APPENDIX 5.8A

Paleontological Resources Assessment

PALEONTOLOGICAL RESOURCE ASSESSMENT

CHULA VISTA ENERGY EFFICIENCY UPGRADE PROJECT

IN THE CITY OF CHULA VISTA

SAN DIEGO COUNTY, CALIFORNIA

LSA

December 2006

PALEONTOLOGICAL RESOURCES ASSESSMENT

CHULA VISTA ENERGY EFFICIENCY UPGRADE PROJECT

IN THE CITY OF CHULA VISTA

SAN DIEGO COUNTY, CALIFORNIA

Submitted to:

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Prepared by:

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LSA Project No. MME0601

Data Base Information:

Type of Study: Records Search, Survey
Sites Recorded: None
USGS Quadrangle: *Imperial Beach, California* 7.5′
Acreage: 3.82 acres
Key Words: Pleistocene Terrace Deposits, Quaternary Alluvium, Negative Survey

LSA

December 2006

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ABSTRACT

Under contract to MMC North America, LLC (MMC), LSA Associates, Inc. (LSA) conducted a paleontological resource assessment of the Chula Vista Energy Efficiency Upgrade Project, located in the City of Chula Vista, in San Diego County, California. The assessment consisted of a locality search performed at the San Diego Natural History Museum (SDNHM) and a pedestrian field survey. The research and field survey were conducted to determine whether improvements and upgrades to the existing electrical facility would impact paleontological resources. The paleontological resources assessment was completed pursuant to the California Environmental Quality Act (CEQA) and in accordance with guidelines developed by the Society of Vertebrate Paleontologists (SVP, 1995).

The locality search indicated that no paleontological resources have been previously documented within the project area or within the 1.0-mile locality search radius. The sediments mapped within the project area include Quaternary Stream Terrace Deposits and Quaternary Alluvium/Colluvium (Kennedy and Tan, 1977). The LSA field survey showed that the entire ground surface property has been disturbed by grading. A recent geotechnical investigation indicates that a minimum of 23 feet of artificial fill underlies the entire project area (Jeffrey Kent, personal communication).

Deméré and Walsh (1993) have assigned the stream terrace deposits a moderate sensitivity and the alluvium/colluvium a low sensitivity for containing paleontological resources based on the occurrence of fossil localities within similar deposits in southern California. Any fossil recovered from these sediments would be scientifically important. Artificial fill has no sensitivity for containing paleontological resources and does not require mitigation monitoring. As such, monitoring is recommended only if excavation extends to the stream terrace deposits. If paleontological resources are identified during earthmoving activities when a paleontological monitor is not on site, ground-disturbing activities should be temporarily diverted around the find and a qualified paleontologist should be contacted to assess, and if necessary collect, the resource. Any resources that are discovered should be prepared to the point of identification, identified to the lowest taxonomic level possible, and curated into a museum with a retrievable storage system where they can be accessed by the scientific community. In addition, a final report will be prepared detailing the monitoring effort; if necessary, it will include an appended itemized inventory of identified specimens.

If project-related development, including large-diameter borings for footings, will not extend beneath the artificial fill that currently mantels the site, no mitigation will be required, as there will be no impacts to paleontological resources.

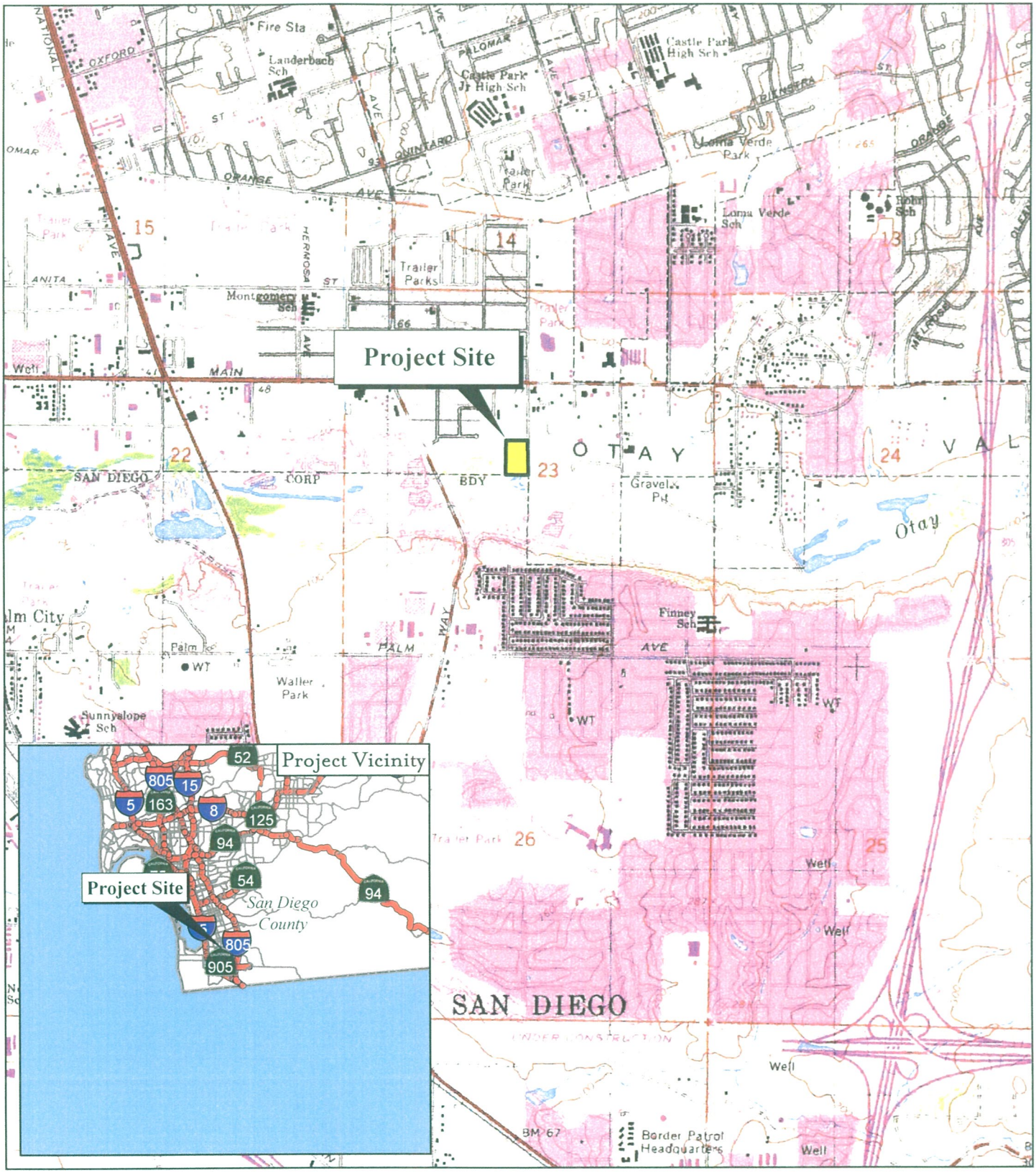
Please note that this report serves only as documentation of the paleontological findings for the project area and in no way represents a geological assessment. Therefore, this report should not be used as such.

