
4.11 PALEONTOLOGICAL RESOURCES

This section has been revised in response to comments received on the Draft EIS/EIR (April 2009), and based on additional independent review by the lead agencies (U.S. Army Corps of Engineers and California Department of Fish and Game). The revised or additional text is shown in double-underline; deleted text is shown in ~~strikeout~~. Revised or new figures or tables (if applicable) are indicated by the addition of the following text to the figure or table title: **(Revised)** or **(New)**.

4.11.1 INTRODUCTION

This section describes the existing paleontological resources and potential impacts to those resources that would result from implementation of the proposed Project (Alternative 2), a "No Action/No Project" alternative (Alternative 1), and five Project alternatives (Alternatives 3-7). Paleontological resources represent a limited, nonrenewable, and impact-sensitive scientific and educational resource. As defined in this section, "paleontological resources" (*i.e.*, fossils) are the remains and/or traces of prehistoric plant and animal life exclusive of man. Fossil remains such as bones, teeth, shells, and leaves are found in geologic deposits (rock formations) where they were originally buried. Paleontological resources include not only the fossilized remains, but also the collecting localities and the geologic deposits containing those localities. Under NEPA, federal agencies are required to consider the effects of their actions on paleontological resources in order to avoid unnecessary impacts to paleontological resources as a result of federal undertakings. Likewise, under CEQA, significant impacts to such resources must be avoided or otherwise mitigated, if feasible.

4.11.1.1 Relationship of Proposed Project to Newhall Ranch Specific Plan Program EIR

This section (**Section 4.11**) provides a stand-alone assessment of the potential significant paleontological impacts associated with the proposed Project; however, the previously certified Newhall Ranch environmental documentation provides important information and analysis for the RMDP and SCP components of the proposed Project. The Project components would require federal and state permitting, consultation, and agreements that are needed to facilitate development of the approved land uses within the Specific Plan site and that would establish spineflower preserves within the Project area, also facilitating development in the Specific Plan, VCC, and a portion of the Entrada planning area. Due to this relationship, the Newhall Ranch environmental documentation, findings, and mitigation, as they relate to paleontological resources, are summarized below to provide context for the proposed Project and alternatives.

Section 4.3 of the Newhall Ranch Revised Draft EIR (March 1999) identified and analyzed the existing conditions, potential impacts, and mitigation measures associated with paleontological resources for the entire Specific Plan area. In addition, Section 5.0 of the Newhall Ranch Revised Draft EIR (March 1999) identified and analyzed the potential paleontological impacts and mitigation measures associated with construction and operation of the approved WRP, which would treat the wastewater generated by the Specific Plan. The Newhall Ranch mitigation program was adopted by Los Angeles County in findings and in the revised Mitigation Monitoring Plans for the Specific Plan and WRP.

The Newhall Ranch Revised Draft EIR (March 1999) found that the Pico Formation and Saugus Formation within the development area of the Specific Plan site have a high potential to yield paleontological resources and that there is potential for the exposure of significant fossils in areas of these

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geologic units that are proposed for grading. Moreover, where Quaternary terrace deposits and Quaternary older alluvium exist in the development area, there is a moderate potential for yielding paleontological resources because there is potential for the exposure of significant fossils in areas of these geologic units. Therefore, the Specific Plan's grading activities could have significant impacts on the site's paleontological resources.

The Newhall Ranch Revised Draft EIR (March 1999) recommended the implementation of Mitigation Measure SP-4.3-4 to address the significant impacts to paleontological resources identified in the document.¹ In addition, although no impacts to paleontological resources are anticipated as a result of the construction and operation of the approved WRP, the Newhall Ranch Revised Draft EIR (March 1999) recommended the implementation of Mitigation Measure SP-5.0-21, should any paleontological resources be found during grading. The Board of Supervisors found that adoption of the recommended mitigation measures would reduce the identified potentially significant effects to less-than-significant levels. **Table 4.11-1** summarizes the Specific Plan's and WRP's impacts on paleontological resources, the applicable mitigation measures, and the significance findings after the mitigation is implemented.

Table 4.11-1
Impacts to Paleontological Resources Caused by Implementation of the Specific Plan and WRP

Impact Description	Mitigation Measures	Finding After Mitigation
Specific Plan Paleontological Resource Impacts - The Specific Plan proposes development on geologic formations with high potential for the discovery of fossil remains; therefore, it could have significant impacts on the region's paleontological resources.	• SP-4.3-4 (requires inspection testing program to salvage scientifically significant fossil remains).	Not significant.
Specific Plan Cumulative Paleontological Resource Impacts - No cumulative impacts to paleontological resources identified.	• No further mitigation recommended.	Not significant.
WRP Paleontological Resource Impacts - No known paleontological resources were identified at the site of the proposed WRP during the field surveys conducted for the Specific Plan. The alluvial sediments which comprise this site's near surface geological structure are not considered a potential source of paleontological (fossil-containing) materials.	• SP-5.0-21 (should any paleontological resources be found during grading, an archaeologist must evaluate the significance of the finding and identify appropriate methods for preserving or cataloguing any significant resources).	Not significant.

Source: Newhall Ranch Revised Draft EIR (March 1999) and Newhall Ranch Revised Additional Analysis (May 2003).

¹ References to mitigation measures included in the Newhall Ranch Specific Plan Program EIR are preceded by "SP" in this EIS/EIR to distinguish them from other mitigation measures discussed herein.

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4.11.1.2 Relationship of Proposed Project to VCC and Entrada Planning Areas

4.11.1.2.1 VCC Planning Area

The SCP component of the proposed Project, if approved, would facilitate development in the VCC planning area. The VCC is reliant on the SCP and associated take authorizations, and would not be developed without the take authorizations due to grading constraints. The VCC planning area is the remaining undeveloped portion of the VCC commercial/industrial complex currently under development by the applicant. The VCC was the subject of an EIR certified by Los Angeles County in April 1990 (SCH No. 1987123005). The applicant has recently submitted to Los Angeles County the last tentative parcel map (TPM No. 18108) needed to complete build-out of the remaining undeveloped portion of the VCC planning area. The County will require preparation of an EIR in conjunction with the parcel map and related project approvals; however, the County has not yet issued a Notice of Preparation (NOP) of the EIR or released the EIR. **Table 4.11-2** summarizes the VCC's impacts on paleontological resources, the applicable mitigation measures, and the significance findings after mitigation from the previously certified VCC EIR (April 1990).

Table 4.11-2
Impacts to Paleontological Resources Caused by VCC Implementation

VCC Impact Description	VCC Mitigation Measures	Finding After Mitigation
Project Paleontological Resource Impacts - The VCC project has potential to impact subsurface resources in unsurveyed areas.	• Mitigation measures call for discontinued grading, assessment, and mitigation if paleontological resources are discovered.	Not significant.
Cumulative Paleontological Resource Impacts - The project site is considered to be in a sensitive archaeological zone. Development of pending, approved, and recorded projects in the project vicinity could impact other archaeological sites. Individual project designs and locations will dictate any impacts to significant sites. Appropriate mitigation measure would be identified on an individual project basis by the appropriate regulatory agency.	• No further mitigation recommended.	Not significant.

Source: VCC EIR (April 1990).

4.11.1.2.2 Entrada Planning Area

The applicant is seeking approval from Los Angeles County for planned residential and non-residential development within the Entrada planning area. The SCP component of the proposed Project would designate an area within Entrada as a spineflower preserve. If approved, the SCP component would include take authorization of spineflower populations in Entrada that are located outside of the designated spineflower preserve area. Thus, the planned residential and non-residential development within portions of the Entrada planning area is reliant on the SCP and associated take authorizations, and those portions would not be developed without the take authorizations. The applicant has submitted to Los Angeles

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County Entrada development applications, which cover the portion of the Entrada planning area facilitated by the SCP component of the proposed Project. However, as of this writing, the County has not yet issued a NOP of an EIR or released an EIR for Entrada. As a result, there is no underlying local environmental documentation for the Entrada planning area at this time.

4.11.2 METHODOLOGY

A five-tiered classification system (Seward, 1994) of identifying the potential for geologic formations to contain paleontological resources was used to assess the impacts of the proposed Project. The data used to define the tiers was obtained from discussions with professional paleontologists, a review of pertinent paleontological information and literature regarding the Project area and its surroundings, and relevant field experience in southern California. Each sensitivity rating reflects the potential for the discovery of fossil resources over the course of the Project. The five sensitivity tiers are:

1. No potential -- This rating applies to igneous rocks whose molten origins preclude fossil remains from being preserved.
2. Low potential -- This rating applies to rocks that are too young geologically to contain significant fossils, are altered, or have a poor record of fossil recovery.
3. Moderate potential -- This rating applies to units that contain sedimentary rocks with histories of producing only a limited number of fossils at many locations.
4. High potential -- This rating applies to units that have well-established histories of containing significant fossils and/or fossils located on the study site.
5. Indeterminate potential -- This rating applies to rock units where there is little or no history of fossil discoveries because of the lack of systematic exploration of rock exposures.

The potential for the Project to result in significant impacts to paleontological resources was assessed by comparing the area of potential effect of each alternative with the location of geologic formations (Dibblee, 1992, 1993, 1996), and the potential for those formations to yield significant resources.

4.11.3 REGULATORY SETTING

This section describes the federal, state, and local regulatory requirements applicable to the proposed Project and the alternatives.

4.11.3.1 Federal

Historical Sites Act of 1935 (16 U.S.C. §§ 461 *et seq.*). This Act declares a national policy to preserve for public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States and provides the basis for the National Historic Landmark Program. The purpose of the National Historic Landmarks Program is to identify and designate National Historic Landmarks, and encourage the long-range preservation of nationally significant properties that illustrate or commemorate the history and prehistory of the United States. Under section 462 of this Act, the Secretary of the Interior performs the following duties and functions, among others:

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- To make a survey of historic and archeological sites, buildings, and objects for the purpose of determining which possess exceptional value as commemorating or illustrating the history of the United States;
- To make necessary investigations and researches in the United States relating to particular sites, buildings, or objects to obtain true and accurate historical and archeological facts and information concerning the same; and
- To erect and maintain tablets to mark or commemorate historic or prehistoric places and events of national historical or archeological significance.

The National Park Service (NPS) administers the National Historic Landmarks Program on behalf of the Secretary. Though there is no specific mention of paleontological resources in the Act itself, it lays the foundation for the National Natural Landmarks Program (NNL), established in 1962, which, in part, protects geologic features and paleontological resources.

National Registry of Natural Landmarks (16 U.S.C. §§ 461-467). The NNL was established in 1962, and is administered under the Historic Sites Act of 1935. Under this program, a NNL is defined as:

[A]n area designated by the Secretary of the Interior as being of national significance to the United States because it is an outstanding example(s) of major biological and geological features found within the boundaries of the United States or its Territories or on the Outer Continental Shelf.

(36 C.F.R. § 62.2.)

National significance is defined as:

[A]n area that is one of the best examples of a biological community or geological feature within a natural region of the United States, including terrestrial communities, landforms, geologic features and processes, habitats of native plant and animal species, or fossil evidence of the development of life.

(36 C.F.R. § 62.2.)

Federal agencies and their agents should consider the existence and the location of designated NNLs, and of areas found to meet the criteria for national significance, in assessing the effects of their activities on the environment under NEPA. (42 U.S.C. § 4331, subd. (b)(4).) The NPS is responsible for providing requested information about the NNL for these assessments. (36 C.F.R. § 62.6, subd. (f).) It is important to note that other than consideration under NEPA, NNLs are not afforded special protection. Furthermore, there is no requirement to evaluate paleontological resources for listing as an NNL. Finally, project proponents (state and local) are not obligated to prepare an application for listing potential NNLs, should such a resource be encountered during the course of project planning.

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National Historic Preservation Act of 1966 (16 U.S.C. §§ 470 *et seq.*). The National Historic Preservation Act establishes the framework within which historic resources are managed in the United States by establishing requirements to ensure responsible stewardship of prehistoric and historic resources for future generations. The full suite of regulations promulgated by the Advisory Council under the Act is available at Parts 800 through 812 in Title 36 of the Code of Federal Regulations. The Act generally is not applicable to paleontological resources, absent evidence that the resource is related to a historic property that is included in, or eligible for inclusion in the National Register. For additional information on the Act, and its applicability to the proposed Project, please see both **Section 4.10, Cultural Resources**, of the Draft EIS/EIR and revised **Section 4.10** of the Final EIS/EIR. ~~Section 106 of the National Historic Preservation Act does not apply to paleontological resources unless the resources are found in culturally related contexts (e.g., fossil shell included as a mortuary offering in a burial or in a culturally related site, such as a petrified wood location used as a chipped stone quarry). In such instances, the materials are considered to be cultural resources and are treated in a manner prescribed for the site in question. Mitigation actions usually are exclusively limited to sites determined eligible for or listed on the National Register of Historic Places.~~

National Environmental Policy Act of 1969 (42 U.S.C. §§ 4321 *et seq.*). Under NEPA, federal agencies are directed to use all practical means to "preserve important historic, cultural, and natural aspects of our national heritage." (42 U.S.C. § 4331, subd. (b)(4).) Regulations for implementing the procedural provisions of NEPA are found in 40 Code of Federal Regulations, parts 1500.1-1508.28.

If the presence of a significant environmental resource is identified during the scoping process, federal agencies and their agents must take the resource into consideration when evaluating project impacts. Consideration of paleontological resources may be required under NEPA when a project is proposed for development on federal land, or land under federal jurisdiction. The level of consideration depends upon the federal agency involved.

4.11.3.2 State

California Environmental Quality Act (Pub. Resources Code, §§ 21000 *et seq.*). CEQA requires that if paleontological resources are identified during the preliminary scoping studies as being within the proposed project area, the lead agency must take those resources into consideration when evaluating project effects. If the project may result in significant impacts to paleontological resources, those significant impacts must be avoided or substantially reduced to the extent feasible.

Public Resources Code Section 5097.5. Public Resources Code section 5097.5, subdivision (a), states that no person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, rock art, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over the lands. Violation of this section is a misdemeanor.

As described in this section, "public lands" are defined as lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof. (Pub. Resources Code, § 5097.5, subd. (b).)

4.11.3.3 Local

The Los Angeles County General Plan contains provisions for the protection of paleontological resources. These regulations generally provide additional assistance for the assessment and treatment measures of projects subject to CEQA compliance. Los Angeles County mitigation requirements include: (1) notification of appropriate scientific/museum personnel that grading is to begin; (2) presence of an on-site monitor at all times of original cutting of undisturbed fossil bearing rock units; (3) diversion of grading activities to allow for salvage; (4) collection of appropriate materials; and (5) donation to a public, nonprofit educational institution.

4.11.4 EXISTING CONDITIONS

The Project area consists of approximately 13,000 acres of hilly terrain. A series of east to west trending ridges and valleys, which become progressively more rugged in the southern portion of the Project area, cross the site. Several large, flat terraces are present along the southern boundary of the Santa Clara River. Hillsides, terraces, and valley floors are covered by grassland and chaparral.

4.11.4.1 Stratigraphy

Five distinct strata are found within the boundaries of the Project area: (1) the Towsley Formation; (2) the Pico Formation; (3) the Saugus Formation; (4) Pleistocene older dissected surficial sediments; and (5) Holocene surficial sediments. (See **Section 4.13, Figures 4.13-1a, 1b and 1c**, Geology Overview Maps of Project Area.) Portions of the following descriptions of the geologic units (in ascending order) that are found within the Project area were provided by Seward (1994:3-5). Descriptions and other data also were obtained from geologic maps of the region. (Dibblee, 1992, 1993, 1996.)

The two sediment strata and three geologic formations found on the Project site range from low to high potential to contain paleontological resources. Impacts to paleontological resources are directly related to the potential for the discovery of fossils within a geologic formation and the amount of development proposed to occur within areas containing that formation. The potential for fossil production of the individual formations within the Project area are provided by Seward (1994) and are discussed below.

Towsley Formation. Exposures of the Towsley Formation are located in Salt Canyon and High Country areas in the southern portion of the Project area. The Towsley Formation is a late Miocene to early Pliocene (eight to four million years ago) marine deposit. The shales, sandstones, and conglomerates of the Towsley Formation were deposited in a gradually shallowing marine basin. Portions of this unit were deposited as submarine sediment flows, bringing sand and rocks (some as large as boulders) into the deep seas. Fossil marine vertebrates and invertebrates are known from exposures of this formation east of the Project area, along State Route 14. At these locations, the remains of fossil whales, sea cows (manatees), a distant relative of the walrus, and numerous invertebrates have been collected. These fossils occur in locally abundant concentrations or horizons. Although this unit has been examined in only a few locations, it appears that fossils occur throughout the deposit. Therefore, this formation is assigned a high paleontological potential.

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Pico Formation. The Pico Formation is exposed along Potrero Canyon, Salt Canyon, Graves Canyon, Chiquito Canyon, and portions of San Martinez Grande Canyon. The Pico Formation was deposited in a shallowing marine basin. The base of the Pico Formation was deposited in deep waters, while the top of the formation was deposited in shallow marine or lagoonal waters. The top of the Pico Formation and the overlying Saugus Formation intermingle. The siltstones, sandstones, and conglomerates of this formation span the period from the early to the late Pliocene (four to two million years ago). This unit contains the remains of numerous invertebrates and occasional vertebrates. Extensive invertebrate fauna and at least one vertebrate have been recorded immediately adjacent to the Project area. Within the Project area, numerous invertebrates have been recovered from locations within Potrero Canyon, Long Canyon, and Chiquito Canyon. A fragmentary fossilized bone was discovered in the transition zone between the Pico Formation and the Saugus Formation, near the mouth of Long Canyon. Therefore, this formation is assigned a high paleontological potential.

Saugus Formation. The Saugus Formation is exposed on the western side of Chiquito Canyon, portions of Long Canyon and Lion Canyon, and east to Six Flags Magic Mountain Amusement Park. Oil field operations have created extensive exposures, allowing for the examination of a large part of this unit. The Saugus Formation was deposited in the region from the late Pliocene (two million years ago) to the early Pleistocene (1.6 million years ago to 200,000 years ago). The age of the Saugus Formation has been debated due to the lack of age diagnostic fossils, especially in the upper portion of the formation. Within the Project area, the Saugus Formation intermingles with the underlying Pico Formation and contains some marine or brackish water deposits in the lower portion of the unit, before becoming exclusively non-marine in the upper portion of the formation. The marine deposits have also been referred to as the Pico Formation.

The Saugus Formation records the last withdrawal of the sea from the Santa Clarita Valley approximately two million years ago. This gradual shallowing of the sea that had covered the region since the Miocene (approximately 15 million years ago) resulted from the rise of the Santa Susana Mountains and Simi Hills. Marine invertebrates are well known from these deposits in the Moorpark and Simi Valley areas. A diverse assemblage of marine and non-marine vertebrates, including extinct horses, large cats, dogs, elephants, turtles, peccaries, deer, and sharks, are known from other exposures of the Saugus Formation in Simi Valley. Other fossil remains that have been recovered from this formation include rodents, rabbits, and lizards. The Saugus Formation is assigned a high paleontological potential.

Pleistocene Older Dissected Surficial Sediments. Elevated deposits of older surficial sediments are scattered throughout the Project area. They are found mainly along the edges of the Santa Clara River Valley, and specifically at the mouth of Potrero Canyon and portions of Humble Canyon, Lion Canyon, and San Martinez Grande Canyon. These deposits probably represent older valley alluvium deposits that are now elevated above the existing valley floor.

The Pleistocene older dissected surficial sediments are assigned a moderate paleontological potential, based upon their connection to terrace deposits, which have a record of fossil production throughout the region. These units are underlain by older highly fossiliferous deposits and have the potential to reveal those deposits during the course of extensive grading for the Project.

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Holocene Surficial Sediments. Surficial sediments are found along the lower elevations, mainly along the canyon floors. These deposits are described as consisting of artificial cut and fill; areas of grading and/or development; gravel and sand of major stream channels; and alluvial gravel, sand, and clay of valley areas. These sediments are the deposits of streams that have flowed across the region over the last 10,000 years. Recent alluvium is too young geologically to contain significant fossils, though, occasionally, older buried alluvium contains fossils. The Holocene surficial sediments are assigned a low paleontological potential, based upon the slight possibility for the discovery of buried older deposits.

4.11.4.2 Specific Plan Area

Information pertaining to the existing conditions as they relate to paleontological resources of the Newhall Ranch Specific Plan area is presented in the Newhall Ranch Specific Plan Program EIR, which is summarized below and in **Subsection 4.11.1.1**. The Specific Plan area was divided into 24 geographic zones that were investigated during geological surveys conducted by R.T. Frankian & Associates in 1994. These surveys produced both current land use and soil descriptions. In addition, RMW Paleo completed a paleontological study for the Newhall Ranch Specific Plan area in October 1994. This information, in conjunction with the information gathered on rock formations, surficial deposits, seismic potential, and groundwater, has assisted in the determination of the impacts of the proposed Project and its alternatives on paleontological resources.

4.11.4.3 VCC Planning Area

The VCC planning area is located near the confluence of the Santa Clara River and Castaic Creek, and is underlain primarily by Holocene surficial sediment deposits associated with the historical drainage patterns of these water courses. The active channel of Castaic Creek currently bisects the site in a north to south direction. On-site surficial sediment deposits consist of alluvial gravel, sand, and silt in historical valley and floodplain areas, and gravel and sand within the Castaic Creek channel. One alluvial area within the VCC planning area subject to less recent hydrological activity is underlain with Pleistocene older dissected surficial sediments, consisting of older alluvial gravel, sand, and silt/clay. Surrounding this area is an exposure of the Saugus Formation. The VCC planning area does not contain any exposures of the Pico or Towsley Formations.

4.11.4.4 Entrada Planning Area

The Entrada planning area is located to the east of the Specific Plan area, and contains three ephemeral tributaries to the Santa Clara River. Most of the area is underlain by Pleistocene older dissected surficial sediments, consisting primarily of gravel and sand. Holocene surficial sediment deposits of alluvial gravel, sand, and clay underlie the canyons of the three ephemeral drainages. The Entrada planning area does not contain any exposures of the Saugus, Pico, or Towsley Formations.

4.11.5 IMPACT SIGNIFICANCE CRITERIA

The significance criterion listed below is derived from Appendix G of the State CEQA Guidelines. The Corps has agreed to use the CEQA criteria presented below for purposes of this EIS/EIR, although

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significance conclusions are not expressly required under NEPA. The Corps also has applied additional federal requirements as appropriate in this EIS/EIR.

Impacts to paleontological resources would be significant if:

The proposed Project or the alternatives directly or indirectly destroys a unique paleontological resource or site or unique geological feature.

4.11.6 IMPACTS OF THE PROPOSED PROJECT AND ALTERNATIVES

The proposed Project's impacts to paleontological resources can be evaluated by assessing the potential for discovery of fossils during construction activities. This potential is based upon the likelihood of encountering fossils during excavations within a geologic formation. Impacts to paleontological resources are not based upon the significance of a find, but rather the presence or absence of fossils within a geologic formation.

4.11.6.1 Impacts of Alternative 1 (No Action/No Project)

Under Alternative 1, no Project-related actions would be taken and the paleontological resources of the Project site would continue to be affected by natural erosion processes as occurs under existing conditions. Under this alternative, there would be no construction of bridges, bank stabilization, grade control structures, detention basins, storm drains, or the WRP. Consequently, Alternative 1 would not result in any direct impacts to the environment. Similarly, with respect to indirect and secondary impacts, under Alternative 1, no infrastructure would be built and no permits issued to facilitate development within the Specific Plan area, the VCC planning area, or portions of the Entrada planning area. Therefore, Alternative 1 would not result in ground disturbing activities that would have the potential to effect paleontological resources, indirectly or otherwise. Consequently, this alternative would not result in any paleontological resource-related impacts.

4.11.6.2 Impacts of Alternative 2 (Proposed Project)

4.11.6.2.1 Direct Impacts

RMDP Direct Impacts. A significant impact would occur if earthmoving and construction activities associated with the installation of infrastructure improvements proposed by the RMDP encounter previously unknown and unrecorded paleontological resources within the Pico Formation, Saugus Formation, and/or the older dissected surficial deposits, which have a high to moderate potential to contain paleontological resources. Activities associated with the construction of proposed improvements, such as bank stabilization, the removal of existing drainages, the installation of grade control structures, and the construction of bridges have the potential to result in adverse impacts to paleontological resources. This is a significant impact.

Significant direct impacts associated with earthmoving activities within the Pico Formation, the Saugus Formation, and/or the older dissected surficial deposits in the Project area would be reduced through the application of Mitigation Measures PR-1, PR-2, PR-3, and PR-4. These measures specify monitoring requirements, planned contingencies for paleontological resource discovery, and periodic

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sampling/screening requirements to be carried out by a qualified paleontologist. Mitigation Measures PR-5, PR-6, and PR-7 require curation and reporting of any paleontological resources found during the course of the Project. The detailed requirements of each mitigation measure are presented below in **Subsection 4.11.7.2**. The proposed mitigation measures would implement the impact reduction procedures required by the Los Angeles County General Plan, and require measures such as on-site monitoring, salvage of scientifically fossil remains, periodic testing of rock samples, and curation of scientific specimens. Implementation of the proposed mitigation measures would reduce significant adverse paleontological impacts of the proposed Project to a less-than-significant level by minimizing the potential for damage to or the loss of significant paleontological resources.

SCP Direct Impacts. The SCP is a conservation plan that would establish conservation, mitigation, and permitting strategies for the spineflower. The proposed spineflower preserves would not result in ground disturbing activities. Therefore, the creation of the proposed preserves would not significantly impact paleontological resources.

4.11.6.2.2 Indirect Impacts

RMDP Indirect Impacts. Implementation of Alternative 2 would result in the build-out of the adopted Specific Plan, with the addition of spineflower preserves at Potrero Canyon, San Martinez Grande Canyon, Grapevine Mesa, and Airport Mesa. Implementation of the proposed RMDP may result in indirect impacts to paleontological resources located on the Specific Plan site by facilitating the development of the previously approved residential, mixed-use, and nonresidential uses throughout the Specific Plan area.

Significant impacts to paleontological resources would occur if earthmoving and construction activities uncover previously unknown and unrecorded paleontological resources within the Pico Formation, the Saugus Formation, and/or the older dissected surficial deposits. Consequently, build-out of the Specific Plan may result in significant indirect impacts to paleontological resources located on the Specific Plan area. The mitigation measures described in **Subsection 4.11.7.1** and **Subsection 4.11.7.2** are consistent with the Los Angeles County General Plan mitigation requirements for paleontological resources and would reduce impacts associated with the build-out of the Specific Plan area to a less-than-significant level.

Exposures of the Towsley Formation on the Specific Plan area are restricted to future open areas where no surface disturbance would occur. Therefore, significant impacts to paleontological resources within this formation are less than significant.

SCP Indirect Impacts. Implementation of Alternative 2 would facilitate development of the previously approved Specific Plan. Impacts of the Specific Plan on paleontological resources are described above. Alternative 2 would result in the completion of the VCC and development of an additional 3,400,000 square feet of nonresidential uses. Implementation of Alternative 2 also would facilitate development of a portion of the Entrada planning area, consisting of approximately 1,725 residential dwelling units and 450,000 square feet of nonresidential uses.

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The VCC planning area primarily is underlain by Holocene surficial sediment deposits associated with historical drainage patterns of the Santa Clara River and Castaic Creek. Therefore, there is a low potential for future development on the VCC planning area to encounter important paleontological resources. The Entrada planning area primarily is underlain by Pleistocene older dissected surficial sediments, which have a moderate potential to yield paleontological resources.

Future development in the VCC and Entrada planning areas has a low to medium potential to result in significant impacts to paleontological resources. Potential impacts can be reduced through the application of Mitigation Measures PR-1, PR-2, PR-3, and PR-4, which specify monitoring requirements, planned contingencies in the unlikely event that paleontological resources are discovered, and periodic sampling/screening requirements to be carried out by a qualified paleontologist. Mitigation Measures PR-5, PR-6, and PR-7 require curation and reporting of any paleontological resources found during the course of the Project. These mitigation measures would implement the Los Angeles County General Plan mitigation requirements for paleontological resources and reduce potential impacts to a less-than-significant level.

4.11.6.2.3 Secondary Impacts

RMDP Secondary Impacts. The RMDP component of the proposed Project (Alternative 2) would result in the construction of various infrastructure improvements on the Specific Plan site, which would facilitate build-out of the Specific Plan. Implementation of the proposed RMDP and the associated build-out of the Specific Plan would not result in the development of facilities located beyond the boundaries of the Specific Plan that would result in ground disturbing operations or otherwise impact paleontological resources. Therefore, Alternative 2 would not result in significant secondary impacts to paleontological resources.

SCP Secondary Impacts. The SCP component of the proposed Project would facilitate future development on the VCC and Entrada planning areas. Development of those sites would not result in the construction of facilities located beyond the boundaries of the VCC and Entrada planning areas, and would not result in off-site ground disturbing operations that would significantly impact paleontological resources. Therefore, the establishment of spineflower preserves included in Alternative 2 would not result in significant secondary impacts to paleontological resources.

Table 4.11-3 summarizes the potential direct, indirect, and secondary impacts of Alternative 2.

Table 4.11-3 Alternative 2 Direct/Indirect/Secondary Significant Impacts	
Type of Impact	Potential for Impacts to Paleontological Resources
Direct	High
Indirect	High
Secondary	None

4.11.6.3 Impacts of Alternative 3 (Elimination of Planned Potrero Bridge and Additional Spineflower Preserves)

As described in **Section 3.0** (Description of Alternatives), Alternative 3 would eliminate some of the proposed RMDP infrastructure improvements proposed for the Specific Plan area when compared to the proposed Project, and increase the size of proposed spineflower preserves from 167.6 to 221.8 acres when compared to Alternative 2. Subsequent development on the Specific Plan site and Entrada planning area also would be reduced, as Alternative 3 would facilitate the development of 21,558 residential dwelling units and approximately 9,333,000 square feet of nonresidential uses.

4.11.6.3.1 Direct Impacts

RMDP Direct Impacts. While impacts to geologic formations with potential to yield paleontological resources would be reduced incrementally when compared to the proposed Project, Alternative 3 would still result in significant direct impacts that are similar to those of the proposed Project, as identified in **Subsection 4.11.6.2.1**.

The significant impacts associated with Alternative 3's earthmoving activities within the Pico Formation, the Saugus Formation, and/or the older dissected surficial deposits to install bank protection, bridges, roadways, and other infrastructure improvements would be reduced through the application of Mitigation Measures PR-1, PR-2, PR-3, and PR-4. These measures specify monitoring requirements, planned contingencies for paleontological resources discovery, and periodic sampling/screening requirements to be carried out by a qualified paleontologist. Mitigation Measures PR-5, PR-6, and PR-7 require curation and reporting of any paleontological resources found during the course of the proposed Project. The detailed requirements of each mitigation measure are presented below in **Subsection 4.11.7.4**. These mitigation measures would implement the Los Angeles County General Plan mitigation requirements for paleontological resources and would reduce potential impacts to a less-than-significant level.

SCP Direct Impacts. The SCP is a conservation plan that would establish conservation, mitigation, and permitting strategies for the spineflower. The spineflower preserves developed under Alternative 3 would not result in ground disturbing activities. Therefore, the creation of the proposed preserves would not significantly impact paleontological resources.

4.11.6.3.2 Indirect Impacts

RMDP Indirect Impacts. The RMDP component of Alternative 3 would indirectly facilitate partial build-out of the Specific Plan by providing required infrastructure improvements. While the potential for impacts to paleontological resources in the Pico, Saugus and older dissected surficial deposit. Formations would be reduced incrementally when compared to the proposed Project, Alternative 3 still would result in significant indirect impacts that are similar to those of the proposed Project identified in **Subsection 4.11.6.2.2**.

Significant impacts to paleontological resources may occur if earthmoving and construction activities uncover previously unknown and unrecorded paleontological resources within the Pico Formation, the Saugus Formation, and/or the older dissected surficial deposits. Consequently, build-out of the Specific

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Plan may result in significant indirect impacts to paleontological resources located on the Specific Plan site. The mitigation measures described in **Subsection 4.11.7.1** and **Subsection 4.11.7.4**, PR-1 through PR-7, are consistent with the Los Angeles County General Plan mitigation requirements for paleontological resources and would reduce impacts associated with the build-out of the Specific Plan area to a less-than-significant level.

SCP Indirect Impacts. The SCP component of Alternative 3 would indirectly facilitate partial build-out of the Specific Plan by authorizing take of selected spineflower occurrences. Implementation of Alternative 3 would facilitate completion of the VCC and development of a portion of the Entrada planning area.

The VCC planning area is underlain primarily by Holocene surficial sediment deposits associated with historical drainage patterns of the Santa Clara River and Castaic Creek. Therefore, there is a low potential for future development at the VCC planning area to encounter important paleontological resources. The Entrada planning area is underlain primarily by Pleistocene older dissected surficial sediments, which have a moderate potential to yield paleontological resources.

Future development in the VCC and Entrada planning areas has a low to medium potential to significantly impact paleontological resources. Potential impacts can be reduced through the application of Mitigation Measures PR-1, PR-2, PR-3, and PR-4, which specify monitoring requirements, planned contingencies in the unlikely event that paleontological resources are discovered, and periodic sampling/screening requirements to be carried out by a qualified paleontologist. Mitigation Measures PR-5, PR-6, and PR-7 require curation and reporting of any paleontological resources found during the course of the Project. The detailed requirements of each mitigation measure are presented below in **Subsection 4.11.7.2**. These mitigation measures would implement the Los Angeles County General Plan mitigation requirements for paleontological resources and reduce potential impacts to a less-than-significant level.

