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Project No: 17-04981

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Subject: Paleontological Resource Assessment for the 2017/2018 Non-Potable Water (NPW) Connections Project, Riverside County, California

Dear Ms. Meyerhoff:

Rincon Consultants, Inc. (Rincon) was retained by Coachella Valley Water District (CVWD) to conduct a paleontological resource assessment for the 2017/2018 Non-Potable Water (NPW) Connections Project (project) in Riverside County, California. The goal of the assessment is to identify the geologic units that may be impacted by development of the proposed project, determine the paleontological sensitivity of geologic units within the project area, assess potential for impacts to paleontological resources from development of the proposed project, and recommend mitigation measures to avoid or mitigate impacts to scientifically significant paleontological resources, as necessary.

This paleontological resource assessment consisted of a fossil locality record search at the Natural History Museum of Los Angeles County (LACM) and review of existing geologic maps and primary literature regarding fossiliferous geologic units within the project area and vicinity. Following the literature review and records search, this report assessed the paleontological sensitivity of the geologic units underlying the project area, determined the 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 resource assessment has been prepared to support environmental review under the California Environmental Quality Act (CEQA). CVWD is the CEQA Lead Agency for the project.

Project Location and Description

The project is located in the Coachella Valley, approximately 1 mile south of Interstate 10 and 2 miles north of State Route 111 within Palm Desert, Riverside County, California. Specifically, the project is located within Township 4 South, Range 6 East, Sections 32-33; Township 5 South, Range 6 East, Sections 4-5 and 9-15; and Township 5 South, Range 6 East, Sections 7 and 17-18. on the United States Geological Survey (USGS) Cathedral City, Myoma and La Quinta, CA 7.5-minute quadrangles (Figure 1).

The proposed project involves the construction and operation of approximately 9.4 miles of NPW pipeline segments and connections to provide irrigation water for seven local golf courses, one RV resort, one planned future development, and replacement of an existing pump station for a total



pumping capacity of approximately 12,000 gpm for the low pressure system and 12,000 gpm for the high pressure system. The proposed NPW end users currently use groundwater or CVWD-supplied potable water for irrigation. The proposed project would deliver a blend of tertiary treated water from CVWD's existing Water Reclamation Plant No. 10 (WRP10) facility and Colorado River water from the Mid-Valley Pipeline terminus at WRP10. CVWD's WRP10 facility is located at 43000 Cook Street within the City of Palm Desert.

The proposed project would install approximately 50,000 linear feet (LF) of non-potable pipeline within public right of way and private lands within the City of Palm Desert and unincorporated Bermuda Dunes. The majority of the pipeline alignment (approximately 40,000 LF) would be placed in the City of Palm Desert, with approximately 10,000 LF of pipeline extending east into unincorporated Bermuda Dunes. In locations where new NPW distribution pipes would be installed parallel to existing NPW pipelines, those new pipelines would serve to increase capacity of the NPW distribution system. The new pipelines would increase the NPW distribution network from approximately 26.6 miles to 36 miles.

Regulatory Setting

Fossils are remains of ancient, commonly extinct organisms, and as such are nonrenewable resources. The fossil record is a document of the evolutionary history of life on earth, and fossils can be used to understand evolutionary pattern and process, rates of evolutionary change, past environmental conditions, and the relationships among modern species (i.e., systematics). The fossil record is considered a valuable scientific and educational resource, and individual fossils are afforded protection under state and federal environmental laws.

This study has been completed in accordance with the requirements of a CEQA-Plus investigation, includes compliance with both state and federal regulations in the case that a federal nexus is established during the course of project execution. A federal nexus may be established with the requirement of federal funding and/or permitting. Compliance with both regulations allows the lead agency to apply the results of this technical study to both levels of regulation should a nexus be established at a later time. State and local regulations applicable to potential paleontological resources in the project area are summarized below.

Federal Regulations

A variety of federal statutes specifically address paleontological resources. They are applicable to all projects occurring on federal lands, and may be applicable to specific projects if the project involves a federal agency license, permit, approval, or funding.

The National Environmental Policy Act (USC, section 4321 et seq.; 40 CFR, section 1502.25), as amended, directs federal agencies to "preserve important historic, cultural, and natural aspects of our national heritage (Section 101(b) (4))." The current interpretation of this language has included scientifically important paleontological resources among those resources that may require preservation.

The Paleontological Resources Preservation Act (PRPA) is part of the Omnibus Public Land Management Act of 2009 (Public Law 111-011 Subtitle D). The PRPA directs the Secretary of the Interior or the Secretary of Agriculture to manage and protect paleontological resources on federal land, and develop plans for inventorying, monitoring, and deriving the scientific and educational use of such resources. The PRPA prohibits the removal of paleontological resources from federal land without a permit, establishes penalties for violations, and establishes a program to increase public awareness about such resources.



While specific to activity that occurs on federal lands, some federal agencies may require adherence to the directives outlined in the PRPA for projects on non-federal lands if federal funding is involved, or the project includes federal oversight.

State

California Environmental Quality Act

Paleontological resources are protected under CEQA, which states, in part, that a project will “normally” have a significant effect on the environment if it, among other things, will disrupt or adversely affect... a paleontological site except as part of a scientific study. Specifically, in Section V(c) of Appendix G of the CEQA Guidelines, the “Environmental Checklist Form,” the question is posed: “Will the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature”. In order to determine the uniqueness of a given paleontological resource, it must first be identified or recovered (i.e., salvaged). Therefore, mitigation of adverse impacts to paleontological resources is mandated by CEQA.

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 Resources 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 (i.e., considered a significant paleontological resource) would be considered a significant impact under CEQA, and the CEQA lead agency is responsible for ensuring that paleontological resources are protected in compliance with CEQA and other applicable statutes.

Public Resources Code Section 5097.5

Section 5097.5 of the Public Resources Code (PRC) states:

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, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.

As used in this PRC section, “public lands” means lands owned by, or under the jurisdiction of, the state or any city, county, district, authority, or public corporation, or any agency thereof. Consequently, public agencies are required to comply with PRC 5097.5 for their own activities, including construction and maintenance, as well as for permit actions (e.g., encroachment permits) undertaken by others.



Methods

Rincon evaluated the paleontological sensitivity of the geologic units that underlie the project area using the results of the paleontological locality search and review of existing information in the primary literature concerning known fossils within those geologic units. Rincon submitted a request to the LACM for a list of known fossil localities from the project area and immediate vicinity (i.e., localities recorded on the USGS Myoma and La Quinta, 7.5-minute topographic quadrangles), and reviewed geologic maps and primary literature including: Alles 2011; Arnal 1961; California Geologic Survey (CGS) 2002; Deméré 2002; Dibblee and Minch 2004, 2008; Ingwall 2008; Norris 1979; Waters 1983; and Whistler et al. 1995.

Rincon assigned a paleontological sensitivity to the geologic units within the project area. The potential for impacts to significant paleontological resources is based on the potential for ground disturbance to directly impact paleontologically sensitive geologic units. The SVP (2010) has defined paleontological sensitivity and developed a system for assessing paleontological sensitivity, as discussed below.

Paleontological Resource Potential

Significant paleontological resources are determined to be fossils or assemblages of fossils that are unique, unusual, rare, diagnostically important, or are common but have the potential to provide valuable scientific information for evaluating evolutionary patterns and processes, or which could improve our understanding of paleochronology, paleoecology, paleophylogeography, or depositional histories. New or unique specimens can provide new insights into evolutionary history; however, additional specimens of even well represented lineages can be equally important for studying evolutionary pattern and process, evolutionary rates, and paleophylogeography. Even unidentifiable material can provide useful data for dating geologic units if radiocarbon dating is possible. As such, common fossils (especially vertebrates) may be scientifically important, and therefore considered highly significant.

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, which are given here verbatim:

- 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.** Rock units of metamorphic or igneous origin are commonly classified as having no potential for containing significant paleontological resources.

Existing Conditions

Regional Geologic Setting

The project area is located in the Coachella Valley within the Colorado Desert geomorphic province of California (CGS 2002). The Colorado Desert extends from the Mojave Desert to the north, the Colorado River on the east, the Peninsular Ranges on the west, and south into Mexico. Dominant features within the Colorado Desert include the Salton Sea; the Colorado River; and the Orocopia, Chocolate, Palo Verde, and Chuckwalla mountains (Norris and Webb 1990). The Coachella Valley is located north of the Imperial Valley within the Salton Trough, a large structural depression that extends from the San Geronio Pass in the north to the Gulf of Mexico in the south. The Salton Trough is a graben structure, bounded by roughly parallel north-west-trending faults, including the San Andreas fault zone to the north and the San Jacinto and Elsinore faults to the southeast (Alles 2011).

During the Pliocene, the Salton Trough formed due to spreading and subsidence associated with the rift system that opened the Gulf of California, which still continues to undergo approximately 48 millimeters per year of spreading. The Salton Trough, including the Coachella and Imperial valleys, would currently be under water as part of the Gulf of California if not for millions of years of sedimentation from the Colorado River (Alles 2011). During the Pliocene to early Pleistocene, sedimentation along the Colorado River resulted in the build-up of a substantial delta, which eventually separated the marine waters of the Gulf of California from the brackish and fresh waters of the Salton Trough (Ingwall 2008). Since the late Pleistocene, the Salton Trough was periodically occupied by the freshwater Lake Cahuilla. The lake formed, drained, and reformed between approximately 37,000 to 300 years before present as a result of fluctuations in the course of the Colorado River and the subsequent diversion of the river's mouth from the Gulf of California to the Salton Trough (Deméré 2002; Norris 1979).

The project area includes one (1) geologic unit mapped at the ground surface (Figure 2): Holocene dune sand (Qs) (Dibblee and Minch 2008). The Holocene dune sand is composed of well-sorted, fine-to medium-grained windblown (eolian) sand and silt. Prior to development in the area, the eolian sand accumulated in significant deposits and formed widespread dunes. The Holocene dune sand overlies



Quaternary surficial alluvial deposits composed of gravel, silt, sand, and clay, which are mapped at the surface to the south and east of the project area. According to Dibblee and Minch (2004), the project area is located just within the boundary of the northernmost shoreline of ancient Lake Cahuilla; as a result, based on previous stratigraphic, archaeological, paleontological, hydrogeological, and tectonic studies, older Quaternary lacustrine Cahuilla deposits are likely present at moderate depth (approximately 10 feet) within the project area below Holocene surficial deposits (Alles 2011; Deméré 2002; Norris 1979; Waters 1983; Whistler et al. 1995). The Pleistocene Lake Cahuilla deposits are composed of weakly consolidated and interbedded sand, silt and clay, with tufa and travertine rock coatings; coarse alluvial deposits; and beach sands. The Quaternary Lake Cahuilla deposits range from several feet deep at the margin of the Coachella Valley to as much as 300 feet thick in the center of the Salton Trough (Arnal 1961; Norris 1979; Norris and Webb 1990; Waters 1983).

Holocene sedimentary deposits, particularly those younger than 5,000 years old, are generally too young to contain fossilized material. However, Quaternary lacustrine deposits derived from ancient Lake Cahuilla have proven to yield scientifically significant mollusk shells within the Salton Trough (Whistler et al. 1995). Fossil specimens of diatoms, spores, pollen, land plants, sponges, ostracods, freshwater gastropods, fresher bivalves, fish, and small terrestrial vertebrate have been recovered from the older Quaternary Lake Cahuilla beds.

Museum Fossil Locality Records

A search of the paleontological locality records at the LACM resulted in no previously recorded fossil localities within the project boundaries. According to the LACM collection records, the closest vertebrate localities recorded within older Quaternary sedimentary deposits (which may underlie the project area at moderate depth below the younger Holocene surficial deposits) were identified about five miles southeast of the project area near the Seven Palms Valley (McLeod 2017). