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4.8 Paleontological Resources

4.8.1 Introduction

Paleontological resources (fossils) are the remains or traces of prehistoric plants and animals. Fossils are important scientific and educational resources because of their use in: (1) documenting the presence and evolutionary history of particular groups of both extant and extinct organisms, (2) reconstructing the environments in which these organisms lived, and (3) determining the relative ages of the strata in which they occur and the geologic events that resulted in the deposition of the sediments that formed these strata. This section summarizes the potential environmental impacts on paleontological resources that may result from construction and operation of the project.

4.8.2 Laws, Ordinances, Regulations, and Standards

Paleontological resources are non-renewable scientific resources and are protected by several federal and state statutes (California Office of Historic Preservation, 1983; see also Marshall, 1976; Fisk and Spencer, 1994), most notably by the Paleontological Resources Protection Act of 2009, and by State environmental regulations (CEQA, Section 15064.5). Professional standards for assessment and mitigation of adverse impacts on paleontological resources have been established by the Society of Vertebrate Paleontology (SVP, 2010). Design, construction, and operation of project will be conducted in accordance with all LORS applicable to paleontological resources. Federal, state, and local LORS applicable to paleontological resources are summarized in Table 4.8-1 and discussed briefly below, along with professional standards for paleontological resources assessment and impact mitigation.

Table 4.8-1. LORS Applicable to Paleontological Resources
Small Power Plant Exemption Application for the Pomona Repower Project

LORS	Applicability	Reference	Project Conformity
Omnibus Public Land Management Act of 2009 (H.R. 146), Title 6, Subtitle D "Paleontological Resources Protection"	Not applicable – Applies only to federal land managed by the Secretaries of the Interior and Agriculture	—	—
Antiquities Act of 1906	Not applicable – No federal land involved, or federal entitlement required	—	—
National Environmental Policy Act of 1969	Not applicable – No federal land involved, or federal entitlement required	—	—
CEQA, Appendix G	Applicable – Requires assessment of the potential to affect paleontological resources during earth-moving activities	Sections 4.8.2, 4.8.3, and 4.8.5	Yes
Cal. Pub. Res. Code Sections 5097.5/5097.9	Not applicable – Applies to state-owned land	—	—
Los Angeles County General Plan 2015	Applicable – Requires mitigation of affected resources	Section 4.8.2.3	Yes
City of Pomona General Plan	Applicable – Requires mitigation of affected resources	Section 4.8.2.3	Yes

4.8.2.1 Federal LORS

Federal protection for significant paleontological resources would apply to this project only if any construction or other related project impacts occur on federally owned or managed lands, or if a federal entitlement or other permit were required. On March 31, 2009, President Obama signed into law the Omnibus Public Land Management Act of 2009 (OPLMA) (H.R. 146). Title 6, Subtitle D of the OPLMA, Paleontological Resources Protection, requires the secretaries of the Department of the Interior and the Department of Agriculture (insofar as U.S. Forest System lands are concerned) to "…manage and protect paleontological resources on Federal land using scientific principals and expertise… (and) develop appropriate plans for inventory, monitoring, and the scientific and educational use of paleontological resources…". The OPLMA further excludes casual collection from restrictions under the law, and then describes the requirements for permitting collection on federal lands, stipulations regarding their use in education, continued federal ownership of recovered paleontological resources, and standards for acceptable repositories of collected specimens and associated data (OPLMA, Sections 6303-6305). The OPLMA also provides for criminal and civil penalties for unauthorized removal of paleontological resources from federal land, and rewards for reporting the theft of fossils (Sections 6306-6309).

Additional federal legislative protection for paleontological resources stems from the Antiquities Act of 1906 (PL 59-209; 16 U.S.C. Sections 431 et seq.; 34 Stat. 225), which calls for protection of historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest on federal lands. In addition, NEPA of 1969 (U.S.C. Sections 4321 et seq.; 40 C.F.R. Section 1502.25), as amended, requires analysis of potential environmental impacts to important historic, cultural, and natural aspects of our national heritage.

Because no federally owned or managed lands will be affected by this project, and no federal entitlement or other permit is required, these statutes do not extend to paleontological resources (see Table 4.8-1).