INTRODUCTION

LSA is under contract to MMC to conduct a paleontological resource assessment for the Chula Vista Energy Efficiency Upgrade Project in the City of Chula Vista (City), San Diego County (County), California. This study was undertaken to determine whether paleontological resources are present in the project area. This assessment addresses the requirements of CEQA (as amended January 1, 2006): California Code of Regulations (CCR) Title 14, Chapter 3, Article 5 Section 15064.5 (Determining the Significance of Impacts on Historical and Unique Paleontological and Geological Resources).

The project area is located at 3497 Main Street. It is identified by San Diego County as Assessor Parcel Number 629-062-04-00. The project site is situated south of Main Street with an approximate set-back of 835 feet. There is no frontage along Main Street; access is provided via an access easement along the eastern perimeter of the project site. Project plans include installation and operation of two (GE) LM6000 combustion turbine units and removal of the existing 44.5 megawatt (MW) twin-pack simple cycle power plant once new units are operational. The project will increase efficiency of energy generation on site and is expected to add approximately 48 MW (net) to the existing site.

The project area consists of urban disturbed and developed land that has been landscaped with nonnative vegetation. The portions of the project site that have not been developed are graded, regularly maintained, and mowed. The project area is approximately 60 feet above mean sea level and can be found on the U.S. Geological Survey (USGS) 7.5-minute series topographic *Imperial Beach, California* quadrangle map within the southeast quarter of the southeast quarter of the northwest quarter section of Section 23 in Township 18 South, Range 2 West San Bernardino Baseline and Meridian (Figure 1). The project site is surrounded by light industrial/commercial businesses to the west; areas to the east are currently under construction for commercial use; a salvage yard exists to the north; and the Otay Valley Regional Park is located to the south.



LSA

FIGURE 1

LEGEND

PROJECT BOUNDARY

0 1,000 2,000 Feet

Chula Vista Energy Efficiency Upgrade
Project Location

SOURCE: USGS 7.5' QUAD, IMPERIAL BEACH (1975), CALIF.

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PURPOSE OF INVESTIGATION

This assessment was completed as required by the Environmental Element of the City's General Plan. This Element was developed "to improve sustainability through the responsible stewardship of Chula Vista's natural and paleontological resources; promotion of environmental health; and protection of persons and property from environmental hazards and the undesirable consequences of noise." In addition, the assessment was completed in accordance with paleontological mitigation guidelines developed by the SVP (1995). This program serves to reduce impacts to nonrenewable paleontological resources to a level that is less than significant.

DISCUSSION

Paleontological resources, or fossils, are the remains (such as bones, teeth, shells, leaves, or wood) and/or traces (such as tracks or burrows) of prehistoric animal and plant life. Generally, for something to be considered a fossil it must be at least 10,000 years old. Fossils provide direct evidence of ancient organisms and can document the patterns of organic evolution and extinction. In California, impacts to paleontological resources are addressed through the environmental review process pursuant to CEQA.

Paleontological remains are recognized as nonrenewable resources significant to our culture. A 1978 memorandum from Griswold E. Petty, the then Acting Associate Director of the Bureau of Land Management, stated:

> "There is no universally accepted definition for a significant scientific paleontological resource. A definite determination can only be made by a qualified, trained paleontologist. Using the following guidelines, a paleontological resource is of significant scientific and educational value if it:
>
> - provides important information of the evolutionary trends among organisms, relating living inhabitants of the earth to extinct organisms;
> - provides important information regarding development of biological communities or interaction between botanical and zoological biotas;
> - demonstrates unusual or spectacular circumstances in the history of life; and
> - is in short supply and in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and is not found in other geographic locations.
> - *All vertebrate fossils have been categorized as being of significant scientific value"* (emphasis added).

