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## 4.8 PALEONTOLOGICAL RESOURCES

Paleontological resources (fossils) may be defined as remains or other indications (trace fossils) of prehistoric animals and plants. Fossils are important scientific and educational resources because of their use in (1) documenting the presence and evolutionary history of particular groups of now extinct organisms; (2) reconstructing the environments in which these organisms lived; and (3) determining the relative ages of the strata in which they occur. Fossils also have direct application for investigating the geologic events that resulted in the deposition of the sediments in which they were buried.

This section describes paleontological resources at the Puente Power Project (P3 or project) site and in the vicinity of P3, and evaluates potential impacts of the project to these resources. The project area discussed in this section refers to all areas of temporary and permanent disturbance associated with the construction and operation of the new plant and ancillary systems, and construction laydown areas. No new offsite linear facilities are required for P3. The study area for paleontological resources evaluated in this section is defined as the area within a 1-mile radius of the P3 site.

The sections below provide an overview of the affected environment; an evaluation of the environmental consequences of the proposed project to paleontological resources; a cumulative impact analysis; identification of mitigation measures that will avoid and reduce project impacts to less-than-significant levels; and applicable laws, ordinances, regulations, and standards (LORS).

This paleontological resources inventory and impact assessment was prepared by Dr. Joe Stewart, Ph.D. It meets all requirements of the California Energy Commission (CEC) (CEC, 2000, 2007), and the standard measures for mitigating adverse construction-related environmental impacts on significant paleontological resources established by the Society of Vertebrate Paleontology (SVP) (SVP, 1995, 1996). The complete technical report, Paleontological Resources Assessment, Puente Power Project, is included as Appendix I (submitted separately under rules of confidentiality).

### 4.8.1 Affected Environment

P3 will be developed on previously disturbed vacant brownfield land within the existing boundaries of the Mandalay Generating Station (MGS) in the City of Oxnard, Ventura County, California. Ventura County and the City of Oxnard are situated on the coast of southern California, approximately 50 miles west of Los Angeles. The MGS property is immediately inland from Mandalay Beach and is approximately 36 acres. The proposed P3 site encompasses approximately 3 acres on the northern portion of the MGS site. All construction and operation activities will occur on the MGS site.

The project site was originally graded in the 1950s during construction of the MGS and installation of the 30-inch-diameter gas line. The existing MGS facility is in an industrial area that includes oil drilling and processing operations and Southern California Edison-owned power generating and transmission facilities. The site is bordered by sand dunes and the Pacific Ocean to the west; McGrath Lake State Park and land owned by SunCal to the north; industrial uses to the north, south and east; and agricultural uses further to the east (see Section 4.6, Land Use and Agriculture, for a more detailed discussion of land uses in the vicinity of the project).

#### 4.8.1.1 Geographic Location

The project site is in the Rio De Santa Clara Spanish Land Grant Sections inferred as 35 and 36, Township 2 North, Range 23 West, on the U.S. Geological Survey Oxnard/Oxnard OE Topographic Map Quadrangles (Latitude: 34.207115; Longitude: 119.250000). The project area is unsectioned and outside of the township and range system.

The relief of the P3 site is low, with elevation of approximately 14 feet mean lower low water. The project site lies in the Transverse Ranges physiographic province (Norris and Webb, 1990). The western edge of the project site is approximately 750 feet from the Pacific Ocean (at mean sea level). The Santa Clara River empties into the Pacific Ocean slightly less than 2 miles to the north. The Santa Clara River floodplain and the city of Ventura separate the project site from the foothills of the nearest highlands (Sulfur Mountain), 5 miles to the north.

#### **4.8.1.2 Regional Geologic Setting**

The general geology of the Oxnard area has been described in some detail by Clahan (2003) at a scale of 1:24,000; Page (1963) at a scale of 1:31,680; McCoy and Sarna-Wojcicki (1978) at a scale of 1:125,000; Campbell *et al.* (1975) at a scale of 1:250,000; and Jennings and Strand (1969) at a scale of 1:250,000. The information in these geologic maps and published and unpublished reports form the basis of the following discussion. The aspects of geology pertinent to this assessment are the types, distribution, and age of sediments immediately underlying the P3 project area, and their probability of producing fossils during project construction. The site-specific geology in the vicinity of the P3 site is discussed separately below. Figure 4.8-1 shows the regional geology in the vicinity of the P3 site.

