

***Appendix E***  
***Cultural Resources Report***  
***(Confidential – Available from BLM)***

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***Appendix F***  
***Paleontology Literature and Records Review***

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# SAN BERNARDINO COUNTY MUSEUM



COUNTY OF SAN BERNARDINO  
PUBLIC AND SUPPORT  
SERVICES GROUP

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ROBERT L. MCKERNAN  
Director

1 November 2009

Ecology and Environment, Inc.  
attn: Christine McCollum  
130 Battery Street, Suite #400  
San Francisco, CA 94111

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re: **PALEONTOLOGY LITERATURE AND RECORDS REVIEW, LUCERNE VALLEY  
SOLAR PLANT, SAN BERNARDINO COUNTY, CALIFORNIA**

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Dear Ms. McCollum,

The Division of Geological Sciences of the San Bernardino County Museum (SBCM) has completed a literature review and records search for the above-named project property in the Lucerne Valley region of San Bernardino County, California. The proposed project property is situated in portions of sections 19, 20, 29, and 30, Township 4 North, Range 2 East, San Bernardino Base and Meridian, as seen on the Cougar Buttes, California 7.5' USGS topographic quadrangle (1971 edition).

Previous geologic mapping (Bortugno and Spittler, 1986) indicates that the proposed project property is located entirely upon Quaternary younger alluvium of Holocene or recent age. These sediments have low potential to contain significant nonrenewable paleontologic resources, and so are assigned low paleontologic sensitivity. However, these sediments may overlies older Pleistocene alluvium present in the subsurface. If present, this alluvium would have high potential to contain significant nonrenewable paleontologic resources, depending upon its lithology and depositional context. Similar older Pleistocene sediments elsewhere throughout this region have yielded the fossil remains of Pleistocene vertebrates (Jefferson, 1991; Scott and Cox, 2008). Excavation into these older sediments within the boundaries of this area therefore has high potential to contain significant nonrenewable paleontologic resources, where the sediments are not previously disturbed.

For this review, I conducted a search of the Regional Paleontologic Locality Inventory (RPLI) at the SBCM. The results of this search indicate that no previously known paleontologic resource localities are recorded by the SBCM from the proposed project site, nor from within several miles in any direction.

### Recommendations

The results of the literature review and the check of the RPLI at the SBCM demonstrate that excavation for the proposed project property has low potential to impact significant nonrenewable

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fossil resources. Undifferentiated Quaternary alluvium mapped at the surface has low paleontologic sensitivity. No program to mitigate impacts to fossil resources is recommended for this sedimentary unit at this time.

However, should Pleistocene older alluvium or other fossil-bearing rock units be encountered in the subsurface, or should significant vertebrate fossils be exposed during excavation, a qualified vertebrate paleontologist would be required to develop a program to mitigate impacts to nonrenewable paleontologic resources, including full curation of all recovered resources (Scott and others, 2004). This program would need to be consistent with the provisions of the California Environmental Quality Act (Scott and Springer, 2003), as well as with regulations currently implemented by the County of San Bernardino and the proposed guidelines of the Society of Vertebrate Paleontology.

The County of San Bernardino (Development Code §82.20.040) defines a qualified vertebrate paleontologist as meeting the following criteria:

Education: An advanced degree (Masters or higher) in geology, paleontology, biology or related disciplines (exclusive of archaeology).

Professional experience: At least five years professional experience with paleontologic (not including cultural) resources, including the collection, identification and curation of the resources.

The County of San Bernardino (Development Code §82.20.030) requires that paleontologic mitigation programs include, but not be limited to:

(a) Field survey before grading. In areas of potential but unknown sensitivity, field surveys before grading shall be required to establish the need for paleontologic monitoring.

(b) Monitoring during grading. A project that requires grading plans and is located in an area of known fossil occurrence, or that has been demonstrated to have fossils present in a field survey, shall have all grading monitored by trained paleontologic crews working under the direction of a qualified professional, so that fossils exposed during grading can be recovered and preserved. Paleontologic monitors shall be equipped to salvage fossils as they are unearthed, to avoid construction delays, and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitors shall be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Monitoring is not necessary if the potentially-fossiliferous units described for the property in question are not present, or if present are determined upon exposure and examination by qualified paleontologic personnel to have low potential to contain fossil resources.