4.8.2.2 State LORS

The CEC environmental review process under the Warren-Alquist Act is considered functionally equivalent to that of CEQA (Cal. Pub. Res. Code Sections 21000 et seq.). CEQA requires that public agencies and private interests identify the environmental consequences of their proposed projects on any object or site of significance to the scientific annals of California (Division I, Cal. Pub. Res. Code Section 5020.1 [b]). The CEQA Guidelines (Cal. Pub. Res. Code Sections 15000 et seq.) define procedures, types of activities, persons, and public agencies required to comply with CEQA. Appendix G in Section 15023 provides an Environmental Checklist of questions that a lead agency should normally address if relevant to a project's environmental impacts. If the answer to a question is "yes" or "possibly," a mitigation and monitoring plan must be designed and implemented to protect significant paleontological resources.

The CEQA lead agency having jurisdiction over a project is responsible for ensuring that paleontological resources are protected in compliance with CEQA and other applicable statutes. The lead agency with the responsibility to ensure that fossils are protected during construction of the proposed project is the CEC. Cal. Pub. Res. Code Section 21081.6, entitled Mitigation Monitoring Compliance and Reporting, requires that the CEQA lead agency demonstrate project compliance with mitigation measures developed during the environmental impact review process.

Other state requirements for paleontological resource management are in Cal. Pub. Res., Chapter 1.7, Sections 5097.5/5097.9 (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 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. Cal. Pub. Res. Code Sections 5097.5/5097.9 do not apply to the project because construction or other related

project impacts will not occur on state owned or managed lands and no state agency is intended to obtain ownership of project lands during the term of the project license.

4.8.2.3 County and City LORS

The Los Angeles County General Plan (Los Angeles County, 2014) Policy C/NR 14:1 requires that all impacts from new development mitigate impacts to historic, cultural, and paleontological resources to the greatest extent feasible. Policy C/NR 14:6 requires that proper notification and recovery processes are carried out.

The City of Pomona General Plan (2014) also calls for the protection of paleontological resources. Specifically, it requires that a qualified paleontologist monitor all grading and/or excavation activities where there is a potential to affect paleontological resources. If resources are found, the recommendations of the qualified paleontologist must be followed, subject to approval of the Planning Division. Finally, scientifically valuable fossils discovered during excavations must be donated to a suitable repository located within Pomona or Los Angeles County whenever possible.

4.8.2.4 Professional Standards

The SVP, an international organization of professional paleontologists, has established standard guidelines (SVP, 2010) that outline acceptable professional practices in the conduct of paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation. Most practicing paleontologists in the nation adhere to the SVP's guidelines, and extend those to address other types of fossils of scientific significance, such as invertebrate fossils and paleobotanical specimens.

4.8.3 Environmental Setting

4.8.3.1 Geographic Location

The site proposed for construction of the project is north of Mt. Vernon Avenue, in the City of Pomona, Los Angeles County, California. The concrete-lined channel of the San Gabriel River is located 0.67 miles north of the site. The site is located at approximately 34°03'33" N. latitude and 117°46'27" W. longitude in northwestern portion of Section 15, Township 1 South, Range 9 West, within the Pomona USGS 7.5' Quadrangle (1:24,000-scale). The City of Pomona is located in the western portion of the Pomona Valley, which lies west of the San Gabriel Valley within the Transverse Ranges. The valley is bounded on the north by the San Gabriel Mountains, and on the south by the Chino Hills. The project site is currently occupied by industrial facilities.

4.8.3.2 Regional Geologic Setting

The proposed project area lies in the Pomona Valley, one of several depositional basins within the Transverse Ranges. This valley is connected via the San Gabriel River to the San Gabriel Valley and Los Angeles Basin. The project area itself lies within the western portion of the basin, where numerous streams have cut through the Chino Hills (Morton and Miller, 2006). The valley is bordered to the north by the San Gabriel Mountains, and to the south by the Chino Hills.

The Transverse Ranges are a complex series of mountain ranges in southern California. As their name suggests, their orientation is contrary to that of the rest of the mountains in the region, reflecting the effects of regional tectonism and plate rotation along the San Andreas Fault. In contrast to other large mountain ranges in California, which trend generally north/south, the Transverse Ranges trend east/west, due to the east/west orientation of the San Andreas Fault in the region (Morton and Miller, 2006). In this region the Pacific and North American tectonic plates converge, creating a general zone of compression (Harden, 1998). This compression not only rotated this region relative to the original positions of the deposits, and uplifted various mountain ranges, it also produced numerous off-shore and intermountain valleys (Harden, 1998). These valleys formed approximately 4 million years ago, and

have accumulated sediment eroded from the uplifting mountains from that time to the present (Harden, 1998).