#### **4.8.1.3 Resource Inventory Methods**

To develop a baseline paleontological resource inventory of the P3 site and surrounding area, and to assess the potential paleontological productivity of each stratigraphic unit present, both published and available unpublished geological and paleontological literature were reviewed, and stratigraphic and paleontologic inventories were compiled, synthesized, and evaluated. These methods are consistent with CEC (2007) and SVP (1995) guidelines for assessing the importance of paleontological resources in areas of potential environmental effect.

Geologic maps and reports covering the bedrock and surficial geology of the P3 project vicinity were reviewed to determine the exposed and subsurface rock units; to assess the potential paleontological productivity of each rock unit; and to delineate their respective areal distribution in the project area.

An archival database search was executed by the Natural History Museum of Los Angeles County (LACM) to determine whether any of the stratigraphic units found in the project vicinity had previously yielded significant paleontological resources. No subsurface exploration was conducted for this assessment.

A field survey, including visual inspection of sedimentary exposures in the project area, was conducted to assess the presence of sediments suitable for containing fossil remains and the presence of any previously unrecorded fossil sites. The field survey for this assessment was conducted on January 12, 2015 by Joe D. Stewart, AECOM paleontologist. During the field survey, attempts were made to detect the presence and nature of native sediments. Some were exposed, but much of the area cannot be accessed or has been substantially modified due to industrial and commercial history of the area.

#### **4.8.1.4 Paleontological Resource Assessment Criteria**

SVP (1995) considers any fossil specimen to be significant, unless demonstrated otherwise, and protected by environmental statutes. This position is held because vertebrate fossils are uncommon, and only rarely will a fossil locality yield a statistically significant number of specimens.

In fact, vertebrate fossils are so uncommon that, in most cases, each fossil specimen found will provide additional important information about the characteristics or distribution of the species it represents. A stratigraphic unit (such as a formation, member, or bed) known to contain significant fossils is considered to be “sensitive” to adverse impacts if there is a high probability that earth-moving or ground-disturbing

activities in that rock unit will either disturb or destroy fossil remains. This definition of sensitivity differs fundamentally from that for archaeological resources:

*“It is extremely important to distinguish between archaeological and paleontological (fossil) resource sites when defining the sensitivity of rock units. The boundaries of archaeological sites define the areal extent of the resource. Paleontologic sites, however, indicate that the containing sedimentary rock unit or formation is fossiliferous. The limits of the entire rock formation, both areal and stratigraphic, therefore define the scope of the paleontologic potential in each case” (SVP, 1995).*

This distinction between archaeological and paleontological sites is important. Most archaeological sites have a surface expression that allows for their geographic location. Fossils, on the other hand, are an integral component of the rock unit below the ground surface; therefore, they are not observable unless exposed by erosion or human activity. Therefore, a paleontologist cannot know either the quality or quantity of fossils present before the rock unit is exposed as a result of natural erosion processes or earth-moving activities. The paleontologist can only make conclusions on sensitivity to impact based on what fossils have been found in the rock unit in the past, along with a judgment on whether or not the depositional environment of the sediments that compose the rock unit was likely to result in the burial and preservation of fossils.

Fossils are seldom uniformly distributed in a rock unit. Most of a rock unit may lack fossils, but at other locations in the same rock unit, concentrations of fossils may exist. Even in a fossiliferous portion of the rock unit, fossils may occur only in local concentrations. It is often very difficult to predict the location and quantity of fossils in advance of project-related ground disturbance.

Because it is unfortunately not possible to determine where fossils are without actually disturbing a rock unit, excavation monitoring by an experienced paleontologist during construction increases the probability that fossils will be discovered and preserved. Preconstruction mitigation measures such as surface prospecting and collecting will not prevent adverse impacts on fossils, because many sites will be unknown in advance due to an absence of fossils at the surface.

The non-uniform distribution of fossils in a rock unit is essentially universal, and many paleontological resource assessment and mitigation reports conducted in support of environmental impact documents and mitigation plan summary reports document similar findings. In fact, most fossil sites recorded in reports of impact mitigation where construction monitoring has been implemented had no previous surface expression. Because the presence or location of fossils in a rock unit cannot be known without exposure resulting from erosion or excavation, under SVP (1995) standard guidelines, an entire rock unit is assigned the same level of sensitivity based on recorded fossil occurrences.

Using SVP (1995) criteria, the paleontological importance or sensitivity (high, low, or undetermined) of each rock unit exposed in a project site or surrounding area is the measure most amenable to assessing the significance of paleontological resources, because the areal distribution of each rock unit can be delineated on a topographic or geologic map. The paleontological sensitivity of a stratigraphic unit reflects: (1) its potential paleontological productivity (and sensitivity); and (2) the scientific significance of the fossils it has produced. This method of paleontological resources assessment is the most appropriate, because discrete levels of paleontological importance can be delineated on a topographic or geologic map.

