
Appendix E

Paleo Resources Report

Paleontological Resources Inventory Letter Report

SDSU Fenton Parkway Bridge Project

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Prepared for:

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Subject: Paleontological Resources Inventory Letter Report for the SDSU Fenton Parkway Bridge Project, City of San Diego, San Diego County, California

Dudek conducted a paleontological resources inventory for the San Diego State University (SDSU) Fenton Parkway Bridge Project (proposed project) in the City of San Diego (City) in San Diego County, California. This letter report provides the paleontological resources inventory for the proposed project that would involve construction of a vehicular and bicycle/pedestrian bridge spanning the San Diego River from north to south. The design and construction of the approach roadways and bridge would comply with applicable City, County of San Diego, and California Department of Transportation (Caltrans) design standards, as well as American Association of State Highway and Transportation Officials guidelines. The proposed design for the bridge is a conventional post-tensioned, trapezoidal, concrete box girder structure. The bridge would be approximately 450 feet long, 58 feet wide, and 7 feet, 6 inches deep, and would consist of up to four spans. The spans would be supported on concrete seat-type abutments in the river embankments at each end and two to three piers within the river channel, each consisting of two to three approximately 20-foot-tall, 6-foot-diameter circular concrete columns. The proposed project also includes relocation and/or extension of an existing 96-inch reinforced concrete pipe storm drain on the north side of the proposed bridge and a 54-inch storm drain along the proposed southern terminus of the bridge at Camino Del Rio North, both of which discharge directly into the San Diego River. The intersection of Fenton Parkway and River Park Road and the intersection of Mission City Parkway and Camino Del Rio North would also require updates.

In accordance with the City, the County of San Diego, California Environmental Quality Act (CEQA), and the Society of Vertebrate Paleontology (SVP 2010) guidelines, Dudek performed a paleontological resources inventory for the proposed project. The inventory included a San Diego Natural History Museum (SDNHM) paleontological records search, a review of geological mapping and geological and paleontological literature, and an intensive pedestrian survey of the proposed project site. No surficial paleontological resources were observed during the pedestrian survey of the proposed project site. The results of the paleontological records search indicated that there are no previously recorded fossil localities that appear directly within the proposed project site, however there is potential to impact paleontological resources within the proposed project site during construction-related ground disturbance due to the moderate sensitivity of the mapped geological units present within the north portion of the proposed project site. Additionally, the SDNHM reported fossil localities nearby from the same geological units that underlie the proposed project site.

As portions of the proposed project site have never been developed, there is a potential to encounter intact subsurface paleontological resources in those areas. As such, a paleontological monitoring program, which includes the preparation and implementation of a Paleontological Resources Impact Mitigation Plan (PRIMP), is necessary to reduce impacts to any potential paleontological resources onsite in those areas underlain by sediments with a moderate to high potential to yield significant paleontological resources. This letter report was prepared by Michael Williams, PhD and Sarah Siren, MS, qualified Principal Investigators (PIs) for Paleontology, with assistance from

Jason Collins, B.A., in accordance with CEQA, the City and County of San Diego (2009) guidelines, and SVP (2010) standards.

Paleontological Resources

Paleontological resources are the remains or traces of plants and animals that are preserved in earth’s crust, and per SVP (2010) guidelines, are older than written history or older than approximately 5,000 years. They are limited, nonrenewable resources of scientific and educational value and are afforded protection under state laws and regulations. This study satisfies requirements in accordance with state guidelines (California Public Resources Code, Section 21000 et seq. and California Public Resources Code Section 5097.5 [Stats 1965, c 1136, p. 2792]). This analysis also complies with guidelines and significance criteria specified by SVP (2010), the County of San Diego (2009) guidelines. Table 1 provides definitions for high, moderate, marginal, low, and no paleontological resource potential, or sensitivity, as set forth in and by the County of San Diego (2009) Guidelines for Determining Significance: Paleontological Resources.

Table 1. Paleontological Resources Sensitivity Criteria

Resource Sensitivity/Potential	Definition
High	High resource potential and high sensitivity are assigned to geologic formations known to contain paleontological localities with rare, well preserved, critical fossil materials for stratigraphic or paleoenvironmental interpretation, and fossils providing important information about the paleoclimatic, paleobiological and/or evolutionary history (phylogeny) of animal and plant groups. In general, formations with high resource potential are considered to have the highest potential to produce unique invertebrate fossil assemblages or unique vertebrate fossil remains and are, therefore, highly sensitive.
Moderate	Moderate resource potential and moderate sensitivity are assigned to geologic formations known to contain paleontological localities. These geologic formations are judged to have a strong, but often unproven, potential for producing unique fossil remains (Deméré and Walsh 1993).
Low	Low resource potential and low sensitivity are assigned to geologic formations that, based on their relatively young age and/or high-energy depositional history, are judged unlikely to produce unique fossil remains. Low resource potential formations rarely produce fossil remains of scientific significance and are considered to have low sensitivity. However, when fossils are found in these formations, they are often very significant additions to our geologic understanding of the area.

Resource Sensitivity/Potential	Definition
Marginal	Marginal resource potential and marginal sensitivity are assigned to geologic formations that are composed either of volcaniclastic (derived from volcanic sources) or metasedimentary rocks, but that nevertheless have a limited probability for producing fossils from certain formations at localized outcrops. Volcaniclastic rock can contain organisms that were fossilized by being covered by ash, dust, mud, or other debris from volcanoes. Sedimentary rocks that have been metamorphosed by heat and/or pressure caused by volcanoes or plutons are called metasedimentary. If the sedimentary rocks had paleontological resources within them, those resources may have survived the metamorphism and still be identifiable within the metasedimentary rock, but since the probability of this occurring is so limited, these formations are considered marginally sensitive.
No Sensitivity	No resource potential is assigned to geologic formations that are composed entirely of volcanic or plutonic igneous rock, such as basalt or granite, and therefore do not have any potential for producing fossil remains. These formations have no paleontological resource potential, i.e., they are not sensitive.

Source: County of San Diego (2009).

Regulatory Framework

California Environmental Quality Act

The CEQA Guidelines require that all private and public activities not specifically exempted be evaluated against the potential for environmental damage, including effects to paleontological resources. Paleontological resources, which are limited, nonrenewable resources of scientific, cultural, and educational value, are recognized as part of the environment under these state guidelines. This study satisfies project requirements in accordance with CEQA (13 PRC [Public Resources Code], 21000 et seq.).

Paleontological resources are afforded protection under CEQA, which require lead agencies to disclose the potential environmental impacts of their discretionary actions. One of the screening questions in Appendix G of the CEQA Guidelines asks: “Would the project directly or indirectly destroy a unique paleontological resource or site or a unique geologic feature?”

Public Resources Code Section 5097.5

The PRC Section 5097.5 (Stats 1965, c 1136, p. 2792) regulates removal of paleontological resources from state lands, defines unauthorized removal of fossil resources as a misdemeanor, and requires mitigation of disturbed sites. The code 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 [lands owned by, or under the jurisdiction of, the state, or any city, county, district,

authority, or public corporation, or any agency thereof], except with the express permission of the public agency having the jurisdiction over the lands. Violation of this section is a misdemeanor.

California Code of Regulations

Two sections of the California Code of Regulations (14 CCR Division 3, Chapter 1), applicable to lands administered by State Parks, address paleontological resources:

Section 4307: Geological Features—

“No person shall destroy, disturb, mutilate, or remove earth, sand, gravel, oil, minerals, rocks, paleontological features, or features of caves.”

Section 4309: Special Permits—

[California Department of Parks and Recreation] may grant a permit to remove, treat, disturb, or destroy plants or animals or geological, historical, archaeological or paleontological materials; and any person who has been properly granted such a permit shall to that extent not be liable for prosecution for violating the foregoing.

City of San Diego Regulations

Under the City’s *Guidelines for Paleontology* (2022) and in compliance with the *California Environmental Quality Act: Significance Determination Thresholds* for paleontology (City of San Diego 2020), specific policies have been created to reduce impacts to paleontological resources, as follows: “Monitoring is always required when grading on a fossil recovery site or near a fossil recovery site in the same geologic deposit/formation/ rock unit as the project site as indicated on the Kennedy Maps. Monitoring may be required for shallow grading (i.e., <10ft) when a site has previously been graded and/or unweathered geologic deposits/formations/rock units are present at the surface. Monitoring is not required when grading documented or undocumented artificial fill” (City of San Diego 2022). Additionally, the City outlines specific grading thresholds for required paleontological monitoring in rock units with high, moderate, and zero-low paleontological resource sensitivity, as follows:

High paleontological sensitivity: monitoring required if more than 1000 cubic yards are to be removed and excavations are 10 feet or greater in depth.

Moderate paleontological sensitivity: monitoring required if more than 2000 cubic yards are to be removed and are greater than 10 feet in depth.

Zero-Low paleontological resource sensitivity: monitoring not required.

Methods

Geological Map and Literature Review

Published geological maps (Kennedy and Tan 2008) and published and unpublished reports were reviewed to identify geological units on the site and determine their paleontological sensitivity.

Paleontological Records Search

A records search request was sent to SDNHM on August 21, 2023. The purpose of the museum records search is to determine whether there are any known fossil localities in or near the proposed project site, identify the sensitivity of geological units present within the proposed project site, and aid in determining whether a paleontological mitigation program is warranted to avoid or minimize potential adverse effects of construction on paleontological resources.

Field Survey

Dudek paleontologist, Javier Hernandez, and archaeologist, Matthew DeCarlo, conducted an intensive pedestrian survey of the proposed project site on May 26, 2023 and June 30, 2023. The survey was conducted to determine if any surficial paleontological resources are present within the proposed project site and confirm geological mapping. The survey utilized standard paleontological survey procedures and consisted of systematic surface inspection of exposed geological units with moderate or high paleontological resource sensitivity. The ground surface was examined for the presence of exposed surficial fossils. Ground disturbances such as, burrows and eroded hillsides were also visually inspected for exposed fossils and sediments.

Results

Geological Map Review and Literature Review

The proposed project site lies within the Peninsular Ranges Geomorphic Province (California Geological Survey 2002). This province extends from the tip of the Baja California Peninsula to the Transverse Ranges (the San Gabriel and San Bernardino Mountains) and includes the Los Angeles Basin, offshore islands (Santa Catalina, Santa Barbara, San Nicholas, and San Clemente), and continental shelf. The eastern boundary is the Colorado Desert Geomorphic Province (California Geological Survey 2002; Morton and Miller 2006). The ancestral Peninsular Ranges were formed by uplift of plutonic igneous rock resulting from the subduction of the Farallon Plate underneath the North American Plate during the latter portion of the Mesozoic era (approximately 125 to 90 million years ago [mya]) (Abbott 1999).

According to the published geological mapping at a scale of 1:100,000 by Kennedy and Tan (2008), the majority of the proposed project site is mapped as late Holocene to late Pleistocene (Present day to approximately 129,000 years ago) young alluvial flood plain deposits (map unit Qya), and the northern terminus is mapped as late to middle Pleistocene (approximately 11,700 to 774,000 years ago) old alluvial flood plain deposits (map unit Qoa).

In his compilation of late Quaternary Vertebrate fossils from California, Jefferson (1991) reported numerous vertebrate fossil localities from late Pleistocene terrestrial deposits in San Diego County. Localities nearby the proposed project site, from the City, include the following taxa: rodents (*Thomomys* sp., *Perognathus* sp., *Peromyscus* sp., *Neotoma* sp.), rabbit (Leporidae), bison (cf. *Bison* sp.), mammoth (*Mammuthus* sp.), horse (*Equus occidentalis*), and camel (Camelidae).

Paleontological Records Search

The records search results were received on September 01, 2023. No records of fossil localities were found within the boundaries of the proposed project site; however, thirty-three fossil localities were recorded within one mile of

the proposed project site. The majority of these localities were from the San Diego Formation, Mission Valley Formation, the Stadium Conglomerate, and the Friars Formation, which are not expected to be impacted as a result of the earthwork for the proposed project. Five of the thirty-three fossil localities are from old alluvial plan deposits within the same sedimentary deposits as the proposed project site (Confidential Appendix A). Of those five, one was from the SDGE substation, and four of the fossil localities are from the SDSU Mission Valley Campus development located approximately one-half mile north-northeast of the proposed project site. This work was recently completed on the SDSU Mission Valley Campus, and paleontological monitoring resulted in several documented localities and recoveries of a partial bison skull, a partial camel jaw, remains of ground sloth and horse, and microvertebrate remains of lizards, snakes, birds, shrews, rodents, and rabbits (SDNHM 2023). The records search results are summarized in below in Table 2 below.

Table 2. SDNHM Fossil Localities Near the Project Site

Locality Number	Location	Formation	Taxa	Elevation
7668	SDGE Mission Substation	unnamed alluvial deposit	None listed in records search letter	373
8589	SDSU Mission Valley	unnamed nonmarine deposit	Detailed above	70
8590	SDSU Mission Valley	unnamed nonmarine deposit	Detailed above	80
8591	SDSU Mission Valley	unnamed nonmarine deposit	Detailed above	83
8592	SDSU Mission Valley	unnamed nonmarine deposit	Detailed above	91

Paleontological Survey

The proposed project site is situated with the northwest terminus at the intersection of Northside Drive and Fenton Parkway and the southern terminus of the bridge at Camino Del Rio North. Dense vegetation consisting of chapparal and tall grasses covered a majority of the proposed project footprint. The area along the northern boundary adjacent to Fenton Parkway was heavily disturbed and shows signs of complete grading and leveling. Gravelly sandstone, pebbles, and cobble present (Figure 2, Photo 1). The team attempted surveying south of the graded area but found that the remainder of the proposed project site was covered in dense vegetation surrounding the San Diego River corridor (Figure 2, Photo 2 and 3). The team attempted to access the proposed bridge footprint from the southern extent adjacent to Camino Del Rio North, but the terrain was extremely steep and densely vegetated, preventing access (Figure 2, Photo 4). The southern proposed temporary staging area was traversable but completely covered with vegetation providing low ground visibility. No paleontological resources were observed during the pedestrian survey.

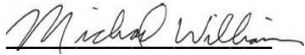
Summary and Management Recommendations

No paleontological resources were identified within the proposed project site as a result of the institutional records search, desktop geological review, and paleontological survey. The paleontological records search conducted by the SDNHM revealed five fossil localities located nearby within the same geological units that underlie the northern portion of the proposed project site at depth. The old alluvial flood plain deposits, which are present in the northern area of the proposed project site, have moderate paleontological sensitivity. The young alluvial flood plain deposits, which are present on the surface within the majority of the proposed project site has low paleontological sensitivity but increases with depth below the ground surface. Based on the records search results, survey results, and map and literature review, the proposed project site has moderate to low potential to produce paleontological resources during planned construction activities. In the event that intact paleontological resources are discovered on the proposed project site, ground-disturbing activities associated with construction of the proposed project, such as grading and large diameter (two feet or greater) drilling during site preparation and trenching for utilities, have the potential to destroy a unique paleontological resource or site. Without mitigation, the potential damage to paleontological resources during construction would be a potentially significant impact. With implementation of the following mitigation measure (MM)-GEO-1 with the impacts would be reduced to below a level of significance. Impacts of the proposed project are considered less than significant with mitigation incorporated during construction.

MM GEO-1: Paleontological Resources Impact Mitigation Program and Paleontological Monitoring. Prior to commencement of any grading activity on site, the applicant shall retain a qualified paleontologist per the Society of Vertebrate Paleontology (2010) guidelines. The qualified paleontologist shall prepare a Paleontological Resources Impact Mitigation Program (PRIMP) for the project that shall be consistent with the SVP (2010) guidelines and outline requirements for preconstruction meeting attendance and worker environmental awareness training, where paleontological monitoring is required within the project site based on construction plans and/or geotechnical reports, procedures for adequate paleontological monitoring and discoveries treatment, and paleontological methods (including sediment sampling for microinvertebrate and microvertebrate fossils), reporting, and collections management. The PRIMP shall also include a statement that any fossil lab or curation costs (if necessary due to fossil recovery) are the responsibility of the project proponent. A qualified paleontological monitor shall be on site during initial rough grading and other significant ground-disturbing activities (including augering) in areas underlain by the old alluvial flood plain deposits and below a depth of five feet below the ground surface in areas underlain by Holocene flood plain deposits to determine if they are old enough to preserve scientifically significant paleontological resources. In the event that paleontological resources (e.g., fossils) are unearthed during grading, the paleontological monitor will temporarily halt and/or divert grading activity to allow recovery of paleontological resources. The area of discovery will be roped off with a 50-foot radius buffer. Once documentation and collection of the find is completed, the monitor will allow grading to recommence in the area of the find. Any fossils encountered and recovered shall be prepared to the point of identification, catalogued, and donated to a public, nonprofit institution with a research interest in the materials. Accompanying notes, maps, and photographs shall also be filed at the repository.

Should you have any questions relating to this report and its findings please contact Michael Williams (mwilliams@dudek.com) or Sarah Siren (ssiren@dudek.com).

Respectfully Submitted,



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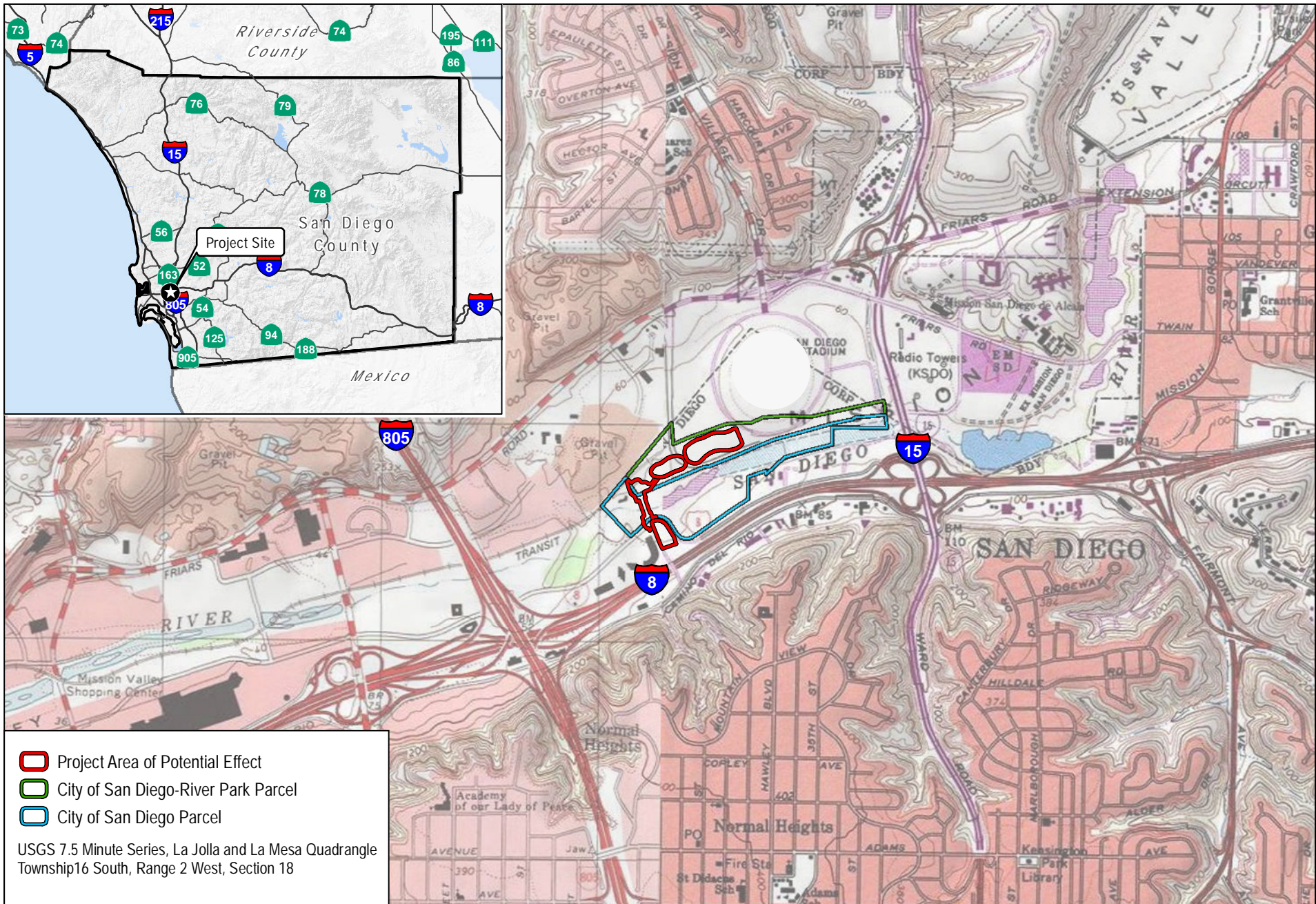
Att.: *Figure 1, Project Location Map*
Figure 2, Survey Photos
Appendix A, Confidential SDNHM Paleontological Records Search Results

cc: *Sarah Siren, Dudek*
Jason Collins, Dudek

References

- Abbott, P.L., 1999. *The Rise and Fall of San Diego: 150 Million Years of History Recorded in Sedimentary Rocks*. San Diego, California: Sunbelt Publications.
- California Geological Survey. 2002. *California Geomorphic Provinces: Note 36*. 4 pp.
- City of San Diego. 2022. *California Environmental Quality Act, Significance Determination Thresholds*. Development Services Department, 84 p.
- Kennedy, M.P. and S.S. Tan. 2008a. *Geologic map of the San Diego 30' x 60' quadrangle, California*, California Geological Survey, Regional Geologic Map No. 3, 1:100,000.
- Morton, D.M., and F.K. Miller. 2006b. *Geologic Map of the San Bernardino and Santa Ana 30-Minute x 60-Minute Quadrangles, California, Geology and Description of Map Units, Version 1.0: U.S. Geological Survey, Open-File Report OF-2006-1217*. 194 pp.
- San Diego Natural History Museum, 2023. *Paleontology Records Search for Paleontological Resources for the SDSU Fenton Bridge Project, Dudek Project # 15507, in San Diego, San Diego County, Project Area*.
- SVP (Society of Vertebrate Paleontology). 2010. *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources*. https://vertpaleo.org/Membership/Member-Resources/SVP_Impact_Mitigation_Guidelines.aspx.

Figure 1 Project Location Map



SOURCE: USGS; BOWMAN/PDC 5/08/2023

FIGURE 1
Project Location
Fenton Parkway Bridge Project

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Figure 2 Survey Photos



Photo 1: Facing, west. Overview.



Photo 2: Facing north. Overview.



Photo 3: Facing, west. Overview.



Photo 4: Facing, north east.

Confidential Appendix A

SDNHM Records Search Results (Confidential)