The geology of the Pomona Basin is dominated by alluvial fans associated with the drainages issuing from canyons in the surrounding mountains (Morton and Miller, 2006). These fans are broad cones of alluvium, and are relatively flat features that interconnect to form a more or less continuous sheet of Quaternary sediment covering older valley fill (Morton and Miller, 2006). The main distinction between Holocene and Pleistocene sediments in this region is the degree of consolidation; older sediments tend to be well-consolidated, with younger sediments becoming progressively less so (Morton and Miller, 2006). Surficial traits typically used to date alluvial fans, such as dissection of the alluvial fan surface, are not viable in this area due to extensive development within the valley.

4.8.3.3 Resource Inventory Methods

To develop a baseline paleontological resource inventory of the project site and surrounding area, and to assess the potential paleontological productivity of each stratigraphic unit present, the published as well as available unpublished geological and paleontological literature was searched and stratigraphic and paleontological inventories were compiled and evaluated (see below). These tasks are in compliance with CEC (2007a and 2007b) and SVP (2010) guidelines for assessing the importance of paleontological resources in areas of potential environmental impact. To obtain information for this assessment, no subsurface exploration was conducted.

Stratigraphic Inventory. Geologic maps and reports covering the bedrock and surficial geology of the project site and vicinity were reviewed to determine the exposed and subsurface stratigraphic units, to assess the potential paleontological productivity of each stratigraphic unit, and to delineate their respective distribution in the project area. In addition, available aerial photographs were examined to determine the distribution of distinctive sediment and soil types.

Paleontological Resource Inventory. Published and available unpublished geological and paleontological literature was reviewed to develop a baseline paleontological resource inventory of the project area and surrounding lands, and to assess the potential paleontological productivity of the stratigraphic units that may be present. Sources included geological maps, satellite photography, technical and scientific reports, and electronic databases. A paleontological resources record review was conducted for the project using the online database maintained by the University of California Museum of Paleontology at Berkeley (UCMP, 2015).

Due to development in the project area, no field survey occurred as part of this review. While several washes are within one mile of the project area, the highly variable nature of alluvial fans makes it almost certain that these exposures will not be representative of the sediment underlying the project area.

4.8.3.4 Resource Inventory Results

Stratigraphic Inventory. The subsurface of the project area consists of Holocene alluvium, underlain by older Quaternary alluvium. These sediments are highly variable and likely contains ancient stream deposits as well as debris flows and other deposits typically associated with alluvial fans. Overlying this is a layer of disturbed sediment and artificial fill of varying thickness resulting from development during the 20th Century.

Site Geology. The project area, shown in Figure 4.8-1, lies on a relatively flat alluvial fan surface in the western Pomona Valley. The Pomona Valley, including the project area, is heavily developed, and therefore a layer of disturbed sediment and fill covers the entire project area to an unknown depth. Below this fill lies Holocene-age alluvial deposits (Morton and Miller, 2006). These sediments are of middle Holocene age (approximately 5,000 years old), and consist of moderately consolidated silt, sand, and boulders (Morton and Miller, 2006). Washes in this area may be incised as deep as 4 meters, and

contain small-scale deposits of modern stream channel sediments (Morton and Miller, 2006). Underlying these sediments are progressively older alluvial fan deposits, deposited in similar settings.

Aside from Quaternary alluvium, all other geologic units within one mile of the project area are igneous in origin, including the andesite to the north and Elephant Hill tonalite (a type of granitic rock) to the south (Morton and Miller, 2006). These units presumably form the basement of the valley itself as well. Because there is no potential for these geological units to yield paleontological resources, they were not analyzed further.

Paleontological Resource Inventory. The extent of impacts of project-related activities on the paleontological resources of each stratigraphic unit anticipated to be present at the project site is assessed in this section. This assessment includes the entirety of the project area. All facility components within the project area are expected to impact previously disturbed sediments of unknown thickness, and Holocene alluvial sediments underlying the disturbed sediments.

Previously Disturbed Sediment. Construction-related excavations within disturbed sediments or artificial fill will not result in impacts to paleontological resources. Reworked and disturbed fossil material can be present in previously disturbed sediment or fill, but lack of stratigraphic context and likely mechanical damage would compromise all scientific values. No impacts to paleontological resources will occur during excavations within these sediments.

Holocene and Quaternary Alluvium. Below the artificial fill and disturbed sediment at the project area are alluvial fans consisting of sediment eroded from the nearby mountains (Qyf3 on Figure 4.8-1). These likely include ancient stream deposits. While these sediments have not produced fossils in the past, the high rate of sedimentation and presence of rivers and washes makes it possible that these sediments contain paleontological resources. These sediments therefore have undetermined paleontological sensitivity.

