to generate solid waste. Solid waste generated during Project construction will be disposed of in compliance with all state, federal, and local statutes. For the reasons discussed above, the Project will not result in cumulatively considerable impacts upon utilities and service systems.

10. MITIGATION MEASURES PROPOSED TO MINIMIZE SIGNIFICANT EFFECTS

The following abbreviations are used in this section related to each mitigation measure described:

Responsible Person	Timing of Verification	Method of Verification	Sanctions
BO-Building Official	A-Prior to Final Map	A-Ensure Plans Reflect Mitigation Measure	1-Withhold Final Map Issuance
CA-City Attorney	B-Prior to Issuance of Grading Permits	B-Other Agency Permit/Approval	2-Withhold Grading or Building Permit
CE-City Engineer	C-Prior to Issuance of Building Permit	C-Separate Submittal (Reports/Submittal/ Plans)	3-Withhold Certificate of Occupancy
CM-City Manager	D-Throughout Construction	D-Payment of Fees	4-Stop Work Order
FD-Fire Department	E-Prior to Approval of Landscape Plans	E-Contractor Compliance	5-Entitlement review and/or revocation
PD-Planning Director	F-Ongoing	F-Improvement Completion	
	G-Prior to Occupancy	G-Site Inspection	

The following numbered mitigation measures are intended to reduce to a level of insignificance the potential environmental impacts described in Section 5. Verification requirements for each mitigation measure, such as the responsible person, timing of verification, and method of verification, will be included in the Final Environmental Impact Report.

A. Aesthetics

To mitigate potential impacts upon aesthetics to a level of insignificance, the following mitigation measures will be implemented.

1. The eight wind turbines will be painted white, with a matte or galvanized finish. The storage building will be painted in an earth-tone, such as beige.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	C	A	2	

2. All Project grading will comply with the City's regulations in order to minimize adverse impacts to viewsheds.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD, CE	B	A	2	

3. Upon removal of the 16 Bonus wind turbines, the area where each individual Bonus wind turbine was located shall be remedied. The site shall be evaluated, and any soil contamination shall be removed, structural foundations (cutting to six feet below grade) and all manmade debris shall be removed from the site and the area shall be replanted with plant material native to the Coachella Valley. Monitoring of such activities shall be undertaken by a qualified biological monitor, who shall file a report of findings to the City upon completion of the site remediation as outlined above.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	D	A, E, G	4	

4. During ongoing operation and maintenance of the Project, only surplus turbine parts too large to be stored in the storage building will be stored in the open storage area. Prior to storing any additional items in the open storage area which are not large turbine parts, a list of said items will be submitted in writing to the City for approval. Decommissioned wind turbines, including inoperable or wrecked machinery, motor vehicles, construction equipment, and construction debris will not be stored onsite.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	F	G	4, 5	

5. The outdoor storage area shall be inspected annually by the City..

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	F	G	4, 5	

6. No advertising sign or logo shall be placed or painted on any commercial WECS.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	C, F	A, G	2, 4, 5	

7. No commercial WECS shall be located where the center of the tower is within 1320 feet (0.25 mile) of State Route 62.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	C	A	2	

8. All aspects of the Project's development shall adhere to Wind Energy Conversion Systems (WECS) requirements as adopted in Section 159.08.030(2)(J) of the City's Municipal Zoning Ordinance.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	C	A	2	

9. All lighting equipment and devices will be shielded or recessed so that direct light and glare are contained within the boundaries of the Project site, away from adjoining properties and public rights-of-way.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	C	A	2	

10. Project development shall comply with the City's adopted outdoor lighting standards as specified in Section 159.20.030 of the Desert Hot Springs Municipal Zoning Code.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	C	A	2	

11. Lighting plans indicating proposed lighting levels and methods to minimize impact on adjacent properties shall be reviewed and approved by the City prior to installation. Modification, alteration, or addition to any approved lighting shall not be undertaken prior to approval by the City.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	C	A	2	

B. Air Quality

To mitigate potential impacts upon air quality to a level of insignificance, the following mitigation measures will be implemented.

12. Prior to commencement of any demolition, grading, or construction activities, the Project applicant will prepare and submit for City Engineering Department review and approval a Fugitive Dust (PM_{10}) Mitigation Plan.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
CE	B	C	2	

13. Traffic speeds of no greater than 15 miles per hour will be observed on all unpaved roadways.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
CE	F	A, E	2, 4, 5	

14. All grading operations will be suspended when wind speed (as instantaneous gusts) exceeds 25 miles per hour.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
CE	DE	A, E	2, 4, 5	

15. Trucks importing and/or exporting soil or other loose material will be covered and/or watered down prior to entering public streets to minimize potential fugitive dust.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
CE	D	A, E	2, 4, 5	

16. Soil binders will be spread on unpaved roads and parking areas, and/or AQMD-approved soil stabilizers will be applied according to manufacturer's specifications to all inactive construction areas (previously graded areas that remain inactive for 96 hours).

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
CE	D	A, E	2, 4, 5	

17. SCAQMD Rule 403 shall be adhered to, ensuring the clean-up of construction-related dirt on approach routes to the site.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
CE	D	A, E	2, 4, 5	

C. Biological Resources

To mitigate potential environmental impacts upon biological resources to a level of insignificance, the following mitigation measures will be implemented.

Vegetation and Habitats

18. Thirty days prior to commencement of construction, the Project site shall be re-surveyed by a qualified biologist for the presence of sensitive species. Additionally, a qualified biological monitor will be onsite during all construction activities. The biological monitor will have the authority to halt or divert construction activities which may be in violation of the stipulations herein. The biological monitor will file a final report with the City Planning Department at the conclusion of construction.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	B	A, C	2, 4	

19. All construction personnel will participate in a biological awareness training program prior to commencement of construction activities, and a report verifying same will be provided to the City Planning Department.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	B	C	2	

20. Upon removal of the 16 Bonus wind turbines, the area where each individual Bonus wind turbine was located shall be remedied. The site shall be evaluated, and any soil contamination shall be removed, structural foundations (cutting to six feet below grade) and all manmade debris shall be removed from the site and the area shall be replanted with plant material native to the Coachella Valley. Monitoring of all such activities shall be undertaken by a qualified biological

monitor, who shall file a report of findings to the City upon completion of the site remediation as outlined above.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	D	A, E, G	4	

21. All barrel cacti located in areas anticipated to be impacted by the Project will be transplanted into portions of the property that will remain as natural open space. The transplantation sites will, as closely as possible, match the original barrel cacti locations with regards to soils, slope, and aspect.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	G	A, G	3, 4	

22. All turbine sites will be clearly marked prior to grading in order to limit damage to adjacent vegetation. Grading and vegetation removal will be limited to construction areas.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	B	A	2	

23. Construction and maintenance traffic will utilize existing roads, and vehicle parking will be limited to existing disturbed areas.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	D	A	4	

24. Grading onsite will be limited to construction areas only. All town sites and access road locations will be clearly marked prior to the initiation of any ground-disturbing activity. No construction activities shall occur adjacent to Super Creek. All staging areas shall occur on previously-disturbed areas.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	B	A	2	

25. During construction and ongoing maintenance operations, wind farm personnel will be restricted to approved dirt roads only. No unauthorized grading of the site will be permitted.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	B	A	2	

26. Applicant will be responsible for controlling and removing all trash and/or windblown debris generated on the site during construction and routine maintenance operations.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	F	E	4, 5	

27. All construction personnel will participate in a biological awareness training program prior to commencement of construction activities, and a report verifying same will be provided to the City Planning Department.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	B	C	2	

Desert Tortoise

28. In order to ensure that no desert tortoises are harmed and that the tortoises can continue to utilize the Project site during the operation and maintenance phases of the Project, a desert tortoise survey will be performed within 24 hours prior to commencement of construction, and all construction activities will be monitored by a qualified biologist. A California Endangered Species Act (CESA) Permit will be obtained from the California Department of Fish and Game.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	D	A, C	4	

29. No construction activities will occur within 100 feet of desert tortoise. If a desert tortoise is found onsite, construction activities should cease within 100 feet of the animal. The desert tortoise will be allowed to move offsite of its own volition.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	D	E	4	

30. No construction activities will occur within 100 feet of desert tortoise burrows. Any burrows located during preconstruction desert tortoise surveys should be fenced with temporary fencing to provide a 100-foot buffer around the burrow. Fences should consist of a non-breachable barrier and support structures.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	D	C, E	4	

31. Construction activities (including parking and laydown areas) will utilize existing access roads and previously-disturbed areas to the maximum extent feasible. Temporary exclusion fencing will be placed around staging areas.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	B, D	A, E	2, 4	

32. The biological monitor will supervise and approve the construction and placement of desert tortoise exclusion fence around burrows and staging areas. The biological monitor will inspect the temporary fencing at least weekly. Corrective actions will be taken promptly to maintain the integrity of the tortoise barrier. Fencing should be dismantled and removed following Project completion.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	D	A	4	

33. The biological monitor will maintain a complete record of all desert tortoise encountered. The record shall include: location, date and time, life history, general condition, and identification numbers.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	D	C	3, 4	

34. Any Project-related vehicle or equipment operating on unpaved roads should not exceed a speed limit of 25 miles per hour.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	D, F	E	4, 5	

35. Contractor will be required to keep all vehicles on existing roads. No cross-country travel will be authorized except under emergency situations.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	D, F	E	4, 5	

36 Employees will inspect beneath parked vehicles and equipment prior to traveling. If an employee discovers a tortoise, the employee shall notify the biological monitor.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	D, F	E	4, 5	

37. All trash will be contained in raven- and coyote-proof containers. All trash will be transported offsite on a weekly basis.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	D, F	E	4, 5	

38. No pets or firearms will be allowed within the Project's construction boundaries, or other associated work areas, at any time.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	F	E	5	

39. The Project will reduce water usage during construction to the extent possible, such that excess water does not act as an attractant to tortoises.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	D	E	4	

40. All construction materials, vehicles, and equipment will be removed from the site upon completion of the Project.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	D	E	4	

Burrowing Owl

41. Within 30 days prior to any construction activities, a focused burrowing owl survey will be conducted (using California Department of Fish and Game protocol) on the areas of the Project site anticipated to be disturbed (approximately 1.35 acres), plus a buffer area as recommended by the Project biologist. If ground-disturbing activities are delayed or suspended for more than 30 days after the survey, the site shall be resurveyed. A survey report for the Project shall be prepared and submitted to the California Department of Fish and Game for review and to the City for review and approval.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	D	A, C	2, 4	

42. Any burrowing owl burrows that cannot be avoided shall be mitigated at a 2:1 ratio with artificial burrows located in an adjacent protected area that provides a minimum 0.61 acres of protected habitat. The configuration of the protected habitat shall be approved by the California Department of Fish and Game. If required by the California Department of Fish and Game, the Project applicant shall provide funding for long-term management and monitoring of the protected lands.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	D	C	4	

43. If burrowing owls must be moved away from the disturbance areas, passive relocation techniques shall be used and only during the non-breeding season (September 1 to January 31). If impacts to burrowing owls are approved, then a relocation program shall be developed pursuant to California Department of Fish and Game and United States Fish and Wildlife Service review and approval.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	D	C	4	

44. Should the Project affect the foraging areas of any owls located adjacent to the Project, then the same mitigation ratio and acreage would also be recommended.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	D	C	4	

LeConte's Thrasher and Loggerhead Shrike

45. Applicant will avoid impacts to washes and wash vegetation.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	B	A	2	

46. All proposed development will incorporate the maximum amount of existing onsite natural open space and native vegetation into the Project and landscaping.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	B, E	A	2	

47. Applicant will salvage desirable desert plant species that would be destroyed by Project implementation, for use in landscaped areas.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	B, E	A	2	

48. Applicant shall provide to all employees an educational brochure that describes the sensitive nature of indigenous plants, animals, and ecosystems. A copy of said educational brochure shall be submitted to the City for approval prior to issuance of any building permits.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	C	C	2	

49. Prior to grading, the applicant shall develop a plan to reduce the impact of night lighting on open space and/or mitigation areas adjacent to the Project site.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	B	C	2	

Coachella Valley Round-Tailed Ground Squirrel

50. Within 30 days prior to construction, a preconstruction survey for Coachella Valley round-tailed ground squirrel will be conducted on the areas of the Project site anticipated to be disturbed (approximately 1.35 acres), plus a buffer area as recommended by the Project biologist. If ground-disturbing activities are delayed or suspended for more than 30 days after the preconstruction survey, the site shall be resurveyed. A survey report for the Project shall be prepared and submitted to the California Department of Fish and Game for review and to the City for review and approval.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	B	C	2	

51. If found on the Project site, any squirrels must be moved away from the disturbance areas and a relocation program shall be developed pursuant to California Department of Fish and Game review and approval.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	D	C	4	

52. Applicant will avoid impacts to washes and wash vegetation.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	B	A	2	

53. All proposed development will incorporate the maximum amount of existing onsite natural open space and native vegetation into the Project and landscaping.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	C	A	2	

54. Applicant will provide to all employees an educational brochure that describes the sensitive nature of indigenous plants, animals, and ecosystems. A copy of said educational brochure shall be submitted to the City for approval prior to issuance of any building permits.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	C	C	2	

55. Prior to grading, the applicant must develop a plan to reduce the impact of night lighting on open space and/or mitigation areas adjacent to the Project site.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	B	C	2	

D. Cultural Resources

To mitigate potential impacts upon cultural and paleontological resources to a level of insignificance, the following mitigation measures will be implemented.

56. An approved Tribal Cultural Resource Monitor shall be present during any survey and/or any ground-disturbing activities. Should buried cultural deposits be encountered, the Monitor may request that destructive construction halt and the Monitor shall notify a Qualified (Secretary of the Interior's Standards and Guidelines) Archaeologist to investigate and, if necessary, prepare a mitigation plan for submission to the State Historic Preservation Officer, the Agua Caliente Tribal Historic Preservation Office, the Morongo Band of Mission Indians, and the Soboba Band of Luiseño Indians.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	B	C	2, 4	

57. If buried cultural materials are discovered during any earth-moving operation associated with the Project, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds. The archaeologist shall be empowered to temporarily stop or redirect grading activities to allow removal of abundant or large artifacts. The archaeologist shall also be required to curate specimens in a repository with permanent retrievable storage and submit a written report to the Planning Director for review and approval prior to occupancy of the first building on the site.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	D	C	2, 4	

58. Once artifact analysis is completed, a final written report detailing the results of all research procedures and interpretation of the site shall be submitted to the Development Director for review and approval prior to occupancy of the first building on the site.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	G	C	3	

59. A qualified paleontologist shall review the Project construction plans and shall create a plan for periodic monitoring in order to determine the presence or absence of older Pleistocene-age sediments that may contain fossils. If earth-moving activities reach potentially fossilliferous sediments and/or exceed 10 feet in depth, then continuous monitoring for paleontological resources, along with a program to mitigate impacts to those resources, will be implemented. The monitor should be prepared to quickly salvage fossils as they are unearthed to avoid construction delays.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	B	C	2	

60. If buried paleontological materials are discovered during any earth-moving operations associated with the Project, all work in that area will be halted or diverted until a qualified paleontological monitor can evaluate the nature and significance of the finds. The paleontological monitor will be empowered to temporarily stop or redirect grading activities to allow removal of abundant or large artifacts. The paleontological monitor shall also be required to curate specimens in a repository with permanent retrievable storage and submit a written report and inventory to the Development Director for review and approval prior to occupancy of the first building on the site. The report should include a discussion of the significance of all recovered specimens. The report and inventory, when submitted to the Development Director, would signify completion of the Program to mitigate impacts to paleontologic resources.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	D	C	2, 4	

61. If human remains are encountered at the Project site during construction, the County Coroner will be notified immediately, and all construction activities will be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	D	C	2, 4	

E. Geology and Soils

To mitigate potential impacts related to geology and soils to a level of insignificance, the following mitigation measures will be implemented.

62. As recommended in the Update to Geotechnical Engineering Report (2000) by Earth Systems Southwest, additional geologic and geotechnical studies will be performed prior to commencement of construction, which are to include additional soil borings to a depth of 40 feet or refusal along the alignment of the turbines. At least three soil borings will be performed to evaluate the soil conditions to support the wind turbines. The additional studies will also include an analysis of Project wind turbine compliance with the current Uniform Building Code.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
CE, BO	B	A	2	

63. The minimum seismic design of the Project will comply with the current edition of the Uniform Building Code for non-building structures.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
CE, BO	B	A	2	

64. Site development shall be in conformance with all recommendations as specified in the Update to Geotechnical Engineering Report (2000) by Earth Systems Southwest.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
CE, BO	B	A	2	

F. Hazards and Hazardous Materials

To mitigate potential impacts relating to hazards and hazardous materials to a level of insignificance, the following mitigation measures will be implemented.

65. The WECS 20 Wind Park will continue to operate in compliance with permits issued by the County of Riverside Department of Environmental Health and by the California Department of Toxic Substances Control.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	F	E	5	

66. Monitoring of all turbines for oil leakage will be performed on a monthly basis, and monthly reports will be submitted to the City Planning Department.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	F	C, E	5	

67. Any oil leakage or spills will be reported immediately to the City Planning Department.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	F	E	5	

68. All new turbines will be equipped with oil pans or other oil containment devices in order to catch any oil in the event of a leak.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
BO, PD	C	A	2	

69. All new turbine nacelle covers will have fire retardant applied for containment.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
BO, PD	C	A	2	

70. Turbine rotor blades will be equipped with lightning protection, which will bring to the ground, and then dissipate, the current.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
BO, PD	C	A	2	

71. The two roads in between the turbines and nearby residences shall be maintained by EUI free of vegetation in order to serve as fire breaks.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
PD	B	A	5	

72. The Project will comply with all Fire Department requirements and conditions.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
FD	C	A	2	

73. The following areas will be cleared of vegetation and maintained by EUI as a fire/fuel break for as long as the turbines are in operation:

- Thirty (30) feet around the periphery of the Project. Access roads that completely surround the Project may satisfy this requirement, if approved by the fire department.
- Ten (10)-radius feet around all transformers and wind turbine towers.
- Thirty (30) feet around all buildings.
- All buildings or equipment enclosures of substantial size containing control panels, switching equipment, or transmission equipment, and no regular human occupancy, shall be equipped with an automatic fire extinguishing system. Plans for such systems must be submitted to the Fire Department for review or approval.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
FD	C	A	2	

74. No permit shall be issued for the construction or placing of any structure onsite for the purpose of habitation or human occupancy without first establishing fire protection requirements as a condition of such permit. This requirement

includes the establishment of a minimum fire flow per Division VIII of Riverside County Ordinance 546.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
FD	C	A	2	

75. Service vehicles assigned to regular maintenance or construction at the Project site shall be equipped with a portable fire extinguisher of a 4A40 BC rating. All motor driven equipment shall be equipped with an approved spark arrestor.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
CE	F	E	5	

76. The Project will comply with current FAA standards for structures, and any required FAA permits or approvals, including a determination of "No Hazard to Air Navigation", shall be obtained prior to construction. The most recent lighting standards for wind turbines are published in the November 2005 report, Obstruction Lighting Standards for Wind Turbine Farms (DOT/FAA/AR-TN05/50). Pursuant to these standards, the Project will have one red light mounted on top of the northernmost wind turbine in the Project, and one red light mounted on top of the southernmost wind turbine in the Project. These two red lights will be utilized only at night, and will be simultaneously flashing. The Project will utilize fixtures that will minimize impacts to neighboring residents, such as red light emitting diode or rapid discharge style L-864 fixtures. Since the wind turbines will be painted white, daytime lighting is not recommended.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
BO, PD	B	C	2	

G. Hydrology and Water Quality

To mitigate potential impacts relating to hydrology and water quality issues to a level of insignificance, the following mitigation measures will be implemented.

77. A hydrology study, drainage plan, and erosion control plan will be prepared and submitted to the City Engineer for review and approval. The Project will adhere

to all recommendations based on the findings of said study and plans, which will be completed prior to issuance of a grading permit.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
CE	B	C	2	

78. For sites greater than one (1) acre in size, the Project applicant will obtain coverage under the State Water Resources Control Board's General National Pollutant Discharge Elimination System (NPDES) permit for construction storm water discharges through the Regional Water Quality Control Board (RWQCB), Colorado River Basin Region prior to commencement of construction. A Notice of Intent, a Storm Water Pollution Prevention Plan (SWPPP), and a Monitoring Plan will be prepared as requirements of the NPDES permit. The SWPPP will include Best Management Practices (BMPs) in compliance with the NPDES program requirements.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
CE	B	C	2	

79. The Project applicant will obtain all necessary permits, agreements, and approvals from appropriate agencies (such as the RWQCB and Mission Springs Water District) related to water quality and nuisance water issues.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
CE	B	C	2	

H. Noise

To mitigate potential impacts resulting from noise to a level of insignificance, the following mitigation measures will be implemented.

80. In order to demonstrate that the Project will remain safely below the City CNEL criterion for WECS, acoustical analyses of the Project will be performed quarterly, commencing with construction and continuing until one year after completion, and reports of said analyses will be submitted to the City Planning Department. The applicant shall bear the cost of these analyses. Should any of

these analyses indicate that noise levels are above allowed thresholds, steps shall be taken immediately to bring noise levels within acceptable thresholds.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
CE, PD	F	C	5	

81. All construction activities, including the repair and maintenance of construction equipment on the Project site, shall comply with Section 130.03 of the City of Desert Hot Springs Municipal Code.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
CE, PD	D	A, E	2, 4	

82. Noise-generating construction equipment operated on the Project site shall be equipped with effective noise control devices (i.e. mufflers, lagging, and/or motor enclosures).

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
CE, PD	D	A, E	2, 4	

83. All equipment shall be properly maintained to assure that no unnecessary noise, due to worn or improperly maintained parts, will be generated.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
CE, PD	D	A, E	2, 4	

84. Truck deliveries and haul-offs shall only be permitted between the hours of 7:00 a.m. and 5:00 p.m. weekdays and 8:00 a.m. and 5:00 p.m. Saturdays. The haul routes shall be approved by the City Engineer.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
CE, PD	F	A, E	2, 4, 5	

I. Public Services

To mitigate potential impacts upon public services to a level of insignificance, the following mitigation measures will be implemented.

85. The Project applicant will submit any and all required impact fees to the City, which may include but are not limited to the fire facilities impact fee, the police facilities impact fee, the general facilities impact fee, and the storm drain impact fee, as part of building permit fees.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
BO	C	D	2	

J. Transportation and Traffic

To mitigate potential impacts upon transportation and traffic to a level of insignificance, the following mitigation measures will be implemented.

86. Prior to issuance of grading permits, a traffic plan to minimize traffic flow interference from construction activities shall be submitted for review and approval to the City Engineer.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
CE	B	C	2	

87. Project construction, operation, and maintenance activities will adhere to the recommendations described in the Energy Unlimited, Incorporated WECS 20 Wind Park Revised Permit Application Offsite Road and Traffic Impact Plan, prepared by Krieger & Stewart.

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
CE	D, F	E	4, 5	

K. Utilities and Service Systems

To mitigate potential impacts upon utilities and service systems to a level of insignificance, the following mitigation measures will be implemented.

88. All solid waste generated during Project construction will be disposed of in compliance with all State, Federal, and local statutes regulating solid waste (as set forth in City Ordinance No. 2005-14).

Responsible Person	Timing of Verification	Method of Verification	Sanction(s)	Verified (Date/Initials)
CE	B	E	4	

11. PROJECT ALTERNATIVES

A. Alternative Locations

The Project site is the existing WECS 20 Wind Park. Constructing the wind turbines on an alternative site would not avoid or substantially lessen the environmental impacts of the Project, as the proposed Project site is located within an existing wind park. The Project site has been previously disturbed, and it is currently developed and operating as an established wind park. Constructing the project on an alternative site would likely result in greater environmental impacts, such as disturbing previously-undisturbed land, and adding turbines to an area with no existing turbines. There is currently no alternative site containing existing turbines available to develop the Project, and there are no less sensitive locations in the City or vicinity. Therefore, no feasible alternative locations exist for the Project.

B. Reduced Number of Wind Turbines

The Project includes the construction, operation, and maintenance of eight 1.5 MW wind turbines and the removal of sixteen 65 kW wind turbines in order to increase the efficiency of the WECS 20 Wind Park. The number and size of the wind turbines proposed for installation were selected in order to maximize use of the wind energy resource available at the Project site. By reducing the eight-turbine configuration to a configuration with fewer turbines, Project construction would become commercially impractical. A configuration of fewer turbines would not only compromise Project financing, but would provide little or no corresponding reduction in construction, visual, noise, or other environmental impacts created by the Project. If the number of wind turbines were to be reduced, the same north-south row of wind turbines would be constructed with the spacing between turbines adjusted for fewer turbines, making little or no difference in environmental impacts as a result of such a reduction; therefore, this alternative is not feasible.

C. Reduced Size of Wind Turbines

The Project includes the construction, operation, and maintenance of eight 1.5 MW wind turbines and the removal of sixteen 65 kW wind turbines in order to increase the efficiency of the WECS 20 Wind Park. The number and size of the wind turbines proposed for installation were selected in order to maximize use of the wind energy resource available at the Project site. The 1.5 MW wind turbines are a current industry standard, and the proposed Project is within the context of a highly competitive energy market in which wind project developers competitively bid against each other in order to win the right to sell power to large-scale utility customers. Since megawatt-sized wind turbines are the only current market-competitive technology in the industry, substituting smaller, non-cost-competitive wind turbines would not only compromise Project financing, but would also fail to maximize the value of the wind energy resource available at the Project site. Reducing the size of the wind turbines would result in little or no reduction in the anticipated environmental effects of the Project; therefore, this alternative is not feasible.

D. No Project Alternative

The Project site is the existing WECS 20 Wind Park. For the No Project alternative, the 8 GE 1.5 MW wind turbines would not be constructed, the 16 existing Bonus 65 kW wind turbines would not be removed from the Project site, the single-story storage building (40 foot by 100 foot) would not be constructed, and the existing outdoor storage area would not be expanded. The existing WECS 20 Wind Park would continue to operate as it is currently, the efficiency of the wind park would not be improved, and millions of additional renewable, non-polluting kilowatt-hours from the Project site would be lost in perpetuity. The existing WECS 20 permit is scheduled to expire in 2015.

12. SIGNIFICANT ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED IF THE PROPOSED PROJECT IS IMPLEMENTED

No unavoidable significant environmental impacts are anticipated. All significant impacts anticipated by the Project will be mitigated to a level of insignificance as described in Section 10.

13. PUBLIC INVOLVEMENT AND AGENCY COORDINATION

A. Public Involvement

An Environmental Assessment (EA) was prepared for the Project in 2005 by the City (see Appendix A). The EA, along with a Notice of Preparation (NOP) of an Environmental Impact Report, was circulated by the City on October 21, 2005. The EA and NOP were submitted to the Governor's Office of Planning and Research, State Clearinghouse (SCH) and distributed directly to a number of public and private agencies, firms, and individuals, along with an announcement for a scoping meeting to be held on November 14, 2005 at 8:00 AM:

A scoping meeting was held at the City's office located at 65950 Pierson Boulevard, Desert Hot Springs CA 92240, on November 14, 2005 at 8:00 AM. Attendees present were the Project applicant, applicant's engineer, and a City representative.

Written Comments on the proposed scope of the March 2007 DEIR were received from the following agencies (see Appendix I):

- California Energy Commission
- Coachella Valley Water District
- Morongo Band of Mission Indians
- South Coast Air Quality Management District
- Southern California Association of Governments
- Sunline Transit Agency

Comments received from those agencies listed above were considered in preparation of the DEIR (March 2007). A Notice of Completion/Notice of Availability of a Draft EIR was prepared, and the DEIR was circulated for a 45-day public comment period between March 26, 2007 and May 10, 2007. The DEIR, along with the Notice of Completion/Notice of Availability, was also sent to the SCH.

At the close of the comment period at 5:00 p.m. on Thursday, May 10, 2007, written comments on the DEIR had been received from the following:

- Agua Caliente Band of Cahuilla Indians
- California Department of Fish and Game
- Coachella Valley Water District
- Mission Springs Water District
- Riverside County Flood Control and Water Conservation District
- Soboba Band of Luiseño Indians
- Southern California Association of Governments
- Pete & Nancy Wright

All comments received on the DEIR (March 2007) were considered in revising the DEIR (Revised October 25, 2007). Written responses to said comments, a digital copy of the DEIR (Revised October 25, 2007), and a Notice of Public Hearing (to be held November 13, 2007 at 6:00 p.m.) were sent on October 30, 2007 to all who submitted written comments on the DEIR (March 2007).

The Project and DEIR (Revised October 25, 2007) were considered by the Planning Commission at a public hearing on November 13, 2007 at 6:00 p.m. at the City's Carl May Center, located at 11711 West Drive, Desert Hot Springs CA 92240. At said hearing, the Planning Commission heard testimony from the Project applicant, applicant's representatives, and members of the public. The Planning Commission then adopted the following resolutions:

- Resolution No. PC 34-07, a Resolution of the Planning Commission of the City of Desert Hot Springs, California, recommending that the City Council certify Environmental Impact Report (SCH No. 2005101120) No. 02-05 and adopt its findings and a Mitigation Monitoring Program for Conditional Use Permit No. 09-04, Variance No. 05-04, Development Permit No. 24-04, and Design Review No. 22-04 for the Revised Commercial WECS 20 Permit Project, to be located on a 160-acre existing wind farm, at the southwest quarter of Section 31, identified as Assessor's Parcel Number 667-160-001, in the City of Desert Hot Springs, Riverside County, California

- Resolution No. PC 36-07, a Resolution of the Planning Commission of the City of Desert Hot Springs, California, forwarding a recommendation to the City Council to approve Conditional Use Permit No. 09-04, a request to construct eight 1.5 MW GE wind turbines including a single-story storage facility and the use of an open storage area; Variance No. 05-04, a request to allow 340-foot high wind turbines; and Development Permit No. 24-04 and Design Review No. 22-04, a request for the construction of a storage building, for the Revised Commercial WECS 20 Permit Project to be located on a 160-acre existing wind farm at the southwest quarter of Section 31, identified as Assessor's Parcel Number 667-160-001, in the City of Desert Hot Springs, Riverside County, California

The Project will be heard by the City Council at a Public Hearing to be held on a future date.

B. Agency Coordination

The City is the Lead Agency for the Project, as it is the public agency with the primary responsibility for preparing CEQA documents and for approving the Project. Since the City is responsible for the Project, it must comply with the requirements of CEQA and the CEQA Guidelines issued by the State of California. There are no other agencies from which approval is required in order to implement the Project.

The Project applicant, EUI, has applied with the City for Variance No. 05-04, Conditional Use Permit No. 09-04, Development Permit No. 24-04, and Design Review No. 22-04, of which approvals are required in order to implement the Project.

14. ORGANIZATIONS AND PERSONS CONSULTED

The following individuals were consulted during the preparation of this document:

- Matt Amalong, AMEC Earth and Environmental
- Hong Bin, Earth Systems Southwest
- Suzanne Cauffiel, Riverside County Department of Environmental Health
- Wayne Fowler, Riverside County Local Agency Formation Commission (LAFCO)
- Jeaneen Gardner, Riverside County Fire Department
- Larry Grafton and Patty Nevins, City of Desert Hot Springs
- Allan Henderson, Patrick & Henderson
- Mike Hogan, CRM TECH
- Larry LaPré, District Wildlife Biologist, California Desert District, Bureau of Land Management
- Wes Speake, AMEC Earth and Environmental
- Bob Toy, City of Desert Hot Springs Building Department
- Lori Trottier, AMEC Earth and Environmental

15. REFERENCES AND SOURCES

- Anderson, R. L. *et al.* 2000. Avian Monitoring and Risk Assessment at Tehachapi Pass and San Gorgonio Pass Wind Resource Areas, California: Phase 1 Preliminary Results. In Proceedings of National Avian – Wind Power Planning Meeting III, sponsored by the Avian Subcommittee of the National Wind Coordinating Committee. San Diego, CA.

- Avian Monitoring and Risk Assessment at the San Gorgonio Wind Resource Area, National Renewable Energy Laboratory, 2005

- California Code of Regulations, Title 14, Chapter 3; Guidelines for Implementation of the California Environmental Quality Act; http://ceres.ca.gov/topic/env_law/ceqa/guidelines/index.html

- California Energy Commission, Assessment of Avian Mortality from Collisions and Electrocutions, Staff Report, CEC-700-2005-015, June 2005.

- City of Desert Hot Springs Comprehensive General Plan, Terra Nova Planning & Research, Inc., September 5, 2000

- City of Desert Hot Springs Zoning Ordinance, Terra Nova Planning & Research, Inc. October 3, 2000

- City of Desert Hot Springs Website, www.desert-hot-springs.us

- City of Desert Hot Springs Chamber of Commerce Website, www.deserthotsprings.com

- Coachella Valley Association of Governments Website for the Coachella Valley Multiple Species Habitat Conservation Plan, www.cvmshcp.org

- County of Riverside General Plan, County of Riverside Transportation and Land Management Agency, October 2003

- Development of Obstruction Lighting Standards for Wind Turbine Farms, DOT/FAA/AR-TN05/50, James W. Patterson, Jr., Federal Aviation Administration, November 2005

- Federal Emergency Management Agency (FEMA), Flood Insurance Rate Maps, Riverside County, California (Unincorporated Areas, Community-Panel Number 060245 0900D, Revised November 20, 1996

- Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada, California Department of Conservation, Division of Mines and Geology, 1998

- McCrary, M.D., McKernan, R.L., Landry, R.E., Wagner, W.D., and Schreiber, Ralph, 1983, Nocturnal Avian Migration Assessment of the San Gorgonio Wind Resource Study Area, Spring 1982, prepared for Southern California Edison, Rosemead, CA.

- McCrary, M.D., McKernan, R.L., Wagner, W.D., and Landry, R.E., 1984, Nocturnal Avian Migration Assessment of the San Gorgonio Wind Resource Study Area, Fall 1982, prepared for Southern California Edison, Rosemead, CA.

- McCrary, M.D., McKernan, R.L., and Schreiber, Ralph, 1986, San Gorgonio Wind Resource Study Area: Impacts of Commercial Wind Turbine Generators on Birds, prepared for Southern California Edison, Rosemead, CA.

- San Gorgonio Wind Resource Study Final Environmental Impact Report for County of Riverside and U.S. Bureau of Land Management, Wagstaff and Brady and Robert Odland Associates, July 1982

- San Gorgonio Wind Resource Site Specific Projects Draft Environmental Impact Report for Riverside County, California, Wagstaff and Brady and Robert Odland Associates, November 1982

- South Coast Air Quality Management District Final 2003 Coachella Valley PM_{10} State Implementation Plan, South Coast Air Quality Management District, August 1, 2003

- South Coast Air Quality Management District Final Localized Significance Threshold Methodology, South Coast Air Quality Management District, June 2003

- USGS Topographic Map, Desert Hot Springs, California 7.5 Minute Quadrangle, 1955, Photorevised 1972, Photoinspected 1978

- USGS Topographic Map, Whitewater, California 7.5 Minute Quadrangle, 1955, Photorevised 1972

- Western Regional Climate Center Website, www.wrcc.dri.edu

TABLES

TABLE 1

ENERGY UNLIMITED, INCORPORATED
REVISED COMMERCIAL WECS 20 PERMIT PROJECT

ESTIMATED CONSTRUCTION AIR POLLUTANT EMISSIONS
PHASE A(1) - ROAD CONSTRUCTION

Estimated Peak Day Construction Equipment Exhaust Emissions For Construction of Revised Commercial WECS 20 Permit Project(2)							
Equipment Type and Use			**Pollutants (lbs/day)**				
Equipment Type	**Quantity**	**No. of Hours in Operation**	**CO**	**ROC**	**NO_X**	**SO_X**	**PM_{10}**
Dozer	1	8	---	---	---	2.800	1.320
Grader	1	8	1.210	0.310	5.700	0.690	0.490
Water Truck	1	8	14.400	1.520	33.360	3.600	2.080
Fuel/Mechanics Truck	1	8	14.400	1.520	33.360	3.600	2.080
Subtotals			**30.010**	**3.350**	**72.420**	**10.690**	**5.970**
Truck tractor & lowboy for grader and dozer: 50 miles per day	1	---	0.297	0.066	1.947	0.020	0.037
Workers' Vehicles: 50 miles per day	11	---	7.659	0.823	0.819	0.005	0.044
Additional PM_{10} for fugitive dust			---	---	---	---	40.000
TOTAL EMISSIONS (lbs/day)			**37.966**	**4.239**	**75.186**	**10.715**	**46.051**
Construction Threshold (lbs/day)			550	75	100	150	150
Exceed Daily Threshold? (Yes/No)			NO	NO	NO	NO	NO

(1) Refer to Energy Unlimited, Incorporated WECS 20 Wind Park Revised Permit Application Offsite Road and Traffic Impact Plan prepared by Krieger & Stewart (Appendix G) for a description of construction phases.

(2) Offroad mobile equipment emissions are based on emission factors shown in Table A9-8-A in the South Coast Air Quality Management District CEQA Air Quality Handbook. On-road vehicle emissions are based on Highest (Most Conservative) EMFAC 2002 (Version 2.2, April 23, 2003) Emission Factors for On-Road Heavy Heavy Duty Diesel Trucks and Highest (Most Conservative) EMFAC 2002 (Version 2.2, April 23, 2003) Emission Factors for On-Road Vehicles, provided by SCAQMD on their website located at http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html.

TABLE 2

ENERGY UNLIMITED, INCORPORATED
REVISED COMMERCIAL WECS 20 PERMIT PROJECT

ESTIMATED CONSTRUCTION AIR POLLUTANT EMISSIONS
PHASE B[1] - WECS FOUNDATION EXCAVATION AND CONCRETE PLACEMENT

Estimated Peak Day Construction Equipment Exhaust Emissions For Construction of Revised Commercial WECS 20 Permit Project[2]							
Equipment Type and Use			**Pollutants (lbs/day)**				
Equipment Type	**Quantity**	**No. of Hours in Operation**	**CO**	**ROC**	**NO_X**	**SO_X**	**PM_{10}**
Water Truck	1	8	14.400	1.520	33.360	3.600	2.080
Fuel/Mechanics Truck	1	8	14.400	1.520	33.360	3.600	2.080
Loader	1	4	2.290	0.920	7.600	0.730	0.680
Backhoe	1	4	2.700	0.600	6.800	0.570	0.560
Concrete Truck	2	4	5.400	1.200	13.600	1.140	1.120
Subtotals			**39.190**	**5.760**	**94.720**	**9.640**	**6.520**
Truck tractor and trailer for loader and backhoe: 50 miles per day	1	---	0.297	0.066	1.947	0.020	0.037
Workers' Vehicles: 50 miles per day	11	---	7.659	0.823	0.819	0.005	0.044
Additional PM_{10} for fugitive dust			---	---	---	---	40.000
TOTAL EMISSIONS (lbs/day)			**47.146**	**6.649**	**97.486**	**9.665**	**46.601**
Construction Threshold (lbs/day)			550	75	100	150	150
Exceed Daily Threshold? (Yes/No)			NO	NO	NO	NO	NO

(1) Refer to Energy Unlimited, Incorporated WECS 20 Wind Park Revised Permit Application Offsite Road and Traffic Impact Plan prepared by Krieger & Stewart (Appendix G) for a description of construction phases.

(2) Offroad mobile equipment emissions are based on emission factors shown in Table A9-8-A in the South Coast Air Quality Management District CEQA Air Quality Handbook. On-road vehicle emissions are based on Highest (Most Conservative) EMFAC 2002 (Version 2.2, April 23, 2003) Emission Factors for On-Road Heavy Heavy Duty Diesel Trucks and Highest (Most Conservative) EMFAC 2002 (Version 2.2, April 23, 2003) Emission Factors for On-Road Vehicles, provided by SCAQMD on their website located at http://www.aqmd.gov/ceqa/handbook/ onroad/onroad.html.

TABLE 3

ENERGY UNLIMITED, INCORPORATED
REVISED COMMERCIAL WECS 20 PERMIT PROJECT

ESTIMATED CONSTRUCTION AIR POLLUTANT EMISSIONS
PHASE C[1] - WECS ERECTION

Estimated Peak Day Construction Equipment Exhaust Emissions For Construction of Revised Commercial WECS 20 Permit Project[2]							
Equipment Type and Use			**Pollutants (lbs/day)**				
Equipment Type	**Quantity**	**No. of Hours in Operation**	**CO**	**ROC**	**NO_X**	**SO_X**	**PM_{10}**
Water Truck	1	8	14.400	1.520	33.360	3.600	2.080
Fuel/Mechanics Truck	1	8	14.400	1.520	33.360	3.600	2.080
Crane	1	8	5.400	1.20	13.600	1.140	1.120
Subtotals			**34.200**	**4.240**	**80.320**	**8.340**	**5.280**
Truck tractor & trailer for hauling WECS: 50 miles per day	1	---	0.297	0.066	1.947	0.020	0.037
Workers' Vehicles: 50 miles per day	11	---	7.659	0.823	0.819	0.005	0.044
Additional PM_{10} for fugitive dust			---	---	---	---	40.000
TOTAL EMISSIONS (lbs/day)			**42.156**	**5.129**	**83.086**	**8.365**	**45.361**
Construction Threshold (lbs/day)			550	75	100	150	150
Exceed Daily Threshold? (Yes/No)			NO	NO	NO	NO	NO

(1) Refer to Energy Unlimited, Incorporated WECS 20 Wind Park Revised Permit Application Offsite Road and Traffic Impact Plan prepared by Krieger & Stewart (Appendix G) for a description of construction phases.

(2) Offroad mobile equipment emissions are based on emission factors shown in Table A9-8-A in the South Coast Air Quality Management District CEQA Air Quality Handbook. On-road vehicle emissions are based on Highest (Most Conservative) EMFAC 2002 (Version 2.2, April 23, 2003) Emission Factors for On-Road Heavy Heavy Duty Diesel Trucks and Highest (Most Conservative) EMFAC 2002 (Version 2.2, April 23, 2003) Emission Factors for On-Road Vehicles, provided by SCAQMD on their website located at http://www.aqmd.gov/ceqa/handbook/ onroad/onroad.html.

TABLE 4

ENERGY UNLIMITED, INCORPORATED
REVISED COMMERCIAL WECS 20 PERMIT PROJECT

ESTIMATED CONSTRUCTION AIR POLLUTANT EMISSIONS
PHASE D[1] - ELECTRICAL CABLE EXCAVATION AND INSTALLATION

Estimated Peak Day Construction Equipment Exhaust Emissions For Construction of Revised Commercial WECS 20 Permit Project[2]							
Equipment Type and Use			**Pollutants (lbs/day)**				
Equipment Type	**Quantity**	**No. of Hours in Operation**	**CO**	**ROC**	**NO_X**	**SO_X**	**PM_{10}**
Water Truck	1	8	14.400	1.520	33.360	3.600	2.080
Fuel/Mechanics Truck	1	8	14.400	1.520	33.360	3.600	2.080
Excavator	1	4	2.700	0.600	6.800	0.570	0.560
Backhoe	1	4	2.700	0.600	6.800	0.570	0.560
Loader	1	4	2.290	0.920	7.600	0.730	0.680
Subtotals			**36.490**	**5.160**	**87.920**	**9.070**	**5.960**
Truck tractor and trailer for hauling backhoe and loader: 50 miles per day	1	---	0.297	0.066	1.947	0.020	0.037
Truck tractor and trailer for hauling electrical cable: 50 miles per day	1	---	0.297	0.066	1.947	0.020	0.037
Workers' Vehicles: 50 miles per day	11	---	7.659	0.823	0.819	0.005	0.044
Additional PM_{10} for fugitive dust							40.000
TOTAL EMISSIONS (lbs/day)			**44.743**	**6.115**	**92.633**	**9.115**	**46.078**
Construction Threshold (lbs/day)			550	75	100	150	150

(1) Refer to Energy Unlimited, Incorporated WECS 20 Wind Park Revised Permit Application Offsite Road and Traffic Impact Plan prepared by Krieger & Stewart (Appendix G) for a description of construction phases.

(2) Offroad mobile equipment emissions are based on emission factors shown in Table A9-8-A in the South Coast Air Quality Management District CEQA Air Quality Handbook. On-road vehicle emissions are based on Highest (Most Conservative) EMFAC 2002 (Version 2.2, April 23, 2003) Emission Factors for On-Road Heavy Heavy Duty Diesel Trucks and Highest (Most Conservative) EMFAC 2002 (Version 2.2, April 23, 2003) Emission Factors for On-Road Vehicles, provided by SCAQMD on their website located at http://www.aqmd.gov/ceqa/handbook/ onroad/onroad.html.

TABLE 5

ENERGY UNLIMITED, INCORPORATED
REVISED COMMERCIAL WECS 20 PERMIT PROJECT

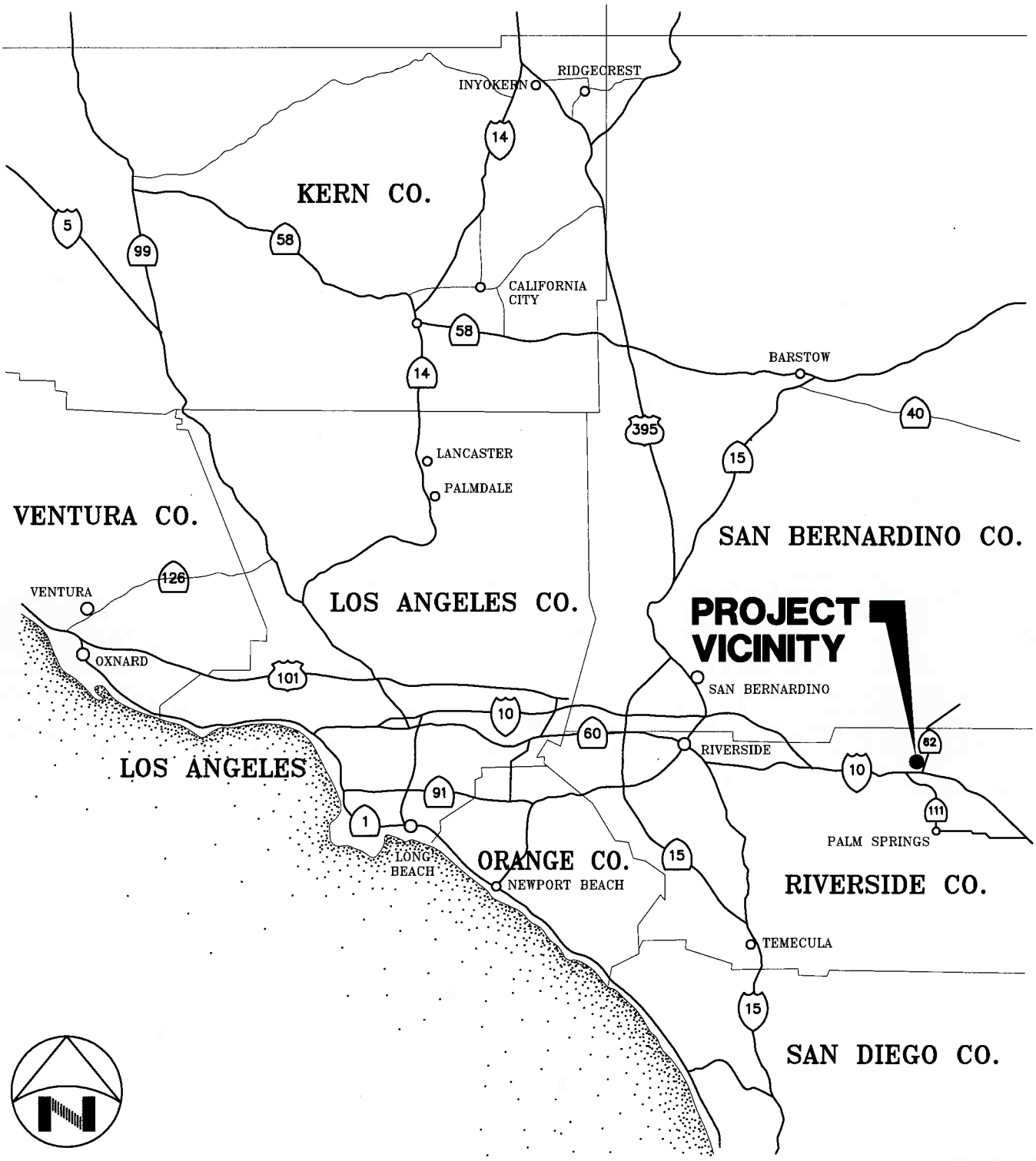
ESTIMATED OPERATION AND MAINTENANCE AIR POLLUTANT EMISSIONS
PHASE E(1) - OPERATION AND MAINTENANCE

Estimated Peak Day Operation and Maintenance Equipment Exhaust Emissions For Construction of Revised Commercial WECS 20 Permit Project(2)							
Equipment Type and Use			**Pollutants (lbs/day)**				
Equipment Type	**Quantity**	**No. of Hours in Operation**	**CO**	**ROC**	**NO_X**	**SO_X**	**PM_{10}**
Crane for Maintenance	1	8	5.400	1.200	13.600	1.140	1.120
Pickup Truck	1	8	14.400	1.520	33.360	3.600	2.080
Subtotals			**19.800**	**2.720**	**46.960**	**4.740**	**3.200**
Pickup Truck: 50 miles per day	1	---	0.696	0.075	0.075	0.001	0.004
Additional PM_{10} for fugitive dust							40.000
TOTAL EMISSIONS (lbs/day)			**20.496**	**2.795**	**47.035**	**4.741**	**43.204**
Operation Threshold (lbs/day)			550	75	100	150	150
Exceed Daily Threshold? (Yes/No)			NO	NO	NO	NO	NO

(1) Refer to Energy Unlimited, Incorporated WECS 20 Wind Park Revised Permit Application Offsite Road and Traffic Impact Plan prepared by Krieger & Stewart (Appendix G) for a description of construction phases.

(2) Offroad mobile equipment emissions are based on emission factors shown in Table A9-8-A in the South Coast Air Quality Management District CEQA Air Quality Handbook. On-road vehicle emissions are based on Highest (Most Conservative) EMFAC 2002 (Version 2.2, April 23, 2003) Emission Factors for On-Road Heavy Heavy Duty Diesel Trucks and Highest (Most Conservative) EMFAC 2002 (Version 2.2, April 23, 2003) Emission Factors for On-Road Vehicles, provided by SCAQMD on their website located at http://www.aqmd.gov/ceqa/handbook/ onroad/onroad.html.

FIGURES



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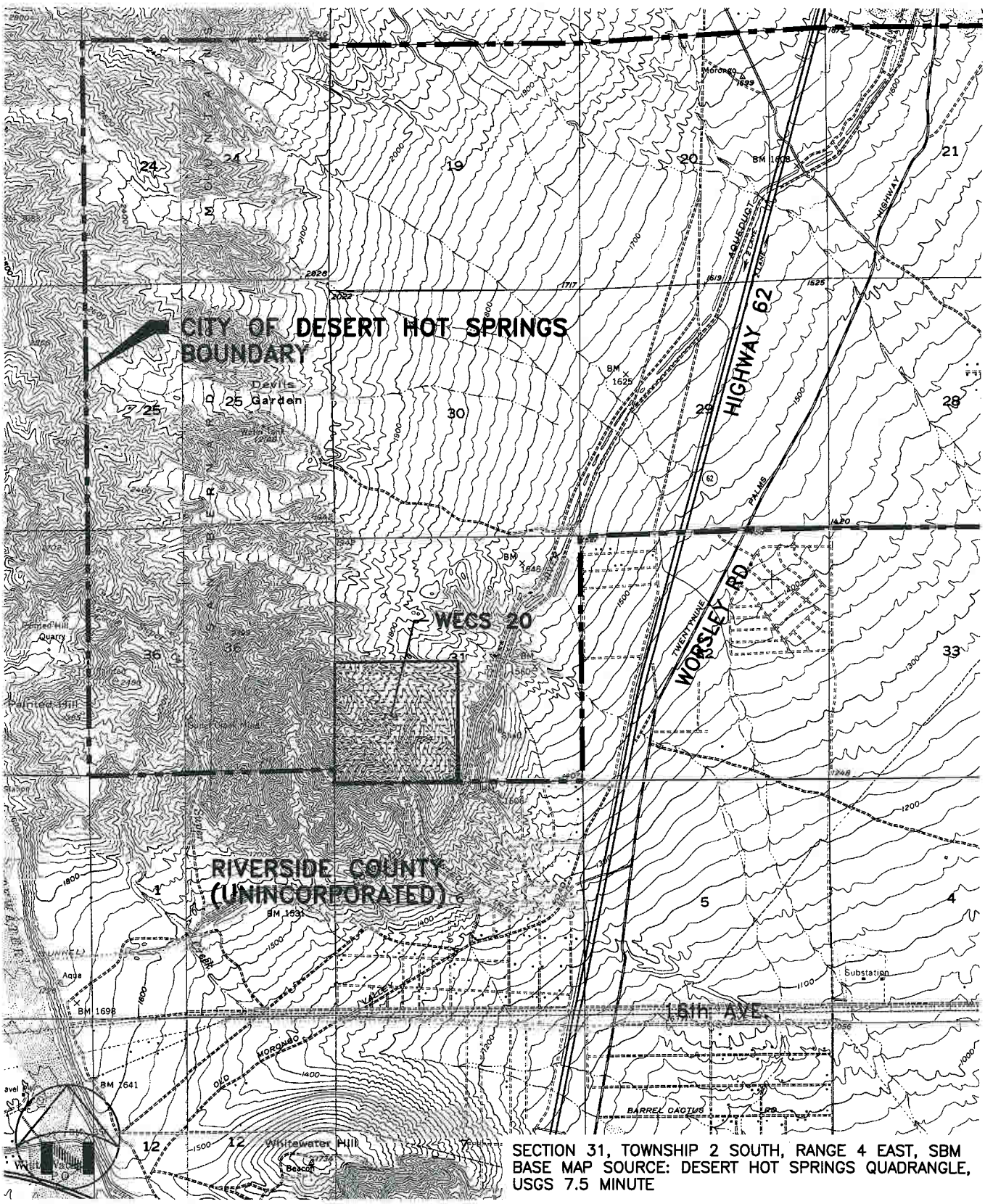
REVISED WECS 20

VICINITY MAP

FIGURE 1 OF 6

SCALE: N.T.S. DATE: 7/17/06 DRAWN BY: EM CHECKED BY: VEM W.O.: 554-9

554\9\FIGURES\9F1.DWG



SECTION 31, TOWNSHIP 2 SOUTH, RANGE 4 EAST, SBM
BASE MAP SOURCE: DESERT HOT SPRINGS QUADRANGLE, USGS 7.5 MINUTE

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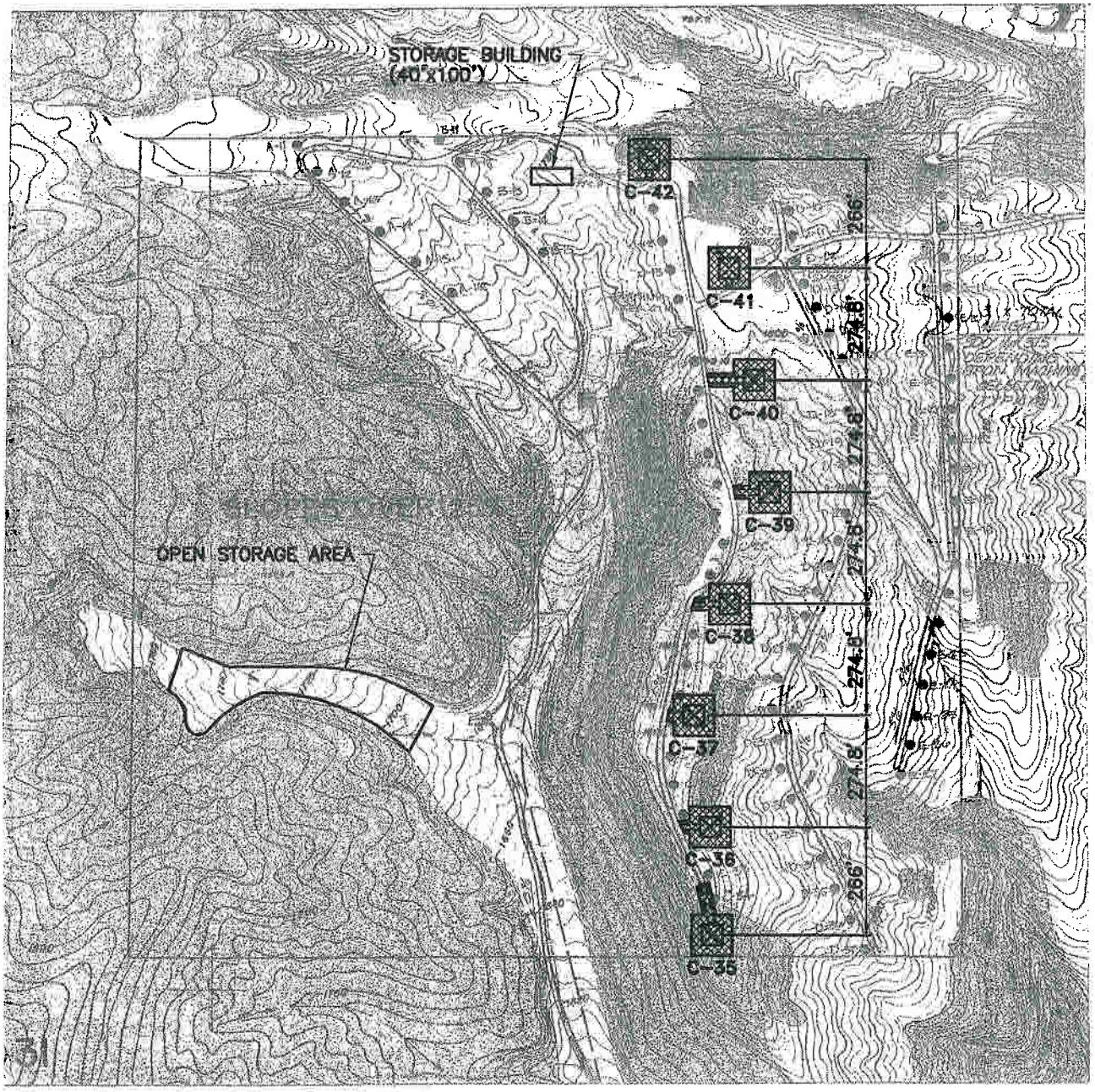
REVISED WECS 20

LOCATION MAP

FIGURE 2 OF 6

SCALE: 1"=3000' DATE: 7/17/06 DRAWN BY: EM CHECKED BY: VEM W.O.: 554-9

554\9\FIGURES\9F2.DWG



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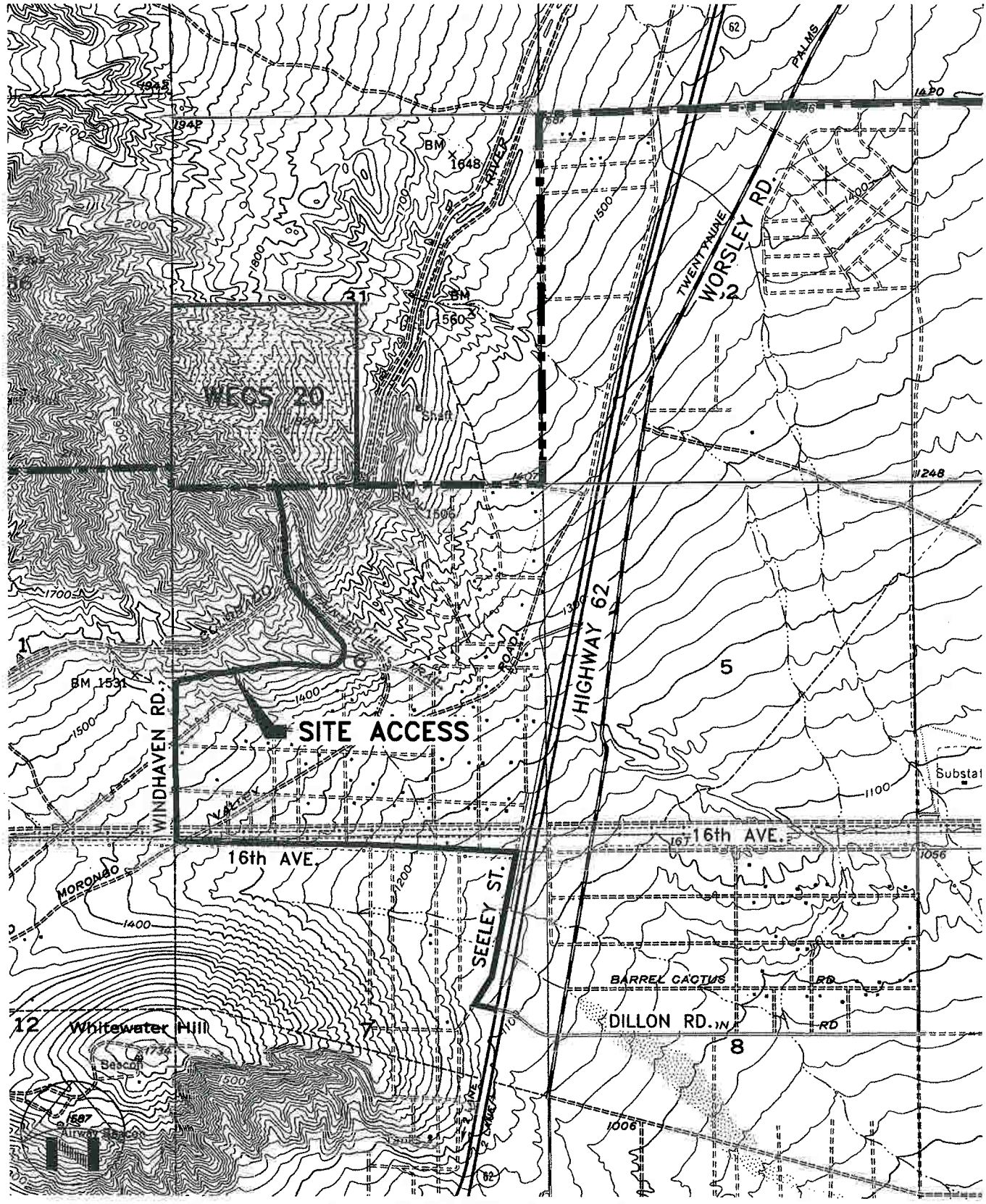
REVISED WECS 20

WIND TURBINE SITES LOCATION MAP

FIGURE 3 OF 6

SCALE: 1"=400' DATE: 7/17/06 DRAWN BY: EM CHECKED BY: VEM W.O.: 554-9

554\9\FIGURES\9F3.DWG



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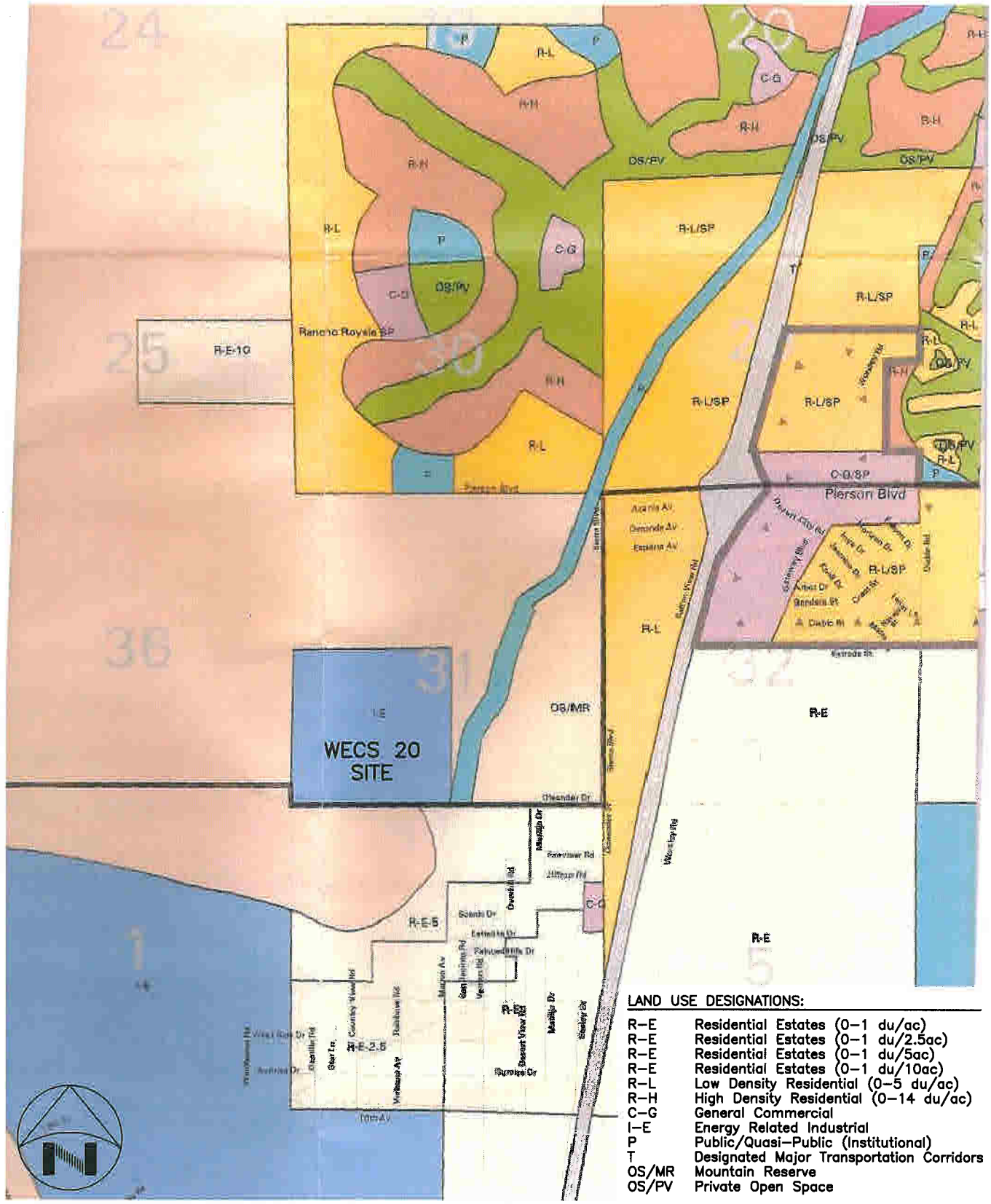
REVISED WECS 20

SITE ACCESS MAP

FIGURE 4 OF 6

SCALE: 1"=2000' DATE: 7/17/06 DRAWN BY: TMW CHECKED BY: VEM W.O.: 554-9

554\9\FIGURES\9F4.DWG



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ENERGY UNLIMITED, INCORPORATED

REVISED WECS 20

SURROUNDING LAND USE DESIGNATIONS

FIGURE 5 OF 6

SCALE: N.T.S. DATE: 7/17/06 DRAWN BY: TMW CHECKED BY: VEM W.O.: 554-9

554\9\FIGURES\9F5.DWG

KRIEGER & STEWART INCORPORATED

3602 University Ave. • Riverside, CA. 92501 • 951-684-6900

ENERGY UNLIMITED, INCORPORATED

REVISED WECS 20

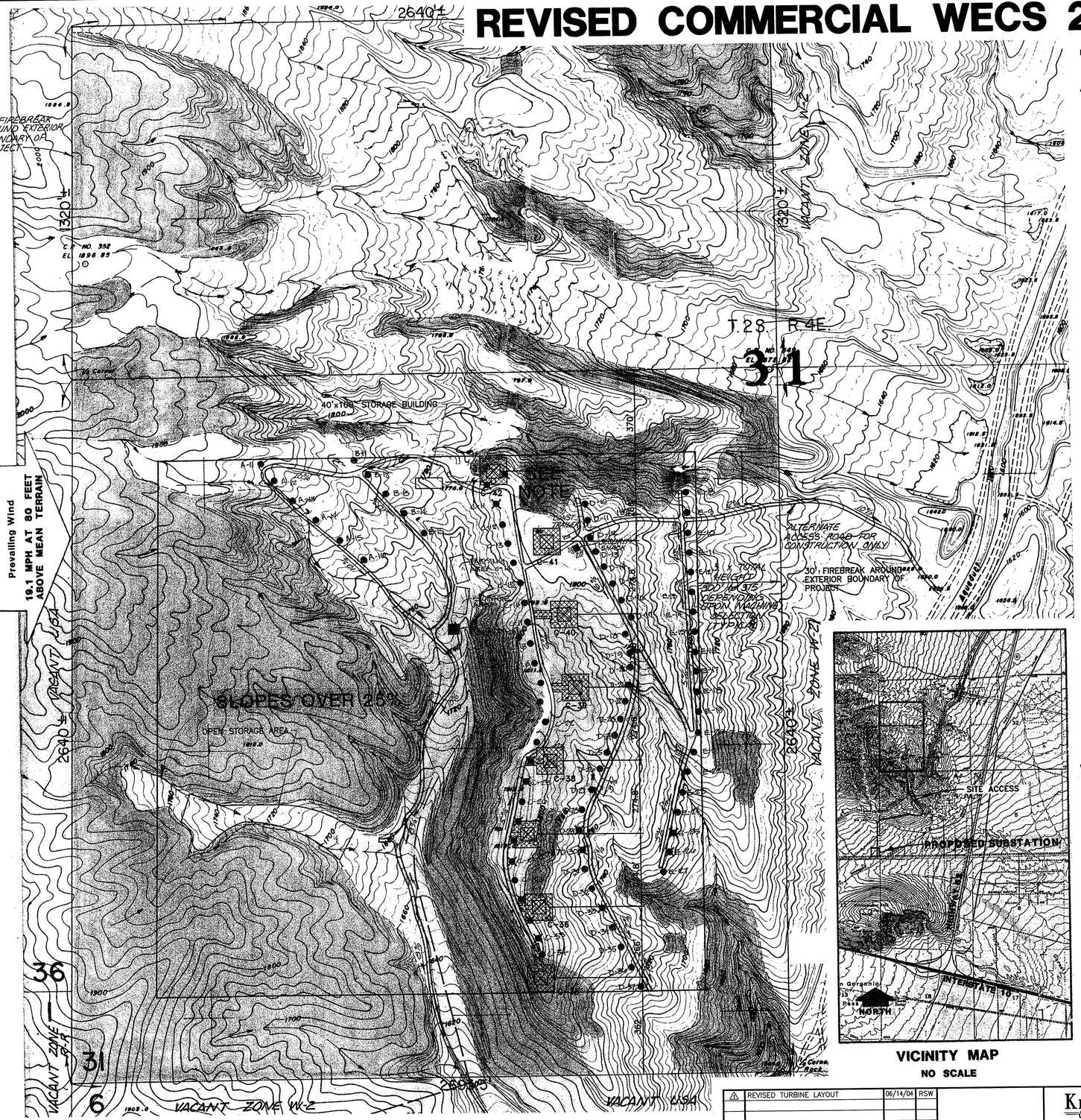
NEAREST RESIDENCES LOCATION MAP

FIGURE 6 OF 6

SCALE: 1"=1400'± DATE: 7/17/06 DRAWN BY: TMW CHECKED BY: VEM W.O.: 554-9

554\9\FIGURES\9F6.DWG

REVISED COMMERCIAL WECS 20 PERMIT



SCALE: 1"=200'

VICINITY MAP

NO SCALE

PROPERTY OWNER: VILLANOVA UNIVERSITY
2 ALDWYN CENTER
VILLANOVA, PA. 19085
610 519-7925

APPLICANT: ENERGY UNLIMITED, INC.
100 FOUR FALLS CORPORATE CENTER, SUITE 215
WEST CONSHOHOCKEN, PA. 19428-2960
818 991-5095

REPRESENTATIVE: KRIEGER & STEWART, INC.
3602 UNIVERSITY AVE.
RIVERSIDE, CA. 92501
909 684-6900

PROPERTY DATA: LEGAL DESCRIPTION: SOUTHWEST QUARTER OF SECTION 31, T2S. R4E.

GENERAL PLAN DESIGNATION: MOUNTAINOUS/DESERT
EXISTING LAND USE: VACANT LAND
EXISTING ZONING: W-2

GROSS AND NET ACREAGE: 160 ACRES

ASSESSOR'S PARCEL NUMBERS: 667-160-001

UTILITIES:
- ELECTRIC – SOUTHERN CALIFORNIA EDISON CO.
- WATER – DESERT HOT SPRINGS COUNTY WATER DISTRICT (NOT AVAILABLE)
- GAS – SOUTHERN CALIFORNIA GAS CO. (NOT AVAILABLE)
- TELEPHONE – GENERAL TELEPHONE CO. (NOT AVAILABLE)
- SEWER – NONE

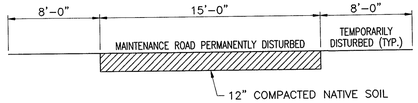
THOMAS BROTHERS MAP (1999 EDITION) RIVERSIDE COUNTY, PAGE 695; 5F

EARTHWORK: CUT: 2,400± C.Y.
FILL: 2,400± C.Y.

DISTURBED AREA: PERMANENT: 0.61 ACRES
TEMPORARY: 0.74 ACRES

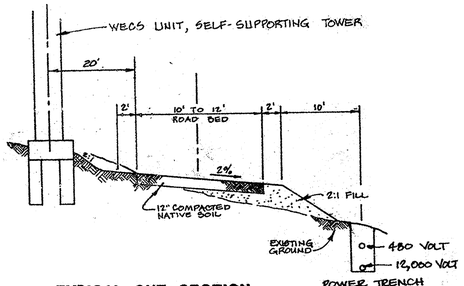
LEGEND:

- ● WECS 20 – EXISTING 65/120 KW WTG – TOTAL 85 (SOUTHWEST QUARTER OF SECTION 31 ONLY)
- ☒ PROPOSED GE 1.5 MW WIND TURBINE LOCATIONS – TOTAL 8
- EXISTING SERVICE ROAD
- PROPOSED SERVICE ROAD
- D= ROTOR DIAMETER=231.31'/252.64'
- ✱ EXISTING 65/120 KW WTG TO BE REMOVED FOR INSTALLATION OF PROPOSED 1.5 MW WTG – TOTAL 16



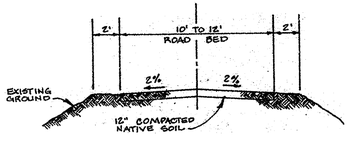
TYPICAL SECTION – PROPOSED SERVICE ROAD

N.T.S.



TYPICAL CUT SECTION

NOT TO SCALE

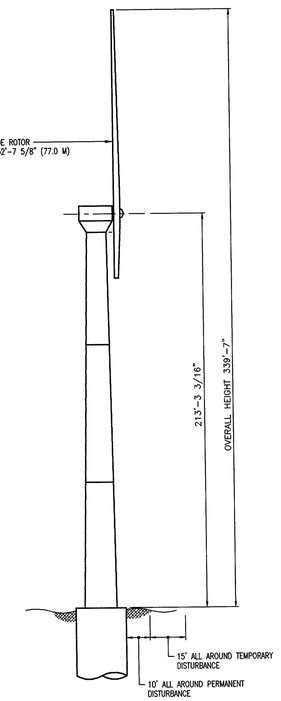


TYPICAL FILL SECTION

NOT TO SCALE

NOTES:

1. MAXIMUM ACCESS ROAD GRADE=13%.
2. ALL ELECTRIC LINES TO BE UNDERGROUND.
3. BASIS OF TOPOGRAPHY – RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT.
4. FENCE AS REQUIRED BY WECS CONDITIONS.
5. REFER TO GEOTECHNICAL REPORT FOR SOIL TYPES.
6. ROADWAYS AND CLEAR ZONES WILL BE STAKED DURING CONSTRUCTION TO KEEP WORKERS AND VEHICLES OFF UNDISTURBED AREAS.
7. 30' FIRE BREAK PER FIRE DEPARTMENT REQUIREMENTS.
8. BOTTLED WATER TO BE FURNISHED IN TEMPORARY CONSTRUCTION TRAILER AND PORTABLE TOILETS TO BE FURNISHED.
9. PROPERTY IS NOT SUBJECT TO LIQUEFACTION OR FLOODING. PROPERTY IS IN FEMA FLOOD ZONE C.
10. WTG'S WILL CONNECT TO ONSITE 12 KV ELECTRICAL LINE. 12 KV LINE CONNECTS TO SCE SUBSTATION SOUTH OF PROPOSED WIND TURBINES.
11. TURBINES C-35 AND C-42 SHALL HAVE A ROTOR WITH DIA.=70.5 METERS (VERSUS 77 METERS).



GE 1.5 MW WTG

N.T.S.

NOTE:

TOWER DATA FROM MANUFACTURERS LITERATURE SHOWN FOR INFORMATION ONLY. FOUNDATION CONTRACTOR AND TOWER ERECTION CONTRACTOR TO VERIFY ALL DATA HEREON WITH MANUFACTURER SHOP DRAWINGS.

SYM	REVISIONS	DATE	BY
1	REVISED TURBINE LAYOUT	06/14/04	RSW

KRIEGER & STEWART INCORPORATED
3602 University Ave. · Riverside, CA. 92501 · 909-684-6900

APPROVED BY _____
REGISTERED ENGINEER No. _____ DATE _____

SCALE	1"=200'
FIELD BOOK	N/A
DESIGN	RSW
DRAWN	PMD
CHECKED	RSW

ENERGY UNLIMITED, INCORPORATED

REVISED WECS 20 PERMIT

PRIMARY EXHIBIT PLOT PLAN/ SITE DISTURBANCE PLAN

SHEET **1** OF 1 SHEETS

554-9
PROJECT No.

DWG. NO.: 9F1X FILE NO.: 554-9 UPDATE BY: SPK PROJ. ENG.: RSW PLOT DATE: 07/28/04 PLOT TIME: 1:15PM PLOT SCALE: 1=200

APPENDIX A

ENVIRONMENTAL ASSESSMENT

City of Desert Hot Springs
Development Department

65950 Pierson Boulevard
Desert Hot Springs, California 92240
(760) 329-6411
Fax (760) 3251-6857

Environmental Assessment

Project Title: Energy Unlimited

Case Nos: Environmental Assessment No. 14-04
Variance No. 05-04
Conditional Use Permit No. 09-04

Lead Agency Name and Address: City of Desert Hot Springs
Development Department
65950 Pierson Boulevard
Desert Hot Springs, California 92240
(760) 329-6411 / (760) 251-6857 fax

Project Sponsor's Name and Address: Mr. Dave Lamm
Energy Unlimited, Inc.
100 Four Falls Corporation Center, Suite 215
West Conshohocken, PA
(818) 991-5095

Property Owner's Name and Address: Villanova University
110 Tolentine
Villanova, PA 19085
(610) 519-7925

Engineer: NA

Contact Person and Phone Number: Larry Grafton, Director Planning and Permits
(760) 329-6411 / (760) 251-6857 fax

Description of the Project: The proposed project includes Conditional Use Permit No. 09-04, Variance No. 05-04, Development Permit No. 24-04 and Design Review No. 22-04 and Conditional Use Permit (CUP) No. 09-04 is a request to construct eight 1.5 KW GE Wind Turbines within an existing Energy Unlimited, Inc. wind farm; the construction of one single story (100' by 40') storage facility for parts and tools; and the use of an open storage area for storage of spare parts for the turbines. Variance (VAR) No.

05-04 is a request to exceed the 200-foot height limit as specified in Section 159.08.030(2)(J)(e)(1)(a) of the Desert Hot Springs Municipal Zoning Ordinance to allow 340-foot wind turbines as the 340-foot size is now an industry standard. Development Permit (DP No. 24-04) and Design Review (DR No. 22-04) for the building design and location of the storage building that will be developed in conjunction with Wind Turbines. The proposed will be located downhill from the primary ridgeline of Whitewater Canyon in a single north-south row. The turbines on the end of each row will be 100.25 meter tall (65 meter tower, 35.25 meter blade) and the six turbines in between will be 103.5 meter tall (65 meter tower, 38.5 meter blade).

Background: A draft Mitigated Negative Declaration was originally prepared and presented for this project. At a public hearing on January 19, 2005 to consider the project entitlements, the City Council took public testimony, discussed the project, and directed staff and the applicant to prepare an Environmental Impact Report (EIR) for the project to further analyze the following potentially significant environmental impacts: aesthetics, biological resources, hazardous materials, public services, utilities, cultural resources, water quality, noise, air quality, and geology.

Project Location: The project site is located on 160 acres at the southwest quarter of Section 31 Township 2 South, Range 4 East, San Bernardino Meridian, in the City of Desert Hot Springs, Riverside County, California. Thomas Guide coordinates: Page 695, F-3. The subject site is identified as Assessor Parcel Number: 667-160-001.

A map depicting the location of the two project areas in a regional and vicinity context has been included as Exhibit "1" (Regional Location Map) and Exhibit "2" (Vicinity Location Map), respectively. Maps depicting the specific project areas have been included as Exhibit "3" (Project Location Map).

Existing Zoning and General Plan Designations of the Project Site:
General Plan Designation:
Industrial Energy-Related (I-E)
Zoning Designation:
Industrial Energy-Related (I-E)

Surrounding Land Uses and Setting: The 80 acre parcel immediately north of the project site was approved for the installation of wind turbines as part of the original Commercial Wind Energy Conversion System (WECS) Permit 20 in 1985, and is currently undeveloped. The property beyond the project site is the west and northwest is largely undeveloped hilly land except for the Energy Unlimited, Inc Section 1 wind park which has been in operation for the past 19 years. About a half mile south and southeast of the project site, and southeast of the project site, there are scattered single family residences, the majority of which are one level structures. The zoning, land use designations, and current use for surrounding adjacent parcels is as follows:

Zoning/General Plan:	Current Land Use:
North = Open Space Mountain Reserve (OS/MR)	Vacant
South = Open Space Mountain Reserve (OS/MR) Residential Estate (R-E-5)	Vacant/scattered single family residences
West = Open Space Mountain Reserve (OS/MR)	Vacant
East = Open Space Mountain Reserve (OS/MR)	Vacant/aqueduct

Other Public agencies whose approval is required:

- Desert Hot Springs City Council ~~(Zoning Text Amendment approvals)~~.

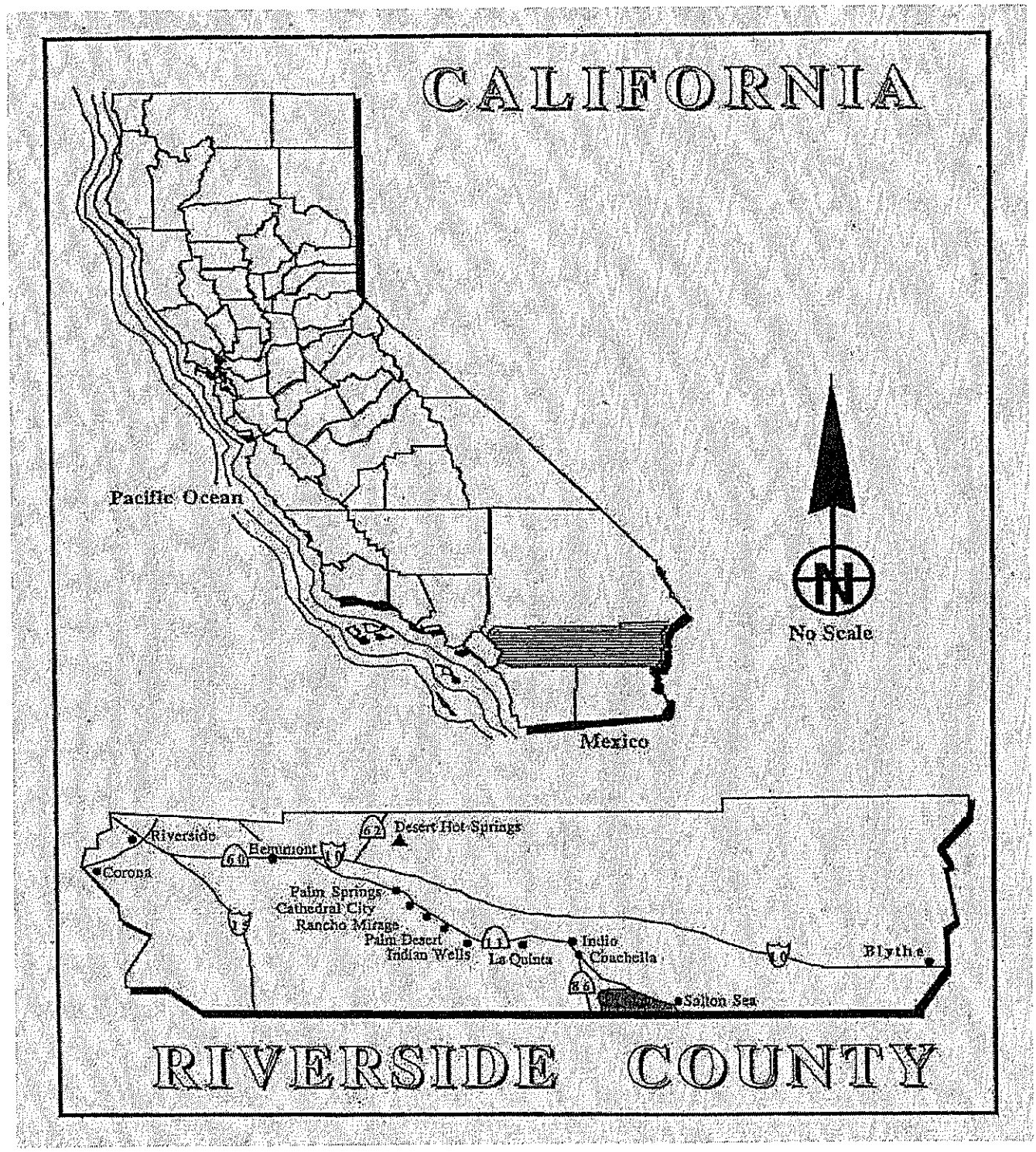


Exhibit 1, Regional Location Map

Project Site

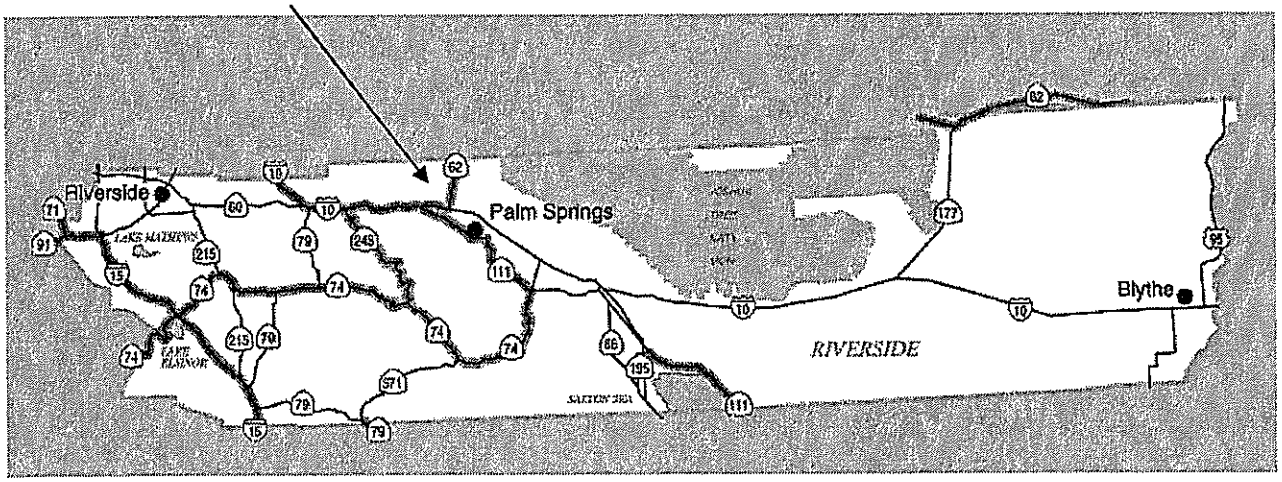


Exhibit 2A, Vicinity Map

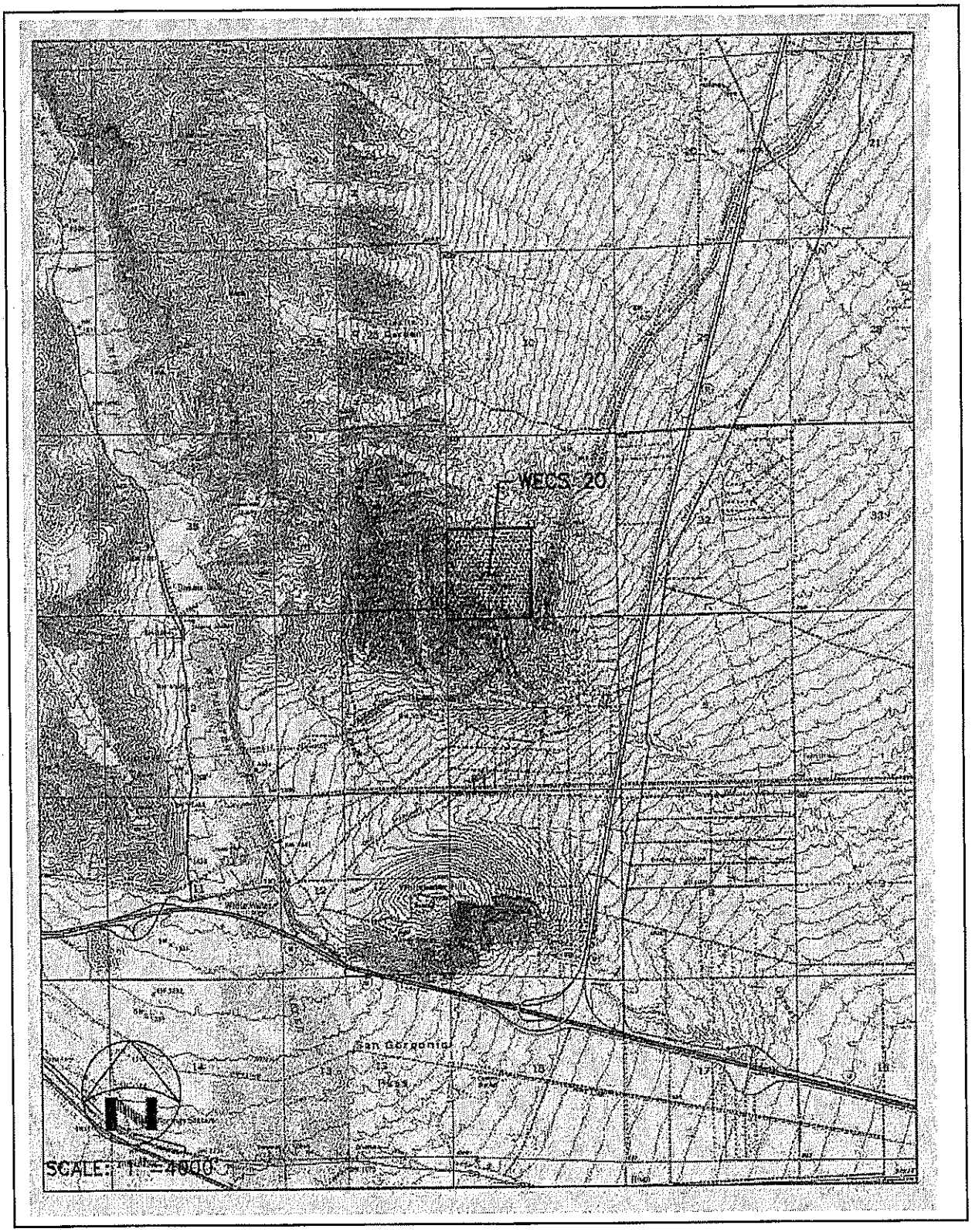


Exhibit 2B, Vicinity Map

REVISED COMMERCIAL WECS 20 PERMIT

LEGEND

TYPICAL SECTION – PROPOSED SERVICE ROAD

TYPICAL CUT SECTION

TYPICAL FILL SECTION

VICINITY MAP

GE 1.5 MW WTG

ENERGY UNLIMITED, INCORPORATED

REVISED WECS 20 PERMIT

SITE DISTURBANCE PLAN

1

Visual Simulation with the proposed 8 GE turbines.
(near the intersection of Highway 62 and Painted Hills Road)

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

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

☒	Aesthetics	☐	Agriculture Resources	☒	Air Quality
☒	Biological Resources	☒	Cultural Resources	☒	Geology /Soils
☒	Hazards & Hazardous Materials	☒	Hydrology / Water Quality	☒	Land Use / Planning
☐	Mineral Resources	☒	Noise	☐	Population / 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 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL 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.

Signature: Larry Grafton, AICP
Director Planning and Permits

Date: 3-25-05

Environmental Checklist and Discussion:
The following checklist evaluates the proposed project's potential adverse impacts. For those environmental topics for which a potential adverse impact may exist, a discussion of the existing site environment related to the topic is presented followed by an analysis of the project's potential adverse impacts. When the does not have any potential for adverse impacts for an environmental topic, the reasons why there are no potential adverse impacts are described.

Issues:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
1. AESTHETICS -- Would the project:				

Thresholds of Significance
A project may have a significant effect on Aesthetics if it adversely affects a scenic vista or scenic highway; it has a demonstrable negative aesthetic effect; or creates obtrusive light or glare.

a) Have a substantial adverse effect on a scenic vista?	☒	☐	☐	☐

Potentially Significant Impact: The proposed project involves the adoption of a Conditional Use Permit (CUP No. 09-04) and Variance (No. 05-04) to construct eight 340-feet high 1.5 KW GE Wind Turbines and a one single story (100' by 40') storage facility within an existing Energy Unlimited, Inc. wind farm currently operated on Section 31 within the City of Desert Hot Springs. The proposed project occurs on a ridgeline approximately 1 mile west of SR-62, a designated by Caltrans as a California State Scenic Highway. A visual impact analysis was completed for the proposed project. The 1.5 KW GE Wind Turbines will extend above the existing Bonus turbines. The ridgeline is already impacted by the existing Bonus turbines. However, the new turbines will add to the existing impacts. Scenic vista impacts shall be further analyzed in an Environmental Impact Report (EIR) for the project.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☒	☐	☐	☐

Potentially Significant Impact: See Response in 1(a) above.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☒	☐	☐	☐

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact

Potentially Significant Impact: See Response in 1(a) above.

d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	☒	☐	☐	☐

Potentially Significant Impacts: Implementation of the proposed project will introduce new light sources on the project site. New light sources are anticipated to occur from the illumination associated with on-site structures including storage building(s), interior and exterior lighting, and light from vehicles on the roadways/parking areas. General increases in light could be expected to significantly affect the ambient evening light level in and around the project site. Light and glare impacts shall be analyzed in the project EIR.

2. 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. Would the project:

Thresholds of Significance

A project may have significant impact on Agricultural Resources if it were to convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural uses, or conflict with existing zoning for agricultural use, or a Williamson Act contract.

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 non-agricultural use?	☐	☐	☐	☒

No Impact: The Desert Hot Springs Comprehensive General Plan indicates that there is no prime agricultural farmland, Farmland of Statewide Importance, or Unique Farmland, or Williamson Act contract in place within the City limits or the City's Sphere of Influence.

Cumulative Impacts: None identified with respect to the proposed project.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒

No Impact: See response in 2(a) above.

c) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	☒

No Impact: See response in 2(a) above.

3. 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:

Thresholds of Significance

The following criteria are identified as thresholds for determining the significance of air quality impacts if it were to:

- Result in an adverse effect on existing air quality (e.g., 500 or more dwelling units).
- Result in an adverse effect to a sensitive use (e.g., school) located near a major air pollutant emission source.

Presented in the SCAQMD CEQA Air Quality Handbook is both a methodology for the quantification of project related air quality impacts and recommended thresholds to evaluate the significance of these emissions. In Chapter 6 of the SCAQMD CEQA Air Quality, the SCAQMD has established two types of air pollution thresholds (i.e., emission thresholds and additional indicators) to assist local governmental agencies in determining whether the projected emissions from the operational phase of a project will be significant. As stated in the SCAQMD CEQA Air Quality Handbook, "if the lead agency finds that the operational phase of a project has the potential to exceed either of the air pollution thresholds, the project should be considered significant." Both types of threshold factors are discussed below.

As indicated in the SCAQMD CEQA Air Quality Handbook, "The District considers a project to be mitigated to a level of insignificance if its impact is mitigated below the thresholds defined in Chapter 6 of the SCAQMD CEQA Air Quality Handbook."

Additional Indicators (Secondary Effects). The SCAQMD recommends that "additional indicators" be used as screening criteria with respect to air quality. Relevant additional factors identified in the SCAQMD CEQA Air Quality Handbook include the following significance criteria: 1) interference with the attainment of the Federal or State ambient air quality standards by either violating or contributing to an existing or projected air quality violation; 2) generation of vehicle trips that cause a CO "hot spot"; 3) creation of, or subject receptors to, an objectionable odor onsite that could result in an accidental release of air toxic emissions or acutely hazardous materials posing a threat

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact

to public health and safety; 5) emissions of an air toxic contaminant regulated by SCAQMD rules or included on a Federal or State air toxic list; 6) the burning of hazardous, medical, or municipal waste as in waste-to-energy facilities; and/or, 7) emissions of carcinogenic or toxic air contaminants that individually or cumulatively exceed the maximum individual cancer risk of 10 in 1 million.

a) Conflict with or obstruct implementation of the applicable air quality plan?	☒	☐	☐	☐

Potentially Significant Impact: See Response in 3(b) below.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☒	☐	☐	☐

Less Than Significant with Mitigation Incorporation: The Coachella Valley is currently federally designated as a "sever-17" ozone nonattainment area and is required to reduce emission by 3% per year. This designation indicates that the attainment date for federal ozone standards in November 15, 2007 (17 years from the date of enactment of the Federal Clean Air Act: CCA). The City in cooperation with the Coachella Valley Association of Governments is involved in the regional management of air quality through the implementation of the Coachella Valley PM_{10} plan. This Plan has been approved by the U.S. Environmental Protection Agency. The implementation programs, as wells as applicable SCAQMD rules and regulations, commit the City to mitigation that will reduce construction-related and operational air quality impacts. Dust (PM_{10}) created by grading and construction activities is specifically targeted for mitigation. Nitrogen oxides are byproducts of fuel combustion from mobile and stationary sources.

With any construction project there will be short-term construction impacts on air quality that will require mitigation. Long-term air quality emissions are not anticipated to be significant from proposed project, but could have a cumulative impact upon local and regional air quality. The most significant short-term impacts are expected to come from the generation of dust during future construction, while long-term impacts are expected to come from the emission of pollutants generated by vehicular traffic, consumption of electricity and natural gas. Potential impacts to air quality, along with all final mitigation measures, shall be discussed in the project EIR.

Cumulative Impacts: Although the City of Desert Hot Springs incorporated air quality measures established by the South Coast Air Quality Management District in its General Plan to mitigate impact on a local level, continued exceedance of state and federal air quality standards will occur on a regional level. Implementation of the General Plan would result in generation of additional pollutants from stationary sources (construction activities, electrical and natural gas usage) and mobile sources primarily from increased vehicular travel. Short-term impacts will result from construction activities due to site disturbance and emissions form construction equipment. Adherence to the SCAQMD Rule and Regulations and compliance with locally adopted Air Quality Management Plan (AQMP) and Coachella Valley PM10 Plan control measures will help reduce the city wide air pollutant burden.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
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)?	☒	☐	☐	☐

Potentially Significant Impact: See response in 3(b) above.

d) Expose sensitive receptors to substantial pollutant concentrations?	☒	☐	☐	☐

Potentially Significant Impact: See response in 3(b) above.

e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

No Impact: The implementation of the proposed project is not anticipated to create objectionable odors. No materials or facilities that create objectionable odors are known to be associated with the project. Therefore, no adverse impacts have been identified.

Cumulative Impacts: None identified with respect to the local area.

4. BIOLOGICAL RESOURCES – Would the project:

Thresholds of Significance

A project has significant effect on Biological Resources if it will result in a loss of individuals, populations, or habitat of a federal or state designated threatened, endangered, or rare species; a loss of locally designated species, such as heritage trees; a loss of locally designated natural communities, such as vernal pools; a loss of wetland habitat; or an interference with wildlife dispersal or migration corridors.

Project actions are also evaluated in terms of impacts to species that do not fall into one of the above categories, but which nevertheless are protected by federal or state regulations. Most often such cases involve nests of birds such as red-tailed hawks that are not rare, but are still protected under the federal Migratory Bird Treaty Act and the California Department of Fish and Game Code.

The term "rare" species is usually interpreted to mean species that are on lists prepared by federal, state, or private organizations but are of lower sensitivity status than threatened or endangered species. Thus, the term "rare" refers to species listed by the California Native Plant Society, federal /state Species of Special Concern, or species considered sensitive by a local jurisdiction.

Evaluation of significance is typically different between threatened/endangered species as compared to non-listed or rare species. Any loss of threatened or endangered species or their habitat is considered a significant impact in relation to federal and state endangered species regulations. However, thresholds of significance for loss of rare

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact

species have not been codified in federal or state regulations. Generally, the term is interpreted in terms of whether the project action would jeopardize the continued persistence or viability of individuals or populations of the species in question.

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?	☒	☐	☐	☐

Potentially Significant Impact: The project site is located within an existing wind farm area established in 1985. A Biological Assessment Update was conducted on the site that included visual on-site reconnaissance by Ogden Energy and Environmental Service, Inc. in November 2000. The report identified that the project site contains creosote bush scrub vegetation common to Southern California deserts. The property is fairly hilly, with small drainage interspersed among the hillsides (page 2). Dirt roadways have been graded through the site for the on-going operation and maintenance of the 69 Bonus wind turbines currently in operation on-site.

The report concluded that the project occurs in an area of sensitive biological resources. Aerial Imagery from the Coachella Valley Association of Governments identifies that the proposed project site is within the Draft Coachella Valley Multiple Species Habitat Conservation Plan but not within the Coachella Valley Fringe-toed Lizard Fee area.

The Biological Assessment Update by Ogden Energy and Environmental Service, Inc. in November 2000, concluded that biological survey established the presence of 56 species of plant, and 33 vertebrate species (8 reptiles, 18 birds, and 7 mammals) on site (page 2). The Biological Assessment Update indicated that sources suggested that up to 25 sensitive species could occur in the project vicinity. However, following field survey by their biologist concluded that up to 16 sensitive species could occur, including three species listed at Threatened or Endangered by the California Department of Fish and Game and/or U.S. Fish and Wildlife Service. Only two species, the desert tortoise and loggerhead shrike, were detected (page 2). The Biological Assessment Update concluded that potential impacts of the project included further degradation of creosote bush scrub habitat, a higher risk of collisions with nocturnal migratory birds, minor loss of habitat for species of concern, and impact to the desert tortoise, a species listed as threatened by the Federal government (page 2, 15). To lessen the projects impacts the Biological Assessment Update recommended the following mitigation measures:

- Grading on site shall be limited to construction areas only. All town sites and access road location shall be clearly marked prior to the initiation of any ground disturbing activity. No construction activity shall occur adjacent to Super Creek. All staging areas shall occur on already disturbed areas.
- No more than 24 hours prior to the initiation of construction, a Desert Tortoise survey shall be conducted.
- A qualified biologist shall be on site during all construction and earth moving activities. The monitor shall be empowered to halt or divert construction activities. A final report shall be filed by the monitor with the Planning Department at the conclusion of construction.
- All construction personnel shall participate in a biological awareness training program prior to the initiation of any earth moving or construction activity.
- If required by the biological monitor, fencing shall be installed around construction sites.
- Any barrel cactus to be removed for construction purposed shall be transplanted to an undisturbed portion of the site which is to remain in open space.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact

As a result of public comment regarding the potential for bird collection a Biological Assessment Update was conducted by AMEC Earth and Environmental, Inc, on June 2004. The reports notes that the current project differs from the past proposal in the height and location of the turbines. The 2000 proposal specified eight 1.3MW 100 meter turbines (69 meter tower, 31 meter blade). The 2004 proposal specifies eight 1.5 MW turbines in nearly the same location in a single north-south row. However, the turbines on the end of each row will be 100.25 meter tall (65 meter tower, 35.25 meter blade) and the six turbines in between will be 103.5 meter tall (65 meter tower, 38.5 meter blade).

The AMEC Update identifies that the San Gorgonio Pass is a high-use nocturnal flyway for migratory songbirds. It has been estimated that 32 million birds flew through the Coachella Valley during the spring of 1982, and 37 million birds during the fall of 1982. Traffic rates of 5,000 to 10,000 birds per hour were recorded with radar equipment. The AMEC Update identified that these migratory birds generally flew at heights much greater than the tallest turbines. On very windy night, however, birds can be blown down closer to ground or may seek shelter at ground level. In these instances, the turbines on the ridge tops, such as on Whitewater Hill, present a risk of collision. The AMEC Update also identifies that large, soaring birds known to be susceptible to collision with wind turbines are not common in the San Gorgonio Pass (page 2).

The AMEC Update concluded that the primary factors involving risk of collision and mortality to birds from wind turbines are location, bird abundance, and tower design (page 3). In regards to the proposal the AMEC Update concludes that the eight proposed towers are located downhill from the primary ridgeline of Whitewater Canyon. These are in the safest location relative to the risk of bird collisions. The towers are not near or over open water or near riparian vegetation. In regards to bird abundance, the AMEC Update concludes that the Desert Hot Springs location is not considered a high use area for soaring birds. The site is within a very high use migration corridor, though the bird passage takes place at higher altitudes (page 3). Furthermore, the AMEC Update concludes that the tubular towers that do not employ guy wires are among the safest designs relative to risk factors for bird collisions (page 3).

The AMEC Update identifies that the potential for bird mortality form the eight turbines is low, but not zero. Risk factors associated with bird collisions are minimized by location, bird abundance, and turbine design and the impact to birds in the Desert Hot Springs area will be biologically insignificant (page 4). The AMEC Update also reports that the findings and conclusions of the November 2000 biological study by Ogden for this project remain valid, with the exception that the U.S. Geological Survey study of desert tortoises in the wind resource area is completed and there is no need to contact USGS if a tortoise is encountered (page 1).

Biology and all final related mitigation measures shall be further analyzed and discussed in the project EIR.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service?	☒	☐	☐	☐

Potentially Significant Impact: See response in 4 (a) above.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

No Impact: There are no protected wetlands, vernal pools, marshes, or coastal bodies of water in the City of Desert Hot Springs. Neither the Biological Assessment Update conducted by Ogden Energy and Environmental Service in November 2000 or by AMEC Earth and Environmental, Inc. on June 2004 identified the presence of any wetlands within the project area. Consequently, project implementation would not have any impacts upon wetlands habitat issues. There is therefore no impact with regard to the aforementioned criterion.

Cumulative Impacts: None identified with respect to the proposed project.

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?	☒	☐	☐	☐

Potentially Significant Impact: See response in 4 (a) above.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒

No Impact: There are no local polices or ordinances protecting biological resources within the municipal boundary of the City of Desert Hot Springs.

Cumulative Impacts: None identified with respect to the proposed project.

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?	☒	☐	☐	☐

Potentially Significant Impact: See response in 4 (a) above.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact

5. CULTURAL RESOURCES -- Would the project:

Thresholds of Significance
A project may significantly impact Cultural Resources if it disrupts or adversely affects a prehistoric or historic archaeological site or a property of historic significance to a community, ethnic or social group, or a paleontological site except as part of a scientific study.

a) Cause a substantial adverse change in the significance of a historical resource as defined in 15064.5?	☒	☐	☐	☐

Potentially Significant Impact: The general area was known to be the home of two native American groups, there is the potential for buried cultural resources to be found on in the area. Therefore, future development projects will be required to conduct site-specific cultural resource surveys to assure the protection of such resources. Since the presence or absence of archaeological/paleontological sites for areas that have not been adequately surveyed is unknown, it is difficult if not impossible to provide a quantitative discussion of cumulative negative impact on archaeological or paleontological resources.

Potential impacts to cultural resources shall be analyzed in the project EIR.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to ' 15064.5?	☒	☐	☐	☐

Potentially Significant Impact: See response in 5(a) above.

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☒	☐	☐	☐

Potentially Significant Impact: See response in 5(a) above.

d) Disturb any human remains, including those interred outside of formal cemeteries?	☒	☐	☐	☐

Potentially Significant Impact: See response in 5(a) above.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact

6. GEOLOGY AND SOILS -- Would the project:

Thresholds of Significance
A project has significant effect in relation to Geology and Soils if it will expose people or occupied structures to geologic or soils hazards (including fault rupture, ground shaking, liquefaction, subsidence, landslides, erosion, expansive soils) or facilitate damage to, or the destruction of, unique geologic features.

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.	☒	☐	☐	☐

Potentially Significant Impact: See response in 6a(ii) below.

ii) Strong seismic ground shaking?	☒	☐	☐	☐

Potentially Significant Impact: Earth Systems Southwest conducted an updated Geotechnical Engineering Report on November 10, 2000. This report indicated that the site is located within an active seismic area of Southern California within approximately 1/4 mile of the Banning Branch of the San Andreas fault system. Strong ground motion resulting from earthquake activity along the nearby fault system is likely to impact the site during the anticipated lifetime of the project. The project site does not lie within a currently delineated State of California, Alquist-Priolo Earthquake Fault Zone. Therefore, the potential for active fault rupture is considered low at the project site (page 4).

Secondary hazards related to ground shaking include soil liquefaction, ground deformation, areal subsidence, tsunamis, and seiches. The site is far inland, so the hazard from tsunamis in non-existent. At the present time, no water storage reservoir, dam or levee is located in the immediate vicinity of the site. Therefore, flood hazards at the site from catastrophic reservoir, dam or levee failure are considered nil. Given the geology and topography of the site it is not anticipated that soil liquefaction would be a significant impact. The Desert Hot Springs Comprehensive General Plan (Exhibit V-2) indicates that the site is highly susceptible of being impacted by rock falls and seismically induced landsliding.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact

Cumulative Impacts: As development increases in the City and surrounding region, there is an increased potential of impacts from fault rupture hazards. In the event of a significant seismic event, a larger population could result in increased structural damage; disruption is service, and even injuries and deaths from seismic related impacts. An element of risk is living within proximity to the various seismic fault zones in the region must be accepted by each resident. Best management practices in the form of construction safety standards, and identifying locations with too great a risk for habitation is anticipated to continue pursuant to city, county, and state policies.

To reduce potential impacts to less than significant levels the Geotechnical Engineering Report recommended the following mitigation measures:

- Additional geologic and geotechnical studies shall be conducted prior to project construction of the proposed wind turbine foundation. These studies should include additional soil boring to a depth of 40 feet or refusal along the alignment of the proposed turbines in WECS #20. At least three soil borings should be conducted to evaluate the soil condition to support thee large wind turbine structures.
- The minimum seismic design should comply with the 1997 edition of the Uniform Building Code (UBC) for non-building structures.
- Site development shall be in conformance to all recommendations as specified in the Geotechnical Engineering Report by Earth Systems Southwest on November 10, 2000.

Potential geological impacts, and further studies indicated herein, shall be addressed in the project Environmental Impact Report.

iii) Seismic-related ground failure, including liquefaction?	☒	☐	☐	☐

Potentially Significant Impacts: See response in 6a(ii) above.

iv) Landslides?	☒	☐	☐	☐

Potentially Significant Impacts: The Desert Hot Springs Comprehensive General Plan (Exhibit V-2) indicates that the site is highly susceptible of being impacted by rock falls and seismically induced landsliding.

b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒

No Impact: The Desert Hot Springs Comprehensive General Plan (Exhibit V-3) indicates that the site is not located within a wind erosion hazard. No mitigation has been identified as needed.

Cumulative Impacts: None identified with respect to the proposed project.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
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?	☒	☐	☐	☐

Potentially Significant Impact: See response to 6a(iii) above.

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?	☒	☐	☐	☐

Potentially Significant Impact: See response to 6a(iii) above.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

No Impact: The proposed WECS project will result in the construction, operation and maintenance of eight wind turbines and does not include any development of housing units on the project site. The proposed project precludes the need for significant quantities of water used or discharged on the site. No mitigation has been identified as needed.

Cumulative Impacts: None identified with respect to the proposed project.

7. HAZARDS AND HAZARDOUS MATERIALS -- Would the project:

Thresholds of Significance

A project may cause significant Hazards and Hazardous Material impacts if it will create a potential public health hazard or involve the use, production or disposal of materials which pose a hazard to people or animal or plant populations in the area affected; or, interfere with emergency response plans or emergency evacuation plans.

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☒	☐	☐	☐

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact

Potentially Significant Impact: The proposed WECS project will result in the construction, operation and maintenance of eight wind turbines. The only hazardous waste connected with the wind plant is used lubricants. The gearbox oil that Energy Unlimited, Inc. (EUI) replaces during maintenance is a controlled hazardous waste. When the gearbox oil is changed, EUI takes the used oil from the gearboxes and stores it in metal containers until a "used oil recycler" comes to the site and removes the oil offsite for processing. There is no hazardous waste disposed of (burned) at the project site. The use and management of the lubricants is regulated by the Department of Environmental Health, County of Riverside who has issued a Hazardous Materials Management Permit to Energy Unlimited, Inc. (Facility Permit #89040). A permanent California EPA ID Number also has been assigned to this wind farm (CAL 0002376812). Without the EPA facility number, the used oil recycler will not take the oil. The Section 31 wind farm site is operated in compliance with these permits.

Hazardous materials shall be more specifically analyzed and addressed in the project Environmental Impact Report.

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?	☒	☐	☐	☐

Potentially Significant Impact: See response to 7(a) above.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒

No Impact: There are no existing or proposed school sites.

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?	☒	☐	☐	☐

Potentially Significant Impact: See response to 7(a) above.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact

No Impact: The project site is not located within the boundaries of any airport land use plan or within two miles of a public or private airport or airstrip, and therefore, is not expected to impact the safety of people working or residing in the area.

Cumulative Impacts: None identified with respect to the proposed project.

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?	☐	☐	☐	☒

No Impact. See response in 7(e) above.

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒

No Impact: Implementation of the project involves the alternation of any existing wind farm that has been in operation since 1985. There are no commercial or residential structures associated with the development of this project. In addition, the project will create and support only two full time positions and 40+ temporary construction jobs that will be phased out at the completion of on-site construction (from January to May 2005). Given the limited nature and size of the project it is not anticipated that project implementation, in and of it self, impair or interfere with implementation of an emergency response plan. No mitigation has been identified as needed.

Cumulative Impacts: None identified with respect to the proposed project.

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: The City Fire Department has identified that the project site is within a high fire area. The proposed WECS project will result in the construction, operation and maintenance of eight wind turbines that will be adjacent to residences that are intermixed with wildlands. Project implementation may expose people or structures to a significant risk involving wildland fires. As such, wildland fire related impacts shall be more specifically analyzed and addressed in the project Environmental Impact Report

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact

8. HYDROLOGY AND WATER QUALITY - Would the project:

Thresholds of Significance

A project may be deemed to have a significant effect on Hydrology and Water Quality if it will significantly affect absorption rates, drainage patterns, the rate and amount of surface runoff, the quality and/or quantity of surface or public water supply, the course or direction of surface and/or groundwater movements or would expose people or property to water-related hazards such as flooding.

a) Violate any water quality standards or waste discharge requirements?	☐	☐	☐	☒

No Impact: The proposed WECS project will result in the construction, operation and maintenance of eight wind turbines. The facility will be required to comply with all State and Regional water quality standards. However, the proposed project precludes the need for significant quantities of water used or discharged on the site. No mitigation has been identified as needed.

Cumulative Impacts: None identified with respect to the proposed project.

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)?	☐	☐	☐	☒

No Impact: The proposed project does not require significant quantities of potable water. No mitigation has been identified as needed.

Cumulative Impacts: None identified with respect to the proposed project.

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- or off-site?	☒	☐	☐	☐

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact

Potentially Significant Impact: Project implementation will not result in the alteration of the course of a stream or river, as there is no surface water bodies located within the project site. The proposed project is not anticipated to substantially alter the existing drainage pattern of the site given the limited nature and size of the project. However, development of the project will result in the potential for additional erosion or siltation on- or off-site due to the construction and use of dirt roadways, dirt parking areas, the construction of one single story (100' by 40') storage facility for parts and tools and the use of an open storage area for storage of spare parts for the turbines. Construction of the WECS foundations is anticipated to result in the temporary disturbance of approximately .74 acres of area and the permanent disturbance of approximately .61 acres of area.

Potential impacts related to hydrology and water quality, along with potential mitigation measures, shall be analyzed in the project EIR.

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- or off-site?	☒	☐	☐	☐

Potentially Significant Impact: See response in 8(c) above.

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?	☐	☐	☐	☒

No Impact: The proposed WECS project will result in the construction, operation and maintenance of eight wind turbines. Project development does not involve the construction of any significant amounts of impervious surfaces that could contribute to runoff water of additional sources of polluted runoff. The proposed project precludes the need for significant quantities of water used or discharged on the site. No mitigation has been identified as needed. See response in 8(c) above.

Cumulative Impacts: None identified with respect to the proposed project.

f) Otherwise substantially degrade water quality?	☒	☐	☐	☐

Potentially Significant Impact: See response in 8(a) above.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

No Impact: The proposed WECS project will result in the construction, operation and maintenance of eight wind turbines and does not include any development of housing units on the project site. Therefore, there is no impact.

Cumulative Impacts: None identified with respect to the proposed project.

h) Place within a 100-year flood hazard area structures, which would impede or redirect flood flows?	☐	☐	☐	☒

No Impact: See response in 8(g) above.

Cumulative Impacts: None identified with respect to the proposed project.

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?	☐	☐	☐	☒

No Impact: At the present time, there are no water storage reservoirs, levees or dams located in the immediate vicinity of the site. Therefore, flood hazards at the site from catastrophic failure of any reservoir, levee or dam are considered nil. There is therefore no impact with regard to the aforementioned criterion.

Cumulative Impacts: None identified with respect to the proposed project.

j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

No Impact: There are no large natural bodies of water in the vicinity of the subject property. As such there are not threats of seiche, tsunami, or mudflows. No mitigation has been identified as needed.

Cumulative Impacts: None identified with respect to the proposed project.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
9. LAND USE AND PLANNING - Would the project:				

Thresholds of Significance
A project may be deemed to have a significant effect on Land Use and Planning if it will conflict with adopted general plans, policies, goals and/or zoning ordinances, be incompatible with surrounding land uses or physically divide or disrupt an existing community.

a) Physically divide an established community?	☐	☐	☐	☒

No Impact: Implementation of the project involves the alternation of any existing wind farm that has been in operation since 1985. There are no established communities located on the project site. The proposed project will not result in significant conflicts with the established and existing arrangements of any community, as the design of the project utilizes existing roadway for access and proposes to construct new interior dirt roadways that will connect to the existing circulation system without interrupting any existing physical roadway arrangement. No mitigation has been identified as needed.

Cumulative Impacts: None identified with respect to the proposed project.

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?	☒	☐	☐	☐

Potentially Significant Impact: The project site is located within an existing wind farm area established in 1985. The project as proposed (excluding the height variance) is consistent with the City's adopted General Plan and Municipal Zoning Ordinance. No specific plans have been adopted for the project site area. Aerial Imagery from the Coachella Valley Association of Governments identifies that the proposed project site is within the Draft Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP). To date, the CVMSHCP has not been approved but is currently out for public comment. The project involves the alternation of an existing wind farm that has been in operation prior to the undertaking of the CVMSHCP and does not involve the expansion of the facility beyond its existing boundaries. However, concerns have been raised that the proposed project is potentially incompatible with existing land uses in the vicinity and the draft CVMSHCP.

Potential impacts related to land use and planning shall be analyzed in the project EIR.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☒	☐	☐	☐

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact

Potentially Significant Impact: See response in 9(b) above.

10. MINERAL RESOURCES -- Would the project:

Thresholds of Significance
A project may be deemed to have a significant effect on Mineral Resources if it will result in the loss of a known mineral resource of value to the state, region, or loss of a locally important mineral resource recovery site delineated on a local general plan.

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?	☐	☐	☐	☒

No Impact. The Desert Hot Springs Comprehensive General Plan (page IV-49) identifies that project area as being within an MRZ-3 Mineral Resources Zone. An MRZ-3 contains mineral deposits, the significance of which cannot be evaluated from available data. As such, no mitigation has been identified as needed.

Cumulative Impacts: None identified with respect to the proposed project.

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?	☐	☐	☐	☒

No Impact: The Desert Hot Springs Comprehensive General Plan EIR identifies no locally-important mineral resources recovery sites within the City. See response in 10(a) above.

Cumulative Impacts: None identified with respect to the proposed project.

11. NOISE -- Would the project result in:

Thresholds of Significance
A project may have a significant effect in relation to Noise if it will expose people to noise hazards or generation of noise levels in excess of standards established by the City of Desert Hot Springs General Plan (exterior CNEL 65, interior CNEL 45 for residential developments and transient lodging); generation of excessive ground borne vibration or ground born noise levels; substantial permanent or temporary increase in ambient noise levels; or projects located within an airport land use plan or within two miles of a airport or private airstrip that would expose people residing or working in the project area to excessive noise levels.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
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?	☒	☐	☐	☐

Potentially Significant Impact: Hersh Walker Acoustics conducted an updated Acoustical Analysis Report on May 5, 2004. Actual noise readings were taken near the closest residence to the site. Noise levels at the closest two residence were also computed for the existing and proposed wind turbines. The analysis found that existing noise levels at the two nearest residential (south and east in the Painted Hills Ranchos) to be well below the current 55dB County WECS noise criterion (page 1). The analysis further shows that after the construction of the 8 turbines, there was no significant change in the noise levels. In addition, the noise analysis assumes the continued operation of all existing turbines, and does not take into account the removal of 16 Bonus turbines, as required by the City's Municipal Code (page 3). As such the noise analysis is likely to be conservative.

At the two nearest residence sites, the analysis reports that levels are below 50 dB and therefore well below the current Riverside County WECS 55 dBA noise criteria (page 3). The analysis also identifies that the property line noise levels are well below the 65 dB County noise criterion for non-WECS property (page 3).

However, concerns have been raised that the proposed project is potentially incompatible with existing land uses in the vicinity and results in the exposure persons to potentially significant noise related impacts. As such, potential impacts related to noise shall be analyzed in the project EIR.

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☒	☐	☐	☐

Potentially Significant Impact: See response in 11(a) above.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☒	☐	☐	☐

Potentially Significant Impact: The project would result in increased noise levels that would not exist without the project. Said increase, and whether this increase will be substantial, shall be analyzed in the project Environmental Impact Report.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☒	☐	☐	☐

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact

Potentially Significant Impact: See response in 11(c) above.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

No Impact: The project area is not located within the boundaries of an airport land use plan or within two miles of a public or private airport or airstrip, and therefore is not expected to expose people working or residing in the area to excessive noise levels (Palm Springs Regional Airport Master Plan and F.A.R. 150 Noise Compatibility Study).

Cumulative Impacts: None identified with respect to the proposed project.

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?	☐	☐	☐	☒

No Impact: See response in 11(e) above.

12. POPULATION AND HOUSING -- Would the project:

Thresholds of Significance
A project may be deemed to have a significant effect on Population and Housing it will induce substantial growth or concentration of population, or displace a large number of people.

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)?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact

No Impact: Implementation of the proposed project will create and support two full time positions and 40+ temporary construction jobs. Given the limited nature and size of the project it is not anticipated that project implementation will result in any significant population growth, either directly or indirectly. As such, no mitigation has been identified as needed.

Cumulative Impacts: None identified with respect to the proposed project.

b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

No Impact: The proposed project would not remove any existing residential units. There is therefore no impact with regard to this criterion.

Cumulative Impacts: None identified with respect to the proposed project.

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

No Impact: See responses in 12 (a) and (b) above.

Cumulative Impacts: None identified with respect to the proposed project.

13. PUBLIC SERVICES

Thresholds of Significance
A project may be deemed to have a significant effect on Public Services if it requires an alteration or expansion of such facilities.

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 other performance objectives for any of the public services:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Fire protection?	☒	☐	☐	☐

Potentially Significant Impact: Development of the proposed project will result in incremental increases in the demand for fire protection services. Additional operating and capital improvement funds to meet increased demands on fire protection service in the project area will be required. Potential public services impacts shall be analyzed in the project EIR.

Police protection?	☒	☐	☐	☐

Potentially Significant Impact: The project will likely result in incremental increases in police service demands. The police station located at the northeast corner of West Drive and Pierson Boulevard serves the site. Additional operating and capital improvement funds to meet increased demands on police service in the project area will be required. Potential public services impacts shall be analyzed in the project EIR.

Schools?	☐	☐	☐	☒

No Impact: Implementation of the proposed project will create and support only two full time positions and over 40 construction jobs that will be phased out at the completion of on-site construction (from January to May 2005). Given the limited nature and size of the project it is not anticipated that project implementation will result in any significant demand for additional schools in the project area.

Cumulative Impacts: None identified with respect to the proposed project.

Parks?	☐	☐	☐	☒

No Impact: Implementation of the proposed project will create and support only two full time positions and over 40 construction jobs that will be phased out at the completion of on-site construction (from January to May 2005). Given the limited nature and size of the project it is not anticipated that project implementation will result in any significant demand on existing or need for additional park facilities in the project area.

Cumulative Impacts: None identified with respect to the proposed project.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Other public facilities?	☒	☐	☐	☐

Potentially Significant Impact: The project will likely result in incremental increases in the use of public facilities. Additional operating and capital improvement funds to meet increased demands on public facilities will be required. Potential public services impacts shall be analyzed in the project EIR.

14. RECREATION --

Thresholds of Significance
A project may be deemed to have a significant effect on Recreation if it increases demand for neighborhood parks, regional parks, open space, or other recreational facilities; or affects existing recreational opportunities.

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?	☐	☐	☐	☒

No Impact: See response in 13(a) Parks above.

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?	☐	☐	☐	☒

No Impact: See response in 13(a) and 14(a) above.

15. TRANSPORTATION/TRAFFIC -- Would the project:

Thresholds of Significance
A project may be deemed to have a significant effect on Transportation/Traffic if it causes an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system; exceed, either individually or cumulatively, a level of service standard; change in air traffic patterns; hazards due to a design feature or incompatible uses; inadequate emergency access or parking capacity; conflict with adopted policies, plans, or programs supporting alternative transportation.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☒	☐	☐	☐

Potentially Significant Impact: The proposed WECS project will result in the construction, operation and maintenance of eight wind turbines. The proposed traffic route is currently used by the operation and maintenance personnel operating the existing WECS #20 wind park. An increase in traffic to and from the site for the construction phase of this project will occur. All potential impacts as well as proposed mitigation related to transportation and traffic shall be discussed in the project EIR.

b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐

Less Than Significant Impact: The project is not expected to exceed level of service standard.

Cumulative Impacts: None identified with respect to the proposed project.

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?	☐	☐	☐	☒

No Impact: See response in 7(e-f) above.

Cumulative Impacts: None identified with respect to the proposed project.

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☒	☐	☐	☐

Potentially Significant Impact: See responses in 7(a) above.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
e) Result in inadequate emergency access?	☐	☐	☐	☒

No Impact: The proposed WECS project will result in the construction, operation and maintenance of eight wind turbines. Implementation of the project does not require the construction or alteration of any road system. The main route to the project site does not pass by any residential areas. Given the limited nature and size of the project it is not anticipated that project implementation will result in any impacts on emergency access or access to nearby uses for local residents.

Cumulative Impacts: None identified with respect to the proposed project.

f) Result in inadequate parking capacity?	☐	☐	☐	☒

No Impacts: The City of Desert Hot Springs has developed parking standards for all new development. Those standards require enough numbers of spaces but also stall size and adequate circulation. Development on the project site must meet those requirements and are subject to review by the City. An Offsite Road and Traffic Impact Plan were prepared by the applicant. This plan indicates that parking capacity will not be affected by project traffic since vehicles used in the construction and operations of the project will park on private property. Some parking alongside access roads may occur to allow for the adjustment of delivery loads; however, this will not be the norm and each occurrence would have little impact on local traffic.

Cumulative Impacts: None identified with respect to the proposed project.

g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒

No Impacts: The proposed WECS project will result in the construction, operation and maintenance of eight wind turbines. Given the limited nature and size of the project it is not anticipated that the project would conflict with adopted policies, plans, or programs supporting alternative transportation. Implementation of the project does not require the construction or alteration of any road system. Furthermore, the main route to the project site does not pass by any residential areas. There is therefore no impact with regard to this criterion.

Cumulative Impacts: None identified with respect to the proposed project.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact

16. UTILITIES AND SERVICE SYSTEMS--
Would the project:

Thresholds of Significance
A project may be deemed to have a significant effect on Utilities and Service Systems if the project results in a violation of solid waste standards, encourages activities which will utilize large amounts of resources, or expands the capacity and network of service systems to serve new development.

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒

No Impact: The proposed WECS project will result in the construction, operation and maintenance of eight wind turbines. Implementation of the proposed project will create and support only two full time positions at the project site. No sewer or water lines are to be installed with the project; the applicant will continue to use on-site port-o-lets. There is therefore no impact with regard to this criterion.

Cumulative Impacts: None identified with respect to the proposed project.

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?	☐	☐	☐	☒

No Impact: See response in 16(a) above.

Cumulative Impacts: None identified with respect to the proposed project.

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒

No Impact: Implementation of the project does not require or result in the construction of new storm water drainage facilities or expansion of existing facilities as the proposed project will only result in the construction, operation and maintenance of eight wind turbines. Project development does not involve the construction of any significant amounts of impervious surfaces that could contribute to the expansion or requirement for storm water drainage facilities. There is therefore no impact with regard to this criterion.

Cumulative Impacts: None identified with respect to the proposed project.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒

No Impact: Implementation of the project involves the alternation of any existing wind farm that has been in operation since 1985. There is no commercial or residential structures associated with the development of this project. In addition, the project will create and support only two full time positions and over 40 construction jobs that will be phased out at the completion of on-site construction (from January to May 2005). No sewer or water lines are to be installed with the project. There is therefore no impact with regard to this criterion.

Cumulative Impacts: None identified with respect to the proposed project.

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 projects projected demand in addition to the provides existing commitments?	☐	☐	☐	☒

No Impact: See Response in 16(b) above.

Cumulative Impacts: None identified with respect to the proposed project.

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☒	☐	☐	☐

Potentially Significant Impact: During grading and construction of the proposed project, construction and building activities will generate solid waste including construction waste such as wood, metal, concrete, and other building materials. This has the potential to result in a significant short-term impact related to solid waste disposal during construction. All potential utility and service system impacts and proposed mitigation shall be analyzed in the project EIR.

g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact

No Impact: The City of Desert Hot Springs has a franchise agreement with Desert Valley Disposal, Inc. to serve the solid waste disposal needs of the City. All solid waste disposal activities are carried out in compliance with all State, Federal and local statutes regulating solid waste.

Cumulative Impacts: None identified with respect to the proposed project.

17. 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?	☒	☐	☐	☐

Potentially Significant Impacts: Based upon the information provided in this Initial Study, potential impacts to biological and cultural resources may be significant and will require analysis in a project Environmental Impact Report (See discussion in 4 and 5 above, incorporated by reference herein).

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)?	☒	☐	☐	☐

Potentially Significant Impact: Based upon the information provided within this Initial Study, the proposed project could result in impacts in a number of areas, including but not necessarily limited to the areas of aesthetics, noise, cultural resources, and geology (See discussion in 1, 3, 6, 8, 11, 12 and 16 above, incorporated by reference herein). The potential for impacts that are individually limited but cumulatively considerable shall be analyzed within a project Environmental Impact Report.

c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact

Potentially Significant Impacts: The project may have environmental effects with the potential to cause substantial adverse effects on human beings in a number of areas, including but not necessarily limited to aesthetics, noise, transportation/traffic, and hazards & hazardous materials (See discussion in 6, 7, 8, 9, 11, 13, 15 and 16 above, incorporated by reference herein). Potential impacts shall be discussed within a project Environmental Impact Report.

Earlier Analyses:
Desert Hot Springs Comprehensive General Plan, Adopted September 5, 2000
Draft/Final EIR for the Desert Hot Springs Comprehensive General Plan (SCH No. 2000021006)
City of Desert Hot Springs Municipal Zoning Ordinance, Chapter 159.02

APPENDIX B

BIOLOGICAL RESOURCES ASSESSMENTS

BIOLOGICAL REPORT UPDATE FOR
SECTION 31 PROPOSED WIND GENERATION EXPANSION
AMEC EARTH & ENVIRONMENTAL, INC.
2006

16 October 2006

Energy Unlimited
638 Lindero Canyon Road, #273
Oak Park, CA 91301

Phone (818) 991-5095
Fax (818) 991-2232

Attention: David Lamm

Re: Biological Report update for Section 31 Proposed Wind Generation Expansion

Introduction

AMEC Earth and Environmental (AMEC) was contracted to visit the site of a proposed wind generation expansion. Biological studies have been performed on this existing, operating, wind power site in the City of Desert Hot Springs in 1984 (Tierra Madre) and 2000 (Ogden). A letter report was prepared in 2004 (AMEC) updating the biological issues for the site, mainly in regard to bird mortality issues related to a proposed change in tower design. Site visits were also made in 2005 to address potential jurisdictional waters issues (AMEC 2005). This letter updates those biological studies for this project. This project has also been identified in previous planning documents as WECS 20 and it is on Assessor's Parcel Number 667-160-001.

Results

AMEC biologist John F. Green visited the site on 13 October 2006. Conditions were found to be essentially identical to those described the previous reports, and to those seen by Green during December 2005 visits to the site. Biological issues, recommendations, and conclusions from those reports therefore remain valid in most respects. Three things have changed, however:

1. Little San Bernardino Mountains Gilia (*Gilia maculata*) is a sensitive plant species which is listed as being of moderate potential for occurrence in the 2000 assessment. This species has been reclassified as Little San Bernardino Mountains Linanthus (*Linanthus maculatus*).
2. Jurisdictional limits for "Waters of the United States" are being redefined as the result of a recent Supreme Court decision. It is possible that new guidelines will exclude dry washes such as those found on site (see AMEC 2005), but this has not yet been determined.
3. The Coachella Valley Multiple Species Habitat Conservation Plan/Natural Community Conservation Plan (MSHCP) (Coachella Valley Association of Governments [CVAG] 2006) has been completed. All Permittees have approved it except for the City of Desert Hot Springs. When or if it is approved by Desert Hot Springs it would go into effect as soon as permits were issued for it by the United States Fish and Wildlife Service and

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California Department of Fish and Game. If this occurs, the project will need to comply with the MSHCP terms if it has not already been permitted to move forward.

Under the plan, sites outside of designated Conservation Areas will face little or no environmental constraints, and will simply pay designated development fees. These fees will be used to buy land within the conservation areas towards the goal of an interconnected reserve system within the plan area.

This site, however, is within the Upper Mission Creek/Big Morongo Canyon Conservation Area. Goals for this Conservation Area are to:

1. Conserve a total of 11,037 acres which would include:
2. Conserve core habitat and supporting ecological processes for Little San Bernardino Mountains Linanthus, Triple-ribbed Milkvetch (*Astragalus tricarinatus*) , Desert Tortoise (*Gopherus agassizi*), and Palm Springs Pocket Mouse (*Perognathus longimembris bangsi*)
3. Conserve habitat for LeConte's Thrasher (*Toxostoma lecontei*)
4. Conserve Coachella Valley Jerusalem Cricket (*Stenopelmatus cahuilaensis*) habitat (none of this would be within Desert Hot Springs)
5. Conserve occupied Burrowing Owl (*Athene cunicularia*) burrows
6. Conserve 248 acres of riparian and desert dry wash habitats
7. Maintain bridges on Highway 62 as biological corridors
8. Maintain fluvial sand transport in the Mission Creek channel

The goals which could be of direct concern to this project are numbers 2, 3, and 5. The site is within modeled Desert Tortoise habitat (Figure 4-12b in CVAG 2006) and the tortoise is known to occur on-site. The site is within a modeled sand source area (an ecologic process) on Figure 4-12d in CVAG (2006). There is a high probability that LeConte's Thrasher could occur in the project area and a moderate probability that Burrowing Owl could.

It is unlikely, however, that the project area would be desired as an addition to the reserve system. It already has an existing wind farm on it and is in a Desert Hot Springs general plan designated Energy-related Industrial area (CVAG 2006). This low intensity land use allows the project area to continue to support desert flora, fauna, and ecological processes, but would make it undesirable as a permanent part of the reserve system. Placement of new wind towers on this site (which includes removal of some of the existing towers) would cause little change to the existing conditions. If the MSHCP is approved, it is likely that this project would be allowed to proceed under the plan through payment of the necessary fees and with appropriate documentation of site usage and conditions.

Conclusions

Except for the exceptions noted above, recommendations and conclusions from the previous biological reports (Tierra Madre 1984, Ogden 2000, AMEC 2004, 2005) remain valid. By following those recommendations, or by complying with the MSHCP as outlined above, this project should be able to move forward without further biological constraints.

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Please contact me with should you have any further questions or comments.

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SECTION 31 PROPOSED WIND GENERATION EXPANSION
BIOLOGICAL ASSESSMENT UPDATE
AMEC EARTH & ENVIRONMENTAL, INC.
2004

Energy Unlimited, Incorporated
Section 31 Proposed Wind Generation Expansion
Biological Assessment Update

Lawrence F. LaPré, PhD
AMEC Earth and Environmental, Inc.
June 2004

Introduction

This report updates a biological study prepared in 2000 for placement of wind generation turbines on an existing site in the City of Desert Hot Springs. This project has been identified in previous planning documents as WECS 20. The current proposal differs from past proposals in the height and location of the turbines. The 2000 proposal specified eight 1.3 mW 100 meter turbines (69 meter tower, 31 meter blade) within the existing Energy Unlimited wind park. The 2004 proposal specifies eight 1.5 mW turbines in nearly the same location in a single north-south row. The turbines on the end of each row will be 100.25 meters tall (65 meter tower, 35.25 meter blade) and the six turbines in between will be 103.5 meters tall (65 meter tower, 38.5 meter blade).

This change and the public review have raised the issue of the potential for bird collisions. Since the San Gorgonio Pass is well known as a migratory flyway, additional information on the avian risk of turbine-related mortality is provided and is the primary purpose of this report. The findings and conclusions of the November 2000 biological study (Ogden, 2000) for this project remain valid, with the exception that the U. S. Geological Survey study of desert tortoises in the wind resource area is completed. The radio transmitters on the wild tortoises have been removed and there is no need to contact USGS if a tortoise is encountered.

Results

<u>Perspective on Avian Mortality</u>

The National Wind Coordinating Committee (2001) has summarized annual avian collision mortality from all sources as follows:

- Vehicles: 60 – 80 million
- Buildings and windows: 98 – 980 million
- Power lines: tens of thousands – 174 million
- Communication towers: 4 – 50 million
- Wind generation facilities: 10,000 – 40,000

These estimates reflect the relative abundance of these structures. In addition, the National Audubon Society has estimated that house cats kill 100 million birds per year. The relative impact of wind energy facilities on the total bird mortality in the United States from human-induced sources is small.

Studies on bird collisions with wind turbines

Since the beginnings of large-scale commercial production of energy from wind turbines in the early 1980s, the potential for adverse environmental impacts in the form of bird mortality has been recognized. The industry, via the American Wind Industry Association, initiated studies of this potential problem, followed by a number of state and federal agencies, notably the California Energy Commission. In 1994, the National Wind Coordinating Committee was formed as a collaborative endeavor composed of representatives of electric utilities, state utility commissions, equipment suppliers, consumer advocates and environmental interests. The NWCC formed an Avian Subcommittee to better understand and coordinate research on the risk of bird collisions with wind turbines. These committees have published the results of several studies and symposia, most of which are available on the worldwide web.

The local governments, utilities and land managers have also sponsored site-specific studies of bird migration and collision potential in the San Gorgonio Pass. Riverside County and the federal Bureau of Land Management assessed all environmental risks prior to approval of the initial developments in the Pass in the early 1980s. Southern California Edison Company sponsored technical studies using radar equipment to determine the intensity of bird migration through the San Gorgonio Pass. Finally, both Riverside County and the California Energy Commission have performed monitoring studies to attempt to quantify the magnitude of the bird collision problem in the San Gorgonio Pass wind resource area.

The results of these technical studies are summarized below:

Bird use of the San Gorgonio Pass

The San Gorgonio Pass is a high-use nocturnal flyway for migratory songbirds. Both the spring and fall seasons have shown extensive bird flights. McCrary *et al*. (1983) estimated 32 million birds flew through the Coachella Valley during spring of 1982, and 37 million birds during the fall of 1982 (McCrary *et al*.1984). Traffic rates of 5,000 - 10,000 birds per hour were recorded with radar equipment. Their study sites ranged over a larger area than just the Pass, extending to Palm Canyon, the Whitewater floodplain and Thousand Palms.

These migratory birds generally flew at heights much greater than the tallest turbines. Birds flew at heights of 200 – 400 meters above the ground, though a smaller proportion (11%) was below 127 meters. On very windy nights, however, birds can be blown down closer to the ground or may seek shelter at ground level. In these instances, the turbines on the ridge tops, such as on Whitewater Hill, present a risk of collision.

Large, soaring birds known to be susceptible to collision with wind turbines are not common in the San Gorgonio Pass. Golden eagles have been recorded nesting at Whitewater Canyon, and are present in low numbers in the winter. Occasional turkey vultures are recorded in the San Gorgonio Pass, as are red-tailed hawks and a variety of less common raptors.

Recorded mortality in the San Gorgonio Pass

Recorded mortality in the San Gorgonio Pass wind resource area is small. County-sponsored mortality studies detected a small (<1%) mortality rate for migratory birds in the San Gorgonio Pass. McCrary *et* al. (1986) estimated that 6,800 birds were killed annually based on 38 dead birds found while monitoring nocturnal migrants. These included 25 species. Considering the number of nocturnal migrants relative to fatalities, the authors concluded that this level of mortality was biologically insignificant. The CEC (Anderson *et al*. 2000) documented 42 fatalities during quarterly searches of 360 turbines. The highest mortality was at

turbines near water. The NWCC estimated a total of 2.3 birds per tower per year would be killed in the San Gorgonio wind resource area, based on a turbine count of 2,900.

Assessing avian risk of mortality

The primary factors involving risk of collision and mortality to birds from wind turbines are location, bird abundance, and tower design.

Location – Location refers both to the placement of a tower with respect to local topography as well as placement relative to nearby vegetation or water. Turbines placed on top of a ridge are more likely to be in the path of both migratory birds and resident soaring birds. Towers placed near or over water present a much higher risk of bird collisions. Towers adjacent to riparian vegetation or other areas with extensive bird use, such as forests and woodlands, present a greater risk of bird mortality.

Bird abundance – Large soaring birds, such as hawks, eagles and vultures are most at risk of collision with wind turbines. These birds utilize updrafts at the edge of canyon walls as a source of lift. In the Altamont Pass wind resource area, the large number of resident and wintering golden eagles has been substantially impacted by collisions with wind turbines. The large population of ground squirrels attracts these and other birds of prey to that location.

The abundance of birds utilizing a migratory flyway is also an important factor in collision frequency. Areas that experience high passage rates are more at risk of collision than areas where migrants are less concentrated.

Tower design – Towers using guy wires are more likely to present a risk of bird mortality than those without supporting cables. Studies are mixed on whether lattice or tubular towers present a greater collision risk. Turbines with fast-moving blades present a higher mortality risk than those with fixed rate, slow blade movement. Use of warning lights may increase the attraction of nocturnal birds (including night migrants) to towers. Taller towers are more likely to encounter migratory birds than short towers, and therefore, present a greater risk of collision.

Features of the Energy Unlimited proposal related to risk factors

Location – The eight proposed towers are located downhill from the primary ridgeline of Whitewater Canyon. These are in the safest location relative to the risk for bird collisions. The towers are not near or over open water or near riparian vegetation. Anderson et al (2000) noted higher bird utilization and mortality in the low elevation (<1,000') subregion he studied relative to the mid elevation (1000' – 2000') subregion. The Energy Unlimited site is in the mid elevation range.

Bird abundance – The Desert Hot Springs location is not considered a high use area for soaring birds. Of five wind resource areas studied by Anderson et al. (2000), the San Gorgonio Pass had the lowest raptor utilization rate. The site is within a very high use migration corridor, though the bird passage takes place at higher altitudes.

Tower design – The tubular towers that do not employ guy wires are among the safest designs relative to risk factors for bird collisions.

Conclusions

The potential for bird mortality from the eight turbines in the Energy Unlimited proposal is low, but not zero. Risk factors associated with bird collisions are minimized by location, bird abundance, and turbine design. The impact to birds in the Desert Hot Springs area will be biologically insignificant.

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SECTION 31 PROPOSED WIND GENERATION EXPANSION
BIOLOGICAL ASSESSMENT UPDATE
OGDEN ENERGY AND ENVIRONMENTAL SERVICES, INC.
2000

Energy Unlimited, Incorporated
Section 31 Proposed Wind Generation Expansion
Biological Assessment Update

Prepared for:

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13 November 2000

SUMMARY

Ogden Energy and Environmental Services, Inc. conducted a biological assessment for a wind generation expansion project proposed by Energy Unlimited, Incorporated. The proposal calls for the erection of seven new Nordex wind turbine generators on an existing 160-acre wind generation site.

The site contains creosote bush scrub vegetation common to Southern California deserts. The property is fairly hilly, with small drainages interspersed among the hillsides. Approximately 85 wind turbine generators are currently on the property.

The current and previous year's biological surveys established the presence of 56 species of plants, and 33 vertebrate species (8 reptiles, 18 birds, and 7 mammals).

Literature sources suggested that up to 25 sensitive species could occur in the project vicinity. Following the field surveys, our biologists concluded that up to 16 sensitive species could occur, including three species listed as Threatened or Endangered by the California Department of Fish and Game and/or U.S. Fish and Wildlife Service. Only two species, the desert tortoise and loggerhead shrike, were detected.

Potential impacts of the project include further degradation of creosote bush scrub habitat, a higher risk of collisions with nocturnal migratory birds, minor loss of habitat for species of concern, and impacts to the desert tortoise, a species listed as threatened by the federal government. Suggestions for measures to mitigate these impacts are given.

Energy Unlimited, Incorporated
Section 31 Proposed Wind Generation Expansion
Biological Assessment Update

Ogden Energy and Environmental Services, Inc.

Lawrence F. LaPré Ph.D., Ecologist
Nathan T. Moorhatch, Biologist
Michael D. Wilcox, Biologist

13 November 2000

Introduction

Ogden Energy and Environmental Services, Inc. was contracted by Krieger and Stewart, Incorporated to conduct a biological assessment for a proposed expansion of an existing wind energy generation site. The site is located east of the Whitewater River and north of Interstate 10 within the southwest quarter of Section 31, Township 2 South, Range 4 East, SBM (USGS 7.5' Desert Hot Springs quadrangle). The proposal calls for the construction of seven Nordex wind generators, measuring approximately 87 meters in height.

The vicinity and location of the project site are shown on Maps 1 and 2.

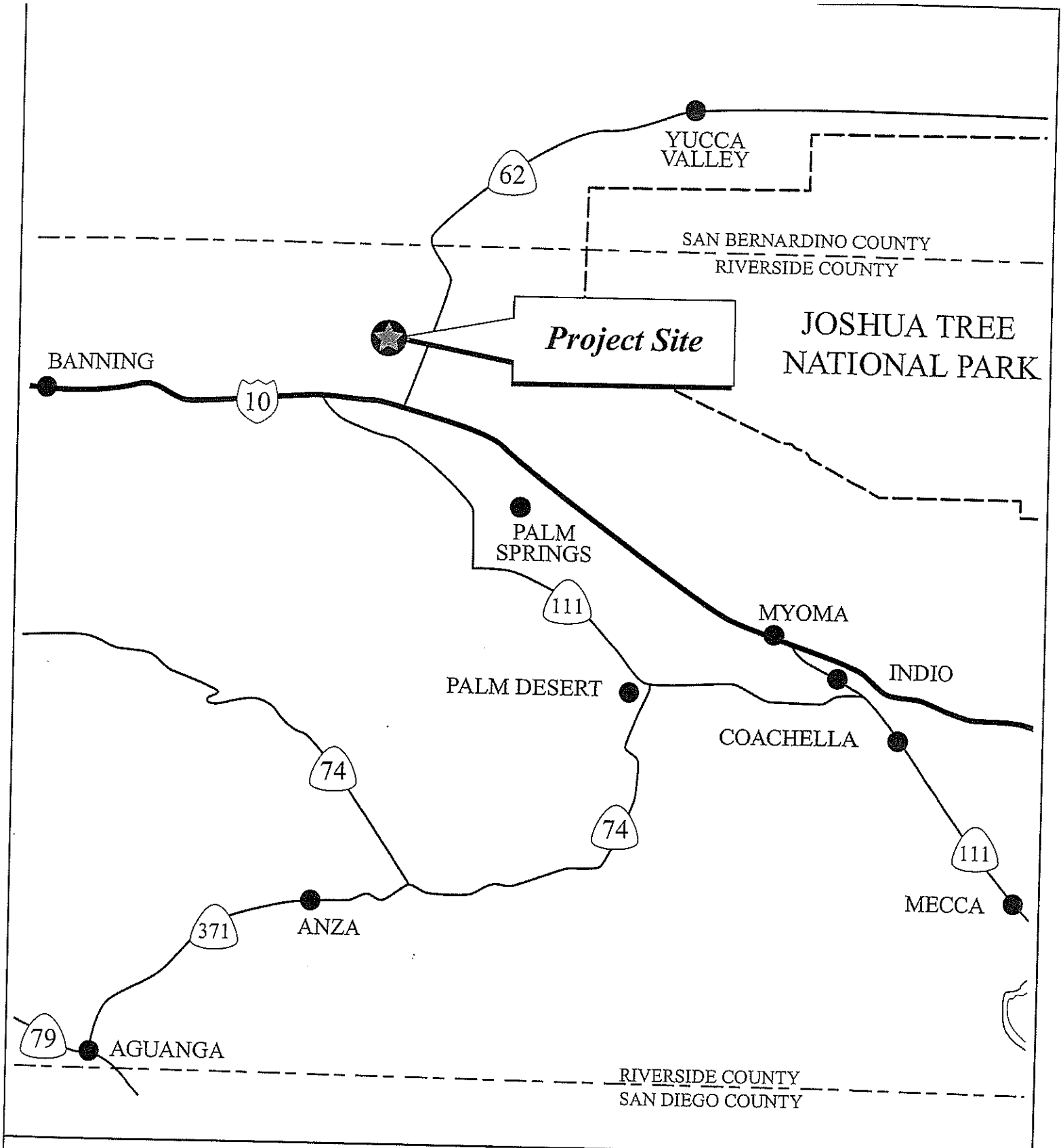
Methods

Preparation for the survey included a literature search and review of biological reports for nearby sites. Records of rare, endangered, and sensitive species known to occur in the area were provided by the California Natural Diversity Data Base *Rare Find* (CNDDB) and a review of the California Native Plant Society's *Rare and Endangered Vascular Plants of California.* The biological assessment of this site prepared in 1984 (Tierra Madre Consultants, 1984) was reviewed, as were biological assessments prepared in May of 1984 and August 1999 for an adjacent wind park.

The property was surveyed on Thursday, 2 November 2000. The biological survey was performed by Nathan T. Moorhatch and Michael D. Wilcox of OGDEN. A list of plant species found at the site is included as Appendix I. All animals seen, heard, or identified by the presence of sign were recorded in field notes and are included as Appendix II.

During the surveys the site was thoroughly evaluated. Special attention was given to searching for Burrowing Owls (*Athene cunicularia)* which had been recorded on a 1984 survey of Section 1, Desert Tortoise (*Gopherus agassizi*), and Coachella Valley Fringe-toed Lizard (*Uma inornata*). Close attention was also paid to California Barrel Cactus (*Ferocactus cylindraceus)* locations and density and to any evidence of creosote rings. The proposed sites of the new wind turbines were carefully inspected.

The property was surveyed in the morning and afternoon hours. Temperatures were in the 70's (degrees F.) under clear skies. Winds were variable but low, sometimes gusting to 7 mph.

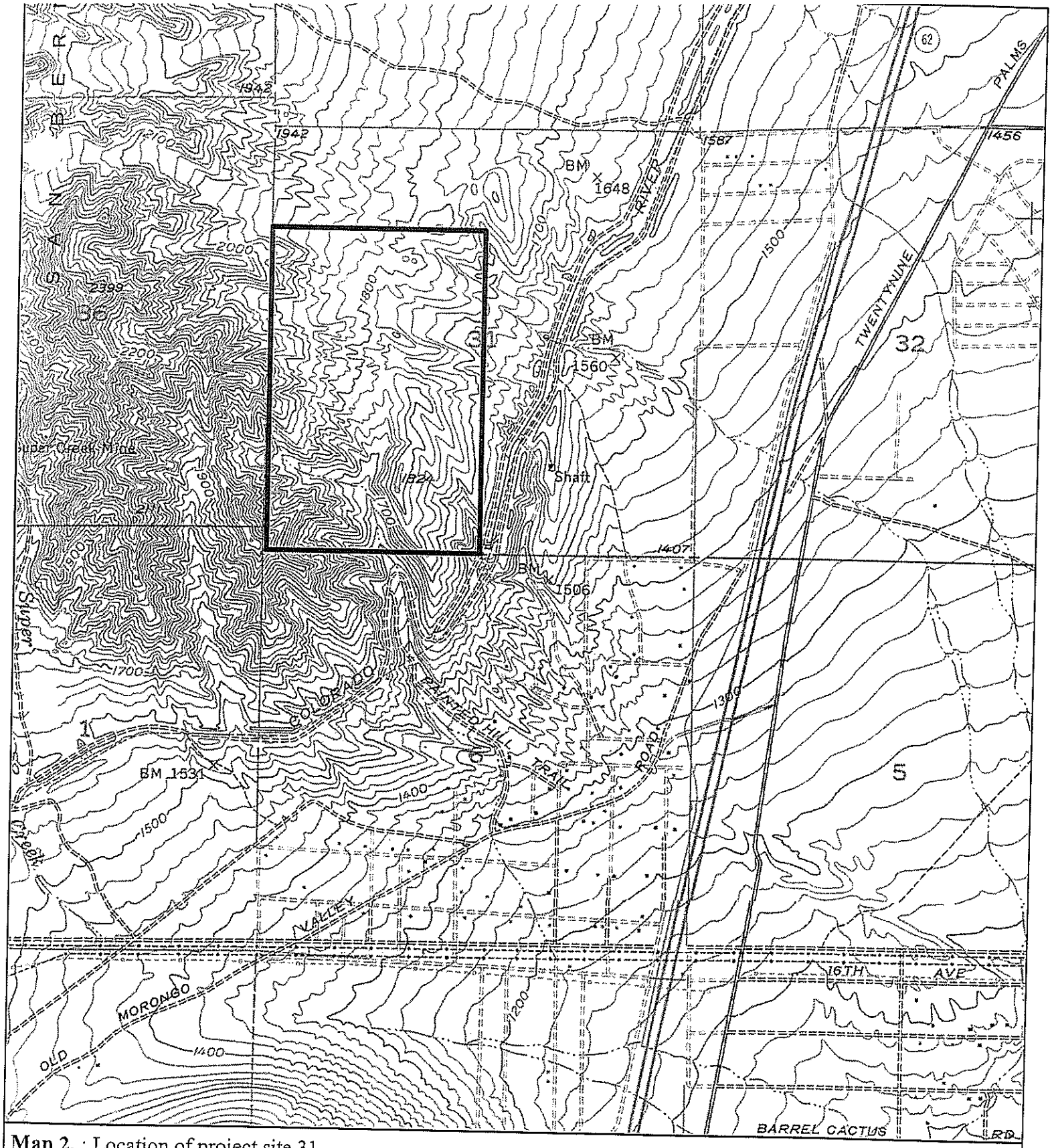


Map 1. :Vicinity of Section 31.

MAP NOT TO SCALE

Map Source: OGDEN Environmental & Energy Services.

OGDEN ENVIRONMENTAL AND ENERGY SERVICES



Map 2. : Location of project site 31.

0 2500
FEET

PROJECT SITE

Map Source: USGS 7.5' Desert Hot Springs, CA Quad.

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11/10/00-KOW

Results

Topography and Soils

The majority of the property is hilly, with the eastern portion of the site grading to more flat areas. The *Soil Survey of Coachella Valley Area* produced by the United States Department of Agriculture Soil Conservation Service was consulted and the following soil types were identified:

Carsitas gravelly sand - a moderately sloping soil associated with alluvial fans.
Chuckawalla cobbly fine sandy loam (9-30% slopes) - also associated with alluvial fans and remnants emanating from the San Gorgonio Mountains.
Chuckawalla cobbly fine sandy loam (2-9% slopes) – on remnants of old alluvial fans emanating from the San Gorgonio Mountains.
Lithic Torripsamments - rock outcrop complexes on the hillsides.
Carsitas fine sand (0-5% slopes) - fine sandy soil on alluvial fans and valley fill.

Vegetation

The site consists mainly of typical creosote bush scrub. A few shrubs dominate the property: Creosote Bush (*Larrea tridentata*), Burrobush (*Ambrosia dumosa*), Indigo bush (*Psorothamnus fremontii*), and Brittlebush (*Encelia farinosa*). Few annuals were found on the site due to the timing of the survey (late fall/early winter). Several species of cacti were found on site, including California Barrel Cactus (*Ferocactus cylindraceus*).

The washes contained the highest number and variety of plant species. Plants common to these areas included Catclaw (*Acacia greggii*), Sweetbush (*Bebbia juncea*), and Mormon Tea (*Ephedra californica*).

Fifty-six species of plants were found and identified in the area (combined 1999 and 2000 survey results). Appendix I lists the plant species observed, and includes common and scientific names.

Wildlife

The field studies of Section 1 and 31 (1984 –2000) yielded 33 species of animals (8 reptiles, 18 birds, and 7 mammals). Seasonal cold temperatures and the nocturnal nature of many desert animals suggest that more individuals and species probably exist on the site. Most of the identified species were associated with the washes. A listing of the wildlife is contained in Appendix II.

Only one reptile species was observed as surface active: Side-blotched Lizard (*Uta stansburiana*). This common species was generally widespread across the site. Several species of reptiles noted in the previous surveys were not observed (and were not expected due to the season). Desert Tortoise (*Gopherus agassizii*) sign detected immediately adjacent to the northernmost proposed tower site (C41) consisted of one Class 3 burrow in a small drainage at the base of the hill where the tower site is proposed. This federal and state listed threatened species had not been detected on previous surveys concentrated on Section 1 of the project site.

Six species of birds out of the 33 species known from the site (all surveys) were recorded during the 2000 survey. Only one bird species, Rock Wren (*Salpinctes obsoletus*) was observed in and around the wind generators currently on site. One notable bird found during the current survey was Loggerhead Shrike (*Lanius ludovicianus*). This bird is listed as a California Department of Fish and Game (CDFG) "Species of Special Concern" (CSC). Burrowing Owls *(Athene cunicularia)*, found during the 1984 survey of Section 1, were not seen during this year's survey.

The San Gorgonio Pass is known as a migration corridor for neotropical birds, which is primarily used in the spring. Traffic rates of 5,000 - 10,000 birds per hour have been recorded with

radar equipment flying over the Pass in the vicinity of the wind turbines. The birds fly at night generally at higher altitudes than the turbines, but are susceptible on very windy nights to being blown down into the turbine fields where they are at risk of collision.

A total of seven mammals were found or suspected to be resident on site. Kangaroo rat (*Dipodomys* sp.) burrows were widespread and several Desert Woodrat (*Neotoma lepida*) middens were found. One Coachella Valley Round-tailed Ground Squirrel (*Spermophilus tereticaudus chlorus),* a state and federal Species of Special Concern, was observed during the 1999 survey of Section 1, but was not observed during the 2000 survey of Section 31.

Sensitive Elements

Plant or animal taxa may be considered "sensitive" due to declining populations, vulnerability to habitat change, or because of restricted distributions. Certain sensitive species have been listed as Threatened or Endangered by the United States Fish and Wildlife Service (USFWS) or by the CDFG and are protected by the federal and state Endangered Species Acts and the California Native Plant Protection Act. Other species have been identified as sensitive by the USFWS, the California Department of Fish and Game (CDFG), or by private conservation organizations, including the California Native Plant Society (CNPS).

The literature review, consultation with the USFWS, and the field surveys indicated that as many as 25 sensitive plants and animals potentially occur in the vicinity of the project site.

For a summary of sensitive species known to occur or potentially occur in the vicinity of the proposed area, see Tables 1a & 1b. The discussion following the table contains additional information on the assessment of occurrences of sensitive species.

TABLE 1a. Sensitive plants occurring or potentially occurring on site:

Sensitive Species	Habitat and Distribution	Flowering Season	Status	Occurrence
Euphorbia misera **Cliff Spurge**	Prefers steep, rocky, dry slopes. One disjunct population recorded from E. of Whitewater Canyon, immediately adjacent to the project site.	January-August	Fed: ND Calif: ND CNPS: List 2 R-E-D 2-2-1	Low on site, observed by Nathan Moorhatch west of Section 1 in 1997
Gilia maculata **Little San Bernardino Mountain Gilia**	Restricted to dry canyons in and around Little S.B. Mts. Prefers sandy wash margins and blowsand.	April-May	Fed: FSC Calif: ND CNPS: List 1B R-E-D 3-2-3	Moderate
Chorizanthe parryi var. *parryi* **Parry's Spineflower**	LA, S.B., Riv. Cos.; usually associated with washes and alluvial fans	April -June	Fed: FSC Calif: ND CNPS: List 3 R-E-D:?-2-3	Absent-Low
Astragalus tricarinatus **Triple-ribbed Milk-vetch**	S.B. and Riv. Cos.; found in joshua tree woodland and Sonoran Desert Scrub.	Feb. - May	Fed: End Calif: ND CNPS: List 1B R-E-D 3-1-3	Low
Astragalus lentiginosus var. *coachellae* **Coachella Valley Milk-Vetch**	S.B. and Riv. Cos.; limited to Coachella Valley blow-sand.	February-May	Fed: End Calif: ND CNPS: List 1B R-E-D 2-2-3	Absent-Low
Nemacladis denudata **Slender Woolly-Heads**	Found in sandy areas, dunes and blowsand.	April-September	Fed: ND Calif: ND CNPS: List 2 R-E-D 2-2-1	Low

TABLE 1b. Sensitive animals occurring or potentially occurring on site.

Sensitive Species	Habitat and Distribution	Status Designation	Occurrence Probability
Gopherus agassizi **Desert Tortoise**	Arid sandy or gravelly locales, cacti, and thorn scrub. Also found in washes and canyon bottoms.	Fed: THR Calif.: THR	Occurs
Uma inornata **Coachella Valley Fringe-toed Lizard**	Arid dunes of fine windblown and sandy flats where vegetation is sparse. San Gorgonio Pass, Coachella Valley.	Fed: THR Calif.: End	Absent
Phrynosoma mcallii **Flat-tailed Horned Lizard**	Dunes and regions of windblown sand and areas of sparse vegetation. SE California and SW Arizona	Fed: ND Calif: CSC	Low
Falco mexicanus **Prairie Falcon**	Nests on high cliffs, forages primarily over open lands; occurs throughout arid western US and Mexico	Fed: ND Calif: CSC	High (foraging) No nest sites
Aquila chrysaetos **Golden Eagle**	Nests in remote trees and cliffs; forages over shrublands and grasslands; breeds throughout w. N. America, winters to e. coast	Fed: ND Calif: CSC	High (foraging)
Athene cunicularia **Burrowing Owl**	Nests in rodent burrows in open habitat, forages in surrounding areas; w. US and Mexico, increasingly uncommon in s. Calif.	Fed: FSC Calif: CSC	Moderate (seen on Section 1 in 1984)
Toxostoma lecontei **Le Conte's Thrasher**	Desert flats and washes. Widespread in California deserts.	Fed: FSC Calif: CSC	High (seen on Section 1 in 1999)
Spermophilus tereticaudus chlorus **Coachella Valley Round-tailed Ground Squirrel**	Found in low desert, creosote scrub bush. Prefers sandy soils. Coachella Valley.	Fed: FSC Calif: CSC	High (seen on Section 1 in 1999)
Corynorhinus townsendii pallescens **Pale Big-eared Bat**	Found in mine shafts and naturally occurring caves or crevices. SE California.	Fed: FSC Calif: CSC	Moderate (foraging)
Macrobaenetes valgum **Coachella Giant Sand Treader Cricket**	This species is found in dunes or smaller areas of blowsand. Coachella Valley.	Fed: FSC Calif: ND	Absent
Stenopelmatus cahuilaensis **Coachella Valley Jerusalem Cricket**	Found in dunes or smaller areas of blowsand. Coachella Valley.	Fed: FSC Calif: ND	Absent

Definitions of status designations and occurrence probabilities.

Federal designations: (federal Endangered Species Act, US Fish and Wildlife Service):

END: Federally listed, Endangered.
THR: Federally listed, Threatened.
FSC: Federal Special Concern species.
ND: No designation.

State designations: (California Endangered Species Act, California Dept. of Fish and Game)

END: State listed, Endangered.
THR: State listed, Threatened.
RARE: State listed as Rare (Listed "Rare" animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.)
CSC: California Species of Special Concern.
ND: No designation.

California Native Plant Society (CNPS) designations: (Note: According to CNPS [Smith and Berg 1988], plants on Lists 1B and 2 meet definitions for listing as threatened or endangered under Section 1901, Chapter 10 of the California Fish and Game Code.)

List 1B: Plants rare and endangered in California and throughout their range.
List 2: Plants rare, threatened or endangered in California but more common elsewhere.
List 3: Plants for which more information is needed.
List 4: Plants of limited distribution; a "watch list."

CNPS R-E-D Code:

Rarity
1: Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction or extirpation is low at this time.
2: Occurrence confined to several populations or one extended population.
3: Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.
Endangerment
1: Not endangered.
2: Endangered in a portion of its range.
3: Endangered throughout its range.
Distribution
1: More or less widespread outside California.
2: Rare outside California.
3: Endemic to California.

Definitions of occurrence probability:

Occurs: Observed on the site by Ogden personnel, or recorded on-site by other qualified biologists.
High: Observed in similar habitat in region by qualified biologists, or habitat on the site is a type often utilized by the species and the site is within the known range of the species.
Moderate: Reported sightings in surrounding region, or site is within the known range of the species and habitat on the site is a type occasionally used by the species.
Low: Site is within the known range of the species but habitat on the site is rarely used by the species.
Absent: A focused study failed to detect the species, or, no suitable habitat is present.
Unknown: No focused surveys have been performed in the region, and the species' distribution and habitat are poorly known.

Sensitive Species for which Habitat is Lacking on the Project Site

Sensitive Plants: The literature review, field surveys, and consultation with the USFWS indicated that 9 sensitive plant species potentially occur in the vicinity of the project site. Research and field surveys allowed for the elimination of 3 species from consideration, based on habitat requirements, geographical and elevational range, and direct search. Those species are:

- **Parish's Alumroot** (*Heuchera parishii)*
- **Shaggy-haired Alumroot** *(Heuchera hirsutissima)*
- **Robison's Mondarella** *(Mondarella robisonii)*

Sensitive Animals: The literature review, field surveys, and consultation with the USFWS indicated that 16 sensitive animal species potentially occur in the vicinity of the project site. The research and field studies allowed for the elimination of 3 species of birds and 2 species of reptiles due to lack of appropriate habitat. Those species are:

- **Least Bell's Vireo** (*Vireo bellii pusillus)*
- **Southwestern Willow Flycatcher** (*Empidonax traillii extimus)*
- **Yellow Warbler** (*Dendroica petechia)*
- **San Diego Horned Lizard** (*Phrynosoma coronatum blainvillii)*
- **Orange-throated Whiptail** *(Cnemidophorus hyperythrus)*

Detailed Information on Sensitive Species

Cliff Spurge (*Euphorbia misera*) is an irregularly branched shrub 3 - 9 dm tall, with grayish twigs and puberulent young growth, blooming from January to August. This species prefers rocky, south facing slopes. In the area of the project site it is commonly associated with Brittlebush (*Encelia farinosa)* and Burrobush *(Ambrosia dumosa*).

While the plant is usually found in the coastal areas of Southern and Baja California, a small colony was found in Whitewater Canyon in 1982. The most recent observation (1997) was of two plants observed on the eastern side of Whitewater Canyon by the author of this report (Nathan Moorhatch). It has been hypothesized that this plant has maintained its stand in the canyon since ancient times when marine waters were present in the area.

There is a low probability of the species occurring on site. The most recent sighting of Cliff Spurge is within a quarter mile of the western edge of Section 1. This portion of the project site is immediately adjacent to the disjunct desert range of the species and has the appropriate habitat and soils. Although it was not observed during the field surveys, a determination of absence cannot be made with certainty.

Little San Bernardino Mountains Gilia (*Gilia maculata*) is a small annual herb that branches to form small cushions on the soil surface, flowering in April and May. It grows in open, sunny spots on soft, sandy flats on benches above streams. It grows in general association with Creosote Bush scrub, but does not grow with shrubs in its immediate vicinity. It is found where other dwarf herbs occur, but not with dense stands of annual weeds. Its known range extends from the north side of the Little San Bernardino Mountains to Desert Hot Springs, and west to Whitewater Canyon (Sanders 1998). There is a moderate probability of Little San Bernardino Mountains Gilia occurring on site. The project site is located a little over one mile east of the Whitewater Canyon area where thousands of plants were observed in 1997. The seasonal timing of the current survey was not suitable for detection of this annual plant. Determination of presence or absence for this species

on or adjacent to the project area is not possible at this time.

Parry's Spineflower (*Chorizanthe parryi* var. *parryi*) is a Federal Species of Concern. It is a small, prostrate to ascending annual that grows in dry slopes and flats from 125 - 2000 feet in elevation. It is associated primarily with coastal sage scrub and chaparral, but may also be found in alluvial fan sage scrub, opening of juniper woodland, or at the interface between these and other vegetation types. It is associated with Terrace escarpments and San Gorgonio loamy sand soils. It flowers between April and June.

There is a very low probability of the species occurring on site. The project site is within the range of the species, but does not have appropriate habitat and soils. This species was reported in the Whitewater River wash (1980) within approximately two miles of the project site. Although it was not observed during the field surveys, a determination of absence cannot be made with certainty. The annual herb may not emerge during a drought year, and the timing of the most recent survey and current conditions were not optimal for finding this plant.

Triple-ribbed Milk-Vetch (*Astragalus tricarinatus*) was listed as an Endangered species by the U.S. Fish and Wildlife Service in October 1998. It is a short-lived perennial that grows in sandy and gravelly soils in dry washes and at the base of slopes. It grows in Joshua Tree woodland and Creosote Bush scrub, where it has been found in association with Sweetbush (*Bebbia juncea*), and California Buckwheat (*Eriogonum fasiculatum*). Most records of Triple-ribbed Milk-Vetch are of very small populations, often consisting of single plants. The largest population of Triple-ribbed Milk-Vetch was found in Big Morongo Canyon, about 4 miles northeast of the project site.

Although the site contains appropriate habitat, there is a low probability that the species occurs on site. The species was originally identified in Whitewater Canyon, where it has not been seen since the mid-1980s.

Coachella Valley Milk-Vetch (*Astragalus lentiginosus*) is listed as a Federal Endangered Species. It is an annual herb that blooms from February to May, and it prefers sandy locations in Sonoran Desert Scrub. Within Riverside and San Bernardino counties this species is limited to Coachella Valley blowsand. The most recent account of this species reported twenty plants at the eastern edge of Windy Point in San Gorgonio Pass, about 4 miles west of the project site. The survey did not find any evidence that the plant is on the site nor the necessary blowsand habitat needed for this species. There is a very low probability of this species occurring on the project site.

Slender Woolly-Heads (*Nemacaulis denudata* var. *gracilis*) is an annual herb restricted to sandy areas, dunes and blowsand. It blooms from March to May, and has been reported within two miles of the project site along Highway 111 east of Whitewater Wash (1948). There is a low probability of occurrence due to lack of suitable habitat (blowsand). No plants were observed during the site surveys.

The **Desert Tortoise** *(Gopherus agassizi)* is a state and federal Threatened species. It is found in a variety of desert habitats, including arid sandy or gravelly areas in creosote scrub bush habitat. Desert Tortoises feed on grasses and herbaceous annuals in early morning and early evening hours. They retreat into their horizontal burrow to avoid high daytime temperatures. Desert Tortoises mate in spring and can lay 2-3 clutches of eggs. Their populations have decreased dramatically in recent years due to a variety of reasons, including habitat loss and a serious respiratory disease.

Desert Tortoises have been reported within the immediate project vicinity (C. McGaugh pers. comm., J.Lovich, pers. comm). During the current survey, Desert Tortoise sign detected adjacent to the proposed Section 31 tower sites included one Class 3 burrow (deteriorated condition, but definitely tortoise). This burrow was located in a small drainage at the base of the hill where tower site C41 is proposed. The other six proposed tower locations did not have any recent tortoise sign associated with them. The Creosote Bush scrub on and adjacent to the site is occupied tortoise habitat, and the tortoise is protected under the federal (ESA) and state (CESA) Endangered Species Acts.

The **Coachella Valley Fringe-toed Lizard** (*Uma inornata*; CVFTL) is a state Endangered and federal Threatened species. The CVFTL is endemic to sand dunes of the Coachella Valley and associated desert scrub, alkali scrub, and desert wash habitats. It is adapted to life in blowsand, burrowing about 2 inches below the surface to avoid predators (sand swimming). This lizard feeds upon ants, beetles, grasshoppers, cockroaches and other insects. CVFTL habitat has been severely reduced by urban development and the placement of windbreaks, which has depleted historic supplies of blowsand from large areas.

The site does not contain appropriate habitat for the CVFTL, and this species is considered to be absent from the project area.

The **Flat-tailed Horned Lizard** *(Phrynosoma mcalli)* is a CDFG CSC. It is usually confined to sand dunes and other regions of fine windblown sand with little vegetation in the Coachella Valley and other southeastern desert areas. The Flat-tailed Horned Lizard is diurnal but will burrow into sand to avoid high daytime temperatures.

The site contains marginal habitat for the Flat-tailed Horned Lizard (which is less dependent on active dunes than the CVFTL). Consequently, there is a low probability that this species would occur on the project site.

The **Prairie Falcon** (*Falco mexicanus*) is also a CDFG CSC (while nesting). The range of this species extends over much of the western United States, where it inhabits arid, open lands, and rarely, woodlands. Its nests are usually on high cliff faces, or in crevices or caves. The Prairie Falcon is a year-round resident in much of its range, dispersing to open lands during fall and winter months. This species feeds primarily on small birds but will also take small mammals and reptiles. Threats include pesticide contamination, robbing of eyries by falconers, shooting, human activities near nest sites, and habitat conversion by development activities.

Despite the presence of hills on the property, the site probably does not provide appropriate nesting habitat. It is likely that the Prairie Falcon observed during the 1999 survey of Section 1 was foraging for food and not nesting on the site. Nesting has been known for many years at and near the Whitewater trout farm (S. Myers pers. obs.), and birds foraging on the project site may be associated with those nest sites.

The **Golden Eagle** (*Aquila chrysaetos*) is federally protected under the Bald Eagle and Golden Eagle Protection Act and is considered a CDFG Species of Special Concern. It is one of North America's largest birds, with a wingspan of up to 7 feet. This species is found throughout North America, but is not common in any part of its range. Golden Eagles nest in rugged, hilly, or mountainous areas adjacent to open terrain where their prey, small to medium-sized mammals, may be found. Territory sizes vary with prey availability and may be 36 square miles in southern California (Zeiner et al. 1990). Threats to Golden Eagles include loss of habitat, shooting, eggshell

thinning from pesticide ingestion, and electrocution from high voltage power lines. Although Golden Eagles that breed in Southern California are probably year-round residents, birds from more northerly latitudes migrate south in fall, resulting in higher numbers in Southern California during winter.

The Golden Eagle sightings reported in the CNBBD are from Whitewater Canyon. Ogden biologists have observed Golden Eagles within one mile of the project site (S. Myers, L. LaPre, pers. obs.), so they may use the site as foraging habitat.

The **Burrowing Owl** *(Athene cunicularia)* is a California and federal Concern Species. It is a small owl of open country, including desert scrub habitats. These diminutive owls are frequently seen during the daylight hours standing on a mound of earth outside their burrow home. The numbers of these owls have decreased in recent years as their habitat is taken for development.

Burrowing Owls were observed on the 1984 survey of the Section 1, but were not seen in the subsequent surveys. Additionally, the few large burrows on the site were checked for evidence of Burrowing Owl (pellets, scat, tracks), and none was found. There is, however, a high probability that this species may occur, based on habitat present and the previous sighting in Section 1.

Le Conte's Thrasher (*Toxostoma lecontei*) is a CSC. This bird inhabits areas with sparse desert scrub, especially those that contain small washes. It can be found throughout much of the Mojave and Colorado deserts. Its population densities are among the lowest of passerine (perching) birds, with estimated densities of less than five birds per square mile in optimum habitat. This low population density, along with their wariness of humans, lowers the chances of observation. They are most readily detected during breeding activities (which peak February to April), when males sing from exposed perches. Off-road vehicle activity and other human disturbance are believed to be extremely disruptive to this species, especially during the breeding season. Thrashers use their bills to dig in soil and leaf litter, feeding on insects, other arthropods, and occasionally seeds and small lizards. They nest in dense, spiny shrubs or in densely branched cacti. The bird observed on Section 1 of the site during the 1999 survey was found in Super Creek, which is a preferred Le Conte's Thrasher habitat. There was also the possibility that a second bird was present, but that could not be absolutely determined. Le Conte's Thrashers almost certainly occur on this portion of the site.

Coachella Valley Round-tailed Ground Squirrel (*Spermophilus tereticaudus chlorus*; CVRGS) is a federal and state Special Concern Species. This subspecies occurs in the flatter, sandy portions of the Coachella Valley, where it may occur on the edge of irrigated lawns and croplands. Populations of CVRGS have been reduced by urbanization, agriculture, and development (Zeiner et al 1990). Round-tailed Ground Squirrels hibernate from September to January, but are otherwise active during the day, avoiding the hot part of the day during summer. They feed primarily on seeds, leaves, and flowers, but will also take insects and spiders. This small squirrel constructs burrows at the base of shrubs where it nests, with young from a single litter emerging in May. The preferred habitat is open, flat areas, with fine textured, sandy soils for burrowing.

One CVRGS was observed on Section 1 during the 1999 survey. Its burrow was at the base of a creosote bush near row K of the existing wind turbines. CVRGS have average home ranges of about 1.85 acres and can occur in densities as high as 100 squirrels per acre (Zeiner et. al 1990). Therefore, additional individuals likely inhabit this portion of this large project site.

Pale Big-eared Bat *(Corynorhinus [Plecotus] townsendii pallescens)* is both a State and Federal Species of Concern. This bat emerges late in the evening to forage almost entirely on moths.

It is found in desert scrub and at higher elevations (pinyon-juniper forests). This species usually roosts and hibernates in mine shafts or naturally occurring caves and crevices.

No bats were observed during the field surveys. There is a moderate chance, however, that these bats could be observed feeding in the evening hours. They were reported in the Whitewater Canyon area in 1980. It is also possible that some individuals roost in natural caves and crevices in the hilly portion of the property.

The **Coachella Giant Sand Treader Cricket** (*Macrobaenetes valgum*; CGSTC) is a federal Species of Concern. Its known habitat is wind-swept sand dune ridges in the Coachella Valley, with its reported range extending from the confluence of the Whitewater and San Gorgonio Rivers eastward to the Whitewater Storm channel, about 2 miles west of Indio. Population levels are largely regulated by winter rainfall, and the species disappears over most of the sand areas in very dry years. Areas where springs keep the sand damp however, are favorable to permanent habitation (NDDB).

No CGSTC were found during the surveys. It is unlikely that they would occur due to lack of suitable habitat and are considered absent.

Coachella Valley Jerusalem Cricket (*Stenopelmatus cahuilaensis*; CVJC) is a federal Species of Concern. It is a large, robust, nocturnal insect endemic to this portion of the California desert. Like the Coachella Giant Sand Treader Cricket, this species resides only in sand dunes. Large bristles on the hind legs form a basket used to push sand, allowing it to burrow into sand. The CVJC probably deposits eggs in the spring, but whether the eggs hatch the same spring or in the fall is unknown. The CVJC is relatively long -lived for an orthopteran (grasshoppers and crickets), taking two years to mature and living for at least a half year as an adult (Tinkham 1968).

The CVJC has been reported in only two locations, near Palm Springs Station and near the Palm Springs Airport, where it was found at the base of large, undulating dunes at the base of Mt. San Jacinto. No individuals were observed during the field surveys, and given the lack of appropriate habitat, are considered absent from the site.

Discussion

Ogden biologists reviewed the site plan showing the placement of seven additional Nordex wind turbines in and among the current wind turbines on site. The review included proposed road additions to serve the new turbines.

Potential Project Impacts

Further development of the site will result in additional disturbance to vegetation and habitat. Additional wind turbines could impact the Desert Tortoise, Le Conte's Thrasher, Coachella Valley Round-tailed Ground Squirrel and other sensitive species as habitat is taken for roads and wind turbine construction.

Possible Impacts to the Desert Tortoise

As part of the biological assessment field work, the seven wind turbine sites were surveyed for evidence of Desert Tortoise. A single Class 3 burrow was observed immediately north of one tower site (C41). However, all of the proposed tower sites are located in fairly close proximity to one another (linear arrangement ~225 feet apart), and all contain suitable Desert Tortoise habitat. Desert Tortoises could wander into the turbine construction areas. Potential impacts could include the loss of a tortoise from activities associated with new turbine construction and placement such

as vehicle collision or ground clearing. Conversely, tortoises are known to construct burrows under the concrete bases of wind turbines on Painted Hill. The turbines are compatible with tortoise populations as long as strict guidelines are observed for tortoise protection.

Impacts to Barrel Cactus

Barrel Cactus is widespread on the property and construction at the wind turbine sites will result in the removal of several individuals. Although Barrel Cactus is not considered a sensitive species, it is of biological interest due to its longevity. It grows slowly, at a rate of about one centimeter per year. It is likely that several individuals on the site are well in excess of 100 years old. Several Barrel Cacti are located within the proposed tower construction footprints.

Impacts to Migratory Birds

There is potential that the towers will interfere with avian migration. At 300 feet high, they represent possible collision hazards for birds, particularly during spring migration. Studies of bird migration in the San Gorgonio Pass in the early 1980's documented bird collisions with the turbines for several bird species of all sizes. The magnitude of the impact is unresolved, and is complicated by the low detectability of collided birds as well as the high scavenging rate by coyotes, foxes, and ravens. However, the additional height of the proposed turbines will increase the likelihood of collision. The low speed of the blade sweep reduces collision potential, but on very windy nights, small birds are blown down into even stationary structures.

A recent California Energy Commission study downplayed the potential for significant impacts to migratory birds from wind turbines in the San Gorgonio Pass. However, the Whitewater Hill and Painted Hill areas were shown in the early 1980's to be the most heavily used areas for nocturnal migration, and Ogden biologists consider the significance of this issue to be unresolved.

Mitigation measures

Mitigating Impacts to Vegetation and Habitats

All tower sites and access roads should be clearly marked prior to grading to limit damage to adjacent habitat. Grading should be limited to construction areas. Vegetation removal should be limited to actual construction sites. Construction activity should be steered away from Super Creek and existing roads should be utilized to prevent damage to the wash habitat. Vehicle staging should be limited to existing disturbed areas such as dirt roads and pads.

Mitigating Impacts to the Desert Tortoise

The threatened desert tortoise has been shown to occupy the Section 31 project site. Specific protection measures are necessary to avoid "take" of this threatened species. It is recommended that a pre-construction survey for Desert Tortoise be conducted 24 hours prior to construction. All construction activities should be monitored by a qualified biologist. The construction personnel should receive an environmental awareness training program prior to initiation of work so that they understand the biological issues and are prepared to work with the monitor in avoidance measures for tortoise protection. It is recommended that fences be placed around the construction sites (tower pads) to prevent tortoises from wandering onto the active construction areas. A possibility exists that any tortoises found would be the subjects of ongoing research by the USGS, Biological Services Division, and the tortoises may be carrying radio transmitters. Kathy Meyers of the USGS Field Station in Palm Springs should be contacted to assure that these research animals are not harmed.

The objective of the tortoise protection measures is to insure that no tortoises are harmed and that the tortoises can continue to utilize the project site during the operations phase. The Coachella

Valley fringe-toed lizard Habitat Conservation Plan, Wind Energy programmatic EIR and the forthcoming Coachella Valley multiple species Habitat Conservation Plan all consider wind energy development to be compatible with species conservation, providing that appropriate minimization and mitigation measures are enacted. We recommend that the City of Desert Hot Springs incorporate Conditions of Approval on this project that specify the measures described above.

Mitigating Impacts to the Barrel Cactus

In consideration of the longevity of the Barrel Cactus, and the relative ease and success of transplantation, those barrel cacti that must be impacted by the wind park expansion should be transplanted onto portions of the property that will remain as natural open space. The transplantation sites should match the conditions of the impacted areas as closely as possible, including soils, slope, and aspect.

Mitigating Impacts to Migratory Birds

It is likely that both migratory and resident birds will occasionally collide with the wind turbines. The significance of the impact cannot be well evaluated based on current information. Additional monitoring studies are needed on a regional basis to determine the extent of bird collisions and if impacts to any migratory species are causing a population decline. The likelihood of a significant impact is low, but this cannot be proven at this time.

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Appendix I. Plants Observed on the Energy Unlimited Section 31 Project Site

SELAGINELLALES	**CLUB MOSSES**
Selaginellaceae *Selaginella bigelovii*	**Spike-moss family** Club-moss
GYMNOSPERMAE	**GYMNOSPERMS**
Cupressaceae *Juniperus californica*	**Cypress family** California Juniper
GNETAE	**JOINT-FIRS**
Ephedraceae *Ephedra californica*	**Ephedra family** California Joint-fir
ANGIOSPERMAE: DICOTYLEDONES	**DICOT FLOWERING PLANTS**
Asteraceae *Acamptopappus sphaerocephalus* *Ambrosia dumosa* *Artemisia californica* *Bebbia juncea* *Chrysothamnus paniculatus* *Dicoria canescens* *Encelia farinosa* *Hymenoclea salsola* *Isocoma acradenia* *Palafoxia arida* *Stephanomeria exigua* *Viguiera parishii*	**Sunflower family** Desert Goldenhead Burrobush California Sagebrush Sweetbush Rabbit Brush Bugseed Brittlebush Cheesebush Alkali Goldenbush Spanish Needles Annual Mitra Parish's Golden-eye
Bignoniaceae *Chilopsis linearis*	**Bignonia family** Desert Willow
Boraginaceae *Cryptantha* sp.	**Borage family** Cryptantha
Brassicaceae *Brassica tournefortii**	**Mustard family** Wild Turnip

Appendix I. Plants (Continued)

Cactaceae	**Cactus family**
Echinocereus engelmannii	Hedgehog Cactus
Ferocactus cylindraceus	California Barrel Cactus
Mammillaria dioicia	Pitayita
Opuntia basilaris var. *basilaris*	Beavertail
Opuntia echinocarpa	Silver Cholla
Opuntia bigelovii	Jumping Cholla
Capparaceae	**Caper family**
Isomeris arborea	Bladderpod
Chenopodiaceae	**Goosefoot family**
*Salsola tragus**	Russian Thistle
Crassulaceae	**Stone-crop family**
Dudleya saxosa	Dudleya
Euphorbiaceae	**Spurge family**
Chamaesyce polycarpa	Sand Mat
Croton californicus	Desert Croton
Ditaxis lanceolata	Lance-leaved Ditaxis
Stillingia linearifolia	Stillingia
Fabaceae	**Pea family**
Acacia greggii	Catclaw
Lotus scoparius	Deerweed
Psorothamnus arborescens	Indigo Bush
Psorothamnus emoryi	White Dalea
Psorothamnus fremontii	Fremont's Dalea
Geraniaceae	**Geranium family**
Erodium texanum	Desert Herons Bill
Krameriaceae	**Krameria family**
Krameria grayi	White Rhatany
Lamiaceae	**Mint family**
Salazaria mexicana	Bladder Sage
Salvia apiana	White Sage
Salvia columbariae	Chia

Appendix I. Plants (Continued)

Nyctaginaceae	**Four o'clock family**
Abronia villosa	Desert Sand Verbena
Mirabilis bigelovii	Desert Wishbone Plant
Oleaceae	**Olive family**
Menodora spinescens	Spiny Menodora
Polemoniaceae	**Phlox family**
Eriastrum eremicum	Woolly Star
Polygonaceae	**Buckwheat family**
Eriogonum fasciculatum	California Buckwheat
Eriogonum inflatum	Desert Trumpet
Rutanace	**Rue Family**
Thamnosma montana	Turpentine Bush
Simmondsiaceae	**Jojoba family**
Simmondsia chinensis	Jojoba
Zygophyllaceae	**Caltrop family**
Larrea tridentata	Creosote Bush
ANGIOSPERMAE: MONOCOTYLEDONES	**MONOCOT FLOWERING PLANTS**
Agavaceae	**Agave family**
Yucca schidigera	Mojave Yucca
Yucca whipplei	Our Lord's Candle
Poaceae	**Grass family**
*Bromus rubens**	Red Brome
Festuca megalura	Fescue
Pleuraphis rigida	Galleta Grass
*Schismus barbatus**	Mediterranean Schismus

* - indicates a non-native (introduced) species.

Appendix II. Animals Observed on the Energy Unlimited Section 31 Project Site

REPTILIA	REPTILES
Testudinidae	**Tortoises**
Gopherus agassizii	Desert Tortoise (burrows, scat)
Iguanidae	**Iguanid Lizards**
Crotaphytus insularis	Desert Collared Lizard*
Sceloporus magister	Desert Spiny Lizard*
Uta stansburiana	Side-blotched Lizard
Phrynosoma platyrhinos	Desert Horned Lizard*
Callisaurus draconoides	Zebra-tailed Lizard*
Teiidae	**Whiptails**
Cnemidophorus tigris	Western Whiptail*
Colubridae	**Colubrid Snakes**
Salvadora hexalepis	Western Patch-nosed Snake*

AVES	BIRDS
Falconidae	**Falcons**
Falco sparverius	American Kestrel*
Falco mexicanus	Prairie Falcon*
Odontophoridae	**New World Quail**
Callipepla gambelii	Gambel's Quail*
Columbidae	**Pigeons and Doves**
Zenaida macroura	Mourning Dove
Cuculidae	**Cuckoos and Roadrunners**
Geococcyx californianus	Greater Roadrunner*
Strigidae	**Typical Owls**
Athene cunicularia	Burrowing Owl*
Apodidae	**Swifts**
Aeronautes saxatalis	White-throated Swift*
Calypte costae	Costa's Hummingbird*

Appendix II. Animals (Continued)

Picidae *Picoides scalaris*	**Woodpeckers** Ladder-backed Woodpecker*
Tyrannidae *Myiarchus cinerascens*	**Tyrant Flycatchers** Ash-throated Flycatcher*
Laniidae *Lanius ludovicianus*	**Shrikes** Loggerhead Shrike
Corvidae *Corvus corax*	**Jays, Crows, Ravens, Magpies** Common Raven
Troglodytidae *Campylorhynchus brunneicapillus* *Salpinctes obsoletus*	**Wrens** Cactus Wren* Rock Wren
Mimidae *Toxostoma lecontei*	**Mockingbirds and Thrashers** Le Conte's Thrasher*
Emberizidae *Spizella atrogularis* *Zonotrichia leucophrys*	**Towhees, Sparrows** Black-chinned Sparrow* White-crowned Sparrow
Fringillidae *Carpodacus mexicanus*	**Finches** House Finch
MAMMALIA	MAMMALS
Leporidae *Lepus californicus* *Sylvilagus audubonii*	**Hares and Rabbits** Black-tailed Jackrabbit* Desert Cottontail*
Sciuridae *Ammospermophilus leucurus* *Spermophious tereticaaudus chlorus*	**Squirrels** White-tailed Antelope Squirrel Coachella Valley Round-tailed Squirrel*
Heteromyidae *Dipodomys (sp)*	**Pocket Mice, Kangaroo Rats** Kangaroo Rat (burrows)
Cricetidae *Neotoma lepida*	**Native Rats, Mice, Voles** Desert Woodrat (middens)

Appendix II. Animals (Continued)

Canidae	**Foxes, Wolves, Coyotes**
Canis latrans	Coyote (scat)

*Indicates a species found in previous surveys but not refound in 2000 survey.

PRELIMINARY DETERMINATION OF JURISDICTIONAL LIMITS
U.S. ARMY CORPS OF ENGINEERS
SECTION 404 WATERS OF THE UNITED STATES
INCLUDING WETLANDS AND STATE WATERS
SUBJECT TO 1602 STREAMBED ALTERATION AGREEMENT
FOR THE SECTION 31 WIND PLANT EXPANSION
AMEC EARTH & ENVIRONMENTAL, INC.
2005

PRELIMINARY DETERMINATION OF JURISDICTIONAL LIMITS U.S. ARMY CORPS OF ENGINEERS SECTION 404 WATERS OF THE UNITED STATES INCLUDING WETLANDS AND STATE WATERS SUBJECT TO CALIFORNIA DEPARTMENT OF FISH AND GAME SECTION 1602 STREAMBED ALTERATION AGREEMENT FOR THE SECTION 31 WIND PLANT EXPANSION

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13 December 2005

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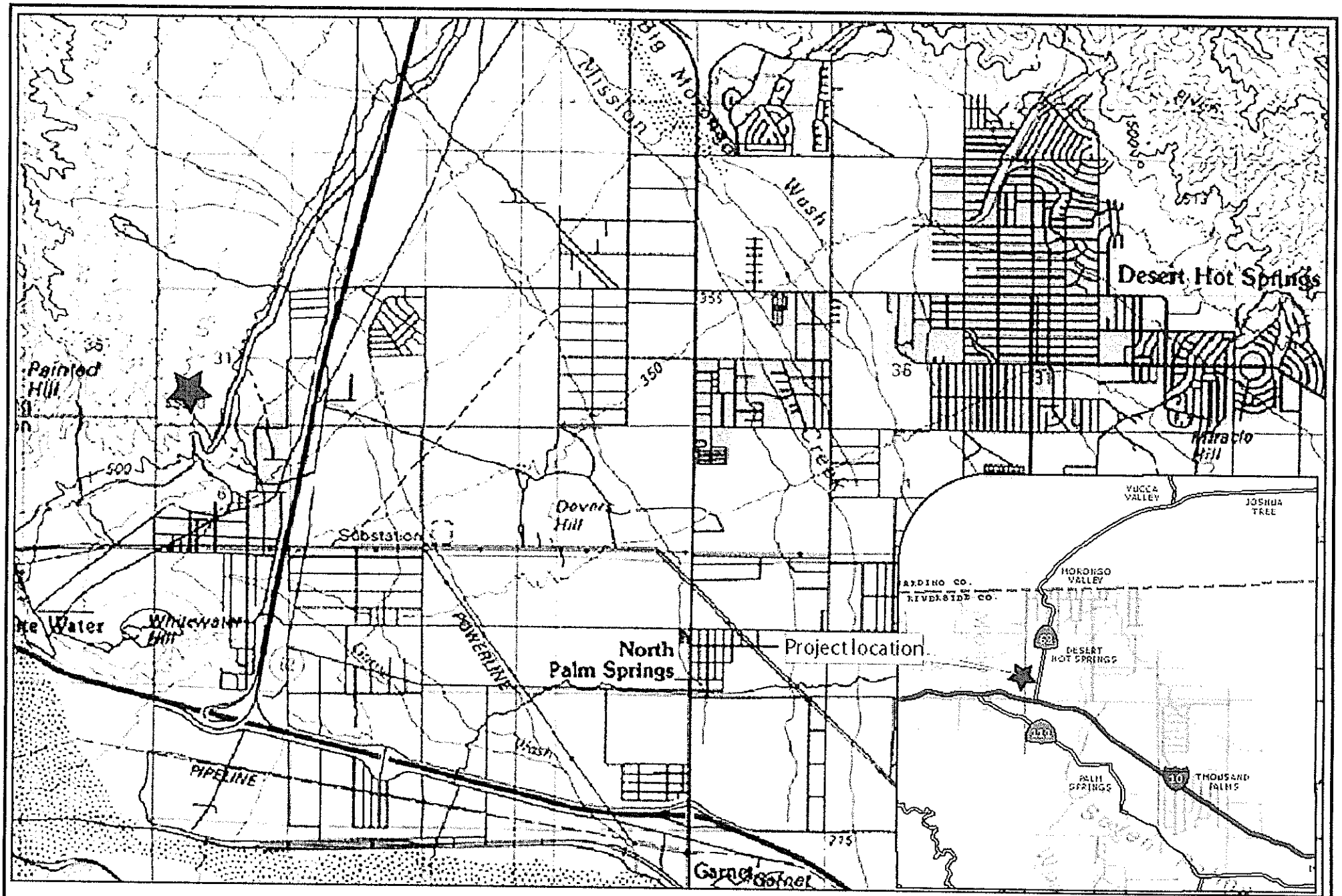
1.0 INTRODUCTION

The purpose of this report is to provide preliminary determinations of the limits of: (1) "Waters of the United States" (waters), including "wetlands" (wetlands), as defined within Section 404 of the Clean Water Act (33 U.S.C 1344) that are subject to United States Army Corps of Engineers (Corps) jurisdiction; and (2) streambed, embankment-to-embankment, and riparian habitat extents, as defined within Section 1602 of the California Fish and Game Code, that are subject to California Department of Fish and Game (CDFG) jurisdiction, on the site delimited as the Section 31 Wind Plant Expansion (site). This expansion site is on a ridgeline, immediately adjacent to an existing dirt road and existing wind towers. Eight new towers are to be installed, resulting in permanent disturbance of 0.61 acres and temporary disturbance to 0.74 acres. The site is in the city of Desert Hot Springs, Riverside County, California. Specifically, it is located in the southwestern quarter of Section 31, Township 2 South, Range 4 East of the United States Geological Survey (USGS) 7.5 minute *Desert Hot Springs, Calif.* quadrangle (see Map 1).

The Corps regulates impacts to the Nation's waters, including wetlands, under Section 404 of the Clean Waters Act (Act) per the Regulatory Program Regulations (Regulations) given at 33 CFR 320-330 (Corps, 1986). The Corps regulates the discharge of fill and dredged material into waters through its permitting authority granted under the Act. The Corps generally recommends that a project proponent provide a preliminary determination of the extent of waters in the form of a waters delimitation/wetlands delineation report prior to granting authorization to proceed with an action that will impact waters. The Corps reserves the ultimate authority regarding making the final waters/wetlands jurisdictional determination per Section 325.9 of the Regulations. Likewise, CDFG has ultimate discretion in the determination of adequacy of the materials submitted in support of a Section 1602 Streambed Alteration Agreement with respect to the delimitation of jurisdictional authority under Section 1602.

The preliminary determination of the extent of Corps jurisdiction presented in this report is based upon the definitions of "waters," "wetland," and "ordinary high water marks" (OHWM) found in Part 328.3 of the Regulations. To avoid confusion, it should be noted that wetlands are a subset of "Waters of the United States." However, wetlands are given a special consideration under the Corps Regulatory Program. The preliminary determination of the extent of CDFG Section 1602 jurisdiction is based upon the information provided on CDFG's website (CDFG 2005). Section 1602 of the Fish and Game Code requires any person who proposes a project that will substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake, or their tributaries, or use materials from a streambed, to notify CDFG before beginning the project. CDFG generally regards as jurisdictional the following categories of State waters: (1) rivers that flow at least periodically or permanently through a bed or channel with banks and that also support fish or other aquatic life; and (2) watercourses having a surface or subsurface flow that support or have supported riparian vegetation. In practice, CDFG generally interprets their jurisdictional limits to include the top-of-embankment to top-of-embankment width plus the outer canopy and ground cover extents of, typically, riparian associated vegetation species that would be sustained by surface and/or subsurface waters of the watercourse.



Map 1. Section 31 Wind Plant Expansion: Vicinity & Location

Project Site

Map Source: U S. 7.5' Desert Hot Springs Topo

0 2640 FEET

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2.0 METHODS

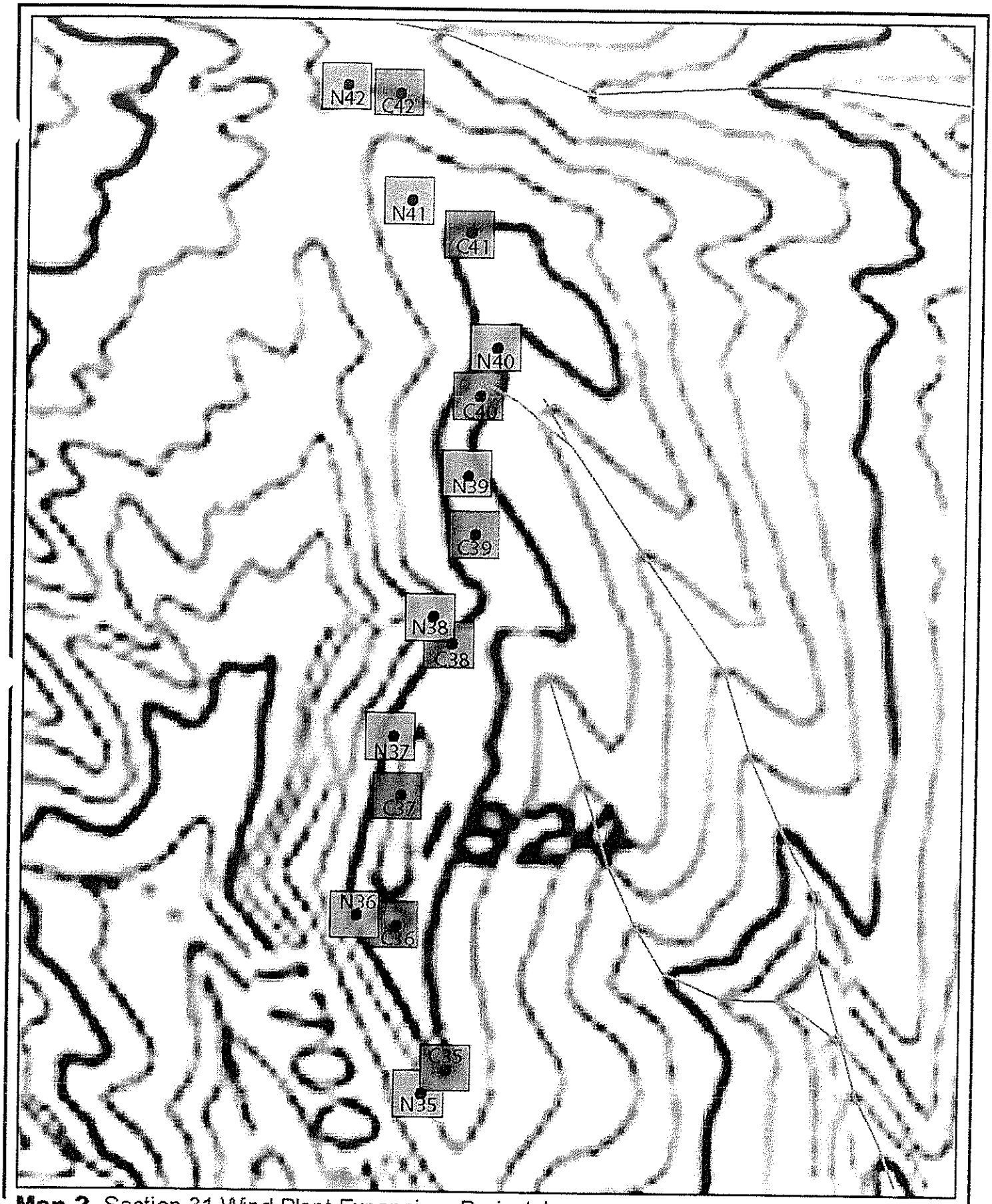
Methods for assessing the limits of federal waters, including wetlands, and CDFG Section 1602 waters and riparian habitats are described below. AMEC biologist John F. Green met with Energy Unlimited representative David Copher on 2 December 2005 to conduct a field assessment. The hydrogeomorphic conditions associated with the ephemeral watercourses that occur within native habitat types (i.e. Creosote Bush Scrub,) were considered the normal conditions for the site. Ephemeral watercourses within the area were assessed strictly on the basis of presence or absence of perceptible OHWM indicators (see Section 3.1, below). Staked locations for the new towers, including their 100 foot square pads and access, were examined, photographed, and their locations were recorded with a handheld GPS unit. A potential jurisdictional issue was found at the staked site for Tower C-40 (see Map 2 and Appendix B). Access to all will be via existing dirt roads, or across very short non-jurisdictional areas. Subsequent to this visit, a conversation with David Lamm of Energy Unlimited revealed that the staked locations were no longer valid. Green then revisited the site with Copher on 9 December 2005, and using a blueprint (Krieger and Stewart 2004), located the approximate new positions of the eight towers. The new locations, including that of Tower C-40 (see Map 2 and Appendix B) all avoid jurisdictional waters and wetlands.

3.0 RESULTS

3.1 Section 404 Jurisdictional Areas

Potential Section 404 jurisdictional "Waters of the United States" in the area were evaluated on the basis of surface hydrologic continuity with navigable waters, in this case, the Salton Sea. Accordingly, the surface hydrologic connectivity is as follows: Drainages in the vicinity of the site enter a series of unnamed washes, some of which are mapped as blueline streams. All flow in a generally southeasterly trend, eventually entering the named Garnet Wash. Garnet Wash is a tributary of the Whitewater River, which ultimately enters the Salton Sea. This system of water sources for the Salton Sea is considered waters according to the definitions of waters of the U.S. given in the Regulations at Section 328.3 subsections (a)(3), (a)(5), (a)(7)(b)(c)(e), and Section 328.4 (c)(1)(2)(3) (see Attachment A-1). Additional information provided in the "Supplementary information" section of the Regulations states that: "...it should be concluded that in the absence of wetlands the upstream limit of Corps jurisdiction also stops when the ordinary high water mark (OHWM) is no longer perceptible" (see Attachment A-2). As such, all on-site waters, including ephemeral watercourses, that display OHWM indicators are considered jurisdictional to the upreach points where the OHWMs are no longer perceptible. Distinct bed and bank contours, sediment deposition lines, and debris deposition lines were the primary OHWM indicators that were perceptible in drainages adjacent to the site during the field visits.

The ephemeral watercourses in the vicinity of the site fit the hydrogeomorphic definition as presented in the *Federal Register, Issuance of Nationwide Permits; Notice* (Vol. 67, No. 10, January 15, 2002): "An ephemeral stream has flowing water only during and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above



Map 2. Section 31 Wind Plant Expansion: Project Areas

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Cxx = Staked Locations For New Towers

Potential Jurisdictional Waters

Nxx = Approximate Mapped Locations For New Towers

Map Source: USGS 7.5' Desert Hot Springs

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the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow." Field conditions do not indicate that groundwater provides water for stream flow and, therefore, the watercourses are considered to be "intermittent streams' according to the Corps' definition in the cited reference. There are no such watercourses within the revised approximate site limits as indicated on Map 2.

The site was also inspected for the occurrences of wetland areas within and adjacent to the OHWM limits of ephemeral watercourses through the desert habitat. The Corps 1987 Manual approach for delineating an area as a wetland generally requires that it display three characteristic wetland parameters that include: (1) a prevalent hydrophytic ("water plant") flora; (2) wetland hydrology; and (3) hydric soils. The Corps' 1987 Manual approach assumes that at least one primary indicator or two secondary indicators of each parameter will be present for an area that constitutes a wetland subject to Corps' jurisdiction. However, the approach does provide some flexibility in the interpretation of field conditions when assessing the potential for an area to be wetlands. As previously stated, under the current configuration of the new towers, no jurisdictional watercourses exist within the site limits. Furthermore, suitable hydrologic and geomorphic conditions are not present for the development of wetlands in this area. Vegetation on the parcel and adjacent to the watercourses is best described as the Creosote Bush - Brittlebush - White Bursage series (CDFG 2003).

According to the *Soil Survey of Riverside County, California, Coachella Valley Area* (United States Department of Agriculture [USDA] Soil Conservation Service, 1980) the primary soil map unit on site appears to be Chuckawalla cobbly fine sandy loam, 9 to 30 percent slopes, an old, well drained alluvial soil. Elements of Lithic Torripsamments-Rock Outcrop are also mapped in the immediate area, a very old alluvial soil with 15-75 percent slopes, excessively drained, and shallow. Permeability of the Chuckawalla soil is moderate, runoff is rapid, and available water capacity is 2-4 inches. The Lithic soil is rapidly permeable, runoff is very rapid, and has little or no water capacity.

Based upon an assessment of the overall hydrologic, hydrogeomorphic, and vegetative conditions within watercourses adjacent to the site, it was not necessary to take sample points to determine wetland attributes (i.e., vegetation, soils, and hydrology) within these watercourses or lands adjacent to these watercourses. No hydrophytic vegetation is present and conditions for the formation of hydric soils are not present.

3.2 Section 1602 Jurisdictional Areas

Following from the interpretation of CDFG jurisdictional extent provided in the Introduction, above, the extent of CDFG jurisdiction was assessed in the field based on one, or a combination, of the following criteria (CDFG 2005):

(1) At minimum, intermittent and seasonal flow through a bed or channel with banks and that also supports fish or other aquatic life.

(2) A watercourse having a surface or subsurface flow regime that supports or that has supported riparian vegetation.

(3) Hydrogeomorphically distinct top-of-embankment to top-of-embankment limits.

(4) Outer ground cover and canopy extents of, typically, riparian associated vegetation species that would be sustained by surface and/or subsurface waters of the watercourse.

Accordingly, the reach of the ephemeral desert washes in the vicinity of the site limits only fit category 3 of the four criteria above, and none occur within the current site limits.

4.0 CONCLUSIONS

AMEC's assessment is that, as currently configured, the sites of the eight new towers are not "Waters of the United States" subject to Corps jurisdiction and permitting under its regulatory program; jurisdictional wetlands were not found to occur on-site; and no wetlands subject to CDFG jurisdiction occur. Apparent state and federal jurisdictional waters occur in the immediate vicinity of Tower C-40, and occur just downslope of several other towers, particularly C-38, C-39, and C-42, therefore any future changes in tower siting will require a new assessment.

5.0 RECOMMENDED FUTURE ACTIONS

AMEC does not anticipate a need for permitting or formal notification on this project in its current configuration. Any further changes from the 14 June 2004 blueprint siting of these towers, however, will require an additional field assessment. In any configuration, Best Management Practices, such as the placement of silt fences, should be employed to prevent construction sediment from entering jurisdictional areas.

The Corps and the CDFG make the ultimate determination of jurisdiction. The following future actions are recommended for the purpose of proposed project facilitation:

(1) The Applicant should contact the Corps of Engineers, Los Angeles District, Regulatory Branch and make an appointment for a pre-application meeting with a Corps representative to introduce the proposed project and the assessment presented in this report. If needed, the Corps will provide guidance regarding the Regulatory Program permit application process, coordination with other federal and State permitting and resources agency coordination, and the need for any additional information.

(2) The Applicant should consult CDFG, Eastern Sierras and Inland Deserts Region 6 Office, Lake and Streambed Alteration Program, and obtain CDFG's opinion of whether formal notification is required. If requested to do so by CDFG, follow the instructions and procedures that may include preparing the "notification of Lake or Streambed Alteration" form (FG 2023) and "Project Questionnaire" form (FG 2034) to introduce the proposed project and the assessment presented in this report.

(3) In the unlikely event that the Corps or CDFG determine that jurisdictional waters are present, the Applicant should also provide notification to the State Water Resources Board (Region 7) and the Regional Water Quality Control Board regarding a Section 401 Water Quality Certification for Discharge of Dredged and/or Fill Materials.

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USDA 1980 Soil Survey of Riverside County, California, Coachella Valley Area.

Appendix A-1
Definitions of Waters of the United States

PART 328 - DEFINITION OF WATERS OF THE UNITED STATES

Sec.
328.1 Purpose.
328.2 General scope.
328.3 Definitions.
328.4 Limits of jurisdiction.
328.5 Changes in limits of waters of the United States.

Authority: 33 U.S.C. 1344.

Section 328.1 Purpose.

This section defines the term "waters of the United States" as it applies to the jurisdictional limits of the authority of the Corps of Engineers under the Clean Water Act. It prescribes the policy, practice, and procedures to be used in determining the extent of jurisdiction of the Corps of Engineers concerning "waters of the United States." The terminology used by Section 404 of the Clean Water Act includes "navigable waters" which is defined at Section 502(7) of the Act as "waters of the United States including the territorial seas." To provide clarity and to avoid confusion with other Corps of Engineer regulatory programs, the term "waters of the United States" is used throughout 33 CFR Parts 320-330. This section does not apply to authorities under the Rivers and Harbors Act of 1899 except that some of the same waters may be regulated under both statutes (see 33 CFR Parts 322 and 329).

Section 328.2 General scope.

Waters of the United States include thosewaters listed in Section 328.3(a) below. The lateral limits of jurisdiction in those waters may be divided into three categories. The categories include the territorial seas, tidal waters, and non-tidal waters (see 33 CFR 328.4 (a), (b), and (c), respectively).

Section 328.3 Definitions.

For the purpose of this regulation these terms are defined as follows:

a) The term "waters of the United States" means

(1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(2) All interstate waters including interstate wetlands;

(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:

(i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or

(ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(iii) Which are used or could be used for industrial purpose by industries in interstate commerce;

(4) All impoundments of waters otherwise defined as waters of the United States under the definition;

(5) Tributaries of waters identified in paragraphs (a)(1)-(4) of this section;

(6) The territorial seas;

(7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1)-(6) of this section. Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 123.11(m) which also meet the criteria of this definition) are not waters of the United States.

(b) The term "wetlands" means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

(c) The term "adjacent" means bordering, contiguous, or neighboring. Wetlands separated from other waters of the United States by man-

to expand the scope of jurisdiction. Neither is the case. The purpose was to clarify the scope of the 404 program by defining the terms in accordance with the way the program is presently being conducted.

Section 328.3: Definitions. This section incorporates the definitions previously found in Sections 323.3(a), (c), (d), (f) and (g). Paragraphs (c), (d), (f) and (g) were incorporated without change. EPA has clarified that waters of the United States at 40 CFR 328.3(a)(3) also include the following waters:

a. Which are or would be used as habitat by birds protected by Migratory Bird Treaties; or

b. Which are or would be used as habitat by other migratory birds which cross state lines; or

c. Which are or would be used as habitat for endangered species; or

d. Used to irrigate crops sold in interstate commerce.

For clarification it should be noted that we generally do not consider the following waters to be "Waters of the United States." However, the Corps reserves the right on a case-by-case basis to determine that a particular waterbody within these categories of waters is a water of the United States. EPA also has the right to determine on a case-by-case basis if any of these waters are "waters of the United States."

(a) Non-tidal drainage and irrigation ditches excavated on dry land.

(b) Artificially irrigated areas which would revert to upland if the irrigation ceased.

(c) Artificial lakes or ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing.

(d) Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons.

(e) Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States (see 33 CFR 328.3(a)).

The term "navigable waters of the United States" has not been added to this section since it is defined in Part 329.

A number of comments were received concerning the proposed change to the definition of the terms "adjacent" and the proposed definitions for the terms "inundation", "saturated", "prevalence", and "typically adapted." A number of commenters believed that these terms may better define the scope of jurisdiction of the section 404 program, but such definitions should more rightfully be within the province of the Environmental Protection Agency in order to remain consistent with the opinion of Benjamin Civiletti, Attorney General (September 5, 1979). These definitions would require the prior approval of the Environmental Protection Agency, which has not been forthcoming. Therefore, these new proposed definitions will not be adopted at this time. To respond to requests for clarification, we have added a definition for "tidal waters." The definition is consistent with the way the Corps has traditionally interpreted the term.

Section 328.4: Limits of Jurisdiction. Section 328.4(c)(1) defines the lateral limit of jurisdiction in non-tidal waters as the ordinary high water mark provided the jurisdiction is not extended by the presence of wetlands. Therefore, it should be concluded that in the absence of wetlands the upstream limit of Corps jurisdiction also stops when the ordinary high water mark is no longer perceptible.

Section 328.5: Changes in Limits of Waters of the United States. This section was changed to reflect both natural and man-made changes to the limits of waters of the United States. This change was made for clarification and resulted from consultation with the Environmental Protection Agency.Section 328.6: Supplemental Clarification. Most commenters favored the Corps plans to give special consideration to unique areas such as Arctic Tundra that do not easily fit the generic" wetlands definition. Several commenters indicated that the Corps should clarify its intended use of this section, and one questioned the need to "describe" unique areas in the Federal Register . A number of commenters indicated that criteria should be specified for determining wetland types to be included as unique areas. Some commenters stated that close coordination between the Corps and the Environmental

Appendix A-2
Section 328.4 – Limits of Jurisdiction

made dikes or barriers, natural river berms, beach dunes and the like are "adjacent wetlands."

(d) The term "high tide line" means the line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

(e) The term "ordinary high water mark" means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

(f) The term "tidal waters" means those waters that rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by hydrologic, wind, or other effects.

Section 328.4 Limits of jurisdiction.

(a) Territorial Seas. The limit of jurisdiction in the territorial seas is measured from the baseline in a seaward direction a distance of three nautical miles. (See 33 CFR 329.12)

(b) Tidal Waters of the United States. The landward limits of jurisdiction in tidal waters:

(1) Extends to the high tide line, or

(2) When adjacent non-tidal waters of the United States are present, the jurisdiction extends to the limits identified in paragraph (c) of this section.

(c) Non-Tidal Waters of the United States. The limits of jurisdiction in non-tidal waters:

(1) In the absence of adjacent wetlands, the jurisdiction extends to the ordinary high water mark, or

(2) When adjacent wetlands are present, the jurisdiction extends beyond the ordinary high water mark to the limit of the adjacent wetlands.

(3) When the water of the United States consists only of wetlands the jurisdiction extends to the limit of the wetland.

Section 328.5 Changes in limits of waters of the United States.

Permanent changes of the shoreline configuration result in similar alterations of the boundaries of waters of the United States. Gradual changes which are due to natural causes and are perceptible only over some period of time constitute changes in the bed of a waterway which also change the boundaries of the waters of the United States. For example, changing sea levels or subsidence of land may cause some areas to become waters of the United States while siltation or a change in drainage may remove an area from waters of the United States. Man-made changes may affect the limits of waters of the United States; however, permanent changes should not be presumed until the particular circumstances have been examined and verified by the district engineer. Verification of changes to the lateral limits of jurisdiction may be obtained from the district engineer.

PART 329 - DEFINITION OF NAVIGABLE WATERS OF THE UNITED STATES

Sec.
329.1 Purpose.
329.2 Applicability.
329.3 General policies.
329.4 General definitions.
329.5 General scope of determination.
329.6 Interstate or foreign commerce.
329.7 Intrastate or interstate nature of waterway.
329.8 Improved or natural conditions of the waterbody.
329.9 Time at which commerce exists or determination is made.

Appendix B
Site Photographs

Figure 1. Apparent jurisdictional area within the original Tower C-40 footprint.

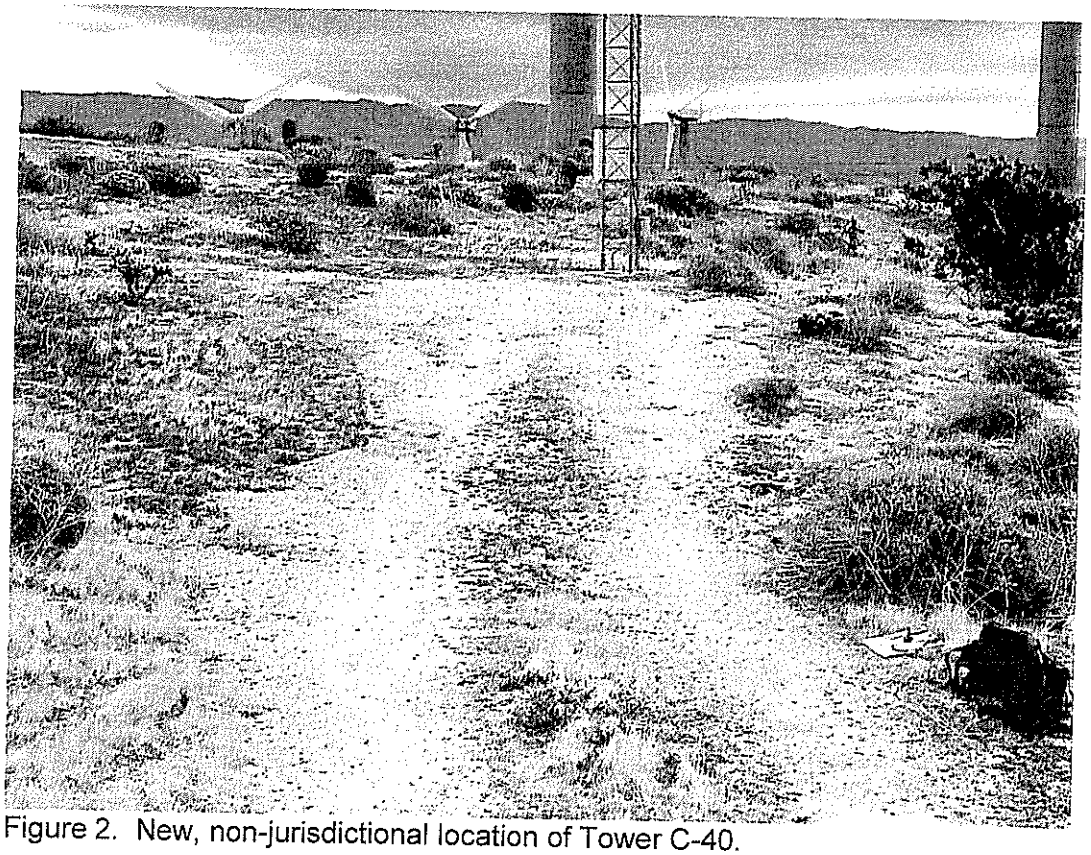

Figure 2. New, non-jurisdictional location of Tower C-40.

Appendix C
Certification

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this determination, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

DATE: 12-16-05 **SIGNED:** _____.

APPENDIX C

CULTURAL RESOURCES ASSESSMENTS

HISTORICAL/ARCHAEOLOGICAL RESOURCES SURVEY REPORT
CRM TECH, 2005

HISTORICAL/ARCHAEOLOGICAL RESOURCES SURVEY REPORT

WINDFARM EXPANSION PROJECT

City of Desert Hot Springs
Riverside County, California

Submitted to:

David Lamm
Energy Unlimited, Inc.
100 Four Falls Corporate Center, Suite 215
West Conshohocken, PA 19428-2960

Submitted by:

Bai Tang, Principal Investigator
Michael Hogan, Principal Investigator
Matthew Wetherbee, Archaeologist/Report Writer
Daniel Ballester, Archaeologist
CRM TECH
4472 Orange Street
Riverside, CA 92501

September 29, 2005

CRM TECH Contract #1680
Approximately One Acre
Assessor's Parcel No. 667-160-001
USGS Desert Hot Springs, Calif., 7.5' Quadrangle
Section 31, T2S R4E, San Bernardino Base Meridian

MANAGEMENT SUMMARY

In August and September, 2005, at the request of Energy Unlimited, Inc., CRM TECH performed a cultural resources study for a proposed windfarm expansion project in the City of Desert Hot Springs, Riverside County, California. The subject property of the study consists of the future sites of eight new wind turbines, which measure approximately one acre in total area. It is located within Assessor's Parcel No. 667-160-001, which encompasses the southwest quarter of Section 31, T2S R4E, San Bernardino Base Meridian. The study is part of the environmental review process for the proposed project. The County of Riverside, as Lead Agency for the project, required the study in compliance with the California Environmental Quality Act (CEQA).

The purpose of the study is to provide the County of Riverside with the necessary information and analysis to determine whether the proposed project would cause substantial adverse changes to any historical/ archaeological resources that may exist in or around the project area, as mandated by CEQA. In order to identify and evaluate such resources, CRM TECH conducted a historical/archaeological resources records search, pursued historical background research, and carried out an intensive-level field survey.

Through the various avenues of research, this study did not encounter any "historical resources," as defined by CEQA, within or adjacent to the project area. Therefore, CRM TECH recommends to the County of Riverside a finding of *No Impact* regarding cultural resources. No further cultural resources investigation is recommended for the project unless construction plans undergo such changes as to include areas not covered by this study. However, if buried cultural materials are encountered during any earth-moving operations associated with the project, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.

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INTRODUCTION

In August and September, 2005, at the request of Energy Unlimited, Inc., CRM TECH performed a cultural resources study for a proposed windfarm expansion project in the City of Desert Hot Springs, Riverside County, California (Fig. 1). The subject property of the study consists of the future sites of eight new wind turbines, which measure approximately one acre in total area (Fig. 2). It is located within Assessor's Parcel No. 667-160-001, which encompasses the southwest quarter of Section 31, T2S R4E, San Bernardino Base Meridian. The study is part of the environmental review process for the proposed project. The County of Riverside, as Lead Agency for the project, required the study in compliance with the California Environmental Quality Act (CEQA; PRC §21000, et seq.).

CRM TECH performed the present study to provide the County of Riverside with the necessary information and analysis to determine whether the proposed project would cause substantial adverse changes to any historical/archaeological resources that may exist in or around the project area, as mandated by CEQA. In order to identify and evaluate such resources, CRM TECH conducted a historical/archaeological resources records search, pursued historical background research, and carried out an intensive-level field survey. The following report is a complete account of the methods, results, and final conclusion of the study.

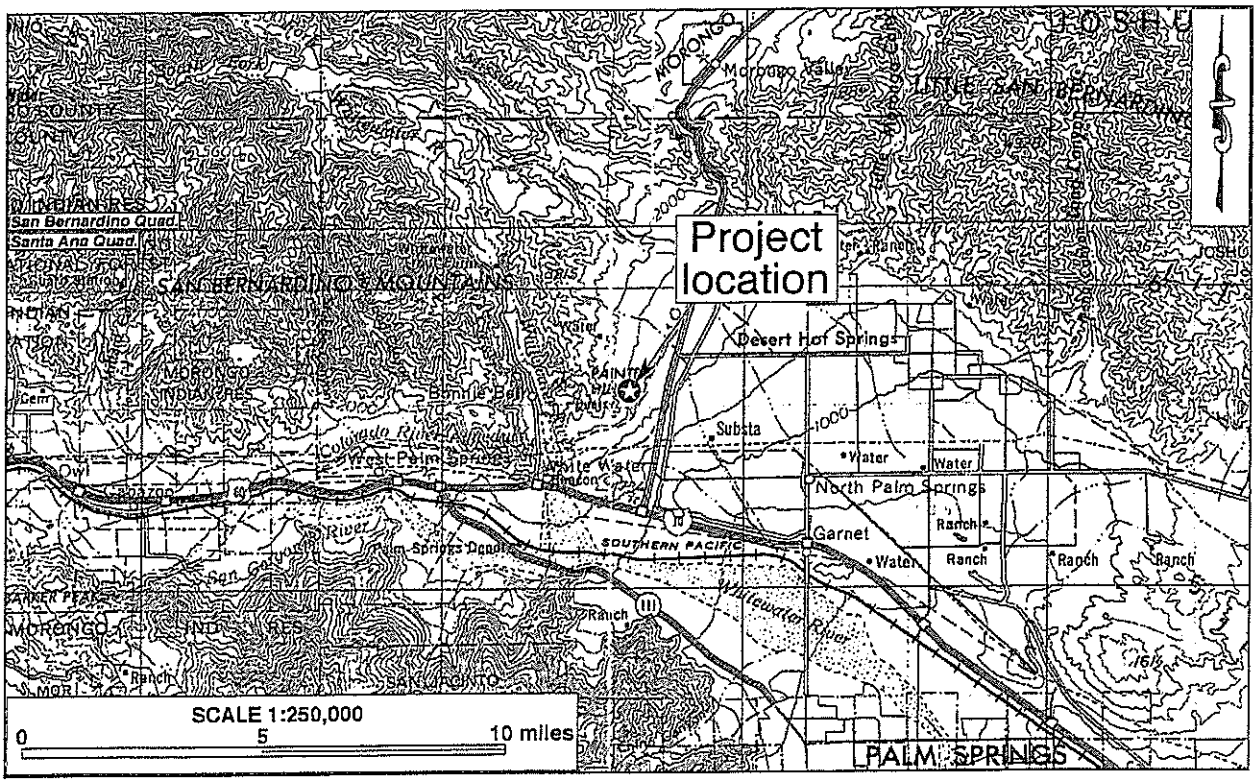


Figure 1. Project vicinity. (Based on USGS San Bernardino and Santa Ana, Calif., 1:250,000 quadrangles [USGS 1969; 1979])

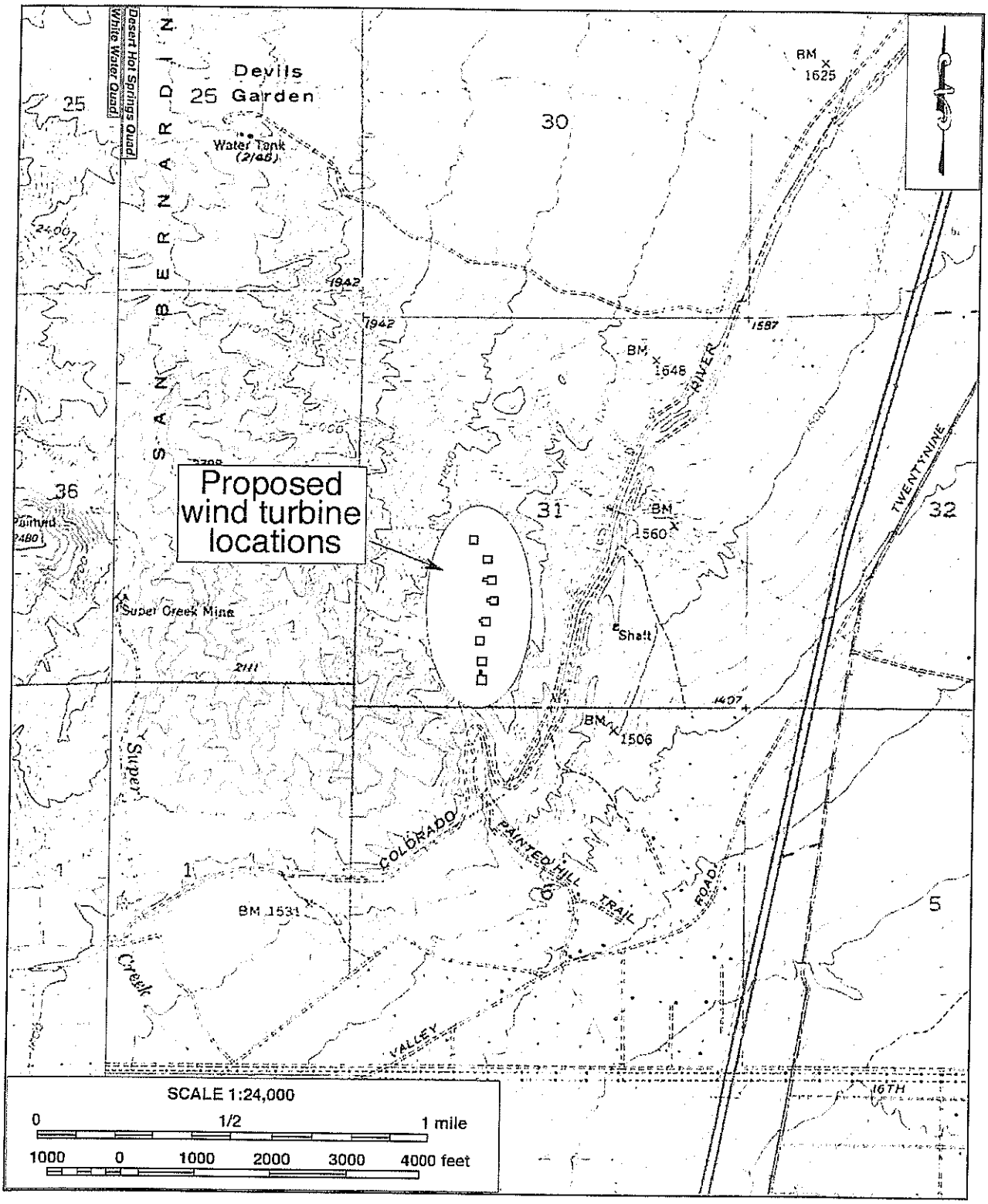


Figure 2. Project area. (Based on USGS White Water and Desert Hot Springs, Calif., 1:24,000 quadrangles [USGS 1978; 1996])

SETTING

CURRENT NATURAL SETTING

The City of Desert Hot Springs is situated on the northwestern end of the Coachella Valley, a northwest-southeast trending desert valley that constitutes the western most portion of the Colorado Desert. Dictated by this geographic setting, the climate and environment of the region are typical of southern California's desert country, marked by extremes in temperature and aridity. Temperatures in the region reach over 120 degrees in summer, and dip to near freezing in winter. Average annual precipitation is less than five inches, and average annual evaporation rate exceeds three feet.

The project area is located within an existing windfarm, on the eastern slopes of the San Bernardino Mountains, and just west of the Colorado River Aqueduct. The elevations of the proposed wind turbine sites range from approximately 1,700 to 1,800 feet above mean sea level. The project area has been extensively disturbed during the construction of the existing windfarm, and two dirt roads traverse the property providing access to all of the existing wind turbines. The vegetation in the project vicinity consists of creosote bushes, brittle bushes, foxtails, chollas, cactuses, desert flowers, and various small desert grasses and shrubs. The soil is composed of coarse-grained sand mixed with large rocks and gravel.

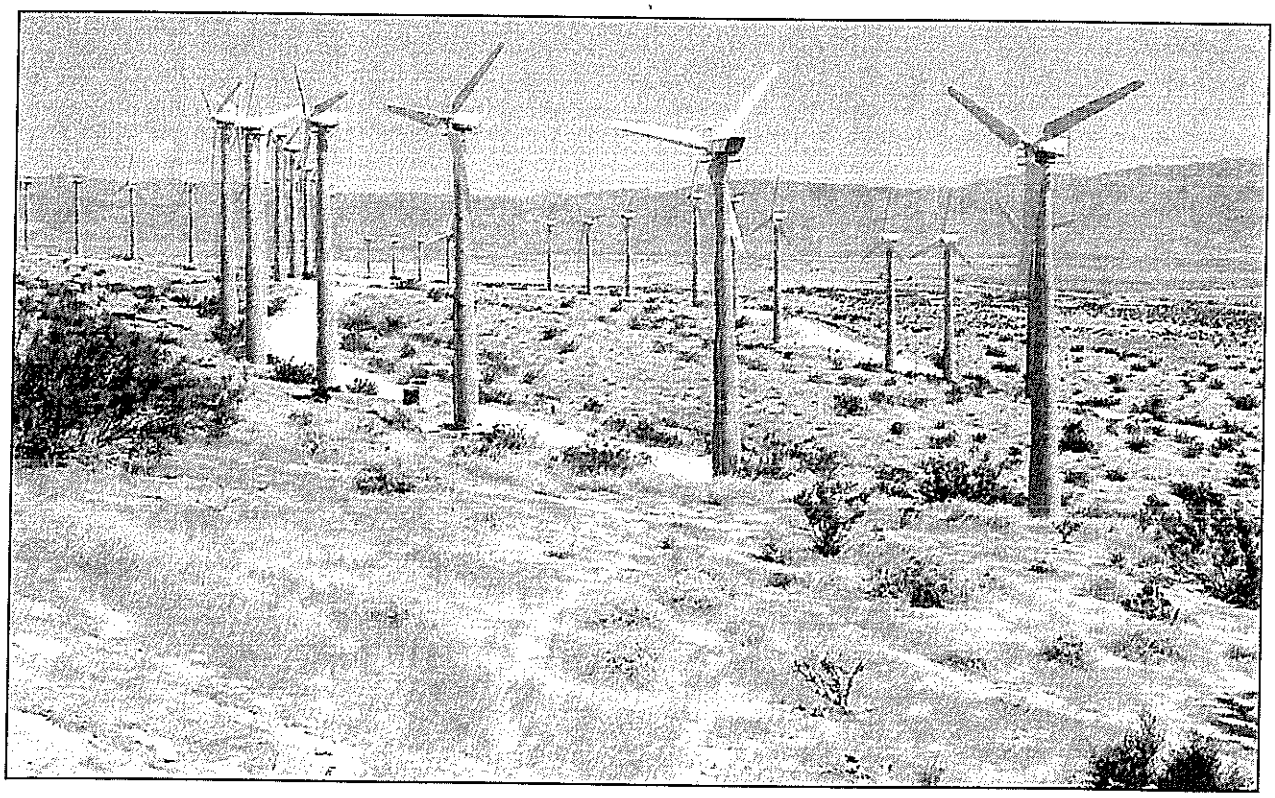


Figure 3. Overview of the current natural setting of the project area. (Photo taken on August 26, 2005; view to the northeast)

CULTURAL SETTING

Ethnohistoric Context

The Coachella Valley is a historical center of Native American settlement, where U.S. surveyors noted large numbers of Indian villages and *rancherías*, occupied by the Cahuilla people, in the mid-19th century. The Cahuilla, a Takic-speaking people of hunters and gatherers, are generally divided by anthropologists into three groups, according to their geographic setting: the Pass Cahuilla of the San Gorgonio Pass-Palm Springs area, the Mountain Cahuilla of the San Jacinto and Santa Rosa Mountains and the Cahuilla Valley, and the Desert Cahuilla of the eastern Coachella Valley.

The Cahuilla did not have a single name that referred to an all-inclusive tribal affiliation. Instead, membership was in terms of lineages or clans. Each lineage or clan belonged to one of two main divisions of the people, known as moieties. Members of clans in one moiety had to marry into clans from the other moiety. Individual clans had villages, or central places, and territories they called their own, for purposes of hunting game, gathering food, or utilizing other necessary resources. They interacted with other clans through trade, intermarriage, and ceremonies.

Population data prior to European contact are almost impossible to obtain, but estimates range from 3,600 to as high as 10,000 persons. During the 19th century, however, the Cahuilla population was decimated as a result of European diseases, most notably smallpox, for which the Native peoples had no immunity. Today, Native Americans of Pass or Desert Cahuilla heritage are mostly affiliated with one or more of the Indian reservations in and near the Coachella Valley, including Torres Martinez, Augustine, Agua Caliente, Cabazon, and Morongo.

Historic Context

In 1823-1825, José Romero, José Maria Estudillo, and Romualdo Pacheco, leading a series of expeditions in search of a route to Yuma, became the first noted European explorers to travel through the Coachella Valley. However, due to its harsh environment, few non-Indians ventured into the desert valley during the Mexican and early American periods, except those who traveled across it along the established trails. The most important among these trails was the Cocomaricopa Trail, an ancient Indian trading route that was "discovered" in 1862 by William David Bradshaw and became known after that as the Bradshaw Trail. In much of the Coachella Valley, this historic wagon road traversed a similar course to that of present-day Highway 111. During the 1860s-1870s, the Bradshaw Trail served as the main thoroughfare between coastal southern California and the Colorado River, until the completion of the Southern Pacific Railroad in 1876-1877 brought an end to its heyday.

Non-Indian settlement in the Coachella Valley began in the 1870s, with the establishment of railroad stations along the Southern Pacific Railroad, and spread further in the 1880s, after public land was opened for claims under the Homestead Act, the Desert Land Act, and other federal land laws. Farming became the dominant economic activity in the valley, thanks to the development of underground water sources, often in the form of artesian wells. But it was not until the completion of the Coachella Canal in 1948-1949 that farmers

in the arid region obtained an adequate and reliable water supply. The main agricultural staple in the Coachella Valley, the date palm, was first introduced around the turn of the century. By the late 1910s, the date palm industry had firmly established itself, giving the region its celebrated image of "the Arabia of America." Starting in the 1920s, a new industry, featuring equestrian camps, resort hotels, and eventually country clubs, gradually spread throughout the Coachella Valley, and since then transformed it into southern California's leading winter retreat.

The present-day City of Desert Hot Springs is among the communities that were largely created by the Coachella Valley's resort industry. Although sporadic settlement took place in the vicinity as early as 1908, the city owes much of its early development to the abundance of hot mineral water along the San Andreas fault line. J. W. Coffey, who subdivided the Desert Hot Springs townsite in 1933, is also credited with first tapping into the hot mineral water for commercial use by drilling a 300-foot well (Gunther 1984:151). Advertised in the early and mid-20th century primarily for its potential for health spas and convalescent homes, Desert Hot Springs saw sufficient growth by 1944 to warrant the establishment of a post office. After a further growth spurt during the post-WWII boom, Desert Hot Springs incorporated as a city in 1963.

RESEARCH METHODS

RECORDS SEARCH

On October 15, 2002, CRM TECH archaeologist Daniel Ballester (see App. 1 for qualifications) conducted the historical/archaeological resources records search at the Eastern Information Center (EIC), University of California, Riverside. During the records search, Ballester examined maps and records on file at the EIC for previously identified cultural resources in or near the project area, and existing cultural resources reports pertaining to the vicinity. Previously identified cultural resources include properties designated as California Historical Landmarks, Points of Historical Interest, or Riverside County Landmarks, as well as those listed in the National Register of Historic Places, the California Register of Historical Resources, or the California Historical Resource Information System.

HISTORICAL RESEARCH

Historical background research for this study was conducted by CRM TECH historian Bai "Tom" Tang (see App. 1 for qualifications) on the basis of published literature in local and regional history and historic maps depicting the project vicinity. Among maps consulted for this study were the U.S. General Land Office's (GLO) land survey plat maps dated 1856 and 1897, and the U.S. Geological Survey's (USGS) topographic maps dated 1901, 1940, and 1957. These maps are collected at the Science Library of the University of California, Riverside, and the California Desert District of the U.S. Bureau of Land Management, located in Moreno Valley.

FIELD SURVEY

On August 26, 2005, Daniel Ballester carried out the intensive-level, on-foot field survey of the project area. During the survey, Ballester walked parallel north-south transects spaced

15 meters (ca. 50 feet) apart across each of the eight proposed wind turbines sites. In this way, the ground surface in the entire project area was systematically and carefully examined for any evidence of human activities dating to the prehistoric or historic periods (i.e., 50 years ago or older). Ground visibility in the project area was excellent (90%) due to the sparse vegetation. The results of the survey are discussed below.

RESULTS AND FINDINGS

RECORDS SEARCH RESULTS

According to records on file at the Eastern Information Center, the entire project area was included in a cultural resources survey completed in 1982 (Wilke 1982), but no cultural resources was previously recorded near any of the wind turbine sites. Outside the project boundaries but within a one-mile radius, EIC records show at least five other previous cultural resources studies covering various tracts of land (Fig. 4). As a result of these studies, 12 historical/archaeological sites have been identified within the scope of the records search.

Of these sites, eight were prehistoric—i.e., Native American—in nature, consisting predominantly of rock circles, rock cairns, and chipped stone and groundstone artifacts. The other four sites included a historic-period rock alignment, a rock cairn, remnants of a historic-period telephone line, and a mine or well shaft, all containing associated refuse deposits. None of these previously recorded sites was located in the immediate vicinity of the project area, and thus none of them requires further consideration during this study.

HISTORICAL RESEARCH RESULTS

Historic maps consulted for this study indicate that the project area is relatively low in sensitivity for cultural resources dating to the historic period (Figs. 5-8). In the 1850s, when the U.S. government conducted the first official land survey of the area, the surveyors observed no man-made features of any kind within or adjacent to the project area (Fig. 5). Throughout the next 100 years, the only man-made features noted in the vicinity of the project area were several dirt roads and the Colorado River Aqueduct (Figs. 6-8), which was built during the 1930s. None of these features crossed within or near the project boundaries (Figs. 6-8). In summary, no buildings, structures, or other notable evidence of settlement and/or land development activities was observed in the project vicinity throughout the historic period.

FIELD SURVEY RESULTS

The intensive-level field survey produced completely negative results for potential cultural resources. The entire project area was closely inspected for any evidence of human activities dating to the prehistoric or historic periods, but none was found. No buildings, structures, objects, sites, features, or artifacts more than 50 years of age were encountered during the field survey.

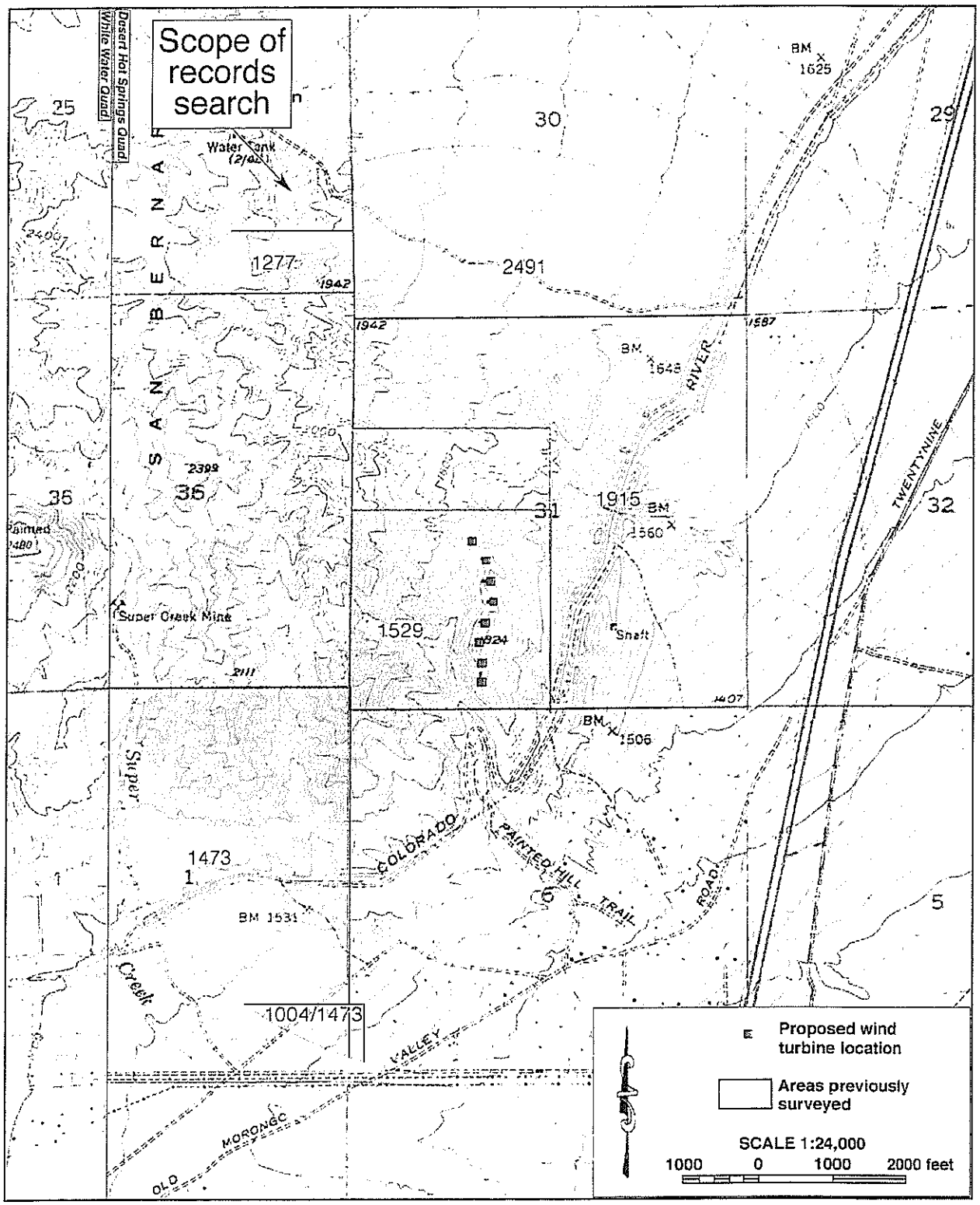


Figure 4. Previous cultural resources studies in the vicinity of the project area, listed by EIC file number. Locations of historical/archaeological sites are not shown as a protective measure.

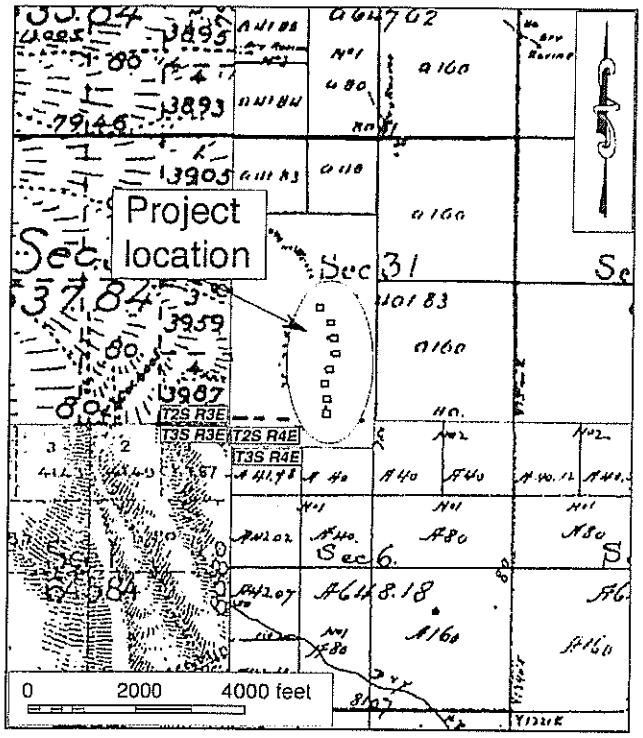


Figure 5. The project area and vicinity in 1855-1896. (Source: GLO 1856a; 1856b; 1897a; 1897b)

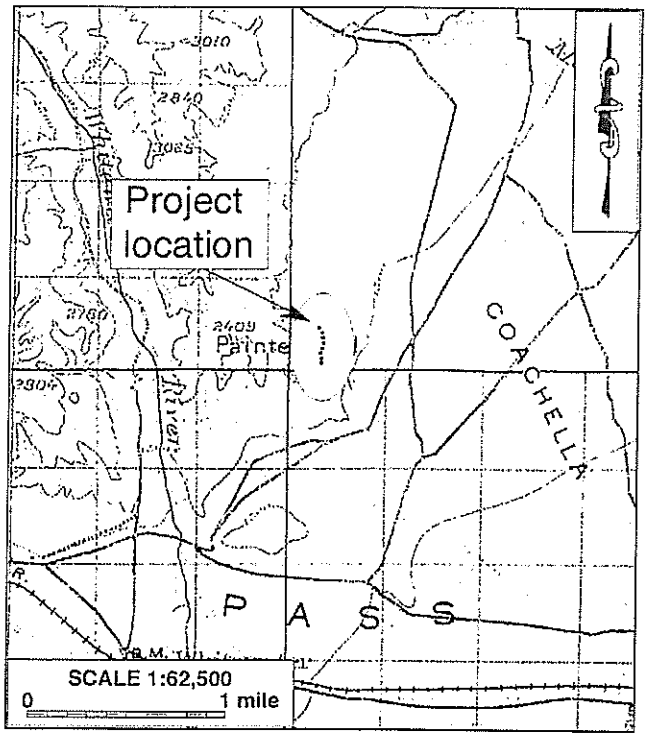


Figure 6. The project area and vicinity in 1897-1898. (Source: USGS 1901)

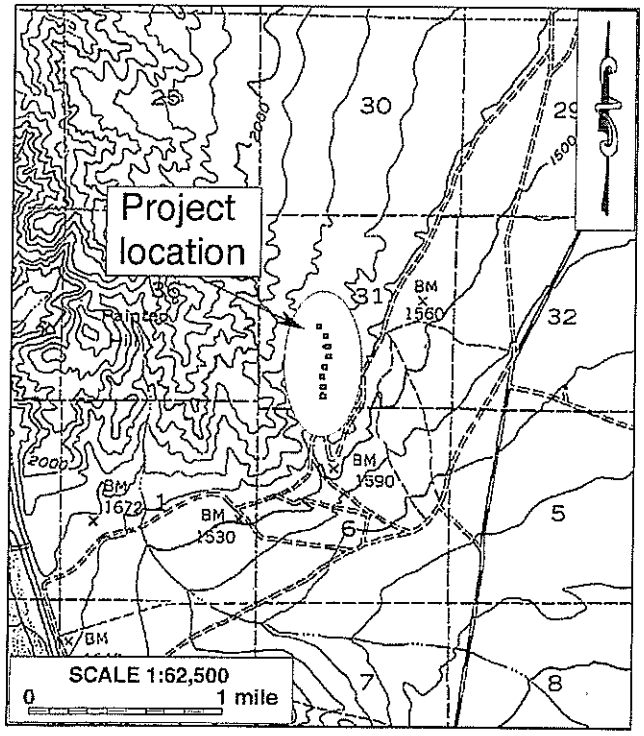


Figure 7. The project area and vicinity in 1940. (Source: USGS 1940)

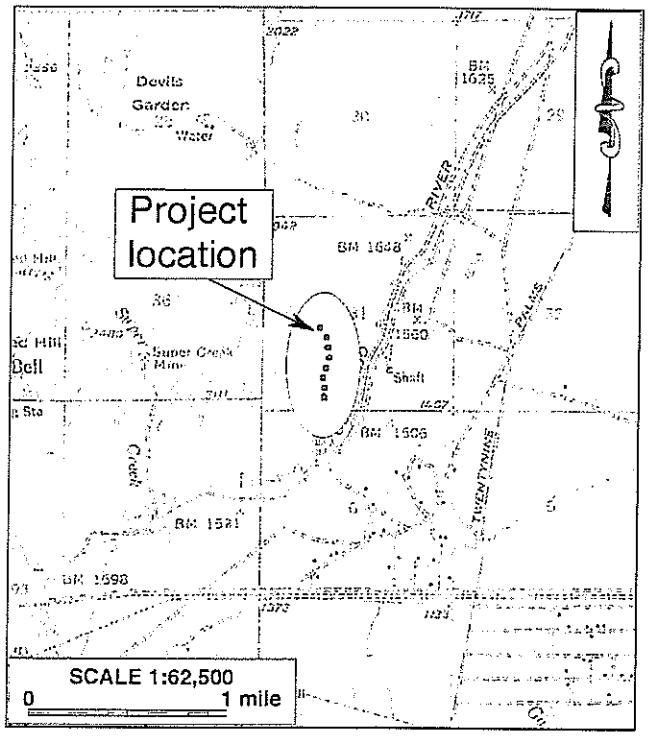


Figure 8. The project area and vicinity in 1951-1957. (Source: USGS 1957)

DISCUSSION

The purpose of this study is to identify any cultural resources within or adjacent to the project area, and to assist the County of Riverside in determining whether such resources meet the official definitions of "historical resources," as provided in the California Public Resources Code, in particular CEQA.

According to PRC §5020.1(j), "historical resource" includes, but is not limited to, any object, building, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California." More specifically, CEQA guidelines state that the term "historical resources" applies to any such resources listed in or determined to be eligible for listing in the California Register of Historical Resources, included in a local register of historical resources, or determined to be historically significant by the Lead Agency (Title 14 CCR §15064.5(a)(1)-(3)).

Regarding the proper criteria for the evaluation of historical significance, CEQA guidelines mandate that "a resource shall be considered by the lead agency to be 'historically significant' if the resource meets the criteria for listing on the California Register of Historical Resources" (Title 14 CCR §15064.5(a)(3)). A resource may be listed in the California Register if it meets any of the following criteria:

(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
(2) Is associated with the lives of persons important in our past.
(3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
(4) Has yielded, or may be likely to yield, information important in prehistory or history. (PRC §5024.1(c))

As discussed above, the records search, the historical research, and the field survey have all produced negative results, and no potential "historical resources" were encountered in the project area. Based on these findings, and in light of the criteria listed above, this study concludes that *no historical resources exist within or adjacent to the project area.*

RECOMMENDATIONS

CEQA establishes that "a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment" (PRC §21084.1). "Substantial adverse change," according to PRC §5020.1(q), "means demolition, destruction, relocation, or alteration such that the significance of a historical resource would be impaired."

Since no historical resources were encountered during the course of this study, CRM TECH presents the following recommendations to the County of Riverside:

- No historical resources exist within or adjacent to the project area, and thus the project as currently proposed will cause no substantial adverse change to any known historical resources.
- No further cultural resources investigation is necessary for the proposed project unless construction plans undergo such changes as to include areas not covered by this study.
- If buried cultural materials are discovered during any earth-moving operations associated with the project, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.

CONCLUSION

The foregoing report has provided background information on the project area, outlined the methods used in the current study, and presented the results of the various avenues of research. Throughout the course of the study, no "historical resources," as defined by CEQA, were encountered within or adjacent to the project area. Therefore, the County of Riverside may reach a finding of *No Impact* regarding cultural resources, with the condition that any buried cultural materials unearthed during earth-moving activities be examined and evaluated by a qualified archaeologist prior to further disturbances.

CERTIFICATION: I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this archaeological report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

DATE: 9/29/05 **SIGNED:** Matt Loftus

REFERENCES

GLO (General Land Office, U.S. Department of the Interior)

1856a Plat Map: Township No. II South Range No IV East, San Bernardino Meridian; surveyed in 1855 and 1856.

1856b Plat map: Township No. III South Range No. IV East of the San Bernardino Meridian; surveyed in 1855-1856.

1897a Plat Map: Township No. 2 South Range No. 3 East, San Bernardino Meridian; surveyed in 1855-1896.

1897b Plat map: Township No. 3 South Range No. 3 East of the San Bernardino Meridian; surveyed in 1893-1895.

Gunther, Jane Davies

1984 *Riverside County, California, Place Names: Their Origins and Their Stories.* J. D. Gunther, Riverside.

USGS (United States Geological Survey, U.S. Department of the Interior)

1901 Map: San Jacinto, Calif. (30', 1:125,000); surveyed in 1897-1898.

1940 Map: Palm Springs, Calif. (15', 1:62,500); aerial photographs taken in 1940.

1957 Map: Palm Springs, Calif. (15', 1:62,500); aerial photographs taken in 1951-1956, field-checked in 1955-1957.

1969 Map: San Bernardino, Calif. (1:250,000); 1958 edition revised.

1978 Map: Desert Hot Springs, Calif. (7.5', 1:24,000); 1955 edition photorevised in 1972 and photoinspected 1978

1979 Map: Santa Ana, Calif. (1:250,000); 1959 edition revised.

1996 Map: White Water, Calif. (7.5', 1:24,000); photorevised in 1996.

Wilke, Philip J.

1982 A Cultural Resources Evaluation of a Quarter-Section near Painted Hill at the Eastern Entrance to San Gorgonio Pass. On file, Eastern Information Center, University of California, Riverside.

APPENDIX 1:
PERSONNEL QUALIFICATIONS

PRINCIPAL INVESTIGATOR/HISTORIAN
Bai "Tom" Tang, M.A.

Education

1988-1993	Graduate Program in Public History/Historic Preservation, UC Riverside.
1987	M.A., American History, Yale University, New Haven, Connecticut.
1982	B.A., History, Northwestern University, Xi'an, China.
2000	"Introduction to Section 106 Review," presented by the Advisory Council on Historic Preservation and the University of Nevada, Reno.
1994	"Assessing the Significance of Historic Archaeological Sites," presented by the Historic Preservation Program, University of Nevada, Reno.

Professional Experience

2002-	Principal Investigator, CRM TECH, Riverside, California.
1993-2002	Project Historian/Architectural Historian, CRM TECH, Riverside, California.
1993-1997	Project Historian, Greenwood and Associates, Pacific Palisades, California.
1991-1993	Project Historian, Archaeological Research Unit, UC Riverside.
1990	Intern Researcher, California State Office of Historic Preservation, Sacramento.
1990-1992	Teaching Assistant, History of Modern World, UC Riverside.
1988-1993	Research Assistant, American Social History, UC Riverside.
1985-1988	Research Assistant, Modern Chinese History, Yale University.
1985-1986	Teaching Assistant, Modern Chinese History, Yale University.
1982-1985	Lecturer, History, Xi'an Foreign Languages Institute, Xi'an, China.

Honors and Awards

1988-1990	University of California Graduate Fellowship, UC Riverside.
1985-1987	Yale University Fellowship, Yale University Graduate School.
1980, 1981	President's Honor List, Northwestern University, Xi'an, China.

Cultural Resources Management Reports

Preliminary Analyses and Recommendations Regarding California's Cultural Resources Inventory System (With Special Reference to Condition 14 of NPS 1990 Program Review Report). California State Office of Historic Preservation working paper, Sacramento, September 1990.

Numerous cultural resources management reports with the Archaeological Research Unit, Greenwood and Associates, and CRM TECH, since October 1991.

Membership

California Preservation Foundation.

PRINCIPAL INVESTIGATOR/ARCHAEOLOGIST
Michael Hogan, Ph.D., RPA*

Education

1991	Ph.D., Anthropology, University of California, Riverside.
1981	B.S., Anthropology, University of California, Riverside; with honors.
1980-1981	Education Abroad Program, Lima, Peru.
2002	Section 106—National Historic Preservation Act: Federal Law at the Local Level. UCLA Extension Course #888.
2002	"Recognizing Historic Artifacts," workshop presented by Richard Norwood, Historical Archaeologist.
2002	"Wending Your Way through the Regulatory Maze," symposium presented by the Association of Environmental Professionals.
1992	"Southern California Ceramics Workshop," presented by Jerry Schaefer.
1992	"Historic Artifact Workshop," presented by Anne Duffield-Stoll.

Professional Experience

2002-	Principal Investigator, CRM TECH, Riverside, California.
1999-2002	Project Archaeologist/Field Director, CRM TECH, Riverside.
1996-1998	Project Director and Ethnographer, Statistical Research, Inc., Redlands.
1992-1998	Assistant Research Anthropologist, University of California, Riverside
1992-1995	Project Director, Archaeological Research Unit, U. C. Riverside.
1993-1994	Adjunct Professor, Riverside Community College, Mt. San Jacinto College, UC Riverside, Chapman University, and San Bernardino Valley College.
1991-1992	Crew Chief, Archaeological Research Unit, U. C. Riverside.
1984-1998	Archaeological Technician, Field Director, and Project Director for various southern California cultural resources management firms.

Research Interests

Cultural Resource Management, Southern Californian Archaeology, Settlement and Exchange Patterns, Specialization and Stratification, Culture Change, Native American Culture, Cultural Diversity.

Cultural Resources Management Reports

Author and co-author of, contributor to, and principal investigator for numerous cultural resources management study reports since 1986.

Memberships

* Register of Professional Archaeologists.
Society for American Archaeology.
Society for California Archaeology.
Pacific Coast Archaeological Society.
Coachella Valley Archaeological Society.

PROJECT ARCHAEOLOGIST/REPORT WRITER
Matthew Wetherbee, Msc., RPA*

Education

2004	Paleontological monitoring training session presented by Cogstone Resource Management, Santa Ana, California.
2004	Msc., Palaeoecology of Human Societies, University College London, London, England.
2001	Archaeological field school, North Kharga Oasis Survey, Western desert of Egypt, Greco-Roman period, Egypt.
1999-2001	Study abroad at the American University in Cairo, Egypt.
2000	B.A., Anthropology (emphasis in Archaeology and Zooarchaelogy), University of California, Santa Cruz (UCSC).
1999	Archaeological Field School, San Juan Bautista Historical Mission, Monterey, California, in conjunction with UCSC.
1997	A.A., Anthropology, Irvine Valley College, Irvine, California.
1997	Archaeological Field School, Saddleback College, San Juan Capistrano, California.

Professional Experience

2004-	Project Archaeologist/Report Writer, CRM TECH, Riverside, California.
2003-2004	Archaeologist, Cogstone Resource Management, Santa Ana, California. • Fieldwork, lab technician, taphonomist.
2003-2004	Archaeologist, Viejo California, Mission Viejo, California. • Survey, testing, data recovery, and monitoring.
2002	Archaeologist, SWCA, Mission Viejo, California. • Filed crew member for archaeological surveys, mitigation excavations, and monitoring.
2001	Research Assistant, Theban Mapping Project, the American University in Cairo, Egypt.
1999-2001	Archaeological assistant to Dr. Salima Ikram, the American University in Cairo. • Assisted with the Animal Mummy Project at the Cairo Egyptian Museum, and various Egyptology and zooarchaeological research.

Publications

2004	"Making a Duck Mummy and Discovering a Secret of the Ancient Technology," in *KMT: A Modern Journal of Ancient Egypt*, Vol.15(2).

Conference Papers

2000	"Recipe for the Afterlife," Mummification in Ancient Egypt. American Research Center in Egypt conference at U.C. Berkeley.

Membership

* Register of Professional Archaeologists.
American Research Center in Egypt.

PROJECT ARCHAEOLOGIST/FIELD DIRECTOR
Daniel Ballester, B.A.

Education

1998	B.A., Anthropology, California State University, San Bernardino.
1997	Archaeological Field School, University of Las Vegas and University of California, Riverside.
1994	University of Puerto Rico, Rio Piedras, Puerto Rico.
2002	"Historic Archaeology Workshop," presented by Richard Norwood, Base Archaeologist, Edwards Air Force Base; presented at CRM TECH, Riverside.

