Appendix D

Native American Outreach and Paleontological Resources Assessment Memo

Native American Outreach

NATIVE AMERICAN HERITAGE COMMISSION
Environmental and Cultural Department
1550 Harbor Blvd., ROOM 100
West SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471

August 22, 2017

Hannah Haas
Rincon

Email to: hhaas@rinconconsultants.com

RE: Rio Ranch Marketplace, Monterey County

Dear Ms. Haas,

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not preclude the presence of cultural resources in any project area. Other sources for cultural resources should also be contacted for information regarding known and/or recorded sites.

Enclosed is a list of Native Americans tribes who may have knowledge of cultural resources in the project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these tribes, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at frank.lienert@nahc.ca.gov.

Sincerely,

Frank Lienert
Associate Governmental Program Analyst

Native American Heritage Commission
Native American Contacts
8/22/2017

Esselen Tribe of Monterey County
Tom Little Bear Nason
38655 Tassajara Road — Esselen
Carmel Valley , CA 93924 — Ohlone
(408) 659-2153

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28 — Ohlone/Costanoan
Hollister , CA 95024
ams@indiancanyon.org
(831) 637-4238

Coastanoan Rumsen Carmel Tribe
Tony Cerda, Chairperson
244 E. 1st Street — Ohlone/Costanoan
Pomona , CA 91766
rumsen@aol.com
(909) 524-8041 Cell
(909) 629-6081

Ohlone/Coastanoan-Esselen Nation
Louise Miranda-Ramirez, Chairperson
P.O. Box 1301 — Esselen
Monterey , CA 93942 — Ohlone/Costanoan
ramirez.louise@yahoo.com
(408) 629-5189
408-661-2486 Cell

Amah MutsunTribal Band
Valentin Lopez, Chairperson
P.O. Box 5272 — Ohlone/Costanoan
Galt , CA 95632 — Northern Valley Yokuts
vlopez@amahmutsun.org
(916) 743-5833

Amah MutsunTribal Band of Mission San Juan Bautista
Irenne Zwierlein, Chairperson
789 Canada Road — Ohlone/Costanoan
Woodside , CA 94062
amahmutsuntribal@gmail.com
(650) 851-7489 Cell
(650) 851-7747 Office
(650) 332-1526 Fax

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessments for the proposed Rio Ranch Marketplace, Monterey County

Rincon Consultants, Inc.

437 Figueroa Street, Suite 203
Monterey, California 93940

831 333 0310 OFFICE AND FAX

info@rinconconsultants.com
www.rinconconsultants.com

August 23, 2017

Esselen Tribe of Monterey County
Tom Little Bear Nason
38655 Tassajara Road
Carmel Valley, CA 93924

RE: Cultural Study for the Rio Ranch Marketplace Project, Carmel-by-the-Sea, Monterey County, CA

Dear Mr. Nason:

Rincon Consultants, Inc. (Rincon) was retained by the County of Monterey Resource Management Agency to conduct a cultural resources study for the Rio Ranch Marketplace (project) located in Carmel-by-the-Sea in Monterey County, California, depicted in the enclosed figure. The project is a proposed 42,310-square foot retail development on a 3.8-acre undeveloped, infill site. The retail development would consist of four commercial retail buildings, including a 23,000 square foot market and three smaller buildings ranging from 5,000 to 8,335 square feet. The development would additionally include two commercial retail farm sheds of 500 square foot each. In total, the building footprint of all buildings would occupy 26 percent of the 164,421-square foot site.

As part of the process of identifying cultural resources issues for this project, Rincon contacted the Native American Heritage Commission and requested a Sacred Lands File (SLF) search and a list of Native American tribal organizations and individuals who may have knowledge of sensitive cultural resources in or near the project area. Rincon received a response from the NAHC on August 22, 2017, which stated that the SLF search had been completed with negative results. The NAHC suggested we contact you to discuss this project further.

If you have knowledge of cultural resources that may exist within or near the project site, please contact me in writing at the above address or at hhaas@rinconconsultants.com, or by telephone at (760) 918-9444, extension 230. Thank you for your assistance.

Sincerely,

Hannah Haas

Hannah Haas
Archaeologist

Enclosure: Project Location Map

Rincon Consultants, Inc.

437 Figueroa Street, Suite 203
Monterey, California 93940

831 333 0310 OFFICE AND FAX

info@rinconconsultants.com
www.rinconconsultants.com

August 23, 2017

Coastanoan Rumsen Carmel Tribe
Tony Cerda, Chairperson
244 E. 1st Street
Pomona, CA 91766

RE: Cultural Study for the Rio Ranch Marketplace Project, Carmel-by-the-Sea, Monterey County, CA

Dear Chairman Cerda:

Rincon Consultants, Inc. (Rincon) was retained by the County of Monterey Resource Management Agency to conduct a cultural resources study for the Rio Ranch Marketplace (project) located in Carmel-by-the-Sea in Monterey County, California, depicted in the enclosed figure. The project is a proposed 42,310-square foot retail development on a 3.8-acre undeveloped, infill site. The retail development would consist of four commercial retail buildings, including a 23,000 square foot market and three smaller buildings ranging from 5,000 to 8,335 square feet. The development would additionally include two commercial retail farm sheds of 500 square foot each. In total, the building footprint of all buildings would occupy 26 percent of the 164,421-square foot site.

As part of the process of identifying cultural resources issues for this project, Rincon contacted the Native American Heritage Commission and requested a Sacred Lands File (SLF) search and a list of Native American tribal organizations and individuals who may have knowledge of sensitive cultural resources in or near the project area. Rincon received a response from the NAHC on August 22, 2017, which stated that the SLF search had been completed with negative results. The NAHC suggested we contact you to discuss this project further.

If you have knowledge of cultural resources that may exist within or near the project site, please contact me in writing at the above address or at hhaas@rinconconsultants.com, or by telephone at (760) 918-9444, extension 230. Thank you for your assistance.

Sincerely,

Hannah Haas

Hannah Haas
Archaeologist

Enclosure: Project Location Map

Rincon Consultants, Inc.

437 Figueroa Street, Suite 203
Monterey, California 93940

831 333 0310 OFFICE AND FAX

info@rinconconsultants.com
www.rinconconsultants.com

August 23, 2017

Ohlone/Coastanoan-Esselen Nation
Louise Miranda-Ramirez, Chairperson
P.O. Box 1301
Monterey, CA 93942

RE: Cultural Study for the Rio Ranch Marketplace Project, Carmel-by-the-Sea, Monterey County, CA

Dear Chairperson Miranda-Ramirez:

Rincon Consultants, Inc. (Rincon) was retained by the County of Monterey Resource Management Agency to conduct a cultural resources study for the Rio Ranch Marketplace (project) located in Carmel-by-the-Sea in Monterey County, California, depicted in the enclosed figure. The project is a proposed 42,310-square foot retail development on a 3.8-acre undeveloped, infill site. The retail development would consist of four commercial retail buildings, including a 23,000 square foot market and three smaller buildings ranging from 5,000 to 8,335 square feet. The development would additionally include two commercial retail farm sheds of 500 square foot each. In total, the building footprint of all buildings would occupy 26 percent of the 164,421-square foot site.

As part of the process of identifying cultural resources issues for this project, Rincon contacted the Native American Heritage Commission and requested a Sacred Lands File (SLF) search and a list of Native American tribal organizations and individuals who may have knowledge of sensitive cultural resources in or near the project area. Rincon received a response from the NAHC on August 22, 2017, which stated that the SLF search had been completed with negative results. The NAHC suggested we contact you to discuss this project further.

If you have knowledge of cultural resources that may exist within or near the project site, please contact me in writing at the above address or at hhaas@rinconconsultants.com, or by telephone at (760) 918-9444, extension 230. Thank you for your assistance.

Sincerely,

Hannah Haas

Hannah Haas
Archaeologist

Enclosure: Project Location Map

Rincon Consultants, Inc.

437 Figueroa Street, Suite 203
Monterey, California 93940

831 333 0310 OFFICE AND FAX

info@rinconconsultants.com
www.rinconconsultants.com

August 23, 2017

Amah Mutsun Tribal Band
Valentin Lopez, Chairperson
P.O. Box 5272
Galt, CA 95632

RE: Cultural Study for the Rio Ranch Marketplace Project, Carmel-by-the-Sea, Monterey County, CA

Dear Chairperson Lopez:

Rincon Consultants, Inc. (Rincon) was retained by the County of Monterey Resource Management Agency to conduct a cultural resources study for the Rio Ranch Marketplace (project) located in Carmel-by-the-Sea in Monterey County, California, depicted in the enclosed figure. The project is a proposed 42,310-square foot retail development on a 3.8-acre undeveloped, infill site. The retail development would consist of four commercial retail buildings, including a 23,000 square foot market and three smaller buildings ranging from 5,000 to 8,335 square feet. The development would additionally include two commercial retail farm sheds of 500 square foot each. In total, the building footprint of all buildings would occupy 26 percent of the 164,421-square foot site.

As part of the process of identifying cultural resources issues for this project, Rincon contacted the Native American Heritage Commission and requested a Sacred Lands File (SLF) search and a list of Native American tribal organizations and individuals who may have knowledge of sensitive cultural resources in or near the project area. Rincon received a response from the NAHC on August 22, 2017, which stated that the SLF search had been completed with negative results. The NAHC suggested we contact you to discuss this project further.

If you have knowledge of cultural resources that may exist within or near the project site, please contact me in writing at the above address or at hhaas@rinconconsultants.com, or by telephone at (760) 918-9444, extension 230. Thank you for your assistance.

Sincerely,

Hannah Haas

Hannah Haas
Archaeologist

Enclosure: Project Location Map

Rincon Consultants, Inc.

437 Figueroa Street, Suite 203
Monterey, California 93940

831 333 0310 OFFICE AND FAX

info@rinconconsultants.com
www.rinconconsultants.com

August 23, 2017

Amah Mutsun Tribal Band of Mission San Juan Bautista
Irenne Zwierlein, Chairperson
789 Canada Road
Woodside, CA 94062

RE: Cultural Study for the Rio Ranch Marketplace Project, Carmel-by-the-Sea, Monterey County, CA

Dear Chairperson Zwierlein:

Rincon Consultants, Inc. (Rincon) was retained by the County of Monterey Resource Management Agency to conduct a cultural resources study for the Rio Ranch Marketplace (project) located in Carmel-by-the-Sea in Monterey County, California, depicted in the enclosed figure. The project is a proposed 42,310-square foot retail development on a 3.8-acre undeveloped, infill site. The retail development would consist of four commercial retail buildings, including a 23,000 square foot market and three smaller buildings ranging from 5,000 to 8,335 square feet. The development would additionally include two commercial retail farm sheds of 500 square foot each. In total, the building footprint of all buildings would occupy 26 percent of the 164,421-square foot site.

As part of the process of identifying cultural resources issues for this project, Rincon contacted the Native American Heritage Commission and requested a Sacred Lands File (SLF) search and a list of Native American tribal organizations and individuals who may have knowledge of sensitive cultural resources in or near the project area. Rincon received a response from the NAHC on August 22, 2017, which stated that the SLF search had been completed with negative results. The NAHC suggested we contact you to discuss this project further.

If you have knowledge of cultural resources that may exist within or near the project site, please contact me in writing at the above address or at hhaas@rinconconsultants.com, or by telephone at (760) 918-9444, extension 230. Thank you for your assistance.

Sincerely,

Hannah Haas

Hannah Haas
Archaeologist

Enclosure: Project Location Map

Rincon Consultants, Inc.

437 Figueroa Street, Suite 203
Monterey, California 93940

831 333 0310 OFFICE AND FAX

info@rinconconsultants.com
www.rinconconsultants.com

August 23, 2017

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28
Hollister, CA 95024

RE: Cultural Study for the Rio Ranch Marketplace Project, Carmel-by-the-Sea, Monterey County, CA

Dear Chairperson Sayers:

Rincon Consultants, Inc. (Rincon) was retained by the County of Monterey Resource Management Agency to conduct a cultural resources study for the Rio Ranch Marketplace (project) located in Carmel-by-the-Sea in Monterey County, California, depicted in the enclosed figure. The project is a proposed 42,310-square foot retail development on a 3.8-acre undeveloped, infill site. The retail development would consist of four commercial retail buildings, including a 23,000 square foot market and three smaller buildings ranging from 5,000 to 8,335 square feet. The development would additionally include two commercial retail farm sheds of 500 square foot each. In total, the building footprint of all buildings would occupy 26 percent of the 164,421-square foot site.

As part of the process of identifying cultural resources issues for this project, Rincon contacted the Native American Heritage Commission and requested a Sacred Lands File (SLF) search and a list of Native American tribal organizations and individuals who may have knowledge of sensitive cultural resources in or near the project area. Rincon received a response from the NAHC on August 22, 2017, which stated that the SLF search had been completed with negative results. The NAHC suggested we contact you to discuss this project further.

If you have knowledge of cultural resources that may exist within or near the project site, please contact me in writing at the above address or at hhaas@rinconconsultants.com, or by telephone at (760) 918-9444, extension 230. Thank you for your assistance.

Sincerely,

Hannah Haas

Hannah Haas
Archaeologist

Enclosure: Project Location Map

Rincon Consultants, Inc.
437 Figueroa Street, Suite 203
Monterey, California 93940

831 333 0310 OFFICE AND FAX

info@rinconconsultants.com
www.rinconconsultants.com

September 13, 2017
Rincon Project No: 16-03366

Brandon Swanson
RMA Planning Services Manager
County of Monterey
168 W. Alisal St., 2nd Floor
Salinas, California 93901

Subject: **Paleontological Resources Assessment for the Rio Rancho Marketplace Project, Monterey County, California**

Dear Mr. Swanson:

Rincon Consultants, Inc. (Rincon) was retained by Foothill Partners to conduct a paleontological resources assessment for the Rio Rancho Marketplace Project in Monterey County, California. The goal of the assessment is to identify the geologic units that may be impacted by activity for the proposed project, determine the paleontological sensitivity of geologic units within the project area, assess potential for impacts to paleontological resources from proposed project activity, and recommend mitigation measures to avoid or mitigate impacts to scientifically significant paleontological resources as necessary.