Significant paleontological resources are fossils or assemblages of fossils that are unique, unusual, rare, uncommon, or diagnostically or stratigraphically important and those that add to an existing body of knowledge in specific areas stratigraphically, taxonomically, or regionally. They include

fossil remains of large to very small aquatic and terrestrial vertebrates, remains of plants and animals previously not represented in certain portions of the stratigraphy, and assemblages of fossils that might aid stratigraphic correlations, particularly those offering data for the interpretation of tectonic events, geomorphologic evolution, paleoclimatology, and the relationships of aquatic and terrestrial species.

Paleontological resources can be thought of as including not just the fossil remains themselves but also the individual localities where those fossils are collected, and in a broader sense, the geologic formations or sedimentary units containing the fossils and localities. The relationship between geologic formations/units and the fossils that they can contain can be important for planning purposes because knowledge of the geology of a particular area makes it possible to predict where fossils may (or may not) be encountered. This relationship is known as paleontological sensitivity, which can range from none to high. A list of sensitivities for all formations and units within the San Diego area is contained in Demeré and Walsh (1993) and is explained in more detail below. Thus, in the early planning stages of a project, an assessment can quickly and uniformly be developed, and if necessary, mitigation measures developed to reduce impacts to paleontological resources within the project to a level that is less than significant.

City-Specific Purpose

Interpreting the paleontological record is an ongoing process that brings new discoveries and insights each year. This is especially the case in the City, where growth and development has resulted in the discovery of numerous paleontological resources. Over the past 20-plus years, mitigation of impacts to paleontological resources within the City has resulted in the discovery and salvage of thousands of significant fossils, including many that represent species new to science, or first occurrences in the southern California area.

According to the City's General Plan, Chula Vista assesses and mitigates the potential impacts of private development and public facilities and infrastructure to paleontological resources pursuant to the provisions of CEQA. Pursuant to Section 15065 of the CEQA Guidelines, a lead agency may find that a project may have a significant effect on the environment where the project has the potential to eliminate important examples of the major periods of California prehistory, which includes the destruction of significant paleontological resources.

Significant impacts to sensitive paleontological resources can be mitigated through a Paleontological Resources Impact Mitigation Program (PRIMP). Typically, a PRIMP consists of monitoring for paleontological resources during excavation operations and the collection and recovery of any significant resources that are observed. Recovered resources are then curated at an appropriate institution where they are available for immediate and future paleontological study and can be displayed for public viewing.

Sensitivity

Planners and paleontologists work together to help preserve the County's fossil heritage during the environmental review process by using a system to determine the potential for the occurrence of

fossils. At the early stages of development, a paleontological assessment is conducted to determine the level of paleontological sensitivity for a project.

According to the SVP, sensitivity ratings are either high, low, or undetermined (SVP, 1995). Sedimentary rock units with high potential for containing significant nonrenewable paleontological resources are rock units within which vertebrate or significant invertebrate fossils have been determined to be present or likely to be present. Rock units with a low potential for containing significant nonrenewable paleontological resources are units within which vertebrate or significant invertebrate fossils have been determined not to be present or not likely to be present. Areas underlain by sedimentary rocks for which literature and unpublished studies are not available have undetermined potential for containing significant paleontological resources.

Sensitivities for geologic formations/units within the County are more detailed than the SVP sensitivities and are specifically dependent fossils that have (or have not) been recovered from each formation/unit within the County. The sensitivities for each of the geologic formations/units in San Diego are included in a report prepared for the San Diego Planning Commission on the Paleontological Resources of San Diego County (Deméré and Walsh, 1993). The rating system includes high, moderate, low, marginal, and zero and each is detailed below.

- **High:** Geologic formations known to contain paleontological localities with rare, well-preserved, and/or critical fossil materials for stratigraphic or paleoenvironmental interpretation and fossils providing important information about the paleobiology and phylogeny (evolutionary history) of animal and plant groups. Generally speaking, highly sensitive formations are known to produce vertebrate fossil remains or are considered to have the potential to produce such remains.
- **Moderate:** Geologic formations known to contain paleontological localities with moderately preserved common elsewhere, or stratigraphically long-ranging fossil material. The moderate sensitivity category is also applied to geologic formations that are judged to have a strong but unproven potential for producing important fossil remains (e.g., Pre-Holocene sedimentary rock units representing low to moderate energy, marine to nonmarine depositional settings).
- **Low:** Geologic formations that, based on their relatively recent formation or high-energy depositional history, are judged unlikely to produce important fossil remains. Low-sensitivity formations may produce a low abundance of invertebrate fossil remains.
- **Marginal:** Geologic formations that are composed of pyroclastic volcanic rocks or metasedimentary rocks, but which nevertheless have a limited potential to yield fossil remains from certain sedimentary lithologies at localized outcrops.
- **Zero:** Geologic formations that are entirely plutonic in origin and therefore have no potential for producing fossil remains.

METHODS

LOCALITY SEARCH

A paleontological locality search was conducted at the SDNHM. This included a review of area geology and any fossil resources recovered within 1 mile of the project area. In addition, the sensitivity of the sediments exposed on the project site to produce fossil remains was determined based on fossil finds from similar sediments in the southern California area. In addition, Ninyo & Moore was contacted to determine what sediments were encountered in the subsurface during its geotechnical investigation of the project area.

The purpose of the search was to establish the status and extent of previously recorded paleontological resources within and adjacent to the project area and to determine which geologic sediments were likely to be exposed during ground-disturbing activities. With this knowledge, LSA could make an informed assessment of the potential effects of the proposed project on paleontological resources and anticipate the kinds of resources that might be encountered during monitoring

FIELD SURVEY

A reconnaissance-level pedestrian field survey of the project area was conducted on October 10, 2006, by Phil Fulton. The survey was conducted by walking parallel transects spaced approximately 10 meters (m) apart over all areas where ground surface was visible until the entire project area had been surveyed. Back dirt from animal burrows was also examined for evidence of paleontological remains.

If any resources were located in situ, the surveyor was prepared to assess the finds for significance and, if necessary, document them. If the find was deemed to be significant, the surveyor was instructed to note its location with a Garmin global positioning system (GPS) unit. The use of GPS units allows localities to be quickly and accurately plotted on a standard 7.5′ topographical map, as well as be easily relocated. The surveyor was also instructed to fill out a fossil locality sheet that contains important information such as field number of the locality, tentative identification of the find, description of the sediments, formation name, location of the find within the project, GPS information, and elevation.

The purpose of this survey was to identify any paleontological resources that might be impacted by the proposed project. In this way, LSA could document and collect paleontological material prior to the beginning of ground-disturbing activities and locate areas within the project that might contain abundant remains.

RESULTS

LOCALITY SEARCH

Geology

The project area is located at the northern end of the Peninsular Range geomorphic province, a 1,450-kilometer (km) (900-mile) long northwest-southeast trending structural block that extends from the tip of Baja California to the Transverse Ranges and includes the Los Angeles Basin (Norris and Webb, 1976). The total width of the province is approximately 362 km (225 miles), with a maximum landbound width of 105 km (65 miles) (Sharp, 1976). This region is characterized by a series of mountain ranges separated by northwest-trending valleys subparallel to faults branching from the San Andreas Fault. The trend of topography is similar to that of the Coast Ranges Geomorphic Province, located to the north, but the geology is more like that of the Sierra Nevada, with granitic rock intruding on the older metamorphic rocks. It contains extensive pre-Cretaceous (> 65 million years ago) igneous and metamorphic rocks covered by limited exposures of post-Cretaceous sedimentary deposits.

Specifically, the project is located on the north side of the Otay River, which has its source in the San Ysidro and Jamul Mountains. According to the geology map prepared by Kennedy and Tan (1977), the project is underlain by Quaternary alluvium/slope wash in the southern half of the project and Quaternary stream terrace deposits in the northern half of the project area.

In November 2006, a geotechnical investigation was conducted by Ninyo & Moore in which it placed geotechnical borings across the project area. The results of this investigation indicated that there were no surficial exposures of either alluvium or stream terrace deposits and in fact, there is at least 23 feet of artificial fill placed across the entire project (Jeffrey Kent, personal communication). These units are described in more detail below.

Quaternary Stream Terrace Deposits represent the remnants of abandoned flood plains, stream beds, or valley/canyon floors produced during an earlier stage of deposition. These deposits can consist of interbedded silt, clayey sand, and conglomeratic coarse-grained sands. Colors can vary from light yellows to browns to reds. These deposits are sometimes referred to as Pleistocene alluvium, Pleistocene fan deposits, or older alluvium.

Holocene Alluvium is a geologically recent deposit of gravel, sand, silt, or mud that was deposited by flowing water in a stream or river. It is found along old and active stream and river drainages and is usually loosely consolidated. Sand grains are generally subangular to subrounded, while the gravels and cobbles are rounded to well-rounded.

Holocene Colluvium is a geologically recent deposit of gravel, sand, silt, or mud that is usually found on the sides or at the base of slopes or cliffs. These deposits are generally loosely consolidated and were primarily deposited by gravity. Therefore, the sediments in colluvium generally did not travel far from their source and are chiefly composed of detritus of the nearby or underlying bedrock formations.

Artificial fill is soil/dirt that is placed by humans and can be either unconsolidated or loosely compacted, or engineered and densely compacted. Composition varies and is dependent on the source. It is often mixed with modern debris such as bricks, concrete, asphalt, glass, or wood. Depending on the area, thickness can be 1 foot or less to several 100 feet.

Paleontology

The results of the locality search indicate that no paleontological resource have been found within the project area or within the 1-mile search radius. According to Demeré and Walsh (1993), the sediments mapped as stream terrace deposits have a moderate sensitivity for containing paleontological remains, and the alluvium and slope wash have a low sensitivity for containing paleontological resources (see below). The locality search letter from the SDNHM is included in Appendix A.

Fossils are well documented from stream terrace deposits. Remains of Rancholabrean type animals such as elephants, horses, bison, camels, saber-tooth cats, deer, and sloths are known from these activities. In addition, smaller vertebrates (including birds, rodents, reptiles, and amphibians) have also been found (Miller, 1971; Jefferson, 1987, 1991a, and 1991b; Conkling, 1988 and 1997; Reynolds and Reynolds, 1991; Woodburne, 1991; Scott and Cox, 1993; Springer and Scott, 1994; Pajak and others, 1996; Scott, 1998; Springer and others, 1998, 1999). The potential exists to encounter similar fossils during ground-disturbing activities whenever these sediments are encountered.