The potential paleontological productivity of a stratigraphic unit exposed in a project area is based on the abundance/densities of fossil specimens and/or previously recorded fossil sites in exposures of the unit in and near a project site. The underlying assumption of this assessment method is that exposures of a stratigraphic unit in a project site are most likely to yield fossil remains both in quantity and density similar to those previously recorded from that stratigraphic unit in and near the project site.

Under California Environmental Quality Act (CEQA) Guidelines, Section 15064.5 (a) (2), public agencies must treat all historical and cultural resources as significant unless the preponderance of evidence demonstrates that they are not historically or culturally significant. An individual fossil specimen is considered scientifically important if it is:

- Identifiable;
- Complete;
- Well-preserved;
- Age diagnostic;
- Useful in paleoenvironmental reconstruction;
- A type or topotypic specimen;
- A member of a rare species;
- A species that is part of a diverse assemblage; or
- A skeletal element different from, or a specimen more complete than, those now available for that species.

All identifiable vertebrate fossils are considered scientifically important because of their potential use in providing relative age determinations and paleoenvironmental reconstructions for the sediments in which they occur. Moreover, vertebrate remains are comparatively rare in the fossil record. The value or importance of different fossil groups varies depending on the age and depositional environment of the stratigraphic unit that contains the fossils.

The following tasks were completed to establish the paleontological importance and sensitivity of each stratigraphic unit exposed in or near the P3 project site:

- The potential paleontological productivity of each rock unit was assessed based on previously recorded and newly documented fossil sites it contains at and/or near the project site;
- The scientific importance of fossil remains recorded from a stratigraphic unit exposed at and/or near the project site was assessed; and
- The paleontological importance of a rock unit was assessed, based on its documented and/or potential fossil content in the area surrounding the project site.

#### 4.8.1.4.1 Categories of Sensitivity

In its standard guidelines for assessment and mitigation of adverse impacts to paleontological resources, the SVP (1995) established three categories of sensitivity for paleontological resources: high, low, and undetermined.

**High Sensitivity.** Stratigraphic units in which fossils have been previously found have a high potential to produce additional fossils, and are therefore considered to be highly sensitive. In the significance criteria of the SVP (1995), all vertebrate fossils are categorized as having significant scientific value, and all stratigraphic units in which vertebrate fossils have previously been found have high sensitivity. In areas of high sensitivity, full-time monitoring is recommended during any project-related ground disturbance.

**Low Sensitivity.** Stratigraphic units that are not sedimentary in origin or that have not been known to produce fossils in the past are considered to have low sensitivity. Monitoring is usually not recommended or needed during excavation in a stratigraphic unit with low sensitivity.

**Undetermined Sensitivity.** Stratigraphic units that have not had any previous paleontological resource surveys or any fossil finds are considered to have undetermined sensitivity. After reconnaissance surveys, observation of artificial exposures (such as road cuts) and natural exposures (such as stream banks), and

possible subsurface testing (such as augering or trenching), an experienced professional paleontologist can often determine whether the stratigraphic unit should be categorized as having high or low sensitivity.

#### 4.8.1.5 Resource Inventory Results

##### 4.8.1.5.1 Geologic Literature

The geologic unit described below is present in the project area. The paleontologic sensitivity rating is based on the results of both the field survey and archival research. The following geologic discussion is based on the mapping of Clahan (2003), because it is the highest-resolution (1:24,000) geologic mapping available. Clahan's mapping of the geology is superimposed on the map of the project area in Figure 4.8-1.

**Active Coastal Eolian Deposits (Qe):** The entire P3 site lies in a unit mapped as active windblown (dune) deposits consisting of loose sand and silt. Much of the presumed original dune topography has been flattened in the P3 footprint. Figure 4.8-2 shows the photographs of the P3 site geology. The fossil site nearest the project is mapped as occurring in this unit. Therefore, Unit Qe is assigned a low-sensitivity rating. No fossils are known to lie within the P3 boundaries. The recent age (Holocene Epoch) of the Active Coastal Eolian Deposits suggests that there is no potential for significant fossil remains to be uncovered by excavations in this sedimentary unit during project construction. Under SVP (1995) criteria, this sedimentary unit has low sensitivity for potential to produce significant paleontological resources. The nearest known fossil locality is in an older and topographically higher geologic unit. However, it should be noted that a site among coastal dunes in Huntington Beach, California, produced a Pleistocene vertebrate fauna dated at approximately 40,000 ka (thousands of years before present in geologic time) (Wake and Roeder, 2009). That site was 1 kilometer inland from the shore.