This paleontological resources assessment consisted of a fossil locality record search at the University of California Museum of Paleontology (UCMP), review of existing geologic maps and primary literature regarding fossiliferous geologic units within the project vicinity and region, assessment of the paleontological sensitivity of the geologic units at the project site and potential for impacts to significant paleontological resources, and proposed mitigation measures to reduce impacts to less than significant. Figures are included in Attachment A.

This paleontological assessment has been prepared to support environmental review in accordance with the California Environmental Quality Act (CEQA).

Project Description

The project, Rio Ranch Marketplace, is a proposed 42,310-square foot retail development on a 3.8-acre undeveloped, infill site. The retail development would consist of four commercial retail buildings, including a 23,000-square foot market and three smaller buildings ranging from 5,000 to 8,335 square feet. The development would additionally include two commercial retail farm sheds of 500 square feet each. In total, the building footprint of all buildings would occupy 26 percent of the 164,421-square foot site. The project locality is shown in Figure 1.

Regulatory Setting

California Environmental Quality Act

CEQA requires that public agencies and private interests identify the potential environmental consequences of their proposed projects on any object or site of significance to the scientific annals of California (Division I, California Public Resources Code Section 5020.1 [b]). Appendix G in Section 15023 provides an Environmental Checklist of questions including a single question related to paleontological resources (Section 15023, Appendix G, Section V, Part c) as follows: "Would the project directly or indirectly destroy a unique paleontological resource or site…?"

CEQA does not define "a unique paleontological resource or site." However, the Society of Vertebrate Paleontology (SVP) has defined a "significant paleontological resource" in the context of environmental review. The SVP defines a Significant Paleontological Resource as:

> *…fossils and fossiliferous deposits, here defined as consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. Paleontological resources are considered to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years).*

The loss of paleontological resources that meet the criteria outlined above to be considered a significant paleontological resource would be considered a significant impact under CEQA, and the CEQA lead agency is responsible for ensuring that significant paleontological resources are protected in compliance with CEQA and other applicable statutes.

Methods

Rincon evaluated the paleontological sensitivity of the geologic units present on the project site based on the results of the paleontological locality search and review of existing information in the primary literature on known fossils within those geologic units. Rincon submitted a request to the UCMP for a list of known fossil localities from the project site and immediate vicinity (i.e. localities recorded on the United States Geological Survey *Monterey* 7.5-minute topographic quadrangle), compiled a list of known fossils from the geologic units known to occur in the project area as recorded by online databases maintained by the UCMP, and reviewed geologic maps and primary literature including: Bromley et al., 2003; California Geological Survey (CGS), 2002; Dibblee and Minch, 2007; Durham, 1965; Hoppe et al., 2003; Norris and Webb, 1990; Storlazzi and Field, 2000; Wakabayashi, 2015.

Rincon assigned paleontological sensitivity to each geologic unit within the project site. The potential for impacts to significant paleontological resources is based on the potential for ground disturbance to directly impact paleontologically sensitive geologic units. Paleontological sensitivity has been defined by the SVP, and paleontological sensitivity was assigned for each geologic unit based on the guidelines outlined by the SVP (2010) as discussed below.

SVP Paleontological Sensitivity Classification

The SVP (2010) describes sedimentary rock units as having high, low, undetermined, or no potential for containing significant nonrenewable paleontological resources. This criterion is based on rock units within which vertebrate or significant invertebrate fossils have been determined by previous studies to be present or likely to be present. While these standards were specifically written to protect vertebrate paleontological resources, all fields of paleontology have adopted these guidelines:

I. **High Potential (sensitivity)** - Rock units from which significant vertebrate or significant invertebrate fossils or significant suites of plant fossils have been recovered are considered to have a high potential for containing significant non-renewable fossiliferous resources. These units include but are not limited to, sedimentary formations and some volcanic formations which contain significant nonrenewable paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils. Sensitivity comprises both (a) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate, invertebrate, or botanical and (b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, ecologic, or stratigraphic data. Areas which contain potentially datable organic remains older than Recent, including deposits associated with nests or middens, and areas which may contain new vertebrate deposits, traces, or trackways are also classified as significant.

II. **Low Potential (sensitivity)** – Sedimentary rock units that are potentially fossiliferous, but have not yielded fossils in the past or contain common and/or widespread invertebrate fossils of well documented and understood taphonomic, phylogenetic species and habitat ecology. Reports in the paleontological literature or field surveys by a qualified vertebrate paleontologist may allow determination that some areas or units have low potentials for yielding significant fossils prior to the start of construction. Generally, these units will be poorly represented by specimens in institutional collections and will not require protection or salvage operations. However, as excavation for construction gets underway it is possible that significant and unanticipated paleontological resources might be encountered and require a change of classification from Low to High Potential and, thus, require monitoring and mitigation if the resources are found to be significant.

III. **Undetermined Potential (sensitivity)** - Specific areas underlain by sedimentary rock units for which little information is available are considered to have undetermined fossiliferous potentials. Field surveys by a qualified vertebrate paleontologist to specifically determine the potentials of the rock units are required before programs of impact mitigation for such areas may be developed.