Professional Experience

2002- Field Director, CRM TECH, Riverside.
- Report writing, site record preparation, and supervisory responsibilities over all aspects of fieldwork and field crew.

1999-2002 Project Archaeologist, CRM TECH, Riverside.
- Survey, testing, data recovery, monitoring, and mapping.

1998-1999 Field Crew, K.E.A. Environmental, San Diego.
- Two and a half months of excavations on Topomai village site, Marine Corp Air Station, Camp Pendleton.

1998 Field Crew, A.S.M. Affiliates, Encinitas.
- Two weeks of excavations on a site on Red Beach, Camp Pendleton, and two weeks of survey in Camp Pendleton, Otay Mesa, and Encinitas.

1998 Field Crew, Archaeological Research Unit, University of California, Riverside.
- Two weeks of survey in Anza Borrego Desert State Park and Eureka Valley, Death Valley National Park.

Attachment F-6

LEVEL OF SIGNIFICANCE CHECKLIST
For Archaeological Resources
(Must be attached to report)

APN: 667-160-001	Project No:		EA Number:
☐ Potentially Significant Impact	☐ Less than Significant with Mitigation Incorporated	☐ Less than Significant Impact	☒ No Impact

(Check the level of significance that applies)

Historic Resources
Would the project:

a) Alter or destroy a historic site? *No.*
b) Cause a substantial adverse change in the significance of a historical resource as defined in California Code of Regulations §15064.5? *No.*
c) Is the resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (Pub. Res. Code §5024.1)? *N/A.*

Findings of Fact: *No buildings, structures, or objects more than 50 years of age were encountered during this study.*

Proposed Mitigation: *None.*

Monitoring: *No.*

Archaeological Resources
Would the project:

a) Alter or destroy an archaeological site? *No.*
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to California Code of Regulations §15064.5? *No.*
c) Disturb any human remains, including those interred outside of formal cemeteries? *No.*
d) Restrict existing religious or sacred uses within the potential impact area? *No.*

Findings of Fact: *No archaeological sites were recorded within the project area.*

Proposed Mitigation: *None.*

Monitoring Proposed: *No.*

Prepared By: Matthew Witherbee Date: 9/29/05

County Use Only

Received by:_____ **Date:**_____

PD-B#_____ **Related Case #:**_____

Revised February 2001

PALEONTOLOGICAL SENSITIVITY STUDY
CRM TECH, 2005

CRM TECH

4472 Orange Street
Riverside, CA 92501

September 29, 2005

David Lamm
Energy Unlimited, Inc.
100 Four Falls Corporate Center, Suite 215
West Conshohocken, PA 19428-2960

RE: Paleontological Sensitivity Study
Windfarm Expansion Project
City of Desert Hot Springs, Riverside County
CRM TECH Contract #1680

Dear Mr. Lamm:

At your request, we have completed a paleontological sensitivity study for the project referenced above. The location and configuration of the project area, which lies within the southwest quarter of Section 31, T2S R4E (APN 667-160-001) is illustrated in Figure 1.

Paleontological literature reviewed during the study indicates that several earlier studies have mapped the soils in this region, each resulting in similar conclusions. The results reveal that the project area is situated upon surface sediments of Pleistocene age. Rogers (1965) mapped the surface geology in the project area as **Pc** and **Qc**. The **Pc** sediments are defined as undivided Pliocene-age nonmarine rocks, while the **Qc** sediments are defined as rocks of Pleistocene age (*ibid.*).

Proctor (1968:Plate 1) mapped the surface geology at the project area as **Tph**, **Qc**, and **Qt**. The **Tph** is known as the Painted Hills Formation and is described as a "sandy well rounded conglomerate." This formation is considered to be equivalent to the Palm Springs Formation of lower Pleistocene age (*ibid.*). The **Qc** is noted as the Cabezon Fanglomerate and is described as a "sandy ill-sorted light-brown conglomerate" (*ibid.*). This soil type is considered to be equivalent to the Ocotillo Conglomerate of late Pleistocene age (*ibid.*). The **Qt** is described as terrace deposits of late Pleistocene age (*ibid.*).

Although the results of the literature review suggest that the rocks that will be impacted by the proposed project are Pleistocene in age, most of them are conglomerates. The coarse nature of these conglomeratic rocks makes them less conducive for the preservation of significant nonrenewable fossil remains. However, previous studies in nearby areas completed by CRM TECH have shown portions of the Painted Hills Formation to contain a number of gravelly sand lenses within these conglomerates, which could make them conducive for the preservation of fossil remains.

Tel. 951 784 3051 • Fax 951 784 2987 • Cell 909 376 7843

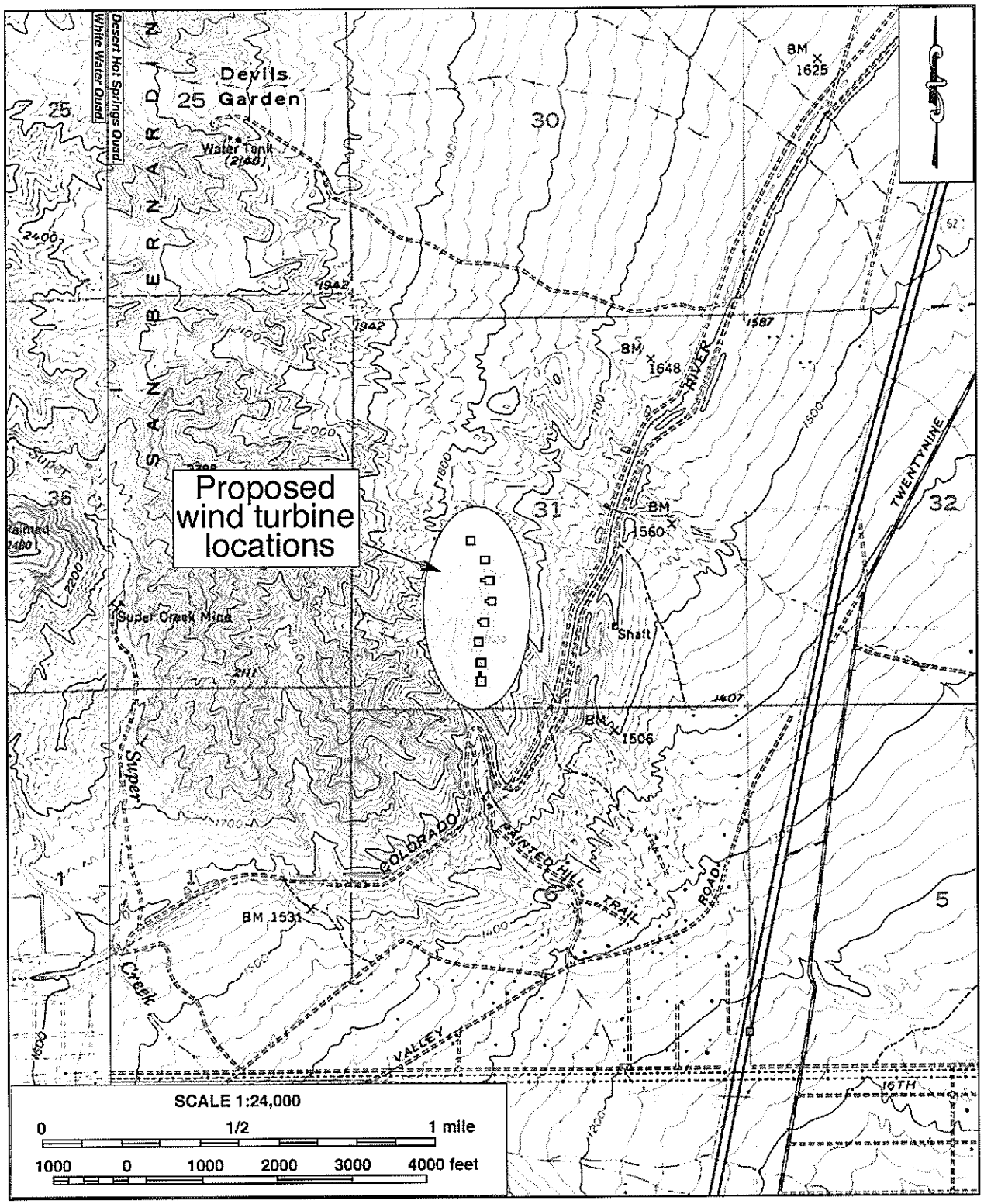


Figure 1. Project area. (Based on USGS White Water and Desert Hot Springs, Calif., 1:24,000 quadrangles [USGS 1978; 1996])

Based on the findings from the literature review, the proposed project's potential impact on paleontological resources is determined to be high. Although the rock conditions are not the best for the preservation of vertebrate fossil remains, the rocks do date to both the early and late Pleistocene Epoch and there may be gravelly sand lenses within the conglomerates where fossil remains may be preserved. Therefore, significant nonrenewable fossil remains may be encountered during construction. A review of the construction plans to determine the amount of ground disturbances activity that will occur, along with the possibility of "spot checking" the construction sites should provide adequate information to determine the amount of paleontological monitoring needed during construction.

We appreciate the opportunity to be of service and are at your disposal should any questions arise regarding this paleontological sensitivity study.

Sincerely,

Michael Hogan, Ph.D.
Principal Investigator

References:

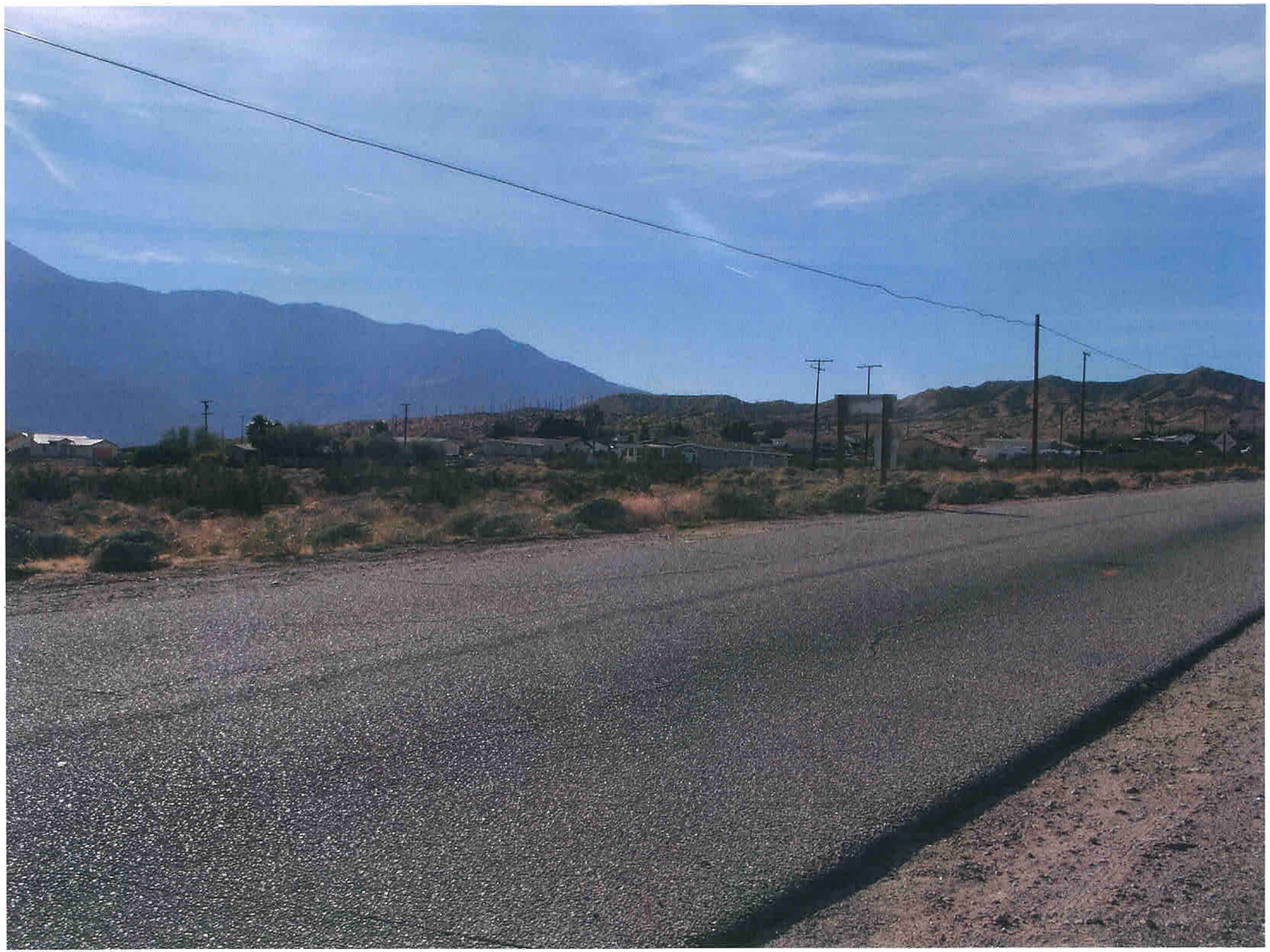
Proctor, Richard J.
1968 *Geology of the Desert Hot Springs-Upper Coachella Valley Area, California, with a Selected Bibliography of the Coachella Valley, Salton Sea, and Vicinity.* California Division of Mines and Geology Special Report 94. Sacramento.

Rogers, Thomas H.
1965 Geological Map of California, Santa Ana Sheet (1:250,000). California Division of Mines and Geology, Sacramento.

USGS (United States Geological Survey, U.S. Department of the Interior)
1978 Map: Desert Hot Springs, Calif. (7.5', 1:24,000); 1955 edition photorevised in 1972 and photoinspected 1978
1996 Map: White Water, Calif. (7.5', 1:24,000); photorevised in 1996.

APPENDIX D

VISUAL SIMULATIONS



KRIEGER & STEWART INCORPORATED 3602 University Ave. • Riverside, CA. 92501 • 951-684-6900	ENERGY UNLIMITED INCORPORATED REVISED WECS 20 SOUTHWEST CORNER OF PIERSON AND HIGHWAY 62 EXISTING	PLATE 1
SCALE: N/A DATE: 4/21/06 DRAWN BY: TMW CHECKED BY: VEM W.O.: 554-9		

554-9PL1.DWG

KRIEGER & STEWART INCORPORATED 3602 University Ave. • Riverside, CA. 92501 • 951-684-6900	ENERGY UNLIMITED INCORPORATED REVISED WECS 20 SOUTHWEST CORNER OF PIERSON AND HIGHWAY 62 PROPOSED	PLATE 2
SCALE: N/A DATE: 4/21/06 DRAWN BY: TMW CHECKED BY: VEM W.O.: 554-9		

554-9PL2.DWG

KRIEGER & STEWART INCORPORATED
3602 University Ave. • Riverside, CA. 92501 • 951-684-6900

ENERGY UNLIMITED INCORPORATED

REVISED WECS 20

PAINTED HILLS AND OVERHILL ROAD IN PAINTED HILLS COMMUNITY
EXISTING

PLATE 3

SCALE: N/A | DATE: 4/21/06 | DRAWN BY: TMW | CHECKED BY: VEM | W.O.: 554-9

554-9PL3.DWG

KRIEGER & STEWART INCORPORATED 3602 University Ave. • Riverside, CA. 92501 • 951-684-6900	ENERGY UNLIMITED INCORPORATED REVISED WECS 20 PAINTED HILLS AND OVERHILL ROAD IN PAINTED HILLS COMMUNITY PROPOSED	PLATE 4
SCALE: N/A	DATE: 4/21/06 DRAWN BY: TMW CHECKED BY: VEM W.O.: 554-9	

554-9PL4.DWG

KRIEGER & STEWART INCORPORATED 3602 University Ave. • Riverside, CA. 92501 • 951-684-6900	ENERGY UNLIMITED INCORPORATED REVISED WECS 20 NORTH OF PIERSON, WEST OF HIGHWAY 62 EXISTING	PLATE 5
SCALE: N/A DATE: 4/21/06 DRAWN BY: TMW CHECKED BY: VEM W.O.: 554-9		

554-9PL5.DWG

KRIEGER & STEWART INCORPORATED
3602 University Ave. • Riverside, CA. 92501 • 951-684-6900

ENERGY UNLIMITED INCORPORATED

REVISED WECS 20

NORTH OF PIERSON, WEST OF HIGHWAY 62
PROPOSED

PLATE 6

SCALE: N/A | DATE: 4/21/06 | DRAWN BY: TMW | CHECKED BY: VEM | W.O.: 554-9

554-9PL6.DWG

APPENDIX E

GEOTECHNICAL ENGINEERING REPORTS

UPDATE TO GEOTECHNICAL ENGINEERING REPORT
REVISED COMMERCIAL WECS 20
EARTH SYSTEMS SOUTHWEST
2000

Earth Systems
Southwest

UPDATE TO
GEOTECHNICAL ENGINEERING REPORT
REVISED COMMERCIAL WECS 20
WEST 1/2 OF SECTION 31, T2S, R4E, S.B.B.M.
RIVERSIDE COUNTY, CALIFORNIA

ENERGY UNLIMITED, INC.
638 LINDERO CANYON ROAD, #273
OAK PARK, CALIFORNIA 91301

UPDATE TO
GEOTECHNICAL ENGINEERING REPORT
REVISED COMMERCIAL WECS 20
WEST 1/2 OF SECTION 31, T2S, R4E, S.B.B.M.
RIVERSIDE COUNTY, CALIFORNIA

File No.: 07164-03
00-11-728

Earth Systems
Southwest

79-811B Country Club Drive
Bermuda Dunes, CA 92201
(760) 345-1588
(800) 924-7015
FAX (760) 345-7315

November 10, 2000

File No.: 07164-03
00-11-728

Energy Unlimited, Inc.
638 Lindero Canyon Road, #273
Oak Park, California 91301

Attention: Mr. David Lamm

Project: **Revised Commercial WECS 20**
West 1/2 of Section 31, T2S, R4E, S.B.B.M.
Riverside County, California

Subject: **Update to Geotechnical Engineering Reports**

References: Pioneer Consultants, Preliminary Soils and Geologic Investigation, WECS 20, W 1/2 of Section 31, T2S, R4E, S.B.B.M., Riverside County, California, Project No. J.N. 3923-001, dated February 4, 1985.

As requested, we have reviewed the referenced documents for purposes of providing an updated report for the WECS 20 revised permit. This letter provides a description of the proposed revisions to the WECS permit and provides foundation and seismic design criteria.

Project Description

The WECS 20 permit area is located in the west 1/2 of Section 31, T2S, R4E, S.B.B.M. in the Whitewater area of Riverside County, California. Figure 1 shows the site location and vicinity. Seven wind turbines are currently proposed to add to an existing north-south trending row of smaller turbines. Based on information presented on the Plot Plan prepared by Krieger and Stewart, Inc., dated October 31, 2000, we understand that the proposed wind turbines will be Nordex N62 1,300kW turbines mounted on approximately 197-foot high (to the hub) monopole towers. These turbine locations are shown on Figure 2.

Site Description

The topography of the site is highly irregular consisting of eastward and southward sloping ridges and stream channels. The overall effect is that of a highly dissected alluvial fan surface. Regional slope on the ridgetops is 5 degrees to the southwest. Approximately half of the site consists of slopes that are 25 percent grade or greater.

The ground surface is characterized by desert pavement consisting of very coarse sands, gravels, and cobbles. Boulders to 3 feet in diameter are scattered on the surface but are generally confined to the ridgetop areas. Vegetation on the site consists of sparse scrub brush and cactus.

Summary of Geologic Conditions

The WECS 20 site is located at the extreme eastern end of the San Gorgonio Pass. This pass forms the boundary between the Transverse Ranges geomorphic province to the north, and the Peninsular Ranges province to the south.

The San Andreas Fault zone is the most significant potential seismic source in the site vicinity. In the eastern San Gorgonio Pass and the upper portion of the Coachella Valley, the San Andreas Fault zone is comprised of the Garnet Hill, the Banning, and the Mission Creek faults.

Previous geologic mapping by Proctor in 1968 and field mapping conducted by Pioneer Consultants in 1985 indicate that the site is underlain by three distinctive geologic units. The oldest exposed geologic unit on the site is the Painted Hill formation (Unit Tph) of early Pleistocene Age. This alluvial unit consists of gray and light brown, poorly sorted beds of conglomerate and/or arkosic formation is the Quaternary age Cabazon Fanglomerate (Unit Qoc). Capping the Cabazon Fanglomerate on ridgetops is a thin mantle of terrace deposits consisting of orange-tinted sands and gravels and is further characterized by large boulders protruding conspicuously from the ground surface. The boulders are present in trace amounts. Overlying the Painted Hill formation and the Cabazon fanglomerate in the valley areas is recent stream alluvium (Unit Qal) consisting of coarse sands and pebble gravels.

The proposed turbines will be located on a ridge that is underlain by the Pleistocene-aged Cabazon Fanglomerate. This formation consists of semi-consolidated, poorly-bedded, poorly-sorted, pebbly to bouldery conglomerate. These deposits are alluvial in origin (deposited by flowing water) and have been uplifted by tectonic forces related to movements along the San Andreas Fault. The rugged topography at the site is primarily the result of the dissection of these deposits by erosion along currently active stream channels.

The Cabazon Fanglomerate was investigated by Pioneer Consultants with soil borings BH-3 and BH-4. These materials were found to consist primarily of a surface, loose silty sand, approximately 1 foot in depth, underlain by dense to very dense, coarser to gravelly sands and silty gravels to the total depths encountered. The borings logs from the Pioneer Consultants Report is attached as Appendix A.

Seismic Hazards

Seismic Sources: Our research of regional faulting indicates that several active faults or seismic zones lie within 62 miles (100 kilometers) of the project site as shown on Table 1. The Maximum Magnitude Earthquake (M_{max}) listed is from published geologic information available for each fault (CDMG, 1996). The M_{max} corresponds to the maximum earthquake believed to be tectonically possible.

Surface Fault Rupture: The project site does not lie within a currently delineated State of California, *Alquist-Priolo* Earthquake Fault Zone (Hart, 1994). Well-delineated fault lines cross through this region as shown on California Division of Mines and Geology (CDMG) maps (Jennings, 1994). Therefore, active fault rupture is unlikely to occur at the project site. While fault rupture would most likely occur along previously established fault traces, future fault rupture could occur at other locations.

Historic Seismicity: Six historic seismic events (5.9 M or greater) have significantly affected the region in the last 100 years. They are as follows:

- *Desert Hot Springs Earthquake* - On December 4, 1948, a magnitude 6.5 M_L (6.0M_W) earthquake occurred east of Desert Hot Springs. This event was strongly felt in the Palm Springs area.
- *Palm Springs Earthquake* - A magnitude 5.9 M_L (6.2M_W) earthquake occurred on July 8, 1986 in the Painted Hills beneath the WECS 20 site causing minor surface creep of the Banning segment of the San Andreas Fault. This event was strongly felt in the Palm Springs area and caused structural damage, as well as injuries.
- *Joshua Tree Earthquake* - On April 22, 1992, a magnitude 6.1 M_L (6.1M_W) earthquake occurred in the mountains 9 miles east of Desert Hot Springs. Structural damage and minor injuries occurred in the Palm Springs area because of this earthquake.
- *Landers & Big Bear Earthquakes* - Early on June 28, 1992, a magnitude 7.5 M_S (7.3M_W) earthquake occurred near Landers, the largest seismic event in Southern California for 40 years. Surface rupture occurred just south of the town of Yucca Valley and extended some 43 miles toward Barstow. About three hours later, a magnitude 6.6 M_S (6.4M_W) earthquake occurred near Big Bear Lake. No significant structural damage from these earthquakes was reported in the Palm Springs area.
- *Hector Mine Earthquake* - On October 16, 1999, a magnitude 7.1M_W earthquake occurred on the Lavic Lake and Bullion Mountain Faults north of 29 Palms. This event while widely felt, no significant structural damage has been reported in the Coachella Valley.

Seismic Risk: While accurate earthquake predictions are not possible, various agencies have conducted statistical risk analyses. In 1996, the California Division of Mines and Geology (CDMG) and the United States Geological Survey (USGS) completed the latest generation of probabilistic seismic hazard maps for use in the 1997 UBC. We have used these maps in our evaluation of the seismic risk at the site. The Working Group of California Earthquake Probabilities (WGCEP, 1995) estimated a 22% conditional probability that a magnitude 7 or greater earthquake may occur between 1994 to 2024 along the Coachella segment of the San Andreas Fault.

The primary seismic risk at the site is a potential earthquake along the San Andreas Fault. Geologists believe that the San Andreas Fault has characteristic earthquakes that result from rupture of each fault segment. The estimated characteristic earthquake is magnitude 7.4 for the Southern Segment of the fault. This segment has the longest elapsed time since rupture than any other portion of the San Andreas Fault. The last rupture occurred about 1690 AD, based on dating by the USGS near Indio (WGCEP, 1995). This segment has also ruptured on about 1020, 1300, and 1450 AD, with an average recurrence interval of about 220 years. The San Andreas Fault may rupture in multiple segments producing a higher magnitude earthquake. Recent paleoseismic studies suggest that the San Bernardino Mountain Segment to the north and the Coachella Segment may have both ruptured together in 1450 and 1690 AD (WGCEP, 1995).

Site Acceleration: The potential intensity of ground motion may be estimated the horizontal peak ground acceleration (PGA), measured in "g" forces. Included in Table 1 are deterministic estimates of site acceleration from possible earthquakes at nearby faults. Ground motions are dependent primarily on the earthquake magnitude and distance to the seismogenic (rupture) zone. Accelerations also are dependent upon attenuation by rock and soil deposits, direction of rupture, and type of fault. For these reasons, ground motions may vary considerably in the same general area. This variability can be expressed statistically by a standard deviation about a mean relationship.

The PGA is an inconsistent scaling factor to compare to the UBC Z factor and is generally a poor indicator of potential structural damage during an earthquake. Important factors influencing the structural performance are the duration and frequency of strong ground motion, local subsurface conditions, soil-structure interaction, and structural details. Because of these factors, an effective peak acceleration (EPA) is used in structural design.

The following table provides the probabilistic estimate of the PGA and EPA taken from the 1996 CDMG/USGS seismic hazard maps.

Estimate of PGA and EPA from 1996 CDMG/USGS Probabilistic Seismic Hazard Maps

Risk	Equivalent Return Period (years)	PGA (g) [1]	Approximate EPA (g) [2]
10% exceedance in 50 years	475	0.96	0.75

Notes:
1. Based on a soft rock site, $S_{B/C}$ and soil amplification factor of 1.0 for Soil Profile Type S_C.
2. Spectral acceleration (S_A) at period of 0.3 seconds divided by 2.5 for 5% damping, as defined by the Structural Engineers Association of California (SEAOC, 1996).

Recommended Future Geotechnical Studies

We recommend that additional geologic and geotechnical studies be conducted prior to project construction of the proposed Nordex N62/1300kW wind turbine foundations. These studies should include additional soil borings to a depth of 40 feet or refusal along the alignment of proposed turbines in WECS 20. At least three soil borings should be conducted to evaluate the soil conditions to support these large wind turbine structures..

Foundations

We understand that the tower foundations will consist of the proprietary Patrick and Henderson tensionless pier (PHTP) using a large diameter, cast-in-place pier. This type of pier would be constructed by excavating to the desired depth and size with an excavator. Within the excavation a smaller diameter, corrugated-steel casing is set concentrically within the larger diameter corrugated-steel casing. Steel tie rods within PVC sleeves are placed vertically and concrete placed in the annular space between the casings. The tie rods are post-tensioned to keep the concrete in compression (hence tensionless) during loading. Soil backfill is placed within the

central casing. The annular space between the outer casing and the excavation walls are to be backfilled with sand/cement slurry.

All details of the foundation system are to be designed by the design engineer. The diameter and depth of the pier as well as spacing and connection of steel tie rods are to be determined by the design engineer, proportioned to support the design loads. The outside annular space should be grouted to near the surface to maintain intimate contact between the composite caisson and the undisturbed native soil. Caving conditions may occur in the soil consisting of relatively cohesionless sand, gravel, and cobbles. Sidewall sloughing will result in larger excavation and greater grout quantities for backfill.

The following table present allowable axial and lateral capacities that may be used in the PHTP design contingent on any change of condition that future soil borings may indicate. The capacities for axial loads may be based on skin friction with some end bearing. These values have an estimated factor of two to ultimate values. We anticipate the size of the PHTP may range from 14 to 15 feet in outer diameter and about 25 to 35 feet deep.

Allowable Axial End Bearing Capacity, Settlement Criteria Governs From depth of 20 to 35 feet below grade	10,000	psf
Allowable Positive Skin Friction per foot of depth	55	psf/ft
Maximum	2000	psf
Allowable Uplift Skin Friction per foot of depth	35	psf/ft
Maximum	2000	psf
Passive Earth Pressure	480	pcf
Unit Soil Weight	110	pcf
Friction Angle of Soil	38	degrees
Secant Modulus of Lateral Subgrade Reaction at e_{50}	65	lbs./cu.-in.
Initial Modulus of Lateral Subgrade Reaction	225	lbs./cu.-in.

Lateral pile capacity: Lateral pile capacity may be calculated for deflections at the pile head for a pile free to rotate. Deflection can be assumed proportional to the applied load. Deep foundations placed in granular soils and subjected to cyclic lateral loading will eventually experience deflection of approximately two times their initial lateral top deflection. We assume plumb tolerance of the turbines should be within 0.002 radians for operating conditions. For extreme design loads, a tilt tolerance of 100:1 (vertical: horizontal) is acceptable.

Seismic Design Criteria

This site is subject to strong ground shaking due to potential fault movements along the San Andreas Fault. The *minimum* seismic design should comply with the 1997 edition of the Uniform Building Code (UBC) for non-building structures. The UBC provisions are generally intended to protect human life safety and prevent structural collapse. It is not necessarily intended to prevent structural damage or preserve functionality after a large earthquake. The following are 1997 UBC seismic design values:

1997 UBC Seismic Coefficients for Chapter 16 Seismic Provisions

			Reference
Seismic Zone:	4		Figure 16-2
Seismic Zone Factor, Z:	0.4		Table 16-I
Soil Profile Type:	S_C		Table 16-J
Seismic Source Type:	A		Table 16-U
Closest Distance to Known Seismic Source:	<2 km		(San Andreas Fault)
Near Source Factor, Na:	1.5		Table 16-S
Near Source Factor, Nv:	2.0		Table 16-T
Seismic Coefficient, Ca:	0.60	= 0.40Na	Table 16-Q
Seismic Coefficient, Cv:	1.12	= 0.56Nv	Table 16-R

Closing

Except as modified by this update report, it is our opinion that the referenced documents are applicable to the proposed revision to the WECS permit. The recommendations contained within our geotechnical engineering report and the supplement regarding special grading provisions for access roads on steep slopes remain applicable.

This report is issued with the understanding that the owner, or the owner's representative, has the responsibility to bring the information and recommendations contained herein to the attention of the engineers for the project so that they are incorporated into the plans and specifications for the project. The owner, or the owner's representative, also has the responsibility to take the necessary steps to see that the general contractor and all subcontractors follow such recommendations. It is further understood that the owner or the owner's representative is responsible for submittal of this report to the appropriate governing agencies.

As the Geotechnical Engineer of Record for this project, Earth Systems Southwest (ESSW) has striven to provide our services in accordance with generally accepted geotechnical engineering practices in this locality at this time. No warranty or guarantee is express or implied. This report was prepared for the exclusive use of the Client and the Client's authorized agents.

ESSW should be provided the opportunity for a general review of final design and specifications in order that earthwork and foundation recommendations may be properly interpreted and implemented in the design and specifications. If ESSW is not accorded the privilege of making this recommended review, we can assume no responsibility for misinterpretation of our recommendations.

This report is based on the assumption that an adequate program of client consultation, construction monitoring, and testing will be performed during the final design and construction phases to check compliance with these recommendations. Maintaining ESSW as the geotechnical consultant from beginning to end of the project will provide continuity of services. The geotechnical engineering firm providing tests and observations shall assume the responsibility of Geotechnical Engineer of Record.

Should you have any questions concerning this update report please give us a call and we will be pleased to assist you.

Sincerely,
EARTH SYSTEMS SOUTHWEST

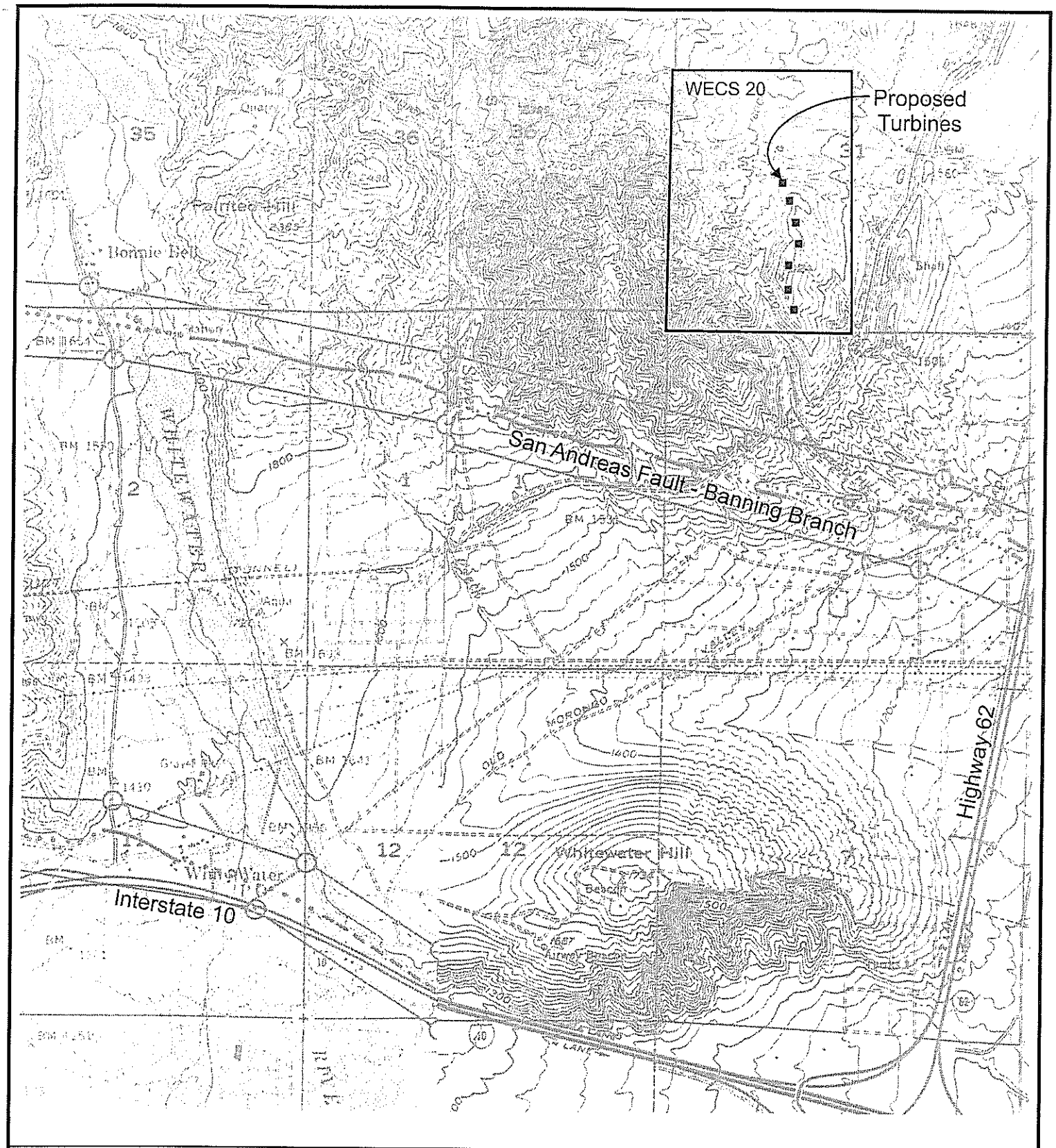
Shelton L. Stringer
GE 2266

REGISTERED PROFESSIONAL ENGINEER
SHELTON L. STRINGER
No. 2266
Exp. 6-30-04
GEOTECHNICAL
STATE OF CALIFORNIA

Distribution: 2/Energy Unlimited, Inc.
5/Krieger and Stewart, Inc.
1/VTA File
2/BD File

The following are attached and complete this report:

Figure 1 - Site Location
Figure 2 - Geologic Map & Exploration Locations, WECS 20
Table 1 - Fault Parameters
Appendix A - Boring Logs from Preliminary Soils and Geologic Investigations, WECS 20



Base Map: California Division of Mines and Geology, Alquist-Priolo Earthquake Fault Zone Maps, Desert Hot Springs and Whitewater Quadrangles, effective 1980 and 1995, respectively.

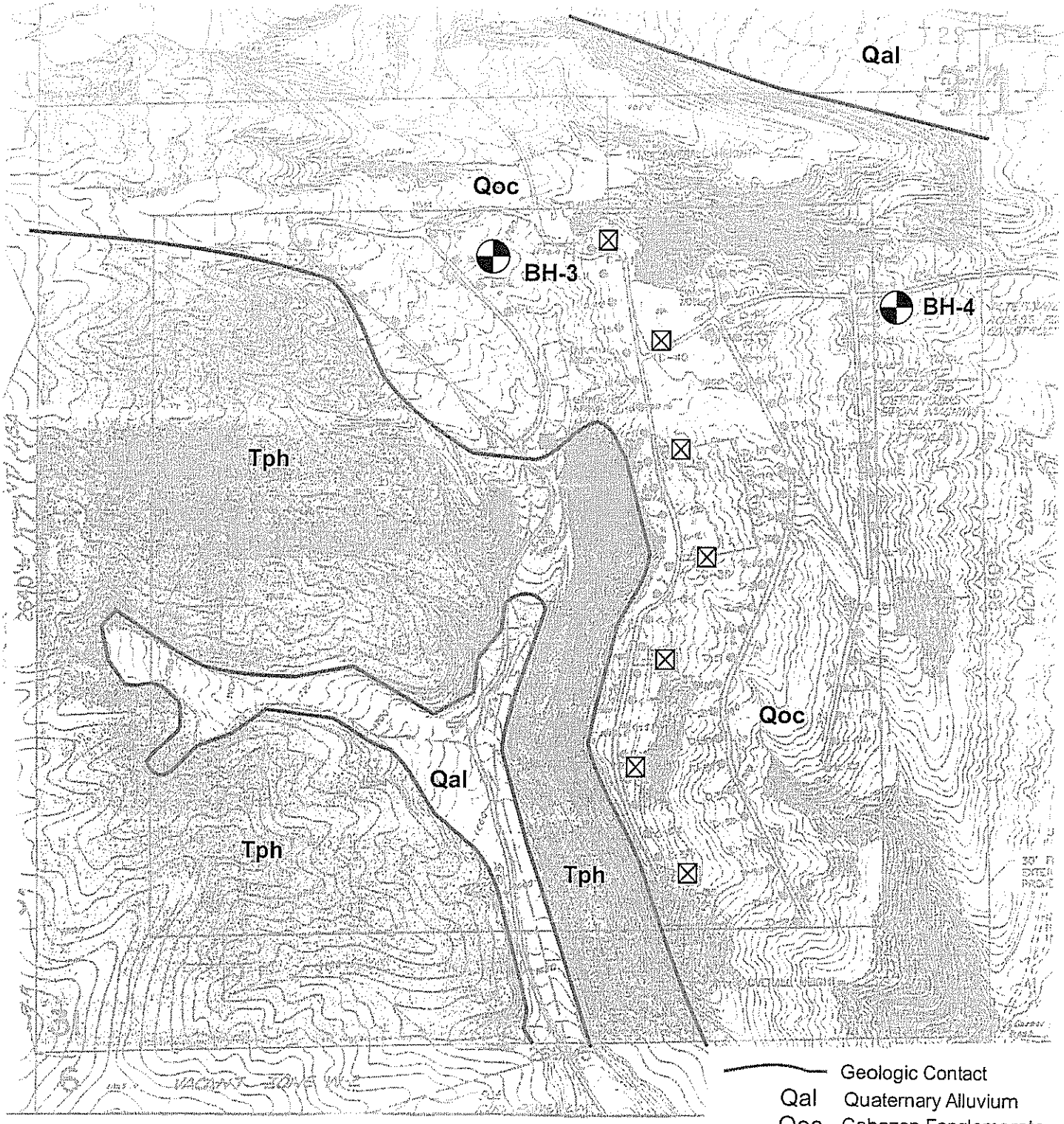
Scale: 1" = 2,000'

0 2,000 4,000

Figure 1 - Site Location

Energy Unlimited, Inc. - Revised WECS 20
Project No.: 07164-03

Earth Systems
Southwest



Note: Geology after Pioneer Consultants, 1985

Geologic Contact
Qal Quaternary Alluvium
Qoc Cabazon Fanglomerate
Tph Painted Hills Formation

Base Map: Revised WECS 20 Permit, Plot Plan, prepared by Krieger and Stewart, Inc., dated October 31, 2000

LEGEND

☒ Proposed Turbine Location

Approximate Boring Location

N

Scale: 1" = 400'

0 400 800

Figure 2 - Geologic Map and Boring Locations

Energy Unlimited, Inc. - Revised WECS 20
Project No.: 07164-03

Earth Systems
Southwest

Table 1
Fault Parameters &
Deterministic Estimates of Mean Peak Ground Acceleration (PGA)

Fault Name or Seismic Zone	Distance from Site (mi)	Distance from Site (km)	Fault Type	Fault Type UBC	Maximum Magnitude Mmax (Mw)	Avg Slip Rate (mm/yr)	Avg Return Period (yrs)	Fault Length (km)	Date of Last Rupture (year)	Largest Historic Event >5.5M	Largest Historic Event (year)	Mean Site PGA (g)
Reference Notes: (1)			(2)	(3)	(4)	(2)	(2)	(2)		(5)		(6)
San Andreas - Southern (C V +S B M)	0.2	0.2	SS	A	7.4	24	220	203	c. 1690			0.61
San Andreas - San Bernardino Mtn.	0.2	0.2	SS	A	7.3	24	433	107	1812	7.0	1812	0.60
San Andreas - Banning Branch	0.7	1.2	SS	A	7.1	10	220	98		6.2	1986	0.56
San Andreas - Mission Crk. Branch	4.1	6.7	SS	A	7.1	25	220	95		6.5	1948	0.42
Morongo	5.1	8.2	SS	C	6.5	0.6	1170	23		5.5	1947	0.29
San Andreas - Coachella Valley	8.2	13.2	SS	A	7.1	25	220	95	c. 1690			0.28
Pinto Mountain	9.2	14.8	SS	B	7.0	2.5	500	73				0.24
Burnt Mountain	13	21	SS	B	6.4	0.6	5000	20	1992	7.3	1992	0.13
Eureka Peak	16	25	SS	B	6.4	0.6	5000	19	1992	6.1	1992	0.11
San Jacinto (Hot Spgs - Buck Ridge)	18	30	SS	C	6.5	2	354	70		6.3	1937	0.10
Landers	19	30	SS	B	7.3	0.6	5000	83	1992	7.3	1992	0.16
Blue Cut	21	33	SS	C	6.8	1	760	30		--		0.11
San Jacinto -Anza	23	36	SS	A	7.2	12	250	90	1918	6.8	1918	0.12
San Jacinto -San Jacinto Valley	23	37	SS	B	6.9	12	83	42		6.8	1899	0.10
North Frontal Fault Zone (East)	26	41	DS	B	6.7	0.5	1730	27				0.09
Johnson Valley (Northern)	27	44	SS	B	6.7	0.6	5000	36		--		0.07
Emerson So. - Copper Mtn.	27	44	SS	B	6.9	0.6	5000	54		–		0.08
Lenwood-Lockhart-Old Woman Spgs	28	45	SS	B	7.3	0.6	5000	149				0.11
North Frontal Fault Zone (West)	32	52	DS	B	7.0	1	1310	50				0.09
Helendale - S. Lockhardt	33	53	SS	B	7.1	0.6	5000	97				0.08
San Jacinto - Coyote Creek	34	55	SS	B	6.8	4	175	40	1968	6.5	1968	0.06
Calico -Hidalgo	35	56	SS	B	7.1	0.6	5000	95				0.07
Pisgah-Bullion Mtn.-Mesquite Lk	36	58	SS	B	7.0	0.6	5000	88	1999	7.1	1999	0.07
San Jacinto -San Bernardino	36	58	SS	B	6.7	12	100	35		6.0	1923	0.05
Cleghorn	41	66	SS	B	6.5	3	216	25				0.04
Elsinore - Temecula	45	73	SS	B	6.8	5	240	42				0.05
Elsinore - Julian	46	74	SS	A	7.1	5	340	75				0.05
Elsinore- Glen Ivy	47	76	SS	B	6.8	5	340	38		6.0	1910	0.04
Cucamonga	50	80	DS	A	7.0	5	650	28				0.05
Earthquake Valley	53	85	SS	B	6.5	2	351	20				0.03
Chino-Central Avenue	56	89	DS	B	6.7	1	882	28				0.04
San Jacinto - Borrego Mountain	57	92	SS	B	6.6	4	175	29		6.5	1942	0.03
Whittier	59	95	SS	B	6.8	2.5	641	37				0.03

Notes:
1. Jennings (1994) and CDMG (1996)
2. CDMG & USGS (1996), SS = Strike-Slip, DS = Dip Slip
3. ICBO (1997), where Type A faults: Mmax > 7 and slip rate >5 mm/yr &Type C faults: Mmax <6.5 and slip rate < 2 mm/yr
4. CDMG (1996) based on Wells & Coppersmith (1994), Mw = moment magnitude
5. Modified from Ellsworth Catalog (1990) in USGS Professional Paper 1515
6. The estimates of the mean Site PGA are based on the following attenuation relationships:
   Average of: (1) 1997 Boore, Joyner & Fumal; (2) 1997 Sadigh et al; (3) 1997 Campbell
   (mean plus sigma values are about 1.6 times higher)
   Based on Site Coordinates: 33.948 N Latitude, 116.609 W Longtude and Site Soil Type C

APPENDIX A

Boring Logs from Preliminary Soils and
Geologic Investigations, WECS 20

BORING SUMMARY NO. BH-3

ELEVATION: N/I

DATE DRILLED: January 7, 1985

DEPTH IN FEET	SAMPLES	BLOW COUNT PER FOOT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	RELATIVE COMPACTION %	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION			
1							Silty sand, fine to coarse, with trace of roots	loose	slightly moist	red/ brown
2	1*	27/5"	13.5	102.0			Silty sand, fine, to ½-inch gravel	dense		
3–7	SPT	35/4"	5.3	77.9			Sand, fine to coarse, to ½-inch gravel	very dense	dry	light brown
8	SPT	50/ 5½"	8.5	116.2		SW-SM	Sand, fine to coarse, with ½ to 1-inch gravel			
12							2 to 3-inch gravel			
13	SPT	50/ 5½"	3.1	125.6			Gravelly			
18	SPT	50/6"	5.1	128.4						
23	SPT	50/ 5½"	5.2	126.3			Sand to ½-inch gravels			
25							(continued)			

* 2.5" I.D. Ring Sampler
SPT - Standard Penetration Test

WECS 20
Desert Hot Springs Area, California
for Energy Unlimited, Inc.

EXHIBIT NUMBER 5

Pioneer Consultants

JOB NUMBER: 3823-001

Approved For report on _____ by _____

BORING SUMMARY NO. BH-3

ELEVATION: N/I

DATE DRILLED: January 7, 1985

DEPTH IN FEET	SAMPLES	BLOW COUNT PER FOOT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	RELATIVE COMPACTION %	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION			
26							Sand	very dense	dry	light brown
27										
28	SPT	50/5"	4.5	132.7						
29							Less coarse sand			
30										
31										
32										
33	SPT	50/4"	6.5	129.3						
34										
35										
36							TOTAL BORING DEPTH 35.0 FEET NO GROUNDWATER ENCOUNTERED			
37										
38										
39										
40										
41										
42										
43										
44										
45										
46										
47										
48										
49										
50										

SPT - Standard Penetration Test

Approved For Report On _____ By _____

WECS 20
Desert Hot Springs Area, California
for Energy Unlimited, Inc.

EXHIBIT NUMBER 5A

Pioneer Consultants

BORING SUMMARY NO. BH-4

ELEVATION: N/I

DATE DRILLED: January 8 and 9, 1985

DEPTH IN FEET	SAMPLES	BLOW COUNT PER FOOT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	RELATIVE COMPACTION %	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION			
1							Silty sand	loose	slightly moist	red/ brown
2	1*	50/5"	3.5	106.7			Silty sand to ½-inch gravel	very dense	dry	light reddish brown
3										
4	2*	31/2"	4.3	83.5		SP-SC				
5							Increasing gravel ½ to 1 inch			
6										
7										
8	SPT	50/ 4½"	3.8	138.8						light brown
9										
10										
11										
12										
13	SPT	50/5"	2.3	130.5			Gravelly sand			
14										
15										
16							Sand, fine to very coarse, trace of ½-inch gravel			
17										
18	SPT	50/4"	2.3	136.1						
19										
20							Increasing gravel			
21										
22										
23	SPT	50/ 1½"	2.2	135.8						
24							TOTAL BORING DEPTH 23.0 FEET (REFUSAL ON COBBLES) NO GROUNDWATER ENCOUNTERED			
25										

* 2.5" I.D. Ring Sampler
SPT - Standard Penetration Test

WECS 20
Desert Hot Springs Area, California
for Energy Unlimited, Inc.

EXHIBIT NUMBER 6

Pioneer Consultants

JOB NUMBER:

PRELIMINARY SOILS AND GEOLOGIC INVESTIGATION
WECS 20, W½ OF SECTION 31, TOWNSHIP 2 SOUTH, RANGE 4 EAST, S.B.B.M.
RIVERSIDE COUNTY, CALIFORNIA
PIONEER CONSULTANTS
1985

554-1.2

PRELIMINARY SOILS AND GEOLOGIC INVESTIGATION

WECS 20

W½ of Section 31, T2S, R4E, S.B.B.M.

Riverside Couinty, California

J.N. 3923-001

RECEIVED
FEB 11 1985
KRIEGER & STEWART

February 4, 1985

for

Energy Unlimited, Inc.
19345 Indian Avenue
Desert Hot Springs, California 92240

prepared by

Pioneer Consultants
251 Tennessee Street
Redlands, California 92373

pioneer consultants
251 TENNESSEE STREET • REDLANDS, CALIFORNIA 92373 • (714) 793-2691

J.N. 3923-001
August 1, 1985

Energy Unlimited, Inc.
11360 Palm Drive, Suite C
Desert Hot Springs, California 92240

Attention: Mr. B. C. Lees

Re: WECS 20 - W½ of Section 31, T2S, R4E, S.B.B.M.
Riverside County, California

Subject: Passive Pressure Calculations and Potential for Water Scour

Gentlemen:

Subsequent to a review of our report dated February 4, 1985 by the County, Mr. Jon Reynolds of Krieger & Stewart requested that we respond to the subject areas of concern. Included with this letter as Appendix A are the calculations used to develop the passive pressures and lateral loads presented in the above-referenced report.

The "Potential for Water Erosion, Sedimentation and Flooding" section in the above report addresses in general terms the potential for scour. As pointed out under the above section, considerable quantities of water will move down the normally dry canyons during periods of intense rainfall. However, this water will not exceed ½ to 1 foot in depth across the channels during peak flows. Based on field observations, whatever scour is initially produced will be quickly replaced by sedimentation during the reduced water flows at the end of flooding. The short duration of desert storms (on the order of minutes) and lack of incised channels observed in the field indicate a lack of scour in all the existing channels. The braided stream pattern in the bottom of the channels does not promote erosion but rather deposition. It is our opinion that the minor scour which may occur should not affect foundation integrity.

We hope this information is sufficient for your needs. If you should have any questions, please feel free to contact this office.

Very truly yours,

PIONEER CONSULTANTS

Warren L. Sherling, C.E.G. #1182
Project Geologist

WLS:ljs
Attachment

cc: (4) Krieger & Stewart Incorporated, Attention: Mr. Jon Reynolds

Qal unit (wash)

Lateral Loads

$\phi = 41-43°$ $\gamma_{dry} = 113$ (min) $\gamma_{wet} = 129$ max.

Level backfill set back = 3.2-3.5H

log spiral (NAVFAC) $\phi = 41°$

$K_a = .215 \quad (129) = 27.7$ use 28 PSF/ft

$K_o = (1-\sin\phi)\gamma = .34 \quad (129) = 44.3$ use 44 PSF/ft

$K_p = 1.9 \quad (.770 - .665) \; (113) = 1578$ use 1500 PSF/ft

Rankine (smooth element)

$K_a = \tan^2(45 - \phi/2) \quad \gamma = .207 \; (129) = 26.8$ or 27 PSF/ft

$K_p = \tan^2(45 + \phi/2) \quad \gamma = 4.81 \; (113) = 544$ PSF/ft

Coulomb (rough element) $\delta = 90°$, $\beta = 0$, $\phi = 40°$ $\delta = 2/3 \; 40 = 26°$ Table 11-1/2 Bowles

$K_a = .199 \; (8) = .199 \; (129) = 25.6$ use 26 PSF/ft

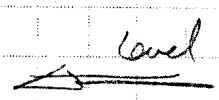
$K_p = 13.364 \; (113) = 1510$ PSF/ft use 1500 PSF

∴ for level ground 3.5H away from element

$K_a = 28$ PSF/ft

$K_o = 44$ PSF/ft

$K_p = 1500$ PSF/ft



natural ground slopes 20' in 20' or 1:1.0 $\beta = 6°$ $\beta/\phi = .14$

log spiral (NAVFAC) $\phi = 41$ $\beta/\phi = .14$

slope towards $K_a = .225 \quad (129) = 29$ PSF/ft

slope away $K_p = 1.45 \; (.735) \; (113) = 1204$ PSF/ft

Coulomb (rough) $\alpha = 90°$ $\beta = 6°$ $\delta = 26°$ $\phi = 40°$ Table 11-1 Bowles

toward $K_a = .211 \; (129) = 27$ PSF/ft

away $K_p = \dfrac{\sin^2(\alpha - \phi)}{\sin^2\alpha \sin(\alpha - \delta)\left[1 - \sqrt{\dfrac{\sin(\phi+\delta)\sin(\phi+\beta)}{\sin(\alpha-\delta)\sin(\alpha+\beta)}}\right]^2}$ (EQ 11-4 Bowles)

$\delta = 26°$ $\phi = 41°$

$\beta = -6°$

$$\frac{.56958}{.89879\left[.2314\right]^2} = 11.829$$

$K_p = 11.829 \; (113) = 1336$ PSF/ft

JOB NO.: 3923-001 PROJECT: EN UNLIM BY: RBR DATE: 24 Jan 85

pioneer consultants
251 TENNESSEE STREET • REDLANDS, CALIFORNIA 92373 (714) 889-8506
(714) 793-2691

Qal unit (wash)

Rankine (smooth element) $\phi = 41°$ $\beta = 6°$

K_a (table 11-3 Bowles) = 5 .2094, 6 .2104, 10 .2145 $\times \gamma =$ 25 PSF/ft

$\beta = -6°$ $\phi = 41°$

$$K_p \text{ (EQ 11-9)} = \cos -6° \frac{\cos -6 + \sqrt{\cos^2 -6 - \cos^2 41}}{\cos -6 - \sqrt{\cos^2 -6 - \cos^2 41}} = \frac{.6406}{.3468} = 1.8469$$

$K_p = 208$ PSF/ft

∴ Use sloping N.G.

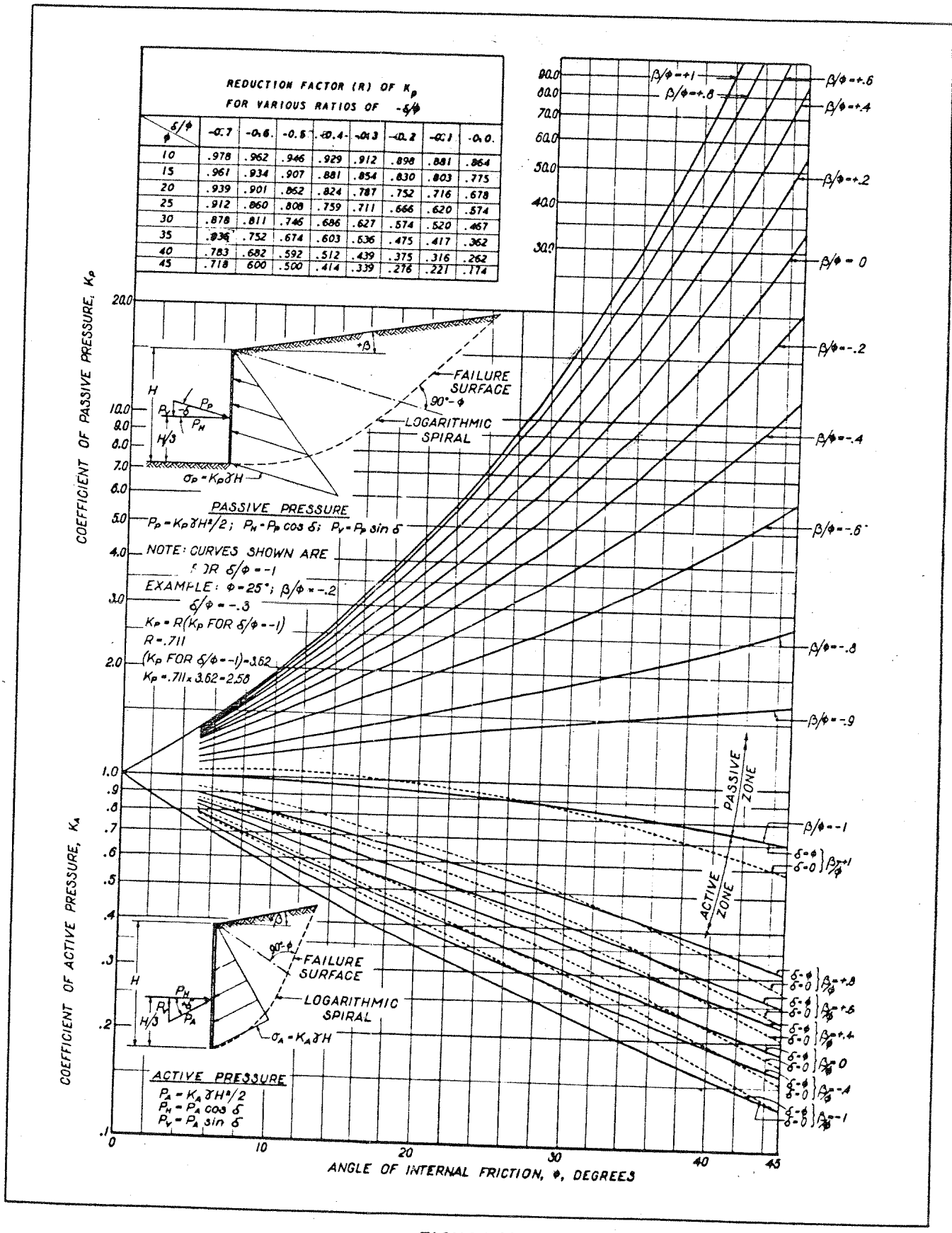
$K_a = 29$ PSF/ft

$K_p = 1200$ PSF/ft

JOB NO.: 3923-001 PROJECT: EN-UNLIM BY: RBR DATE: 24 Jan 85

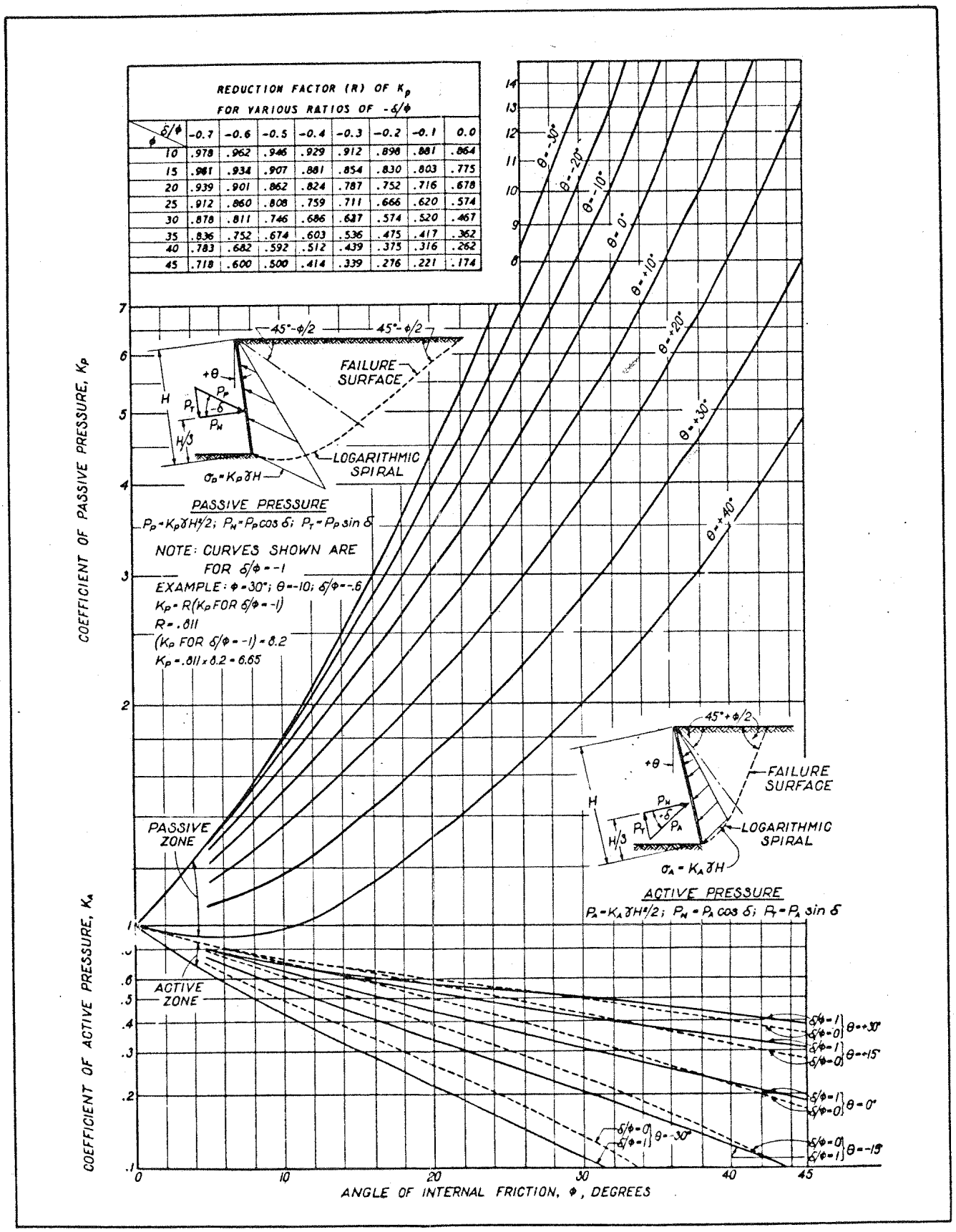
FORM 204 - 9/84 - 3M

APPENDIX A SHEET 3 OF



ϕ \ δ/ϕ	-0.7	-0.6	-0.5	-0.4	-0.3	-0.2	-0.1	-0.0
10	.978	.962	.946	.929	.912	.898	.881	.864
15	.961	.934	.907	.881	.854	.830	.803	.775
20	.939	.901	.862	.824	.787	.752	.716	.678
25	.912	.860	.808	.759	.711	.666	.620	.574
30	.878	.811	.746	.686	.627	.574	.520	.467
35	.836	.752	.674	.603	.536	.475	.417	.362
40	.783	.682	.592	.512	.439	.375	.316	.262
45	.718	.600	.500	.414	.339	.276	.221	.174

FIGURE 10-3
Active and Passive Coefficients with Wall Friction (Sloping Backfill)



REDUCTION FACTOR (R) OF K_p FOR VARIOUS RATIOS OF $-\delta/\phi$

ϕ \ δ/ϕ	-0.7	-0.6	-0.5	-0.4	-0.3	-0.2	-0.1	0.0
10	.978	.962	.946	.929	.912	.898	.881	.864
15	.961	.934	.907	.881	.854	.830	.803	.775
20	.939	.901	.862	.824	.787	.752	.716	.678
25	.912	.860	.808	.759	.711	.666	.620	.574
30	.878	.811	.746	.686	.627	.574	.520	.467
35	.836	.752	.674	.603	.536	.475	.417	.362
40	.783	.682	.592	.512	.439	.375	.316	.262
45	.718	.600	.500	.414	.339	.276	.221	.174

FIGURE 10-4
Active and Passive Coefficients with Wall Friction (Sloping Wall)

essure considered in the

$$\overline{\sin(\phi-\beta)}\Big]^2 \qquad (11\text{-}3)$$

independent of γ and H.
ies, and a computer pro-
ther angle combinations.
hat the inclination at the

ss is

$$\frac{\beta)}{\beta)} \qquad (d)$$

$$\overline{\alpha)} \qquad (e)$$

n value of P_p as

$$\overline{\delta)\sin(\phi+\beta)}\Big]^2 \qquad (11\text{-}4)$$

$$\overline{\delta)\sin(\alpha+\beta)}$$

1 ($\delta = \beta = 0$ and $\alpha = 90°$),

$$\left.+\frac{\phi}{2}\right) \qquad (11\text{-}5)$$

$$\overline{\sin(\phi+\beta)}\Big]^2 \qquad (11\text{-}6)$$

$$\overline{\sin(\alpha+\beta)}$$

values of ϕ, α, δ, and β.
nt on the *effective* stresses
ws that the wall pressure

Table 11-1 Active-earth-pressure coefficients K_a based on the Coulomb equation (11-3)

ALPHA =90. BETA = 0.

δ	φ=26	28	30	32	34	36	38	40
0	0.390	0.361	0.333	0.307	0.283	0.260	0.238	0.217
16	0.349	0.324	0.300	0.278	0.257	0.237	0.218	0.201
17	0.348	0.323	0.299	0.277	0.256	0.237	0.218	0.200
20	0.345	0.320	0.297	0.276	0.255	0.235	0.217	0.199
22	0.343	0.319	0.296	0.275	0.254	0.235	0.217	0.199

ALPHA =90. BETA = 5.

δ	φ=26	28	30	32	34	36	38	40
0	0.414	0.382	0.352	0.323	0.297	0.272	0.249	0.227
16	0.373	0.345	0.319	0.295	0.272	0.250	0.229	0.210
17	0.372	0.344	0.318	0.294	0.271	0.249	0.229	0.210
20	0.370	0.342	0.316	0.292	0.270	0.248	0.228	0.209
22	0.369	0.341	0.316	0.292	0.269	0.248	0.228	0.209

ALPHA =90. BETA =10.

δ	φ=26	28	30	32	34	36	38	40
0	0.443	0.407	0.374	0.343	0.314	0.286	0.261	0.238
16	0.404	0.372	0.342	0.315	0.289	0.265	0.242	0.221
17	0.404	0.371	0.342	0.314	0.288	0.264	0.242	0.221
20	0.402	0.370	0.340	0.313	0.287	0.263	0.241	0.220
22	0.401	0.369	0.340	0.312	0.287	0.263	0.241	0.220

Table 11-2 Passive-earth-pressure coefficients K_p based on the Coulomb equation (11-6)

ALPHA =90. BETA = 0.

δ	φ=26	28	30	32	34	36	38	40
0	2.561	2.770	3.000	3.255	3.537	3.852	4.204	4.599
16	4.195	4.652	5.174	5.775	6.469	7.279	8.230	9.356
17	4.346	4.830	5.385	6.025	6.767	7.636	8.662	9.882
20	4.857	5.436	6.105	6.886	7.804	8.892	10.194	11.771
22	5.253	5.910	6.675	7.574	8.641	9.919	11.466	13.364

ALPHA =90. BETA = 5.

δ	φ=26	28	30	32	34	36	38	40
0	2.943	3.203	3.492	3.815	4.177	4.585	5.046	5.572
16	5.250	5.878	6.609	7.464	8.474	9.678	11.128	12.894
17	5.475	6.146	6.929	7.850	8.942	10.251	11.836	13.781
20	6.249	7.074	8.049	9.212	10.613	12.321	14.433	17.083
22	6.864	7.820	8.960	10.334	12.011	14.083	16.685	20.011

ALPHA =90. BETA =10.

δ	φ=26	28	30	32	34	36	38	40
0	3.385	3.713	4.080	4.496	4.968	5.507	6.125	6.841
16	6.652	7.545	8.605	9.876	11.417	13.309	15.665	18.647
17	6.992	7.956	9.105	10.492	12.183	14.274	16.899	20.254
20	8.186	9.414	10.903	12.733	15.014	17.903	21.636	26.569
22	9.164	10.625	12.421	14.659	17.497	21.164	26.013	32.602

APPENDIX A

(from Bowles)

pioneer consultants

251 TENNESSEE STREET • REDLANDS, CALIFORNIA 92373 • (714) 793-2691

J.N. 3923-001
February 4, 1985

Energy Unlimited, Inc.
19345 Indian Avenue
Desert Hot Springs, California 92240

Attention: Mr. Clare Lees

Re: WECS 20 - W½ of Section 31, T2S, R4E, S.B.B.M.
Riverside County, California

Subject: Preliminary Soils and Geologic Investigation

Gentlemen:

At your request, we have made a preliminary soils and geologic investigation on the above-referenced site. The purpose of our investigation was to evaluate the subsurface condition of the site and make geotechnical recommendations for wind generator foundations and access roadway grading. Our investigation included five rotary auger borings on the site, office and field geologic investigation of the site, laboratory testing of the acquired soil samples, geotechnical engineering analysis and the preparation of this report.

We have found the site to be suitable for both shallow footings and deep caisson foundations. Our specific recommendations are included in the attached report.

It has been our pleasure to be of service and, if there are any further questions, please call at your convenience.

Very truly yours,

PIONEER CONSULTANTS

Robert B. Rogers

Robert B. Rogers, P.E.
Geotechnical Engineer

Michael C. Shea

Michael C. Shea, R.G. #3262
Project Geologist

REGISTERED PROFESSIONAL ENGINEER
ROBERT B. ROGERS
NO. 26370
4 Feb 1985
CIVIL
STATE OF CALIFORNIA

RBR:ljs
Addressee (2)
Attachment

cc: Krieger & Stewart Incorporated

SITE AND PROJECT DESCRIPTION

The proposed WECS 20 site is located in the W½ of Section 31, T2S, R4E and consists of the entire area with the exception of the north half of the northwest quarter. Its location is shown on Exhibit 1 attached.

The main access to the proposed wind farm site was via a dirt service road associated with the Colorado River Aqueduct. The road trends south and west from West Pierson Boulevard. An additional access road is proposed in the NW¼ of Section 6 to the south.

The site is at present unoccupied and undeveloped except for: (a) evidence of past mine activity; (b) dirt access roads and (c) scattered anemometer locations. Drainage across the site is to the southeast in the northern portion and to the south in the southern portion.

The topography of the site is highly irregular consisting of eastward and southward sloping ridges and stream channels. The overall effect is that of a highly desiccated alluvial fan surface. Regional slope on the ridgetops is 5 degrees to the southwest. Approximately half of the site consists of slopes which are equal to or exceed 25 percent grade. These areas are indicated with cross hatching on the enclosed site plan (Exhibit 2, 2 sheets) prepared by Krieger & Stewart of Riverside. Those slopes in excess of 25 percent are not included in this study. The Colorado River Aqueduct of the Metropolitan Water District lies just east of the eastern boundary of the site and is shown on the enclosed plan (Exhibit 2).

The ground surface is characterized by desert pavement consisting of very coarse sands, gravels, and cobbles. Boulders to 3 feet in diameter are scattered on the surface but are generally confined to the ridgetop areas. Vegetation on the site consists of scrub brush and cactus and covers approximately 10 to 15 percent of the ground surface. As is shown on Exhibit 2 (Sheets 1 and 2), the proposed WECS 20 development will consist of pylon-mounted wind generators adjacent to compacted soil access roads. These will be located primarily in the alluvial valleys and on the native sloping ground that does not exceed 25 percent in grade. Each wind generator will be spaced approximately 70 feet apart.

Access road grading is proposed in the area immediately south of the NW¼ of Section 6 as shown on Exhibit 2 (Sheet 2 of 2).

SCOPE OF SERVICES

A preliminary soil and geologic investigation of the wind farm site was made that included:

1. Examination of pertinent available published and unpublished information relative to the site and the surrounding general region.

2. A field investigation consisting of five 8-inch hollow stem auger borings to depths as great as 35 feet and a reconnaissance geologic mapping of the site by our staff geologist. Logs of the borings are included as Exhibits 3 through 7. Representative bulk and undisturbed samples were obtained during the subsurface investigation and returned to our laboratory for testing and analysis.

3. Laboratory testing of representative samples retained and the results are included as Exhibits 8 through 14.

4. Preparation of a geotechnical report presenting our findings, conclusions and recommendations concerning the development of the proposed wind farm site. Our evaluation addressed all of the points outlined in the Riverside County Planning Department's requirements for "WECS Geotechnical Reports".

FIELD INVESTIGATION

The field investigation consisted of five borings to depths of 15.5 to 35.0 feet from the existing ground surface. The borings were advanced using an 8-inch hollow stem rotary flight auger. Drive samples were obtained using both the 2.5-inch internal diameter ring sampler and the Standard Penetration Test sampler. The samplers were advanced using a 140-pound hammer free-falling 30 inches, and the number of blows required to advance the sampler the last 12 inches of an 18-inch drive are recorded on the log sheets. These values are used to evaluate the relative consistency of the subsoils.

All of the samples retained in the investigation were returned to our laboratory for testing and analysis. The locations of the borings are shown on the attached plot plan, Exhibit 2 (Sheets 1 and 2 of 2); and the boring logs accompany this report as Exhibits 3 through 7.

LABORATORY TESTING

The following tests were performed for this project in our laboratory in accordance with the American Society for Testing and Materials or contemporary practices of the soil engineering profession.

In-Situ Moisture and Density: This test consisted of weighing and measuring the drive samples obtained from the borings to determine their in-place moisture and density. These results are used to analyze the consistency of the subsoils.

Standard Penetration Test: The Standard Penetration Test, although a field test, is used to determine the relative density of the subsoil and also the allowable bearing value and total settlement. This is basically for cohesionless materials.

Maximum Density - Optimum Moisture Determination: This test determines the density that a soil can be compacted at various moisture contents. For each soil mixture, there is a maximum dry density obtained and the associated optimum moisture content. The results are used to evaluate the natural compaction, the control of the grading process and as an aid in developing the soil bearing capacity. This test is based on the ASTM Standard D1557.

Sieve Analysis: This test determines the size of the soil grains which constitutes a soil and is used in generating an engineering classification of the soil.

Plasticity Index: This is determined from the liquid limit and the plastic limit of the soils. The liquid limit is the moisture content at which the soil changes from a plastic to a liquid state, and the plastic limit is the moisture content at which the soil changes from a semi-solid to a plastic state. The difference in these values is the Plasticity Index and is the range of moisture content at which the soil is in a plastic condition. It is used to aid in the classification of the soil.

Direct Shear: This test is used to confirm the ultimate soil bearing value, as well as, lateral load resistance and slope stability analysis.

GEOLOGY

Previous mapping (Proctor, 1968) and our field mapping show that the site is underlain by three distinctive geologic units. The oldest exposed geologic unit on the site is the Painted Hill formation (Unit Tph) of early Pleistocene Age. This alluvial unit consists of gray and light brown, poorly-sorted beds of conglomerate and/or arkosic conglomerate sandstone. Unconformably overlying the Painted Hill formation is the Quaternary age Cabezon fanglomerate (Unit Qc). The Cabezon fanglomerate consists of poorly-sorted and bedded, pebbly and bouldery tan arkosic sandstone with clasts of gneiss, granitic rocks and minor amounts of basalt. Capping the Cabezon fanglomerate on ridgetops is a thin mantle of terrace deposits consisting of orange-tinted sands and gravels and is further characterized by large boulders protruding conspicuously from the ground surface. The boulders are present in trace amounts. Overlying the Painted Hill formation and the Cabezon fanglomerate in the valley areas is recent stream alluvium (Unit Qal) consisting of coarse sands and pebble gravels.

Faulting

No active or potentially active faulting is known or has previously been mapped crossing the proposed wind farm site, and no portion of the wind farm site is included within an Alquist-Priolo Special Studies Zone. The nearest active or potentially active faults to the site include the Banning Fault (considered to be the southern branch of the San Andreas Fault), located approximately ½ mile south of the main wind farm site, and the Mission Creek Fault (considered to be the northern branch of the San Andreas Fault), located approximately 4 miles northeast of the main wind farm site. Both the Mission Creek and the Banning Fault are considered active by the State of California (Hart, 1980). The Banning Fault is shown on Exhibit 2 (Sheet 2 of 2) passing northwesterly through the central portion of Section 6 and, thus, through the alignment of the proposed access road to the site. The limits of the Special Studies Zone to the north and south of the fault are also shown.

Seismic Setting

The regional seismic setting is shown on Exhibit 15. As discussed under "Faulting", the nearest active or potentially active faults to the site include the Banning and Mission Creek Faults and, slightly more distant, the San Jacinto Fault (24 miles to the southwest). Although the Banning Fault passes nearest the wind farm site, no historic seismic activity has been assigned to this branch of the San Andreas. By comparison, the Mission Creek Fault is considered the more active northern branch of the San Andreas Fault (Proctor, 1968; Riverside County, 1976). For the evaluation of the site, we have chosen the more active Mission Creek Fault as the "design fault" when evaluating seismic parameters which could affect the site.

Historic Seismicity

Only one earthquake of greater than 6.0 magnitude has been assigned to the San Andreas Fault within 100 miles of the site during the last 100 years (Hileman, Allen and Nordquist, 1974). This was the magnitude 6.5 event at Desert Hot Springs in 1948, approximately 3.8 miles to the east. An event of estimated magnitude 6.5 occurred along the San Andreas in 1868 near the Salton Sea, approximately 30 miles to the southeast. However, these records are incomplete. Some surface rupture also occurred along the trace of the San Andreas Fault near the Salton Sea as a result of sympathetic movement during the 1968 magnitude 6.5 earthquake centered on the Coyote Creek Fault. No surface rupture is anticipated at any point on the site as the result of a major earthquake along either the Banning or Mission Creek Faults. However, surface rupture is anticipated to occur through the proposed access roadway during a major earthquake along the Banning Fault.

Seismic Exposure

Although no precise method has been developed to evaluate the seismic potential of a specific fault, available information on historic seismic activity may be projected to estimate the future activity of the fault. This is usually done by plotting the historic seismic activity in terms of number of events in a given time interval versus magnitude of the events. The other method of determining potential seismicity of a fault is by evaluating accumulated stress and determining the size of the earthquake necessary to release this accumulated stress. Based on such data and plots, recurrence intervals for the earthquakes in given magnitudes may be estimated. Such data has been presented for the San Andreas Fault by Lamar, Merifield and Proctor (1973) and by the County of Riverside (1976). For this project, the maximum probable earthquake is defined as that with a recurrence period of 100 years or the greatest historic event, whichever is greater, as recommended by CDMG Note 43. Using the information referenced above, we estimate the maximum probable or "design earthquake" for the Mission Creek Fault to be 6.5 magnitude. Based on data presented by Greensfelder (1974), we estimate that the maximum credible event for the San Andreas Fault in this area [which includes both the Mission Creek Fault (north branch) and the Banning Fault (south branch)] to be an event of magnitude 7.5. The maximum credible event is the greatest event that the fault appears theoretically capable of producing without a consideration of time interval based upon the present tectonic framework.

Ground Motion Characteristics

The ground motion characteristics for the postulated maximum probable earthquake of magnitude 6.5 on the Mission Creek Fault were estimated. Available information in literature about the maximum peak bedrock acceleration and attenuation with distance (Schnabel and Seed, 1973), the effects of site-soil conditions on surface ground motion parameters (Idriss, 1978) and site-response criteria (Hays, 1980) were utilized. This information indicates that a maximum peak rock acceleration on the order of 0.52 g may be anticipated at the site for a magnitude 6.5 event epicentered along the Mission Creek Fault at a point nearest the site (4 miles). The extreme soils engineering differences between the recent alluvium and the older bedrock (either terraced gravels in Cabezon fanglomerate or only Cabezon fanglomerate) would produce considerably different maximum ground surface acceleration values. The maximum ground acceleration in those areas underlain by bedrock is expected to be only slightly less than peak rock acceleration. This is due to the response of very thick, but essentially rocklike, older alluvial deposits above the hard, high-velocity crystalline bedrock. Therefore, in these areas underlain by either Tph, or Qc with thin cover of terrace deposits, we

estimate the maximum ground surface acceleration to be 0.39 g based on the work by Idriss (1978). However, within those areas underlain by the younger alluvium (Qal Unit), the relatively thin deposit of alluvium (estimated at less than 100 feet) would amplify, rather than dampen, the peak ground surface acceleration according to the data presented by Riverside County (1976). Therefore, in the alluvial areas, we estimate the maximum surface acceleration to be 0.46 g based on a slight damping by the underlying Cabezon fanglomerate and a slight amplification by the overlying thin alluvial deposits. Repeatable ground acceleration can be estimated at 65 percent of peak ground acceleration for design purposes (Ploessel and Slosson, 1974) with a value of 0.25 g for the areas underlain by Cabezon fanglomerate and about 0.30 g for the areas underlain by 100 feet or less of recent alluvium. The predominant period of bedrock acceleration is expected to be 0.35 second or less with more than 18 seconds of strong ground shaking.

Secondary Seismic Hazards

Of the other secondary seismic hazards, such as, surface rupture, liquefaction, settlement, or seismically-triggered rock slides/landslides, only seismically-triggered rock slides might affect the site. These potential rock slides would be very local in nature and would only occur along the very steep [1½:1 (horizontal to vertical) or steeper] slopes which presently exist at the site. It should be noted that these steep slopes have very limited heights. Actual run out of the boulders down the slope faces would probably be on the order of less than 5 feet.

SUBSURFACE CONDITIONS

Three basic geologic units were encountered on this site consisting of the Tertiary Painted Hill Formation (Tph), the Quaternary Cabezon fanglomerate (Qc) and the Quaternary recent alluvium (Qal) which are outlined on our plot plan, Exhibit 2 (Sheets 1 and 2 of 2). The majority of the construction is proposed to be in the Quaternary Cabezon fanglomerate (Qc) and the Quaternary recent alluvium (Qal). All of the subsurface explorations were in one of these two units.

The recent alluvium was investigated by boring BH-2. The material consisted of a clean, medium to coarse sand in the upper 4 to 5 feet with coarse sand and interbedded 1 to 4-inch thick gravel beds underneath that. Moisture contents ranged from a low of 1.1 percent at a depth of 8.0 feet to a high of 4.7 percent at a depth of 12.5 feet. Dry densities ranged from a low of 112.7 pounds per cubic foot (pcf) at a depth of 4.5 feet to a high of 137.9 pcf at a depth of 8.0 feet. The higher densities reflect greater gravel contents; the lesser density reported at a depth of 12 to 13 feet is felt

to be a disturbed sample due to the very dense nature and high blow counts present.

The Cabezon fanglomerate was investigated by borings BH-1, BH-3 and BH-5. These materials were found to consist primarily of a surface, loose silty sand, approximately 1 foot in depth, underlain by coarser to gravelly sands to silty gravels to the total depths encountered. Moisture contents ranged from a low of 0.8 percent at a depth of 17.0 feet in boring BH-1 to a high of 13.5 percent at a depth of 1.5 feet in BH-3. The higher moisture contents reflect silt content and recent rainfall. Dry densities ranged from a low of 94.0 pcf at a depth of 2.5 to 3.0 feet in BH-5 to 151.3 pcf at a depth of 23 feet in BH-5. The higher densities reflect an increase in gravel content of the soils; the lesser densities probably indicate sampling disturbance due to the high blow count.

Generally, we would characterize both soil types as being only slightly dissimilar in undisturbed characteristics and to be the same material when recompacted as compacted fill. The in-situ properties of the Qal unit at the site had a dry unit weight of approximately 118 pcf, a cohesion intercept of 0 psf and friction angles ranging from 41 to 43 degrees. The native ground slopes approximately 10:1 (horizontal to vertical).

In the Qc unit the soil has a unit weight of approximately 110 pcf in the upper 5 to 6 feet, with a minimum friction angle of 40 degrees and a cohesion intercept of 0 to 100 psf. The ground slopes as steep as 4.5:1 (horizontal to vertical).

Thus, both units where construction is proposed consist of coarse sands and gravels that are in a dense to very dense native condition.

Potential for Wind Erosion

According to the work prepared by Halseth (1967), the site would be included in the Tujunga-Soboba Soil Association with between 10 and 20-percent slopes. This soil association consists of excessively drained, coarse-textured soils developed on a granitic alluvial base. Based upon the findings in that report and our field mapping which indicated very little evidence of blowing sand, the site has little or no wind-erosion potential. This is based on the current conditions where there is no source of finer sand to blow. Disturbed soils have from 16 to 30 percent passing the No. 40 sieve and therefore would be a very small source for wind-blown sand.

Potential for Water Erosion, Sedimentation and Flooding

Based upon the flood insurance maps prepared by the Federal Emergency Management Agency, the entire site lies above the Mission

Creek Drainage Flood Plain. However, based upon the topographic expression at the site and our field mapping (which indicated that the deeply-incised streams have been backfilled by rather coarse alluvial debris), these channels carried considerable quantities of moving water at some time in the past. Therefore, it is our opinion that isolated portions of the site presently within the existing southeast-draining stream channels would be subjected to minor flooding. Sedimentation would occur if the velocity of the water was retarded in anyway by the proposed project.

Because of the steep natural slopes involved, flooding will more than likely precipitate erosion rather than sedimentation for a given rainfall event. Periodic maintenance after storm events can be expected especially for proposed access roads that cross drainage channels.

Stability of Existing Cut and Fill Slopes

Presently, all of the slopes at the site are natural slopes. Within some of the more deeply incised canyons, the canyon walls founded in Cabezon fanglomerate stand at inclinations of near vertical with essentially no evidence of instability or raveling. On the other hand, the recent alluvium (despite its very dense nature) is noncohesive and easily eroded. Therefore, it is anticipated that cut or fill slopes within recent alluvial material should not be steeper than 2:1 (horizontal to vertical) and should be protected from surface erosion.

Stability of Proposed Cut and Fill Slopes

Because both geologic units have similar recompacted fill soil characteristics, we recommend that roadway fills be constructed less than 15 feet in height. Where these fills are constructed at a maximum slope of 2:1 (horizontal to vertical), the factor of safety is between 1.3 and 1.4. Where the slopes are constructed not steeper than 2.5:1 (horizontal to vertical), the factor of safety increases to the 1.6 to 1.7 range. These factors of safety are based upon static condition with internal pore pressure equal to half the slope height (worst condition). It is our professional opinion that fill slopes should not be constructed steeper than 2:1 (horizontal to vertical); and to achieve a minimum factor of safety of 1.5 for these conditions, they should not be constructed steeper than 2.5:1 (horizontal to vertical).

With the exception of certain portions of the Qal unit where the soils are loose in the upper 2 to 5 feet, the soils present on this site are predominantly more dense in a natural condition than they would be in a compacted fill condition. Therefore, we recommend that cuts not greater than 15 feet in height be constructed not steeper than 2:1 (horizontal to vertical). Proposed cut slopes greater than 15 feet in

height might require flatter slopes based on individual cut slope field conditions at the time the grading is conducted.

Foundation Material Type

Two predominant soil types were encountered on this site, and separate recommendations are made for each. Both consist of sands to increasingly coarser gravels at depth which were encountered in a dense to very dense condition between 1 to 5 feet below the existing ground surface, depending upon the unit. The site is not level and each unit has a different natural slope to it.

Collapsible or Expansive Soils

No clays or other expansive soils were encountered on this site, nor was there evidence, in any of the subsurface explorations, of collapsible soils. Extremely low dry densities obtained in some of the samples are primarily a result of sampler disturbance due to the extremely dense nature of the subsurface soils encountered.

Settlements

The following recommendations are predicated on a 1-inch nominal settlement with a 3/4-inch differential settlement between adjacent footings of similar sizes and loads, normally to be anticipated in sandy and noncohesive foundation materials. These settlements should occur as the footings are constructed and loaded and should not be of a long-term nature.

Shallow Footing Recommendations

Spread footing foundations are a foundation option on this site. The recommended safe bearing capacity for each geologic unit and site condition is given below:

For the Qal Unit (Wash Area):

Footing Width (feet)	Level Ground (psf)	10:1 Ground Sloping Away (psf)
2	4,200	3,300
4	10,200	8,100
6	13,400	10,600

For the Qc Unit (Highland Area):

Footing Width (feet)	Level Ground (psf)	4:1 Ground Sloping Away (psf)
2	6,000	4,100
4	11,000	7,600
6	14,000	9,700

Isolated spread footings are recommended to have a minimum depth of embedment of 18 inches from lowest adjacent finish grade. Footings may be founded on dense, native, undisturbed soil or properly compacted fill soils.

Lateral Soil Loads

In the Qal Unit, the following pressures are recommended:

For level ground:

Active - 28 pounds per square foot per foot of soil depth (psf/ft)

At Rest - 44 psf/ft

Passive - 1500 psf/ft

When ground slopes 10:1 (horizontal to vertical):

Active - 29 psf/ft (when sloped toward the element)

Passive - 1200 psf/ft (when the ground slopes away from the element)

In the Qc Unit, the following pressures are recommended:

For level ground:

Active - 27 psf/ft

At Rest - 45 psf/ft

Passive - 1400 psf/ft

When the ground slopes at 4:1 (horizontal to vertical):

Active - 31 psf/ft (when sloped toward the element)
Passive - 730 psf/ft (when the ground slopes away from the element)

Active means the resisting element moves away from the soil; at rest means the resisting element does not move relative to the soil; and passive means the resisting element moves into the soil. The coefficient of friction between concrete footings and/or caissons and the soil may be taken as 0.5 in both units. This may be increased by one-third to resist wind and seismic loads.

Caisson Foundations

Caisson foundations are also a foundation option for the site. There is an insignificant applied vertical load and the previous recommendations for spread footings may be used at the bottom of any caisson to resist vertical loads and/or rotation. The bottom of the caisson in that case should be set back a minimum of seven times the caisson diameter from an exposed slope. This means that the horizontal distance from the open face of a slope to the bottom of the caisson would be 7 times the caisson diameter when the elevation at the bottom of the caisson and the elevation at the face of the slope are equal. Both soil units encountered on this site may be excavated vertically for caissons. The top 4.5 feet may require casing in the Qal unit, however.

The primary design loads on a caisson foundation would be a lateral load of 25.9 kips and a 1600 foot-kip moment applied to the top of the caisson. Caisson sizes were analyzed for level ground conditions for the soil conditions encountered at this site. The results are summarized below:

Caisson Diameter (feet)	Ground Surface Deflection (inches)	Maximum Moment in a Caisson (foot-kip)
5	0.25	1645
4	0.45	1640
3	1.65	1642

The above parameters are predicated on a level setback of 3.2 times the caisson length. Because the existing site slopes significantly in a direction against the passive resistance of overturning for the caissons, we recommend that either: (1) the access road run on the uphill side of each foundation; or, alternatively (2) the depth of the caisson be measured from the level of the road if it is placed on the downhill side of the caisson.

In consultation with Krieger & Stewart, a 5-foot diameter caisson was analyzed for ground sloping at 4:1 (horizontal to vertical) and the resultant moment diagram for a 20-foot deep caisson is included as

Exhibit 16. However, this is a short caisson, and it is more likely to rotate rather than to deflect due to moment loading. There are significant resistances to rotation due to the end bearing of the caisson. However, we recommend the full passive pressure of 730 psf/ft be used in the design of a 5-foot diameter caisson over the full 5-foot width of the caisson. If the 5-foot diameter caisson is sufficiently fixed that it does not rotate out of position, it is not likely to deflect more than ¼ inch under the above design loads of lateral load and overturning moment. The lateral stability against rotation should be addressed by the designer of the caisson.

Access Roadway Construction

It is not anticipated at this time that the access roadways would be paved but merely compacted in-place soils. Cuts and fills would be constructed as necessary to provide drivable road surface to access all of the wind machines. Basically, this technique of unimproved road construction has worked well in the past in the immediate area. Periodic maintenance will be required at stream crossings after rainfall and runoff events. Surfacing these roads with gravel in excess of ¼ inch would reduce the possibility of blowing sand and fines erosion.

General Site Grading

1. Clearing and Grubbing: The site as it exists had little to no development in the past, and currently 40 percent of the site is covered with native desert flora. We recommend that those areas of improvements and access roadways be excavated to ensure flora and root removal and that the resulting excavation be backfilled following procedures for compacted fill as recommended below.

2. Preparation of Footing Areas: Shallow footings may rest on dense, undisturbed, native soils. If loose native materials are present, a minimum of 12 inches of additional material should be removed and recompacted to meet the minimum density recommended below under "Placement of Compacted Fill".

3. Placement of Compacted Fill: Compacted fill is defined as that material which will be replaced in the areas of removal due to root removal, the placement of footings and wherever the grade is to be raised. All fill shall be compacted to a minimum 90 percent based upon the maximum density obtained in accordance with ASTM Standard D1557. The area to be filled will be prepared by benching completely into cut, scarifying the cut material remaining for a depth of 6 inches, adjusting the moisture to near optimum and recompacting to 90 percent of ASTM D1557 procedure maximum dry density.

4. Review of Grading Plan and Specifications: We recommend that the soil engineer have the opportunity to review the final grading plan and construction specifications to assure that they include the items of this soil and geology report for the benefit of the owner and the contractor.

5. Pre-Job Conference: Prior to the commencement of grading, a pre-job conference should be held with representatives of the owner, contractor, engineer and soil engineer in attendance. The purpose of this meeting shall be to clarify any questions relating to the intent of the grading recommendations and to verify that the project specifications comply with the recommendations of this report.

6. Testing and Inspection: During grading, density testing should be performed by a representative of the soil engineer in order to determine the degree of compaction being obtained. Where testing indicates insufficient density, additional compactive effort shall be applied, with the adjustment of moisture content where necessary, until 90 percent relative compaction is obtained. The maximum dry density shall be determined in accordance with ASTM Standard D1557 in all cases.

   Caisson foundations should be inspected as they are drilled and the concrete placed the same day as the caisson excavation is drilled. The concrete should be placed by either pump or tremie so that no concrete is allowed to drop or free-fall in the caisson excavation and so that the bottom of the pump or tremie pipe remains submerged the entire time the caisson is being filled. The bottom of the caisson shall be clean and free of loose material. The bottom of the caisson need not be flat.

GENERAL

The recommendations of this report are based on the assumption that all footings will be founded on either dense, undisturbed, native soils or recompacted fill soils. All footing/caisson excavations should be inspected prior to the placement of concrete in order to verify that footings/caissons are founded on satisfactory soils and are free of loose and disturbed materials. All grading and fill placement should be performed under the testing and inspection of a representative of the soil engineer.

The findings and recommendations of this report were prepared in accordance with contemporary geotechnical engineering principles and practice. We make no other warranty, either express or implied. Our recommendations are based on an interpolation of soil conditions between boring locations. Should conditions be encountered during

excavation that appear to be different from those indicated by this report, this office should be notified.

REFERENCES

1. CDMG, 1975, Recommended Guidelines for Determining the Maximum Credible and the Maximum Probable Earthquakes, Note No. 43.

2. Greensfelder, R. W., 1974, Maximum Credible Rock Acceleration from Earthquakes in California, Calif. Div. Mines & Geol., Map Sheet 23.

3. Halseth, T. P., 1967, Progress Report on the Coachella Valley Wind Erosion Problem, Soil Conservation Service, Berkeley, California, 32 pp.

4. Hart, E. W., 1980, Fault-Rupture Hazard Zones in California, CDMG Spec.Pub. 42, 25 pp.

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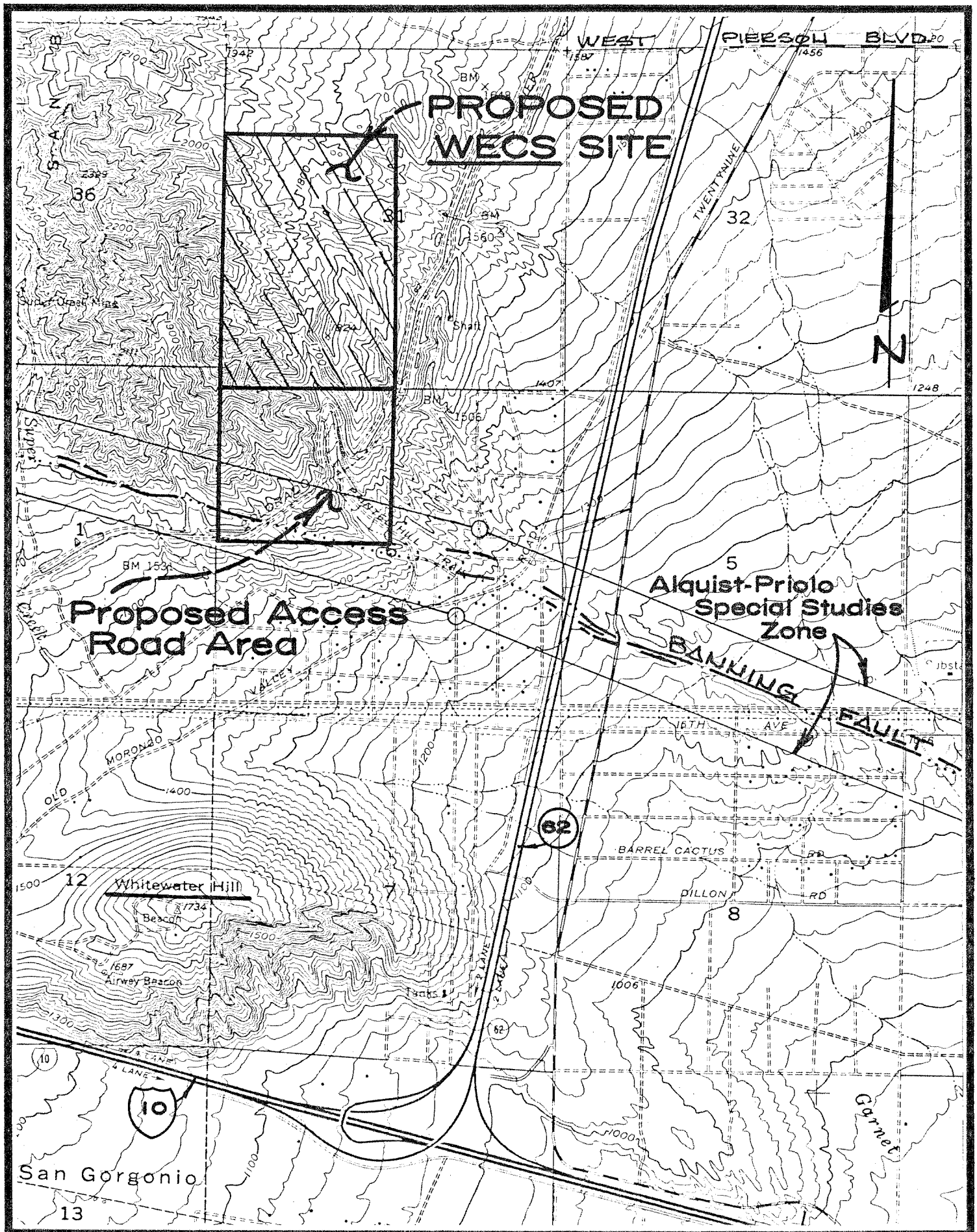
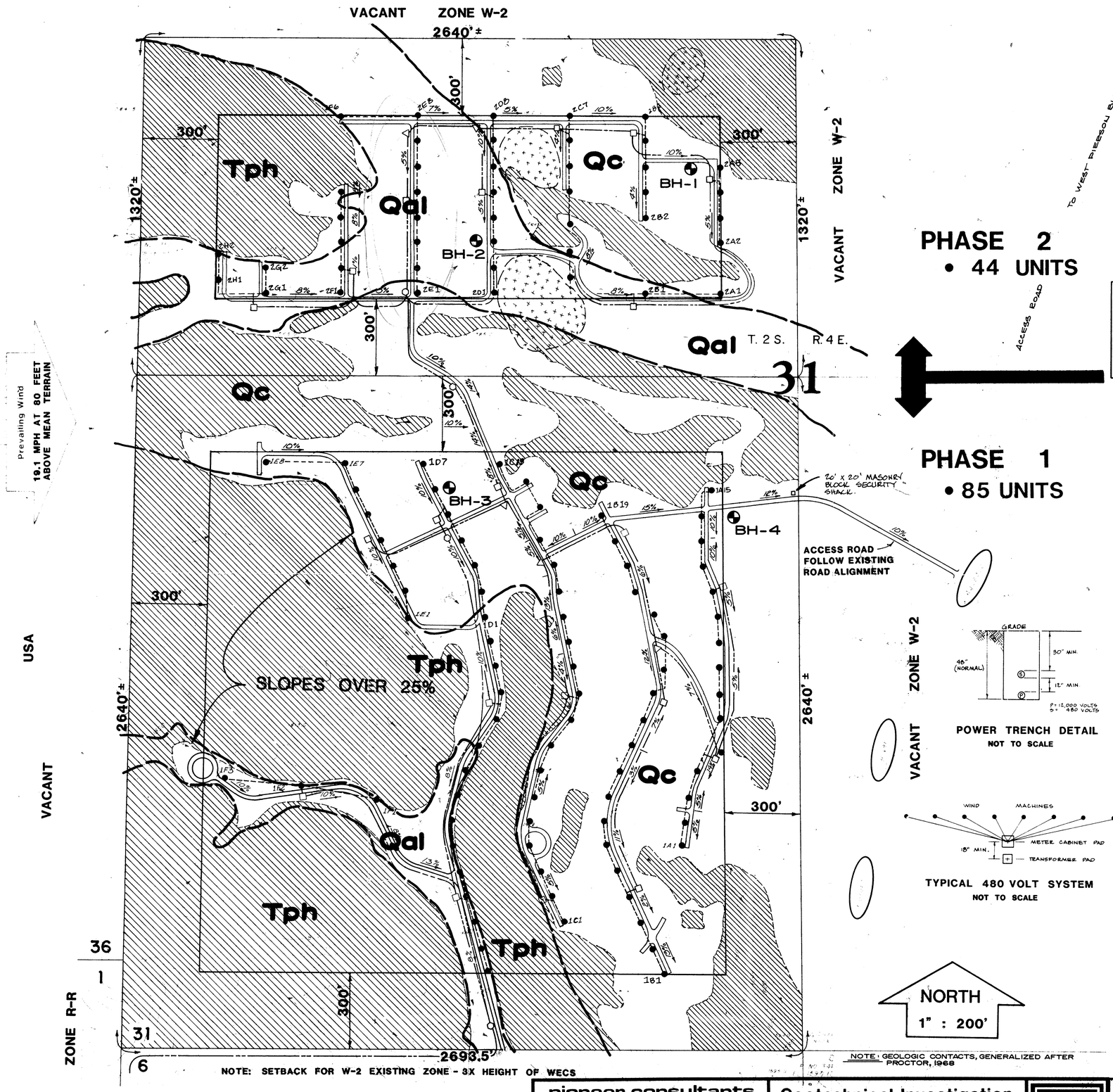


pioneer consultants GEOTECHNICAL ENGINEERS Redlands, California	DATE JAN. '85	JOB NO. 3923-001
	SCALE 1" = 200'	EXHIBIT 1.



NOTE: SETBACK FOR W-2 EXISTING ZONE - 3X HEIGHT OF WECS

NOTE: GEOLOGIC CONTACTS, GENERALIZED AFTER PROCTOR, 1968

OWNER/APPLICANT: ENERGY UNLIMITED, INC.
HARRY HALLORAN
1 ALDWYN CENTER
VILLANOVA, PA. 19085
(619) 329-0797

PROPERTY DATA: DESCRIPTION: SOUTHWEST QUARTER OF SECTION 31 AND THE SOUTH HALF OF THE NORTHWEST QUARTER OF SECTION 31

ZONING: EXISTING: W-2
PROPOSED: W-E: CZ 4285

AREA: PHASE 1 - SOUTHWEST QUARTER OF SECTION 31 = 160 ACRES
PHASE 2 - SOUTH HALF OF THE NORTHWEST QUARTER OF SECTION 31 = 80 ACRES

ASSESSOR'S PARCEL NUMBERS: 667-150-001 AND 667-160-001

UTILITIES: ELECTRIC - SOUTHERN CALIFORNIA EDISON COMPANY
WATER - DESERT HOT SPRINGS COUNTY WATER DISTRICT (NONE ON SITE)
GAS - SOUTHERN CALIFORNIA GAS COMPANY (NONE ON SITE)
TELEPHONE - CONTINENTAL TELEPHONE COMPANY (NONE ON SITE)

NOTES:

1. ● WECS 65 KW (DANISH MANUFACTURE) UNITS: PHASE 1 TOTAL = 85
PHASE 2 TOTAL = 44
GRAND TOTAL = 129
2. SPACING OF WECS UNITS 300 FEET PARALLEL TO WIND DIRECTION AND 100 FEET PERPENDICULAR TO WIND DIRECTION
3. MAXIMUM ACCESS ROAD GRADE 15%

EXPANATION

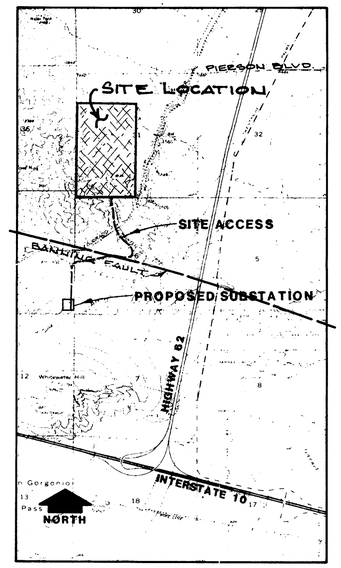
Qal	QUATERNARY, Recent Alluvium	⊕ BH-5 Exploratory Boring
Qc	QUATERNARY, Cabezon Fanglomerate	
Tph	TERTIARY, Painted Hill Fm.	

BARREL CACTUS AREA LOCATIONS SHOWN ARE APPROXIMATE. WECS UNITS AND ROADS WILL BE CONSTRUCTED TO AVOID ACTUAL CONTACT.

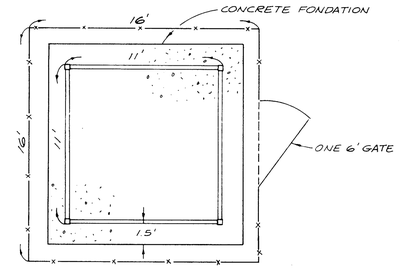
WECS UNIT NUMBERING: PHASE, ROW, NUMBER OF UNIT IN ROW

12,000 VOLT LINE
480 VOLT LINE
□ 6' X 8' TRANSFORMER PAD
△ 3' X 5' X 4' PULL BOX
○ 4' X 6'-6" X 7' MANHOLE

POWER TRENCH DETAIL
NOT TO SCALE



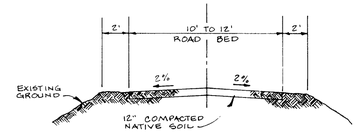
VICINITY MAP
NO SCALE



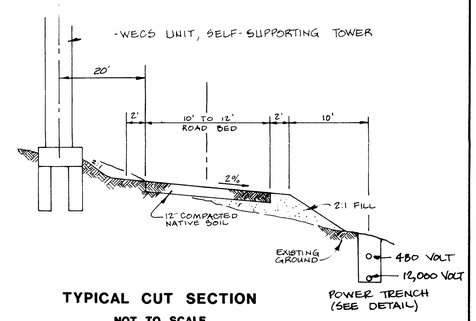
FENCE DETAIL NOT TO SCALE

PROVIDE 6FT CHAIN-LINK FENCE WITH 3 STRANDS BARBED WIRE PER CONDITIONS OF APPROVAL FOR LATTICE TOWERS ONLY. NO FENCING WITH TUBE TOWERS.

TYPICAL 480 VOLT SYSTEM
NOT TO SCALE



TYPICAL FILL SECTION
NOT TO SCALE



TYPICAL CUT SECTION
NOT TO SCALE

REVISED: 1/8/85

pioneer consultants GEOTECHNICAL ENGINEERS Redlands, California			
DATE JAN. '85	SCALE 1" = 200'		
JOB NO. 3923-001	EXHIBIT 2-1		

Geotechnical Investigation
For
ENERGY UNLIMITED, INC.

KRIEGER & STEWART
ENGINEERING CONSULTANTS
3602 UNIVERSITY AVE., SUITE 201
RIVERSIDE, CALIFORNIA 92501
(714) 684-6900

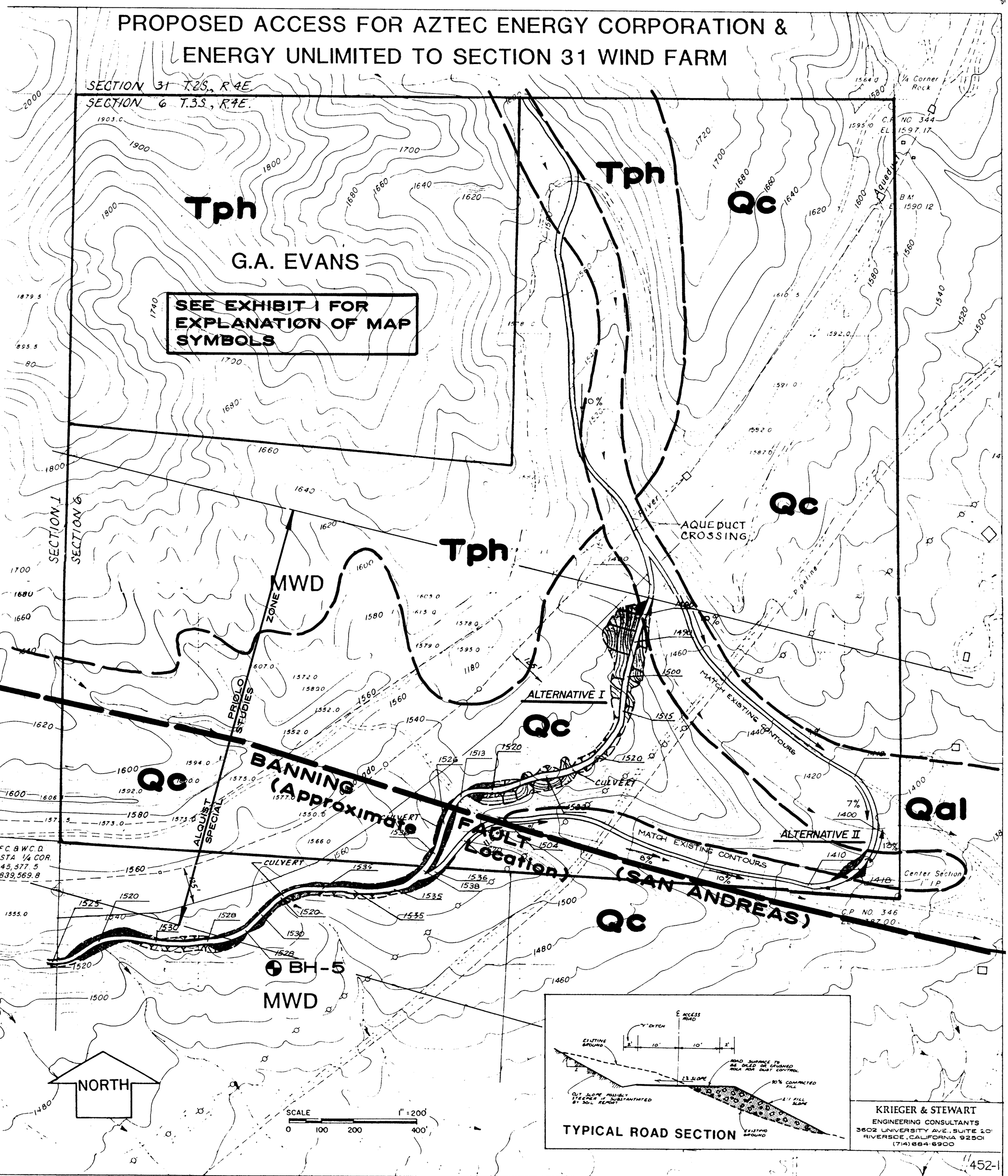
DRAWN	CHECKED	DATE	REVISED
FDB	JGK	3-13-84	6-15-84

ENERGY UNLIMITED, INC.

WIND ENERGY CONVERSION SYSTEM
WECS 20
PLOT PLAN EXHIBIT 'A'

SHEET 1 OF 2 SHEETS
554-1

PROPOSED ACCESS FOR AZTEC ENERGY CORPORATION & ENERGY UNLIMITED TO SECTION 31 WIND FARM



NOTE: GEOLOGIC CONTACTS AND FAULT LOCATION ARE GENERALIZED AFTER PROCTOR, 1968

pioneer consultants
GEOTECHNICAL ENGINEERS
Redlands, California

DATE JAN. '85	SCALE 1" = 200'
JOB NO. 3923-001	EXHIBIT 2-2

Geotechnical Investigation

For
ENERGY UNLIMITED, INC.

BORING SUMMARY NO. BH-1

ELEVATION: N/I

DATE DRILLED: January 7, 1985

DEPTH IN FEET	SAMPLES	BLOW COUNT PER FOOT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	RELATIVE COMPACTION %	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION			
1							Silty sand, with trace of ½-inch gravel	loose	slightly moist	red/ brown
2	1*	50/4"					Sand, fine to very coarse to 1-inch gravel (no recovery)	very dense		
3										
4	SPT	50/3"	3.1	117.5		SW-SC	Gravels		dry	lighter
5										
6										
7						SP-SM	Sand, fine to coarse, trace of ½ to 1-inch gravel and 3-inch cobbles (no recovery)			light brown/ gray
8	SPT	50/ 4½"								
9										
10										
11										
12										
13	SPT	50/ 4½"	1.9	92.0		SP-SM	Sand, fine to very coarse, gravels to 3 inches			
14										
15										
16										
17	SPT	50/½"	0.8	116.5			Gravel			
18							TOTAL BORING DEPTH 17.5 FEET (REFUSAL) NO GROUNDWATER ENCOUNTERED			
19										
20										
21										
22										
23										
24										
25										

* 2.5" I.D. Ring Sampler
SPT - Standard Penetration Test

WECS 20
Desert Hot Springs Area, California
for Energy Unlimited, Inc.

EXHIBIT NUMBER 3

Pioneer Consultants

JOB NUMBER: 3923-001

Approved For Report On _____ By _____

BORING SUMMARY NO. BH-2

ELEVATION: N/I

DATE DRILLED: January 7, 1985

DEPTH IN FEET	SAMPLES	BLOW COUNT PER FOOT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	RELATIVE COMPACTION %	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION			
1–4	1*	71	3.7	118.8			Sand, clean, medium to coarse	loose	moist	brown/ gray
			3.5	112.7						
5–7	2*	50/2"	4.1	130.9		SP	Sand, fine to coarse, to 1 to 4-inch gravels	very dense		
8–12	SPT	50/ 4½"	1.1	137.9			Sand to a trace of ½" gravel		slightly moist	
13–15	SPT	50/5"	4.7	103.5		SP-SM	Sand, fine to medium, trace of coarse to 1-inch gravel			
16–25							TOTAL BORING DEPTH 15.5 FEET (REFUSAL) NO GROUNDWATER ENCOUNTERED			

* 2.5" I.D. Ring Sampler
SPT - Standard Penetration Test

WECS 20
Desert Hot Springs Area, California
for Energy Unlimited, Inc.

EXHIBIT NUMBER 4

Pioneer Consultants

JOB NUMBER: 3923-001

BORING SUMMARY NO. BH-3

ELEVATION: N/I

DATE DRILLED: January 7, 1985

DEPTH IN FEET	SAMPLES	BLOW COUNT PER FOOT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	RELATIVE COMPACTION %	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION			
1							Silty sand, fine to coarse, with trace of roots	loose	slightly moist	red/ brown
2	1*	27/5"	13.5	102.0			Silty sand, fine, to ½-inch gravel	dense		
3–7	SPT	35/4"	5.3	77.9			Sand, fine to coarse, to ½-inch gravel	very dense	dry	light brown
8–9	SPT	50/ 5½"	8.5	116.2		SW-SM	Sand, fine to coarse, with ½ to 1-inch gravel			
11							2 to 3-inch gravel			
12–13	SPT	50/ 5½"	3.1	125.6			Gravelly			
17–18	SPT	50/6"	5.1	128.4						
22–23	SPT	50/ 5½"	5.2	126.3			Sand to ½-inch gravels			
25							(continued)			

* 2.5" I.D. Ring Sampler
SPT - Standard Penetration Test

WECS 20
Desert Hot Springs Area, California
for Energy Unlimited, Inc.

EXHIBIT NUMBER 5

Pioneer Consultants

JOB NUMBER: 3923-001

Approved For Report On _____ By _____

BORING SUMMARY NO. BH-3

ELEVATION: N/I

DATE DRILLED: January 7, 1985

DEPTH IN FEET	SAMPLES	BLOW COUNT PER FOOT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	RELATIVE COMPACTION %	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION			
26							Sand	very dense	dry	light brown
27										
28	SPT	50/5"	4.5	132.7						
29							Less coarse sand			
30										
31										
32										
33	SPT	50/4"	6.5	129.3						
34										
35										
36							TOTAL BORING DEPTH 35.0 FEET NO GROUNDWATER ENCOUNTERED			
37										
38										
39										
40										
41										
42										
43										
44										
45										
46										
47										
48										
49										
50										

SPT - Standard Penetration Test

Approved For Report On _____ By _____

WECS 20
Desert Hot Springs Area, California
for Energy Unlimited, Inc.

EXHIBIT NUMBER 5A

Pioneer Consultants

JOB NUMBER: 3923-001

BORING SUMMARY NO. BH-4

ELEVATION: N/I

DATE DRILLED: January 8 and 9, 1985

DEPTH IN FEET	SAMPLES	BLOW COUNT PER FOOT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	RELATIVE COMPACTION %	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION			
1							Silty sand	loose	slightly moist	red/ brown
2	1*	50/5"	3.5	106.7			Silty sand to ½-inch gravel	very dense	dry	light reddish brown
3										
4	2*	31/2"	4.3	83.5		SP-SC				
5							Increasing gravel ½ to 1 inch			
6										
7										
8	SPT	50/ 4½"	3.8	138.8						light brown
9										
10										
11										
12										
13	SPT	50/5"	2.3	130.5			Gravelly sand			
14										
15										
16							Sand, fine to very coarse, trace of ½-inch gravel			
17										
18	SPT	50/4"	2.3	136.1						
19										
20							Increasing gravel			
21										
22										
23	SPT	50/ 1½"	2.2	135.8						
24							TOTAL BORING DEPTH 23.0 FEET (REFUSAL ON COBBLES) NO GROUNDWATER ENCOUNTERED			
25										

* 2.5" I.D. Ring Sampler
SPT - Standard Penetration Test

WECS 20
Desert Hot Springs Area, California
for Energy Unlimited, Inc.

EXHIBIT NUMBER 6

Pioneer Consultants

JOB NUMBER: 3923-001

Approved For Report On _____ By _____

BORING SUMMARY NO. BH-5

ELEVATION: N/I

DATE DRILLED: January 9, 1985

DEPTH IN FEET	SAMPLES	BLOW COUNT PER FOOT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	RELATIVE COMPACTION %	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION			
1							Sand, fine to medium, trace of very coarse	loose	slightly moist	brown
2	1*	100	5.4	93.9			Sand to ½-inch gravel	dense		
3							Trace of 3-inch gravel			
4										
5	2*	62	2.4	118.7						
6										
7						SP-SM	Sand, fine to coarse, to 3-inch gravel	very dense	dry	light brown
8	SPT	92	1.4	149.2						
9							Increasing gravel			
10										
11										
12										
13	SPT	50/5"	1.0	147.9						
14										
15										
16										
17										
18	SPT	84/ 10½"	1.5	148.5						
19										
20										
21							Sand to 3-inch gravel			
22										
23	SPT	50/4"	1.4	151.3						
24										
25							(continued)			

* 2.5" I.D. Ring Sampler
SPT - Standard Penetration Test

WECS 20
Desert Hot Springs Area, California
for Energy Unlimited, Inc.

EXHIBIT NUMBER 7

Pioneer Consultants

JOB NUMBER: 3923-001

Approved For Report On _____ By _____

BORING SUMMARY NO. BH-5

ELEVATION: N/I

DATE DRILLED: January 9, 1985

DEPTH IN FEET	SAMPLES	BLOW COUNT PER FOOT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	RELATIVE COMPACTION %	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION			
26							Sand with ½-inch gravel	very dense	dry	light brown
27										
28	SPT	50/5"	1.6	150.8						
29										
30										
31							TOTAL BORING DEPTH 30.0 FEET NO GROUNDWATER ENCOUNTERED			
32										
33										
34										
35										
36										
37										
38										
39										
40										
41										
42										
43										
44										
45										
46										
47										
48										
49										
50										

SPT - Standard Penetration Test

Approved For Report On _____ By _____

WECS 20
Desert Hot Springs Area, California
for Energy Unlimited, Inc.

EXHIBIT NUMBER 7A

Pioneer Consultants

JOB NUMBER: 3923-001

The maximum density was determined in accordance with ASTM Standard D1557. The results by laboratory checkpoint are:

Boring Number	Depth (feet)	Soil Description	Maximum Dry Density (P.C.F.)	Optimum Moisture (Percent)
BH-1	1.0- 6.0	Clayey silt, very fine, trace of fine to coarse sand and fine to medium gravel, brown	131.0	9.0
BH-2	6.0-12.0	Sand, fine to coarse, trace of very fine silty sand, brown	134.5	7.5
BH-3	7.0-35.0	Silt, very fine, trace 50% fine to coarse sand, brown	130.7	9.0
BH-4	2.0- 8.0	Silty, very fine, trace 50% fine to coarse sand, brown	133.5	8.3
BH-5	5.0-30.0	Sand, medium, trace of fine to coarse sand, fine to medium gravel, gray	130.5	7.0

MAXIMUM DENSITY - OPTIMUM MOISTURE DETERMINATION

PREPARED BY:	ljs	WECS 20 Desert Hot Springs Area, California for Energy Unlimited, Inc.		EXHIBIT NUMBER
CHECKED BY:	RBR			8
APPROVED BY:	DWT	DATE: 1/85	SCALE:	JOB NUMBER: 3923-001

Pioneer Consultants *Consulting Engineers and Geologists*

FORM NO. 265 (6/83) 1000

Boring Number	Depth (feet)	Percent Passing Individual Sieve 2"	1½"	1"	3/4"	1/2"	3/8"	#4	#10	#20	#40	#100	#200
BH-1	1.0- 6.0					100	96	88	69	47	33	18	12
BH-1	6.0-12.0	100	96	94	92	90	87	75	56	38	25	12	7
BH-1	12.0-17.5						100	89	60	33	20	10	6
BH-2	6.0-12.0	100	97	92	87	79	73	54	42	26	16	7	4
BH-2	12.0-15.0	100	99	97	93	87	83	74	58	40	29	11	7
BH-3	7.0-35.0						100	88	72	49	32	16	10
BH-4	2.0- 8.0				100	92	88	73	52	33	22	11	8
BH-5	5.0-30.0			100	93	84	77	63	47	29	18	9	5

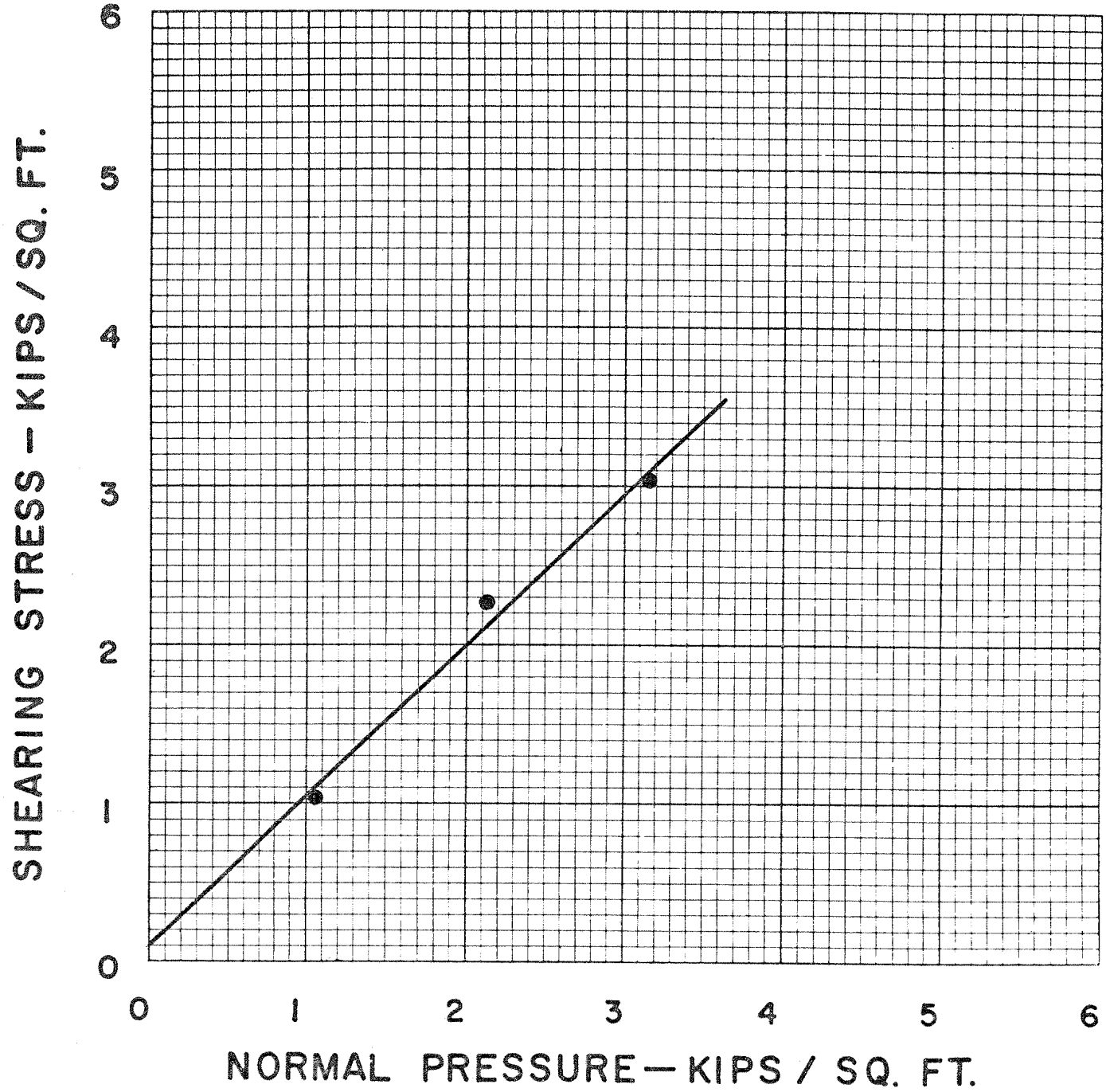
Boring Number	Depth (feet)	Liquid Limit	Plasticity Index	Classification A.A.S.H.T.O.	Unified
BH-1	1.0- 6.0	27	8	A-2-4	SW-SC
BH-1	6.0-12.0	-	Nonplastic	A-1-b	SP-SM
BH-1	12.0-17.5	-	Nonplastic	A-1-b	SP-SM
BH-2	6.0-12.0	-	Nonplastic	A-1-a	SP
BH-2	12.0-15.0	-	Nonplastic	A-1-b	SP-SM
BH-3	7.0-35.0	-	Nonplastic	A-1-b	SW-SM
BH-4	2.0- 8.0	-	-	-	SP-SC
BH-5	5.0-30.0	-	-	-	SP-SM

SUMMARY OF LABORATORY TESTING

PREPARED BY: ljs	WECS 20 Desert Hot Springs Area, California for Energy Unlimited, Inc.		EXHIBIT NUMBER 9
CHECKED BY: RBR			
APPROVED BY: DWT	DATE: 1/85	SCALE:	JOB NUMBER: 3923-001

Pioneer Consultants — *Consulting Engineers and Geologists*

FORM NO. 265 (6/83) 1000

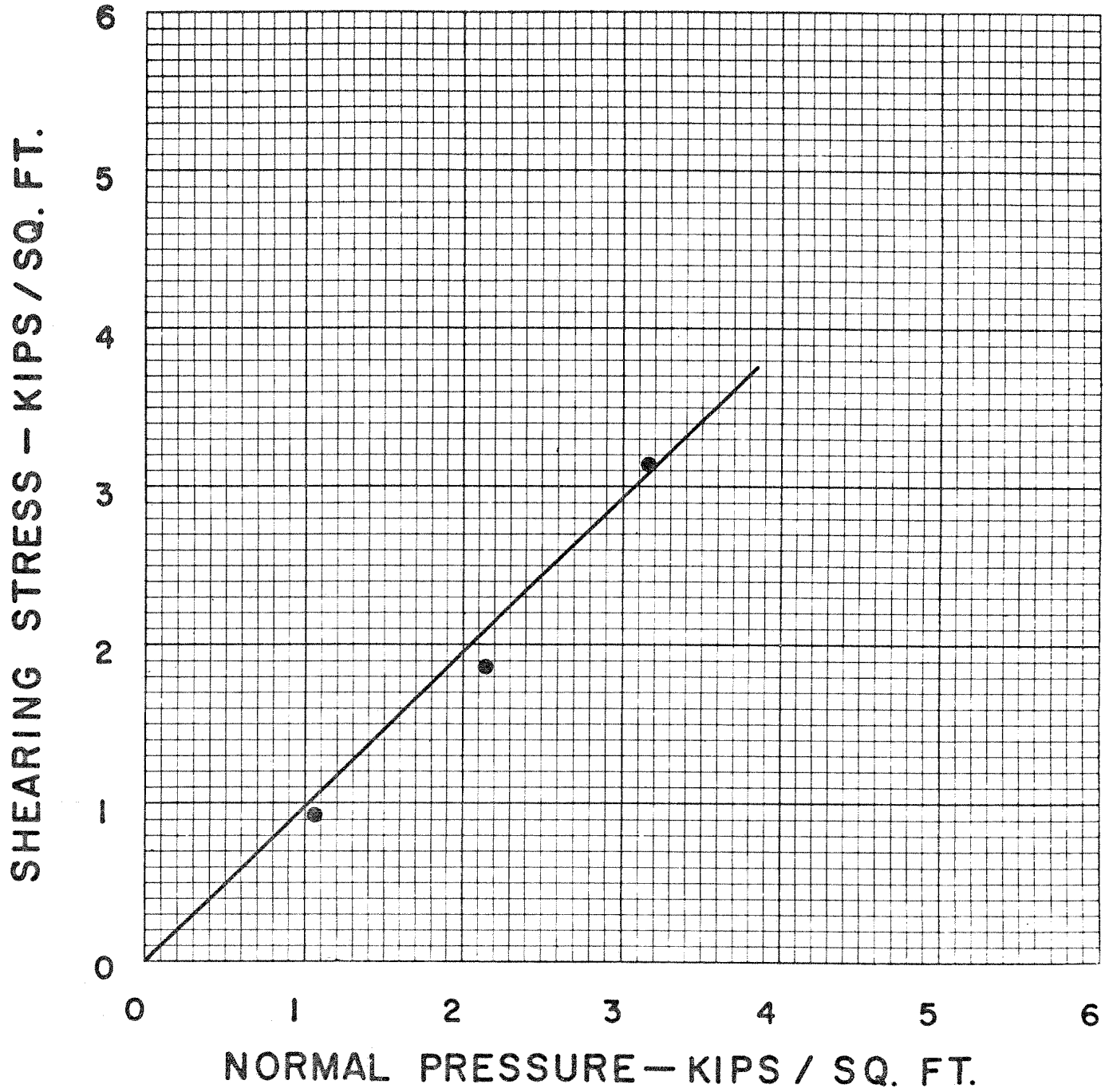


EXCAVATION NO. BH-1 DEPTH: 1.0 - 6.0 FEET

SATURATED TEST		IN SITU MOISTURE TEST	
Ø =	•	Ø =	40 •
C =	P.S.F	C =	110 P.S.F

DIRECT SHEAR TEST DATA

PROJECT: WECS 20, Desert Hot Springs Area, California	PIONEER CONSULTANTS	EXHIBIT
JOB NO.: 3923-001 DATE: 1/85	REDLANDS, CALIFORNIA	10

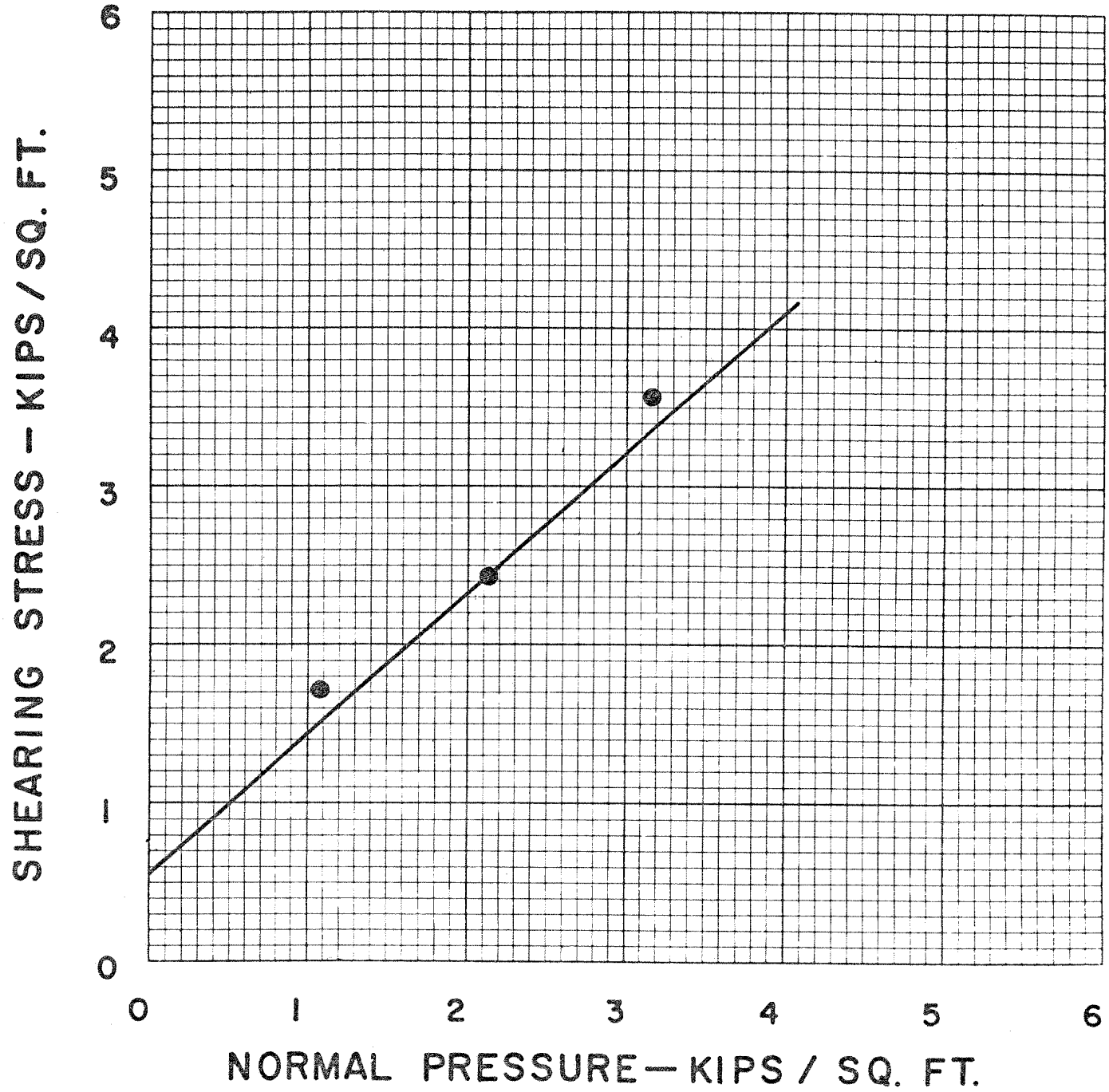


EXCAVATION NO. BH-2 DEPTH: 2.5 - 3.0 FEET

SATURATED TEST		IN SITU MOISTURE TEST	
Ø =	•	Ø =	40 •
C =	P.S.F	C =	0 P.S.F

DIRECT SHEAR TEST DATA

PROJECT:	WECS 20, Desert Hot Springs Area, California	PIONEER CONSULTANTS	EXHIBIT
JOB NO.:	3923-001 DATE: 1/85	REDLANDS, CALIFORNIA	11



EXCAVATION NO. BH-2 **DEPTH:** 6.0 - 12.0 FEET

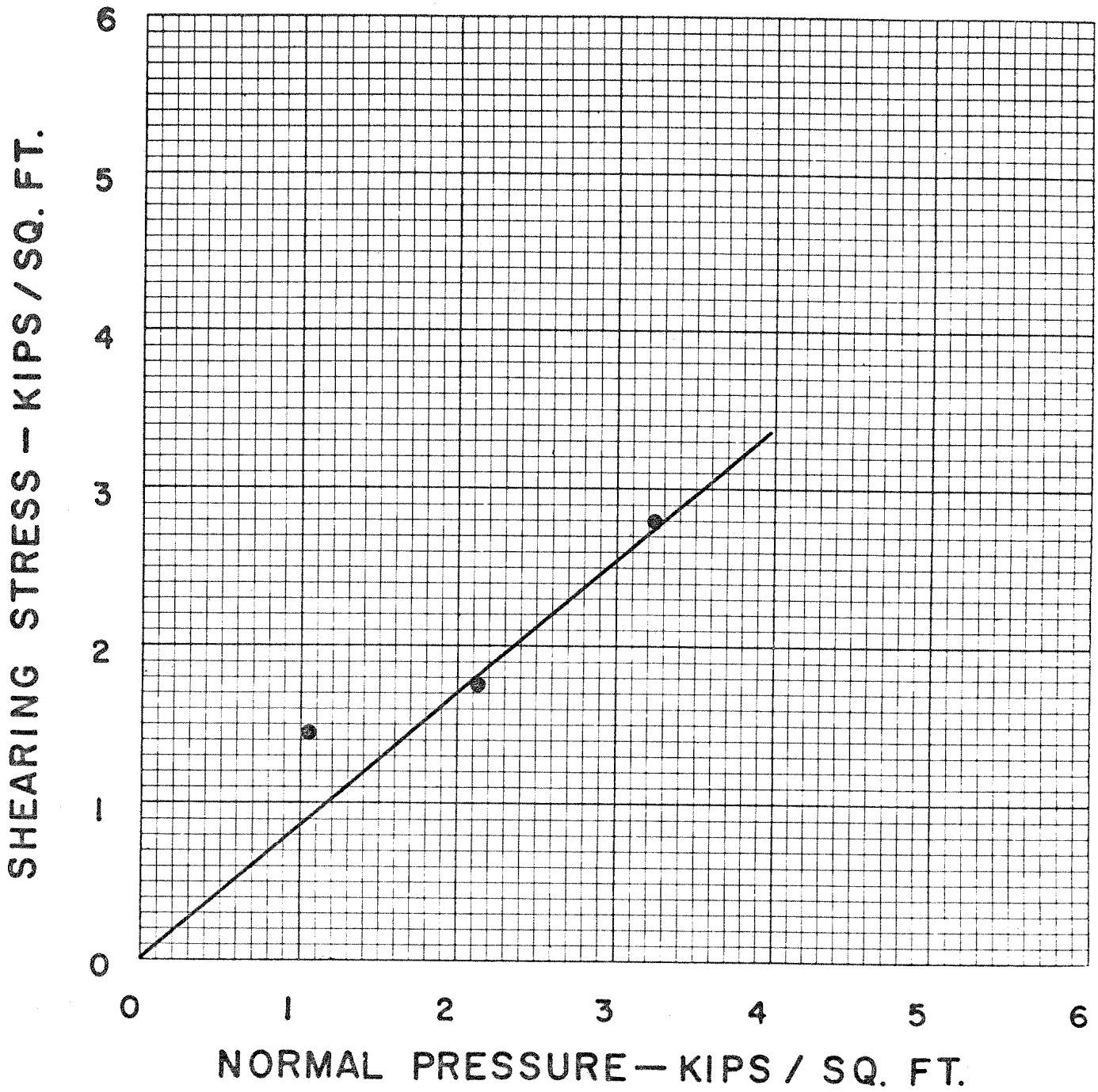
γ = 120.5 m_c = 7.3%

SATURATED TEST		REMOLDED TEST	
Ø =	•	Ø =	41 •
C =	P.S.F	C =	560 P.S.F

DIRECT SHEAR TEST DATA

PROJECT: WECS 20, Desert Hot Springs Area, California	PIONEER CONSULTANTS	EXHIBIT
JOB NO.: 3923-001 DATE: 1/85	REDLANDS, CALIFORNIA	12

FORM 132

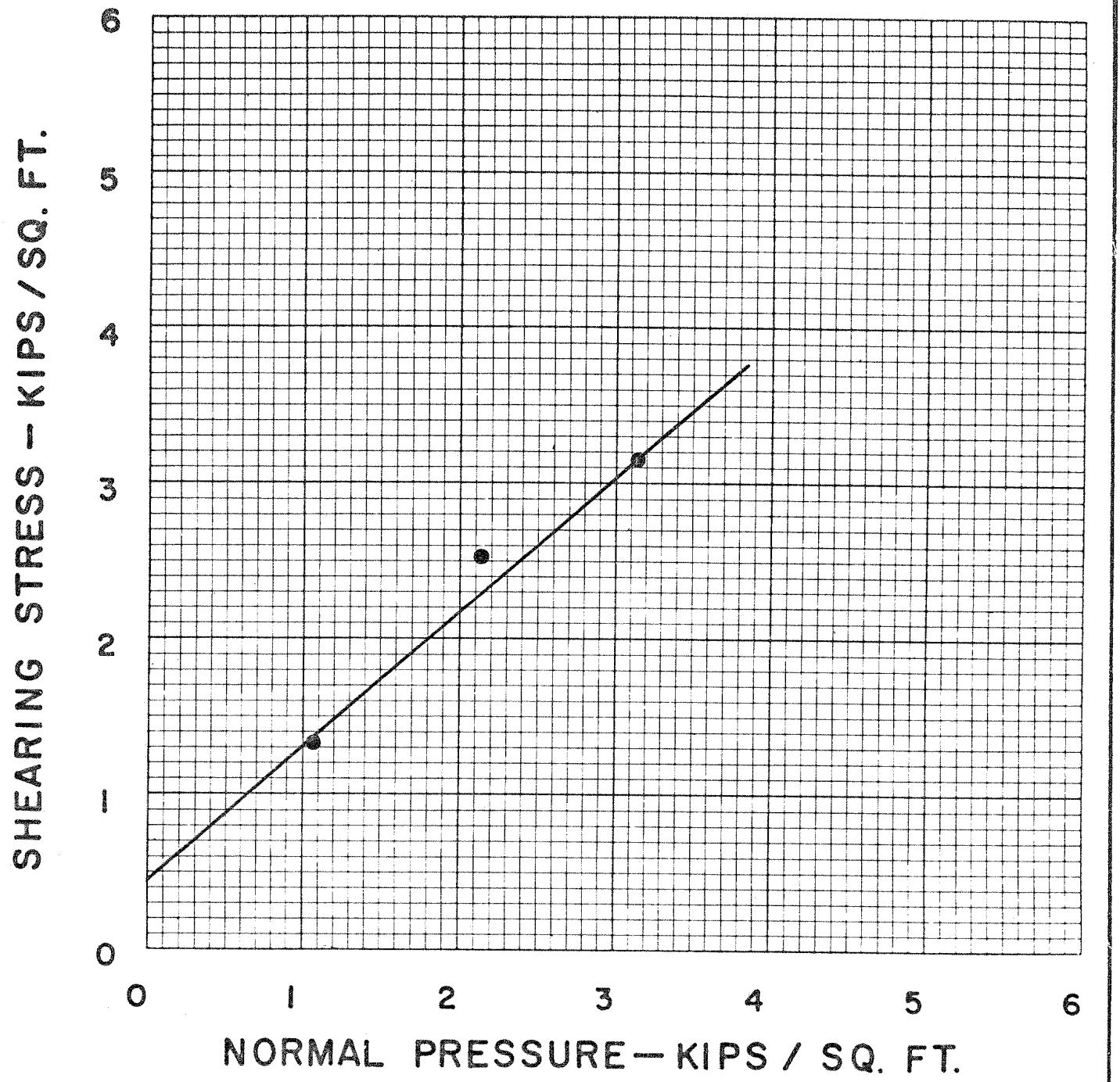


EXCAVATION NO. BH-5 DEPTH: 4.5 - 5.0 FEET

SATURATED TEST		IN SITU MOISTURE TEST	
Ø =	•	Ø =	40 •
C =	P.S.F	C =	0 P.S.F

DIRECT SHEAR TEST DATA

PROJECT: WECS 20, Desert Hot Springs Area, California	PIONEER CONSULTANTS	EXHIBIT
JOB NO.: 3923-001 DATE: 1/85	REDLANDS, CALIFORNIA	13

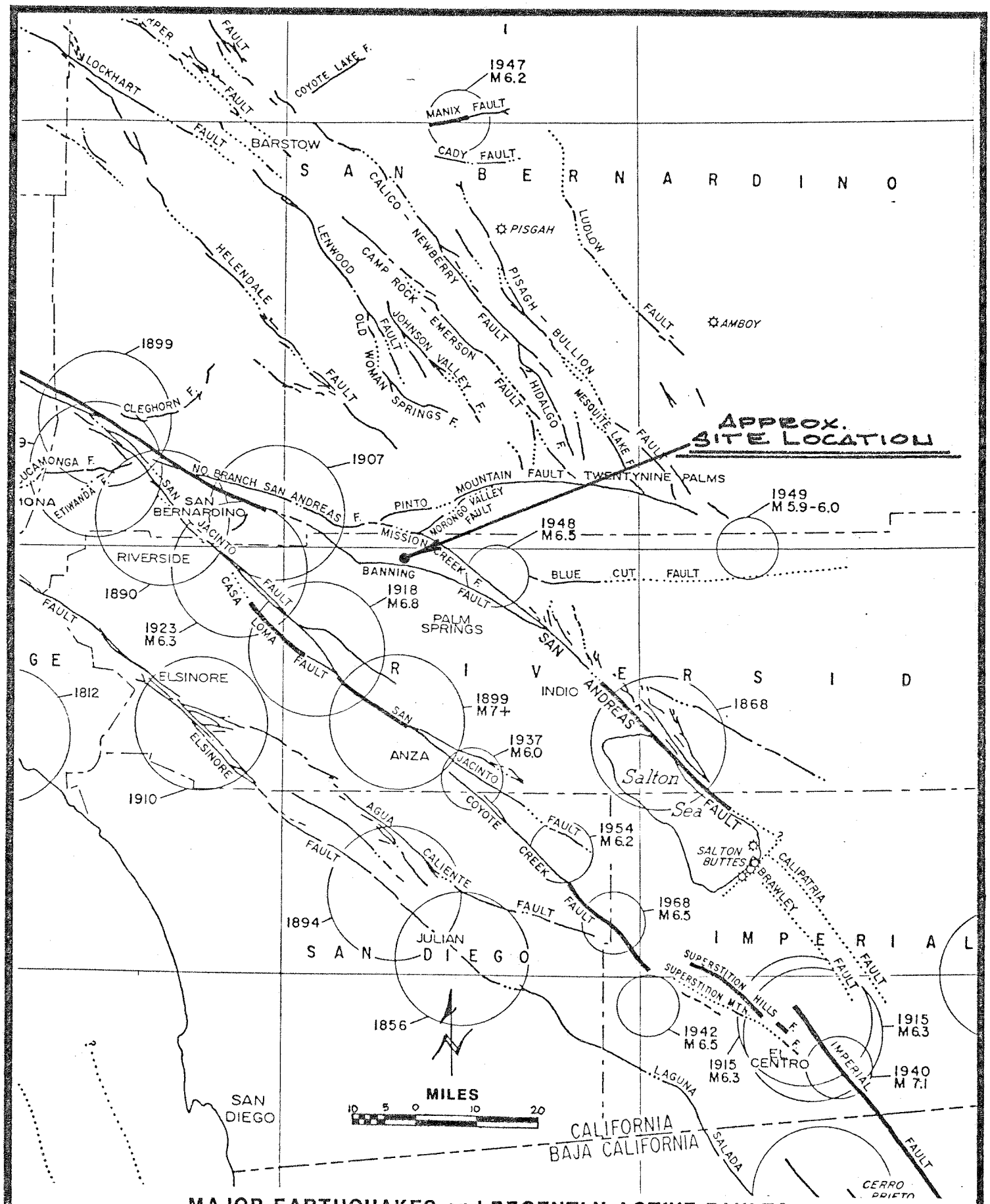


EXCAVATION NO. BH-5 DEPTH: 5.0 - 30.0 FEET

SATURATED TEST		IN SITU MOISTURE TEST	
Ø =	•	Ø =	40 •
C =	P.S.F	C =	460 P.S.F

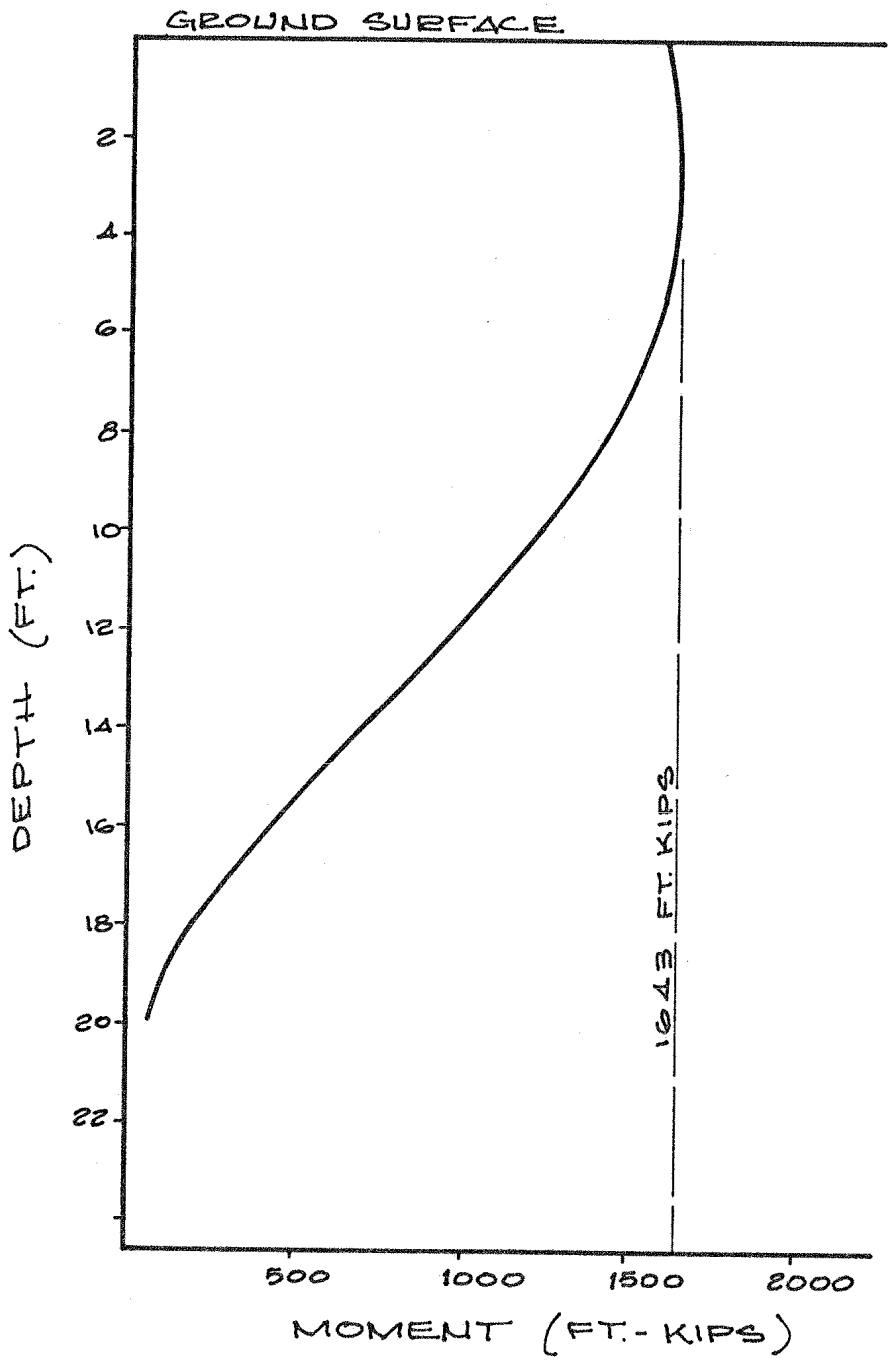
DIRECT SHEAR TEST DATA

PROJECT: WECS 20, Desert Hot Springs Area, California	PIONEER CONSULTANTS	EXHIBIT
JOB NO.: 3923-001 DATE: 1/85	REDLANDS, CALIFORNIA	14



MAJOR EARTHQUAKES and RECENTLY ACTIVE FAULTS
SOUTHERN CALIFORNIA REGION

pioneer consultants GEOTECHNICAL ENGINEERS Redlands, California	DATE FEB. '85	JOB NO. 3923-001
	SCALE AS SHOWN	EXHIBIT 15



pioneer consultants GEOTECHNICAL ENGINEERS Redlands, California	DATE FEB. '85	JOB NO. 3923-001
	SCALE AS SHOWN	EXHIBIT 16

APPENDIX F

ACOUSTICAL ANALYSIS REPORT
NOISE IMPACT ANALYSIS
HERSH WALKER ACOUSTICS
2004

Hersh Walker Acoustics

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Acoustical Analysis Report

Noise Impact Analysis

Addition to Commercial WECS Permit No. 20

Section 31, T2S, R4E

City of Desert Hot Springs, CA

May 5, 2004

Prepared by:

Bruce Walker

Bruce Walker, Ph. D., INCE Bd. Cert.
V.P., Hersh Walker Acoustics

Prepared for:

Energy Unlimited, Inc.
638 Lindero Canyon Road, #273
Oak Park, CA 91301

Introduction:

Energy Unlimited, Inc. proposes to delete 16 existing 65 kW wind turbines and add eight (8) 1.5 MW wind turbines to WECS 20 on the southwest quarter of Sections 31, T2S, R4E in Desert Hot Springs, Riverside County. The nearest existing residential areas surrounding the site are to the south and east in Painted Hills Ranchos. Noise levels at the two nearest residences were computed and determined to be well below the current 55 dB County WECS noise criterion.

Project Description:

WECS 20 consists of 57 existing (of 73 currently in operation) 65 kW Bonus turbines on 25 meter towers, plus eight added GE Wind Energy 1.5 MW turbines on 65 meter towers as shown in Figure 1.

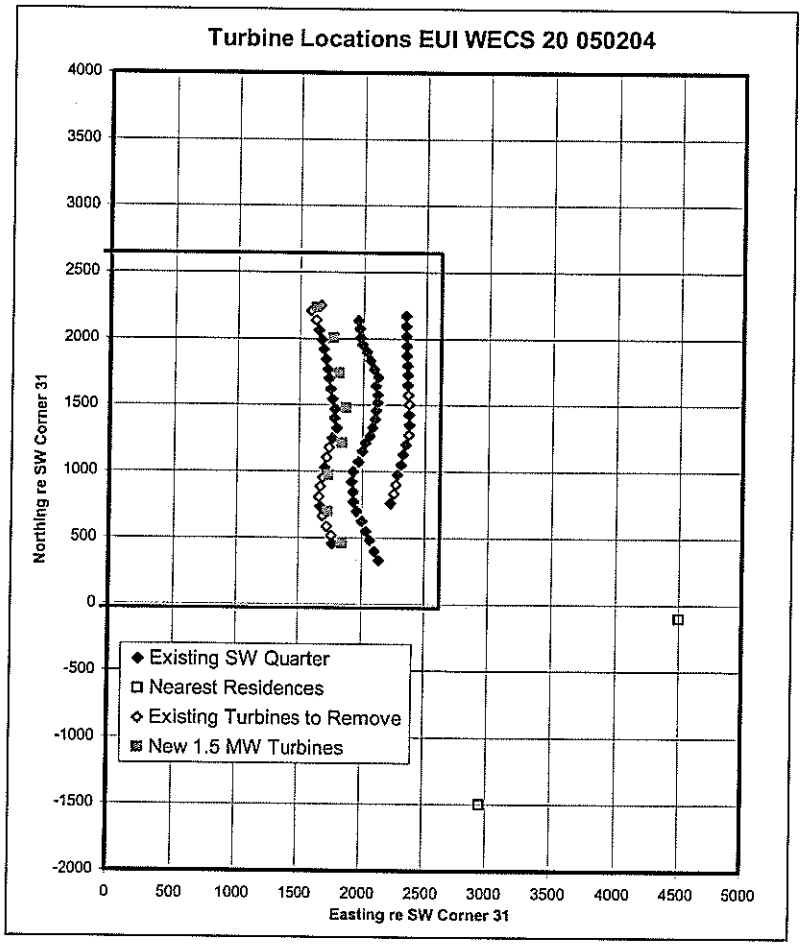

Figure 1 - Turbine Layout and Location of Nearest Residences

In addition to the residences, levels were computed on the four project boundaries, at positions judged to have maximum turbine noise exposure.

Turbine Information:

The following information was obtained from Extract from the Test Report WT 1326/00 on Noise Emission of Wind Power Plant, (WPP) Type TW 1.5s with a Hub Height of 65 m by WINDTEST KWT GmbH, Sommerdeich 14b, 25709 Kaiser-Wilhelm-Koog.

Table 1 - Summary of GE 1.5 MW Turbine Characteristics

Turbine Type:	GE Wind Energy Type 1.5sl
Power Rating:	1500 kW
Rotor Type:	3 Blade Upwind
Rotor Diameter:	70.5 meters
Rotor Speed:	Variable
Hub Height:	65 meters
Tower Type:	Steel Tube
Generator Speed:	Variable
Power Regulation:	Variable Speed and Pitch
Power vs Wind Speed at 10 meter elevation:	843 kW at 7 m/s
	1207 kW at 8 m/s
	1500 kW at 10 m/s
Rated Effective A-Weighted Sound Power Level at 10 meter Wind Speed	101.5 dB at 6 m/s
	103.3 dB at 8 m/s
	103.9 dB at 10 m/s (Spec.)
Pure Tone per Riverside County Definition	None

Computations:

Noise levels were computed in accordance with the following procedure:

1. The Easting, Northing and Elevation of each wind turbine and each calculation point (residence or property line position) were stored in computer files.
2. Distances were computed for each turbine/residence pair

$$d_{T,H} = \sqrt{(X_T - X_H)^2 + (Y_T - Y_H)^2 + (Z_T + HubHeight - Z_H)^2}$$

3. Per Riverside County requirement, the A-weighted sound pressure level (*SLA*) from each turbine was computed from the Effective A-Weighted Sound Power Level (L_{WA}). To provide levels corresponding to near full turbine power output, levels for 10 m/s wind speed (approx. 13 m/s at hub) were used for the computations.

$$SLA_{T,H} = L_{WA} - 10\log\left(2\pi d_{T,H}^2\right) - .00328 d_{T,H}$$

   where $d_{T,H}$ is the distance in meters from turbine *T* to residence *H*.

4. The total sound pressure level at each residence was determined as the sum of contributions from all turbines

$$SLA_H = 10\log\left[\sum_T 10^{(SLA_{T,H}/10)}\right]$$

5. The results were tabulated.
6. A similar computation was performed for reception points on a grid encompassing a 2.5-mile square area with the turbine array near the center (4 x 3 mile rectangle for the cumulative calculations). Using Matlab, noise contours on 5 dB intervals were computed and plotted.

Computation Results:

Results of the individual off-site location sound level computations for 85 existing turbines, 8 proposed new turbines and the total for all 93 are shown in Table 2. At the two nearest residence sites, levels are below 50 dB and therefore well below the current 55 dB Riverside County WECS noise criteria. Property line noise levels are well below the 65 dB County noise criterion for non-WECS property.

Table 2 - Results of Residence and Property Line Noise Computations for WECS 2-Noise for Existing, Proposed and All Turbines

I.D.	Description	Easting	Northing	SPL All	SPL 65 kW	SPL 1.5 MW
1	South	2950	-1500	46.9	44.7	42.8
2	East	4500	-100	46.7	44.8	42.2
3	South P.L.	5350	1000	55.5	52.7	52.2
4	East P.L.	0	1700	60.2	59.1	53.4
5	North P.L.	2810	-800	57.0	53.7	54.2
6	West P.L.	3300	-850	50.5	47.9	47.2

Contour plots are presented in Figure 2 - Figure 5 for the four conditions. On these graphs, Easting and Northing are shown in miles relative to the SW corner of Section 31 T2S R4E.

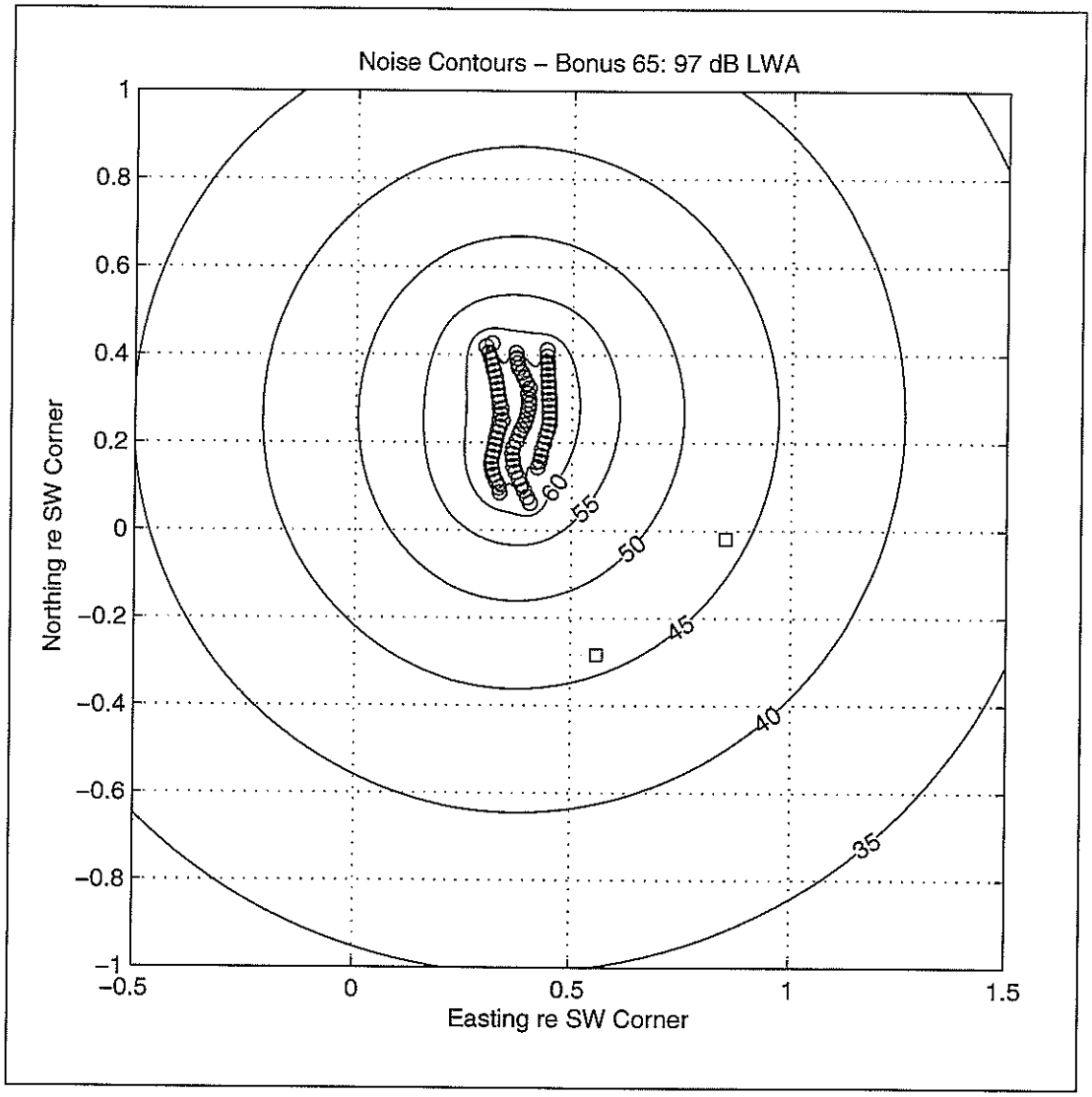

Figure 2 - Noise Contours for Existing 73 65 kW Turbines

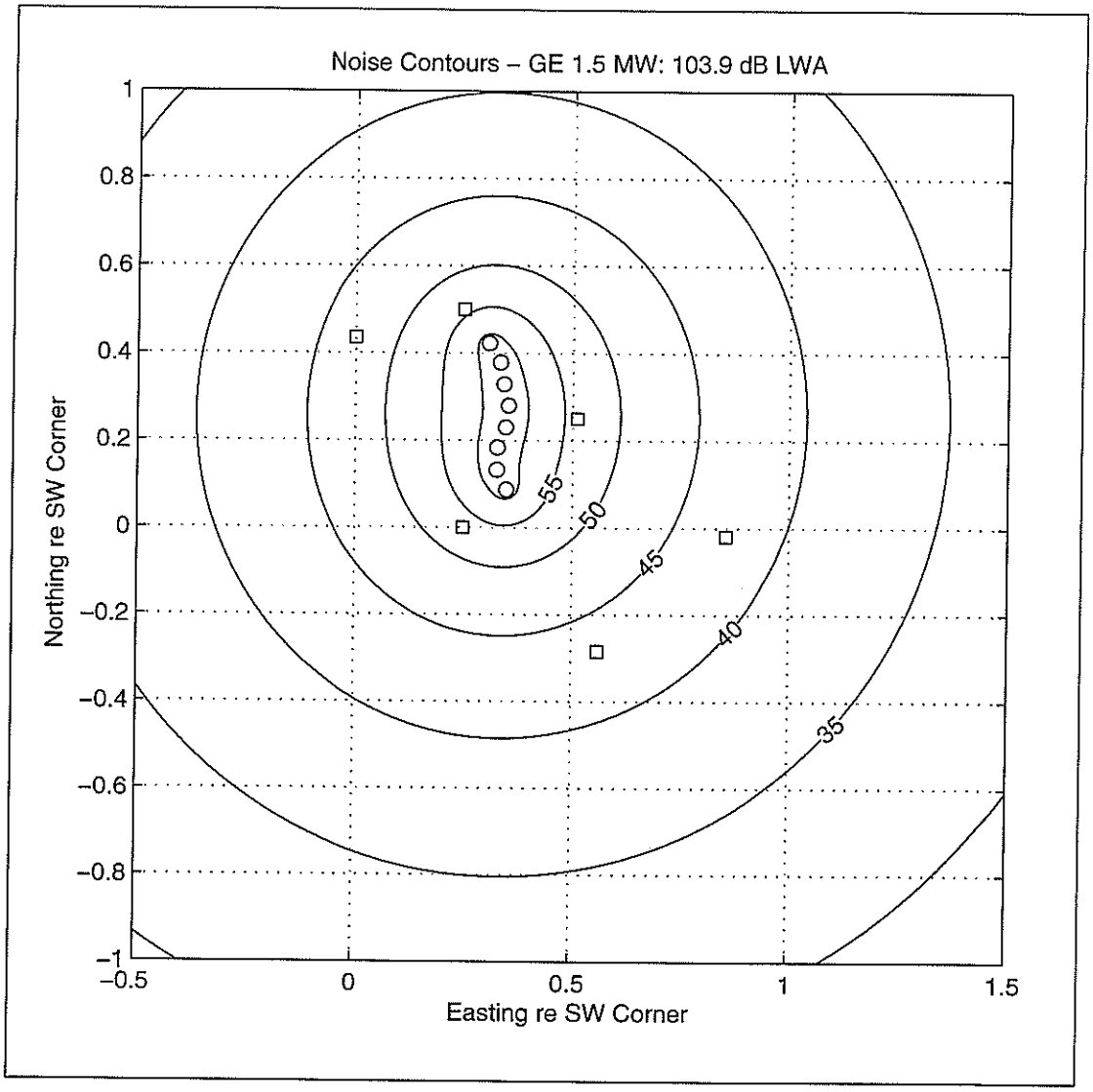

Figure 3 - Noise Contours for 8 Proposed 1.5 MW Turbines

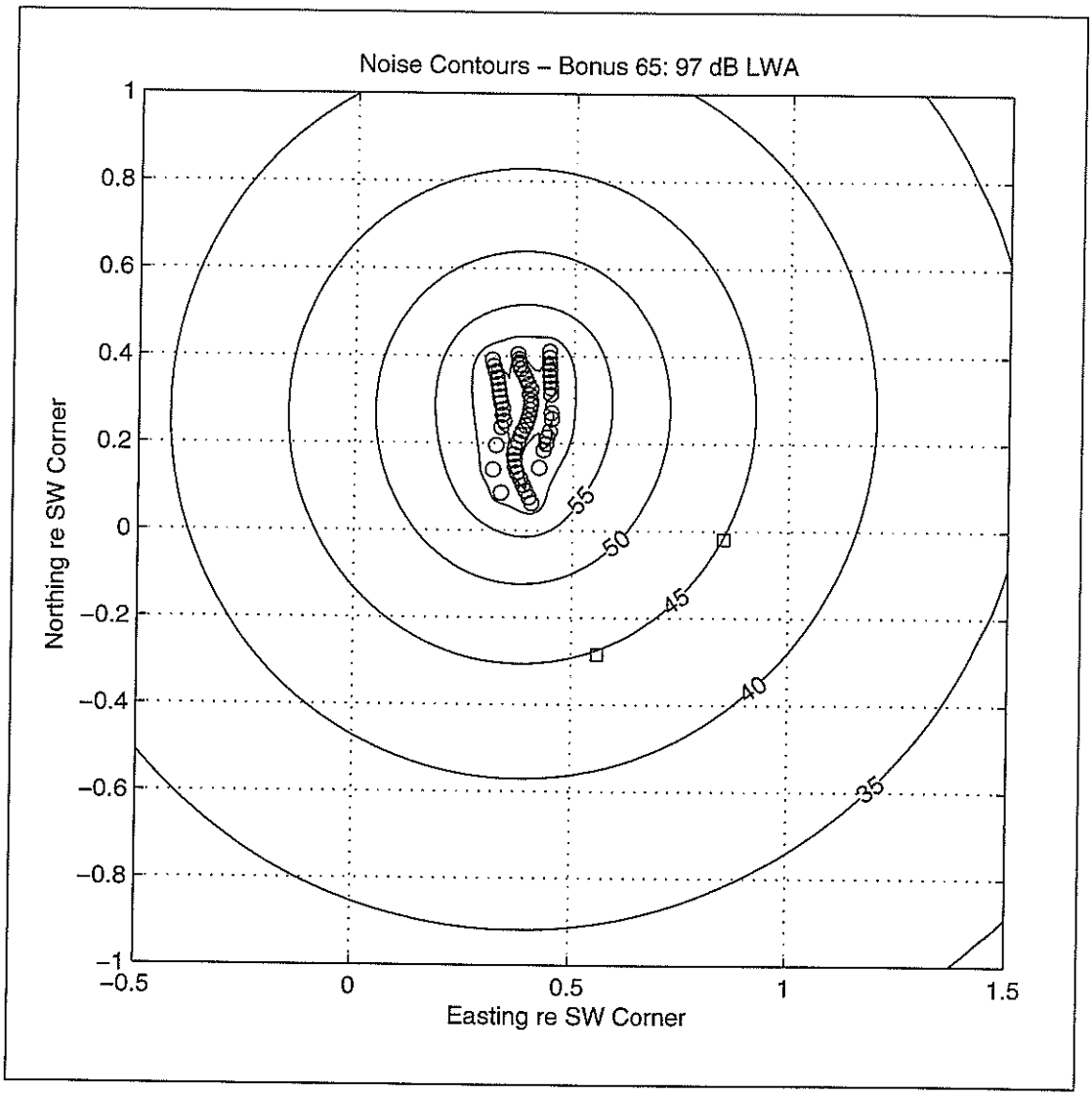

Figure 4 - Noise Contours for 65 kW Turbines after Removal of 16

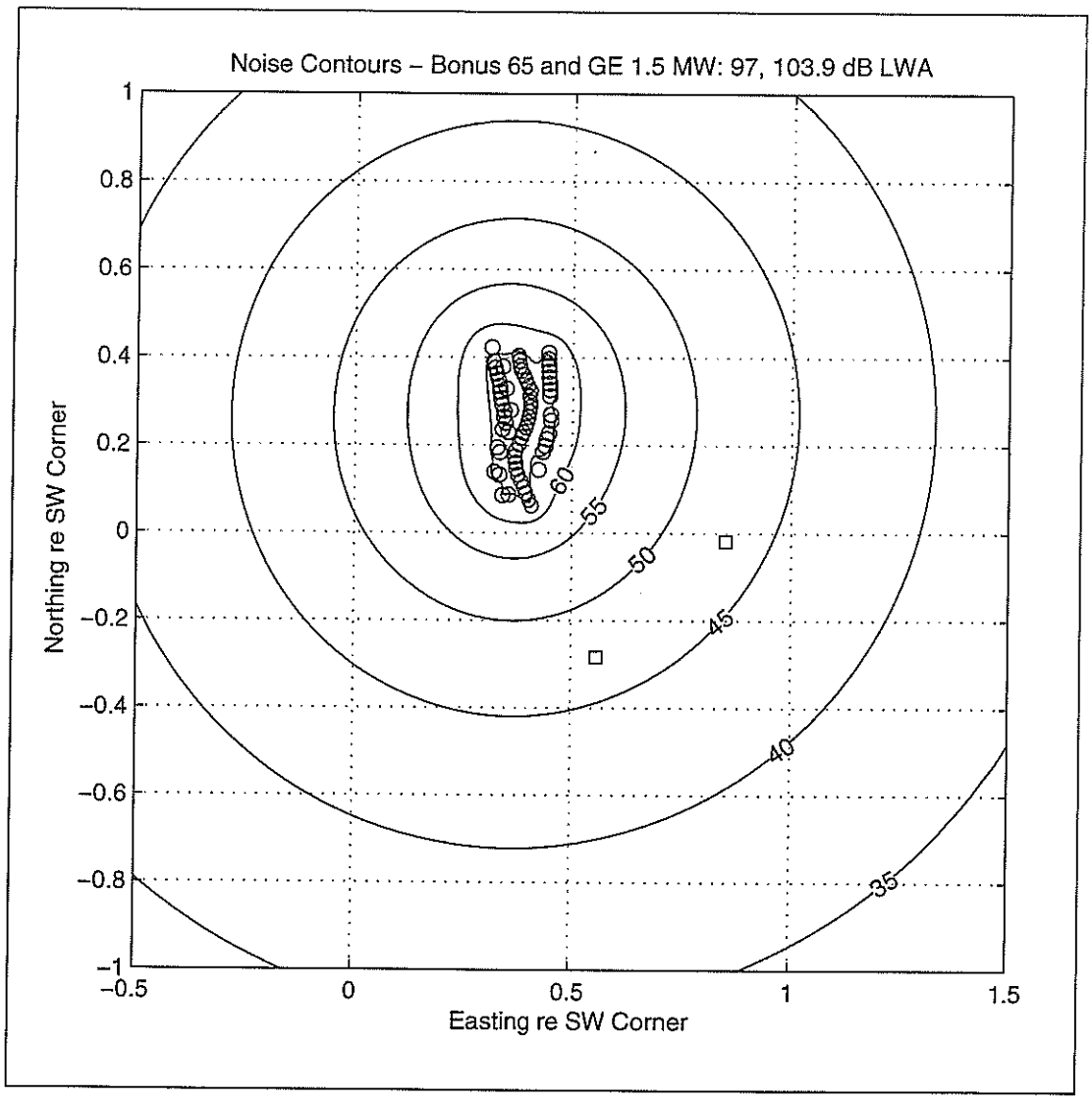

Figure 5 - Noise Contours for Combined Turbine Array

Field Measurements:

On the morning of April 29, 2004, a series of acoustical measurements was undertaken at a point approxiximately 200 ft north of the residence located to the east of the project site. During these measurements, wind speeds at the measurement site were gusting to above 18 m/s, resulting in substantial wind interaction noise at the microphone and making results difficult to interpret. Selecting data for wind in the 6-8 m/s range (at 3 m elevation) resulted in data as shown in Table 3. Note that the ambient noise (turbines parked) was approximately 50 dB, resulting from wind noise in nearby vegetation and structures. Subtracting the background noise from the overall noise with turbines operating results in an estimated noise level from the existing turbines below 50 dB.

Table 3 - Summary of Ambient Noise Measurements

Turbine Condition	Noise Level - dB
All Operating	52-54
Removal Turbines Parked	51-53
All Parked	49-51
Turbine Noise Level (Background Corrected)	47-48

Conclusion:

Project noise levels are clearly in compliance with existing WECS noise standards established by the County of Riverside.

APPENDIX G

OFFSITE ROAD AND TRAFFIC IMPACT PLAN
KRIEGER & STEWART, INCORPORATED
2004

ENERGY UNLIMITED, INCORPORATED
WECS 20 WIND PARK
REVISED PERMIT APPLICATION
OFFSITE ROAD AND TRAFFIC IMPACT PLAN

Prepared By:

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RSW/lsc
C500/554-9TP

ENERGY UNLIMITED, INCORPORATED
WECS 20 WIND PARK
OFFSITE ROAD AND TRAFFIC IMPACT PLAN

1. Introduction

The proposed WECS project will result in the construction, operation, and maintenance of eight wind turbines. The proposed traffic route to the site is shown on the attached map. This route is currently used by the operation and maintenance personnel operating the existing WECS 20 Wind Park. An increase in traffic to and from the site for the construction phase of this project will occur. The current Average Daily Trips (ADT) along the access route has not been established; however, by observation, it appears quite low (well below 7,000 ADT). Therefore, the increase in traffic will have little impact on the ability of the access road system to handle the traffic load, as the volume to capacity ratio on these roads will remain very small. Parking capacity will not be affected by project traffic since vehicles used in the construction and operations of said project will park on private property. Some parking alongside access roads may occur to allow for the adjustment of delivery loads; however, this will not be the norm and each occurrence should have little impact on local traffic. This project will have no impact on emergency access or access to nearby uses for local residents and will not impact the local rail traffic. This project will not require new or altered road maintenance procedures. In general, this project will have little or no impact on the transportation capabilities of the community.

2. Route Locations

The proposed route for traffic is shown on the attached map. A main route does not pass by any residential areas.

3. Road Surfaces

Access Road adjacent to Colorado River Aqueduct	Native Material

4. Road Maintenance and Repair Plan

Access Road along Colorado River Aqueduct	Minor grading and water as needed to control dirt and dust.
All Roads	All damage to the road surface due to construction traffic will be repaired to the original condition of the road prior to the start of construction.

5. Estimate of Duration of Traffic

i) Construction (Total Duration: 1 Month)

PROJECT PHASE	DESCRIPTION	ESTIMATED DURATION OF TRAFFIC
A	Road Construction	1 Week/Month for 1 Month
B	WECS Foundation Excavation and Concrete Placement	4 Weeks/Month for 1 Month
C	WECS Erection	3 Weeks/Month for 1 Month
D	Electrical Cable Excavation and Installation	2 Weeks/Month for 1 Month

ii) Operation and Maintenance (Total Duration: 30± Years)

PROJECT PHASE	DESCRIPTION	ESTIMATED DURATION OF TRAFFIC
E	Operation and Maintenance	Continuous

6. Description and Frequency of the Vehicles Using the Proposed Routes

i) Construction

TYPE OF VEHICLE	PHASES (1)	ESTIMATED TRAFFIC VOLUME (2)
Truck Tractor & Lowboy with Dozer/Grader	A	2 Trips Total
Water Truck	A, B, D	4 Trips Daily
Fuel & Mechanics Truck	A, B, C, D	1 Trip Daily
Survey Crew Truck	A, B, D	2 Trips Weekly
Truck Tractor & Trailer with Backhoe & Loader	B, D	2 Trips Total
Concrete Trucks	B	55 Trips per Foundation (8 Days)

TYPE OF VEHICLE	PHASES [1]	ESTIMATED TRAFFIC VOLUME [2]
Crane	C	2 Trips Total
Truck Tractor & Trailer with WECS	C	4 Trips per WTG
Truck Tractor & Trailer with Electrical Cable	D	2 Trips Weekly
Private Vehicles of Construction Workers (1 Trip per Vehicle)	A, B, C, D	10 Trips Daily

ii) Operation and Maintenance

TYPE OF VEHICLE	PHASES [1]	ESTIMATED TRAFFIC VOLUME [2]
Crane for Maintenance	E	1 Trip Monthly
Pickup Truck for Maintenance Workers	E	1 Trip Daily

[1] See Item 5 for Description of Phase
[2] 1 Trip is a Round Trip On Site and Off Site

7. Sequence of Work

Work will be performed simultaneously as required. Work will proceed as soon as building permits are obtained.

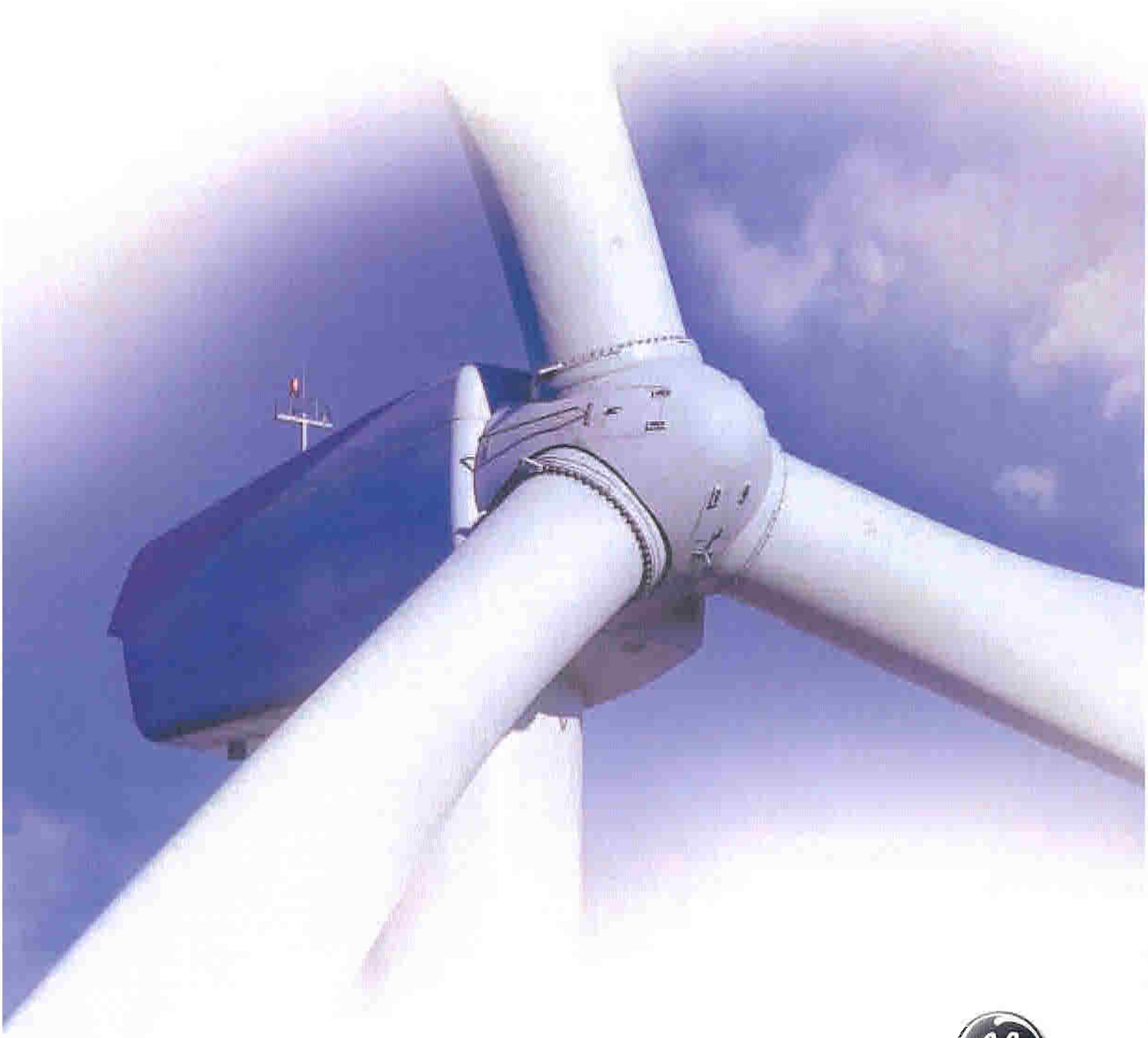
RSW/lsc
C500/554-9TP

APPENDIX H

WIND TURBINE GENERATOR TECHNICAL DATA

1.5sl/1.5s wind turbine

English



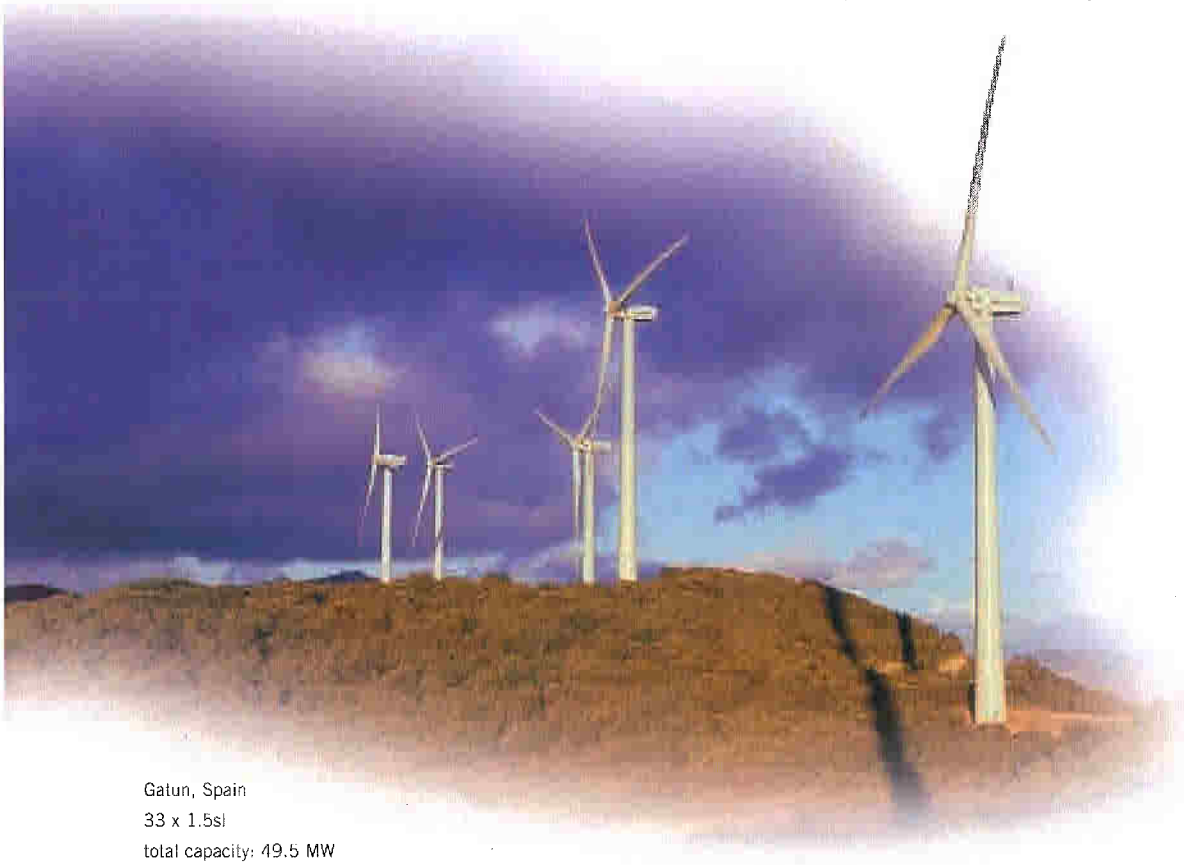
imagination at work

The 1.5sl/s wind turbines – proven results...

Fenner, USA
20 x 1.5s
total capacity: 30 MW

Arneburg, Germany
20 x 1.5sl
total capacity: 30 MW

Bassum, Germany
13 x 1.5s
total capacity: 19.5 MW



Gatun, Spain
33 x 1.5sl
total capacity: 49.5 MW

When it comes to "megawatt-plus" technology, our proven 1.5 MW wind turbine continues to raise the bar. Without resting on its past successes, our efforts to build on this proven performer include everything from technology investments in reliability and dependability, to more cost effective and versatile configurations. With over 1,300 units in operation worldwide, the 1.5 MW continues to be one of the world's most widely used wind turbines in its class.

The 1.5 MW machine is active yaw and pitch regulated with power/torque control capability and an asynchronous generator. It utilizes a bedplate drive train design where all nacelle components are joined on a common structure, providing exceptional durability. The generator and gearbox are supported by elastomeric elements to minimise noise emissions.

Slufter, the Netherlands
8 x 1.5s,
total capacity: 12 MW

Fenner, USA
20 x 1.5s
total capacity: 30 MW

Caluengo, Spain
33 x 1.5sl
total capacity: 49.5 MW

Slufter, the Netherlands
8 x 1.5s
total capacity: 12 MW

...adaptable solutions.

With variable hub heights and rotor diameters, the 1.5 MW wind turbine is both versatile and adaptable, and has proven itself in a wide variety of wind energy sites around the world, both on-land and off-shore. The 1.5 MW wind turbine features variable-speed control and independent blade pitch to assure aerodynamic efficiency and reduce loads on the drive train, yielding reduced maintenance cost overall and longer turbine life. The turbines' independent blade pitch system also mitigates the need for large emergency braking systems and enables the use of larger rotors to allow increased energy yield. At the same time, GE's unique Wind Volt-Amp-Reactive ("WindVAR") electronics provide transmission efficiencies and enable the turbine to function harmoniously within the local grid. Reliable, cost-effective operation...it was designed in from day one.

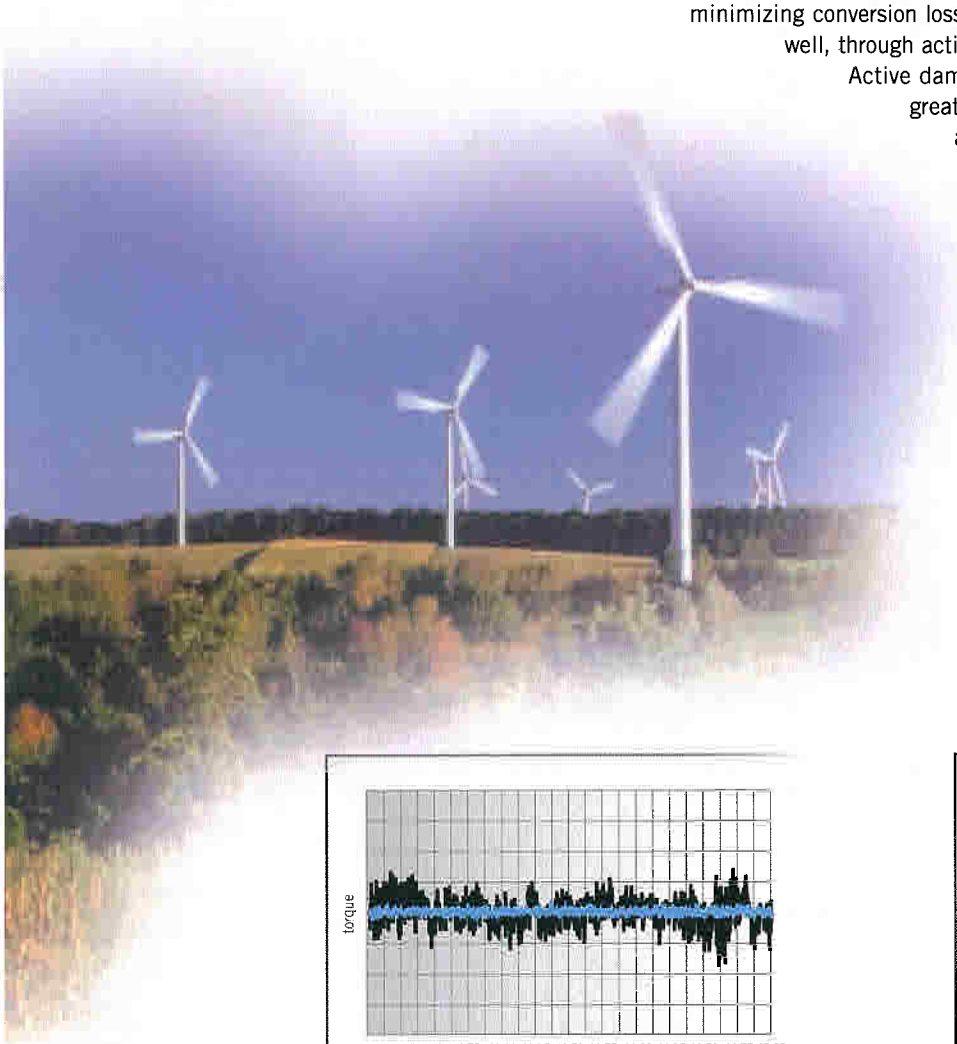
Escurillo, Spain
33 x 1.5sl
total capacity: 49.5 MW

Variable Speed – for higher energy capture and reduced loads.

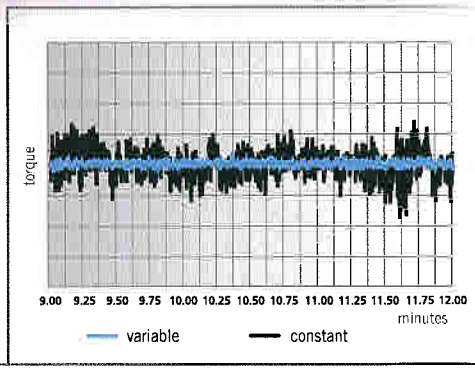
Through the use of advanced electronics, the 1.5 MW turbine features efficient and reliable variable speed control. This feature enables the turbines' control system to continually adjust the rotor rpm level for optimum thrust at each wind speed – allowing the wind turbine to continually operate at its highest level of aerodynamic efficiency. Fixed-speed wind turbines, by contrast, only attain peak efficiency at one speed.

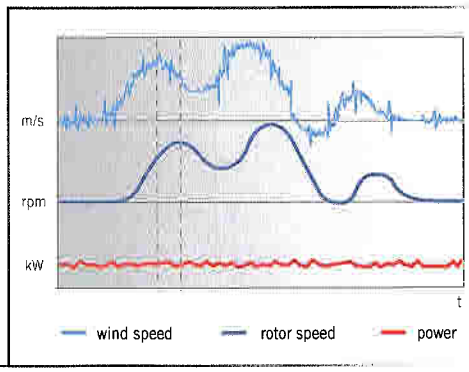
Fenner, USA
20 x 1.5s,
total capacity: 30 MW

Also, unlike conventional variable-speed machines where all power generated is forced through the converter, the 1.5 MW design is outstandingly efficient. Through the turbines' high-efficiency converter, it is only necessary to convert a quarter of the power generated – substantially minimizing conversion losses. Tower oscillation is kept to a minimum as well, through active damping of the entire turbine system. Active damping also limits peak torque, providing greater drive train reliability, reduced maintenance and longer turbine life.



Below The energy in a wind gust is stored by accelerating the rotor. This leads to reduced loads, improved transmission efficiencies and performance.

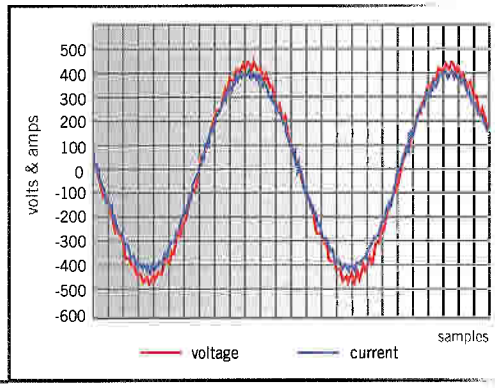




Above GE Energy's variable speed operation provides reduced mean torque loads and smaller torque excursions for a given power output compared to constant speed wind turbines. The result is less wear on the internal drivetrain components and longer turbine life.

Escurillo, Spain
33 x 1.5sl,
total capacity: 49.5 MW

Dynamic reactive power for transmission efficiency and local-grid compatibility.



WindVAR Technology:
Leading, lagging or unity power factor

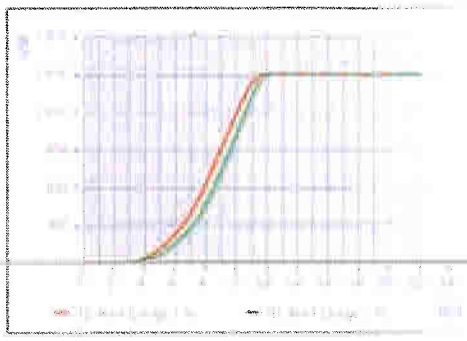
GE Energy's WindVAR power conversion system with VAR control enables the wind turbines to operate at unity, leading or lagging power factor (unity power factor shown left), providing the highest transmission efficiencies and enhanced voltage stability. This is particularly beneficial in weak grid applications.

At the heart of the GE Energy technology, our unique WindVAR power electronics system converts the wind turbine's variable-speed operation into constant-frequency power required by the utility. Through WindVAR, voltage is controlled and regulated in real-time. Similar to conventional utility generators, WindVAR enables the turbine to supply reactive power to the grid at the time it's needed, in a fraction of a second, providing transmission efficiencies and enhanced voltage stability. This feature is especially beneficial when the local grid is weak, or in larger turbine installations.

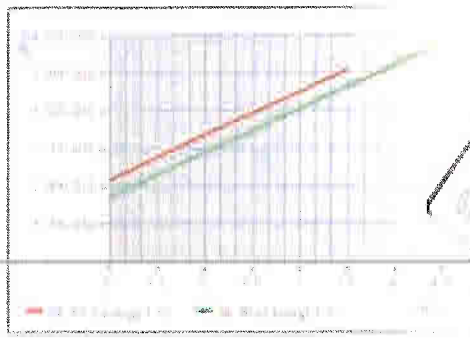
Bassum, Germany
12 x 1.5s,
total capacity: 18 MW

Heede, Germany
11 x 1.5s,
total capacity: 16.5 MW

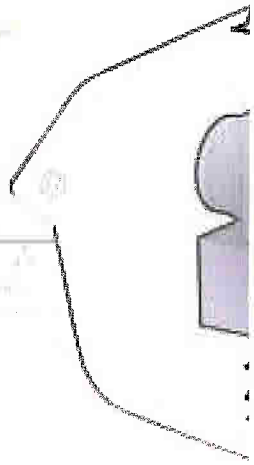
Trent Mesa, USA
100 x 1.5s,
total capacity: 150 MW



Power curve



Annual energy yield



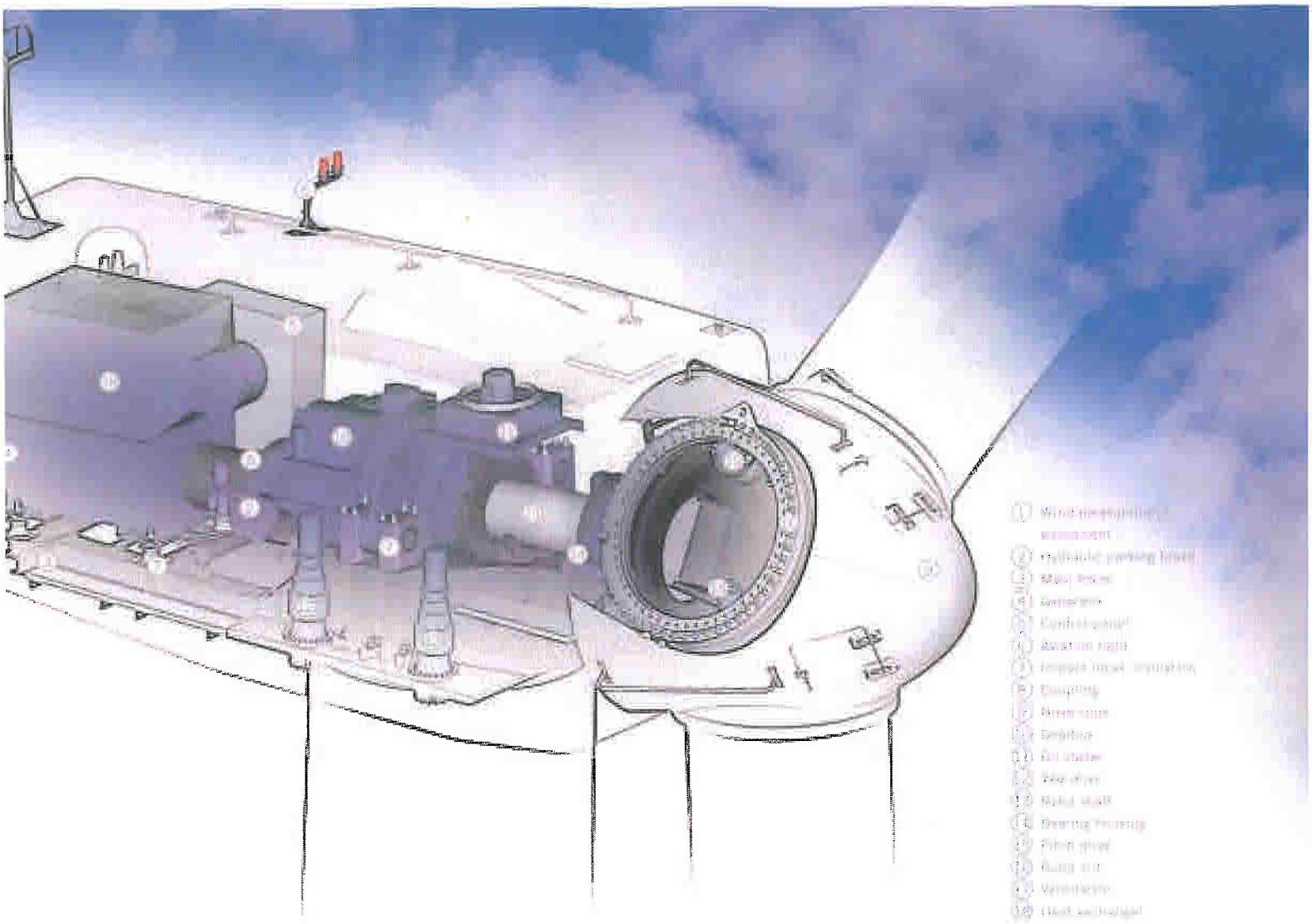
Support services that keep your goals and expectations at the forefront.

Trent Mesa, USA
100 x 1.5s,
total capacity: 150 MW

With a wide range of capabilities and proven wind project success, we can provide you with your desired level of assistance. From operation and maintenance to project development assistance – we can put our experienced, worldwide resources to work for you.

Once online, your unique project needs are our priority. We will work with you to determine your individual needs and preferred level of assistance – then, we'll be there for you whenever you need us. Our customers are our highest priority and our goal is to deliver the absolute highest customer value – when you're pleased, we are successful.

The installation and commissioning process for our turbines is rigorous. Our commissioning specialists assure that each system's operating and output patterns are optimized for each unique location.



Technical specifications

	1.5sl	1.5s
Operating data		
• Rated capacity:	1,500 kW	1,500 kW
• Cut-in wind speed:	3 m/s	4 m/s
• Cut-out wind speed		
300 s average:	25 m/s	25 m/s
30 s average:	WZ II: 23 m/s, IEC s: 28 m/s	WZ II: 25 m/s, WZ III, IEC II: 28 m/s
3 s average:	WZ II: 25 m/s, IEC s: 30 m/s	WZ II: 27 m/s, WZ III, IEC II: 30 m/s
• Cut-back-in wind speed		
300 s average:	WZ II: 17 m/s IEC s: 22 m/s	WZ II: 19 m/s, WZ III, IEC II: 22 m/s
• Rated wind speed:	11.8 m/s	12 m/s
Rotor		
• Number of rotor blades:	3	3
• Rotor diameter:	77 m	70.5 m
• Swept area:	4,657 m²	3,904 m²
• Rotor speed (variable):	10.1 – 20.4 rpm	11.1 – 22.2 rpm
Tower		
• Hub heights for WZ II:	61.4 / 80 / 85 / 100 m	64.7 / 80 / 85 / 100 m
• Hub heights for WZ III/IEC s:	64.7 / 80 / 85 m	64.7 / 80 / 85 m
Power control:	Active blade pitch control	Active blade pitch control

Operating limits (outside temperature)
- cold weather light: -20° C to +45° C
- cold weather extreme: -30° C to +45° C / -40° C survival without operation

Control system
- PLC (Programmable logic controller) Remote control and monitoring system

Gearbox
- Three step planetary spur gear system

Generator
- Doubly fed three-phase asynchronous generator

Braking system (fail-safe)
- Electromechanical pitch control for each blade (3 self-contained systems)
- Hydraulic parking brake

Yaw system
- Electromechanical driven with wind direction sensor and automatic cable unwind

Converter
- Pulse-width modulated IGBT frequency converter

Tower design
- Multi-coated, conical tubular steel tower with safety ladder to the nacelle
- Load lifting system, load-bearing capacity over 200 kg
- Service platform for 100 m hub height (service lift optional)

Noise reduction
- Impact noise insulation of the gearbox and generator
- Sound reduced gearbox
- Noise reduced nacelle
- Rotor blades with minimised noise level

Lightning protection system
- Lightning receptors installed on blade tips
- Surge protection in electrical components

Subject to technical alterations, errors and omissions.

GE Energy is one of the world's leading wind energy companies and wind turbine suppliers. With over 6,100 worldwide wind turbine installations, comprising more than 4,000 MW of capacity, our knowledge and expertise spans more than two decades. We currently design and produce wind turbines ranging from 900 kilowatts to 3.6 megawatts in Germany, Spain and the U.S. In Florida, USA, and the Netherlands, we also manufacture advanced wind turbine blades to assure the highest quality, advanced designs and quick on-time delivery. We know that wind power will be an integral part of the world energy mix in this century and we are committed to helping our customers design and implement energy solutions for their unique energy needs.

Our facilities conform to the international ISO 9001 Quality Systems Standard. This standard, together with our adherence to the rigorous Six-Sigma-control discipline, provide you with quality assurance backed by the strength of GE. As a part of GE Power Systems, we also share the diverse resources of one of the world's leading suppliers of power generation technology and management systems. GE is a company widely known for its commitment to excellence in products and services. Every relationship we pursue bears our uncompromising commitment to quality and innovation.

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GE Tower
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(+65) 6326 3492
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Canada
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555 Boulevard Frederick Philipps, 3rd floor
Montreal, Quebec, H4M 2X4
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(+1) 905 858 5390 fax

www.gewindenergy.com

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GEA-13550 (11/03, 5M)

APPENDIX I

NOTICE OF PREPARATION AND
COMMENTS IN RESPONSE TO NOTICE OF PREPARATION

NOTICE OF PREPARATION

NOTICE OF PREPARATION

TO:	See Distribution List	FROM:	City of Desert Hot Springs Development Department 65950 Pierson Boulevard Desert Hot Springs CA 92240

SUBJECT: Notice of Preparation of a Draft Environmental Impact Report.

The CITY OF DESERT HOT SPRINGS will be the Lead Agency and will prepare an environmental impact report for the project identified below. We need to know 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 for the project. The Project description, location, and the probable environmental effects are contained in the attached materials.

☒	A copy of the Initial Study IS attached.
☐	A copy of the Initial Study IS NOT attached.
☒	The proposed project IS considered a project of statewide, regional or areawide significance.
☐	The proposed project IS NOT considered a project of statewide, regional or areawide significance.
☒	The proposed project WILL affect highways or other facilities under the jurisdiction of the State Department of Transportation.
☐	The proposed project WILL NOT affect highways or other facilities under the jurisdiction of the State Department of Transportation.
☒	A scoping meeting WILL be held by the lead agency.
☐	A scoping meeting WILL NOT be held by the lead agency.

If the project meets the criteria requiring the scoping meeting, or if the agency voluntarily elects to hold such a meeting, the date, time and location of the scoping meeting are as follows:

Date: November 14, 2005	Time: 8:00 AM	Location: City of Desert Hot Springs 65950 Pierson Boulevard Desert Hot Springs CA 92240

Your response must be sent at the earliest possible date, but not later than 30 days after receipt of this notice.

Please send your response to Larry Grafton, Director of Planning and Permits at the address shown above. We will need the name of a contact person in your agency.

Project Title	Revised Commercial WECS 20 Project
Project Location – Specific: Identify street address and cross street or attach a map showing project site (preferably a USGS 15' or 7 ½' topographical map identified by quadrangle name):	The project site is located on 161.61 acres at the southwest quarter of Section 31 Township 2 South, Range 4 East, San Bernardino Meridian, in the City of Desert Hot Springs, Riverside County, California, recorded as Assessor's Parcel Number 667-160-001. Thomas Guide coordinates: 695 F3. Maps depicting the location of the two project areas in a regional and vicinity context, as well as maps depicting the specific project area have been attached herewith.
Project Description:	The proposed project includes the construction of eight 1.5 MW GE Wind Turbines in an existing Energy Unlimited, Inc. wind farm. The turbines will be organized along one north-south row at the western edge of the current wind farm development. The turbines will be mounted on towers 65 meters in height, with 35-meter blades on the outside two turbines (totaling 329 feet in height) and with 38.5-meter blades on the inside six turbines (totaling 339 feet in height). The project also includes the construction of one single-story (100' x 40') storage facility for parts and tools, and the use of an open storage area for storage of spare parts for the turbines.
Project Applicant (if any):	Energy Unlimited, Inc.
California Environmental Protection Agency Hazardous Waste List (if applicable):	CAL 0002376812

Date: 10-18-05	Signature:	Larry Grafton
	Title:	Planner
	Telephone:	(760) 329-6411

Consulting firm retained to prepare draft EIR (if applicable):

Name:	Krieger & Stewart, Inc.
Address:	3602 University Drive
City/State/Zip:	Riverside CA 92501
Contact Person:	David F. Scriven

NOTICE OF PREPARATION

OF AN

ENVIRONMENTAL IMPACT REPORT

For the

ENERGY UNLIMITED, INC.
REVISED WECS 20 PROJECT

City of Desert Hot Springs
Development Services Department

INTRODUCTION

In accordance with the California Environmental Quality Act (CEQA), the City of Desert Hot Springs is the Lead Agency and will prepare an Environmental Impact Report (EIR) for the project identified below. The purpose of the Notice of Preparation (NOP) is to solicit comments on the environmental analysis to be contained in the EIR.

In conjunction with the development of the proposed project, it is necessary to address the potential adverse effects of the proposed project on the environment. The Notice of Preparation (NOP) serves two purposes: to solicit information on the scope of the environmental analysis for the proposed project, and to notify the public that the City of Desert Hot Springs will prepare a draft EIR to further assess potential adverse environmental impacts that may result from implementing the proposed project. The Draft EIR will discuss all topics required by CEQA and will evaluate existing conditions and potential impacts associated with the proposed development (Preferred Alternative). The Draft EIR will also evaluate impacts associated with project alternatives, including a "No Project" alternative.

Comments focusing on your area of expertise, your agency's area of jurisdiction, or issues relative to the environmental analysis should be addressed to Larry Grafton, City of Desert Hot Springs. Comments should be received by the City within 30 days of the date of this NOP and will be considered during the preparation of the Draft EIR. Please include the name and phone number of the contact person for your organization. If the proposed project has no bearing on you or your organization, no action on your part is necessary. The project's description, location, and potential environmental impacts are described in the NOP and in the attached Initial Study.

PROJECT LOCATION

The project is within the Coachella Valley region of Riverside County, and lies within the corporate limits of the City of Desert Hot Springs. The project site is located on 160 acres at the southwest quarter of Section 31 Township 2 South, Range 4 East, San Bernardino Meridian, in the City of Desert Hot Springs, Riverside County, California. Thomas Guide Coordinates are Page 695, F-3. The subject site is identified as Assessor's Parcel Number 667-160-001.

BACKGROUND

The project site contains an approved Commercial Wind Energy Conversion System (WECS) approved by the County approximately 20 years ago. For the past 20 years, the site has been operated exclusively as a commercial wind energy facility. The primary visible structures present on the project site are 69 Bonus wind turbine generators which have been in operation since 1985.

A draft Mitigated Negative Declaration was originally prepared and presented for this project. A public hearing was held on January 19, 2005 to determine whether an Environmental Impact Report (EIR) is required for the project. At the hearing, the City Council took public testimony, discussed the project, and directed staff and the applicant to prepare an EIR for the project in order to further analyze the following potentially significant environmental impacts: aesthetics, air quality, biological resources, cultural resources, geology, water quality, hazardous materials, land use/planning, noise, public services, traffic, and utilities.

PROJECT DESCRIPTION / REQUESTED ENTITLEMENTS

The proposed project includes Conditional Use Permit No. 09-04, Variance No. 05-04, Development Permit No. 24-04 and Design Review No. 22-04.

Conditional Use Permit (CUP) No. 09-04 is a request to construct eight 1.5 MW GE Wind Turbines within an existing Energy Unlimited, Inc. wind farm, the construction of one single-story (100' by 40') storage facility for parts and tools, and the use of an open storage area for storage of spare parts for the turbines.

Variance (VAR) No. 05-04 is a request to exceed the 200-foot height limit, as specified in Section 159.08.030(2)(J)(e)(1)(a) of the Desert Hot Springs Municipal Zoning Ordinance, to allow 340-foot wind turbines, as the 340-foot size is now an industry standard.

Development Permit (DP No. 24-04) and Design Review (DR No. 22-04) are for the design and location of the storage building and outdoor storage area that will be developed in conjunction with the wind turbines. The proposed turbines will be located downhill from the primary ridgeline of Whitewater Canyon in a single north-south row. The turbines on the end of each row will be 100.25 meters tall (65-meter tower, 35.25-meter blade) and the six turbines in between will be 103.5 meters tall (65-meter tower, 38.5-meter blade).

ENVIRONMENTAL SETTING

The following briefly describes the project planning area and environmental resources that may be adversely affected by the development of the project.

Existing and Surrounding Land Uses

The project site contains an existing Energy Unlimited, Inc. wind farm with 69 wind turbines.

The 80-acre parcel immediately north of the project site was approved for the installation of wind turbines as part of the original Commercial Wind Energy Conversion System (WECS) Permit 20 in 1985, and is currently undeveloped. The property beyond the project site to the west and northwest is largely undeveloped hilly land except for the Energy Unlimited, Inc. Section 1 wind park, which has been in operation for the past 19 years. About a half mile south and southeast of the project site are scattered single family residences, the majority of which are single-level structures. The zoning, land use designations, and current use for surrounding adjacent parcels is as follows:

Zoning/General Plan:	Current Land Use:
North = Open Space Mountain Reserve (OS/MR)	Vacant
South = Open Space Mountain Reserve (OS/MR) Residential Estate (R-E-5)	Vacant/scattered single family residences
West = Open Space Mountain Reserve (OS/MR)	Vacant
East = Open Space Mountain Reserve (OS/MR)	Vacant/aqueduct

Issues

The Draft EIR shall address all topics required by Sections 15120 through 15131, inclusive, of the State CEQA Guidelines. Particular attention shall be given to the concerns listed below, as well as any additional concerns raised in the responses to the Notice of Preparation.

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

REQUEST FOR COMMENTS

The City of Desert Hot Springs is soliciting input based on your views and opinions concerning the scope of the EIR for the proposed project. To facilitate your review, the following materials are attached:

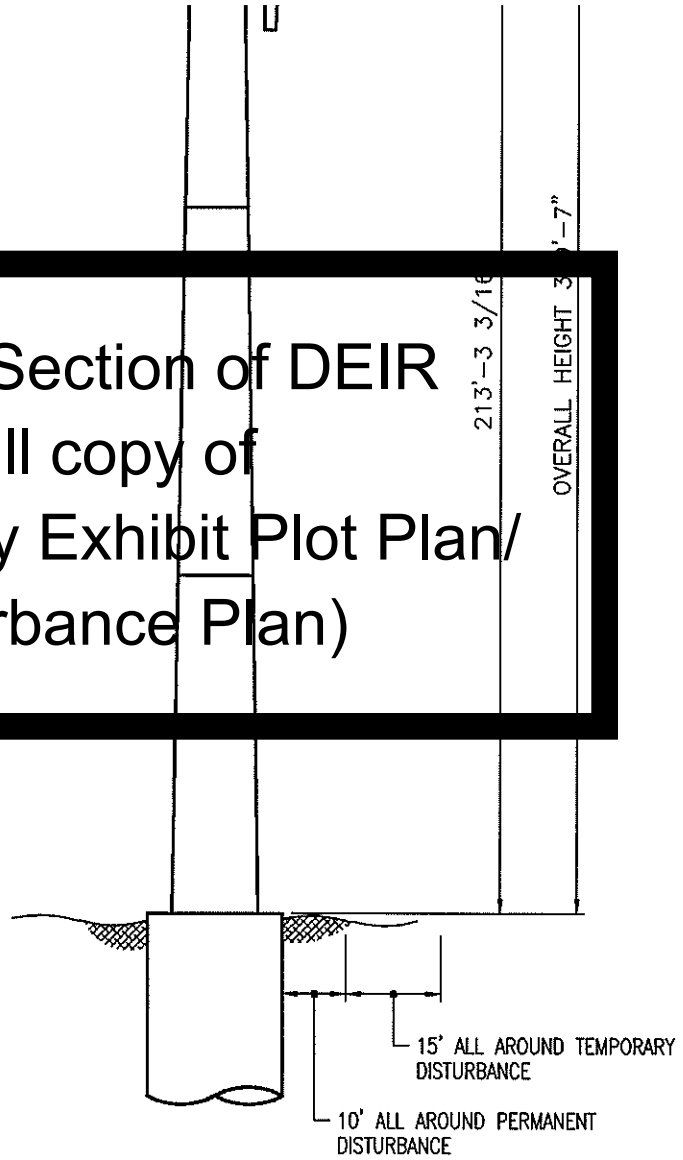
City of Desert Hot Springs Initial Study
Regional Location Exhibit (included in Initial Study)
US Geological Survey Exhibit (included in Initial Study)
Site Plan
Aerial Photograph Exhibit

Due to the time limits mandated by State law, your response must be sent at the earliest possible date, and not later than November 25, 2005, 5:00 p.m. Comments must be sent via U.S. Mail as follows:

Larry Grafton, Planner
City of Desert Hot Springs
65950 Pierson Boulevard
Desert Hot Springs, CA 92240
Telephone: 760-329-6411 x 245
Fax: 760-251-6857

Documents related to the project are available for review at the above location.

See Figures Section of DEIR
for a full copy of
Sheet 1 (Primary Exhibit Plot Plan/
Site Disturbance Plan)



80 VOLT
12,000 VOLT
NCH
L)

GE 1.5 MW WTG

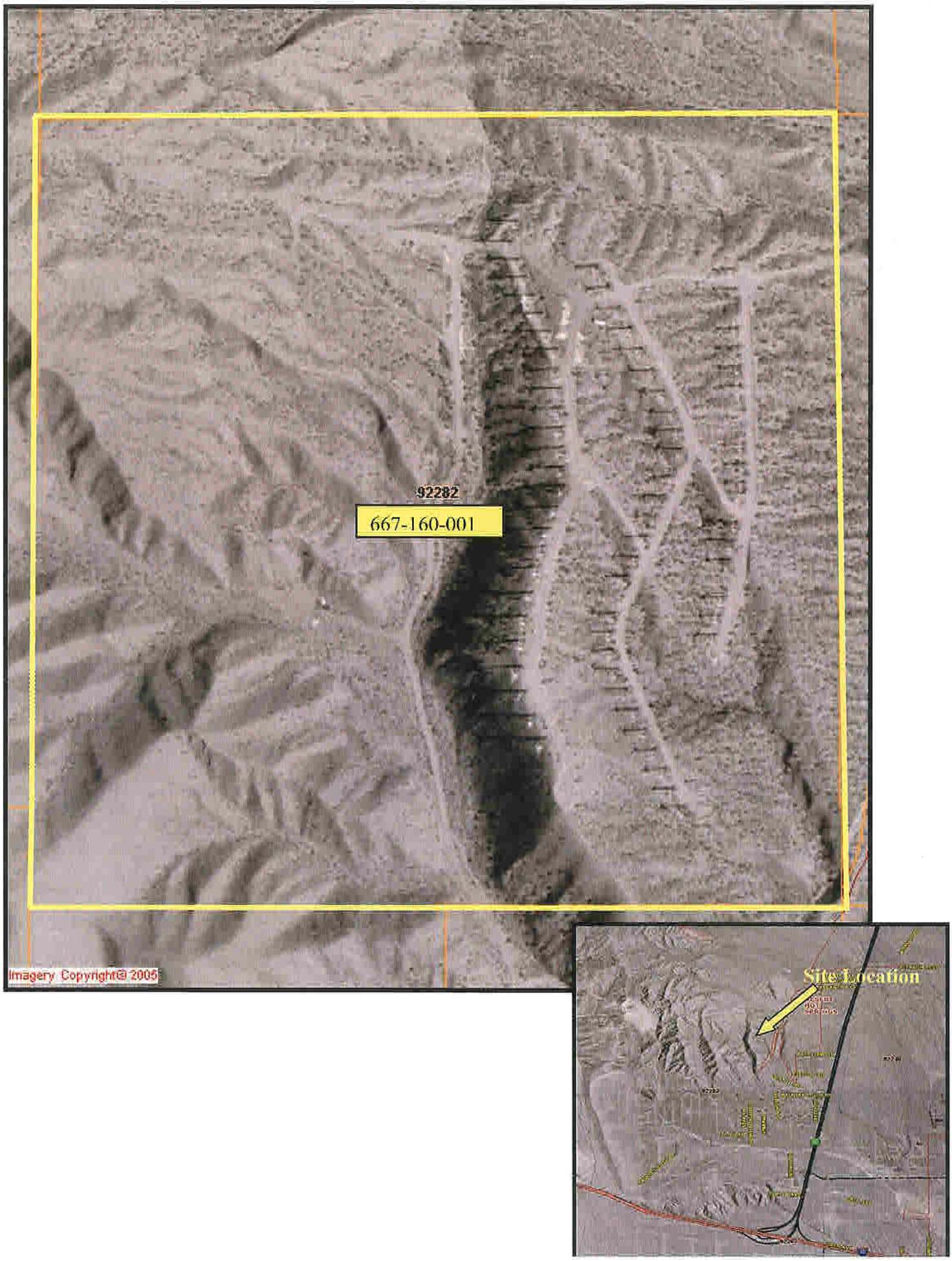
N.T.S.

NOTE:

TOWER DATA FROM MANUFACTURERS LITERATURE SHOWN FOR INFORMATION ONLY. FOUNDATION CONTRACTOR AND TOWER ERECTION CONTRACTOR TO VERIFY ALL DATA HEREON WITH MANUFACTURER SHOP DRAWINGS.

ENERGY UNLIMITED, INCORPORATED	SHEET 1 OF 1 SHEETS
REVISED WECS 20 PERMIT PRIMARY EXHIBIT PLOT PLAN/ SITE DISTURBANCE PLAN	554-9 PROJECT No.

WECS 20 Site Location



City of Desert Hot Springs
Development Department

65950 Pierson Boulevard
Desert Hot Springs, California 92240
(760) 329-6411
Fax (760) 251-6857

See Appendix A of DEIR for a full copy of the Environmental Assessment

Environmental Assessment

P

Case Numbers:	Environmental Assessment No. 14-04 Variance No. 05-04 Conditional Use Permit No. 09-04 Development Permit No. 24-04 Design Review No. 22-04
Lead Agency Name and Address:	City of Desert Hot Springs Development Department 65950 Pierson Boulevard Desert Hot Springs, California 92240 (760) 329-6411 / (760) 251-6857 fax
Project Sponsor's Name and Address:	Mr. Dave Lamm Energy Unlimited, Inc. 100 Four Falls Corporation Center, Suite 215 West Conshohocken, PA (818) 991-5095
Property Owner's Name and Address:	Villanova University 110 Tolentine Villanova, PA 19085 (610) 519-7925
Engineer:	Krieger and Stewart, Inc. 3602 University Avenue Riverside, CA 92501 (951) 684-6900
Contact Person and Phone Number:	Larry Grafton, Planner (760) 329-6411 / (760) 251-6857 fax

COMMENTS IN RESPONSE TO NOTICE OF PREPARATION

STATE OF CALIFORNIA —THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, Gover

CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET
SACRAMENTO, CA 95814-5512

December 15, 2005

Mr. Larry Grafton
City of Desert Hot Springs
65950 Pierson Boulevard
Desert Hot Springs, CA 92240

RE: Revised WECS 20 Permit, Environmental Assessment No. 14-04, SCH# 2005101120

Dear Mr. Grafton:

The California Energy Commission staff appreciates the opportunity to comment on the Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR) for the Revised WECS 20 Project (Project) proposed by Energy Unlimited, Inc. Energy Commission staff have several comments on the NOP with respect to biological resources. Please note that the following comments are those of the Energy Commission staff. These comments have not been reviewed or approved by the Energy Commission, and, therefore, do not necessarily reflect adopted Energy Commission policy.

Wind Turbine Impacts

We appreciate that the NOP addresses the issue of avian mortality due to wind turbine collision, particularly in light of the significance of the San Gorgonio Pass area as an important flyway for migratory birds. Avian collisions with wind turbines are potentially significant and should be thoroughly analyzed in the DEIR. The analysis should address the many factors contributing to a wind turbine's potential for avian collisions. These factors include tower size, rotor swept area, tower spacing and configuration, seasonal variation in operation of the tower, topographic features at the site (proximity of swales, canyons, and ridgelines), availability of perches on towers and adjacent structures, plant communities and prey abundance at the tower site, and the presence of lights. These variables interact with seasonal and yearly changes in the abundance and species composition of resident, migratory, and wintering bird populations and with species-specific differences in flight and behavior.

With so many complex variables interacting in ways that potentially affect avian collision rates, research has shown that each wind development site is unique and requires detailed baseline studies before finalizing site design and developing mitigation and monitoring programs. Observations of bird flight behavior over all seasons should be used to fine tune turbine sites to reduce the risk of collisions (i.e., height of flights, areas of highest use, activities when flying). We recommend that the preparers of the DEIR consult the National Wind Coordinating Committee and Anderson et al. 1999 (*Studying Wind Energy/Bird Interactions: A Guidance Document*) for guidance in these studies. Other sources of information include the California Energy Commission and Dorin et al. 2005 (*Assessment of Avian Mortality*

from Collisions and Electrocutions), and Smallwood and Neher 2004 (*Repowering the Altamont Pass Wind Resource Area: Forecasting and Minimizing Avian Mortality Without Significant Loss of Power Generation*) available at (www.energy.ca.gov/pier/final-project-reports/CEC-500-2005-005.pdf).

We suggest that the DEIR include a detailed site/risk assessment that analyzes the variables noted above and that the results of these studies be considered before turbine sites and turbine design are finalized. The analysis should address potential direct mortality to wildlife from collisions and indirect impacts due to avoidance, habitat disruption, and displacement. The AMEC Earth and Environmental, Inc. 2004 Biological Assessment Update referred to in the NOP apparently was designed to assess the potential impact of wind towers at sites that had already been selected rather than to collect data that would allow siting turbines in locations that would minimize potential impacts. We recommend that surveys for the project include at least one year of data collection and that the data be analyzed and considered before deciding upon the location of the turbines. We are also concerned that the Biological Assessment Update was based on a survey conducted in June 2004 rather than systematic surveys over several seasons. As described in Anderson et al. 1999, the recommended protocol calls for surveys to be conducted at least quarterly for a full year to capture seasonal variations in local populations. Based on recent findings that bat collisions with wind turbines may also be a significant issue, the baseline surveys should also include bats, particularly those species of special concern to the United States Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG).

The NOP notes that the Biological Assessment Update determined that the conclusions and findings of the November 2000 biological study for this project remain valid. Since the November 2000 study was prepared, however, research has resulted in significantly greater knowledge of wind development impacts to avian populations. We hope that the DEIR will revisit the conclusions and findings of the November 2000 biological study in light of this new research.

Mitigation and Post-Construction Monitoring

The DEIR should also include a detailed mitigation, monitoring, and reporting plan, including post-construction surveys for bat and bird carcasses for at least three years. The monitoring plan should include a remedial action plan if the post-construction monitoring shows that a turbine is significantly impacting bats and birds (e.g., seasonal shut downs of the problem turbine or turbine relocation). Annual reporting of post-construction survey results is important for assessing the ongoing impacts of wind turbine operation. We also recommend the formation of a Technical Advisory Committee that would interpret the results of the surveys and make recommendations for mitigating unanticipated project impacts to bat and bird populations. If the project is constructed, post-construction monitoring methods for the project should be based on information from similar past projects to insure that the best possible post-construction study is implemented.

Construction Impacts

The DEIR should address all potential direct, indirect, and cumulative impacts to biological resources from the proposed construction, including improvements to existing roads. The DEIR should describe and quantify impacts to riparian habitat and waters of the United States and propose adequate mitigation so that the project does not result in net loss of sensitive habitat.

New roadways can also provide a vector for spread of weeds, so the DEIR should include survey results for invasive, non-native plant species, as well as recommendations for avoiding the introduction and spread of weeds. Special consideration must be given in the DEIR to project impacts that may adversely affect rare, threatened, or endangered species, species of special concern, and fully protected species.

Coachella Valley Multiple Species Habitat Conservation Plan

The NOP notes that the Project area is within the Coachella Valley Multiple Species Habitat Conservation Plan (Plan) but otherwise makes no mention of this Plan. The Environmental Impact Report for the Plan is likely to be considered for certification in January 2006 and may be approved sometime thereafter by the City of Desert Hot Springs and other permitting authorities. The Plan may be in place for much of the life of the Project, therefore, we suggest that the DEIR incorporate the conservation goals and objectives of the Plan when addressing federally listed species such as desert tortoise.

Cumulative Impacts

Due to the large number of existing wind projects in the San Gorgonio Pass area, we believe there could be significant cumulative impacts with respect to biological resources. We recommend the DEIR provide a thorough cumulative impact analysis of this Project, existing wind projects, and future proposed wind projects on avian and bat populations in the region. This analysis should incorporate post-construction survey results from existing projects and any other reasonably foreseeable future projects. The time frame for the analysis should encompass the life of the Project.

Thank you for considering our comments in preparation of the DEIR. If you have questions or would like additional information, please contact Rick York, supervisor of the Biological and Cultural Resource Unit, at (916) 654-3945 or email him at ryork@energy.state.ca.us. We look forward to receiving a copy of the DEIR.

Sincerely,

PAUL RICHINS, Manager
Environmental Office

ESTABLISHED IN 1918 AS A PUBLIC AGENCY

COACHELLA VALLEY WATER DISTRICT

POST OFFICE BOX 1058 • COACHELLA, CALIFORNIA 92236 • TELEPHONE (760) 398-2651 • FAX (760) 398-3711

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PATRICIA A. LARSON, VICE PRESIDENT
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MARK BEUHLER,
ASST. GENERAL MANAGER
JULIA FERNANDEZ, SECRETARY
DAN PARKS, ASST. TO GENERAL MANAGER
REDWINE AND SHERRILL, ATTORNEYS

November 1, 2005

File: 0163.1

Larry Grafton
City of Desert Hot Springs
Development Department
65-950 Pierson Boulevard
Desert Hot Springs, CA 92240

Dear Mr. Grafton:

Subject: Energy Unlimited, Inc.

Thank you for affording the District the opportunity to review the Notice of Preparation of a Draft Environmental Impact Report for the proposed Energy Unlimited, Inc., project in Desert Hot Springs.

The proposed project is not located within this District's boundaries; therefore, the District has no comments regarding the project.

If you have any questions, please call Luke Stowe, Environmental Specialist, extension 2545.

Yours very truly,

Mark L. Johnson
Director of Engineering

LS:dd\brd\eac\05\grafton-DHS

020431-3

TRUE CONSERVATION
USE WATER WISELY

MORONGO
BAND OF
MISSION
INDIANS

A SOVEREIGN NATION

October 24, 2005

Mr. Larry Grafton
City of Desert Hot Springs
65950 Pierson Blvd.
Desert Hot Springs, CA 92240

Re: Energy Unlimited, Notice of Preparation, Draft EIR

Dear Mr. Grafton:

Thank you for sending the Morongo Band of Mission Indians (the "Tribe") a copy of the Notice of Preparation for the above referenced project.

The Draft EIR section on Cultural Resources, in addition to the standard issue areas (survey and monitoring requirements), should include a statement on how the Tribe would be involved if any Native American cultural resources or human remains are found on site. The Tribe wishes to be consulted with on any finds on the subject property. For example, the developer/project archaeologist could be conditioned to consult with the Tribe on the disposition of any Native American cultural resources found on site.

Thank you for notifying the Tribe of this project and considering our comments in the Draft EIR. The Tribe hereby requests a copy of the Draft EIR once it becomes available.

Sincerely,

Britt W. Wilson
Cultural Resources Coordinator
Morongo Band of Mission Indians

245 N. MURRAY STREET, SUITE C - BANNING, CA 92220 - 951-849-8807 - FAX: 951-922-8146

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4182
(909) 396-2000 • www.aqmd.gov

October 27, 2005

Mr. Larry Grafton, Planner
City of Desert Hot Springs
65950 Pierson Boulevard
Desert Hot Springs, CA 92240

Dear Mr. Grafton:

Notice of Preparation of a Draft Environmental Impact Report for
Revised Commercial WECS 20 Project

The South Coast Air Quality Management District (SCAQMD) appreciates the opportunity to comment on the above-mentioned document. The SCAQMD's comments are recommendations regarding the analysis of potential air quality impacts from the proposed project that should be included in the Draft Environmental Impact Report (EIR). Please send the SCAQMD a copy of the Draft EIR upon its completion. In addition, please send with the Draft EIR all appendices or technical documents related to the air quality analysis and electronic versions of all air quality modeling and health risk assessment files.

Air Quality Analysis
The SCAQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. The SCAQMD recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from the SCAQMD's Subscription Services Department by calling (909) 396-3720. Alternatively, lead agency may wish to consider using the California Air Resources Board (CARB) approved URBEMIS 2002 Model. This model is available on the SCAQMD Website at: www.aqmd.gov/ceqa/models.html.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project. Air quality impacts from both construction and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, that is, sources that generate or attract vehicular trips should be included in the analysis.

Consistent with the SCAQMD's environmental justice enhancement I-4, in October 2003, the SCAQMD Governing Board adopted a methodology for calculating localized air quality impacts and localized significance thresholds (LSTs). LST's can be used in addition to the recommended regional significance thresholds as a second indication of air quality impacts when preparing a CEQA document. Therefore, when preparing the air quality

analysis for the proposed project, it is recommended that the lead agency perform a localized significance analysis by either using the LSTs developed by the SCAQMD or performing dispersion modeling as necessary. Guidance for performing a localized air quality analysis can be found at http://www.aqmd.gov/ceqa/handbook/LST/LST.html.

It is recommended that lead agencies for projects generating or attracting vehicular trips, especially heavy-duty diesel-fueled vehicles, perform a mobile source health risk assessment. Guidance for performing a mobile source health risk assessment ("Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis") can be found on the SCAQMD's CEQA webpages at the following internet address: http://www.aqmd.gov/ceqa/handbook/mobile_toxic/mobile_toxic.html. An analysis of all toxic air contaminant impacts due to the decommissioning or use of equipment potentially generating such air pollutants should also be included.

Mitigation Measures

In the event that the project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized during project construction and operation to minimize or eliminate significant adverse air quality impacts. To assist the Lead Agency with identifying possible mitigation measures for the project, please refer to Chapter 11 of the SCAQMD CEQA Air Quality Handbook for sample air quality mitigation measures. Additionally, SCAQMD's Rule 403 – Fugitive Dust, and the Implementation Handbook contain numerous measures for controlling construction-related emissions that should be considered for use as CEQA mitigation if not otherwise required. Other measures to reduce air quality impacts from land use projects can be found in the SCAQMD's Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. This document can be found at the following internet address: http://www.aqmd.gov/prdas/aqguide/aqguide.html. Pursuant to state CEQA Guidelines §15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed.

Data Sources

SCAQMD rules and relevant air quality reports and data are available by calling the SCAQMD's Public Information Center at (909) 396-2039. Much of the information available through the Public Information Center is also available via the SCAQMD's World Wide Web Homepage (http://www.aqmd.gov).

The SCAQMD is willing to work with the Lead Agency to ensure that project-related emissions are accurately identified, categorized, and evaluated. Please call Charles Blankson, Ph.D., Air Quality Specialist, CEQA Section, at (909) 396-3304 if you have any questions regarding this letter.

Sincerely,

Steve Smith

Steve Smith, Ph.D.
Program Supervisor, CEQA Section
Planning, Rule Development and Area Sources

SS:CB:li

RVC051026-04LI
Control Number

JUTHERN CALIFORNIA

ASSOCIATION of GOVERNMENTS

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f (213) 236-1825

www.scag.ca.gov

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Orange County: Chris Norby, Orange County • Christine Barnes, La Palma • John Beauman, Brea • Lou Bone, Tustin • Art Brown, Buena Park • Richard Chavez, Anaheim • Debbie Cook, Huntington Beach • Cathryn DeYoung, Laguna Niguel • Richard Dixon, Lake Forest • Marilynn Poe, Los Alamitos • Tod Ridgeway, Newport Beach

Riverside County: Jeff Stone, Riverside County • Thomas Buckley, Lake Elsinore • Bonnie Flickinger, Moreno Valley • Ron Loveridge, Riverside • Greg Pettis, Cathedral City • Ron Roberts, Temecula

San Bernardino County: Gary Ovitt, San Bernardino County • Lawrence Dale, Barstow • Paul Eaton, Montclair • Lee Ann Garcia, Grand Terrace • Tim Jasper, Town of Apple Valley • Larry McCallon, Highland • Deborah Robertson, Rialto • Alan Wapner, Ontario

Ventura County: Judy Mikels, Ventura County • Glen Becerra, Simi Valley • Carl Morehouse, San Buenaventura • Toni Young, Port Hueneme

Orange County Transportation Authority: Lou Bone, City of Orange

Riverside County Transportation Commission: Robin Lowe, Hemet

Ventura County Transportation Commission: Keith Millhouse, Moorpark

Printed on Recycled Paper 559-8/15/05

November 15, 2005

Mr. Larry Grafton
Director of Planning and Permits
City of Desert Hot Springs
Development Department
65950 Pierson Boulevard
Desert Hot Springs, CA 92240

RE: SCAG Clearinghouse No. I 20050696 Revised Commercial WECS 20 Project

Dear Mr. Grafton:

Thank you for submitting the **Revised Commercial WECS 20 Project** for review and comment. As areawide clearinghouse for regionally significant projects, SCAG reviews the consistency of local plans, projects and programs with regional plans. This activity is based on SCAG's responsibilities as a regional planning organization pursuant to state and federal laws and regulations. Guidance provided by these reviews is intended to assist local agencies and project sponsors to take actions that contribute to the attainment of regional goals and policies.

We have reviewed the **Revised Commercial WECS 20 Project**, and have determined that the proposed Project is not regionally significant per SCAG Intergovernmental Review (IGR) Criteria and California Environmental Quality Act (CEQA) Guidelines (Section 15206). Therefore, the proposed Project does not warrant comments at this time. Should there be a change in the scope of the proposed Project, we would appreciate the opportunity to review and comment at that time.

A description of the proposed Project was published in SCAG's **October 1-31, 2005** Intergovernmental Review Clearinghouse Report for public review and comment.

The project title and SCAG Clearinghouse number should be used in all correspondence with SCAG concerning this Project. Correspondence should be sent to the attention of the Clearinghouse Coordinator. If you have any questions, please contact me at (213) 236-1851. Thank you.

Sincerely,

Lorraine Jones for

BRIAN WALLACE
Associate Regional Planner
Intergovernmental Review

Doc #115891

40 Resolving Regional Challenges

SunLine TRANSIT AGENCY

MEMBERS: Desert Hot Springs Palm Springs Cathedral City Rancho Mirage Palm Desert Indian Wells La Quinta Indio Coachella Riverside County

TODAY'S MODEL FOR TOMORROW'S WORLD

November 14, 2005

Mr. Larry Grafton, Planning Manager
City of Desert Hot Springs
Development Department
65-950 Pierson Boulevard
Desert Hot Springs, CA 92240

RE: CUP #09-04/V #05-04/DP #24-04 and DR #22-04

Dear Mr. Grafton:

This letter responds to your request for comments regarding the proposed development located west of Route 62, in Desert Hot Springs. SunLine Transit Agency (SunLine) staff has reviewed the maps provided and offers the following comments:

SunLine does not provide transit service to the proposed project location. As part of the project, SunLine recommends that sidewalks be constructed in all areas fronting the project site to ensure that future residents are able to access services offered within the area.

As you may be aware, we are currently conducting a study to examine existing routes and to determine how best to improve transit service offered in the community. SunLine will work cooperatively with all jurisdictions to ensure that they have input into the process before the Master Plan is finalized.

Please feel free to call me at 760-343-3456, ext. 119, if you have any questions or concerns regarding this letter.

Sincerely,

Eunice Lovi
Director of Planning

EL/amp

cc: C. Mikel Oglesby, General Manager

32-505 Harry Oliver Trail, Thousand Palms, California 92276 Phone 760-343-3456 Fax 760-343-3845 www.sunline.org

APPENDIX J

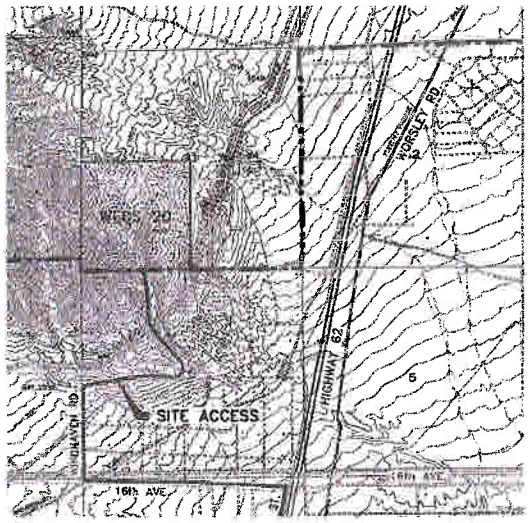
NOTICE OF COMPLETION / NOTICE OF AVAILABILITY

PUBLIC NOTICE
CITY OF DESERT HOT SPRINGS
COMMMUNITY DEVELOPMENT DEPARTMENT
NOTICE OF COMPLETION / NOTICE OF AVAILABILITY

FROM: CITY OF DESERT HOT SPRINGS
Community Development Department
65950 Pierson Blvd.
Desert Hot Springs, CA 92240

SUBJECT: Notice of Completion/Notice of Availability of a Draft EIR in accordance with the California Environmental Quality Act

Project Title: Revised Commercial WECS 20 Permit Project



City: Desert Hot Springs **County:** Riverside

Project Location: The existing WECS 20 Wind Park, located on APN 667-160-001 on the southwesterly quarter of Section 31, Township 2 South, Range 4 East, San Bernardino Meridian. The Project site is located approximately 0.5 mile westerly of State Route 62 and approximately 2 miles northerly of Interstate 10.

Description of Nature, Purpose, and Beneficiaries of Project: The Project includes the construction and operation of eight 1.5-megawatt wind turbine generators in the existing WECS 20 Wind Park, the removal of sixteen existing older turbines from the WECS 20 Wind Park, the construction of one single story 100' x 40' storage facility for parts and tools, and the use of an open storage area for storage of spare parts for the turbines. The purpose of the project is to improve the productivity of the WECS 20 Wind Park by replacing older turbines with newer, more efficient turbines, thereby increasing the amount of energy produced by utilizing the wind resource in the area. The Project will increase production of renewable energy, thereby offsetting air pollutant emissions that are produced by conventional fossil-fueled power plants, and help California achieve its goal of 20 percent renewable energy by 2017. Therefore, the beneficiaries are the current and future residents of California.

Lead Agency: City of Desert Hot Springs, Community Development Department

The Draft EIR Is Available for Public Review at the following locations:
- City Desert Hot Springs, Community Development Department, 65950 Pierson Blvd, Desert Hot Springs, CA 92240
- Riverside County Library, 11691 West Drive, Desert Hot Springs, 92260

Review Period: March 26, 2007 – May 10, 2007 **Contact Person:** Steven Mendoza, Assistant City Manager

Revised Commercial WECS 20 Permit Project: The Draft Environmental Impact Report (DEIR) addresses the potential for significant environmental impacts that could result from approving and implementing the current proposal by Energy Unlimited, Incorporated for the Revised Commercial WECS 20 Permit Project, a wind energy project to improve the existing WECS 20 Wind Park in the City of Desert Hot Springs. The 160-acre project site is comprised of 69 existing operational wind turbines. The Revised Commercial WECS 20 Permit Project proposes to temporarily disturb approximately 0.74 acre and permanently disturb 0.61 acre, with a total anticipated disturbed area of approximately 1.35 acres.

Entitlement Actions: Development Permit, Design Review, Conditional Use Permit, Variance

Significant Environmental Effects Anticipated as a Result of the Project
There are no significant environmental effects anticipated as a result of the Project. All potentially significant impacts anticipated by the Project will be mitigated to a level of insignificance by implementation of the mitigation measures set forth in the Draft Environmental Impact Report for the Revised Commercial WECS Permit Project (March 2007).

Public Meetings: No public meetings have been scheduled at this time. However, the City of Desert Hot Springs Planning Commission, and City Council, will consider the Draft EIR at later dates. Agendas for these public meetings are routinely posted.

APPENDIX K

COMMENTS ON THE DRAFT EIR
AND
RESPONSES TO COMMENTS ON THE DRAFT EIR

COMMENTS ON THE DRAFT EIR AND RESPONSES TO COMMENTS ON THE DRAFT EIR

As of the close of the comment period at 5:00 p.m. on Thursday, May 10, 2007, written comments on the Draft Environmental Impact Report for the Revised Commercial WECS 20 Permit Project (DEIR) were received from the following:

1. Agua Caliente Band of Cahuilla Indians
2. California Department of Fish and Game
3. Coachella Valley Water District
4. Mission Springs Water District
5. Riverside County Flood Control and Water Conservation District
6. Soboba Band of Luiseño Indians
7. Southern California Association of Governments
8. Pete & Nancy Wright

Responses to comments are included in the following pages, along with copies of the complete letters received from all commenters.

1. AGUA CALIENTE BAND OF CAHUILLA INDIANS

Responses to comments received from the Agua Caliente Band of Cahuilla Indians (Agua Caliente) are included below. A complete copy of Agua Caliente's comment letter follows on pages K-3 through K-4.

Comment Number	Comment	Response
1A	Agua Caliente noted that although the project is not located within the Agua Caliente Indian Reservation boundaries, "...it is on lands included within the Tribal Traditional Use Area".	The City of Desert Hot Springs (City) acknowledges this comment, and mitigation measures to preserve and protect any Native American resources on the Project site have been incorporated into the Project DEIR and the Final Environmental Impact Report (FEIR). Refer to Mitigation Measures Nos. 56 through 58 in Section 10 of the DEIR and in Section 10 of the FEIR. No modifications to the EIR were required as a result of this comment.
1B	Agua Caliente indicates that they do not concur with CRM TECH's findings that "...there are no impacts to resources"; however, since the City has included mitigation requiring Native American Monitoring during ground-disturbing activities, Agua Caliente requests that the City "...include information regarding the responsible person for implementing the mitigation measures and timing and verification procedures".	The City of Desert Hot Springs acknowledges this comment. The DEIR does indicate that mitigation in the form of monitoring shall be required because the Project site is within the traditional use area of the Agua Caliente Band of Cahuilla Indians. Clarifying text has been added to the FEIR. Information regarding the person responsible, timing, and methods of verification is included for each mitigation measure in Section 10 of the FEIR.

AGUA CALIENTE BAND OF CAHUILLA INDIANS

TRIBAL HISTORIC PRESERVATION

April 24, 2007

Steve Mendoza, Assistant City Manager
Community Development Department
City of Desert Hot Springs
65950 Pierson Blvd
Desert Hot Springs, CA 92240

RE: Comments on the Draft EIR for the WECS 20 Wind Farm Project, City of Desert Hot Springs, Riverside County, CA

Dear Steve:

The Agua Caliente Band of Cahuilla Indians appreciates your efforts to include the Tribal Historic Preservation Office (THPO) in your project. The project referenced above is not within Agua Caliente Indian Reservation boundaries however, it is on lands included within the Tribal Traditional Use Area.

I have reviewed the Draft EIR including Appendix C for the project referenced above. CRM tech conducted an archaeological survey of the proposed pad locations. CRM Tech's Cultural Resources Assessment determined there are no impacts to resources. Because other areas may be impacted, such as access roads and staging areas, I do not concur with CRM Tech's findings. However, the City has included mitigation measures to included Cultural Monitor's for ground disturbing activities. Please be sure to include information regarding the responsible person for implementing the mitigation measures and timing and verification procedures.

Also, I would like to offer the services of our Approved Cultural Resource Monitors for any ground disturbing activities related to this project. Please contact our offices for further information about Approved Cultural Resource Monitors.

If you have questions or require additional information, please call me at (760) 883-1926. You may also email me at ptuck@aguacaliente.net.

Cordially,

Patricia Tuck, Archaeologist
Tribal Historic Preservation Office
AGUA CALIENTE BAND
OF CAHUILLA INDIANS

c: Agua Caliente Cultural Register

H:\Consult Correspondence\2007\External\Traditonal Use Area\dhs_WECS20WindPark_DraftEIR_4_24_07.doc

RECEIVED APR 30 2007

650 EAST TAHQUITZ CANYON WAY, PALM SPRINGS, CA 92262
T 760/325/3400 F 760/883/1940 AGUACALIENTE.ORG

MAR 2 6 2007

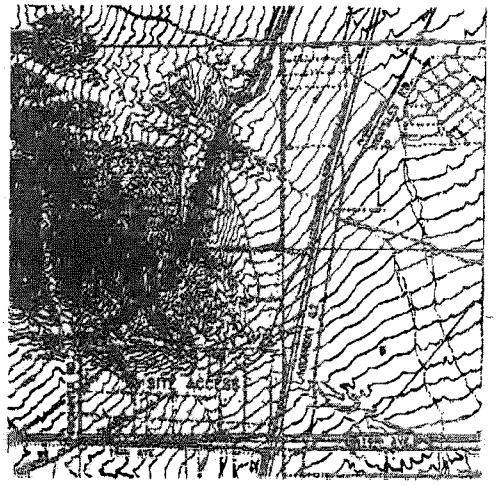
PUBLIC NOTICE
CITY OF DESERT HOT SPRINGS
COMMMUNITY DEVELOPMENT DEPARTMENT
NOTICE OF COMPLETION / NOTICE OF AVAILABILITY

MAR 2 6 2007
C. Tom
Richard B.
Disc to Richard R

FROM: CITY OF DESERT HOT SPRINGS
Community Development Department
65950 Pierson Blvd.
Desert Hot Springs, CA 92240

SUBJECT: Notice of Completion/Notice of Availability of a Draft EIR in accordance with the California Environmental Quality Act

Project Title: Revised Commercial WECS 20 Permit Project



City: Desert Hot Springs **County:** Riverside

Project Location: The existing WECS 20 Wind Park, located on APN 667-160-001 on the southwesterly quarter of Section 31, Township 2 South, Range 4 East, San Bernardino Meridian. The Project site is located approximately 0.5 mile westerly of State Route 62 and approximately 2 miles northerly of Interstate 10.

Description of Nature, Purpose, and Beneficiaries of Project: The Project includes the construction and operation of eight 1.5-megawatt wind turbine generators in the existing WECS 20 Wind Park, the removal of sixteen existing older turbines from the WECS 20 Wind Park, the construction of one single story 100' x 40' storage facility for parts and tools, and the use of an open storage area for storage of spare parts for the turbines. The purpose of the project is to improve the productivity of the WECS 20 Wind Park by replacing older turbines with newer, more efficient turbines, thereby increasing the amount of energy produced by utilizing the wind resource in the area. The Project will increase production of renewable energy, thereby offsetting air pollutant emissions that are produced by conventional fossil-fueled power plants, and help California achieve its goal of 20 percent renewable energy by 2017. Therefore, the beneficiaries are the current and future residents of California.

Lead Agency: City of Desert Hot Springs, Community Development Department

The Draft EIR Is Available for Public Review at the following locations:
- City Desert Hot Springs, Community Development Department, 65950 Pierson Blvd, Desert Hot Springs, CA 92240
- Riverside County Library, 11691 West Drive, Desert Hot Springs, 92260

Review Period: March 26, 2007 – May 10, 2007 **Contact Person:** Steven Mendoza, Assistant City Manager

Revised Commercial WECS 20 Permit Project: The Draft Environmental Impact Report (DEIR) addresses the potential for significant environmental impacts that could result from approving and implementing the current proposal by Energy Unlimited, Incorporated for the Revised Commercial WECS 20 Permit Project, a wind energy project to improve the existing WECS 20 Wind Park in the City of Desert Hot Springs. The 160-acre project site is comprised of 69 existing operational wind turbines. The Revised Commercial WECS 20 Permit Project proposes to temporarily disturb approximately 0.74 acre and permanently disturb 0.61 acre, with a total anticipated disturbed area of approximately 1.35 acres.

Entitlement Actions: Development Permit, Design Review, Conditional Use Permit, Variance

Significant Environmental Effects Anticipated as a Result of the Project
There are no significant environmental effects anticipated as a result of the Project. All potentially significant impacts anticipated by the Project will be mitigated to a level of insignificance by implementation of the mitigation measures set forth in the Draft Environmental Impact Report for the Revised Commercial WECS Permit Project (March 2007).

Public Meetings: No public meetings have been scheduled at this time. However, the City of Desert Hot Springs Planning Commission, and City Council, will consider the Draft EIR at later dates. Agendas for these public meetings are routinely posted.

2. CALIFORNIA DEPARTMENT OF FISH AND GAME

Responses to comments received from the California Department of Fish and Game (CDFG) are addressed in the letter report from AMEC Earth & Environmental dated August 17, 2007 included on the following pages (pages K-6 through K-25). A complete copy of CDFG's comment letter follows on pages K-26 through K-42.

August 17, 2007

Energy Unlimited
Attn: David Lamm
638 Lindero Canyon Road, #273
Oak Park, CA 91301
Phone (818) 991-5095
Fax (818) 991-2232

Subject: Revised Commercial WECS 20 Permit Project
SCH 2005101120

The California Department of Fish and Game commented on the Draft Environmental Impact Report for the Revised Commercial WECS 20 Permit Project. This letter contains those comments (see Attachment A), accompanied by responses. Brackets in the margin delineate the comments with each bracket assigned a comment number (e.g., 2-A, etc.). Responses to each bracketed comment are included in the table below.

Comment Number	Comment	Response
2-A	A California Endangered Species Act (CESA) Permit must be obtained, due to the projects potential to result in "take" of a CESA listed species (e.g., desert tortoise), during construction and/or over the life of the project.	The Project may result in a potentially significant impact on the desert tortoise (DEIR, page 42). Because the Project has the potential to result in "take" of a CESA listed species, an incidental take permit must be obtained. The following is taken from California Department of Fish and Game Habitat Conservation Planning Branch (www.dfg.ca.gov/hcpb/ceqacesa/cesa/cesa.shtml): Section 2080 of the Fish and Game Code prohibits "take" of any species that the commission determines to be an endangered species or a threatened species. Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful development projects. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate mitigation planning to offset project caused losses of listed species populations and their essential habitats. Sections 2081(b) and (c) of the California Endangered Species Act allow the Department to issue an incidental take permit for a State listed threatened and endangered species only if specific criteria are met. These criteria are reiterated in Title 14 CCR, Sections 783.4(a) and (b), and are as follows: 1. The authorized take is incidental to an otherwise lawful activity; 2. The impacts of the authorized take are minimized and fully mitigated; 3. The measures required to minimize and fully mitigate the

Comment Number	Comment	Response
		impacts of the authorized take: a. are roughly proportional in extent to the impact of the taking on the species, b. maintain the applicant's objectives to the greatest extent possible, and c. are capable of successful implementation; 4. Adequate funding is provided to implement the required minimization and mitigation measures and to monitor compliance with and the effectiveness of the measures; and 5. Issuance of the permit will not jeopardize the continued existence of a State-listed species. The terms and conditions of the permit will be determined by the Department and must ensure that the issuance criteria in items 1 through 5 above are met. Measures to minimize the take of species covered by the permit (Covered Species) and to mitigate the impacts caused by the take will be set forth in one or more attachments to the permit. This attachment will generally be a mitigation plan (possibly a Habitat Conservation Plan) prepared and submitted by the Permittee in coordination with Department staff. The mitigation plan should identify measures to avoid and minimize the take of State-listed species and to fully mitigate the impact of that take. These measures can vary from project to project. Some of the measures used in the past include: delineation

Comment Number	Comment	Response
		of construction sites; take avoidance measures tailored to the affected species; preconstruction notification of the Department; employee education programs; reporting procedures when an animal is killed, injured or trapped; compliance inspections and reports; acquisition and transfer of habitat management lands; and associated funding (including money for document processing and for initial protection (e.g., fencing, posting, clean-up), and endowments for management of the lands in perpetuity). This list can serve as a partial inventory of measures that may be used to minimize and mitigate take, but these are not mandatory requirements and the list is not inclusive of all potential measures. Applicants may propose alternative strategies for minimizing and fully mitigating impacts. The Department must be able to conclude, however, that the project's impacts are fully mitigated and the measures, when taken in aggregate, must meet the full mitigation standard. If all mitigation and monitoring will not be completed prior to the start of activities that will affect State-listed species, a trust account or other form of security acceptable to the Department shall be established to ensure that funding is available to carry out mitigation measures and monitoring requirements in the event the applicant fails to complete these activities. The Department generally requires that security be in the form of a bank trust (or escrow) account, an irrevocable letter of credit, or similar form of security approved by the Legal Affairs Division (LAD).
2-B	The Fish and Game Code requires that the Department issue a separate California Environmental Quality Act (CEQA) document for the issuance of a CESA permit unless the project CEQA document addresses all project impacts to	The DEIR addresses all project impacts to listed species and specifies mitigation monitoring and reporting programs.

Comment Number	Comment	Response
	listed species and specifies a mitigation monitoring and reporting program that will meet the requirements of a CESA permit.	
2-C	The Department believes that the proposed project could further the decline of the Western Burrowing Owl, a sensitive species. This species must be treated as though it is listed and appropriate avoidance, mitigation and compensation for impacts need to be identified. Unavoidable impacts should be mitigated through acquisition and protection, in perpetuity, of high quality biological habitat. In addition, surveys and mitigation should be consistent with the 1995 Department Staff Report on Burrowing Owl Mitigation.	Appropriate avoidance, mitigation, and compensation for impacts are identified in the DEIR (Section 10: 41-44). Surveys and mitigation will be consistent with the 1995 Department Staff Report on Burrowing Owl Mitigation. Burrowing owls are known to forage low, near, or on the ground, so they are not considered at risk for collision with wind turbines. The lower arc of the proposed turbine blades will be approximately 26.5-29.75 m (87-98 ft) above the ground, which is well above the heights typically used by this species during its regular movements. Occasional fatalities of burrowing owls may occur, based on the single burrowing owl fatality found at the San Gorgonio study reported by Anderson *et al.* (2005). Because of the small disturbance footprint for the proposed project, construction and operation of the project should not result in a significant impact to this species.
2-D	This project has potential to both temporarily and permanently impact Waters of the State. Impacts associated with removal and remediation of the sixteen wind turbines was not characterized.	In 2005, AMEC conducted a jurisdictional delineation (Appendix B4 in DEIR) and concluded that, as currently configured, the sites of the eight new towers are not "Waters of the United States" subject to Corps jurisdiction and permitting under its regulatory program; jurisdictional wetlands were not found to occur on-site; and no wetlands subject to CDFG jurisdiction occur. The conclusions and recommendations made in that report are current. Conclusions made in Appendix B4 of the DEIR are applicable to the areas of turbine removal as well. No jurisdictional waters or wetlands will be impacted by removal of the sixteen turbines.

Comment Number	Comment	Response
		Removal of the sixteen Bonus 65-kW wind turbines involves a crane lifting each turbine, in segments, and moving each segment to a truck. All vehicles remain on existing access roads, and disturbance to the surrounding habitat is minimal. Recommendations made in Appendix B4 of the DEIR (e.g. BMPs) should be adhered to for the removal of the sixteen turbines.
2-E	The open storage area and associated road are located on or near a blue line stream according to the Desert Hot Springs 7.5 minute quadrangle map.	The expansion of the existing open storage area and associated road will not impact any jurisdictional waters or wetlands. The USGS Desert Hot Springs 7.5 minute quad (1978) shows a blue line stream located where the open storage area is located, but current data from the USFWS Wetlands Online Mapper (in collaboration with USGS) do not show the blue-line stream as being present. A field visit corroborated that there are no indicators (sediment deposits, high-water marks, bed and bank, vegetation, etc.) of a drainage or flow in the proposed expansion area (see Attachment B, Photographs 1 & 2). A faint drainage can be seen south of the existing storage area (see Attachment B, Photograph 1); however, this area is not part of the proposed expansion area and therefore will be avoided.
2-F	Any impact whether permanent or temporary must be permitted through a Streambed Alteration Agreement (SAA) issued by the Department in accordance with Fish and Game code § 1600 et seq.	All appropriate permits, agreements, and approvals will be obtained prior to construction activities. However, since no waters or wetlands will be impacted, no permits, agreements, or approvals are necessary.
2-G	Mortality studies should be conducted both before and after a repower to assess if there are biological benefits associated with a repower. Avian mortality data is characterized by comparing total Megawatts (MW), or Rotor Swept Area (RSA). The MW of this project will be increasing so it is inappropriate at this time to state that "Lowering the number of turbines	The total MW will be increasing, but the numbers of fatalities with new-generation turbines are lower than the old-generation turbines. The recent fatality studies on new-generation wind farms in the western United States have revealed low avian fatality rates (see Attachment C – Impacts to Birds). Therefore, the Project is not likely to significantly impact avian species.

Comment Number	Comment	Response
	here and elsewhere in the San Gorgonio Pass as a result of repowering is anticipated to decrease cumulative impacts to birds from collisions."	
2-H	The increased height of the turbines at the Project site and its affect on avian and bat mortality is not adequately addressed in the DEIR. The San Gorgonio Pass is a high-use nocturnal flyway for migratory songbirds. Current studies should be conducted that examine the height at which birds and bats utilize the project area.	See 2-G. See Attachment C – Impacts to Birds. Eight bat species, all California species of special concern, have the potential to be present in the Project vicinity. The pallid bat (*Antrozous pallidus*), spotted bat (*Euderma maculatum*), California mastiff bat (*Eumops perotis californicus*), California leaf-nosed bat (*Macrotus californicus*), pocketed free-tailed bat (*Nyctinomops femorosacca*), big free-tailed bat (*Nyctinomops macrotis*), and Townsend's big-eared bat (*Plecotus townsendii*) roost in buildings, crevices, abandoned mines, rock outcrops, caves, or tree-holes. The southern yellow bat (*Lasiurus ega*) prefers wooded, riparian, and residential areas with untrimmed palm trees. The Project area does not have open water, tree-roosting habitat, or other preferred nesting/roosting/foraging habitat features that would tend to attract bats. No bats or bat sign were observed during field surveys, so the probability of their occurrence in the Project area is low. Therefore, the Project is not likely to significantly impact bat species.

ATTACHMENT A

CDFG COMMENT LETTER

State of California – The Resources Agency ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF FISH AND GAME
Inland Deserts Region
78078 Country Club Dr., Ste. 109
Bermuda Dunes, CA 92203

May 2, 2007

Steven Mendoza
Assistant City Manager
City of Desert Hot Springs
65950 Pierson Boulevard
Desert Hot Springs, CA 92240

Subject: Revised Commercial WECS 20 Permit Project
SCH 2005101120

Dear Mr. Mendoza:

The California Department of Fish and Game (Department) has reviewed the Draft Environmental Impact Report (DEIR) for the Revised Commercial WECS 20 Permit Project (Project). The Project is located in the existing WECS 20 Wind Park, located on APN 667-160-001 in the City of Desert Hot Springs. The Project location is approximately 0.5 miles west of State Route 62 and approximately 2 miles north of Interstate 10. The Project includes the construction and operation of eight 1.5 megawatt wind turbine generators, the removal and remediation of sixteen existing older turbines, the construction of a single story 100 foot by 40 foot storage facility, and the use of an open storage area. The Project area consists of creosote bush scrub and ephemeral desert washes.