Both the Holocene Alluvium and Colluvium are generally too young (less than 10,000 years) to contain in situ fossil remains. If conditions are just right, however, remains may be fossilized in less than 10,000 years. Occasionally, fossils from upstream formations or the underlying bedrock from which they originated are encountered. However, these remains are generally not considered significant since they are not in their original context.

Although artificial fill can contain fossils, they are not considered significant, as they are no longer in their original context within the geologic record.

Paleontological Sensitivities

The paleontological sensitivities for each of the units that are expected to be encountered during ground-disturbing activities within the project area are listed in Table A. A brief reasoning for each sensitivity designation is also discussed below.

Table A: Paleontological Sensitivities of Units within the Project Area

Formation/Unit	Sensitivity*
Pleistocene stream terrace deposits	Moderate
Holocene alluvium and slope wash	Low
Artificial fill	—

*Deméré and Walsh, 1993.

The Pleistocene stream terrace deposits are mapped on the northern half of the project area (Kennedy and Tan, 1975) (see Appendix A). They can contain Pleistocene vertebrate fossils. Although these fossils are significant, they have only been encountered in a few widely scattered places across San Diego County. Thus, these Pleistocene alluvial deposits were assigned a moderate paleontological resource sensitivity by Deméré and Walsh (1993). Any fossils recovered from this unit would be scientifically significant.

The Holocene alluvial and slope wash deposits are mapped within the southern half of the project area (Kennedy and Tan, 1975) (see Appendix A). Fossils are generally unknown from these deposits in San Diego County. Mainly based on their young age, these recent alluvial deposits in San Diego County are assigned a low paleontological resource sensitivity by Deméré and Walsh (1993).

Artificial fill is not mapped on the geology map prepared by Kennedy and Tan (1977). However, it was encountered during the geotechnical investigation for the project by Ninyo & Moore (Jeffrey Kent, personal communication). Artificial fill was not officially rated by Deméré and Walsh (1993). However, because it has been placed at its current location by humans, any fossils that may be in the fill matrix are out of context and would not be scientifically important. Thus, artificial fill is not considered paleontologically sensitive, and mitigation monitoring is not required in these sediments.

FIELD SURVEY

No paleontological resources were identified during the field survey. The survey of the parcel indicated that the entire ground surface has been disturbed by grading and other development associated with the current electrical facility and/or past uses of the site. Buried utility lines also run through the property. Ground visibility was excellent in the undeveloped northern portion of the project because the area had been recently mowed. The soil consisted of coarse-grained sand, gravel, and cobbles. Photographs of the project area are included in Appendix B.

RECOMMENDATIONS

No paleontological resources were identified during the field survey. According to Demeré and Walsh (1993), sediments mapped within the project area have a sensitivity rating of low to moderate for containing paleontological resources. However, according to the geotechnical investigation, there is at least 23 feet of artificial fill across the entire project area. Therefore, there is only a potential to encounter paleontological resources if excavation extends to depths below the fill, which may occur during excavation for deep footings if required by the geotechnical consultant. In order to mitigate potential adverse impacts to nonrenewable paleontological resources in these sediments, LSA recommends that a qualified paleontologist be retained and that a PRIMP be implemented and followed for the project. The PRIMP should be consistent with the guidelines of the SVP (SVP, 1995) and should include but not be limited to the following mitigation measures.

PAL-1 Attendance at the pregrade meeting by a qualified paleontologist or his/her representative. At this meeting the paleontologist will explain the likelihood for encountering paleontological resources, what resources may be discovered, and the methods that will be employed if anything is discovered (see PAL-2 and PAL-3).

PAL-2 During construction excavation, a qualified vertebrate paleontologic monitor shall be present on a full-time basis whenever excavation will occur within the sediments that have a moderate sensitivity rating and on a spot-check basis in sediments that have a low sensitivity rating. The monitor shall inspect fresh cuts and/or spoils piles to recover paleontological resources. The monitor shall be empowered to temporarily divert construction equipment away from the immediate area of the discovery. The monitor shall be equipped to rapidly stabilize and remove fossils to avoid prolonged delays to construction schedules. If large mammal fossils or large concentrations of fossils are encountered, the developer shall consider using heavy equipment on site to assist in the removal and collection of large materials.

PAL-3 Localized concentrations of small (or micro-) vertebrates may be found in all native sediments. Therefore, it is recommended that these native sediments occasionally be spot-screened through one-eighth to one-twentieth-inch mesh screens to determine whether microfossils are present. If microfossils are encountered, additional sediment samples (up to 3 cubic yards or 6,000 pounds) shall be collected and processed through one-twentieth-inch mesh screens to recover additional fossils.

PAL-4 Any recovered specimens shall be prepared to the point of identification and permanent preservation. This includes the picking of any washed mass samples to recover small invertebrate and vertebrate fossils, the removal of surplus sediment from around larger specimens to reduce the volume of storage for the repository and the storage cost for the developer, and the addition of approved chemical hardeners/stabilizers to fragile specimens.

PAL-5 Specimens shall be identified to the lowest taxonomic level possible and curated into an institutional repository with retrievable storage. The repository institutions usually charge a one-time fee based on volume, so removing surplus sediment is important. The repository institution may be a local museum or university that has a curator who can retrieve the specimens on request.

PAL-6 A report shall be prepared that details the methods and results of the monitoring program, even if the results are negative. If applicable, this shall include an appended itemized inventory of identified specimens. This report shall be presented to the developer for submission to the City for review. When the review process has been completed, the revised document shall signify completion of the PRIMP. A copy of the final report and the accession inventory shall be forwarded to the repository institution and any other interested parties such as the SDNHM and the City.