IV. **No Potential (sensitivity)** – Rock units of metamorphic or igneous origin are commonly classified as having no potential for containing significant paleontological resources.

Results

Locality Search

A search of the paleontological locality records at the UCMP paleontological collection resulted in no previously recorded fossil localities within the project boundaries (Holroyd, 2017). However, a tooth from a megalodon shark (*Charcharodon megalodon*) was recovered from sediments belonging to the Monterey Group along Carmel Road, very near to the project area (Holroyd, 2017). Furthermore,

numerous invertebrate fossils have been found from the Monterey Group to the west of the project area (Holroyd, 2017).

Regional Geologic Setting

The project site is located in the southeastern Coastal Ranges Geomorphic Province, one of 11 major provinces in the state (CGS, 2002). The Coast Ranges province is bounded to the east by the Great Valley, to the northeast by the Klamath Mountains, to the south by the Transverse Ranges, and to the west by the Pacific Ocean (Norris and Webb, 1990). It is divided into two subprovinces—the ranges south of San Francisco Bay to Santa Barbara County and the ranges north of San Francisco Bay. This subdivision coincides with the northern ranges located east of the San Andreas Fault zone and the southern ranges mostly to the west (Norris and Webb, 1990). The southern Coast Ranges, where the project area is located, are lower in elevation with less rainfall than the northern Coast Ranges, and consequently have less vegetation.

The Coast Ranges record a thick sequence of sedimentary strata dating back to the Mesozoic Franciscan Melange (circa 251 million years ago), with granitic and metamorphic rocks of the Salinian block present in the southern Coast Ranges, where the project is located (Norris and Webb, 1990). The Franciscan Melange records deposition of volcanic and clastic sediments into a subduction zone during the Mesozoic era, followed by subsequent metamorphism (Wakabayashi, 2015). Later, Paleocene deposits of marine sandstone with igneous conglomerate lenses belonging to the Carmelo Formation were deposited, followed by Miocene marine mudstones belonging to the Monterey Formation (Storlazzi and Field, 2000). More recently, the Pleistocene history of the region (2.6 million – 10,000 years ago) is marked by glacially controlled sea level fluctuations and tectonic uplift during which the shoreline advanced and retreated as much as 30 miles across the continental shelf, carving a series of marine terraces along the coast (Norris and Webb, 1990).

The project area includes one (1) geologic unit mapped at the surface (Figure 2): recent valley alluvium (Qa) and an additional two (2) geologic units that are likely present in the subsurface: Pleistocene older alluvium (Qoa) and the Monterey Group (Tm) (Dibblee and Minch 2007). Each of these units is discussed in more detail below.

Recent Valley Alluvium (Qa). The surficial geology of the project area is recent valley alluvium (Dibblee and Minch, 2007), which consists of gravel, sand, and silt sediments that have been deposited in the Carmel Valley since the beginning of the Holocene (circa 10,000 years ago) from erosion of the surrounding highlands by the Carmel River. While at the surface these sediments are too young to preserve fossil resources, they increase in age with depth. The older, buried sediments may be old enough to preserve fossil resources, which the SVP defines as being older than 5,000 years (SVP, 2010).

Older Alluvial Sediments (Qoa). These sediments are similar in lithology to the recent alluvial sediments, but date to the Pleistocene (Dibblee and Minch, 2007). This unit is present at the surface to the north of the project area, but is likely present in the subsurface of the project area at an undetermined depth. Pleistocene fossils recovered from Monterey County include horses (*Equus*), ground sloth (*Glossotherium*), camel (*Camelops*), and bison (*Bison*), among others (Hoppe et al., 2003; UCMP, 2017).

Monterey Group (Tm). Monterey Group sediments that outcrop in the hills to the north of the project area consist of white weathering siliceous shale that dates to the upper Miocene (Dibblee and Minch, 2007), and are likely present in the subsurface of the project area. In addition to the shark and invertebrate fossils reported by the UCMP records search, the online catalogue of the UCMP has records of fish fossils (*Oligodiodon*, *Squatina*, and *Myliobatis*) from the Monterey Group elsewhere in Monterey County (UCMP, 2017) as well as numerous invertebrate fossil localities (Bromley et al., 2003; Durham, 1965).

Paleontological Sensitivity

While the geologic units mapped at the surface of the project area are too young at the surface to preserve fossil resources, they increase in age with depth and may become old enough to preserve fossils at depth. Furthermore, the underlying geologic units date to the Pleistocene and Miocene. As detailed in the online databases of the UCMP and the review of scientific literature presented above, these subsurface units are well-known for the preservation of scientifically significant fossil resources ranging from invertebrates to vertebrate macrofauna. Table 1 presents the SVP paleontological sensitivities for each formation.

Table 1. Paleontological Sensitivities

Formation	Unit Symbol	SVP Sensitivity
Recent Valley Alluvium	Qa	Low-to-high, increasing with depth
Pleistocene Older Alluvium	Qoa	High
Monterey Group	Tm	High

While the surficial valley alluvium is too young to preserve fossil resources at the surface, these sediments overlie older sediments that, as discussed above, have a history of preserving significant fossil resources. Therefore, these sediments have low-to-high sensitivity, increasing with depth. Excavations that exceed the depth of the young surficial sediments will risk impacting fossil resources. Furthermore, the older geologic units that underlie the valley alluvium have high paleontological sensitivity. Implementation of the following mitigation measures will reduce the risk of impacts to fossil resources to below significance.

Effects Analysis

Sediments mapped at the surface have low-to-high sensitivity, increasing with depth. Any ground disturbing activities in previously undisturbed portions of the project area that exceed the depth of the young sediments may result in adverse effects to paleontological resources. Mitigation measures are recommended to reduce potential adverse effects to paleontological resources to a less than significant level for ground disturbing activities that exceed 10 feet in depth in previously undisturbed sediments. While the exact depth at which the surficial sediments transition from low to high sensitivity is unknown, 10 feet is a reasonable estimate based on geologic mapping.

Recommended Mitigation

Retain a Qualified Paleontologist. Prior to initial ground disturbance, the applicant shall retain a project paleontologist to direct all mitigation measures related to paleontological resources. A

qualified paleontologist (Principal Paleontologist) is defined by the SVP standards as an individual with an M.S. or Ph.D. in paleontology or geology who is experienced with paleontological procedures and techniques, who is knowledgeable in the geology of California, and who has worked as a paleontological mitigation project supervisor for a least one year (SVP 2010).

Paleontological Worker Environmental Awareness Program (WEAP). Prior to the start of construction, the project paleontologist or his or her designee shall conduct training for construction personnel regarding the appearance of fossils and the procedures for notifying paleontological staff should fossils be discovered by construction staff. The WEAP shall be fulfilled at the time of a preconstruction meeting at which a qualified paleontologist shall attend.

Paleontological Monitoring. Ground disturbing construction activities (including grading, trenching, foundation work, and other excavations) in previously undisturbed sediments that exceed 10 feet in depth should be monitored on a full-time basis by a qualified paleontological monitor during initial ground disturbance. A qualified paleontological monitor is defined as an individual who has experience with collection and salvage of paleontological resources and meets the minimum standards of the SVP (2010) for a Paleontological Resources Monitor. The duration and timing of the monitoring will be determined by the project paleontologist and the location and extent of proposed ground disturbance. If the project paleontologist determines that full-time monitoring is no longer warranted, based on the specific geologic conditions at the surface or at depth, the project paleontologist may recommend that monitoring be reduced to periodic spot-checking or cease entirely.

Fossil Discoveries. In the event of a fossil discovery by the paleontological monitor or construction personnel, all work in the immediate vicinity of the find shall cease. A qualified paleontologist shall evaluate the find before restarting construction activity in the area. If it is determined that the fossil(s) is (are) scientifically significant, the qualified paleontologist shall complete the following conditions to mitigate impacts to significant fossil resources:

1) **Salvage of Fossils.** If fossils are discovered, all work in the immediate vicinity should be halted to allow the paleontological monitor, and/or lead paleontologist to evaluate the discovery and determine if the fossil may be considered significant. If the fossils are determined to be potentially significant, the qualified paleontologist (or paleontological monitor) should recover them following standard field procedures for collecting paleontological resources. Typically, fossils can be safely salvaged quickly by a single paleontologist and not disrupt construction activity. In some cases larger fossils (such as complete skeletons or large mammal fossils) require more extensive excavation and longer salvage periods. In this case the paleontologist should have the authority to temporarily direct, divert or halt construction activity to ensure that the fossil(s) can be removed in a safe and timely manner.
2) **Preparation and Curation of Recovered Fossils**. Once salvaged, significant fossils should be identified to the lowest possible taxonomic level, prepared to a curation-ready condition, and curated in a scientific institution with a permanent paleontological collection (such as the University of California Museum of Paleontology), along with all pertinent field notes, photos, data, and maps. Fossils of

undetermined significance at the time of collection may also warrant curation at the discretion of the project paleontologist.

Final Paleontological Mitigation Report. Upon completion of ground disturbing activity (and curation of fossils, if necessary) the project paleontologist should prepare a final mitigation and monitoring report outlining the results of the mitigation and monitoring program. The report should include discussion of the location, duration and methods of the monitoring, stratigraphic sections, any recovered fossils, and the scientific significance of those fossils, and where fossils were curated.

If you have any questions regarding this Paleontological Resources Assessment, please contact us.

Sincerely,
Rincon Consultants, Inc.

Alyssa Bell, Ph.D.
Senior Paleontologist

David Daitch, Ph.D.
Principal Investigator/Program Manager

Jennifer Haddow, Ph.D.
Principal Environmental Scientist

Attachments: *Attachment A: Figures*

References

California Geological Survey (CGS). 2002. California Geomorphic Provinces, Note 36.

Dibblee and Minch, 2007. Geologic map of the Monterey and Seaside quadrangles, Monterey County, California. DF-346

Durham, D. 1965. Geology of the Jolon and Williams Hill Quadrangles Monterey County, California. Geological Survey Bulletin 1181-Q. 81 p.

Holroyd, P. 2017. Email response to records search inquiry for the paleontology collections of the University of California Museum of Paleontology. Received September 5, 2017.

Hoppe, K. A., P. L. Koch, and T. T. Furutani. 2003. Assessing the preservation of biogenic Strontium in fossil bones and tooth enamel. International Journal of Osteoarchaeology 13: 20-28.

Norris, R. M. and Webb, R. W. 1990. Geology of California, 2nd edition. John Wiley and Sons, Inc. New York.

Society of Vertebrate Paleontology. 2010. Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. Society of Vertebrate Paleontology Impact Mitigation Guidelines Revision Committee.

Storlazzi, C. D. and M. E. Field. 2000. Sediment distribution and transport along a rocky, embayed coast: Monterey Peninsula and Carmel Bay, California. Marine Geology 170: 289-316.

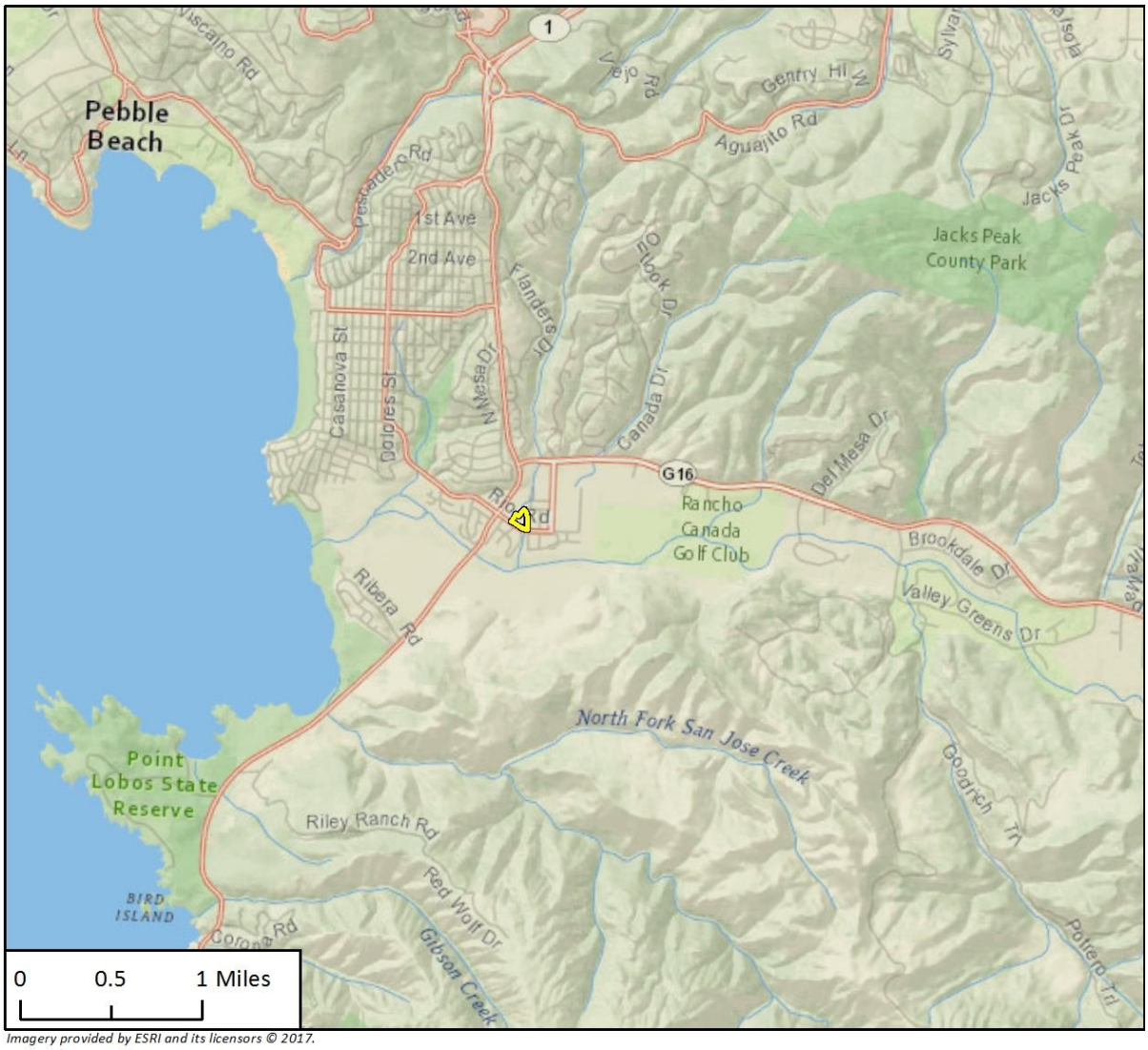
University of California Museum of Paleontology (UCMP). 2017. Online search of collections database. Accessed at http://ucmpdb.berkeley.edu/ on September 5, 2017.

Wakabayashi, J. 2015. Anatomy of a subduction complex: architecture of the Franciscan Complex, California, at multiple length and time scales. International Geology Review 57: 669-746.

Attachment A

Figures

Figure 1 Project Location Map



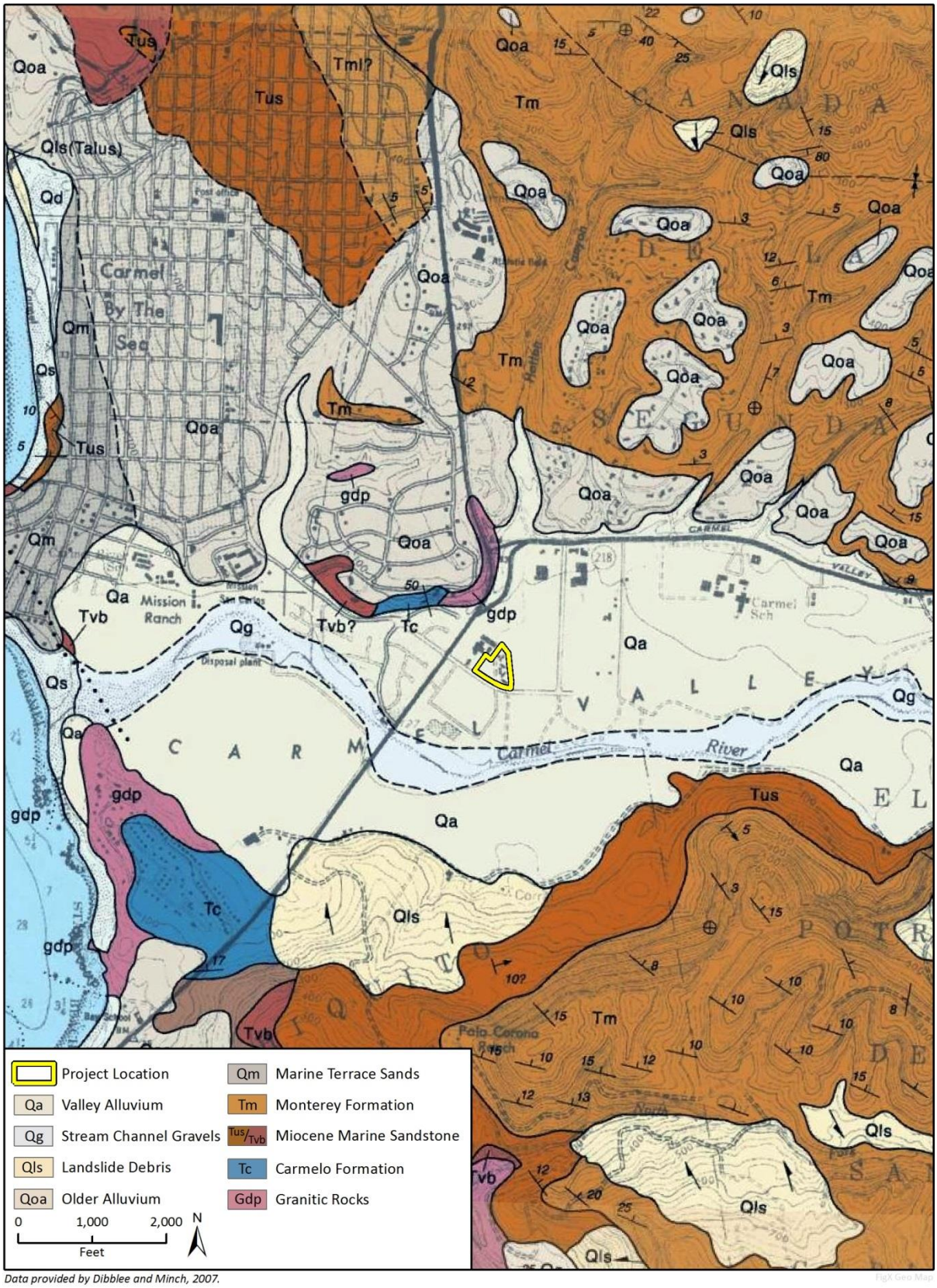
Imagery provided by ESRI and its licensors © 2017.

Project Location

N

Fig 1 Regional Location

Figure 2 Geologic Map



Data provided by Dibblee and Minch, 2007.