The Desert tortoise (*Gopherus agassizii*) is known to occur on the Project site. During biological surveys conducted on November 2, 2000 by Ogden Energy and Environmental Services, Inc. a Desert tortoise Class 3 burrow was detected within the Project area. In addition, the site is within modeled Desert tortoise habitat of the proposed Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP). A California Endangered Species Act (CESA) Permit must be obtained, due to the projects potential to result in "take" of a CESA listed species, during construction and/or over the life of the project. CESA Permits are issued to conserve, protect, enhance, and restore State-listed threatened or endangered species and their habitats. Early consultation is encouraged, as significant modification to the proposed project and mitigation measures may be required in order to obtain a CESA Permit. The Fish and Game Code requires that the Department issue a separate California Environmental Quality Act (CEQA) document for the issuance of a CESA permit unless the project CEQA document addresses all project impacts to listed species and specifies a mitigation monitoring and reporting program that will meet the requirements of a CESA permit.

2-A

2-B

RECEIVED MAY - 7 2007

Conserving California's Wildlife Since 1870

2-C The Project has the potential to impact the Western Burrowing Owl (*Athene cunicularia*), a California Species of Special Concern. In the November 13, 2000 Biological Assessment Update by Ogden Energy and Environmental Services it is stated that there is a "high probability" that the Burrowing owl may occur. Section 15380 of the California Environmental Quality Act (CEQA) requires the lead agency to treat sensitive species as though they were listed, if the species meets the criteria for listing described in the section. The Department believes that the proposed project could further the decline of the Western Burrowing Owl a sensitive species. This species must be treated as though it is listed and appropriate avoidance, mitigation and compensation for impacts need to be identified. Unavoidable impacts should be mitigated through acquisition and protection, in perpetuity, of high quality biological habitat. In addition, surveys and mitigation should be consistent with the 1995 Department Staff Report on Burrowing Owl Mitigation (attached).

2-D The streambed jurisdictional delineation produced by AMEC Earth & Environmental on December 13, 2005 and included in the DEIR does not provide a clear delineation of what is considered Waters of the State. This Project has potential to both temporarily and permanently impact Waters of the State. Impacts associated with removal and remediation of the sixteen wind turbines was not characterized. In addition the open storage area and associated road are located on or near a blue line stream according to the Desert Hot Springs 7.5 minute quadrangle map. Any impact whether permanent or temporary must be permitted through a Streambed Alteration Agreement (SAA) issued by the Department in accordance with Fish and Game code § 1600 et seq.

2-E

2-F

2-G As stated in the DEIR avian impacts are known to be more than zero. The DEIR states that avian mortality will be low without offering current or site specific data. Mortality studies should be conducted both before and after a repower to assess if there are biological benefits associated with a repower. Avian mortality data is characterized by comparing total Megawatts (MW), or Rotor-Swept Area (RSA). The MW of this project will be increasing so it is inappropriate at this time to state that "Lowering the number of turbines here and elsewhere in the San Gorgonio Pass as a result of repowering is anticipated to decrease cumulative impacts to birds from collisions."

2-H The increased height of the turbines at the Project site and its affect on avian and bat mortality is not adequately addressed in the DEIR. The San Gorgonio Pass is a high-use nocturnal flyway for migratory songbirds. Current studies should be conducted that examine the height at which birds and bats utilize the project area. Without current information on bird and bat use within the RSA it is not possible to assess the significance of increased turbine height on avian and bat mortality.

The Department appreciates the opportunity to comment on this project. Questions regarding this letter should be directed to Mr. Craig Weightman, Environmental Scientist at (760) 200-9394.

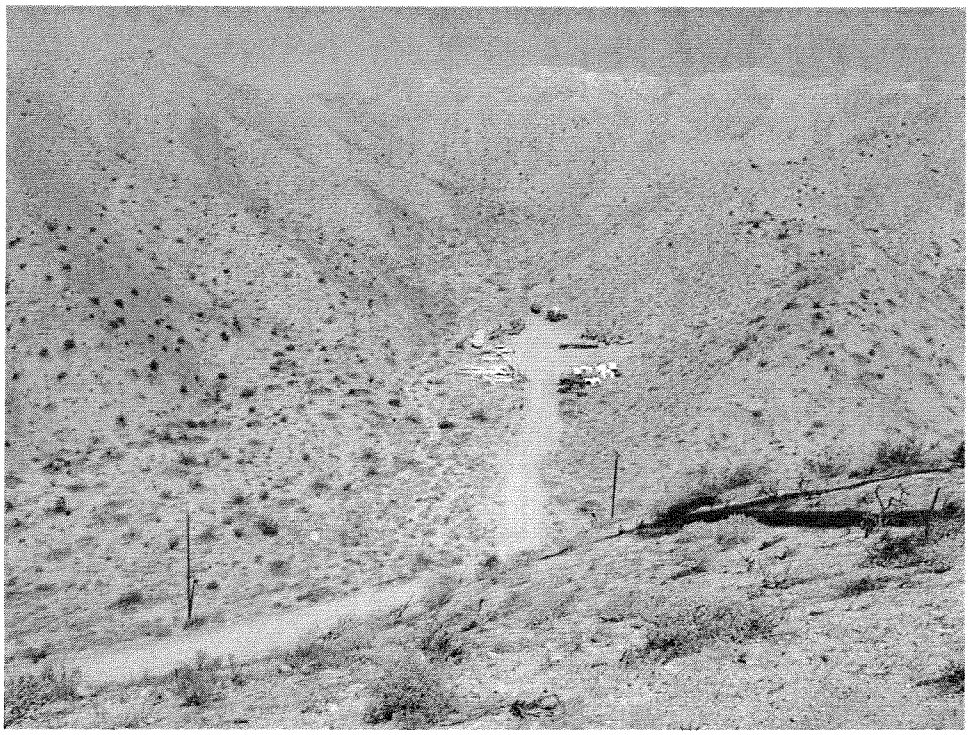
Sincerely,

Kimberly Nicol

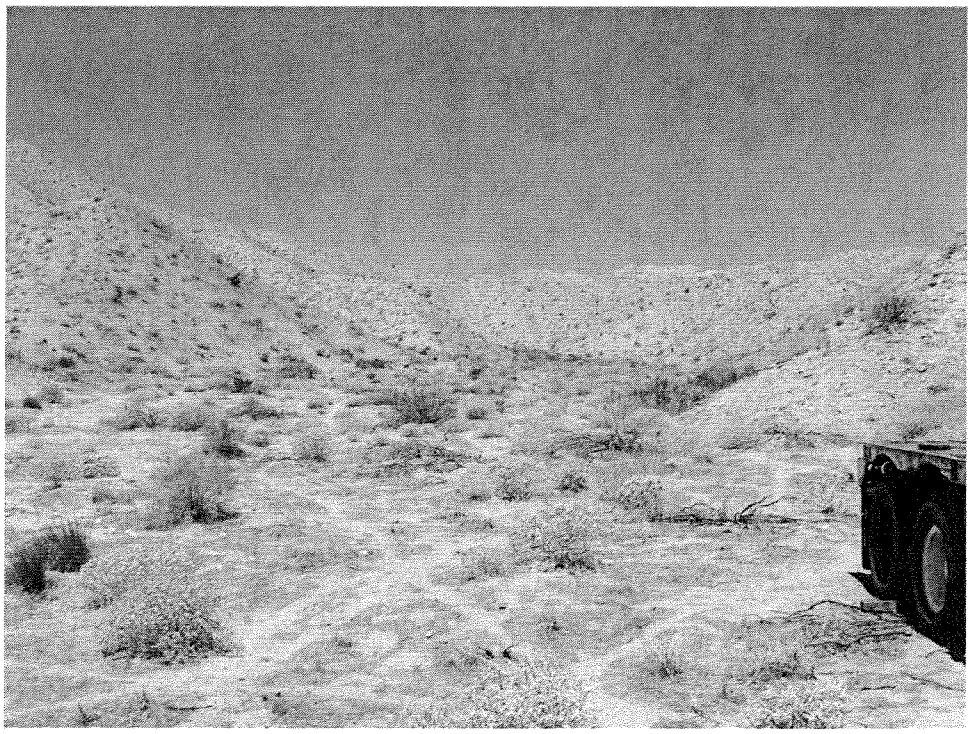
Kimberly Nicol
Senior Environmental Scientist
Inland Deserts Region

ATTACHMENT B

STORAGE AREA EXPANSION PHOTOGRAPHS



Photograph 1. From above: looking west at existing storage area and access road. Proposed expansion area is west of existing storage area.



Photograph 2. From ground-level (west edge of existing storage area): looking west at proposed storage area expansion.

ATTACHMENT C

IMPACTS TO BIRDS

Prepared by

AMEC Earth and Environmental, Inc.

San Gorgonio Pass and Coachella Valley wind turbines have not had the same problems with avian collisions evident at other large California Wind Resource Areas (WRA). During a four year study at Altamont and Tehachapi (California Energy Commission 1989), 108 raptor fatalities were discovered. During a two-year study at Altamont, Orloff and Flannery (1992) discovered 182 avian fatalities, including 124 raptors, and estimated up to 567 raptors may have been killed due to turbine strikes. At another 18-month study at Altamont (Howell 1997), 72 avian fatalities, including 44 raptors, were discovered.

Raptor fatalities in the San Gorgonio area are significantly lower (approximately 20% of the levels found at Altamont and Montezuma Hills). San Gorgonio has an estimated 0.010 raptor fatalities per turbine per year compared to 0.048 raptor fatalities per turbine per year for both Altamont and Montezuma Hills (National Wind Coordinating Committee 2001).

Based on the most up-to-date summary regarding avian interactions with wind turbines presented by Strickland and Johnson (2006), there has been no analysis of diurnal and nocturnal migration rates and their relationship to the avian fatality rates observed during standardized post-construction fatality monitoring studies. However, the current evidence from California and the rest of the country indicates that avian fatality, particularly that of nocturnal migrants, is not significant. There have only been two documented reports of 14 to 30 fatalities of neotropical migrants in a single night: one at a wind project in Minnesota and the other in West Virginia.

An estimate of the range of fatalities that could occur at the WECS 20 Repower Project (Project) can be calculated based on the post-construction fatality monitoring results corrected for observer efficiency and scavenging as reported in the studies for which those data are available. According to the summary issued by the National Wind Coordinating Council, per MW avian mortality rates for recent projects in the western United States have ranged from 1 to 3 birds/MW (NWCC 2004). Recent mortality monitoring conducted by Kerlinger *et al.* (2006) for the High Winds project in the Montezuma Hills, CA also provides useful recent results. Kerlinger *et al.* (2006) reported an average of 1.36 bird fatalities per MW per year; using these rates, this would result in a predicted rate of 16 bird fatalities per year at the proposed 12-MW Project. Kerlinger *et al.* (2006) also reported the fatality rate of night migrants during fatality monitoring at the High Winds project was less than 1 bird per turbine per year.

Standardized fatality monitoring from six western projects (including one in California) reported by Strickland and Johnson (2006) and Kerlinger *et al.* (2006) was conducted at wind projects containing turbines in the 1 MW to 1.8 MW size range, which are equal to or larger than the turbines proposed for this Project. The estimated fatality rates for these projects ranged from 0.95 to 2.92 birds per MW per year. Using an estimate in the middle of this range (1.935 birds/MW/year) would yield an estimate of approximately 23 birds/year.

Raptors

Raptors are predatory and carnivorous birds, with sharp talons and hooked bills for grasping and tearing prey. Avian-use statistics such as mean use, frequency of occurrence, and exposure indices for species provide insight on the relative abundance of birds, how frequently they use the project area, and an index to their risk of colliding with proposed wind turbines. The concern for raptor collisions at wind projects arises largely from the fact that red-tailed hawks, northern harriers, golden eagles, American kestrels, prairie falcons, and turkey vultures have all collided with wind turbines at Altamont, California, although most of the raptor fatalities were red-tailed hawks (Erickson *et al.* 2001a). However, comparisons with only the Altamont Pass wind project would be misleading because the Altamont facilities have many old-generation wind turbines, whereas most new-generation wind turbines have caused fewer raptor fatalities (Kerlinger *et al.* 2006).

The published avian use and fatality monitoring studies performed to date in the San Gorgonio Pass area (Anderson *et al.* 2005) along with the remainder of California and the U.S. have identified only two sites where raptor mortality/fatality is considered significant: the Altamont Pass and Montezuma Hills projects in California (NWCC 2004, Strickland and Johnson 2006). Based on recent standardized fatality monitoring studies that included adjustments for scavenging and observer efficiency, raptor use is very high in Altamont Pass and Montezuma Hills – 4.20 to 5.25 raptors per 30-minute survey – and fatality rates are also very high – 0.40 to 0.45 fatalities per MW per year. Data from seven other western sites with large, modern turbines revealed low raptor use – 0.45 to 1.35 birds per 30-minute survey – and a low fatality rate – 0.00 to 0.09 fatalities per MW per year (Strickland and Johnson 2006).

The mean raptor fatality estimate from eight new-generation wind projects in the midwest and west (Stateline, OR/WA; Vansycle, OR; Klondike, OR; Nine Canyon, WA; Foote Creek, WY; Buffalo Ridge, MN; Wisconsin; Buffalo Mountain, TN) was 0.04 raptor fatalities/MW/year, compared to approximately 1 raptor fatality/MW/year at Altamont, CA. In other words, the new-generation wind projects had 25 times less raptor mortalities than old-generation wind projects (Erickson *et al.* 2004). Only one raptor mortality was recorded over a four-year study at the Buffalo Ridge WRA, and zero raptor mortalities were documented at the Vansycle WRA during a one-year study (Erickson *et al.* 2000). The Stateline WRA (Oregon and Washington) receives moderate use by raptors (0.43 birds per 30 minutes), yet post-construction monitoring between 2001 and 2003 revealed only one Swainson's hawk fatality at one turbine. At the High Winds Power Project in Solano County, CA, raptor use estimates were high compared to other areas studied, particularly for American kestrels and red-tailed hawks. Corresponding to the high use by these species at the High Winds project, and despite newer turbine technology, the avian species with the greatest number of recorded fatalities in the two years after construction were American kestrels (n=45) and red-tailed hawks (n=18) (Kerlinger *et al.* 2006). Overall, it appears that there is a correlation between avian use statistics from pre-construction surveys and avian fatalities during post-construction surveys for raptors (Strickland and Johnson 2006).

At the National Wind Coordinating Committee's November 2006 Wildlife Research Meeting IV, researchers Wally Erickson, Ed Arnett, and Dale Strickland presented regression analysis of pre-project raptor use per 20-minute survey at nine new-generation wind projects at which state-of-the-art pre- and post-construction monitoring had been conducted (including two in California). The analysis found a statistically significant relationship between pre-project raptor use counts and post-construction raptor mortality. The raptor use rates observed at a project adjacent to the WECS 20 Project (0.48 raptors/30-minutes or 0.32 raptors/20-minutes) fall in the range that correspond to very low post-construction mortality in that regression analysis—between 0.01 and 0.04 raptor/MW/year (or 0.45 to 1.8 raptors/year for the 45-MW project) (Erickson et al. 2006). That rate is comparable to the rate that can be estimated from the 2005 Anderson study of raptor use and mortality in the San Gorgonio area—1.3 raptors for the 45-MW project (Anderson et al. 2005).

Based on the overall relatively low raptor use in the San Gorgonio area, there is little potential for raptor fatalities to equal or exceed those observed at other new-generation wind power projects. Red-tailed hawks are probably the most vulnerable species to collisions in the project area, considering they compose a large percentage of raptor fatalities at other wind projects in the U.S. (Erickson *et al.* 2001a). Other seasonal raptors and owls (e.g., California condor, northern harrier, white-tailed kite, sharp-shinned hawk, zone-tailed hawk, red-shouldered hawk, Swainson's hawk, ferruginous hawk, rough-legged hawk, golden eagle, bald eagle, merlin, peregrine falcon, barn owl, long-eared owl, western screech-owl, and great horned owl) may also have lower than expected levels of fatalities because few have been documented colliding with new-generation wind projects.

Passerines

Passerines are perching birds or songbirds (more than half of all species of birds are passerines). Concern for passerine collisions arises at wind power projects, because as a whole, passerines have been the group of birds incurring the most fatalities at several wind plants, often comprising >80% of the fatalities (Johnson *et al.* 2002, Erickson *et al.* 2001a). Passerines were approximately 50% of the fatalities of all bird groups combined among nocturnal migrants (Erickson *et al.* 2001a). Little is known about the numbers or routes of nocturnal bird migrants in the vicinity of western wind farms. Only one radar study has been conducted – the Stateline Wind Project located in northeastern Oregon and southeastern Washington (Mabee and Cooper 2004). Although relatively low migration rates and low flight altitudes were observed during this study, the different habitat and topography at the Project (creosote bush scrub) versus Stateline (agricultural land on rolling hills) may limit inferences from this study to the Project.

Passerines include hundreds of species that outnumber other groups such as raptors, both in numbers of species and in numbers of individuals, thus their collision rate may not be out of proportion to their relative abundance in the area. A review of avian fatalities at eight new-generation projects in the west and midwest (Stateline, OR/WA; Vansycle, OR; Klondike, OR; Nine Canyon, WA; Foote Creek, WY; Ponnequin, CO; Buffalo Ridge, MN; Wisconsin) showed that most fatalities are of horned larks (29.6%), followed

by sparrows (13.8%), warblers (9.2%), upland gamebirds (8.8%), and approximately <5% for other groups of birds (Erickson *et al.* 2004). Overall fatality rates for passerines in the U.S. (Vansycle, OR; Klondike, OR; Nine Canyon, WA; Foote Creek, WY; Buffalo Ridge, MN; Wisconsin; Buffalo Mountain, TN; Mountaineer, WV) were approximately 3 fatalities/MW/year (excluding old-generation sites in CA; Erickson *et al.* 2004). One eastern U.S. site (Buffalo Mountain, TN) had unusually high fatality rates (approximately 11 fatalities/MW/year).

At the Stateline Wind Project, slightly more than 81% of all avian observations were of horned larks, western meadowlarks, Canada geese, and common ravens (Erickson *et al.* 2004). The most commonly observed avian fatalities were horned larks and golden-crowned kinglets, with fatality estimates at 0.89 and 0.20 birds per turbine per year, respectively. The overall fatality estimate for small birds at Stateline was 1.70 birds per turbine per year (Erickson *et al.* 2004). Preliminary studies at Stateline show a relatively small-scale impact of the facility on grassland-nesting passerines. These impacts were mostly a result of direct loss of habitat due to construction of turbine pads, access roads, and some temporary habitat disturbance (Erickson *et al.* 2004). Similarly, at Combine Hills the average fatality estimate for small birds is 1.89 fatalities per turbine per year, with horned larks the most commonly observed fatality (1.20 per turbine per year; Young *et al.* 2006).

There is low potential for passerine fatalities to equal or exceed those observed at other new-generation wind power projects in the western United States, which is approximately 1.5–3.5 birds/turbine/year (Young *et al.* 2006).

Waterfowl, Waterbirds, and Shorebirds

Because of the lack of significant wetland complexes in the immediate vicinity of the project area, the majority of migrating waterfowl will likely be unaffected by continued wind farm development. Furthermore, based on fatality monitoring data in the west, waterfowl collisions with wind turbines are rare and unlikely to be an issue at this location (Erickson *et al.* 2002).

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State of California - The Resources Agency
ARNOLD SCHWARZENEGGER, Governor
DEPARTMENT OF FISH AND GAME
Inland Deserts Region
78078 Country Club Dr., Ste. 109
Bermuda Dunes, CA 92203

May 2, 2007

Steven Mendoza
Assistant City Manager
City of Desert Hot Springs
65950 Pierson Boulevard
Desert Hot Springs, CA 92240

Subject: Revised Commercial WECS 20 Permit Project
SCH 2005101120

Dear Mr. Mendoza:

The California Department of Fish and Game (Department) has reviewed the Draft Environmental Impact Report (DEIR) for the Revised Commercial WECS 20 Permit Project (Project). The Project is located in the existing WECS 20 Wind Park, located on APN 667-160-001 in the City of Desert Hot Springs. The Project location is approximately 0.5 miles west of State Route 62 and approximately 2 miles north of Interstate 10. The Project includes the construction and operation of eight 1.5 megawatt wind turbine generators, the removal and remediation of sixteen existing older turbines, the construction of a single story 100 foot by 40 foot storage facility, and the use of an open storage area. The Project area consists of creosote bush scrub and ephemeral desert washes.

The Desert tortoise (*Gopherus agassizii*) is known to occur on the Project site. During biological surveys conducted on November 2, 2000 by Ogden Energy and Environmental Services, Inc. a Desert tortoise Class 3 burrow was detected within the Project area. In addition, the site is within modeled Desert tortoise habitat of the proposed Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP). A California Endangered Species Act (CESA) Permit must be obtained, due to the projects potential to result in "take" of a CESA listed species, during construction and/or over the life of the project. CESA Permits are issued to conserve, protect, enhance, and restore State-listed threatened or endangered species and their habitats. Early consultation is encouraged, as significant modification to the proposed project and mitigation measures may be required in order to obtain a CESA Permit. The Fish and Game Code requires that the Department issue a separate California Environmental Quality Act (CEQA) document for the issuance of a CESA permit unless the project CEQA document addresses all project impacts to listed species and specifies a mitigation monitoring and reporting program that will meet the requirements of a CESA permit.

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Conserving California's Wildlife Since 1870

The Project has the potential to impact the Western Burrowing Owl (*Athene cunicularia*), a California Species of Special Concern. In the November 13, 2000 Biological Assessment Update by Ogden Energy and Environmental Services it is stated that there is a "high probability" that the Burrowing owl may occur. Section 15380 of the California Environmental Quality Act (CEQA) requires the lead agency to treat sensitive species as though they were listed, if the species meets the criteria for listing described in the section. The Department believes that the proposed project could further the decline of the Western Burrowing Owl a sensitive species. This species must be treated as though it is listed and appropriate avoidance, mitigation and compensation for impacts need to be identified. Unavoidable impacts should be mitigated through acquisition and protection, in perpetuity, of high quality biological habitat. In addition, surveys and mitigation should be consistent with the 1995 Department Staff Report on Burrowing Owl Mitigation (attached).

The streambed jurisdictional delineation produced by AMEC Earth & Environmental on December 13, 2005 and included in the DEIR does not provide a clear delineation of what is considered Waters of the State. This Project has potential to both temporarily and permanently impact Waters of the State. Impacts associated with removal and remediation of the sixteen wind turbines was not characterized. In addition the open storage area and associated road are located on or near a blue line stream according to the Desert Hot Springs 7.5 minute quadrangle map. Any impact whether permanent or temporary must be permitted through a Streambed Alteration Agreement (SAA) issued by the Department in accordance with Fish and Game code § 1600 et seq.

As stated in the DEIR avian impacts are known to be more than zero. The DEIR states that avian mortality will be low without offering current or site specific data. Mortality studies should be conducted both before and after a repower to assess if there are biological benefits associated with a repower. Avian mortality data is characterized by comparing total Megawatts (MW), or Rotor-Swept Area (RSA). The MW of this project will be increasing so it is inappropriate at this time to state that "Lowering the number of turbines here and elsewhere in the San Gorgonio Pass as a result of repowering is anticipated to decrease cumulative impacts to birds from collisions."

The increased height of the turbines at the Project site and its affect on avian and bat mortality is not adequately addressed in the DEIR. The San Gorgonio Pass is a high-use nocturnal flyway for migratory songbirds. Current studies should be conducted that examine the height at which birds and bats utilize the project area. Without current information on bird and bat use within the RSA it is not possible to assess the significance of increased turbine height on avian and bat mortality.

The Department appreciates the opportunity to comment on this project. Questions regarding this letter should be directed to Mr. Craig Weightman, Environmental Scientist at (760) 200-9394.

Sincerely,

Kimberly Nicol

Kimberly Nicol
Senior Environmental Scientist
Inland Deserts Region

State of California

Memorandum

: "Div. Chiefs - IFD, BDD, NED, & WMD
Reg. Mgrs. - Regions 1, 2, 3, 4, & 5

Date : October 17, 1995

From : Department of Fish and Game

Subject : Staff Report on Burrowing Owl Mitigation

I am hereby transmitting the Staff Report on Burrowing Owl Mitigation for your use in reviewing projects (California Environmental Quality Act [CEQA] and others) which may affect burrowing owl habitat. The Staff Report has been developed during the last several months by the Environmental Services Division (ESD) in cooperation with the Wildlife Management Division (WMD) and regions 1, 2, and 4. It has been sent out for public review and redrafted as appropriate.

Either the mitigation measures in the staff report may be used or project specific measures may be developed. Alterative project specific measures proposed by the Department divisions/regions or by project sponsors will also be considered. However, such mitigation measures must be submitted to ESD for review. The review process will focus on the consistency of the proposed measure with Department, Fish and Game Commission, and legislative policy and with laws regarding raptor species. ESD will coordinate project specific mitigation measure review with WMD.

If you have any questions regarding the report, please contact Mr. Ron Rempel, Supervising Biologist, Environmental Services Division, telephone (916) 654-9980.

COPY Original signed by C.F. Raysbrook

C. F. Raysbrook
Interim Director

Attachment

cc: Mr. Ron Rempel
Department of Fish and Game
Sacramento

STAFF REPORT ON BURROWING OWL MITIGATION

Introduction

The Legislature and the Fish and Game Commission have developed the policies, standards and regulatory mandates to protect native species of fish and wildlife. In order to determine how the Department of Fish and Game (Department) could judge the adequacy of mitigation measures designed to offset impacts to burrowing owls *(Speotyto cunicularia;* A.O.U. 1991) staff (WMD, ESD, and Regions) has prepared this report. To ensure compliance with legislative and commission policy, mitigation requirements which are consistent with this report should be incorporated into: (1) Department comments to Lead Agencies and project sponsors pursuant to the California Environmental Quality Act (CEQA); and (2) other authorizations the Department gives to project proponents for projects impacting burrowing owls.

This report is designed to provide the Department (including regional offices and divisions), CEQA Lead Agencies and project proponents the context in which the Environmental Services Division (ESD) will review proposed project specific mitigation measures. This report also includes preapproved mitigation measures which have been judged to be consistent with policies, standards and legal mandates of the Legislature,. the Fish and Game Commission and the Department's public trust responsibilities. Implementation of mitigation measures consistent with this report are intended to help achieve the conservation of burrowing owls and should compliment multi-species habitat conservation planning efforts currently underway. The *Burrowing Owl Survey Protocol and Mitigation Guidelines* developed by The California Burrowing Owl Consortium (CBOC 1993) were taken into consideration in the preparation of this staff report as were comments from other interested parties.

A range-wide conservation strategy for this species is needed. Any range-wide conservation strategy should establish criteria for avoiding the need to list the species pursuant to either the California or federal Endangered Species Acts through preservation of existing habitat, population expansion into former habitat, recruitment of young into the population, and other specific efforts.

California's burrowing owl population is clearly declining and, if declines continue, the species may qualify for listing. Because of the intense pressure for urban development within suitable burrowing owl nesting and foraging habitat (open, flat and gently rolling grasslands and grass/shrub lands) in California, conflicts between owls and development projects often occur. Owl survival can be adversely affected by disturbance and foraging habitat loss even when impacts to individual birds and nests/burrows are avoided. Adequate information about the presence of owls is often unavailable prior to project approval. Following project approval there is no legal mechanism through which to seek mitigation other than avoidance of occupied burrows or nests. The absence of standardized survey methods often impedes consistent impact assessment.

Burrowing Owl Habitat Description

Burrowing owl habitat can be found in annual and perennial grasslands, deserts, and arid scrublands characterized by low-growing vegetation (Zarn 1974). Suitable owl habitat may also include trees and shrubs if the canopy covers less than 30 percent of the ground surface. Burrows are the essential component of burrowing owl habitat. Both natural and artificial burrows provide protection, shelter, and nests for burrowing owls (Henny and Blus 1981). Burrowing owls typically use burrows made by fossorial mammals, such as ground squirrels or badgers, but also may use man-made structures such as cement culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement.

Occupied Burrowing Owl Habitat

Burrowing owls may use a site for breeding, wintering, foraging, and/or migration stopovers. Occupancy of suitable burrowing owl habitat can be verified at a site by detecting a burrowing owl, its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance. Burrowing owls exhibit high site fidelity, reusing burrows year after year (Rich 1984, Feeney 1992). A site should be assumed occupied if at least one burrowing owl has been observed occupying a burrow there within the last three years (Rich 1984).

CEQA Project Review

The measures included in this report are intended to provide a decision-making process that should be implemented whenever there is potential for an action or project to adversely affect burrowing owls. For projects subject to the California Environmental Quality Act (CEQA), the process begins by conducting surveys to determine if burrowing owls are foraging or nesting on or adjacent to the project site. If surveys confirm that the site is occupied habitat, mitigation measures to minimize impacts to burrowing owls, their burrows and foraging habitat should be incorporated into the CEQA document as enforceable conditions. The measures in this document are intended to conserve the species by protecting and maintaining viable' populations of the species throughout their range in California. This may often result in protecting and managing habitat for the species at sites away from rapidly urbanizing/developing areas. Projects and situations vary and mitigation measures should be adapted to fit specific circumstances.

Projects not subject to CEQA review may have to be handled separately since the legal authority the Department has with respect to burrowing owls in this type of situation is often limited. The burrowing owl is protected from "take" (Section 3503.5 of the Fish and Game Code) but unoccupied habitat is likely to be lost for activities not subject to CEQA.

Legal Status

The burrowing owl is a migratory species protected by international treaty under the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 C.F.R. Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 C.F.R. 21). Sections 3505, 3503.5, and 3800 of the California Department of Fish and Game Code prohibit the take, possession, or destruction of birds, their nests or eggs. To avoid violation of the take provisions of these laws generally requires that project-related disturbance at active nesting territories be reduced or eliminated during the nesting cycle (February 1 to August 31). Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) may be considered "take"' and is potentially punishable by fines and/or imprisonment.

The burrowing owl is a Species of Special Concern to California because of declines of suitable habitat and both localized and statewide population declines. Guidelines for the Implementation of the California Environmental Quality Act (CEQA) provide that a species be considered as endangered or "rare" regardless of appearance on a formal list for the purposes of the CEQA (Guidelines, Section 15380, subsections b and d). The CEQA requires a mandatory findings of significance if impacts to threatened or endangered species are likely to occur (Sections 21001 (c), 2103; Guidelines 15380, 15064, 15065). To be legally adequate, mitigation measures must be capable of "avoiding the impact altogether by not taking a certain action or parts of an action"; "minimizing impacts by limiting the degree or magnitude of the action and its implementation"; "rectifying the impact by repairing, rehabilitating or restoring the impacted environment"; "or reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action" (Guidelines, Section 15370). Avoidance or mitigation to reduce impacts to less than significant levels must be included in a project or the CEQA lead agency must make and justify findings of overriding considerations.

Impact Assessment

Habitat Assessment

The project site and a 150 meter (approximately 500 ft.) buffer (where possible and appropriate based on habitat) should be surveyed to assess the presence of burrowing owls and their habitat (Thomsen 1971, Martin 1973). If occupied habitat is detected on or adjacent to the site, measures to avoid, minimize, or mitigate the project's impacts to the species should be incorporated into the project, including burrow preconstruction surveys to ensure avoidance of direct take. It is also recommended that preconstruction surveys be conducted if the species was not detected but is likely to occur on the project site.

Burrowing Owl and Burrow Surveys

Burrowing owl and burrow surveys should be conducted during both the wintering and nesting seasons, unless the species is detected on the first survey. If possible, the winter survey should be conducted between December 1 and January 31 (when wintering owls are most likely to be present) and the nesting season survey should be conducted between April 15 and July 15 (the peak of the breeding season). Surveys conducted from two hours before sunset to one hour after, or from one hour before to two hours after sunrise, are also preferable.

Surveys should be conducted by walking suitable habitat on the entire project site and (where possible) in areas within 150 meters (approx. 500 ft.) of the project impact zone. The 150-meter buffer zone is surveyed to identify burrows and owls outside of the project area which may be impacted by factors -such as noise and vibration (heavy equipment, etc.) during project construction. Pedestrian survey transects should be spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines should be no more than 30 meters (approx. 100 ft.) and should be reduced to account for differences in terrain, vegetation density, and ground surface visibility. To effectively survey large projects (100 acres or larger), two or more surveyors should be used to walk adjacent transects. To avoid impacts to owls from surveyors, owls and/or occupied burrows should be avoided by a minimum of 50 meters (approx. 160 ft.) wherever practical. Disturbance to occupied burrows should be avoided during all seasons.

Definition of Impacts

The following should be considered impacts to the species:

- Disturbance within 50 meters (approx. 160 ft.) Which may result in harassment of owls at occupied burrows;
- Destruction of natural and artificial burrows (culverts, concrete slabs and debris piles that provide shelter to burrowing owls); and
- Destruction and/or degradation of foraging habitat adjacent (within 100 m) of an occupied burrow(s).

Written Report

A report for the project should be prepared for the Department and copies should be submitted to the Regional contact and to the Wildlife Management Division Bird and Mammal Conservation Program. The report should include the following information:

- Date and time of visit(s) including name of the qualified biologist conducting surveys, weather and visibility conditions, and survey methodology;
- Description of the site including location, size, topography, vegetation communities, and animals observed during visit(s);
- Assessment of habitat suitability for burrowing owls;
- Map and photographs of the site;
- Results of transect surveys including a map showing the location of all burrow(s) (natural or artificial) and owl(s), including the numbers at each burrow if present and tracks, feathers, pellets, or other items (prey remains, animal scat);
- Behavior of owls during the surveys;
- Summary of both winter and nesting season surveys including any productivity information and a map showing territorial boundaries and home ranges; and
- Any historical information (Natural Diversity Database, Department regional files? Breeding Bird Survey data, American Birds records, Audubon Society, local bird club, other biologists, etc.) regarding the presence of burrowing owls on the site.

Mitigation

The objective of these measures is to avoid and minimize impacts to burrowing owls at a project site and preserve habitat that will support viable owls populations. If burrowing owls are detected using the project area, mitigation measures to minimize and offset the potential impacts should be included as enforceable measures during the CEQA process.

Mitigation actions should be carried out from September 1 to January 31 which is prior to the nesting season (Thomsen 1971, Zam 1974). Since the timing of nesting activity may vary with latitude and climatic conditions, this time frame should be adjusted accordingly. Preconstruction surveys of suitable habitat at the project site(s) and buffer zone(s) should be conducted within the 30 days prior to construction to ensure no additional, burrowing owls have established territories since the initial surveys. If ground disturbing activities are delayed or suspended for more than 30 days after the preconstruction survey, the site should be resurveyed.

Although the mitigation measures may be included as enforceable project conditions in the CEQA process, it may also be desirable to formalize them in a Memorandum of Understanding (MOU) between the Department and the project sponsor. An MOU is needed when lands (fee title or conservation easement) are being transferred to the Department.

Specific Mitigation Measures

1. Occupied burrows should not be disturbed during the nesting season (February 1 through August 3 1) unless a qualified biologist approved by the Department verifies through non-invasive methods that either: (1) the birds have not begun egg-laying and incubation; or (2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.

2. To offset the loss of foraging and burrow habitat on the project site, a minimum of 6.5 acres of foraging habitat (calculated on a 100 m {approx. 300 ft.} foraging radius around the burrow) per pair or unpaired resident bird, should be acquired and permanently protected. The protected lands should be adjacent to occupied burrowing owl habitat and at a location acceptable to the Department. *Protection of additional habitat acreage per pair or unpaired resident bird may be applicable in some instances.* The CBOC has also developed mitigation guidelines (CBOC 1993) that can be incorporated by CEQA lead agencies and which are consistent with this staff report.

3. When destruction of occupied burrows is unavoidable, existing unsuitable burrows should be enhanced (enlarged or cleared of debris) or new burrows created (by installing artificial burrows) at a ratio of 2:1 on the protected lands site. One example of an artificial burrow design is provided in Attachment A.

4. If owls must be moved away from the disturbance area, passive relocation techniques (as described below) should be used rather than trapping. At least one or more weeks will be necessary to accomplish this and allow the owls to acclimate to alternate burrows.

5. The project sponsor should provide funding for long-term management and monitoring of the protected lands. The monitoring plan should include success criteria, remedial measures, and an annual report to the Department.

Impact Avoidance

If avoidance is the preferred method of dealing with potential project impacts, then no disturbance should occur within 50 meters (approx. 160 ft.) of occupied burrows during the nonbreeding season of September 1 through January 31 or within 75 meters (approx. 250 ft.) during the breeding season of February 1 through August 31. Avoidance also requires that a minimum of 6.5 acres of foraging habitat be *permanently* preserved contiguous with occupied burrow sites for each pair of breeding burrowing owls (with or without dependent young) or single unpaired resident bird. The configuration of the protected habitat should be approved by the Department.

Passive Relocation - With One-Way Doors

Owls should be excluded from burrows in the immediate impact zone and within a 50 meter (approx. 160 ft.) buffer zone by installing one-way doors in burrow entrances. One-way doors (e.g., modified dryer vents) should be left in place 48 hours to insure owls have left the burrow before excavation. Two natural or artificial burrows should be provided for each burrow in the project area that will be rendered biologically unsuitable. The project area should be *monitored daily for one* week to confirm owl use of burrows before excavating burrows in the immediate impact zone. Whenever possible, burrows should be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe should be inserted into the tunnels during excavation to maintain an escape route for any animals inside the burrow.

Passive Relocation - Without One-Way Doors

Two natural or artificial burrows should be provided for each burrow in the project area that will be rendered biologically unsuitable. The project area should be *monitored daily until the owls have relocated to the new burrows.* The formerly occupied burrows may then be excavated. Whenever possible, burrows should be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe should be inserted into burrows during excavation to maintain an escape route for any animals inside the burrow.

Projects Not Subject to CEQA

The Department is often contacted regarding the presence of burrowing owls on construction sites, parking lots and other areas for which there is no CEQA action or for which the CEQA process has been completed. In these situations, the Department should seek to reach agreement with the project sponsor to implement the specific mitigation measures described above. If they are unwilling to do so, passive relocation without the aid of one-way doors is their only option based upon Fish and Game Code 3503.5.

Literature Cited

American Ornithologists Union (AOU). 1991. Thirty-eighth supplement to the AOU checklist of North American birds. *Auk* 108:750-754.

Feeney, L. 1992. Site fidelity in burrowing owls. Unpublished paper presented to Raptor Research Annual Meeting, November 1992. Seattle, Washington.

Haug, E. A. and L. W. Oliphant. 1990, Movements, activity patterns, and habitat use of burrowing owls in Saskatchewan. *J. Wildlife Management* 54:27-35.

Henny, C. J. and L. J. Blus. 1981. Artificial burrows provide new insight into burrowing owl nesting biology. *Raptor Research* 15:82-85.

Martin, D. J. 1973. Selected aspects of burrowing owl ecology and behavior. *Condor* 75:446-456.

Rich, T. 1984. Monitoring burrowing owl populations: Implications of burrow re-use. *Wildlife Society Bulletin* 12:178-180.

The California Burrowing Owl Consortium (CBOC). 1993. Burrowing owl survey protocol and mitigation guidelines. Tech. Rep. Burrowing Owl Consortium, Alviso, California.

Thomsen, L. 1971. Behavior and ecology of burrowing owls on the Oakland Municipal Airport. *Condor* 73:177-192.

Zarn, M. 1974. Burrowing owl. U. S. Department of Interior, Bureau of Land Management. Technical Note T-N 250. Denver, Colorado. 25 pp.

May. 8. 2007 10:02AM Misson Springs No. 0870 P. 14

Reproductive Success of Burrowing Owls Using Artificial Nest Burrows in Southeastern Idaho

by Bruce Olenick

Artificial nest burrows were implanted in southeastern Idaho f'or burrowing owls in the spring of 1986. These artificial burrows consisted of a 12" x 12" x 8" wood nesting chamber with removable top and a 6 foot corrugated and perforated plastic drainage pipe 6 inches in diameter (Fig. 1). Earlier investigators claimed that artificial burrows must provide a natural dirt floor to allow burrowing owls to modify the nesting tunnel and chamber. Contrary to this, the artificial burrow introduced here does not allow owls to modify the entrance or tunnel. The inability to change the physical dimensions of the burrow tunnel does not seem to reflect the owls' breeding success or deter them from using this burrow design.

In 1936, 22 artificial burrows were inhabited. Thirteen nesting attempts yielded an average clutch size of 8.3 eggs per breeding pair. Eight nests successfully hatched at least 1 nestling. In these nests, *67 of 75* eggs hatched (59.3%) and an estimated 61 nestlings (91.0%) fledged. An analysis of the egg laying and incubation periods showed that incubation commenced well after egg laying bega. Average clutch size at the start of incubation was 5.6 eggs. Most eggs tended to hatch synchronously in all successful nests.

Although the initial cost of constructing this burrow design may be slightly higher than a burrow consisting entirely of wood, the plastic pipe burrow offers the following advantages: (1) it lasts several field seasons without rotting or collapsing; (2) it may prevent or retard predation; (3) construction time is minimal; (4) it is easy to transport, especially over long distances; and (5) the flexible tunnel simplifies installation. The use of this artificial nest burrow design was highly successful and may prove to be a great resource technique for future management of this species.

For additional information on constructing this artificial nest burrow, contact Bruce Olenick, Department of Biology, Idaho State University, Pocatello, ID 83209.

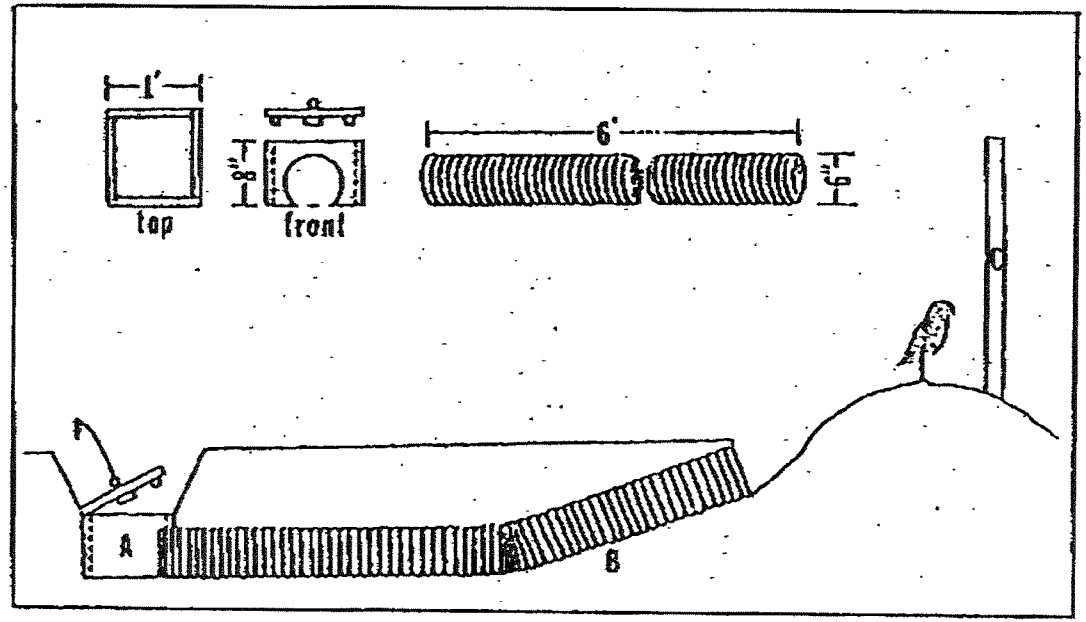

fig. 1 Artificial nest burrow design for burrowing owls Entire unit (including nest chamber) is buried 12" – 18" below ground for maintaining thermal stability of the nest chamber. A= nest chamber, B = plastic pipe. C = perch.

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ATTACHMENT A

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

APPLICATION FOR INCIDENTAL TAKE OF ENDANGERED SPECIES, THREATENED SPECIES AND CANDIDATE SPECIES

Applications for incidental take permits must include all of the information listed in the California Code of Regulations, Title 14, sections 783.2 and 783.3. This form is provided to assist you in preparing complete responses to the required sections. Consultation with a qualified wildlife biologist should be considered if the project applicant cannot completely respond to the species-specific information requested. Include all CEQA documents prepared in association with any other related permitting requirements (e.g., local agencies, etc.) to assist the Department in timely processing of the application.

Applications must be submitted to the Regional Manager. Any questions regarding the application and/or process should be directed to Department staff located in the Region where the project or activity will be conducted.

I. GENERAL INFORMATION

A. DATE OF APPLICATION:

B. APPLICANT: Full name, complete mailing address, phone number, and fax number of individual, business, agency, or institution for which permit is requested.

C. IF "APPLICANT" IS A CORPORATION, FIRM, PARTNERSHIP, ASSOCIATION, INSTITUTION OR PUBLIC OR PRIVATE AGENCY PROVIDE:

Name, address, telephone number, and e-mail address, if available, of the person responsible for the project or activity requiring the permit, the president or principal officer, and the registered agent for the service of process.

D. A BRIEF DESCRIPTION OF THE PROJECT OR ACTIVITY FOR WHICH THE PERMIT IS SOUGHT:

E. LOCATION WHERE PROJECT OR ACTIVITY IS TO BE CONDUCTED: Provide a description of the physical location such as street address, town or city, etc; Assessor's Parcel Number (APN); and Township, Range, Section. Attach U.S.G.S. map with location marked.

F. PROPOSED PERMIT DURATION: Based on the expected duration of project activities, including any activities related to implementation of mitigation requirements.

G. OTHER PERMITS REQUIRED: List any other permits required/sought for this project (i.e., Stream Alteration Agreement, Federal ESA Authorization, CESA Scientific Collecting, CORPS Permit, etc.)

H. CEQA LEAD AGENCY: Name of the Local or State approving agency. Name, address, telephone number, and fax number of the Lead Agency contact person.

I. CEQA DOCUMENTATION: A statement as to whether an environmental impact report, negative declaration, or mitigated negative declaration has been prepared or is being considered, or whether another document prepared pursuant to a certified regulatory program (Public Resources Code section 21080.5) has been prepared or is being considered.

II. BIOLOGICAL ANALYSIS

A. SPECIES TO BE COVERED: List the common and scientific names of all species for which incidental take coverage is being sought. List each species' status under CESA, and whether the species is the subject of rules and guidelines pursuant to Fish and Game Code sections 2112 and 2114.

B. PROJECT DESCRIPTION: Provide a complete and detailed description of the project or activity for which the permit is sought, including the project site, staging areas, access roads, etc. Provide an estimate of the acreage that will be affected by the project and related activities.

C. EXTENT OF TAKE: Provide an analysis of whether and to what extent the project or activity could result in the taking of the species to be covered by the permit. Include a discussion of habitat impacts and the project activities that could cause take of covered species. Use a table or chart, if necessary, to display impacts of different aspects of the project. Attach results of field surveys and qualifications of individuals conducting surveys, if applicable.

D. IMPACT ON THE SPECIES: Present an analysis of the impacts of the proposed taking on the species. For example, will the project impact a significant share of the population? Does the project create a barrier that will isolate remaining populations from each other?

E. JEOPARDY: Present an analysis of whether issuance of the incidental take permit would jeopardize the continued existence of a species. This analysis shall include consideration of the species' capability to survive and reproduce, and any adverse impacts of the taking on those abilities in light of: 1) known population trends; 2) known threats to the species; and 3) reasonably foreseeable impacts on the species from other related projects and activities.

F. MITIGATION MEASURES: Propose and explain measures to minimize and fully mitigate all impacts of the proposed taking.

G. COMPLIANCE: Provide a plan to monitor and report compliance with and effectiveness of the minimization and mitigation measures. The plan should include specific, measurable goals or success criteria as well as remedial measures and thresholds for triggering those remedial measures.

H. FUNDING: A description of the funding source and the level of funding available for implementation of the minimization and mitigation measures.

CERTIFICATION

I certify that the information submitted in this application is complete and accurate to the best of my knowledge and belief. I understand that any false statement herein may subject me to suspension or revocation of this permit and to civil and criminal penalties under the laws of the State of California.

Signature Date

3. COACHELLA VALLEY WATER DISTRICT

Responses to comments received from Coachella Valley Water District (CVWD) are included below. A complete copy of CVWD's comment letter follows on pages K-44 through K-45.

Comment Number	Comment	Response
3A	CVWD commented that under the second bulleted item on page 63 of the DEIR, Hydrology and Water Quality, "5 acres" in the first sentence should be replaced with "1 acre".	The noted change has been made and is reflected in the FEIR. Refer also to Comment 5B and Response 5B.

ESTABLISHED IN 1918 AS A PUBLIC AGENCY

COACHELLA VALLEY WATER DISTRICT

POST OFFICE BOX 1058 • COACHELLA, CALIFORNIA 92236 • TELEPHONE (760) 398-2651 • FAX (760) 398-3711

DIRECTORS:

PETER NELSON, PRESIDENT
PATRICIA A. LARSON, VICE PRESIDENT
TELLIS CODEKAS
JOHN W. McFADDEN
RUSSELL KITAHARA

OFFICERS:

STEVEN B. ROBBINS,
GENERAL MANAGER-CHIEF ENGINEER
MARK BEUHLER,
ASST. GENERAL MANAGER
JULIA HERNANDEZ, SECRETARY
DAN PARKS, ASST. TO GENERAL MANAGER
REDWINE AND SHERRILL, ATTORNEYS

May 2, 2007

File: 1150.12

Steven Mendoza
Assistant City Manager
City of Desert Hot Springs
65-950 Pierson Boulevard
Desert Hot Springs, CA 92240

Dear Mr. Mendoza:

The Coachella Valley Water District (District) appreciates the opportunity to review the Notice of Availability for the Draft Environmental Impact Report for the Revised WECS 20 Permit Project in Desert Hot Springs. The District provides domestic water, wastewater, recycled water, irrigation/drainage, regional stormwater protection and groundwater management services to a population of 265,000 throughout the Coachella Valley in Southern California.

After reviewing the document, we submit the following comment:

> Page 63, Hydrology and Water Quality. Under the second bulleted item, please replace "5 acres" in the first sentence with "1 acre".

If you have any questions or need more information, please contact Luke Stowe, Senior Environmental Specialist, at extension 2545.

Yours very truly,

RECEIVED MAY - 7 2007

Mark L. Johnson
Director of Engineering

LS:md\eng\env\07\may\mendoza-s

TRUE CONSERVATION
USE WATER WISELY

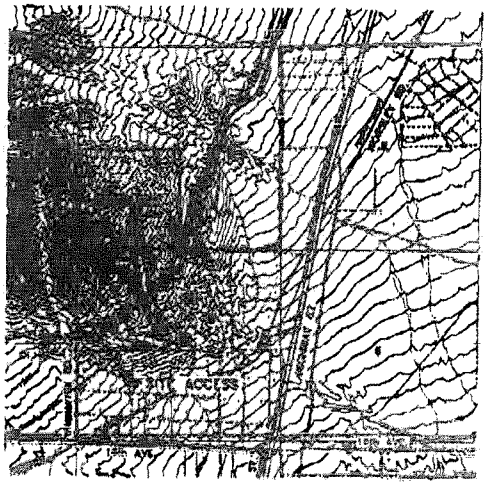
PUBLIC NOTICE
CITY OF DESERT HOT SPRINGS
COMMMUNITY DEVELOPMENT DEPARTMENT
NOTICE OF COMPLETION / NOTICE OF AVAILABILITY

FILED
RIVERSIDE COUNTY
MAR 28 2007
By M. Meyer Deputy

FROM: CITY OF DESERT HOT SPRINGS
Community Development Department
65950 Pierson Blvd,
Desert Hot Springs, CA 92240

SUBJECT: Notice of Completion/Notice of Availability of a Draft EIR in accordance with the California Environmental Quality Act

Project Title: Revised Commercial WECS 20 Permit Project



City: Desert Hot Springs **County:** Riverside

Project Location: The existing WECS 20 Wind Park, located on APN 667-160-001 on the southwesterly quarter of Section 31, Township 2 South, Range 4 East, San Bernardino Meridian. The Project site is located approximately 0.5 mile westerly of State Route 62 and approximately 2 miles northerly of Interstate 10.

Description of Nature, Purpose, and Beneficiaries of Project: The Project includes the construction and operation of eight 1.5-megawatt wind turbine generators in the existing WECS 20 Wind Park, the removal of sixteen existing older turbines from the WECS 20 Wind Park, the construction of one single story 100' x 40' storage facility for parts and tools, and the use of an open storage area for storage of spare parts for the turbines. The purpose of the project is to improve the productivity of the WECS 20 Wind Park by replacing older turbines with newer, more efficient turbines, thereby increasing the amount of energy produced by utilizing the wind resource in the area. The Project will increase production of renewable energy, thereby offsetting air pollutant emissions that are produced by conventional fossil-fueled power plants, and help California achieve its goal of 20 percent renewable energy by 2017. Therefore, the beneficiaries are the current and future residents of California.

Lead Agency: City of Desert Hot Springs, Community Development Department

The Draft EIR Is Available for Public Review at the following locations:
- City Desert Hot Springs, Community Development Department, 65950 Pierson Blvd, Desert Hot Springs, CA 92240
- Riverside County Library, 11691 West Drive, Desert Hot Springs, 92260

4.2.07

Review Period: March 26, 2007 – May 10, 2007 **Contact Person:** Steven Mendoza, Assistant City Manager

Revised Commercial WECS 20 Permit Project: The Draft Environmental Impact Report (DEIR) addresses the potential for significant environmental impacts that could result from approving and implementing the current proposal by Energy Unlimited, Incorporated for the Revised Commercial WECS 20 Permit Project, a wind energy project to improve the existing WECS 20 Wind Park in the City of Desert Hot Springs. The 160-acre project site is comprised of 69 existing operational wind turbines. The Revised Commercial WECS 20 Permit Project proposes to temporarily disturb approximately 0.74 acre and permanently disturb 0.61 acre, with a total anticipated disturbed area of approximately 1.35 acres.

Entitlement Actions: Development Permit, Design Review, Conditional Use Permit, Variance

Significant Environmental Effects Anticipated as a Result of the Project
There are no significant environmental effects anticipated as a result of the Project. All potentially significant impacts anticipated by the Project will be mitigated to a level of insignificance by implementation of the mitigation measures set forth in the Draft Environmental Impact Report for the Revised Commercial WECS Permit Project (March 2007).

Public Meetings: No public meetings have been scheduled at this time. However, the City of Desert Hot Springs Planning Commission, and City Council, will consider the Draft EIR at later dates. Agendas for these public meetings are routinely posted.

4. MISSION SPRINGS WATER DISTRICT

Responses to comments received from Mission Springs Water District (MSWD) are addressed in the letter report from AMEC Earth & Environmental dated August 17, 2007 included on the following pages (pages K-47 through K-60). A complete copy of MSWD's comment letter follows on pages K-61 through K-62.

August 17, 2007
Job No. 7554000309

Energy Unlimited
638 Lindero Canyon Road, #273
Oak Park, California 91301

Attention: Mr. David Lamm

Re: Response To Comment From Mission Springs Water District On Draft Environmental Impact Report For The Revised Commercial WECS 20 Permit Project (SCH#2005101120)

Following is our response to the subject comment letter from the Mission Springs Water District dated May 10, 2007. Our response is organized in a tabular format according to the numbered brackets for each comment on the attached bracketed letter. The responses correspond to the comment number on the agency letter and are keyed to a summary of each specific agency comment.

We appreciate this opportunity to provide environmental planning services to you. Please let me know if you have any questions.

Sincerely,

Lori E. Trottier, AICP
Senior Planner
LET/dc

Encl: Attachment 1 - Response Table
Attachment 2 - MSWD Letter
Attachment 3 - Lubricants List

c: Mr. David Lamm, Addressee (1)

AMEC Earth & Environmental, Inc.
1290 North Hancock Street, Suite 102
Anaheim, California
USA 92807-1924
Tel (714) 779-2591
Fax (714-779-8377

ATTACHMENT 1
RESPONSE TABLE

RESPONSE TABLE

Comment Number	Comment	Response
4-A	MSWD requests that their comment letter (dated May 10, 2007) pertaining to the Project be considered as an official comment received in response to the Project DEIR. The Project is situated within the jurisdiction of the MSWD, which is a domestic water purveyor. The MSWD's primary source of water is pumped from groundwater aquifers.	Responses 4-B through 4-E herein are intended to satisfy the requirements of §15088 (a) of the CEQA Statutes and Guidelines which require that the lead agency prepare a written response to comments received on environmental issues from persons who reviewed the DEIR.
4-B	The details of the construction process and the operation of the wind mills, including the use of oils or other chemicals or compounds are not discussed in the Project Description. Likewise, the details of the delivery, storage, and handling of these substances on and off-site and the manner in which they are used in the operation of the Project are not described.	The following discussion provides additional details of construction and long-term maintenance and operation of the Project to supplement the Project Description on Page 24 of the DEIR. The following additional details do not raise any new environmental issues or impacts beyond what was identified in the circulated DEIR, nor do they require new or revised mitigation measures to reduce potentially significant individual or cumulative impacts to less than significance. **Demolition and Construction/Assembly** The Project requires removal of 16 existing wind turbines. Each of the 16 older wind turbines contain approximately five to seven gallons of oil lubricants as listed in Attachment 3, Lubricants List. The lubricants are contained in the Nacelle of each turbine, which will be modified prior to any disruption or removal from the site to reduce the potential for lubricant spills during this phase of the Project. Likewise, the transformers contain small quantities of lubricants. Prior to removal from the Project site and transport for disposal off-site at facilities licensed to accept them, the older turbines will be modified as follows: The Gearbox vents on each wind turbine will be removed and plugged and the hydraulic system vent will be plugged. Prior to assembly of the new turbines, the Project will generate following packaging waste materials, which are collected separately and are disposed of by a local specialist waste disposal firm: • Paper and cardboard packaging • Plastic packaging • Wooden packaging • Ferrous metals The wind turbine components including the Gearbox and transformers are

RESPONSE TABLE

Comment Number	Comment	Response
		shipped with the listed lubricants in place and are ready for assembly. Therefore the lubricants are initially delivered to the site via truck and are located within and/or on their intended wind turbine component. When the wind turbine Nacelle and transformers are loaded off the truck, they are placed on a flat area covered by an oil resistant tarp to reduce the potential for constituent migration from an accidental lubricant spill. The transformer is separate from the Nacelle and is ground-mounted inside a one to two foot containment wall, which is constructed prior to assembly of the wind mills. The containment wall is designed to contain any oil which escapes from the transformer. During construction and on-site assembly of the new turbines, standard operating procedures are followed to ensure that lubricants do not escape to the surrounding area (e.g., the Nacelle will be positioned at a proper level and angle during mounting, lubricant levels will be checked to make sure they are not excessive). In addition, it should be noted that other large components of the wind mills, such as rotor blades, are manufactured with reusable transport equipment and do not include lubricants in quantities that could escape to the surrounding environment. **Use of Lubricants for Maintenance and Repair** The Lubricants List shown in Attachment 3 identifies oils or other chemicals or compounds used during long-term operation of the wind turbines. The following discussion identifies the details of lubricant delivery, storage, and handling. All of the listed substances are used to lubricate the wind turbine components, and none of the substances are combusted. **Operation and Maintenance.** The operation of the wind turbines generates no wastes. Used lubricants from the Gearbox and absorbents and filter materials including oil filters, wiping cloths, and protective clothing that have been contaminated with hazardous substances are the only hazardous wastes generated by the maintenance of the Project. One to two times per year, lubricant levels are checked and if needed filled. When executing service work, the Project Applicant, Energy

RESPONSE TABLE

Comment Number	Comment	Response
		Unlimited, Incorporated (EUI) will collect any of the wastes mentioned above, which will then be consigned to a specialist waste disposal firm for material or energetic recycling or disposal pursuant to statutory requirements of the California EPA and the County of Riverside permits issued for the facility. Gearbox lubricants are replaced based on need as confirmed by oil tests conducted on a bi-annual basis. A Gearbox oil change is carried out by EUI using a pump truck. A specialist waste disposal facility will issue a transfer/acceptance certificate to EUI for each oil change performed. During replacement for an oil change, a hose is run from the Gearbox in the Nacelle down to the used oil containment vessel. The used lubricant is collected in the oil containment vessel and is later disposed of at a facility licensed to accept the quantities and types of lubricants associated with the Project. Replacement lubricant is raised to the Nacelle in sealed containers and opened at the point of use. The lubricant is then poured directly into the Gearbox. As an added precaution against the possibility of oil spills and with the permission of the turbine manufacturer, EUI will install its patent pending "Tower Topper" beneath the Nacelle. The Tower Topper is designed to collect any lubricants before escaping from the Nacelle and to direct lubricants to a containment vessel for proper disposal. **Disposal.** The used Gearbox oil that is replaced during maintenance is a controlled hazardous waste. The used oil generated during oil changes and related materials such as used filters are stored on-site in metal containers until a "Used Oil Recycler" comes to the site and removes the materials offsite for processing elsewhere. The use and management of oil wastes from the existing wind farm (and oil from the Project) is regulated by the Department of Environmental Health, County of Riverside through issuance of a Hazardous Materials Management Permit to Energy Unlimited Incorporated (Facility Permit #89040). A permanent California Environmental Protection Agency (EPA) Identification Number also has been assigned to this wind farm

RESPONSE TABLE

Comment Number	Comment	Response
		(CAL 000237812). The existing wind farm at the Project site is operated in compliance with these Permits. Without the EPA facility number, the Used Oil Recycler will not accept used oil and hazardous materials. Proof of disposal or transfer/acceptance certificates are available for inspection at the Project site.
4-C	MSWD indicates that the DEIR does not adequately identify individual and cumulative impacts of the Project on groundwater resources. Existing conditions of the groundwater due to the current population of windmills in the Project vicinity is not addressed. The DEIR does not address individual and cumulative impacts on existing groundwater resources related to the use of oils, chemicals, and compounds used with the Project.	The DEIR on Page 24 states "Gearbox oil will be replaced in the turbines periodically and the used oil will be stored onsite in four 55-gallon above ground drums, which will be removed from the site approximately twice annually by a licensed waste oil recycling company. The 55-gallon drums are acceptable hazardous waste containers and the implementation of Mitigation Measures described below will further reduce Project impacts. Therefore, Section 5 of the DEIR indicates that the Project will have less than significant impacts with mitigation, and Section 9 of the DEIR indicates that the Project will have less than significant cumulative impacts with mitigation. Pursuant to Mitigation Measure 65 of the DEIR on Page 14 and as indicated in Response 4-B, the Project is subject to compliance with permits associated with the use of potentially hazardous chemicals issued by the Riverside Department of Environmental Health and the California Department of Toxic Substances Control. Pursuant to Mitigation Measure 68 on Page 14 of the DEIR and as indicated in Response 4-B, the windmills will be designed with oil containment devices to reduce the likelihood of contaminant spills and migration contributing to cumulative impacts on groundwater. Furthermore, the Project must comply with Mitigation Measures of the DEIR pertaining to regular and routine leak monitoring and reporting procedures to further reduce the potential for constituent migration to the groundwater table. Mitigation Measure 66 on Page 14 of the DEIR requires monthly leak monitoring and reporting to the City Planning Department. Mitigation Measure 67 on Page 14 of the DEIR requires immediate reporting of leaks or spills to the City Planning

RESPONSE TABLE

Comment Number	Comment	Response
		Department. Therefore, the Project has been designed to reduce impacts to the groundwater table, and mitigation measures have been incorporated into the Project which will reduce potential individual and cumulative impacts on groundwater to less than significance. During construction, routine maintenance, and long-term operation there is potential for small amounts of oil and grease to be released to the soils surrounding the windmills. In the unlikely event of a spill, the anticipated release is expected to be less than three gallons but as a worst case up to 55 gallons per unit. As indicated in Response 4-B, typical chemical products likely to be used in association with the windmills are listed in Attachment 3 and consist of various types of oils and greases, which are insoluble to negligibly soluble by their nature. As such, when released to the environment, these oils and greases are bound to surface sediment and soil and can be easily removed prior to reaching the groundwater table pursuant to the procedures identified in mitigation measures in the DEIR and the statutory requirements of the County of Riverside Department of Environmental Health and the California Department of Toxic Substances Control under the authority of permits for the existing Project. Therefore, potential individual and cumulative impacts of the Project on groundwater are not significant due to the relatively insoluble nature of these constituents, when released into the environment. Furthermore, the implementation of Mitigation Measures 65, 66, 67 and 68 of the DEIR, including Project design features and regular routine maintenance features, will further reduce the Project's potential to impact groundwater to less than significance. In addition to Project design and mitigation features, which will reduce impacts to less than significance, there are existing conditions of the Project site and groundwater table, as discussed below, which indicate less than significant potential for individual or cumulative impacts on the groundwater table from the Project. According to the California Department of Water Resources (DWR), February 27, 2004, California's Groundwater Bulletin 118, Hydrologic

RESPONSE TABLE

Comment Number	Comment	Response
		Region Colorado River, Coachella Valley Groundwater Basin, Mission Creek Subbasin, the average depth to groundwater for the Mission Creek sub basin, which the site lies within, is on average 372 feet below ground surface (bgs). Since the site lies on a ridge, the depth to groundwater below the site, within the Mission Creek sub basin, is estimated at least 372 feet bgs if not greater (DWR 2004). Furthermore, the volume of groundwater recharge from the Project site negligible due to the sloped topography of the Project site and the annual precipitation in this area being approximately 6 inches per year (DWR 2006). For the reasons stated above, the use of the Project site for generation of wind energy is not anticipated to contribute to the groundwater table. In the unlikely event of an accidental release of 50 gallons of oil or grease, the impact would be localized, and the City's standard protocol for constituent clean-up will adequately mitigate any potentially significant individual or cumulative impacts. Pursuant to Mitigation Measure 65 on Page 14 of the DEIR, the Project must comply with hazardous materials permits issued by the County of Riverside Department of Environmental Health and by the California Department of Toxic Substances Control. These permits limit the types and amounts of materials that can be stored and used for the Project and are accepted by the EPA as effective in addressing the amounts and types of constituents associated with this Project in minimizing the environmental effects of the use and storage of hazardous materials. For the reasons stated above, individual and cumulative impacts related to groundwater contamination from the Project during construction and long-term operation are less than significant with mitigation as indicated on Page 106 of the DEIR.
4-D	The Final EIR should address impacts related to loss of efficiency, need for additional lubricants, potential contamination and/or deterioration of equipment over time.	Response 4-B above and the Project Description on Page 24 of the DEIR describe the anticipated maintenance and lubricant requirements of the Project. The anticipated maintenance schedule has been identified to maintain minimally acceptable Project efficiency pursuant to the Applicant's requirements, which are necessary for long-term project viability. As indicated in the Impact Summary Table on Pages 14 through 17 of the DEIR, all potentially significant impacts are reduced to less than significance with the implementation of recommended mitigation

RESPONSE TABLE

Comment Number	Comment	Response
		measures. For the reasons stated above, the Project will not have potentially significant individual or cumulative impacts after mitigation related to loss of efficiency, need for additional lubricants, potential contamination or deterioration of equipment over time. The mitigation measures identified in the Summary Table on Pages 10 through 14 and in the Mitigation Monitoring and Reporting Program in Section 10 of the DEIR reduce all potentially significant individual and cumulative impacts to less than significance.
4-E	The agency requests detailed information regarding any petroleum waste and any hazardous materials or other potential groundwater contaminants generated or used in the construction and/or operation of the Project as well as potential individual and cumulative impacts on groundwater or other water resources and necessary mitigation measures.	Responses 4-B, 4-C, and 4-D above discuss the Project details regarding petroleum waste and any hazardous materials or other potential groundwater contaminants generated or used in the construction and/or operation of the Project as well as potential individual and cumulative impacts on groundwater or other water resources. As indicated in these responses the mitigation measures necessary to reduce Project impacts to less than significance have been included in the circulated DEIR. Therefore, as discussed above, the impact of the Project on groundwater and other water resources is less than significant. No additional mitigation measures are needed.

ATTACHMENT 2
MSWD LETTER

Mission Springs Water District
66575 Second Street, Desert Hot Springs, CA 92240 · www.mswd.org · p 760.329.6448 · f 760.329.2482

May 10, 2007

City Council
City of Desert Hot Springs
c/o City Clerk
65-950 Pierson Blvd.
Desert Hot Springs, CA 92240

Steven Mendoza, Community Development Director
City of Desert Hot Springs Development Department
65-950 Pierson Blvd.
Desert Hot Springs, CA 92240

Re: Mission Springs Water District Comments on Draft EIR (WECS Permit No. 20)

Honorable Members of the City Council and Mr. Steven Mendoza:

4-A This correspondence is intended to provide the Mission Springs Water District staff's comments on the above-referenced project and related Draft Environmental Impact Report ("DEIR"), currently under review by the City. We request that this letter be entered at this time as official comments from the Mission Springs Water District.

The Mission Springs Water District is the public agency domestic water purveyor for residential, commercial and industrial customers within its 135 square mile jurisdictional boundaries. The District's primary source of water is pumped from groundwater aquifers, which are, at least in part, beneath the thousands of windmills within the District's boundaries. Because the preservation and continued extraordinary quality of our groundwater resources is a primary concern to the District and its customers, we would like to share our concerns regarding the project and the DEIR, and request that the following comments be received and reflected in the Final EIR for the project:

4-B 1. The DEIR does not fully describe the project, including particularly the details of the construction process and the operation of the windmills, including, particularly, the use of oils or other chemicals or compounds as lubricants and otherwise in the operation of the windmill apparatus. Details of the delivery storage and handling of these constituent substances, on site and off site, and the manner in which they are used on and in the windmill apparatus, is of particular concern to District staff.

4-C 2. The DEIR does not adequately identify individual and cumulative impacts of the project, which may affect groundwater resources. We are particularly concerned that the use of oil (gear oil, vegetable oil, hydraulic fluids, etc.) or other chemicals

Board of Directors:
Mary M. Gibson
President
Randy Duncan
Vice President
John Furbee
Dorothy W. Glass
Nancy S. Wright
General Manager:
Arden Wallum

MSWD is a Groundwater Guardian Affiliate

4-C cont.

or compounds in the current population of windmills in the vicinity of the project may already be a potential source of groundwater contamination. We would therefore like to see the DEIR more fully address the transportation, storage and use of oil in the project, with attention given to potential individual and cumulative impacts on groundwater resources, related to the use of oils, chemicals or compounds in the windmill fields and by the project.

4-D

3. The District would like to see more consideration given to identifying potential groundwater contaminants used in connection with the project, which may be introduced during the construction and operation of the windmills. A more complete and detailed description of the project, and any chemicals (including, without limitation, petroleum and other oils or similar products) used in construction and operation of the project, would better assist the District in identifying potential groundwater contaminants. The Final EIR should also address any future impacts that can be anticipated based on experience with existing windmills, such as loss of efficiency, need for additional lubricants, potential contamination or escape of contaminants which might result from lack of maintenance or deterioration of the equipment over time, etc. These future potential impacts should be addressed in clear, enforceable mitigation measures.

4-E

4. In connection with the above, please provide detailed information regarding any petroleum waste, and any hazardous materials or other potential groundwater contaminants that may be generated or used in the construction and/or operation of this project, the potential individual and cumulative effects the project may have on any groundwater or other water resources, and how any potential harmful individual or cumulative effects on the local groundwater will be mitigated.

While the District applauds efforts to develop local alternative energy resources, we are cautious about the proposed project, and would like to have our comments considered and addressed in the Final EIR for the project.

We appreciate your consideration of our comments.

Sincerely,

Wayne Nelson for Arden Wallum

Arden Wallum,
General Manager

cc: Board of Directors

ATTACHMENT 3
LUBRICANTS LIST

Attachment 3

Lubricant List

The following table provides a summary of the typical waste associated with maintenance and repair of the Project. Gear oil changes are carried out on an as-needed basis as confirmed during regular and routine oil analysis for each unit. A gear oil change is carried out by Energy Unlimited, Incorporated, the Applicant/Owner, using a pump truck. A transfer/acceptance certificate for the disposal of waste generated during routine maintenance and repair will be issued to Energy Unlimited, Incorporated.

Table 2: Lubricant List

Component	Amount of Waste (m^3)	Exchange Cycle (months)	Annual Amount (m^3/a)	Form	Recycle Process
Generator bearing	0.00015	6	0.0003	Paste	Local agency recycling requirements will be complied with on an ongoing basis.
Brake hydraulic	0.00300	36	0.0010	Fluid	
Main bearing	0.00086	6	0.0017	Paste	
Main bearing	0.00087	6	0.0017	Paste	
Transmission	0.37500	36	0.1250	Fluid	
Yaw bearing	0.00044	6	0.0009	Paste	
Pitch bearing	0.00133	6	0.0027	Paste	
Pitch bearing	0.00128	5	0.0031	Paste	
Yaw bearing	0.00043	6	0.0009	Paste	
Pitch transmission	0.02100	24	0.0105	Fluid	
Pitch toothing	0.00158	6	0.0032	Paste	
Yaw toothing	0.00158	6	0.0032	Paste	
Yaw transmission	0.06000	24	0.0300	Fluid	
Transformer	0.72900	NA	0.0000	Fluid	

MSWD
Mission Springs Water District
66575 Second Street, Desert Hot Springs, CA 92240 • www.mswd.org • p 760.329.6448 • f 760.329.2482

May 10, 2007

REC'D

City Council
City of Desert Hot Springs
c/o City Clerk
65-950 Pierson Blvd.
Desert Hot Springs, CA 92240

Steven Mendoza, Community Development Director
City of Desert Hot Springs Development Department
65-950 Pierson Blvd.
Desert Hot Springs, CA 92240

Re: Mission Springs Water District Comments on Draft EIR (WECS Permit No. 20)

Honorable Members of the City Council and Mr. Steven Mendoza:

This correspondence is intended to provide the Mission Springs Water District staff's comments on the above-referenced project and related Draft Environmental Impact Report ("DEIR"), currently under review by the City. We request that this letter be entered at this time as official comments from the Mission Springs Water District.

The Mission Springs Water District is the public agency domestic water purveyor for residential, commercial and industrial customers within its 135 square mile jurisdictional boundaries. The District's primary source of water is pumped from groundwater aquifers, which are, at least in part, beneath the thousands of windmills within the District's boundaries. Because the preservation and continued extraordinary quality of our groundwater resources is a primary concern to the District and its customers, we would like to share our concerns regarding the project and the DEIR, and request that the following comments be received and reflected in the Final EIR for the project:

1. The DEIR does not fully describe the project, including particularly the details of the construction process and the operation of the windmills, including, particularly, the use of oils or other chemicals or compounds as lubricants and otherwise in the operation of the windmill apparatus. Details of the delivery storage and handling of these constituent substances, on site and off site, and the manner in which they are used on and in the windmill apparatus, is of particular concern to District staff.

2. The DEIR does not adequately identify individual and cumulative impacts of the project, which may affect groundwater resources. We are particularly concerned that the use of oil (gear oil, vegetable oil, hydraulic fluids, etc.) or other chemicals

Board of Directors:
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Nancy S. Wright
General Manager:
Arden Wallum

MSWD is a Groundwater Guardian Affiliate

or compounds in the current population of windmills in the vicinity of the project may already be a potential source of groundwater contamination. We would therefore like to see the DEIR more fully address the transportation, storage and use of oil in the project, with attention given to potential individual and cumulative impacts on groundwater resources, related to the use of oils, chemicals or compounds in the windmill fields and by the project.

3. The District would like to see more consideration given to identifying potential groundwater contaminants used in connection with the project, which may be introduced during the construction and operation of the windmills. A more complete and detailed description of the project, and any chemicals (including, without limitation, petroleum and other oils or similar products) used in construction and operation of the project, would better assist the District in identifying potential groundwater contaminants. The Final EIR should also address any future impacts that can be anticipated based on experience with existing windmills, such as loss of efficiency, need for additional lubricants, potential contamination or escape of contaminants which might result from lack of maintenance or deterioration of the equipment over time, etc. These future potential impacts should be addressed in clear, enforceable mitigation measures.

4. In connection with the above, please provide detailed information regarding any petroleum waste, and any hazardous materials or other potential groundwater contaminants that may be generated or used in the construction and/or operation of this project, the potential individual and cumulative effects the project may have on any groundwater or other water resources, and how any potential harmful individual or cumulative effects on the local groundwater will be mitigated.

While the District applauds efforts to develop local alternative energy resources, we are cautious about the proposed project, and would like to have our comments considered and addressed in the Final EIR for the project.

We appreciate your consideration of our comments.

Sincerely,

Wayne Nielsen for Arden Wallum

Arden Wallum,
General Manager

cc: Board of Directors

5. RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Responses to comments received from Riverside County Flood Control and Water Conservation District (RCFC) are included below. A complete copy of RCFC's comment letter follows on page K-65.

Comment Number	Comment	Response
5A	"The proposed project is located within the District's preliminary West Desert Hot Springs Master Drainage Plan (MDP) boundary. The DEIR should address potential impacts to the proposed MDP facilities in the project area."	According to the map of the preliminary West Desert Hot Springs Master Drainage Plan (MDP) sent by RCFC to Krieger & Stewart on 07/24/2007, proposed Line "GS-3" of the preliminary MDP extends southeasterly from the Colorado River Aqueduct (approximately 800 feet easterly of the Project site) to the Garnet Wash. Proposed Line "GS-4" extends southeasterly from the Colorado River Aqueduct (approximately 1,200 feet southerly of the project site) and terminates at the Garnet Wash. Lines "GS-3" and "GS-4" are the two proposed facilities of the MDP closest to the Project site. As stated in the DEIR, "[s]ince Project construction will disturb a relatively small area of the Project site, the Project is not anticipated to substantially alter the existing drainage pattern of the area or cause additional erosion or siltation on- or offsite. The Project site is located in Flood Zone C (areas of minimal flooding) according to Flood Insurance Rate Map, Community Panel Number 060245 0900D, and impacts related to flooding are not considered significant." Further, to mitigate potential impacts related to hydrology and water quality issues to a level of insignificance, Mitigation Measure No. 77 in the DEIR states that "[a] hydrology study, drainage plan, and erosion control plan will be prepared and submitted to the City Engineer for review and approval. The Project will adhere to all recommendations based on the findings of said study and plans, which will be completed prior to issuance of a grading permit."

Comment Number	Comment	Response
		As described above, it has been determined that subject Project will not result in potentially significant impacts to the preliminary West Desert Hot Springs Master Drainage Plan. Additional text has been included in the FEIR.
5B	"Mitigation Measure No. 78 on page 15 of the DEIR incorrectly states that sites greater than 5 acres in size will require coverage under the State Water Resources Control Board National Pollutant Discharge Elimination System General Permit for Stormwater Discharges Associated with Construction Activity (Construction Activity General Permit) through the Regional Water Quality Control Board, Colorado River Basin Region. Please be advised that the threshold has changed from 5 acres to 1 acre. Please revise all references regarding this matter in the DEIR accordingly."	Appropriate revisions have been made and are reflected in the FEIR. Also refer to Comment 3A and Response 3A.

WARREN D. WILLIAMS
General Manager-Chief Engineer

1995 MARKET STREET
RIVERSIDE, CA 92501
951.955.1200
951.788.9965 FAX
www.floodcontrol.co.riverside.ca.us

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

April 24, 2007

Mr. Steven Mendoza, Assistant City Manager
City of Desert Hot Springs
65950 Pierson Boulevard
Desert Hot Springs, CA 92240-3006

Dear Mr. Mendoza:

Re: Notice of Completion/Availability of a Draft Environmental Impact Report for the Revised Commercial WECS 20 Permit Project

This letter is written in response to the Notice of Completion/Availability of a Draft Environmental Impact Report (DEIR) for the Revised Commercial WECS 20 Permit Project. The proposed project includes the construction and operation of eight wind turbine generators, the removal of sixteen wind turbine generators, the construction of a storage facility and the use of an open area for storage. The proposed project site is located approximately 0.5 miles westerly of State Route 62 and approximately 2 miles northerly of Interstate 10 in the city of Desert Hot Springs, Riverside County.

The Riverside County Flood Control and Water Conservation District (District) has the following comments/concerns:

1. The proposed project is located within the District's preliminary West Desert Hot Springs Master Drainage Plan (MDP) boundary. The DEIR should address potential impacts to the proposed MDP facilities in the project area. To obtain more information on the MDP, please contact Art Diaz of the District's Planning Section at 951.955.1345.

2. Mitigation Measure 78 on Page 15 of the DEIR incorrectly states that sites greater than 5 acres in size will require coverage under the State Water Resources Control Board National Pollutant Discharge Elimination System General Permit for Storm Water Discharges Associated with Construction Activity (Construction Activity General Permit) through the Regional Water Quality Control Board, Colorado River Basin Region. Please be advised that the threshold has changed from 5 acres to 1 acre. Please revise all references regarding this matter in the DEIR accordingly.

Thank you for the opportunity to review the DEIR. Please forward any subsequent environmental documents regarding the project to my attention at this office. Any further questions concerning this letter may be referred to Jason Swenson at 951.955.8082 or me at 951.955.1233.

Very truly yours,

TERESA TUNG
Senior Civil Engineer

c: TLMA
Attn: David Mares
Art Diaz

JDS:mcv
P8\113638

RECEIVED APR 30 2007

6. SOBOBA BAND OF LUISEÑO INDIANS

Responses to comments received from the Soboba Band of Luiseño Indians (Soboba) are included below. A complete copy of Soboba's comment letter follows on page K-67.

Comment Number	Comment	Response
6A	Soboba commented that the Project area falls within the bounds of their Tribal Traditional Use Areas and requested that a Native American Monitor be present during any and all ground-disturbing activities until such presence is deemed unnecessary by both the archaeological and Native American monitors.	Mitigation Measure No. 56 in the DEIR and FEIR states, in part, that "an approved Tribal Cultural Resources Monitor shall be present during any survey and/or ground-disturbing activities." Further, the mitigation measure has been revised to require that Soboba receive a copy of the mitigation plan (if one is prepared). Mitigation Measures Nos. 57 and 58 are also intended to preserve and protect any Native American resources that may be present on the Project site. Mitigation measures have been modified in the FEIR.
6B	Soboba requests to be involved in any and all consultation throughout the project.	Soboba has been added to the project mailing list to receive a copy of all future environmental documents and notices on the project. No revisions to the EIR were required as a result of this comment.

Mission:

Educate and communicate the rich heritage of Soboba peoples; Lead and assist individuals, organizations and communities in understanding the needs and concerns of Native American monitoring of traditional sites; Advocate Native American participation in state agencies and boards; Advocate legislation and enforcement of laws affecting Native American peoples and protecting historical and archaeological resources.

April 3, 2007

Attn: Community Development Department
City of Desert Hot Springs
65950 Pierson Blvd
Desert Hot Springs, CA 92240

Re: Comments on EIR for the Revised Commercial WECS 20 Permit Project

The Soboba Band of Luiseño Indians appreciates your observance of Tribal Cultural Resources and their preservation in your project. The information provided on said project(s) has been assessed through our Cultural Resource Department, where it was concluded that although this site is outside the existing reservation, the project area does fall within the bounds of our Tribal Traditional Use Areas.

At this time the Soboba Band does see a direct need for Native American Monitoring and consultation. The Tribe requests a Native American Monitor be present during any and all ground disturbing activities. Soboba requests this, until deemed unnecessary by both Archaeological and Native American Monitors. Also the Tribe requests to be involved in any and all consultation throughout the project. If you have any questions or concerns, please do not hesitate to contact the Cultural Resource Department.

[SPECIAL NOTE (for projects other than cell towers): *If* this project is associated with a city or county specific plan or general plan action it is subject to the provisions of SB18-Tradtional Tribal Cultural Places (law became effective January 1, 2005) and will require the city or county to participate in **formal, government-to-government** consultation with the Tribe. If the city or county are your client, you may wish to make them aware of this requirement. By law, they are required to contact the Tribe.]

Sincerely,

Erica Helms
Soboba Cultural Resource Department
Cell (951) 663-8333
Phone (951) 487-8268
ehelms@soboba-nsn.gov

RECEIVED APR - 6 2007

7. SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

Responses to comments received from the Southern California Association of Governments (SCAG) are included below. A complete copy of SCAG's comment letter follows on page K-69.

Comment Number	Comment	Response
7A	SCAG commented that they "... have reviewed the Revised Commercial WECS 20 Permit Project, and have determined that the proposed Project is not regionally significant per SCAG Intergovernmental Review (IGR) Criteria and California Environmental Quality Act (CEQA) Guidelines (Section 15206). Therefore, the proposed Project does not warrant comments at this time. Should there be a change in the scope of the proposed Project, we would appreciate the opportunity to review and comment at that time."	The Project scope has not changed; therefore, no changes to the EIR are required as a result of this comment.
7B	"A description of the proposed Project was published in SCAG's March 16-31, 2007 Intergovernmental Review Clearinghouse Report for public review and comment."	Thank you for providing this information. No modifications to the EIR were required as a result of this comment.

Larry

SOUTHERN CALIFORNIA
ASSOCIATION of GOVERNMENTS

Main Office
818 West Seventh Street
12th Floor
Los Angeles, California
90017-3435

t (213) 236-1800
f (213) 236-1825

www.scag.ca.gov

Officers: President: Yvonne B. Burke, Los Angeles County • First Vice President: Gary Ovitt, San Bernardino County • Second Vice President: Richard Dixon, Lake Forest • Immediate Past President: Toni Young, Port Hueneme

Imperial County: Victor Carrillo, Imperial County • Jon Edney, El Centro

Los Angeles County: Yvonne B. Burke, Los Angeles County • Zev Yaroslavsky, Los Angeles County • Jim Aldinger, Manhattan Beach • Harry Baldwin, San Gabriel • Todd Campbell, Burbank • Tony Cardenas, Los Angeles • Stan Carroll, La Habra Heights • Margaret Clark, Rosemead • Gene Daniels, Paramount • Judy Dunlap, Inglewood • Rae Gabelich, Long Beach • David Gafin, Downey • Eric Garcetti, Los Angeles • Wendy Greuel, Los Angeles • Frank Gurulé, Cudahy • Jim Jeffra, Lancaster • Janice Hahn, Los Angeles • Isadore Hall, Compton • Keith W. Hanks, Azusa • José Huizar, Los Angeles • Tom LaBonge, Los Angeles • Paula Lantz, Pomona • Paul Nowatka, Torrance • Pam O'Connor, Santa Monica • Bernard Parks, Los Angeles • Jan Perry, Los Angeles • Ed Reyes, Los Angeles • Bill Rosendahl, Los Angeles • Greig Smith, Los Angeles • Tom Sykes, Walnut • Mike Ten, South Pasadena • Tonia Reyes Uranga, Long Beach • Antonio Villaraigosa, Los Angeles • Dennis Washburn, Calabasas • Jack Weiss, Los Angeles • Herb J. Wesson, Jr., Los Angeles • Dennis Zine, Los Angeles

Orange County: Chris Norby, Orange County • Christine Barnes, La Palma • John Beauman, Brea • Lou Bone, Tustin • Debbie Cook, Huntington Beach • Leslie Daigle, Newport Beach • Richard Dixon, Lake Forest • Troy Edgar, Los Alamitos • Paul Glaab, Laguna Niguel • Sharon Quirk, Fullerton

Riverside County: Jeff Stone, Riverside County • Thomas Buckley, Lake Elsinore • Bonnie Flickinger, Moreno Valley • Ron Loveridge, Riverside • Greg Pettis, Cathedral City • Ron Roberts, Temecula

San Bernardino County: Gary Ovitt, San Bernardino County • Lawrence Dale, Barstow • Paul Eaton, Montclair • Lee Ann Garcia, Grand Terrace • Tim Jasper, Town of Apple Valley • Larry McCallon, Highland • Deborah Robertson, Rialto • Alan Wapner, Ontario

Ventura County: Linda Parks, Ventura County • Glen Becerra, Simi Valley • Carl Morehouse, San Buenaventura • Toni Young, Port Hueneme

Orange County Transportation Authority: Art Brown, Buena Park

Riverside County Transportation Commission: Robin Lowe, Hemet

Ventura County Transportation Commission: Keith Millhouse, Moorpark

1.22.07

April 11, 2007

Mr. Steven Mendoza
Assistant City Manager
Community Development Department
City of Desert Hot Springs
65950 Pierson Boulevard
Desert Hot Springs, CA 92240

RE: SCAG Clearinghouse No. I 20070164 Revised Commercial WECS 20 Permit Project

Dear Mr. Mendoza:

Thank you for submitting the **Revised Commercial WECS 20 Permit Project** for review and comment. As areawide clearinghouse for regionally significant projects, SCAG reviews the consistency of local plans, projects and programs with regional plans. This activity is based on SCAG's responsibilities as a regional planning organization pursuant to state and federal laws and regulations. Guidance provided by these reviews is intended to assist local agencies and project sponsors to take actions that contribute to the attainment of regional goals and policies.