(c) Recovered specimens. Qualified paleontologic personnel shall prepare recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover

small invertebrates and vertebrates. Preparation and stabilization of all recovered fossils is essential in order to fully mitigate adverse impacts to the resources.

(d) Identification and curation of specimens. Qualified paleontologic personnel shall identify and curate specimens into the collections of the Division of Geological Sciences, San Bernardino County Museum, an established, accredited museum repository with permanent retrievable paleontologic storage. These procedures are also essential steps in effective paleontologic mitigation and CEQA compliance. The paleontologist must have a written repository agreement in hand prior to the initiation of mitigation activities. Mitigation of adverse impacts to significant paleontologic resources is not considered complete until curation into an established museum repository has been fully completed and documented.

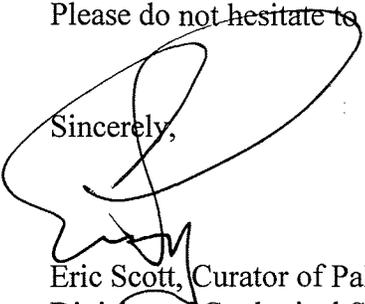
(e) Report of findings. Qualified paleontologic personnel shall prepare a report of findings with an appended itemized list of specimens. A preliminary report shall be submitted and approved before granting of building permits, and a final report shall be submitted and approved before granting of occupancy permits. The report and inventory, when submitted to the appropriate Lead Agency along with confirmation of the curation of recovered specimens into the collections of the San Bernardino County Museum, will signify completion of the program to mitigate impacts to paleontologic resources.

## References

- Bortugno, E.J. and T. E. Spittler, 1986. Geologic map of California, San Bernardino sheet, scale 1:250,000. California Division of Mines and Geology Regional Geologic Map Series, Map 3A.
- Jefferson, G.T., 1991. A catalogue of late Quaternary vertebrates from California: Part Two, mammals. Natural History Museum of Los Angeles County Technical Reports, No. 7.
- Scott, E. and S.M. Cox, 2008. Late Pleistocene distribution of *Bison* (Mammalia; Artiodactyla) in the Mojave Desert of southern California and Nevada. In X. Wang and L.G. Barnes (eds.) Geology and Vertebrate Paleontology of Western and Southern North America, Contributions in Honor of David P. Whistler. Natural History Museum of Los Angeles County Science Series No. 41, p. 359 - 382.
- Scott, E. and K. Springer, 2003. CEQA and fossil preservation in southern California. The Environmental Monitor, Fall 2003, p. 4-10, 17.
- Scott, E., K. Springer and J.C. Sagebiel, 2004. Vertebrate paleontology in the Mojave Desert: the continuing importance of "follow-through" in preserving paleontologic resources. In M.W. Allen and J. Reed (eds.) The human journey and ancient life in California's deserts: Proceedings from the 2001 Millennium Conference. Ridgecrest: Maturango Museum Publication No. 15, p. 65-70.

Please do not hesitate to contact us with any further questions you may have.

Sincerely,



Eric Scott, Curator of Paleontology  
Division of Geological Sciences  
San Bernardino County Museum

***Appendix G***  
***Dust Control Plan***

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# **LUCERNE SOLAR PROJECT**

## **Dust Control Plan**

Prepared by

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**Revised**

**July 2010**

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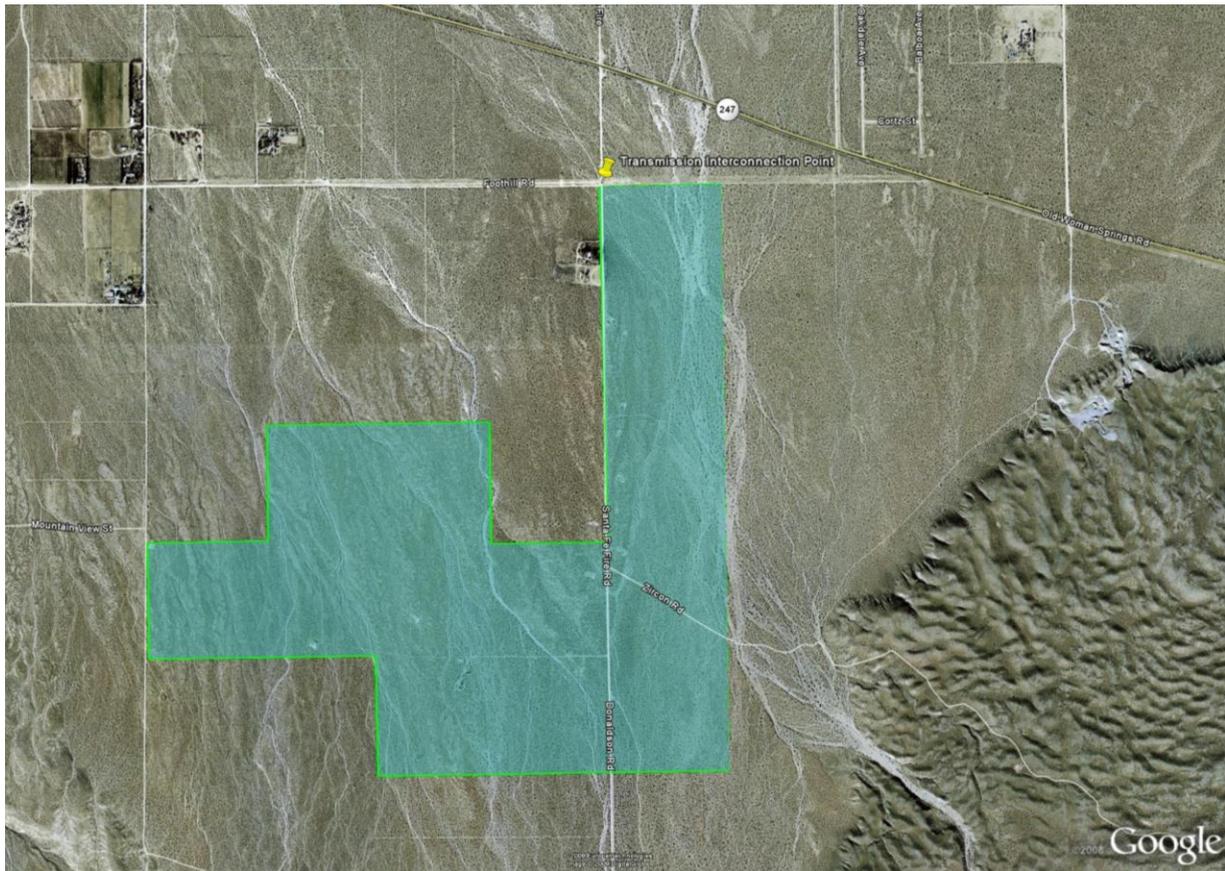
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# Dust Control Plan

## 1.0 INTRODUCTION

FRV, Lucerne Solar L.P. (Lucerne Solar), is planning to build a phased construction, 45 MW, solar photovoltaic power plant on 516 acres of BLM land in San Bernardino County. The site of the proposed Projects is located on Santa Fe Fire Trail, south of Old Woman Springs Road approximately 8 miles east of the junction of Barstow Road and Old Woman Springs Road as shown on Figure 1: General Facility Location.



**Figure 1: General Facility Location**

The first phase will be 20 MW beginning construction in late 2010. The remaining phase of approximately 25 MW is dependent upon the availability of transmission capacity and the timing of future power sales contracts.

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Construction of the proposed facilities will result in fugitive dust. Fugitive dust is particulate matter that is suspended in the air by wind or human activities and does not come from a point source such as a stack. Air quality regulations require the use of control techniques to minimize fugitive dust emissions. The goal is to eliminate visible airborne fugitive dust to the extent possible, given the construction techniques and requirements. This plan is designed to reduce fugitive dust emissions to a minimum from the Project.

## **2.0 FUGITIVE DUST SOURCES ON THE LUCERNE SOLAR PROJECT**

Fugitive dust can be created directly from the activities involved in project construction such as vegetation removal, grading, trenching, backfill, or topsoil replacement. Vehicles and equipment moving rapidly on unsurfaced roads and work areas can also create dust, while significant wind action on unprotected spoil piles or topsoil storage areas is yet another source of dust. These activities consist of a series of different operations, each with its own duration and potential for dust generation. In other words, emissions from any single construction site can be expected 1) to have a definable beginning and an end, and 2) to vary substantially over different phases of the construction process. This is in contrast to most other fugitive dust sources, where emissions are either relatively steady or follow a discernable annual cycle.

This dust control plan applies only to fugitive dust generated by construction activities and vehicle trips by support equipment on unpaved roads.

## **3.0 APPLICABLE RULES**

The Lucerne Solar project is under the purview of the Mojave Desert Air Quality Management District (MDAQMD). The district's RULE 403.2, Fugitive Dust Control for the Mojave Desert Planning Area, was developed to ensure that the National Ambient Air Quality Standards (NAAQS) for PM10 will not be exceeded due to anthropogenic sources of fugitive dust within the Mojave Desert Planning Area (MDPA); and to implement the control measures contained in the Mojave Desert Planning Area Federal PM10 Attainment Plan. RULE 403.2 is applicable to the Lucerne Solar project due to its construction activities on Bureau of Land Management (BLM) land.

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## 4.0 DUST CONTROL MEASURES IDENTIFIED BY RULES

During construction, the Lucerne Solar Project shall:

- Use periodic watering for short-term stabilization of Disturbed Surface Area to minimize visible fugitive dust emissions. For purposes of this Rule, use of a water truck to maintain moist disturbed surfaces and actively spread water during visible dusting episodes shall be considered sufficient to maintain compliance;
- Take actions sufficient to prevent project-related Trackout onto paved surfaces;
- Cover loaded haul vehicles while operating on Publicly Maintained paved surfaces;
- Stabilize graded site surfaces upon completion of grading when subsequent development is delayed or expected to be delayed more than thirty days, except when such a delay is due to precipitation that dampens the disturbed surface sufficiently to eliminate Visible Fugitive Dust emissions;
- Cleanup project-related Trackout or spills on Publicly Maintained paved surfaces within twenty-four hours (24); and
- Reduce non-essential Earth-Moving Activity under High Wind conditions. For purposes of this Rule, a reduction in Earth-Moving Activity when visible dusting occurs from moist and dry surfaces due to wind erosion shall be considered sufficient to maintain compliance.
- Provide Stabilized access route(s) to the project site as soon as is feasible. For purposes of this Rule, as soon as is feasible shall mean prior to the completion of Construction/Demolition activity;
- Maintain natural topography to the extent possible;
- Construct parking lots and paved roads first, where feasible;
- Construct upwind portions of project first, where feasible; and
- Apply dust palliative with low environmental toxicity such as, synthetic polymers like Soil Sement®, Soil Seal and Soilmaster™.

During operation when undergoing weed abatement activity, the Lucerne Solar Project shall not:

- Disrupt the soil crust to the extent that Visible Fugitive Dust is created due to wind erosion.

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## **5.0 ADDITIONAL DUST CONTROL MEASURES**

### **5.1 RESIDENTIAL AREAS AND HIGHWAYS**

Dust will be controlled so that impacts to adjacent residences are kept to a minimum at all times. Fugitive dust emissions near residential areas will be controlled either by the application of water on the construction right-of-way and access roads, by water and tackifier on topsoil and spoil piles, speed control on exposed surface areas, and the mechanical covering of exposed piles with plastic or other wind-resistant covers.

## **6.0 SAFETY MEASURES FOR DUSTY CONDITIONS**

In areas adjacent to highways where dust could cause poor visibility, grading activities will be restricted to prevent unsafe conditions. Restrictions may include applying water as close to earth-moving equipment as possible, slowing the speed of construction equipment, spacing equipment further apart, increased traffic control, or shutting down operations. Lucerne Solar will coordinate with the California Highway Patrol to ensure adequate traffic control measures are in place, including the possibility of using flaggers to control traffic if extreme low visibility conditions develop.

## **7.0 MONITORING AND RECORDKEEPING**

Environmental Inspectors will be primarily responsible for monitoring and enforcing the need for dust control. The contractor will implement dust control as specified above, and the Environmental Inspectors will be responsible for making sure that dust control is effective and recorded.