By following the above guidelines, impacts to nonrenewable paleontological resources will be reduced to levels that are less than significant. If project-related development, including large-diameter borings for footings, will not extend beneath the artificial fill that currently mantels the site to a minimum depth of 23 feet, no mitigation will be required, as there will be no impacts to paleontological resources.

Please note that this report serves only as documentation of the paleontological findings for the project area and in no way represents a geological assessment. Therefore, this report should not be used as such.

REFERENCES

Conkling, S.W.
1988 *A Floral and Fauna Analysis of Clark Regional Park (La Habra Formation: Rancholabrean), Orange County California,* Abstract, Journal of Vertebrate Paleontology, 8(3), p. 12A.
1997 Report of Paleontological Resource Monitoring , Trabuco Retention Basin, Orange County, California. Prepared by LSA Associates for the County of Orange Environmental Management Agency. On file at LSA.

Deméré, Tom A., and S. L. Walsh
1993 *Paleontological Resources, County of San Diego.* Unpublished technical report prepared for the Department of Public Works, San Diego County: 1–68.

Jefferson, George T.
1987 *A Catalogue of Rancholabrean Vertebrate Taxa from Localities in the United States, Canada and Mexico, West of the Rocky Mountains*, Unpublished Manuscript, 213p.
1991a *A Catalogue of Late Quaternary Vertebrates from California: Part One. Non-marine Lower Vertebrate and Avian Taxa.* Natural History Museum of Los Angeles County Technical Reports Number 5, Los Angeles.
1991b *A Catalogue of Late Quaternary Vertebrates from California: Part Two. Mammals.* Natural History Museum of Los Angeles County Technical Reports Number 7, Los Angeles.

Kennedy, M. P., and S. S. Tan
1977 *Geology of National City, Imperial Beach, and Otay Mesa Quadrangles, Southern San Diego Metropolitan Area, California.* California Division of Mines and Geology, Map Sheet 29.

Miller, W. E.
1971 *Pleistocene Vertebrates of the Los Angeles Basin and Vicinity (Exclusive of Rancho La Brea)*, Los Angeles County Museum of Natural History Bulletin, Science: No. 10.

Norris, R.M., and R.W. Webb
1976 *Geology of California*, John Wiley and Sons, Inc., Santa Barbara.

Pajak, A.F. III, E. Scott, and C.J. Bell
1996 *A Review of the Biostratigraphy of Pliocene and Pleistocene Sediments in the Elsinore Fault Zone, Riverside County, California* In C.J. Bell and S.S. Sumida (eds.), The uses of vertebrate fossils in biostratigraphic correlation. PaleoBios 17 (2–4): 27–48.

Reynolds, R.E. and R.L. Reynolds
1991 *The Pleistocene Beneath our Feet: Near-surface Pleistocene Fossils in Inland Southern California Basins*. In: Inland Southern California: the last 70 million years, M.O. Woodburne, R.E. Reynolds, and D.P. Whistler, eds. Redlands, San Bernardino County Museum Special Publication 38(3 and 4): 41–43.

Scott, E.
1998 Equus scotti *from Southern California.* Journal of Vertebrate Paleontology 18(3): 76-A.

Scott, E. and S.M. Cox
1993 *Arctodus simus (Cope), 1879 from Riverside County, California*. In R.J. Dundas and D.J. Long (eds.), new additions to the Pleistocene vertebrate record of southern California. PaleoBios 15(2): 27– 36.

Sharp, R. P.
1976 *Geology: Field Guide to Southern California.* Kendall/Hunt Publishing Company; 2nd edition, 181 pp.

Society of Vertebrate Paleontology
1995 *Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontologic Resources: Standard Guidelines.* Society of Vertebrate Paleontology *News Bulletin*, No. 163, January 1995: 22–27.

Springer, K.B., and E. Scott
1994 *First Record of Late Pleistocene Vertebrates from the Domenigoni Valley, Riverside County, California.* Journal of Vertebrate Paleontology 14 (supplement to 3):47A.

Springer, K.B., E. Scott, L.K. Murray, and W.G. Spaulding
1998 *Partial Skeleton of a Large Individual of* Mammut americanum *from the Domenigoni Valley, Riverside County, California*. Journal of Vertebrate Paleontology 18(3): 78-A.

Springer, K.B., E. Scott, J.C. Sagebiel, and K.M. Scott
1999 *A Late Pleistocene Lake Edge Vertebrate Assemblage from the Diamond Valley, Riverside County, California*. Journal of Vertebrate Paleontology 19(3): 77-A.

Woodburne, M. O.
1991 *The Cajon Valley.* In: Inland Southern California: the last 70 million years, M.O. Woodburne, R.E. Reynolds, and D.P. Whistler, eds. Redlands, San Bernardino County Museum Special Publication 38(3 and 4): 41–43.

APPENDIX A

LOCALITY SEARCH LETTER

SAN DIEGO NATURAL HISTORY MUSEUM
BALBOA PARK - SAN DIEGO SOCIETY OF NATURAL HISTORY - ESTABLISHED 1874

November 3, 2006

Mr. Brooks Smith
LSA Associates, Inc.
20 Executive Park, Suite 200
Irvine, CA 92614

RE: Paleontological record search and paleontological resource sensitivity assessment: The Chula Vista Energy Project, City of Chula Vista, California (LSA project number MME0601)

Dear Mr. Smith:

This letter presents the results of a record search conducted for the Chula Vista Energy Project site. This 3.5 acre site is located within the City of Chula Vista and is located east of Interstate 5 and west of Interstate 805. The project site is south of Main Street, east of Teena Drive, west of Reed Court, and is bound to the south by Otay Valley Regional Park.