An environmental assessment of the site (CH2M Hill, 1997) indicates several thousand feet of undifferentiated Pleistocene and Pliocene fine sands and silts, at varying degrees of consolidation. It is possible that deep excavations at the P3 site could impact older sedimentary deposits. Identifiable fossil remains salvaged from these older sediments during project construction could be scientifically important and significant. Identifiable fossil remains discovered during project construction could represent new taxa or new fossil records for the area, or for the State of California. They could also represent geographic or temporal range extensions. Moreover, discovered fossil remains could make it possible to more accurately determine the age, paleoclimate, and depositional environment of the sediments from which they are salvaged. Finally, fossil remains salvaged during project construction could provide a more comprehensive documentation of the diversity of animal and plant life that once existed in Ventura County.

The only Pleistocene vertebrate fossils reported in the project area in the compilations of Jefferson (1991a, 1991b) are from the upper Pleistocene of Ventura, particularly from Pierpoint Bay (Jefferson, 1991b).

##### 4.8.1.5.2 Results of Paleontological Records Search

Dr. Samuel McLeod of LACM indicated that the LACM does not have any vertebrate fossil localities that lie within the P3 boundaries, but there is a locality nearby from older sedimentary deposits that may occur at depth in the vicinity of the project site. The closest known vertebrate fossil locality is from older Quaternary deposits in Sexton Canyon in the hills north of the Ventura plain, north-northeast of the proposed project area. That locality produced a fossil specimen of goose, *Chendytes lawi*, (Miller, 1934).

## **4.8.2 Environmental Consequences**

### **4.8.2.1 Significance Criteria**

The evaluation of impacts on paleontological resources is conducted consistent with the standards and guidelines recommended by the SVP (1995) for assessing and mitigating impacts to paleontological resources. Pursuant to CEQA, the analysis of impacts to paleontological resources considers whether the project would result in disturbance or destruction of a sensitive and/or unique paleontological resource or site.

### **4.8.2.2 Construction Impacts**

Although the P3 site has been previously disturbed and the original sedimentary unit has a low sensitivity for paleontological resources, the potential remains to impact any resources that may be present. Potential direct impacts on paleontological resources resulting from construction of the proposed project primarily involve vegetation clearing, grading, pile driving, and excavations for structure foundations, and trenching for pipelines or utilities. Paleontological resources that could be adversely affected by ground disturbance and earth moving are not restricted to fossil remains; they include associated specimen data and corresponding geologic and geographic site data, and the fossil-bearing strata. Direct impacts described above could disturb previously undisturbed fossiliferous sediments, making those sediments and their paleontological resources unavailable for future scientific investigation. In general, project-related ground disturbance could have adverse impacts on significant paleontological resources. Implementation of the mitigation measures identified in Section 4.8.4 would reduce these impacts to less than significant, because the value to science of any significant fossils uncovered during project-related excavations would be preserved.

### **4.8.2.3 Operation Impacts**

No impacts on paleontological resources are expected to result from the continuing operation of the P3 or any of its related facilities.

## **4.8.3 Cumulative Impacts Analyses**

Of the cumulative projects identified in Section 4.0, only two projects (North Shore Subdivision and Avalon Homes Subdivision) are within the 1-mile study area for paleontological resources. If paleontological finds were to be encountered during construction of P3, the potential for cumulative impacts would be low, as long as mitigation measures were implemented to salvage the resources. The mitigation measures proposed in Section 4.8.4 would effectively preserve the value to science of any significant fossils uncovered during project-related excavations. Because North Shore Subdivision and Avalon Homes Subdivision are subject to CEQA review, it is anticipated the similar measures would be implemented for these projects to minimize potential impacts to paleontological resources. Therefore, cumulative impacts to paleontological resources are expected to be less than significant.

## **4.8.4 Mitigation Measures**

No paleontological resources have been identified in the project area. Therefore, the mitigation measures below are focused on the inadvertent discovery of buried archaeological resources during project implementation.

### **PAL-1 Retain Qualified Paleontologists**

Prior to the start of earth-disturbing activities, a qualified professional paleontologist will be retained by the Applicant as the Paleontological Resource Specialist (PRS). The PRS will meet the minimum

qualifications for a vertebrate paleontologist, as described in the SVP guidelines of 1995. The PRS will be responsible for implementation of Mitigation Measures PAL-2 through PAL-7. In addition, qualified paleontological resource monitors (PRMs) will be retained to monitor during ground-disturbing activities that could uncover paleontological resources.

#### **PAL-2 Provide Project Relevant Project Documents to the Paleontological Resource Specialist**

The Applicant will provide to the PRS and the Compliance Project Manager (CPM), for their approval, maps and drawings showing the footprint of the power plant, construction laydown areas, and all related facilities. Maps will identify all areas of the project where ground disturbance is anticipated. The plan drawings should show the location, depth, and extent of all ground disturbances. If the footprint of the project changes, the project owner will provide maps and drawings reflecting those changes to the PRS and CPM.

If construction of the project proceeds in phases, maps and drawings may be submitted prior to the start of each phase. A letter identifying the proposed schedule of each project phase will be provided to the PRS and CPM. Before work commences on affected phases, the project owner will notify the PRS and CPM of any construction phase scheduling changes.

At a minimum, the Applicant will ensure that the PRS or PRM consults weekly with the project superintendent or construction field manager to confirm area(s) to be worked the following week, and until ground disturbance is completed.

#### **PAL-3 Prepare a Paleontological Resources Monitoring and Mitigation Plan**

Prior to the start of earth-disturbing activities, the PRS will prepare a Paleontological Resources Monitoring and Mitigation Plan (PRMMP). The PRMMP will identify general and specific measures to minimize potential impacts to significant paleontological resources. The PRMMP will identify those activities requiring monitoring, those locations within the P3 site where monitoring is necessary, and the depth at which monitoring is no longer required. The PRMMP will be developed in accordance with SVP guidelines (SVP, 1995). The Applicant will submit the PRMMP to the CEC for approval. No ground disturbance will occur prior to approval of PRMMP unless specifically approved by the CEC.

#### **PAL-4 Worker Environmental Awareness Program**

Prior to and for the duration of earth-disturbing activities, the Applicant will provide Worker Environmental Awareness Program training to all new workers within their first week of employment. The training will be prepared by the PRS, may be conducted by any member of the paleontological team, and may be presented in the form of a video. The Worker Environmental Awareness Program will address the possibility of encountering paleontological resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect those resources. The PRS will be available (by telephone or in person) to answer questions posed by employees. The training may be discontinued when earth-disturbing activities are completed or suspended, but will be resumed when ground disturbance resumes.

#### **PAL-5 Monitor during Construction**

The Applicant will ensure that the PRS and PRM(s) monitor consistent with the PRMMP all construction-related grading, excavation, trenching, and augering in areas where potential fossil-bearing materials have been identified. In the event that the PRS determines that full-time monitoring is not necessary in locations that were identified as potentially fossil-bearing in the PRMMP, the CPM will be notified to obtain concurrence. The PRS and PRM(s) will have the authority to halt or redirect construction if paleontological resources are encountered.



### **PAL-6 Curation Agreement**

The Applicant, through the designated PRS, will ensure that all components of the PRMMP are adequately performed, including collection of fossil materials, preparation of fossil materials for analysis, analysis of fossils, identification and inventory of fossils, preparation of fossils for curation, and delivery for curation of all significant paleontological resource materials encountered and collected during project construction.

### **PAL-7 Prepare Paleontological Resources Report**

The designated PRS will prepare a Paleontological Resources Report (PRR). The PRR will be prepared following completion of the ground-disturbing activities. The PRR will include an analysis of the collected fossil materials and related information, and submit it to the CPM for review and approval. The report will include, but is not limited to, a description and inventory of recovered fossil materials; a map showing the location of paleontological resources encountered; determinations of sensitivity and significance; and a statement by the PRS that project impacts to paleontological resources have been mitigated below the level of significance.

## **4.8.5 Laws, Ordinances, Regulations, and Standards**

P3 will be constructed and operated in accordance with all LORS applicable to paleontological resources. Federal, state, and local LORS applicable to paleontological resources are discussed below, and summarized in Table 4.8-1, Applicable Laws, Ordinances, Regulations, and Standards.

### **4.8.5.1 Federal**

Federal LORS pertaining to the protection of paleontological resources such as the Antiquities Act and Paleontological Resources Preservation Act only apply to projects on federally owned or managed lands, federally funded projects, or projects subject to federal approval, and therefore are not applicable to P3.

### **4.8.5.2 State**

#### **4.8.5.2.1 Public Resources Code**

State requirements for paleontological resources management are in Public Resources Code (PRC) Chapter 1.7, Section 5097.5 (Stats. 1965, c. 1136, p. 2792), entitled *Archaeological, Paleontological, and Historical Sites*. This statute defines any unauthorized disturbance or removal of a fossil site or fossil remains on public land as a misdemeanor, and specifies that state agencies may undertake surveys, excavations, or other operations as necessary on state lands to preserve or record paleontological resources. This statute applies to projects built on city-owned or state-managed lands, and therefore is not applicable to P3.

#### **4.8.5.2.2 California Coastal Commission**

The California Coastal Commission has regulatory control over all licensed, permitted, or assisted activities, wherever they may occur if the activity affects coastal resources. Regulation is accomplished primarily through the preparation of Local Coastal Programs. The California Coastal Act (PRC, Division 20), Chapter 3, Article 5 (land resources), Section 30244 (archaeological and paleontological resources) states: where development would adversely impact archaeological or paleontological resources as identified by the State Historical Preservation Officer, reasonable mitigation will be required.

### **4.8.5.3 Local**

#### **4.8.5.3.1 County of Ventura General Plan**

Section 1.8.1 of the Resources element of the County of Ventura General Plan lists two goals concerning paleontological resources. These are: 1) to identify, inventory, preserve and protect the paleontological and cultural resources of Ventura County for their scientific, educational and cultural value; and 2) to enhance cooperation with cities, special districts, other appropriate organizations, and private landowners in acknowledging and preserving the County's paleontological and cultural resources. Section 1.8.2 of the Resource element declares three policies concerning paleontological resources. These are: 1) discretionary developments will be assessed for potential paleontological and cultural resource impacts, except when exempt from such requirements by CEQA, and to incorporate such assessments into a countywide resource data base; 2) discretionary development will be designed to avoid impacts to significant paleontological or cultural resources whenever possible, but unavoidable impacts will be reduced to a less than significant level and/or will be mitigated by extracting maximum recoverable data, and the determinations of impacts, significance and mitigation will be made by qualified paleontologist; and 3) mitigation of significant impacts on cultural or paleontological resources will follow the Guidelines of the State Office of Historic Preservation and will be performed in consultation with professional archaeologists and paleontologists.

#### **4.8.5.3.2 City of Oxnard General Plan**

Section 5.3 of the City of Oxnard 2030 General Plan Goals and Policies, Goal ER-11.6 states that in the event that archaeological/paleontological resources are discovered during site excavation, grading and construction work on the project site be suspended until the significance of the features can be determined by a qualified archaeologist/paleontologist. The 2030 General Plan Map has no information about paleontological resources in the City.

### **4.8.6 Professional Standards**

#### **4.8.6.1 Society of Vertebrate Paleontology**

The SVP, a national scientific organization of professional vertebrate paleontologists, has established standard guidelines (SVP, 1995, 1996) that outline acceptable professional practices for conducting paleontological resource assessments and surveys, monitoring and mitigation, data and fossil salvage, sampling procedures, and specimen preparation, identification, analysis, and curation. Most practicing professional paleontologists in the nation adhere closely to the SVP's assessment, mitigation, and monitoring requirements as specifically spelled out in its standard guidelines. The SVP's standard guidelines were approved by a consensus of professional paleontologists, and are the standard against which all paleontological monitoring and mitigation programs are judged. Many federal and California state regulatory agencies have either formally or informally adopted the SVP's "standard guidelines" for the mitigation of construction-related adverse impacts on paleontological resources as a measure of professional practice.

Briefly, SVP guidelines recommend that each project have literature and museum archival reviews, a field survey, and—if there is a high potential for disturbing significant fossils during project construction—a mitigation plan that includes monitoring by a qualified paleontologist to salvage fossils encountered, identify salvaged fossils, determine their significance, and place curated fossil specimens into a permanent public museum collection (such as the LACM).

#### 4.8.7 Involved Agencies and Agency Contacts

No state or local agencies have specific jurisdiction over paleontological resources. The project area is in the City of Oxnard. Neither state nor federal lands are involved in this project. Table 4.8-2 lists agency contact information for the California Coastal Commission, the LACM, the County of Ventura, and the City of Oxnard.

#### 4.8.8 Permits Required and Permit Schedule

No state or county agency requires a paleontological collecting permit to allow for the salvage of fossil remains discovered as a result of construction-related earth moving on state or private land in a project site.