4.11.5.3.3 Secondary Impacts

RMDP Secondary Impacts. The RMDP component of Alternative 3 would result in the construction of various infrastructure improvements on the Specific Plan site that would facilitate build-out of the Specific Plan. Implementation of the RMDP and the associated build-out of the Specific Plan would not require or result in development of facilities located beyond the boundaries of the Specific Plan that would result in ground disturbing operations or otherwise significantly impact paleontological resources. Therefore, implementation of infrastructure improvements included in Alternative 3 would not result in significant secondary impacts to paleontological resources.

SCP Secondary Impacts. The SCP component of Alternative 3 would facilitate future development on the VCC and Entrada planning areas. Development of those sites would not result in the construction of facilities located beyond the boundaries of the VCC and Entrada planning areas, and would not result in off-site ground disturbing operations that would significantly impact paleontological resources. Therefore, the spineflower preserves included in Alternative 3 would not result in significant secondary impacts to paleontological resources.

Table 4.11-4 summarizes the direct, indirect, and secondary impacts of Alternative 3.

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Table 4.11-4
Alternative 3 Direct/Indirect/Secondary Significant Impacts

Type of Impact	Potential for Impacts to Paleontological Resources
Direct	High
Indirect	High
Secondary	None

4.11.6.4 Impacts of Alternative 4 (Elimination of Planned Potrero Bridge and Addition of VCC Spineflower Preserve)

As described in **Section 3.0** (Description of Alternatives), Alternative 4 would eliminate additional infrastructure improvements included in the proposed RMDP, and increase the size of proposed spineflower preserves from 167.6 to 259.9 acres when compared to Alternative 2. Under this alternative, no additional development would be facilitated on the VCC planning area, and subsequent development on the Specific Plan site would be reduced. In total, Alternative 4 would facilitate the development of 21,846 residential dwelling units and approximately 5,933,000 square feet of nonresidential uses on the Specific Plan site and on a portion of the Entrada planning area.

4.11.6.4.1 Direct Impacts

RMDP Direct Impacts. While impacts to geologic formations with potential to yield paleontological resources would be reduced when compared to the proposed Project, Alternative 4 still would result in significant direct impacts that are similar to those of the proposed Project, as identified in **Subsection 4.11.6.2.1**.

The significant impacts associated with Alternative 4's earthmoving activities within the Pico Formation, the Saugus Formation, and/or the older dissected surficial deposits to install bank protection, bridges, roadways and other infrastructure improvements could be reduced through the application of Mitigation Measures PR-1, PR-2, PR-3, and PR-4. These measures specify monitoring requirements, planned contingencies for the discovery of unique paleontological resources, and periodic sampling/screening requirements to be carried out by a qualified paleontologist. Mitigation Measures PR-5, PR-6, and PR-7 require curation and reporting of any paleontological resources found during the course of the Project. The detailed requirements of each mitigation measure are presented below in **Subsection 4.11.7.4**. These mitigation measures would implement the Los Angeles County General Plan mitigation requirements for paleontological resources and reduce potential impacts to a less-than-significant level.

SCP Direct Impacts. The SCP is a conservation plan that would establish conservation, mitigation, and permitting strategies for the spineflower. The spineflower preserves developed under Alternative 4 would not result in ground disturbing activities. Therefore, the creation of the proposed preserves would not significantly impact paleontological resources.

4.11.6.4.2 Indirect Impacts

RMDP Indirect Impacts. The RMDP component of Alternative 4 would indirectly facilitate partial build-out of the Newhall Ranch Specific Plan by providing required infrastructure improvements. While impacts to geologic formations with potential to yield paleontological resources would be reduced incrementally when compared to the proposed Project, Alternative 4 still would result in potentially significant indirect impacts that are similar to those of the proposed Project, as identified in **Subsection 4.11.6.2.2**.

Significant impacts to paleontological resources may occur if earthmoving and construction activities uncover previously unknown and unrecorded paleontological resources within the Pico Formation, the Saugus Formation, and/or the older dissected surficial deposits. Consequently, build-out of the Specific Plan may result in significant indirect impacts to paleontological resources located on the Specific Plan area. The mitigation measures described in **Subsection 4.11.7.1** and **Subsection 4.11.7.4** below are consistent with the Los Angeles County General Plan mitigation requirements for paleontological resources and require measures such as on-site monitoring, salvage of scientifically fossil remains, periodic testing or rock samples, and curation of scientific specimens. Implementation of those mitigation measures would reduce impacts associated with build-out of the Specific Plan area to a less-than-significant level.

SCP Indirect Impacts. The SCP component of Alternative 4 indirectly would facilitate partial build-out of the Specific Plan by authorizing take of selected spineflower occurrences. Implementation of Alternative 4 also would facilitate development of a portion of the Entrada planning area, and result in the establishment of a spineflower preserve on the VCC planning area, which would preclude future build-out of the VCC. Previously approved development on the VCC planning area would not be feasible because the spineflower preserve would make it infeasible to implement the previously approved grading plan that is required to complete build-out of the VCC project.

The Entrada planning area is underlain primarily by Pleistocene older dissected surficial sediments, which have a moderate potential to yield paleontological resources. Potential impacts can be reduced through the application of Mitigation Measures PR-1, PR-2, PR-3, and PR-4, which specify monitoring requirements, planned contingencies in the unlikely event that paleontological resources are discovered, and periodic sampling/screening requirements to be carried out by a qualified paleontologist. Mitigation Measures PR-5, PR-6, and PR-7 require curation and reporting of any paleontological resources found during the course of the Project. The detailed requirements of each mitigation measure are presented below in **Subsection 4.11.7.4**. These mitigation measures would implement the Los Angeles County General Plan mitigation requirements for paleontological resources and reduce potential impacts to a less-than-significant level.

4.11.6.4.3 Secondary Impacts

RMDP Secondary Impacts. The RMDP component of Alternative 4 would result in the construction of various infrastructure improvements on the Specific Plan site, which would facilitate build-out of the Specific Plan. Implementation of the proposed RMDP and the associated build-out of the Specific Plan would not result in the development of facilities located beyond the boundaries of the Specific Plan that

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would result in ground disturbing operations or otherwise cause significant impacts to paleontological resources. Therefore, implementation of infrastructure improvements included in Alternative 4 would not result in significant secondary impacts to paleontological resources.

SCP Secondary Impacts. The SCP component of Alternative 4 would facilitate future development on a portion of the Entrada planning area. Development of the Entrada planning area would not result in the construction of facilities located beyond the boundaries of the site, and would not result in off-site ground disturbing operations that would significantly impact paleontological resources. Therefore, the establishment of spineflower preserves included in Alternative 4 would not result in significant secondary impacts to paleontological resources.

Table 4.11-5 summarizes the direct, indirect, and secondary impacts of Alternative 4.

Table 4.11-5 Alternative 4 Direct/Indirect/Secondary Significant Impacts	
Type of Impact	Potential for Impacts to Paleontological Resources
Direct	High
Indirect	High
Secondary	None

4.11.6.5 Impacts of Alternative 5 (Widen Tributary Drainages and Addition of VCC Spineflower Preserve)

As described in **Section 3.0** (Description of Alternatives), Alternative 5 would eliminate additional infrastructure improvements included in the proposed RMDP, and increase the size of proposed spineflower preserves from 167.6 to 338.6 acres when compared with Alternative 2. Under this alternative, no additional development would be facilitated on the VCC planning area, and subsequent development on the Specific Plan site would be reduced. In total, Alternative 5 would facilitate the development of 21,155 residential dwelling units and approximately 5,865,000 square feet of nonresidential uses on the Specific Plan site and on a portion of the Entrada planning area.

4.11.6.5.1 Direct Impacts

RMDP Direct Impacts. While impacts to geologic formations with potential to yield paleontological resources would be reduced when compared to the proposed Project, Alternative 5 still would result in potentially significant direct impacts that are similar to those of the proposed Project, as identified in **Subsection 4.11.6.2.1**.

The significant impacts associated with Alternative 5's earthmoving activities within the Pico Formation, the Saugus Formation, and/or the older dissected surficial deposits to install bank protection, bridges, roadways and other infrastructure improvements would be reduced through the application of Mitigation Measures PR-1, PR-2, PR-3, and PR-4. These measures specify monitoring requirements, planned contingencies for the discovery of unique paleontological resources, and periodic sampling/screening requirements to be carried out by a qualified paleontologist. Mitigation Measures PR-5, PR-6, and PR-7

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require curation and reporting of any paleontological resources found during the course of the Project. The detailed requirements of each mitigation measure are presented below in **Subsection 4.11.7.4**. These mitigation measures would implement the Los Angeles County General Plan mitigation requirements for paleontological resources and reduce potential impacts to a less-than-significant level.

SCP Direct Impacts. The SCP is a conservation plan that would establish conservation, mitigation, and permitting strategies for the spineflower. The spineflower preserves developed under Alternative 5 would not result in ground disturbing activities. Therefore, the creation of the proposed preserves would not significantly impact paleontological resources.

4.11.6.5.2 Indirect Impacts

RMDP Indirect Impacts. The RMDP component of Alternative 5 would indirectly facilitate partial build-out of the Specific Plan by providing required infrastructure improvements. Impacts to geologic formations with potential to yield paleontological resources would be incrementally reduced when compared to the proposed Project because Alternative 5 would result in a reduced amount of development on the Specific Plan site, which would reduce the potential for ground disturbance impacts to paleontological resources. However, Alternative 5 still would result in potentially significant indirect impacts that are similar to those of the proposed Project, as identified in **Subsection 4.11.6.2.2**.

Significant impacts to paleontological resources may occur if earthmoving and construction activities uncover previously unknown and unrecorded paleontological resources within the Pico Formation, the Saugus Formation, and/or the older dissected surficial deposits. Consequently, build-out of the Specific Plan may result in significant indirect impacts to paleontological resources located on the Specific Plan area. The mitigation measures described in **Subsection 4.11.7.1** and **Subsection 4.11.7.4** would reduce impacts associated with build-out of the Specific Plan area to a less-than-significant level.

SCP Indirect Impacts. The SCP component of Alternative 5 would indirectly facilitate partial build-out of the Specific Plan by authorizing take of selected spineflower occurrences. Implementation of Alternative 5 also would facilitate development of a portion of the Entrada planning area, and result in the establishment of a spineflower preserve on the VCC planning area, which would preclude future build-out of the VCC. Previously approved development on the VCC planning area would not be feasible because the spineflower preserve would make it infeasible to implement the previously approved grading plan that is required to complete build-out of the VCC project.

The Entrada planning area is underlain primarily by Pleistocene older dissected surficial sediments, which have a moderate potential to yield paleontological resources. Potential impacts can be reduced through the application of Mitigation Measures PR-1, PR-2, PR-3, and PR-4, which specify monitoring requirements, planned contingencies in the unlikely event that paleontological resources are discovered, and periodic sampling/screening requirements to be carried out by a qualified paleontologist. Mitigation Measures PR-5, PR-6, and PR-7 require curation and reporting of any paleontological resources found during the course of the Project. The detailed requirements of each mitigation measure are presented below in **Subsection 4.11.7.4**. These mitigation measures would implement the Los Angeles County General Plan mitigation requirements for paleontological resources and would reduce potential impacts to a less-than-significant level.

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4.11.6.5.3 Secondary Impacts

RMDP Secondary Impacts. The RMDP component of Alternative 5 would result in the construction of various infrastructure improvements on the Specific Plan site, which would facilitate build-out of the Specific Plan. Implementation of the proposed RMDP and the associated build-out of the Specific Plan would not result in the development of facilities located beyond the boundaries of the Specific Plan that would result in ground disturbing operations or otherwise significantly impact paleontological resources. Therefore, implementation of infrastructure improvements included in Alternative 5 would not result in significant secondary impacts to paleontological resources.

SCP Secondary Impacts. The SCP component of Alternative 5 would facilitate future development on a portion of the Entrada planning area. Development of the Entrada planning area would not result in the construction of facilities located beyond the boundaries of the site, and would not result in off-site ground disturbing operations that would significantly impact paleontological resources. Therefore, the establishment of spineflower preserves included in Alternative 5 would not result in significant secondary impacts to paleontological resources.

Table 4.11-6 summarizes the direct, indirect, and secondary impacts of Alternative 5.

Table 4.11-6 Alternative 5 Direct/Indirect/Secondary Significant Impacts	
Type of Impact	Potential for Impacts to Paleontological Resources
Direct	High
Indirect	High
Secondary	None

4.11.6.6 **Impacts of Alternative 6 (Elimination of Planned Commerce Center Drive Bridge and Maximum Spineflower Expansion/Connectivity)**

As described in **Section 3.0** (Description of Alternatives), Alternative 6 would result in additional reductions in the infrastructure improvements included in the proposed RMDP, and increase the size of proposed spineflower preserves from 167.6 to 891.2 acres when compared with Alternative 2. Under this alternative, no additional development would be facilitated on the VCC planning area, and subsequent development on the Specific Plan site would be reduced. In total, Alternative 6 would facilitate the development of 20,212 residential dwelling units and approximately 5,784,000 square feet of nonresidential uses on the Specific Plan site and on a portion of the Entrada planning area.

4.11.6.6.1 Direct Impacts

RMDP Direct Impacts. While impacts to geologic formations with potential to yield paleontological resources would be reduced when compared to the proposed Project, Alternative 6 still would result in potentially significant direct impacts that are similar to those of the proposed Project, as identified in **Subsection 4.11.6.2.1**.

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The significant impacts associated with Alternative 6's earthmoving activities within the Pico Formation, the Saugus Formation, and/or the older dissected surficial deposits in the Project area would be reduced through the application of Mitigation Measures PR-1, PR-2, PR-3, and PR-4. These measures specify monitoring requirements, planned contingencies for the discovery of unique paleontological resources, and periodic sampling/screening requirements to be carried out by a qualified paleontologist. Mitigation Measures PR-5, PR-6, and PR-7 require curation and reporting of any paleontological resources found during the course of the Project. The detailed requirements of each mitigation measure are presented below in **Subsection 4.11.7.4**. These mitigation measures would implement the Los Angeles County General Plan mitigation requirements for paleontological resources and reduce impacts to a less-than-significant level.

SCP Direct Impacts. The SCP is a conservation plan that would establish conservation, mitigation, and permitting strategies for the spineflower. The spineflower preserves developed under Alternative 6 would not result in ground disturbing activities. Therefore, the creation of the proposed preserves would not significantly impact paleontological resources.

4.11.6.6.2 Indirect Impacts

RMDP Indirect Impacts. The RMDP component of Alternative 6 would indirectly facilitate partial build-out of the Newhall Ranch Specific Plan by providing required infrastructure improvements. While impacts to geologic formations with potential to yield paleontological resources would be reduced incrementally when compared to the proposed Project, Alternative 6 still would result in potentially significant indirect impacts that are similar to those of the proposed Project, as identified in **Subsection 4.11.6.2.2**.

Significant impacts to paleontological resources may occur if earthmoving and construction activities uncover previously unknown and unrecorded paleontological resources within the Pico Formation, the Saugus Formation, and/or the older dissected surficial deposits. Consequently, build-out of the Specific Plan may result in significant indirect impacts to paleontological resources located on the Specific Plan area. The mitigation measures described in **Subsection 4.11.7.1** and **Subsection 4.11.7.4** would reduce impacts associated with build-out of the Specific Plan area to a less-than-significant level.

SCP Indirect Impacts. The SCP component of Alternative 6 would indirectly facilitate partial build-out of the Specific Plan by authorizing take of selected spineflower occurrences. Implementation of Alternative 6 also would facilitate development of a portion of the Entrada planning area, and result in the establishment of a spineflower preserve on the VCC planning area, which would preclude future build-out of the VCC. Previously approved development on the VCC planning area would not be feasible because the spineflower preserve would make it infeasible to implement the previously approved grading plan that is required to complete build-out of the VCC project.

The Entrada planning area is underlain primarily by Pleistocene older dissected surficial sediments, which have a moderate potential to yield paleontological resources. Potential impacts can be reduced through the application of Mitigation Measures PR-1, PR-2, PR-3, and PR-4, which specify monitoring requirements, planned contingencies in the unlikely event that paleontological resources are discovered, and periodic sampling/screening requirements to be carried out by a qualified paleontologist. Mitigation

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Measures PR-5, PR-6, and PR-7 require curation and reporting of any paleontological resources found during the course of the Project. The detailed requirements of each mitigation measure are presented below in **Subsection 4.11.7.4**. These mitigation measures would implement Los Angeles County General Plan mitigation requirements for paleontological resources and reduce potential impacts to a less-than-significant level.

4.11.6.6.3 Secondary Impacts

RMDP Secondary Impacts. The RMDP component of Alternative 6 would result in the construction of various infrastructure improvements on the Specific Plan site, which would facilitate build-out of the Specific Plan. Implementation of the proposed RMDP and the associated build-out of the Specific Plan would not result in the development of facilities located beyond the boundaries of the Specific Plan that would result in ground disturbing operations or otherwise significantly impact paleontological resources. Therefore, implementation of infrastructure improvements included in Alternative 6 would not result in significant secondary impacts to paleontological resources.

SCP Secondary Impacts. The SCP component of Alternative 6 would facilitate future development on a portion of the Entrada planning area. Development of the Entrada planning area would not result in the construction of facilities located beyond the boundaries of the site, and would not result in off-site ground disturbing operations that would significantly impact paleontological resources. Therefore, the establishment of spineflower preserves included in Alternative 6 would not result in significant secondary impacts to paleontological resources.

Table 4.11-7 summarizes the potential for paleontological resources to be impacted as a result of the direct, indirect, and secondary impacts of Alternative 6.

Table 4.11-7 Alternative 6 Direct/Indirect/Secondary Significant Impacts	
Type of Impact	Potential for Impacts to Paleontological Resources
Direct	High
Indirect	High
Secondary	None

4.11.6.7 Impacts of Alternative 7 (Avoidance of 100-Year Floodplain, Elimination of Two Planned Bridges, and Avoidance of Spineflower)

As described in **Section 3.0** (Description of Alternatives), Alternative 7 would substantially reduce the infrastructure improvements provided by the RMDP when compared to the proposed Project, and increase the size of proposed spineflower preserves from 167.6 to 660.6 acres when compared with Alternative 2. Under this alternative, no additional development would be facilitated on the VCC planning area, and subsequent development on the Newhall Ranch Specific Plan site would be reduced. In total, Alternative 7 would facilitate the development of 17,323 residential dwelling units and approximately 3,815,000 square feet of nonresidential uses on the Specific Plan site and on a portion of the Entrada planning area.

4.11.6.7.1 Direct Impacts

RMDP Direct Impacts. While impacts to geologic formations with potential to yield paleontological resources would be reduced when compared to the proposed Project, Alternative 7 still would result in potentially significant direct impacts that are similar to those of the proposed Project, as identified in **Subsection 4.11.6.2.1**.

The significant impacts associated with Alternative 7's earthmoving activities within the Pico Formation, the Saugus Formation, and/or the older dissected surficial deposits in the Project area would be reduced through the application of Mitigation Measures PR-1, PR-2, PR-3, and PR-4. These measures specify monitoring requirements, planned contingencies for the discovery of unique paleontological resources, and periodic sampling/screening requirements to be carried out by a qualified paleontologist. Mitigation Measures PR-5, PR-6, and PR-7 require curation and reporting of any paleontological resources found during the course of the Project. The detailed requirements of each mitigation measure are presented below in **Subsection 4.11.7.4**. These mitigation measures would implement the Los Angeles County General Plan mitigation requirements for paleontological resources and reduce potential impacts to a less-than-significant level.

SCP Direct Impacts. The SCP is a conservation plan that would establish conservation, mitigation, and permitting strategies for the spineflower. The spineflower preserves developed under Alternative 7 would not result in ground disturbing activities. Therefore, the creation of the proposed preserves would not significantly impact paleontological resources.

4.10.6.7.2 Indirect Impacts

RMDP Indirect Impacts. The RMDP component of Alternative 7 would indirectly facilitate partial build-out of the Specific Plan by providing required infrastructure improvements. While impacts to geologic formations with potential to yield paleontological resources would be reduced incrementally when compared to the proposed Project, Alternative 7 still would result in potentially significant indirect impacts that are similar to those of the proposed Project, as identified in **Subsection 4.11.6.2.2**.

Significant impacts to paleontological resources may occur if earthmoving and construction activities uncover previously unknown and unrecorded paleontological resources within the Pico Formation, the Saugus Formation, and/or the older dissected surficial deposits. Consequently, build-out of the Specific Plan may result in significant indirect impacts to paleontological resources located on the Specific Plan area. The mitigation measures described in **Subsection 4.11.7.1**, and **Subsection 4.11.7.4** would reduce impacts associated with the build-out of the Specific Plan area to a less-than-significant level.

SCP Indirect Impacts. The SCP component of Alternative 7 would indirectly facilitate partial build-out of the Specific Plan by authorizing take of selected spineflower occurrences. Implementation of Alternative 7 also would facilitate development of a portion of the Entrada planning area, and result in the establishment of a spineflower preserve on the VCC planning area, which would preclude future build-out of the VCC. Previously approved development on the VCC planning area would not be feasible because the spineflower preserve would make it infeasible to implement the previously approved grading plan that is required to complete build-out of the VCC project.

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The Entrada planning area is underlain primarily by Pleistocene older dissected surficial sediments, which have a moderate potential to yield paleontological resources. Potential impacts can be reduced through the application of Mitigation Measures PR-1, PR-2, PR-3, and PR-4, which specify monitoring requirements, planned contingencies in the unlikely event that paleontological resources are discovered, and periodic sampling/screening requirements to be carried out by a qualified paleontologist. Mitigation Measures PR-5, PR-6, and PR-7 require curation and reporting of any paleontological resources found during the course of the Project. The detailed requirements of each mitigation measure are presented below in **Subsection 4.11.7.4**. These mitigation measures would implement the Los Angeles County General Plan mitigation requirements for paleontological resources and reduce potential impacts to a less-than-significant level.

4.11.6.7.3 Secondary Impacts

RMDP Secondary Impacts. The RMDP component of Alternative 7 would result in the construction of various infrastructure improvements on the Specific Plan site, which would facilitate build-out of the Specific Plan. Implementation of the proposed RMDP and the associated build-out of the Specific Plan would not result in the development of facilities located beyond the boundaries of the Specific Plan that would result in ground disturbing operations or otherwise significantly impact paleontological resources. Therefore, implementation of infrastructure improvements included in Alternative 7 would not result in significant secondary impacts to paleontological resources.

SCP Secondary Impacts. The SCP component of Alternative 7 would facilitate future development on a portion of the Entrada planning area. Development of the Entrada planning area would not result in the construction of facilities located beyond the boundaries of the site, and would not result in off-site ground disturbing operations that would significantly impact paleontological resources. Therefore, the establishment of spineflower preserves included in Alternative 7 would not result in significant secondary impacts to paleontological resources.

Table 4.11-8 summarizes the direct, indirect, and secondary impacts of Alternative 7.

Table 4.11-8	
Alternative 7 Direct/Indirect/Secondary Significant Impacts	
Type of Impact	Potential for Impacts to Paleontological Resources
Direct	High
Indirect	High
Secondary	None

4.11.7 MITIGATION MEASURES

4.11.7.1 Mitigation Measures Already Required by the Adopted Newhall Ranch Specific Plan EIR

Los Angeles County previously adopted mitigation measures to minimize impacts to paleontological resources within the Specific Plan area as part of its adoption of the Specific Plan and WRP. These

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measures are found in the previously certified Newhall Ranch Specific Plan Program EIR and the adopted Mitigation Monitoring Plans for the Specific Plan and WRP (May 2003), and are summarized in **Table 4.11-1**, above. In addition, these mitigation measures are set forth in full below, and preceded by "SP," which stands for Specific Plan.

SP-4.3-4 As part of an inspection testing program, a Los Angeles County Natural History Museum-approved inspector is to be on site to salvage scientifically significant fossil remains. The duration of these inspections depends on the potential for the discovery of fossils, the rate of excavation, and the abundance of fossils. Geological formations (like the Saugus Formation) with a high potential will initially require full time monitoring during grading activities. Geologic formations (like the Quaternary terrace deposits) with a moderate potential will initially require half-time monitoring. If fossil production is lower than expected, the duration of monitoring efforts should be reduced. Because of known presence of microvertebrates in the Saugus Formation, samples of at least 2,000 pounds of rock shall be taken from likely horizons, including localities 13, 13A, 14, and 23. These samples can be stock-piled to allow processing later to avoid delays in grading activities. The frequency of these samples will be determined based on field conditions. Should the excavations yield significant paleontological resources, excavation is to be stopped or redirected until the extent of the find is established and the resources are salvaged. Because of the long duration of the Specific Plan, a reassessment of the paleontological potential of each rock unit will be used to develop mitigation plans for subsequent subdivisions. The report shall include an itemized inventory of the fossils, pertinent geologic and stratigraphic data, field notes of the collectors and include recommendations for future monitoring efforts in those rock units. Prior to grading, an agreement shall be reached with a suitable public, non-profit scientific repository, such as the Los Angeles County Museum of Natural History or similar institution, regarding acceptance of fossil collections.

Water Reclamation Plant

SP-5.0-21 No significant impact to cultural or paleontological resources are anticipated from construction of the WRP. However, should such resources be found during site grading, a professional archaeologist or paleontologist will be retained to evaluate the significance of the finding and to identify appropriate methods of preserving or cataloguing any significant resources.