We have reviewed the **Revised Commercial WECS 20 Permit Project**, and have determined that the proposed Project is not regionally significant per SCAG Intergovernmental Review (IGR) Criteria and California Environmental Quality Act (CEQA) Guidelines (Section 15206). Therefore, the proposed Project does not warrant comments at this time. Should there be a change in the scope of the proposed Project, we would appreciate the opportunity to review and comment at that time.

A description of the proposed Project was published in SCAG's **March 16-31, 2007** Intergovernmental Review Clearinghouse Report for public review and comment.

The project title and SCAG Clearinghouse number should be used in all correspondence with SCAG concerning this Project. Correspondence should be sent to the attention of the Clearinghouse Coordinator. If you have any questions, please contact me at (213) 236-1856. Thank you.

Sincerely,

Jill Egerman

JILL EGERMAN
Associate Environmental Planner
Intergovernmental Review

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Doc #134388

8. PETE AND NANCY WRIGHT

See annotated comment numbers on the copy of Pete and Nancy Wright's comment letter on pages K-71 and K-72. Responses to said numbered comments are addressed on pages K-73 through K-79 and are further supported by information included on pages K-80 through K-86. A complete copy of the Wright's comment letter follows on pages K-87 through K-110.

Pete & Nancy Wright
69875 Fairview
Painted Hills
Whitewater, CA 92282

RECEIVED
MAY 09 2007
PLANNING DEPARTMENT

May 7, 2007

RE: WESC 20
Public Comments to EIR

Comment No.

8A-1
8A-2 We have lived at the above address for 34 years. We are probably the closest home to this farm and yet we never received a notice for public comments for this EIR. Please put us on the mailing list.

8B-1
8B-2 There has been a significant decrease in the number of animal life that lived and hunted in our neighborhood, except for rats they have increased in numbers. We had many birds and wildlife e.g. Golden Eagles, Red Tail Hawks, Burring Owls, Barn Owls, Desert Tortoises and lots of bats hunting and living in Painted Hills. Now we seldom see any birds of pray and we haven't seen any bats or Desert Tortoises in many years. The EIR does not adequately address the impacts to the wildlife, flora and fauna.

8C-1
8C-2 This is a scenic ridgeline that needs to be preserved. The existing windmills are about 100 feet tall the ones proposed will be 327 feet tall (taller than the Morongo Casino), with blinking/strobe lights on top, this will degrade the night time views of this ridgeline. Example: the turbines on the south side of I 10 are several miles away from our house and yet more times than I can count throughout the years they have, for whatever reason, shined and flashed into our bedroom window. The required FAA lights are a public nuisance and are not consistent with Desert Hot Springs Dark Sky Ordinance.

8D-1
8D-2
8D-3
8D-4 Riverside County measured the noise levels of this farm shortly after they were installed in 1985 and at that time they exceeded the noise level of 55 db. With age they have become much louder, they disturb our peace and wellbeing and can be heard for miles away. The applicant says that these new and bigger turbines are not as loud, we do not agree; please consider the cumulative sound effects they will add. No one can calculate on paper what they will sound like after they are installed, each turbine has its own sound and cannot be determined by doing a single noise test. The types of noises and levels differ due to wind velocities, speed, climate and time of day. When the wind is not blowing or there is only a slight breeze at our house, the wind speed is greater on the ridge due to the difference in elevation and this is when the turbines are the loudest at our house. We can't open our windows to get fresh air without hearing the constant annoying sounds coming from this farm; more turbines at the least will create more noise clutter.

8E-1 Wind turbines do catch fire, see attached pictures. What kind of fire protection will this farm have to protect our property? This is a big concern to us since the Fire Department can only watch as they burn and try to put out fires caused by the burning parts flying off

the windmill. These burning parts will blow a long way from the windmill property. This area is considered a high fire risk area by the Riverside County Fire Dept.

Other concerns we have are but not limited to:

8F-1 -Storm water run off.
8F-2 -Ground vibrations when these enormous machines are spinning up to 200 miles p/h.
8F-3 -Maintenance of the turbines in the field, on the desert floor.
8F-4 -Storing oily parts on the desert floor.
8F-5 -Shadows cast from the windmill.
8F-6 -Cumulative impacts of the 3000 plus windmills.
8F-7 -Lack of current studies on the Pacific Flyway and bats.
8F-8 -Lack of sufficient noise studies.
8F-9 -Dust control.
8F-10 -Ingress and egress of construction and maintenance equipment.

8G-1 This EIR has significant impacts that are not mitigated. The EIR should explore every
8G-2 mitigation measure and not use the "benefit to all" excuse. There is now well documented research and many studies about the lack of benefits of wind power to the public and they have all come to the same conclusion, the impacts are much greater than the benefits. One of those reports is "Wind Farms Provide Negligible Useful Electricity" by Richard S. Courtney March 2006, the Center for Science and Public Policy-Washington D.C., attached as exhibit A.

8H-1 We feel that this EIR is inadequate and flawed and does not adequately address any of our concerns we ask that you deny approval. We also ask that you deny approval of any height variance.

Comment Number	Comment	Response
8A-1	We are probably the closest home to this farm and yet we never received a notice for public comments for this EIR.	The Notice of Preparation and Notice of Completion were sent to appropriate public agencies as well as to interested private individuals and organizations where names and addresses were known.
8A-2	Please put us on the mailing list.	The Commenters have been added to the mailing list for future notices.
8B-1	There has been a significant decrease in the number of animal life that lived and hunted in our neighborhood, except for rats they have increased in numbers.	No evidence is offered indicating that this has been caused by the Project. No modification to the DEIR is required.
8B-2	The EIR does not adequately address the impacts to the wildlife, flora, and fauna.	Between 1984 and 2006, the Project site has been visited on at least four separate occasions by qualified, experienced biological experts seeking to document and evaluate the impacts to wildlife, flora, and fauna from this wind energy development. The resulting biological reports prepared between November 2000 and October 2006 were included in Appendix B of the DEIR: • November 13, 2000 Report by Lawrence F. LaPre, Ph.D., Ecologist; Nathan T. Moorhatch, Biologist; and Michael D. Wilcox, Biologist; for Ogden Energy and Environmental Sciences, Inc. (Ogden 2000). • June, 2004 Report by Lawrence F. LaPre, Ph.D., for AMEC Earth and Environmental, Inc. (AMEC 2004). • December 13, 2005 Report by John F. Green for AMEC Earth and Environmental, Inc. (AMEC 2005) • October 13, 2006 Report by John F. Green for AMEC Earth and Environmental, Inc. (AMEC 2006). The impacts to wildlife, flora, and fauna from this project have been carefully detailed, studied, and confirmed in these reports, which indicate that, with mitigation, biological impacts will be less than significant. Additional information regarding avian impacts and other specific biological questions raised is being added to the FEIR. No additional modifications are required.

Comment Number	Comment	Response
8C-1	This is a scenic ridgeline that needs to be preserved.	The affected ridgeline is not designated by any federal, state, or local ordinance as having exceptional value for scenic or other related visual reasons or requiring special protection for its visual resources. The DEIR emphasizes that "The City of Desert Hot Springs General Plan EIR… noted that visual resources in the area have already been impacted by existing turbines in the vicinity." A row of 19 turbines extends along the north/south edge of the westernmost portion of the Section 31 Ridgeline, and a total of 69 existing turbines on the Project site are visible from below the ridge. Views of existing and proposed project wind turbines are provided in Appendix D of the DEIR. Upon Project completion, 8 larger and 53 small wind turbines will be visible. Under either scenario, wind turbines will be visible in the Commenters' view of the Section 31 ridgeline. Although the new turbines will be larger than the old ones, visual clutter may be reduced because fewer wind turbines will be in view. The essential visual character of this wind turbine populated ridgeline will remain the same. Mitigation measures 1 through 8 of the DEIR have been specifically developed to improve the visual appearance of the Project and reduce said impacts to below a level of significance. No modification to the DEIR is required.
8C-2	The existing windmills are about 100 feet tall the ones proposed will be 327 feet tall (taller than Morongo Casino) with blinking/strobe lights on tope, this will degrade the night time views of this ridgeline. The required FAA lights are a public nuisance and are not consistent with the Desert Hot Springs Dark Sky Ordinance.	At night and in darkness, the Section 31 ridgeline is generally not visible. Mounted and operated properly, the FAA lights will be located several hundred feet above the Commenters' home and will not shine through their windows. Mitigation measures 9 through 11 of the DEIR were developed to minimize the impacts of FAA nighttime lighting and reduce said impacts to below a level of significance. FAA requirements, such as the FAA lights for this Project, are not within the City's jurisdiction to regulate and are not subject to the Desert Hot Springs Dark Sky Ordinance. No modification to the DEIR is required.

Comment Number	Comment	Response
8D-1	Riverside County measured the noise levels of this farm shortly after they were installed in 1985 and at that time they exceeded the nose level of 55 db.	A copy of the report referenced was not provided. The Acoustical Analysis Report for the Project dated May 5, 2004 and prepared by Bruce Walker, Ph.D., INCE Bd. Cert. of Hersh Walker Acoustics ("Acoustics Report") was included in Appendix F of the DEIR. The Acoustics Report measured actual noise levels from the existing wind turbines at the Project site. Noise measured from the existing wind turbines was substantially lower than 55 dB. No modification to the DEIR is required.
8D-2	Please consider the cumulative effects they will add.	The Acoustics Report did address both the individual and cumulative noise level impacts of adding the eight larger Project turbines to the existing wind farm. The noise from the proposed eight turbines is projected to be less than 45 dB at the closest residence (see page 5 of the Acoustics Report). The sound level of the Project turbines added to the existing turbines is estimated to be well under 55 dB and will be closer to 45 dB once the existing 16 turbines have been removed from the site. No modification to the DEIR is required.
8D-3	The types of noises and levels differ due to wind velocities, speed, climate and time of day.	Possible significant compounding factors such as wind speed and background noise were specifically taken into account in the Acoustics Report. In instances where the background noise was significant in onsite tests, this compounding influence was eliminated (see page 8 of the Acoustics Report). In instances where turbine sound levels are estimated, it is assumed that the noise from the wind turbines will not be masked at all by possible background noise levels. No modification to the DEIR is required.
8D-4	When the wind is not blowing or there is only a slight breeze at our house, the wind speed is greater on the ridge due to the difference in elevation and this is when the turbines are loudest at our house.	When background noise is not present, the sound from the wind turbines may be more apparent. However, as set forth in the Acoustics Report and stated above, whatever sound is audible during this worst case condition is nevertheless well below the 55 dB standard. Further, mitigation in the DEIR serves to ensure that noise impacts are reduced to less than significant levels. No modification to the DEIR is required.

Comment Number	Comment	Response
8E-1	What kind of fire protection will this farm have to protect our property? This area is considered a high fire risk area by the Riverside County Fire Department.	The DEIR indicates that the Project site is in a designated high fire hazard area. Fire protection measures for the Project are listed as Mitigation Measures in the DEIR. These mitigation measures reduce the potential fire impacts to less than significant levels. No modification to the DEIR is required. Photos attached to the Commenters' letter as Exhibit A did not depict wind turbines on the Project site (nor in fact were they anywhere within the Coachella Valley or San Gorgonio Pass).
8F-1	Other concerns: Storm water run off.	Storm water runoff has not been a problem under existing operations at the project site. The proposed Project will disturb a very small area of the Project site and is therefore not anticipated to substantially alter the drainage pattern on or offsite. Mitigation measures in the DEIR reduce any potential impacts to less than significant levels. No modification to the DEIR is required.
8F-2	Other concerns: Ground vibration.	The attached letter report prepared by Bruce Walker, Ph.D., INCE. Bd. Cert. of Channel Islands Acoustics, dated September 6, 2007, concludes that "there is less than negligible probability of sensible or otherwise significant ground vibrations being caused by the Project wind turbines."
8F-3	Other concerns: Maintenance of the turbines in the field, on the desert floor.	Standard operation and maintenance procedures will protect against negative impacts to the desert floor. Clarifying text is included in the discussions on Hazards and Hazardous Materials in the FEIR. Mitigation measures currently contained in the DEIR (and FEIR) will minimize the risk of impacts to the desert floor.
8F-4	Other concerns: Storing Oily Parts on the Desert Floor	The use and treatment of Hazardous Materials, including oil, is addressed in the DEIR. Mitigation measures in the DEIR regulate storage of parts on the site. These measures, along with continued compliance with the hazardous waste permits for the Project site, will protect the desert floor from possible impacts resulting from the storage of oily parts. No modification to the DEIR is required.

Comment Number	Comment	Response
8F-5	Other concerns: Shadows cast from the windmill.	The attached letter report prepared by Mark H. Dawson of Dawson Engineering, dated October 3, 2007, addresses the potential for impacts resulting from shadows cast by the wind turbines at the Project site, and concludes that "shadows from the proposed wind turbines will have no significant impact on the surrounding environment".
8F-6	Other concerns: Cumulative impacts of the 3000 plus windmills.	An analysis of the cumulative impacts of the Project and related cumulative impact mitigation measures appears on pages 75 to 80 of the DEIR. The mitigation measures in the DEIR reduce the individual and cumulative impacts of the project to below a level of significance. No modification to the DEIR is required.
8F-7	Other concerns: Lack of current studies on the Pacific flyway and bats.	The Pacific Flyway is one of four flyways (paths traveled by migratory birds) that pass through the United States. The Pacific Flyway extends from Alaska and northern Canada on the north to Baja California and Patagonia (a region located in the southern portion of South America) on the south, traversing several states (including California) along the way. The times and routes of travel vary by bird species. The Pacific Flyway is under the collective jurisdiction of the federal governments of the United States, Canada, and Mexico, and is regulated by the Pacific Flyway Council. Studies on the entire Pacific Flyway are not provided in this analysis; however, recent studies (Anderson *et al* 2005 and Erickson *et al* 2002, among others) of bird and bat fatalities have been performed in several wind resource areas in California and elsewhere, including the San Gorgonio Pass. Such studies are referenced in the DEIR and FEIR. Additional text regarding potential Project impacts upon birds and bats is included in the FEIR. The attached letter report prepared by AMEC, dated August 31, 2007, provides a summary of potential Project impacts to birds and bats.
8F-8	Other concerns: Lack of sufficient noise studies.	Noise-related matters have been addressed in detail by expert report and analyses, which are part of the DEIR and subsequent responses above. No modification to the DEIR is required.

Comment Number	Comment	Response
8F-9	Other concerns: Dust control.	Air quality impacts of the Project are analyzed on pages 37 through 40 of the DEIR. Air Quality mitigation measures, including dust control measures for the Project, are listed in the DEIR. These mitigation measures reduce the impacts on air quality to below a level of significance. No modification to the DEIR is required.
8F-10	Other concerns: Ingress and egress of construction and maintenance equipment.	The transportation and traffic impacts of the Project are described on pages 69 and 70 of the DEIR and in Appendix G. Traffic and transportation mitigation measures which will regulate the transportation of Project equipment are listed in the DEIR; these mitigation measures reduce the impacts of transportation/traffic to below a level of significance. No modification to the DEIR is required.
8G-1	This EIR has significant impacts that are not mitigated. The EIR should explore every mitigation measures and not use the "benefit to all" excuse.	This comment does not reference specific impacts. The DEIR carefully sets forth the detailed significant impacts of this Project and has specified appropriate mitigation measures to reduce these impacts to less than significant levels. No examples of the DEIR's "benefit to all" justification in determining Project mitigation measures has been provided and it is unclear what is referred to. No modification to the DEIR is required.
8G-2	There is now well documented research and many studies about the lack of benefits of wind power to the public. One of those reports is "Wind Farms Provide Negligible Useful Electricity" by Richard S. Courtney March 2006, the Center for Science and Public Policy-Washington D.C., attached as exhibit A.	The purpose of the environmental review process is to analyze and address potential environmental impacts that may result with implementation of subject Project. The Draft EIR and Final EIR are prepared as part of the environmental review process in order to provide public information documents in accordance with CEQA and the State CEQA Guidelines. A discussion of the benefits of wind energy is a policy issue, and it is not within the scope of issues that an EIR is required to address. No modification to the DEIR is required.
8H-1	We feel that this EIR is inadequate and flawed and does not adequately address any of our concerns we ask that you deny approval. We also ask that you deny approval of any height variance.	Data contradicting the conclusions of the DEIR has not been provided. Conversely, the detailed reports in the DEIR conclude that, with mitigation measures, Project impacts can be reduced to levels below significance. No modification to the DEIR is required.

Comment Number	Comment	Response
8-I	Wind Turbine Tower Failure (see page K-91)	Pictures labeled Exhibit "B" attached to the Commenter's letter call attention to a tower failure. The tower failed on September 22, 2006. The nacelle and damaged portion of the tower were safely removed on October 4, 2006. On November 29, 2006, a Riverside County HAZMAT inspector, responding to a complaint about alleged oil leaks, inspected EUI's site and found it to be in compliance and in satisfactory condition. No previous (based on reports from the Riverside County Fire Department and the Riverside County Department of Environmental Health) or further tower failures have occurred to date, and there is no evidence to indicate that further tower failures are imminent.
8-J	Water Truck Accident (see page K-92)	Pictures labeled "Exhibit B" attached to the Commenter's letter call attention to a water truck accident. The water truck is owned by a subcontractor to Energy Unlimited Inc. The subcontractor lost control of his vehicle and the vehicle went off-road, turned over, and came to rest on a lower part of EUI's Section 31 wind park. EUI required the subcontractor to remove the truck from the site, and it was removed from the site without incident in October, 2006. The truck was removed voluntarily and without threat of penalty or violation from any public or private party. No similar incident has occurred to date.

CHANNEL ISLANDS ACOUSTICS
676 WEST HIGHLAND DRIVE
CAMARILLO, CALIFORNIA 93010
(805) 484-8000 FAX (805) 482-5075
E-MAIL NOISEYBW@AOL.COM

September 6, 2007

Mr. David Lamm
Energy Unlimited, Inc.
638 Lindero CYN Rd, #273
Oak Park, CA 91377

Re: Ground Vibrations from Wind Turbines on
Section 31 Wind Project

Dear Mr. Lamm:

In response to your recent inquiry, in my 24 years of experience of studying wind turbines, I have not encountered any complaints or significant impacts of ground vibration caused by wind turbines. Based upon my experience of studying ground vibration generation and propagation from trains, pile drivers and similar sources, there is less than negligible probability of sensible or otherwise significant ground vibrations being caused by the Project wind turbines.

In a major study to investigate turbine siting issues relative to seismic sensor arrays, Stiles, Stimpson, Toon, England and Wright [ref. "Microseismic and Infrasound Monitoring of Low Frequency Noise and Vibrations from Windfarms," Applied and Environmental Geophysics Research Group, Earth Sciences and Geography, School of Physical and Geographical Sciences, Keele University, July, 2005] made exhaustive measurements of ground vibration near wind turbines using extremely sensitive seismic measurement equipment. Their results show vibration velocity levels of 0.00004-0.00006 mm/sec, peaking at 7.5 Hz at distances 25-100 meters from the 450 kW test turbine. The human perception threshold for vibration is approximately 0.1 mm/sec (ref. ANSI S3.29 Guide to the Evaluation of Human Exposure to Vibration in Buildings], nearly 2,000 times greater than the levels measured at close distance to the test turbine.

Stiles *et al* also determined that a square-root of distance attenuation best fit their data. At 1000 ft (300 meters), the vibration would therefore be less than 1/5,000 of the perception threshold.

Respectfully,

Bruce Walker

Bruce Walker, Ph.D., INCE Bd. Cert.

DAWSON ENGINEERING
6600 Roe Street, Boise ID 83703
(208) 853-6291 Fax (208) 853-6292

October 18, 2007

Mr. David S. Lamm, Esq.
Energy Unlimited, Inc.
638 Lindero CYN RD, #273
Oak Park, CA 91377

Re: Potential for Shadows Caused by Eight Proposed Wind Turbines on Section 31 Wind Farm

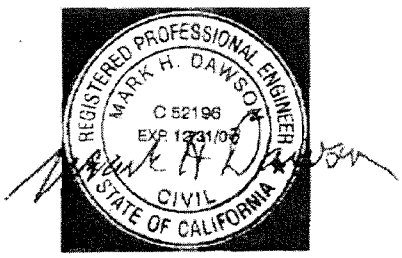
Dear David:

At your request I have studied the potential for the impact of shadows caused by the proposed 8 turbine wind project on section 31. As you know, largely due to the trajectory of the sun as it crosses the North American sky, shadows cast by wind turbines generally do not cause problems for people located several thousand feet (or more) away from wind turbines. This is because shadows, if they are perceived at all, will generally occur in the early morning or near sunset for a brief duration. Even when a person is close enough to perceive a shadow, its impact is often dissipated or eliminated by clouds, the existence of pollution, trees, or other natural and manmade structures. This explains, in part, why in its over twenty years of operation, Energy Unlimited, Inc. has not received a single complaint from either an employee or a nearby resident about shadows from over 65 wind turbines located at the Project site.

The proposed eight turbines will be installed in the same location, displacing some of the existing wind turbines. As a result of my analysis and calculations, I have determined that if shadows from any of these eight larger wind turbines are perceived at all from the closest residence to the project site, they would be present near sunset during the summer months beginning late April and continuing through mid August. During this time, the ambient temperature is so high that people in the area often prefer to stay indoors. Given that there are no known health impacts from wind turbine shadows, and the absence of prior complaints about wind turbine shadows in this area, it is likely that shadows from the proposed wind turbines will have no significant impact on the surrounding environment.

Thank you for your attention to this letter.

Sincerely,

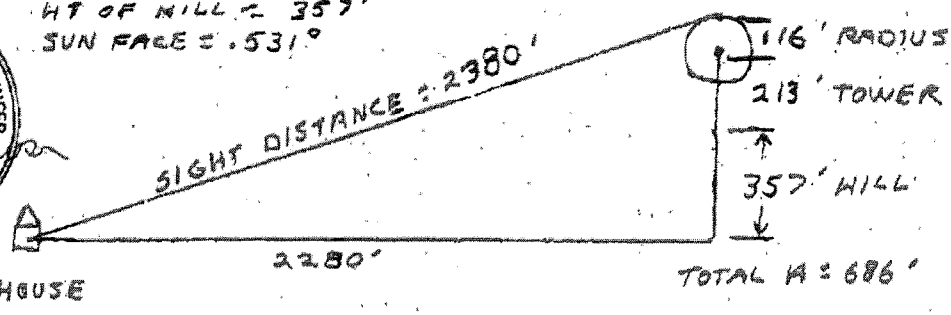


Mark H. Dawson, P.E.

S-31 9/18/07 1

NEAREST RESIDENCE: USING GOOGLE EARTH, SET SCALE OF MAP TO 1" = 300'. VERIFY THAT EXISTING TURBINES SCALE TO 75' BETWEEN TURBINES.

SCALED HORIZONTAL DISTANCE TO HOUSE = 7.6" = 2280' Total
HOUSE ELEVATION = 1415' 7.5 = 2250' E-W
BASE OF TURBINE ELEVATION = 1772' 1.22 368 N-S
HT OF HILL = 357'
SUN FACE = .531°

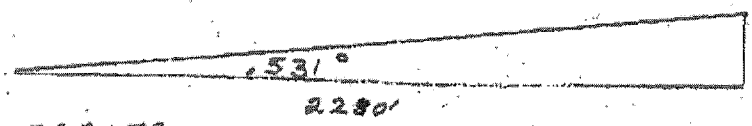


SIGHT DISTANCE = $\sqrt{2280^2 + 686^2}$ = 2380'

TURBINE TOWER = 65M = 213'
TURBINE DIAMETERS END OF ROW 70.5M = 231'
MID ROW = 77M = 253'

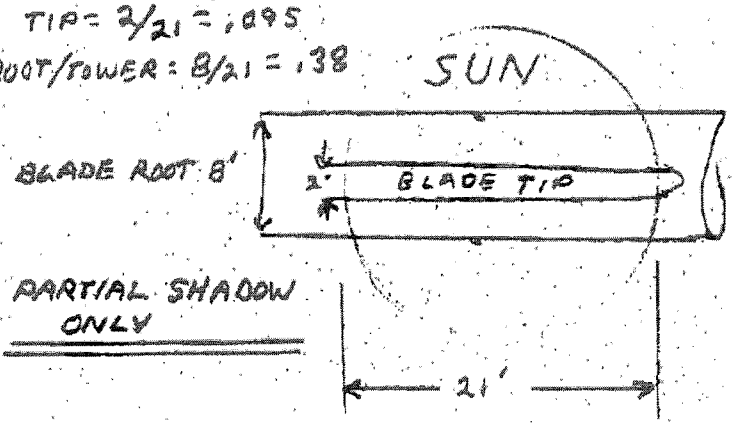
BLADE WIDTH AT ROOT = 8'
BLADE WIDTH AT TIP < 2'
TOWER WIDTH AT TOP = 8'

(1) 00 BLADES COVER FACE OF SUN AT 2380'



APPARENT DIA. OF SUN = 2280 tan .531 = 21'

COVERAGES
TIP = 2/21 = .095
ROOT/TOWER = 8/21 = .38



PARTIAL SHADOW ONLY

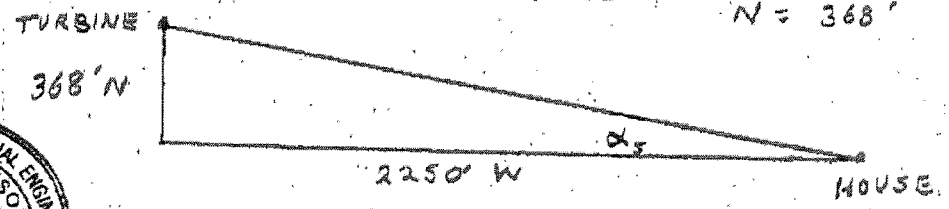
REGISTERED PROFESSIONAL ENGINEER MARK H. DAWSON CIVIL STATE OF CALIFORNIA

(2) At what azimuth and elevation will the sun fall behind the turbines?

AZIMUTH = ANGLE FROM NORTH, MEASURED CLOCKWISE = α

ELEVATION = ANGLE ABOVE HORIZON = e

FROM HOUSE TO HUB OF TURBINE #1 W = 2250' N = 368'



REGISTERED PROFESSIONAL ENGINEER MARK H. DAWSON C 52196 EXP 12/31/08 CIVIL STATE OF CALIFORNIA

$\tan \alpha_s = \frac{368}{2250} = .1635 \quad \alpha_{SUN} = 9.288°$

WIDTH OF ROTOR = 231' SIGHT DISTANCE = 2380' (PAGE 2)

$\tan \alpha_T = \frac{231}{2380} = .0971 \quad \alpha_{TURBINE} = 5.54°$ ← SIGHT DIST.

HOUSE EXPERIENCES SHADING FROM TURBINE 1 WHEN

$\alpha_1 = 270° + \alpha_s \pm \frac{\alpha_T}{2} = 279.288 \pm 2.772 = 276.516° \text{ to } 282.060°$

FROM FIRST SKETCH, PAGE 1, ELEVATION ANGLE e IS

$\tan e = \frac{570'}{2280'} = 14.036°$

$e_1 = 14.036° \pm 2.772 = 11.314 \text{ to } 16.808°$

HOUSE GETS #2 TURBINE SHADE

TURBINE 2 ROTOR DIA. = 253'

DISTANCES: W 2280 N = 368 + 266 = 634'

ELEVATION + 368 + 253/2 = 495'

DISTANCE TO ROTOR = $\sqrt{2250^2 + 634^2 + 368^2} = 2366'$

$\alpha_T = \tan^{-1} \frac{253}{2366} = 6.104° \quad \frac{\alpha_T}{2} = 3.052°$

$\alpha_2 = 270 + \tan^{-1} \frac{634}{2250} \pm 3.052° = 285.736 \pm 3.052° = 282.685° \text{ to } 288.788°$

$e_2 = \tan^{-1} \frac{495}{\sqrt{2250^2 + 634^2}} \pm 3.052° = 11.956° \pm 3.052° = 8.904° \text{ to } 15.008°$

TO EXPERIENCE SHADING, BOTH AZIMUTH α AND ELEVATION e MUST OCCUR AT THE SAME TIME.

FROM NREL WEBSITE, WE CAN CALCULATE WHICH DAYS WILL MEET THIS CRITERIA

	α	e
TURBINE #1	276.516 – 282.060	11.314 – 16.808
TURBINE #2	282.685 – 288.788	8.904 – 15.008

PRINTOUT #1*

FIRST WE DO A 10 MIN RUN FROM APR 1ST TO SEPT 1ST

INSPECTION OF DATA SHOWS TURBINE #1 STARTS SHADING

4/21 – 5/18 AND 7/25 – 8/23

TURBINE #2:

5/2 – 8/12

CHECK TURBINE #3 - DISTANCE = 2050 W 634+277 = 911 N

$\alpha = \tan^{-1} \frac{911}{2050} = 23.95°$; $270 + 23.95 = 293.95 \pm \approx 3°$

BY INSPECTION, SUN HAS SET BEFORE IT GOES SO FAR NORTH

EXPANDING THE DATA TO 1 MIN, AND BRACKETING THE DAYS ABOVE, WE CAN ANALYSE PLOTS AS FOLLOWS:

1) ADJUST FOR VIEWING ANGLE: ROTOR DISK IS FORESHORTENED BY COS α AND COS e, α_1 CALC IS SHOWN ON P. 4

$\cos e_1 = \cos 14.036 = .9701$ $.9701 \times 14.036 = 13.61°$

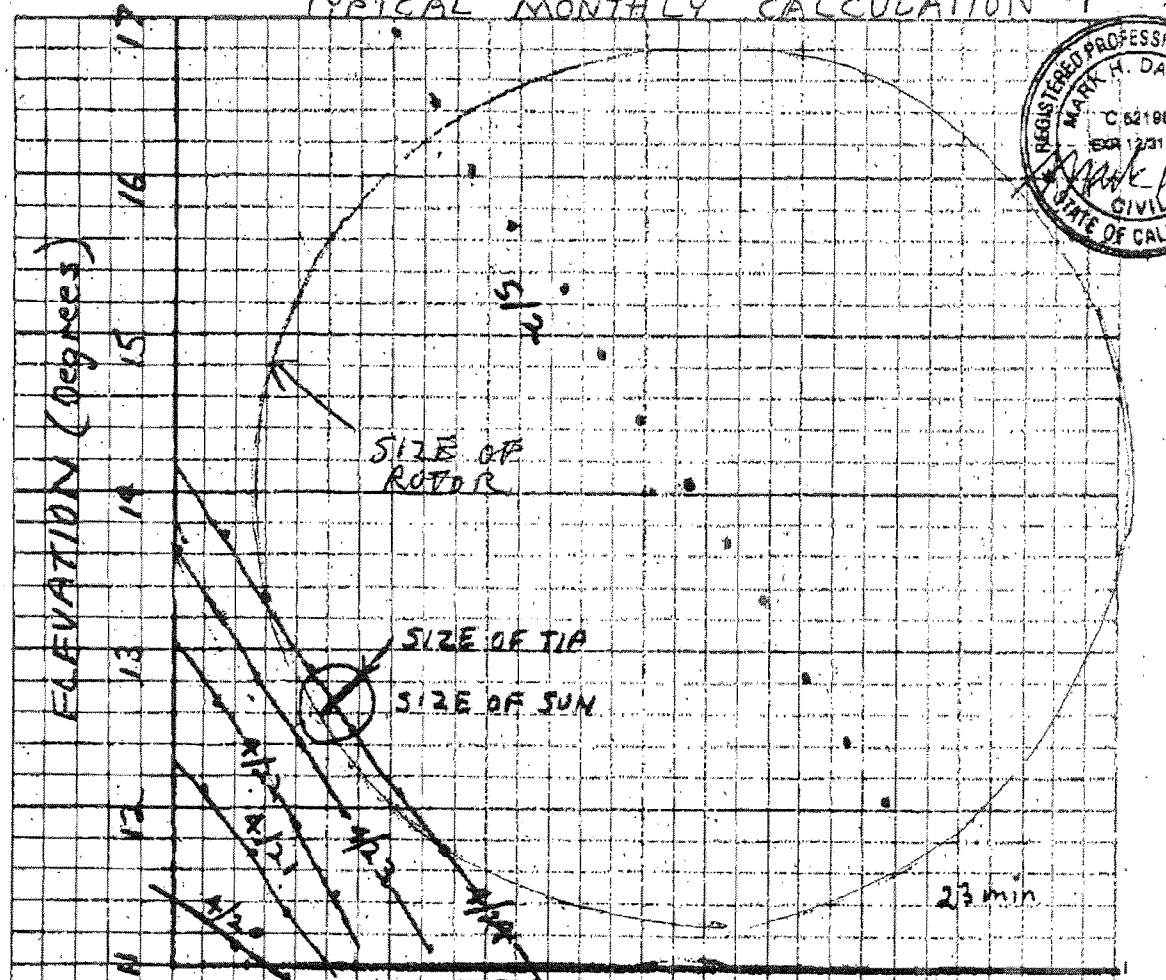
$\cos \alpha_2 = \cos 6.104 = .994$ $.994 \times 6.104 = 6.069°$

$\cos e_2 = \cos 11.956 = .978$ $.978 \times 11.956 = 11.697°$

REGISTERED PROFESSIONAL ENGINEER MARK H. DAWSON C 52198 EXP. 12/31/08 CIVIL STATE OF CALIFORNIA

* FROM NREL MIDC SOLPOS CALCULATOR GREENWICH TIME: 10 MIN BINS

TYPICAL MONTHLY CALCULATION 4



REGISTERED PROFESSIONAL ENGINEER
MARK H. DAWSON
C 52196
EXP 12/31/08
CIVIL
STATE OF CALIFORNIA

SUN IS .531° = .53" DIA

4/24 7 MIN TIP OF BLADE DOES NOT CROSS OVER ENTIRE DIAMETER OF SUN

ADJUST PERCEIVED DIAM. OF ROTOR FOR VIEWING ANGLE AS FOLLOWS:

$\cos 5.54° \times DIA = .995 \times 5.54° = 5.51° = \alpha_1$

Intercept values are $\pm \frac{5.51}{2} = \pm 2.757$

$279.288 \pm 2.757 = 276.531 - 282.045$

NOTE: Existing turbines are in same location and have shaded the residence, but for shorter durations

August 31, 2007

Energy Unlimited
Attn: David Lamm
638 Lindero Canyon Road, #273
Oak Park, CA 91301
Phone (818) 991-5095
Fax (818) 991-2232

Subject: Avian and Bat Issues for the Revised Commercial WECS 20 Permit Project SCH 2005101120

Birds

As stated in AMEC's Biological Assessment Update (2004; Appendix B of the DEIR), "the potential for bird mortality from the eight turbines in the Energy Unlimited proposal is low, but not zero. Risk factors associated with bird collisions are minimized by location, bird abundance, and turbine design. The impact to birds in the Desert Hot Springs area will be biologically insignificant."

This conclusion is supported by the recent fatality studies referenced in AMEC's Response to CDFG Comments (2007; Attachment C – Impacts to Birds). The recent fatality studies on new-generation wind farms in the western United States have revealed low avian fatality rates. For the reasons stated above, the Project is not likely to significantly impact avian species.

Bats

Eight bat species, all California species of special concern, have the potential to be present in the Project vicinity. The pallid bat (*Antrozous pallidus*), spotted bat (*Euderma maculatum*), California mastiff bat (*Eumops perotis californicus*), California leaf-nosed bat (*Macrotus californicus*), pocketed free-tailed bat (*Nyctinomops femorosacca*), big free-tailed bat (*Nyctinomops macrotis*), and Townsend's big-eared bat (*Plecotus townsendii*) roost in buildings, crevices, abandoned mines, rock outcrops, caves, or tree-holes. The southern yellow bat (*Lasiurus ega*) prefers wooded, riparian, and residential areas with untrimmed palm trees.

The Project area does not have open water, tree-roosting habitat, or other preferred nesting/roosting/foraging habitat features that would tend to attract bats. No bats or bat sign were observed during field surveys, so the probability of their occurrence in the Project area is low. Therefore, the Project is not likely to significantly impact bat species.

Pete & Nancy Wright
69875 Fairview
Painted Hills
Whitewater, CA 92282

RECEIVED
MAY 09 2007
PLANNING DEPARTMENT

May 7, 2007

RE: WESC 20
Public Comments to EIR

We have lived at the above address for 34 years. We are probably the closest home to this farm and yet we never received a notice for public comments for this EIR. Please put us on the mailing list.

There has been a significant decrease in the number of animal life that lived and hunted in our neighborhood, except for rats they have increased in numbers. We had many birds and wildlife e.g. Golden Eagles, Red Tail Hawks, Burring Owls, Barn Owls, Desert Tortoises and lots of bats hunting and living in Painted Hills. Now we seldom see any birds of pray and we haven't seen any bats or Desert Tortoises in many years. The EIR does not adequately address the impacts to the wildlife, flora and fauna.

This is a scenic ridgeline that needs to be preserved. The existing windmills are about 100 feet tall the ones proposed will be 327 feet tall (taller than the Morongo Casino), with blinking/strobe lights on top, this will degrade the night time views of this ridgeline. Example: the turbines on the south side of I 10 are several miles away from our house and yet more times than I can count throughout the years they have, for whatever reason, shined and flashed into our bedroom window. The required FAA lights are a public nuisance and are not consistent with Desert Hot Springs Dark Sky Ordinance.

Riverside County measured the noise levels of this farm shortly after they were installed in 1985 and at that time they exceeded the noise level of 55 db. With age they have become much louder, they disturb our peace and wellbeing and can be heard for miles away. The applicant says that these new and bigger turbines are not as loud, we do not agree; please consider the cumulative sound effects they will add. No one can calculate on paper what they will sound like after they are installed, each turbine has its own sound and cannot be determined by doing a single noise test. The types of noises and levels differ due to wind velocities, speed, climate and time of day. When the wind is not blowing or there is only a slight breeze at our house, the wind speed is greater on the ridge due to the difference in elevation and this is when the turbines are the loudest at our house. We can't open our windows to get fresh air without hearing the constant annoying sounds coming from this farm; more turbines at the least will create more noise clutter.

Wind turbines do catch fire, see attached pictures. What kind of fire protection will this farm have to protect our property? This is a big concern to us since the Fire Department can only watch as they burn and try to put out fires caused by the burning parts flying off

the windmill. These burning parts will blow a long way from the windmill property. This area is considered a high fire risk area by the Riverside County Fire Dept.

Other concerns we have are but not limited to:

-Storm water run off.
-Ground vibrations when these enormous machines are spinning up to 200 miles p/h.
-Maintenance of the turbines in the field, on the desert floor.
-Storing oily parts on the desert floor.
-Shadows cast from the windmill.
-Cumulative impacts of the 3000 plus windmills.
-Lack of current studies on the Pacific Flyway and bats.
-Lack of sufficient noise studies.
-Dust control.
-Ingress and egress of construction and maintenance equipment.

This EIR has significant impacts that are not mitigated. The EIR should explore every mitigation measure and not use the "benefit to all" excuse. There is now well documented research and many studies about the lack of benefits of wind power to the public and they have all come to the same conclusion, the impacts are much greater than the benefits. One of those reports is "Wind Farms Provide Negligible Useful Electricity" by Richard S. Courtney March 2006, the Center for Science and Public Policy-Washington D.C., attached as exhibit A.

We feel that this EIR is inadequate and flawed and does not adequately address any of our concerns we ask that you deny approval. We also ask that you deny approval of any height variance.

Exhibit A

Yahoo! My Yahoo! Mail Make YI your home page Search: Web Search

YAHOO! GROUPS Welcome, surphgirl [Sign Out, My Account] Groups Home - Hel

What is your credit score? See your score in seconds!

Excellent	750 - 850	Fair	620 - 659	I Don't Know	???
Good	660 - 749	Poor	400 - 619	Find out INSTANTL	

Group Information

Members: 49

Category: Issues and Activism

Founded: Feb 12, 2007

Language: English

Yahoo! Groups Tips

Did you know...
Want to share photos of your group with the world? Add a group photo to Flickr.

Yahoo! 360°

Share your life through photos, blogs, more.

Already receiving

Home

Activity within 7 days: 58 New Messages - New Questions

Description

Network organization opposing any and all ill-conceived industrial wind turbine projects. **Risks of Industrial Wind Turbines** is a group of citizens and organizations dedicated to preserve the public safety, property values, economic viability, environmental integrity and quality of life of residents and future generations. The dangers and hazards of industrial wind turbines sited near human beings should be obvious. Yet, public perception driven by corporate media is designed to champion suspect technology as a "public good". Members of **Risks of Industrial Wind Turbines** seek to coordinate, share and develop strategies and information on the real consequences of such wind project.

Wind Turbines are not a farm crop - **they are INDUSTRIAL machines.**

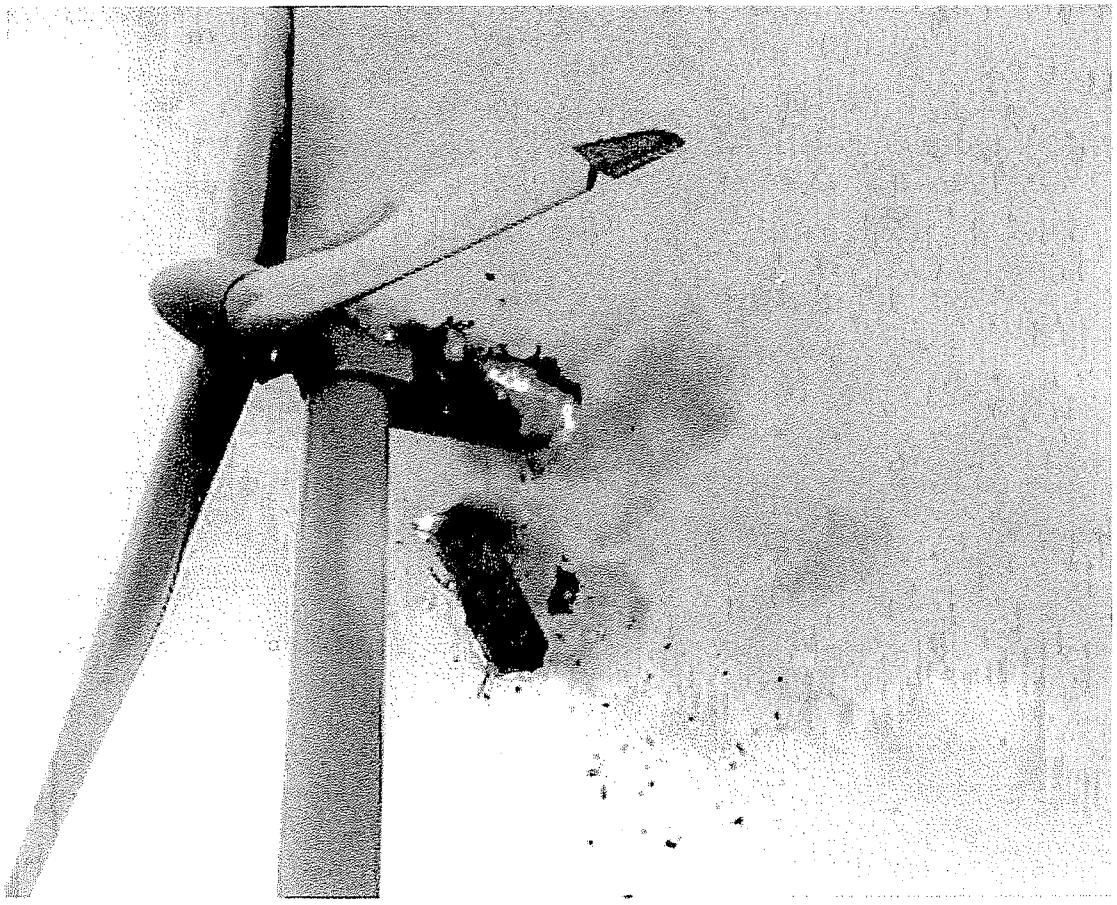
Alternative energy must be grounded in a realistic cost-benefit analysis. Wall Street industrial wind developer's primary purpose is to take advantage of extraordinary income sheltering opportunities, tax subsidies and government corporate welfare schemes. Main street community interests, public safety concerns and environmental preservations are being sacrificed to further the alliance between LLC's and corrupt career politicians.

The media propaganda claim that industrial wind turbines will reduce the use of fossil fuels and lessen dependence on foreign oil is a myth.

Wind developments are not highly efficient and provide insignificant and unreliable electric power. They generate little regional revenue or produce few local jobs. Property values are significantly diminished and the quality of life is virtually destroyed.

This is a private group by invitation only. Membership by referral, recommendation or verified identity disclosure.

Next Blog» Create Blog | Sign In



Cohocton Is Already Burning !!!

Historic Site Fire on Lewis Road - 4/5/07

visit Cohocton Free *for the before and after landscape view from Lent Hill*

COHOCTON WIND WATCH

CITIZENS, RESIDENTS AND NEIGHBORS CONCERNED ABOUT ILL-CONCEIVED WIND TURBINE PROJECTS IN THE TOWN OF COHOCTON AND ADJACENT TOWNSHIPS IN WESTERN NEW YORK.

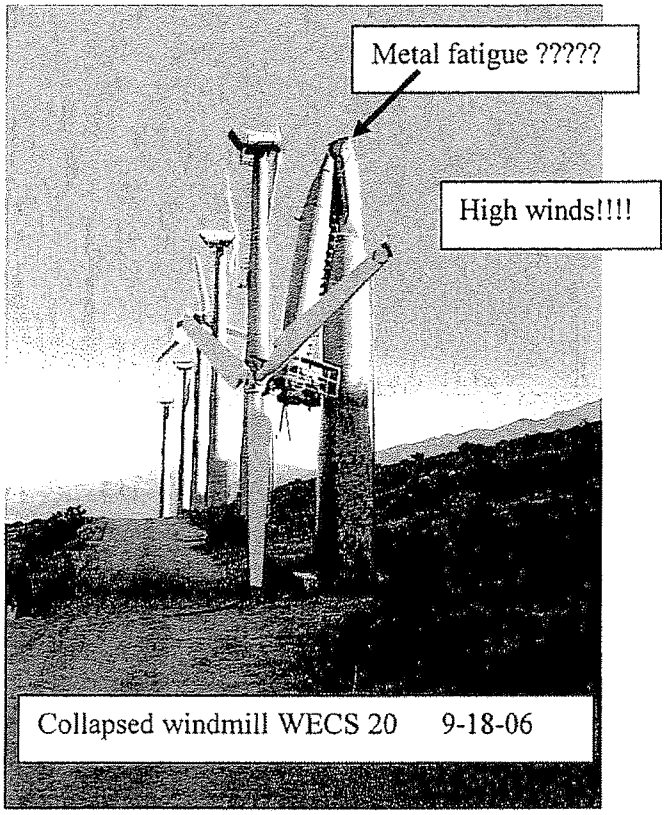
Cohocton Wind Watch is a community citizen organization dedicated to preserve the public safety, property values, economic viability, environmental integrity and quality of life in Cohocton, NY and in surrounding townships. Neighbors committed to public service in order to achieve a reasonable vision for a Finger Lakes region worthy of future generations.

Sweep clean past failures! A bright future demands new leadership.

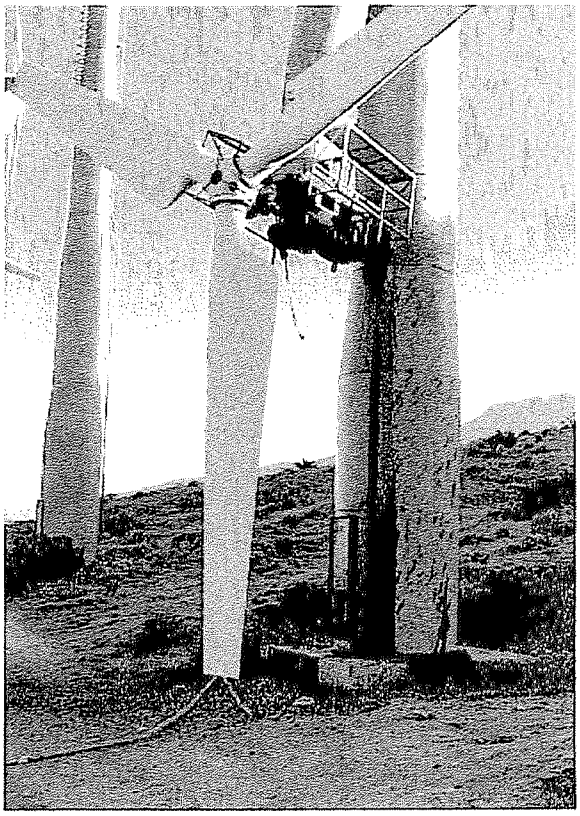
Support and join the Reform Cohocton movement.

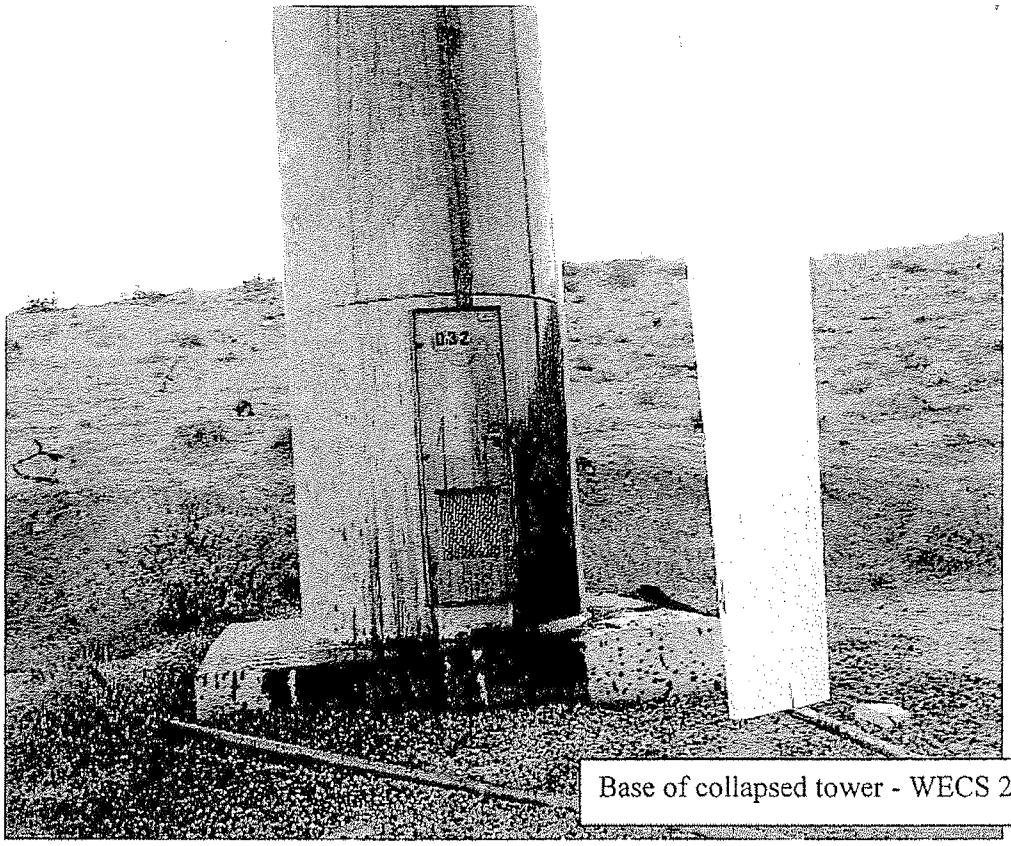
Visit http://reformcohocton.org/ unite, organize and elect ethical and responsible officials.

Exhibit B



Collapsed windmill WECS 20 9-18-06



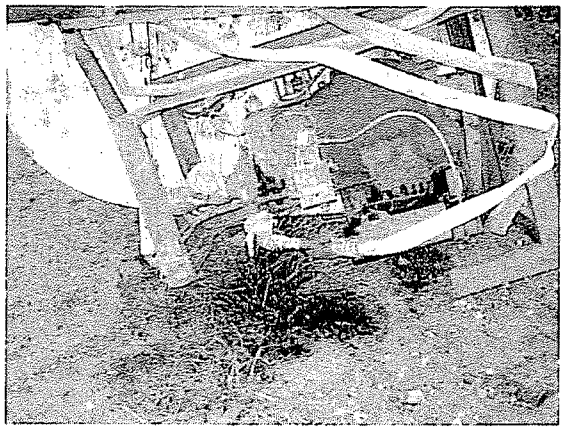


dripping oil

Base of collapsed tower - WECS 20 - 9-16-06

<u>WECS 20</u> -
in the city of Desert Hot Springs

Wrecked water truck - WECS 20
How long has it been there?????



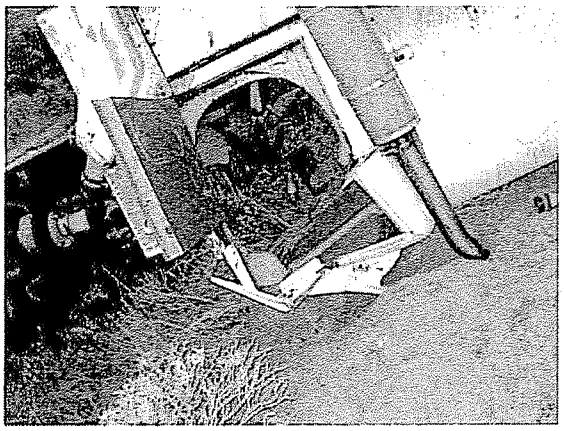


Exhibit C

Wind Farms Provide Negligible Useful Electricity

By
Richard S. Courtney

March 2006

Center for Science and Public Policy – Washington, D.C.
Robert Ferguson, Executive Director
202-454-5249 - www.scienceandpolicy.org

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Wind Farms Provide Negligible Useful Electricity

Abstract

Wind farms (i.e. local assemblies of wind turbines) for power generation can only provide negligible useful electricity to grid supply systems. Because they provide intermittent only power, they merely displace thermal power stations onto standby mode while the thermal power stations wait for the wind to change. Wind farms make no significant reduction to pollution because thermal power stations continue using their fuel and producing their emissions while operating in standby mode. The large scale use of wind farms requires upgrading of an electricity grid; more complex grid management, and operation of additional thermal power stations to protect against power cuts in time of supply failure. These effects increase the cost of electricity supplied by the grid in addition to the capital, maintenance and operating costs of the wind farms themselves. Also, wind farms cause significant environmental damage. These severe environmental costs may be worth suffering if wind farms actually provided cheap, clean, useful electricity. They do not.

Executive Summary

Wind farms are expensive, polluting, environmentally damaging bird swatters that produce negligible useful electricity, but do threaten electricity losses.

Thermal power stations

Conventional power stations fission a material or burn a fuel to obtain heat that is used to boil water and superheat the resulting steam which is fed to the steam turbines (some power stations also use gas turbines in combination with steam turbines). The turbines drive turbogenerators that make electricity.

A power station takes days to start producing electricity from a cold start. Time is needed to boil the water, to superheat the steam, to warm all the components of the power station, and to spin the turbogenerators up to operating speed.

Each power station is designed to provide an output of electricity. It can only provide very little more or very little less than this output (i.e. a power station has a "low turndown ratio").

Electricity demand matching

Electricity is wanted all the time but the demand for electricity varies from hour to hour, day to day, and month to month. The electricity grid has to match the supply of electricity to the demand for it at all times. This is difficult because power stations cannot be switched on and off as demand varies, and only small variation to the output of each power station is possible.

The problem of matching electricity supply to varying demand is overcome by operating power stations in three modes called 'base load', 'generation' and 'spinning standby'. Some power stations operate all the time providing electricity to the grid, and they are said to provide 'base load'.

Other power stations also operate all the time but do not provide electricity all the time. They burn (or fission) their fuel to boil water and superheat the resulting steam which is fed to the steam turbines that are thus kept hot and spinning all the time. Of course, they emit all the emissions from use of their fuel all the time. But some of this time they dump heat from their cooling towers instead of generating electricity, and they are then said to be operating 'spinning standby'.

One or more power stations can be instantly switched from spinning standby to provide electricity to match an increase to demand for electricity. It is said to be operating 'generation' when it is providing electricity.

Power stations are switched between spinning standby and generation as demand for electricity changes. Thus the grid operator manages the system to match supply with demand for electricity by switching power stations between 'generation' and 'spinning standby'. And the small available variation in output from each power station is used to avoid large step changes in the supply when this switching is conducted.

Wind farm input to electricity

Wind farms only provide electricity when the wind is strong enough and not too strong. So, they suddenly provide electricity when the wind changes. The grid operator must match this changed supply of electricity to the existing demand for electricity. Of course, the grid operator achieves the match by switching a power station to spinning standby mode. That power station continues to operate in this mode so it can provide electricity when the wind farm stops supplying electricity because the wind has changed again. Wind farms only force power stations to operate more spinning standby. They provide no useful electricity and make no reduction to emissions from power generation. Indeed, the wind farm is the true source of emissions from a power station operating spinning standby in support of the wind farm.

Wind farms have capital, maintenance and operating costs that add to the cost of electricity. These costs are their only contribution to the electricity supply system. But they disrupt operation of the system.

Power surges

A sudden, large addition to electricity in part of the grid is called a 'power surge'. It can overload a component of the grid with resulting widespread damage to the grid. For example, in recent years power surges have damaged components with resulting loss of power to the London Underground system, the city of Turin, and most of North America.

Wind turbines provide power when the wind is strong enough and not too strong. It is very difficult to predict the precise moment when a wind farm will start to provide electricity to the grid. And the wind can change over a large area. Hence, the presence of many wind farms in a locality causes power surges.

Denmark has many wind farms and so is subjected to power surges from them. The Danish grid manages this problem by dumping the electricity across its borders as a free gift to Denmark's neighbours. But some countries cannot do that. For this reason in December 2003 the Irish grid operator announced that he would accept no more

electricity from wind farms onto the Irish grid. Additional wind power would be so unmanageable that grid failures would be inevitable.

The UK has a similar problem. The Interconnector with France could not handle the dumping of a power surge. Hence, large use of wind power in the UK would cause damage to components of the UK grid and frequent power cuts throughout the UK. Indeed, the UK grid is being upgraded to withstand the problems caused by the intermittent operation of the existing wind farms.

Managing supply risk

As earlier explained, power stations operate spinning standby to match electricity demand to supply. In addition to this, other power stations operate spinning standby to manage risk of supply failures. There is a risk of failure of a base load power station or the transmission system from it. Such failures would cause power cuts in the absence of the additional spinning standby.

Wind farms only provide power when the wind is strong enough and not too strong. Hence, wind farms increase the risk of supply failures. Indeed, they give the certainty of supply failures when the wind is too strong or not strong enough.

The increased risk of supply failures from wind farms is insignificant when there is small contribution of electricity to the grid from wind farms. All the output from the wind farms forces thermal power stations to operate spinning standby that can cope with the risk.

But the problem of managing the risk increases disproportionately as the risk increases. Electricity is not wanted in the same amounts everywhere, and electricity is lost when it is transmitted over long distances. The additional risk management difficulties require additional spinning standby when the risk of supply failures is very large. Otherwise it would be impossible to match supply with demand throughout the grid when a large supply failure occurred.

Additional power stations must be built and operated on spinning standby (using their additional fuel and providing their additional emissions) to manage the increased risk of power cuts from supply failures when wind power contributes 20% or more of the potential electricity supply.

The construction of wind farms instead of power stations has caused these problems in California where scheduled voltage reductions are continuously provided around the State as an alternative method to manage the risk of power cuts from supply failures.

Sec. 1 - Wind power in history

Wind power has been used for ages. Wind energy powered most of the world's shipping for thousands of years. Primitive wind turbines powered pumps (notably in the Netherlands and England) and mills throughout Europe for centuries.

There are a number of types of wind turbines. They are divided into Vertical-Axis and Horizontal-Axis types.

Vertical-axis windmills were first developed by the Persians to mill corn around 1500 BC, and they were still in use in the 1970's in the Zahedan region. Sails were mounted on a boom attached to a shaft that turned vertically. The technology had spread to Northern Africa and Spain by 500 BC.[1] Low-speed, vertical-axis windmills are still popular in Finland because they operate without adjustment when the direction of the wind changes. These inefficient Finnish wind turbines are usually made from a 200 litre oil drum split in half and are used to pump water and to aerate land. Low speed vertical-axis windmills for water pumping and air compressing are commercially available.

The horizontal-axis wind turbine was invented in Egypt and Greece around 300 BC. "It had 8 to 10 wooden beams rigged with sails, and a rotor which turned perpendicular to the wind direction".[2] This type of wind turbine later became popular in Portugal and Greece. Around 1200 AD, the crusaders built and developed the post-mill for milling grain. The turbine was mounted on a vertical post and could be rotated on top the post to keep the turbine facing the wind. This post-mill technology was first adopted for electricity generation in Denmark in the late 1800's.[3] The technology soon spread to the U.S. where it was used to pump water and to irrigate crops across the Great Plains. During World War I, some American farmers rigged wind turbines to each generate 1 kW of DC current. Such wind turbines were mounted on buildings and towers. On western farms and railroad stations, wind turbines for pumping water were between 6 and 16m high and had 2 to 3m diameter. With 15km/h wind speed, a 2m-diameter turbine operating a 60cm diameter pump cylinder could lift 200 litres of water per hour to a height of 12m. A 4m diameter turbine could lift 250 litres per hour to a height of 38m.[4]

Sec. 2 – Useful Niches

The above brief history demonstrates that wind turbines can have useful niches to the present day. For example, small wind turbines can be used to economically pump water or generate electricity in remote locations distant to – or disconnected from (e.g. on boats) – an electricity grid supply. But wind power lost favour when the greater energy concentration in fossil fuels became widely available by use of steam engines. Wind power has recently found favour for large scale electricity generation in some places, and this paper explains why such use is uneconomic and impractical.

Today, if wind power were economically competitive with fossil fuels, then oil tankers would be sailing ships. Japan has conducted several studies to ascertain if use of automated sails could assist modern shipping. These studies have demonstrated that available wind power is so small a contribution to the powering of a ship that the systems

to obtain it cannot recover their capital costs[5] (which agrees with the considerations provided in this paper).

However, since the 1970s, the use of large, modern wind turbines has become popular for electricity generation in some places. This is especially true in Denmark, the UK and also in parts of the USA where it has resulted in California's 'Energy Crisis'. Reasons for this use are entirely political. As this paper explains, the low energy concentration in wind requires use of very many turbines with associated very high capital and maintenance costs. Also, the output of the turbines depends on the weather and, therefore, cannot be predicted with accuracy for more than a few days in advance.

Wind farms are local assemblies of wind turbines for power generation. Their turbines generate electricity when the wind is strong enough but not too strong.[6] This makes their output intermittent, and electricity is not a commodity so it cannot be stored in significant amounts and must be used at its existing distribution system when generated. This intermittent supply of electricity disrupts the electricity grid (as also explained in this paper).

Sec. 3 - Theoretically available wind power[7]

Wind is the movement of air. Perpendicular to the wind direction, the wind's kinetic energy per unit time (e_k) is provided by the mass (m) and the square of the velocity (v) of the air with density (ϱ) moving through a unit area (A).

$$e_k = \frac{1}{2} m v^2 = \frac{1}{2} (A v \varrho) v^2 = \frac{1}{2} A \varrho v^3$$

Air has low density (ϱ) that varies with its altitude (h). Its density at ground level (ϱ_o) is ~1.225 kg / m^3. For heights below ~6 km, ϱ can be estimated to a reasonable approximation using the expression.

$$\varrho = \varrho_o \exp(-0.297\ h / 3048)$$

where h is in meters

ϱ also varies with the air's temperature (T) and pressure (P). For heights below ~6 km, the relationship of ϱ, T and P can be estimated to a reasonable approximation using the expression.

$$\varrho = 3.4843\ P / (T + 273)$$

where P is in kPa and T in °C

For the standard atmosphere, T is defined to decrease linearly with height

$$T = 15 - 1.983\ (h/304.8)\ °C$$

So, the air affecting a wind turbine blade has little mass per unit of time unless the wind speed is high. This means there is little wind energy available for collection at low wind speeds. And most wind turbines can only operate when the wind speed is low.

The high capital and maintenance costs of each turbine provide only the small return it can obtain by extracting the little energy which is carried by normal winds. For example, an average wind speed of 14 mph is needed to convert wind energy into electricity competitively with coal-fired or nuclear electricity in the U.S., but the U.S. average wind speed is 10 mph.

- NEGLIGIBLE

Sec. 4 - Technical limitations of wind turbines for power generation

Horizontal-axis wind turbines (developed from post mill technology) are inherently more efficient than vertical wind turbines.[8] Hence, horizontal-axis wind turbines are favoured for electricity generation. They are fitted with one, two, three or (very rarely) more turbine blades. A schematic of a typical wind turbine for power generation is shown in **Figure 1**.

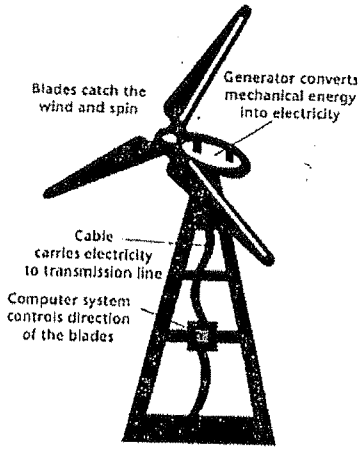
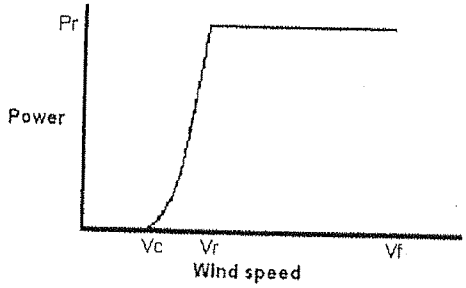


Figure 1. Schematic of a typical 3-blade wind turbine for electricity generation.

Modern wind turbines are large to maximise interaction with the air and, thus, gain efficiency. A typical wind turbine can produce 1.5 to 4.0 million kWh of electricity a year.[9] The largest wind turbine in operation is the Vestas V44-600. Its blade is 144 feet in diameter and is mounted on a 160-foot tower west of Traverse City, Michigan.[10] It provides slightly less than one percent of the Traverse City Light and Power Company's total output.

Wind turbines require much land. Turbines would take the wind from each other if sited too close together.[11] Each wind turbine needs about two acres of land, and several turbines are needed to generate much electricity.[12] An assembly of wind turbines is called a wind farm, and a typical wind farm covers hundreds of acres. However, agriculture can be conducted between the foundations of the turbines of an installed wind farm.

Little energy is obtainable from a wind turbine unless the air has high velocity (i.e. the wind is strong) because low velocity air has little kinetic energy per unit volume. But wind turbines only operate when the wind is sufficiently strong and not too strong. Hurricanes, cyclones and tropical storms carry large amounts of energy because they have high wind speeds, but they are rare. A wind turbine designed to collect energy from tropical storms would rarely operate, and a wind turbine designed to collect energy efficiently from ordinary winds would be damaged if it tried to operate in a tropical storm.



The highest wind speed at which a wind turbine generates electricity is called its furling speed. The theoretical maximum output of a typical turbine as a function of wind speed is shown graphically in **Figure 2**.[13]

Figure 2. Schematic of an ideal wind turbine's output as a function of wind speed.
Pr is the rated power of the turbine
Vc is the lowest wind speed at which the turbine generates electricity
Vr is the lowest wind speed at which the turbine generates its rated output
Vf is the furling speed

So, a wind turbine only provides power when the wind speed is high enough and not too high. The precise values of the lowest and highest wind speeds for power generation depend on the design of wind turbine. But the proportion of time a wind turbine operates is called its load factor. And the load factors achieved by commercial wind farms are low. This is shown in **Table 1** that provides the achieved load factors of wind farms in three countries with significant generating capacity from wind farms.

Country	Time Period	Achieved Load Factor	Source	Notes
West Denmark	1999 2000 2001 2002 2003 1999-2003	19.7% 21.0% 19.9% 18.9% 21.0% 20.0%	Eltra (Danish grid operator)	Denmark has most installed wind power capacity of any country. West Denmark is its windiest region
Germany	2003	14.8%	Reuters	
United Kingdom	1999 2000 2001 2002 2003 1999-2003	28.2% 28.2% 26.4% 29.9% 24.1% 27.3%	UK Department of Trade and Industry (DTI)	The UK is Europe's windiest country

Table 1. Achieved load factors of wind powered electricity generation.

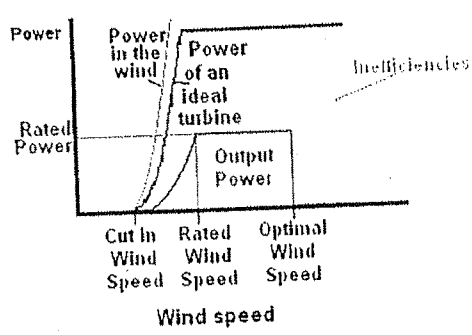


Figure 3. Schematic of actual wind turbine output as a function of wind speed.

Table 1 demonstrates that wind farms provide very intermittent electricity supply. Assuming the performance of wind farms could be extended so they provide power for more of the time, then it could be optimistically assumed that their load factors may be increased to 30%. But that should be compared to the typical load factor from a thermal power station of 85 to 90% that does not depend on the wind speed so it stops only for maintenance.

The problem is compounded by the actual output of a wind turbine being less than its theoretical maximum (shown schematically in **Figure 2**). As shown in **Figure 3**, wind turbines have between 30% and 40% efficiency[14] (i.e. they output as electricity about a

third of the wind power they collect) which is comparable efficiency to that of thermal power stations.

The low load factors and low efficiency of wind turbines combine with the little energy available from normal winds to make it very difficult to recover the capital costs of a wind turbine used to generate electricity from sale (at commercial rates and without subsidy) of the small amount of electricity it can produce.

Sec. 5 - Relative costs of wind power and conventional electricity generation

The costs of fuel, infrastructure and capital borrowing vary between countries. Therefore, the relative costs of electricity generating systems differ between countries. However, wind farms produce such expensive electricity that any country which is a large user of wind power is illustrative of the high relative cost of wind power.

A report from the UK's Royal Academy of Engineering on 'The Costs of Generating Electricity'[15] claims that electricity from offshore wind farms will cost at least twice as much as that from conventional sources in the UK. The Academy estimates the generating costs of electricity in UK pence per kilowatt hour (p/kWh where 100p = £1). Their report concludes that for the foreseeable future the UK's cheapest electricity will come from gas turbines and nuclear stations, costing just 2.3 p/kWh, compared with 3.7 p/kWh for onshore wind and 5.5 p/kWh for offshore wind. The nuclear cost included decommissioning costs of nuclear power stations.

A significant contributor to the high cost that the Academy estimates for wind power is the need to provide back up generating capacity for when the wind is not at a speed to operate wind turbines. Their report says it is 'rather generous' with its wind generation figures: it assumes only 65% back-up power is needed whereas previous estimates were for 75 to 80% (65% is very generous because it assumes a load factor of 35%, but see Table 1). Even so, their report estimates the need for backup capacity adds 1.7 p/kWh to the costs of wind power.

Sec. 6 - Environmental effects of wind farms

Environmentalists who oppose roads for normal transportation campaign for construction of wind farms.

Wind farms have significant environmental costs. Some people dislike their appearance, but this is a matter of aesthetic opinion. More importantly, wind farms cover the landscape in concrete foundations for their turbines and roads to access the turbines. They are very effective at this in the UK because

1. the UK Planning System has been deliberately altered to encourage construction of wind farms,
2. large subsidies are provided to owners of wind farms, and
3. so-called environmentalists who oppose roads for normal transportation campaign for construction of wind farms.

Some other European countries and American States are providing similar biases towards construction of wind farms. For example, tax breaks are given to offset maintenance costs of power plants that use 'renewable' energy sources in some U.S. States. Also, the Public Utility Regulatory Policies Act (PURPA) requires utility companies to purchase electricity from independent power producers in the U.S.

The long-term effects are potentially serious. *Land that has been converted to an industrial use (i.e. power generation) is not likely to return to agriculture.*

Wind farms also swat birds. One wind farm at Altamont Pass, California, kills thousands of birds – including an estimated 880 to 1300 birds of prey – each year.[16] Hence, the widespread use of wind farms may alter local ecology and reduce biodiversity.

Wind farms kill significant numbers of birds and bats, hence may alter local ecology and reduce biodiversity.

Additionally, wind farms provide serious noise pollution down-wind. An efficient wind turbine blade removes much energy from the air. For this reason, a rotating blade generates pulses of reduced pressure in the air flowing behind the turbine which provide loud, throbbing, often subsonic noise. This has potential to disturb breeding habits of wildlife and is certainly unpleasant for people exposed to it.[17]

Winds are stronger and more constant at sea than on land, and the noise pollution from wind turbines would not be a problem at sea. But large ocean waves would be likely to displace the turbines from their moorings unless the turbines' mountings were very expensive,[18] and these mountings would destroy the sea bottom where they were sited. Also, the wind turbines would provide hazard to shipping if not carefully sited, charted and lit.

It is sometimes claimed that some of these environmental effects of wind farms may be overcome by dwellings each having their own wind turbine(s) for their personal use as electricity generators. It should be noted that large adoption of this policy by an urban area would significantly increase the noise pollution in the area.[19] Also, such an urban wind farm would have all the other problems of every wind farm.

Sec. 7 - The purpose of Wind farms

Wind farms have negative environmental effects and generate expensive electricity, but some governments are promoting them. The justification for this promotion is often said to be that

- wind farms provide useful electricity to an electricity supply grid, and
- the use of wind farms reduces emissions from conventional power stations supplying to the grid.

Both these claims are false: this paper explains that the grid supply and demand profiles ensure that

- wind farms add a large, unnecessary cost to the provision of electricity by a grid supply,
- wind farms cannot provide significant amounts of useful electricity to an electricity grid at any time, and
- the large use of wind farms increases emissions from conventional power systems supplying to the grid.

Sec. 8 - Thermal power stations

Conventional (i.e. thermal) power stations fission a material or burn a fuel to obtain heat that is used to boil water and superheat the resulting steam which is fed to the steam turbines (some power stations – e.g. combined cycle gas turbine: CCGT – also use gas turbines in combination with steam turbines). The turbines drive turbogenerators that make electricity.

A thermal power station takes days to start producing electricity from a cold start.[20] Time is needed to boil the water, to superheat the steam, to warm all the components of the power station, and to spin the turbogenerators up to operating speed.

Each thermal power station is designed to provide an output of electricity. It can only provide very little more or very little less than this output (i.e. a power station has a "low turndown ratio").[21]

Sec. 9 - Electricity demand matching[22]

Electricity is wanted from a grid supply all the time but the demand for electricity varies from hour to hour, day to day, and month to month. The electricity grid has to match the supply of electricity to the demand for it at all times. This is difficult because thermal power stations cannot be switched on and off as demand varies, and only small variation to the output of each power station is possible.

The problem of matching electricity supply to varying demand is overcome by operating thermal power stations in three modes called

- 'base load',
- 'generation' and
- 'spinning standby' as backup capacity.

Some power stations operate all the time providing electricity to the grid, and they are said to provide the 'base load'.

Other power stations also operate all the time but do not provide electricity all the time. They burn (or fission) their fuel to boil water and superheat the resulting steam which is fed to the steam turbines that are thus kept hot and spinning all the time. Of course, they emit all the emissions from use of their fuel all the time. But some of this time they dump heat from their cooling towers instead of generating electricity, and they are then said to be operating 'spinning standby'.

One or more power stations can be switched from spinning standby to provide electricity to match an increase to demand for electricity. It is said to be operating 'generation' when it is providing electricity.

Power stations are switched between spinning standby and generation as demand for electricity changes. Thus the grid operator manages the system to match supply with demand for electricity by switching power stations between 'generation' and 'spinning standby'. And the small available variation in output from each power station is used to avoid large step changes in the supply when this switching is conducted. But operating a

power station at less than its optimum output severely reduces its efficiency so it has little reduction to its fuel consumption and emissions although it supplies less electricity.[23]

Additionally, the need for power stations to operate is reduced by use of 'pumped storage'. Electricity is used to pump water uphill to a reservoir when there is little demand from the grid. Then, when there is peak demand for electricity the water is allowed to flow back down and generate power. This consumes electricity because of mechanical losses, but it is economic because it removes the need for a few power stations to operate almost continuously on standby mode so they can supply electricity at the (very short) times of peak demand. The pumped storage provides the extra electricity needed to meet the peak demand.

Large use of wind farms provides no reduction to the need to operate conventional thermal power stations and makes little or no reduction to emissions from them.

Sec. 10 - Wind farm input to electricity grid supply

Wind farms only provide electricity when the wind is strong enough and not too strong. So, they suddenly provide electricity when the wind changes. The grid operator must match this changed supply of electricity to the existing demand for electricity. Of course, the grid operator achieves the match by switching a conventional (i.e. thermal) power station to spinning standby mode or by operating it at low output with much reduced efficiency. That power station continues to operate in this manner so it can provide electricity when the wind farm stops supplying electricity because the wind has changed again. Therefore, large use of wind farms provides no reduction to the need to operate conventional thermal power stations and makes little or no reduction to emissions from them.

The United Kingdom provides a good illustration of the problem because it intends to increase its use of 'renewable' energy to 20% of its generating capacity mostly by increased use of wind power. David Tolley (Head of Networks and Ancillary Services, Innogy, a subsidiary of the German energy consortium RWE) has said of wind farms, "When [thermal] plant is de-loaded to balance the system, it results in a significant proportion of deloaded plant which operates relatively inefficiently ... *it has been estimated that the entire benefit of reduced emissions from the renewables programme has been negated by the increased emissions from part-loaded plant* under NETA." (NETA is the New Electricity Trading Arrangements; the UK's deregulated power market.) (Emphasis added)

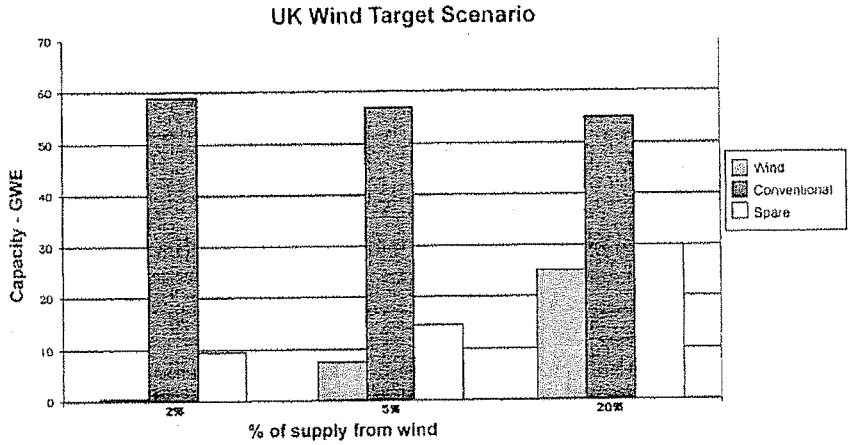
Table 2 shows the results of model studies conducted by the UK's National Grid Corporation that indicate the effect of wind's unreliability on the generating plant required to achieve that 20% UK renewables target:[24]

Contribution from wind % of 400 TWh	Wind capacity GWe	Conventional capacity GWe	spare capacity GWe
2%	0.5	59	9.5
5%	7.5	57	14.5
20%	25	55	30

Table 2. Generating capacity to achieve increased use of wind power in the UK

Table 2 shows that increased use of wind power provides very little reduction to need for conventional power plants. This is because the wind power is intermittent. The building of 25 GWe of wind capacity – approximately equal to the present world total and equivalent to almost half of UK peak demand – will only reduce the need for conventional fossil and nuclear plant capacity by 6.7% (and arguably less). Some 30 GWe of spare capacity will also be need to be on immediate call continuously to provide a normal margin of reserve and to back up the wind plants' inability to produce power on demand – about two thirds of it being for the latter. **Figure 4** also shows this problem.[25]

Wind farms mostly force power stations to operate more spinning standby. They provide negligible useful electricity and make negligible reduction to emissions from power generation. Indeed, a wind farm is the true source of emissions from a thermal power station operating spinning standby as spare capacity in support of the wind farm.



UK National Grid Corporation (per Prof M. Laughton)

Figure 4. Histogram of generating capacity to achieve increased use of wind power in the UK.

Wind farms have capital, maintenance and operating costs that add to the cost of electricity. These costs are their only real contribution to the electricity supply system. But they disrupt operation of the system.

Sec. 11 - Power surges

A sudden, large addition to electricity in part of the grid is called a 'power surge'. It can overload a component of the grid with resulting widespread damage to the grid. For example, during recent years power surges have damaged grid components with resulting loss of power to the London Underground system, the city of Turin, and most of North America.

Wind turbines provide power when the wind is strong enough and not too strong. It is very difficult to predict the precise moment when a wind farm will start to provide electricity to the grid. And the wind can change over a large area. Hence, the presence of many wind farms (or a large wind farm) in a locality causes power surges.[26]

Denmark has many wind farms and so is subjected to power surges from them. The Danish grid manages this problem by dumping the electricity across its borders as a free gift to Denmark's neighbours. But some countries cannot do that. For this reason in December 2003 the Irish grid operator announced that he would accept no more electricity from wind farms onto the Irish grid. Additional wind power would be so unmanageable that grid failures would be inevitable.

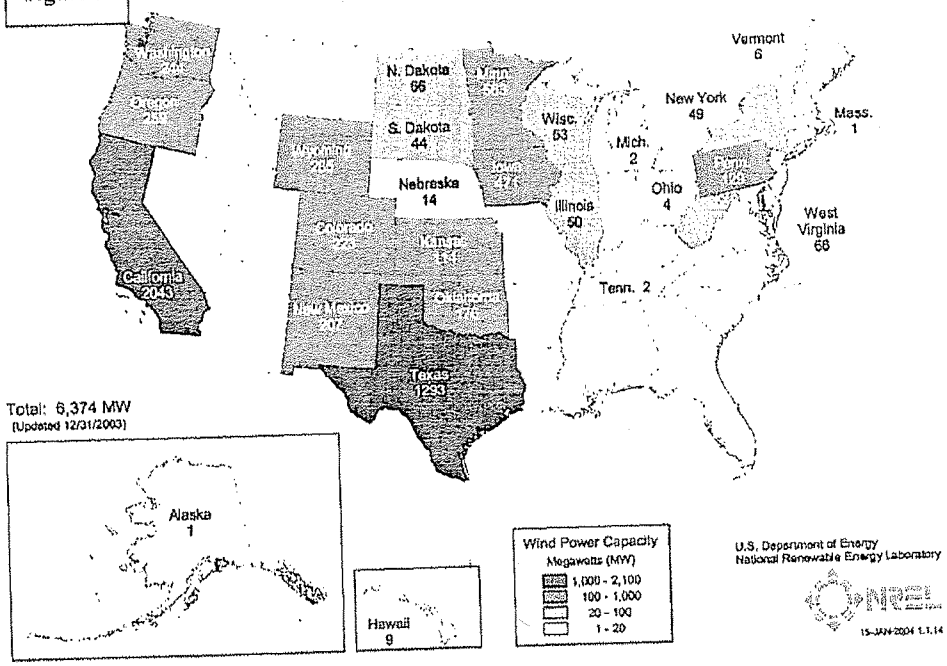
The UK has a similar problem. The Interconnector with France could not handle the dumping of a power surge. Hence, large use of wind power in the UK would cause damage to components of the UK grid and frequent power cuts throughout the UK. Indeed, the UK grid is being upgraded to withstand the problems caused by the intermittent operation of the existing wind farms. Some other countries have similar problems. For example, the dumping of power from one coast of the USA to the other would be difficult because of the distance.

Sec. 12 - Managing supply risk

As earlier explained, power stations operate spinning standby to match electricity demand to supply. In addition to this, other power stations operate spinning standby to manage risk of supply failures. There is a risk of failure of a base load power station or the transmission system from it. Such failures would cause power cuts in the absence of the additional spinning standby.[27]

Wind farms only provide power when the wind is strong enough and not too strong. Hence, wind farms increase the risk of supply failures. Indeed, they give the certainty of supply failures when the wind is too strong or not strong enough.

Figure 5. United States - 2003 Year End Wind Power Capacity (MW)



The increased risk of supply failures from wind farms is insignificant when there is small contribution of electricity to the grid from wind farms. All the output from the wind farms forces thermal power stations to operate spinning standby that can cope with the risk.

But the problem of managing the risk increases disproportionately as the risk increases. Electricity is not wanted in the same amounts everywhere, and electricity is lost when it is transmitted over long distances. The additional risk management difficulties require additional spinning standby when the risk of supply failures is very large. Otherwise it would be impossible to match supply with demand throughout the grid when a large supply failure occurred.[28] This is demonstrated by the needed amounts of spare capacity shown in **Table 2** and **Figure 4**.

Additional power stations must be built and operated on spinning standby (using their additional fuel and providing their additional emissions) to manage the increased risk of power cuts from supply failures when wind power contributes more than 20% of the potential electricity supply.[29] Indeed, this limit is the reason why the UK target for 'renewable' electricity generation is 20%: the UK generates hydropower (mostly in Scotland) so wind power will not reach the 20% limit if the target is met.

This problem has been realised in California – that has more wind power than any other U.S. State (see **Figure 5**) – although its wind power contributes much less than 20% of its electricity supply. Some 13,000 wind turbines produce more than one percent of California's electricity. (This is about half as much electricity as is produced by one nuclear power plant.) The wind farms were constructed instead of thermal power stations (or instead of re-opening mothballed Californian nuclear power stations), and excess capacity in adjacent States was used to overcome the need for the wind farms to have backup. But California obtained a power crisis when that excess capacity was consumed by the adjacent States. Hence, California has inadequate spare capacity for the needed additional risk management associated with its small use of wind power. This has resulted in California needing to continuously apply scheduled voltage reductions (known as 'brown outs') around the State as an alternative method to manage the risk of power cuts from supply failures.

Summary and Conclusion

Wind farms are expensive, polluting, environmentally damaging bird swatters that produce negligible useful electricity but threaten electricity cuts.

About Richard S Courtney

Richard S Courtney is a Member of the European Science and Environment Forum (ESEF) and acts as a technical advisor to several UK MPs and mostly-UK MEPs. He is Chairman of the Southern Region of a Trade Union (BACM-TEAM) affiliated to the UK's Trades Union Congress. He was the Vice-President of BACM-TEAM from 1995 until May 2000, and he was also a Member of the Executive of the Federation of European Energy Industry Executives throughout that time. Having been the contributing Technical Editor of *CoalTrans International*, he is now on the Editorial Board of *Energy & Environment*. His present work mostly consists of providing commissioned advice to national governments, although he has recently conducted research studies of energy interactions at sea surface.

Richard is a respected authority on energy issues, especially clean coal technology. He has been the Senior Materials Scientist of the UK's Coal Research Establishment, has served as a Technical Advisor to the European Coal and Steel Community (ECSC), possesses several patents, and has published papers in many journals including *Nature, Microscopy* and *Filtration*. He is the author of the chapter on coal in *Kempes Engineers Yearbook*.

His scientific achievements have obtained much recognition. The British Association for the Advancement of Science appointed him as a Member of the Association of British Science Writers in recognition of his "clear presentation of scientific information to politicians". The UK's Royal Society for Arts and Commerce appointed him as a Life Fellow in recognition of his "services to British industry". PZZK (the management association of Poland's mining industry) gave him an award in recognition of his "services to Europe's industry". He has broadcast on radio and TV around the world in response to requests from several media companies, notably the BBC, and he lectures around Europe.

His knowledge of energy and environment issues is widely respected. He has been called as an expert witness by the UK Parliament's House of Commons Select Committee on Energy and also House of Lords Select Committee on the Environment. UNESCO commissioned a paper from him on Coal Liquefaction. An Expert Peer Reviewer for the UN Intergovernmental Panel on Climate Change (IPCC), in November 1997 he chaired the Plenary Session of the Climate Conference in Bonn at the joint request of the European Academy of Science, the Science and Environment Project (USA), and the Europaische Akedemie fur Umweltfragen e.v. (Germany). In June 2000 he was one of 15 scientists invited from around the world to give a briefing on climate change at the US Congress in Washington DC, and he then chaired one of the three briefing sessions.

Richard is also an Accredited Methodist Preacher. He is a founding Member of the Christ and the Cosmos Initiative that explores the interactions of religious and scientific ideas. The Initiative started in the UK but became active in 28 countries.

Richard avoids confusion about him in his scientific and religious activities by rarely citing his academic achievements, but his material science qualifications include a DipPhil (Cambridge), a BA (Open) and a Diploma (Bath). He may be contacted at:

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