4.8.4 Impacts

Potential impacts to paleontological resources are described below.

4.8.4.1 CEQA Environmental Checklist

The checklist in Table 4.8-2 assesses the significance of potential impacts.

Table 4.8-2. CEQA Checklist to Assess Potential Impacts
Small Power Plant Exemption Application for the Pomona Repower Project

	Potentially Significant Impact	Less than Significant w/Mitigation	Less than Significant	No Impact
PALEONTOLOGICAL RESOURCES—Would the project:				
a) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?		**X**		
MANDATORY FINDINGS OF SIGNIFICANCE				
Does the project have the potential to . . . eliminate important examples of the major periods of California history or prehistory?		**X**		

4.8.4.2 Discussion of Impacts

In its standard guidelines for assessment and mitigation of adverse impacts to paleontological resources, the SVP (2010) established three categories of sensitivity for paleontological resources: high, low, and undetermined. The paleontological importance or sensitivity of a stratigraphic unit reflects: (1) its potential paleontological productivity (and thus sensitivity), and (2) the scientific significance of the

fossils it has produced. This assessment method posits that exposures of a stratigraphic unit are most likely to yield fossil remains in quantity (and quality) similar to those previously recorded from that unit in and near the project site.

In its standard guidelines for assessment and mitigation of adverse impacts to paleontological resources, the SVP (1995) notes that an individual fossil specimen is considered scientifically important and significant if it is: (1) identifiable, (2) complete, (3) well preserved, (4) age-diagnostic, (5) useful in paleoenvironmental reconstruction, (6) a member of a rare species, (7) a species that is part of a diverse assemblage, or (8) a skeletal element different from, or a specimen more complete than, those now available for that species.

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

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

4.8.4.3 Paleontological Resource Impact Assessment

The significance of impacts of project-related activities on the paleontological resources of each stratigraphic unit anticipated to be present at the project site is presented in this section. Construction of all facility components within the project area will affect previously disturbed sediments, and Holocene alluvium underlying disturbed sediment.

Previously Disturbed Sediment. Construction-related excavations within disturbed sediments or artificial fill will not result in adverse impacts on paleontological resources. No impacts to paleontological resources will occur during excavations within these sediments.

Holocene and Quaternary Alluvium. Below artificial fill and disturbed sediment in the project area is alluvium deposited as a result of the erosion of the nearby mountains. These likely include ancient stream deposits. While these sediments have not produced fossils in the past, the high rate of sedimentation and presence of rivers and washes makes it possible that these sediments contain paleontological resources. These sediments therefore have undetermined paleontological sensitivity.

4.8.4.4 Summary of Paleontological Resource Inventory and Assessment

The potential impacts on paleontological resources resulting from construction of the project are summarized in this section. Construction-related impacts to paleontological resources would result from excavations to depths that may reach potentially fossiliferous sediments. No impacts on paleontological resources are expected to occur from the post-construction operation of the project. Although earth moving associated with construction of the project site would be a comparatively short-term activity, the loss of fossil remains, unrecorded fossil sites, associated specimen data and corresponding geologic and geographic site data, and the fossil-bearing strata would be potentially long-term environmental impacts.

The project site is located on unconsolidated, middle-Holocene alluvial fan deposits of unknown paleontological sensitivity. Overlying these deposits are disturbed fill possessing no paleontological sensitivity. Underlying these deposits, however, are sediments of undetermined paleontological sensitivity. As a rule (SVP, 2010) sediments of undetermined paleontological sensitivity are treated as if they are potentially fossiliferous. Consequently, project-related ground-disturbing activities could potentially have adverse impacts on paleontological resources.

4.8.5 Cumulative Effects

Widespread development throughout southern California has resulted in proportionately extensive impacts on paleontological resources, and this is anticipated to continue, albeit not at the rate that existed prior to the current economic recession, and not at the rate that existed before implementation of CEQA. The extensive nature of these cumulative impacts is due to this extensive development combined with the widespread presence of numerous fossiliferous sedimentary units in the region. However, measures typically implemented pursuant to state statutes (see Section 4.8.2.2) serve to mitigate these impacts through the recovery of the scientific and educational potential of the affected paleontological resources. Although not all projects are subject to CEQA review, and only a proportion of those incorporate paleontological protection measures, application of paleontological monitoring and mitigation measures is common and therefore mitigates the cumulative and direct impacts of continued development.