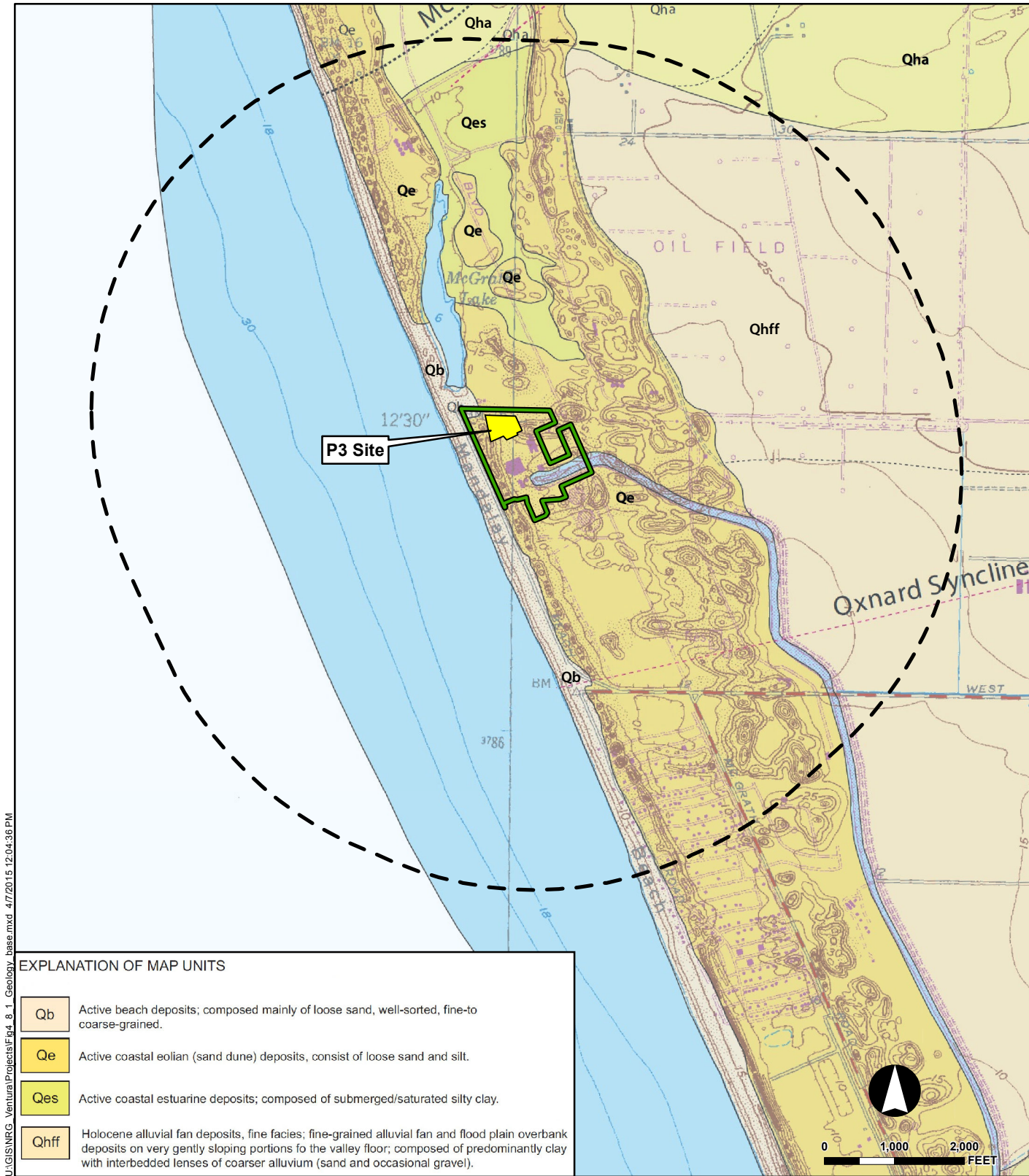
#### 4.8.9 References

- Campbell, R.H., S.C. Wolf, R.E. Hunter, H.C. Wagner, A. Junger, and J.G. Vedder, 1975. Geologic map and sections, Santa Barbara Channel region, California. U.S. Geological Survey Open File Report 75-123. 1:250,000.
- CEC (California Energy Commission), 2000. Paleontological Resources. *In*: Regulations Pertaining to the Rules of Practice and Procedure and Power Plant Site Certification.
- CEC (California Energy Commission), 2007. Paleontological Resources. *In*: Complete Text of the Energy Commission's Proposed Amendments to the Power Plant Siting Regulations.
- CH2M Hill, 1997. Mandalay Generating Station Phase II Environmental Site Assessment. Prepared for: Southern California Edison Corporation, 2244 Walnut Grove Avenue, Rosemead, CA 92207. Prepared by: CH2M Hill, 3 Hutton Centre Drive, Suite 200, Santa Ana, CA 92207.
- Clahan, K.B., 2003. Geologic Map of the Oxnard 7.5-minute quadrangle, Ventura County, California: A digital database. California Geological Survey Preliminary Geologic Maps, 1:24,000.
- Jefferson, G.T., 1991a. A catalogue of Late Quaternary Vertebrates from California: Part One, nonmarine lower vertebrate and avian taxa. Natural History Museum of Los Angeles County Technical Reports no. 5.
- Jefferson, G.T., 1991b. A catalogue of Late Quaternary Vertebrates from California: Part Two, Mammals. Natural History Museum of Los Angeles County Technical Reports no. 7.
- Jennings, C.W., and R.G. Strand, 1969. Geologic Map of California: Los Angeles Sheet. California Division of Mines and Geology. 1:250,000.
- McCoy, G., and A.M. Sarna-Wojcicki, 1978. Preliminary map showing surficial materials of the Ventura-Oxnard Plain area, California. U.S. Geological Survey Open-File Report OF-78-1065. 1:125,000.
- Miller, L.H., 1934. A new horizon for the extinct goose, *Chendytes*. *Science* 80:141-142.
- Norris, R.M., and R.W. Webb, 1990. *Geology of California*. John Wiley and Sons, Inc. New York. 541 pp.
- Page, R.W., 1963. Geology and Ground-Water Appraisal of the Naval Air Missile Test Center Area, Point Mugu, California. U.S. Geological Survey Water-Supply Paper 1619.

- SVP (Society of Vertebrate Paleontology), 1995. Assessment and mitigation of adverse impacts to nonrenewable paleontologic resources and standard guidelines. Society of Vertebrate Paleontology News Bulletin 163:22-27.
- SVP (Society of Vertebrate Paleontology), 1996. Conditions of receivership for paleontological salvage collections: Society of Vertebrate Paleontology News Bulletin, No. 166, pp. 31-32.
- Wake, T.A., and M.A. Roeder, 2009. A diverse Rancholabrean vertebrate microfauna from southern California includes the first fossil record of ensatina (*Ensatina eschscholtzii*: Plethodontidae). Quaternary Research 72:364-370.

<b>Table 4.8-1                      Summary of Laws, Ordinances, Regulations, and Standards – Paleontological Resources</b>			
<b>LORS</b>	<b>Administering Agency</b>	<b>Applicability</b>	<b>AFC Section</b>
<b>State</b>			
California Coastal Act	California Coastal Commission	For development in the coastal zone that would adversely impact archaeological or paleontological resources as identified by the State Historical Preservation Officer, reasonable mitigation will be required.	4.3, 4.8.1 – 4.8.4
<b>Local</b>			
County of Ventura General Plan	Ventura County Planning Department	Development will be designed to avoid impacts to significant paleontological or cultural resources whenever possible, but unavoidable impacts will be reduced to a less than significant level and/or will be mitigated by extracting maximum recoverable data.	4.3, 4.8.1 – 4.8.4
City of Oxnard General Plan	City of Oxnard Planning Department	In the event that archaeological/ paleontological resources are discovered during site excavation, grading and construction work on the project site must be suspended until the significance of the features can be determined by a qualified archaeologist/ paleontologist	4.3, 4.8.1 – 4.8.4
Notes: AFC = Application for Certification LORS = Laws, Ordinances, Regulations, and Standards			

<b>Table 4.8-2 Involved Agencies and Agency Contacts</b>				
<b>Issue</b>	<b>Agency</b>	<b>Contact/Title</b>	<b>Telephone</b>	<b>E-mail</b>
City of Oxnard General Plan	City of Oxnard Department of Planning	Chris Williamson, Planner	(805) 385-8156	chris.williamson@ci.oxnard.ca.us
County of Ventura General Plan	County of Ventura Department of Planning	Rosemary Rowan	(805) 654-2461	rosemary.rowan@ventura.org
Potential paleontological resources documentation and specimen repository	Vertebrate Paleontology Department, Los Angeles County Natural History Museum	Dr. Samuel A. McLeod, Collection Manager	(213) 763-3325	smcleod@nhm.org
Coastal Commission policies on paleontological resources	California Coastal Commission South Central Coastal District	Denise Venegas, Planner	(805) 585-1800	denise.venegas@coastal.ca.gov



**PROJECT GEOLOGY MAP**

- Puente Power Project (P3) Site
- MGS Property Boundary

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**FIGURE 4.8-1**



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**PHOTOGRAPHS OF SITE GEOLOGY**

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**FIGURE 4.8-2**