Kennedy and Tan (1977) mapped the sedimentary rocks underlying the project area (Figure 1). The rocks in the northern portion of the project area have been mapped as "Stream-terrace deposits" (Q_t) and the rocks underlying the southern portion of the project area have been mapped as "Alluvium and slopewash" ($Q_{al} + Q_{sw}$). Deméré and Walsh (1993) assigned the Quaternary-age stream terrace deposits a moderate paleontological resource sensitivity, based on the occurrence of fossil localities in similar deposits cropping out in several areas in the southern portion of San Diego County. The alluvium and slopewash deposits were assigned a low paleontological resource sensitivity in this same report.

The museum has no recorded localities located within a one mile radius of the project site (see Figure 2). Two museum recorded localities do occur in the nearby vicinity. Both of these localities occur in marine sandstones of the Pliocene age San Diego Formation. These localities have produced fossils of marine invertebrates (e.g., gastropods, pelecypods, and scaphopods). Future excavation activities associated with the Chula Vista Energy Project site will likely impact paleontologically sensitive sedimentary deposits. For this reason a complete paleontological resource mitigation program should be implemented. Any fossils recovered from either of the geologic units mapped on the project site are likely to be scientifically significant.

If you have any questions concerning my findings please feel free to contact me at 619-255-0320 or mhart@sdnhm.org.

Sincerely,

Margaret Hart

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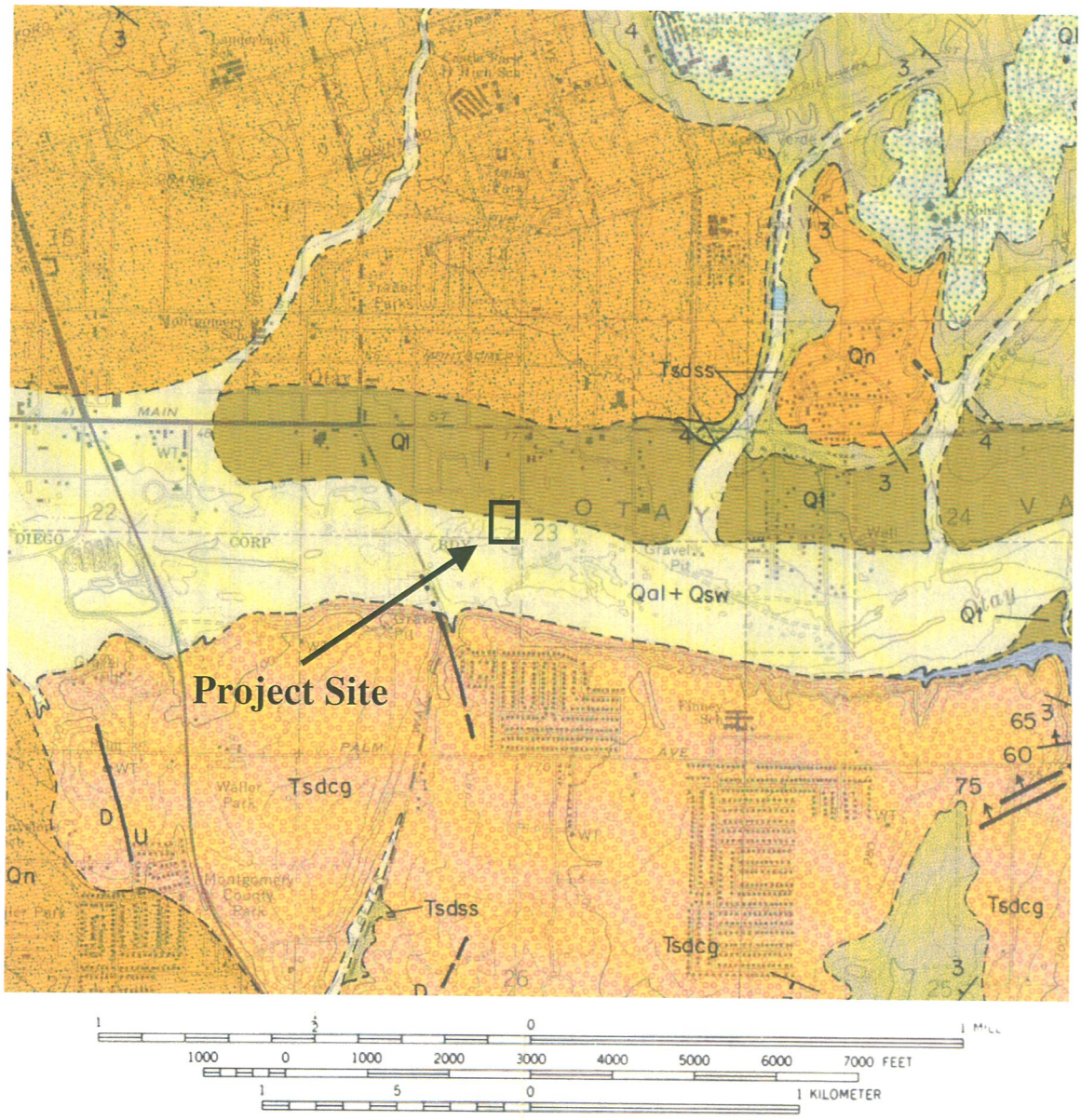

Figure 1: Geologic map showing the approximate location of the Chula Vista Energy Project site in relation to mapped sedimentary rock units. Q_t: Stream-terrace deposits; $Q_{al} + Q_{sw}$: Alluvium and slopewash (map detail from: Kennedy and Tan, 1977).

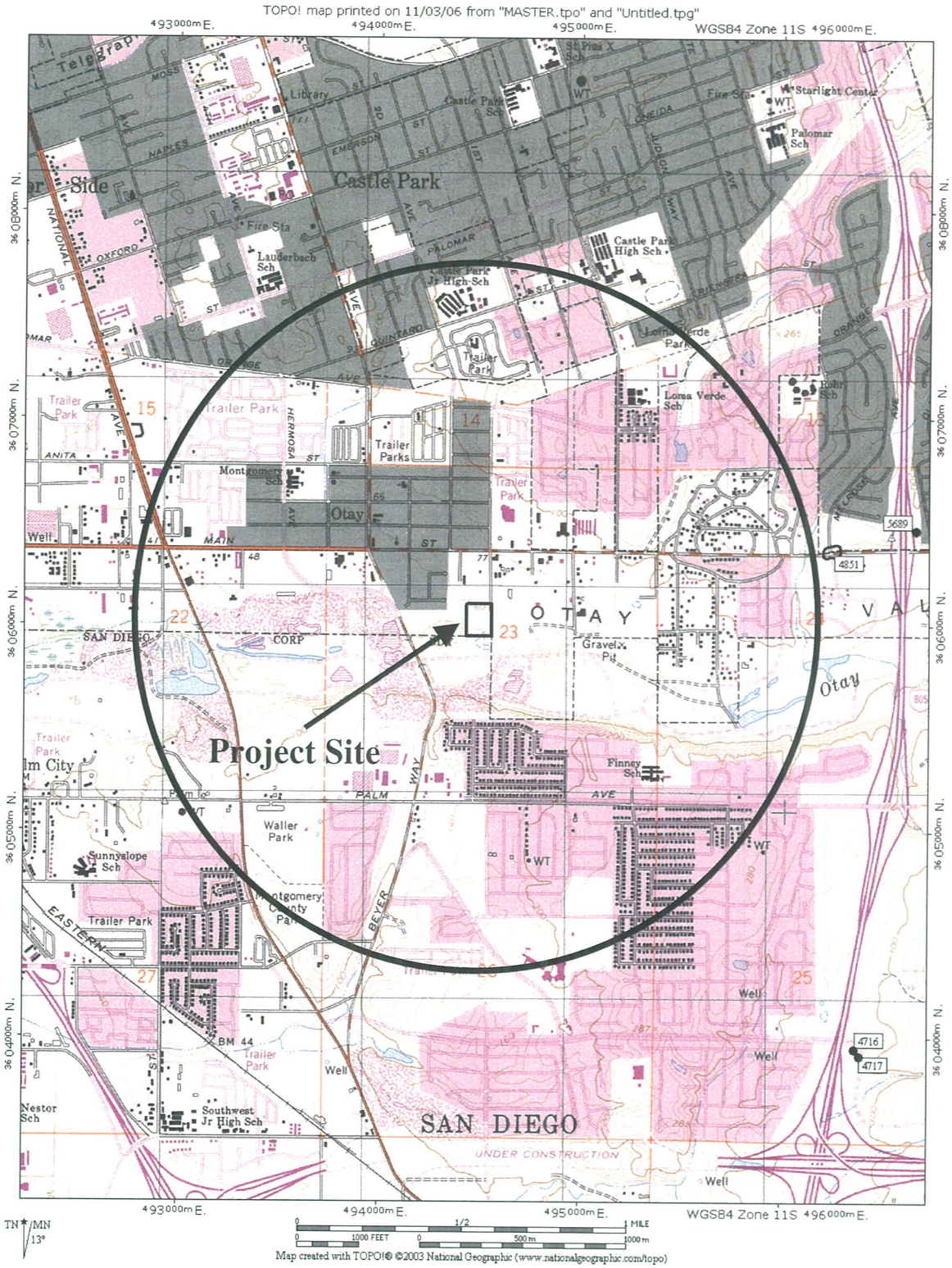

Figure 2: Index map showing the approximate location of the Chula Vista Energy Project site in relation to recoded paleontological collecting localities. The San Diego Natural History Museum has no recorded fossil localities located within a one mile radius of project site. (Base map: Imperial Beach, CA 7.5 minute USGS topographic quadrangle)

Literature cited:

Deméré, T. A., and S. L. Walsh. 1993. Paleontological Resources, County of San Diego. Unpublished technical report prepared for the Department of Public Works, San Diego County: 1-68.

Kennedy, M. P., and S. S. Tan. 1977. Geology of National City, Imperial Beach, and Otay Mesa quadrangles, southern San Diego metropolitan area, California. Map Sheet - California Division of Mines and Geology 29.

APPENDIX B

PROJECT PHOTOGRAPHS

Overview of the project area from the northeast corner, view to the south.

Overview of the project area from the northwest corner, view to the southeast.

Overview of the project area from the northwest corner, view to the south.

Overview of northern portion of the project area from the north edge of the paved area, view to the north.