4.11.7.2 Mitigation Measures Already Required by the Adopted VCC EIR

The County of Los Angeles also adopted mitigation measures to minimize paleontological resources-related impacts within the VCC planning area as part of its approval of the VCC project. These measures are found in the previously certified VCC EIR (April 1990), and are summarized in **Table 4.11-2**, above. In addition, these measures are set forth in full below, and preceded by "VCC-PR," which stands for Valencia Commerce Center - Paleontological Resources.

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At the time of adoption, the VCC mitigation measures represented the best available mitigation imposed by Los Angeles County. Moreover, as noted in **Subsection 4.11.1.2.1**, above, additional environmental review will be conducted by Los Angeles County with respect to the VCC planning area, because the applicant recently submitted the last tentative parcel map for build-out of the VCC planning area. Implementation of the previously adopted, applicable VCC mitigation measures and additional mitigation requirements (e.g., measures similar to those previously adopted for the Specific Plan area and/or recommended for the proposed Project) would ensure that significant impacts to paleontological resources within the VCC planning area are reduced to the extent feasible.

VCC-PR-1 If remains, artifacts or cultural resources are discovered during grading, all development activity will be discontinued until an assessment is completed and appropriate mitigation measures are identified.

VCC-PR-2 Detailed surface field surveys will be conducted prior to individual tentative map approval.

Additional paleontological mitigation measures were required by the Corps in 1990 as part of the individual permit that the Corps issued for the VCC project-related flood control improvements. The Corps' permit required site surveys for paleontological resources, and if necessary, monitoring of grading activities.

4.11.7.3 Mitigation Measures Relating to the Entrada Planning Area

The County of Los Angeles has not yet prepared or released a draft EIR for the proposed development within the portion of the Entrada planning area that would be facilitated by approval of the SCP component of the proposed Project. As a result, there are no previously adopted mitigation measures for the Entrada planning area. However, the adoption and implementation of measures similar to those previously adopted for the Specific Plan area and/or recommended for the proposed Project would ensure that potential impacts to paleontological resources within the Entrada planning area are reduced to the extent feasible.

4.11.7.4 Additional Mitigation Measures Proposed by this EIS/EIR

Based on the analysis above, the following mitigation measures are proposed to ensure that impacts to paleontological resources located on the Project site are reduced to less-than-significant levels. The measures were derived from the Los Angeles County guidelines and the State CEQA Guidelines for the protection of paleontological resources. Generalized mitigation measures were provided by these documents, with specific measures (established by the Society of Vertebrate Paleontology) based upon professional standards. According to Seward, these measures have been used successfully elsewhere in California to help protect paleontological resources for future scientific study and public education, while allowing the timely completion of projects. (Seward, 1994:10.)

The proposed mitigation measures are to be implemented in addition to those previously adopted by Los Angeles County in connection with its approval of the Specific Plan, WRP, and VCC projects. The

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additional measures are preceded by “PR” to designate that they are mitigation measures for paleontological resource impacts.

PR-1 A qualified paleontologist shall be retained to monitor and salvage scientifically significant fossil remains. The duration of these inspections depends on the potential for the discovery of fossils, the rate of excavation, and the abundance of fossils.

- (a) The Saugus and Pico Formations have a high potential to yield paleontological resources and will require continuous monitoring during all grading activities. This may require use of multiple paleontologists working on the site at the same time if simultaneous ground disturbing activities are occurring over an extensive area to assure all areas of excavation are being fully monitored for the presence of paleontological resources. The number of required monitors shall be determined by Project’s monitoring paleontologist.
- (b) The older dissected Pleistocene formations have a moderate potential to yield paleontological resources and will require half-time monitoring during all grading activities by a qualified paleontologist(s).

Because of the large size and long duration of this Project, it will be necessary to periodically review the paleontological potential assigned to each rock unit. This shall be done at the end of each phase of grading. This reassessment of potential will be used to develop mitigation plans for future phases of development. If fossil production is lower than expected, the duration of the monitoring efforts should be reduced to less than continuous monitoring during all grading activities.

PR-2 The paleontologist, in consultation with the grading contractor, developer, and Los Angeles County inspector, shall have the power to divert temporarily or direct grading efforts in the area of an exposed fossil to allow evaluation and, if necessary, salvage of exposed fossils.

PR-3 Microinvertebrates are known to exist in the Saugus Formation within the Project area. Samples of the Saugus Formation rock units shall be collected periodically as directed by the Project paleontologist. Appropriate materials for collection are samples of at least 2,000 pounds of rock from likely horizons identified by the Project paleontologist. These samples can be stockpiled (to allow for processing at a later time) to avoid delays in grading activities. The representative rock samples shall be analyzed by a qualified paleontologist for data collection purposes. Based on the results of initial evaluations, the number of collection samples in subsequent grading phases may be increased or decreased as deemed appropriate by the Project paleontologist.

PR-4 Because fossils were discovered during the course of the 1994 field survey, pre-grading salvage is necessary in localities 13, 13A, 14, and 23, as presented in the 1994 Paleontological Technical Report prepared by RMW. This report provides specific details pertaining to the existing conditions as they relate to paleontological resources of the Specific Plan portion of the RMDP and was presented in the Newhall Ranch Specific Plan Program EIR, and is available for public review at the Los Angeles County Department of Regional Planning, 320 W. Temple

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Street, Los Angeles, California, 90012. These locations represent significant fossil discoveries. A minimum of 2,000 pounds of rock should be collected at each site, stockpiled, and screen washed before grading begins at these locations. The representative rock samples shall be analyzed by a qualified paleontologist for data collection purposes. Based on the results of initial evaluations, the number of collection samples in subsequent grading phases may be increased or decreased as deemed appropriate by the Project paleontologist.

- PR-5** Scientific specimens are to become the property of a public, nonprofit educational institution, such as the Los Angeles County Museum of Natural History (or similar institution). Most institutions are now requiring, as conditions for accepting the materials, that significant fossils be prepared, identified to a reasonable level, and catalogued before donation. Therefore, to meet these requirements, prior to the start of Project-related grading, an agreement shall be reached with a suitable scientific repository regarding acceptance of the fossil collection.
- PR-6** Locations of recorded fossil deposits shall remain confidential and shall be disclosed to qualified paleontologists or other qualified individuals on a "need to know" basis.
- PR-7** To assure compliance with the Los Angeles County guidelines and CEQA, a final report summarizing the results of the mitigation efforts is necessary. To adequately report the results of the mitigation efforts, the report shall include: (1) an itemized inventory of the fossils; (2) pertinent geologic and stratigraphic data; (3) field notes of the collectors; and (4) indication of the repository. Because the Newhall Ranch Specific Plan and the VCC and Entrada planning areas will be developed in phases, a final report shall be prepared at the end of the grading activities associated with each phase of development. This report shall provide the information necessary to reassess the paleontological potential of each rock unit graded and shall include recommendations for future monitoring efforts in those rock units.

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4.11.8 SUMMARY OF SIGNIFICANCE FINDINGS

Table 4.11-9 presents a summary of the significance criteria relating to each of the Project alternatives, and the reduced level of impact that would be achieved for each alternative by applying the above mitigation measures.

Table 4.11-9 Summary of Significant Paleontological Impacts - Pre- and Post-Mitigation									
Significance Criteria	Applicable Mitigation Measures	Planning Area	Impact of Alternatives - Pre/Post-Mitigation						
			ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	ALT 6	ALT 7
Directly or indirectly destroy a unique paleontological resource or site.	PR-1	NRSP	NI/NI	SI/M	SI/M	SI/M	SI/M	SI/M	SI/M
	PR-2								
	PR-3								
	PR-4	VCC	NI/NI	SI/M	SI/M	SI/M	SI/M	SI/M	SI/M
	PR-5								
	PR-6 PR-7	Entrada	NI/NI	SI/M	SI/M	SI/M	SI/M	SI/M	SI/M
SI/M = Significant impact, but mitigated to less-than-significant level									
NI = No impact, and no mitigation required									

In summary, the proposed Project (Alternative 2) and Alternatives 3-7 may result in direct and indirect project-related actions that would affect geologic formations known to contain paleontological resources. With the implementation of proposed mitigation measures, potential impacts resulting from each Project alternative would be reduced to a less-than-significant level. None of the Project alternatives would result in secondary (off-site) impacts to paleontological resources.

4.11.9 SIGNIFICANT UNAVOIDABLE IMPACTS

With implementation of the identified mitigation measures, the paleontological resources impacts of the proposed Project and the "build" alternatives would be reduced to less-than-significant levels. Therefore, the proposed Project and alternatives would not result in any significant unavoidable impacts to paleontological resources.