The potential of this project to contribute to cumulative impacts on paleontological resources is slight and, with the mitigation described below, the contribution of the project to cumulative negative impacts on paleontological resources would be negligible.

4.8.6 Mitigation Measures

The mitigation measures proposed below are in compliance with CEC guidelines (CEC, 2000; CEC, 2007a; CEC, 2007b) and with SVP guidelines for mitigating adverse construction-related impacts on paleontological resources (SVP, 2010). Implementation of these measures would assure that the potential impacts from project-related ground disturbance on paleontological resources would be less than significant.

4.8.6.1 Project Paleontological Resources Specialist

No less than 10 days prior to the start of construction, the project proponent will submit the name and resume of a qualified paleontological resources specialist (PRS) to the CEC for review and approval. This individual will prepare the paleontological resources module of the worker education program and be available during the course of ground-disturbing construction in case there is an unanticipated paleontological discovery. The name and contact information of the PRS will be provided to all construction management personnel, the compliance manager, and the cultural resource monitors (if any).

4.8.6.2 Construction Personnel Education

Prior to working on the site for the first time, all personnel involved in earth-moving activities will be provided with Paleontological Resources Awareness Training. This training ideally would be provided as a module in the worker environmental awareness training. They will be informed that fossils may be encountered, provided with information on the appearance of fossils, the role of paleontological monitors, and on proper notification procedures. This worker training will be prepared and initially presented by the PRS. Subsequent training may be conducted via video presentation and hard-copy training materials.

4.8.6.3 Develop and Implement a Paleontological Resources Monitoring and Mitigation Plan

Before the start of construction, and after reviewing available geotechnical boring data, the project proponent will prepare a Paleontological Resources Monitoring and Mitigation Plan (PRMMP). This plan will outline monitoring procedures, and protocols to be followed in the event that paleontological resources are discovered. The PRMMP will call for paleontological monitoring when, in the opinion of the PRS, potentially fossiliferous sediments could be encountered.

The PRMMP will stipulate that, if paleontological resources are encountered, *all work in the immediate vicinity of the find will halt immediately* and the paleontological resources monitor(s) will be notified. Construction will not resume until the PRS releases the area. The PRMMP will also outline communications protocols to be followed during monitoring and in the case of discovery of paleontological resources, and reporting requirements (at minimum including daily and monthly compliance reports, when monitoring occurs, and a final report).

4.8.6.4 Develop a final Paleontological Resources Report

At the conclusion of the project a final Paleontological Resources Report will be drafted. In the event that no paleontological resources are discovered this report will note the monitoring activities that occurred and that no fossils were discovered. In the event that fossils are discovered the nature of these fossils, tentative identifications (if possible), and the name of the repository the fossils were deposited in will be identified. In addition, site locality records will be prepared to record the location of the fossil site in a searchable paleontological database.

4.8.6.5 Significant Unavoidable Adverse Impacts

With implementation of the mitigation described above, no significant unavoidable adverse impacts on paleontological resources are anticipated as a result of the construction and operation of the project and related facilities.

4.8.7 Agencies and Agency Contacts

There are no State or local agencies having specific jurisdiction over paleontological resources.

4.8.8 Permits and Permit Schedules

No State or county agency requires a paleontological collecting permit to allow for the recovery of fossil remains discovered as a result of construction-related earth moving on state or private lands.

4.8.9 References

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Project Location

Source: 2013 National Geographic Society, i-cubed, USGS

Legend

- Project Location
- 1-mile Project Buffer
- Keh:Tonalite of Elephant Hill
- Kgp:Tonalite of Ganesha Park
- Kt:Tonalite, undifferentiated
- Qls:Very young landslide deposits
- Qw:Very young wash deposits
- Qyf3:Young alluvial-fan deposits, Unit 3
- Qyw:Young wash deposits
- Tg:Glendora Volcanics
- Tga:Glendora Volcanics
- Tgb:Glendora Volcanics
- Tgc:Glendora Volcanics
- Tgr:Glendora Volcanics
- Tgrb:Glendora Volcanics
- Tmd:Mountain Meadows Dacite
- Tplv:Puente Formation
- Tpsq:Puente Formation
- Tpy:Puente Formation

0 1,500 Feet

N

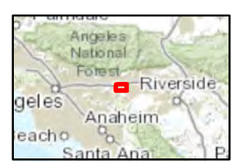

FIGURE 4.8-1
Paleontological Resources Study Area
Pomona Repower Project
Pomona, California

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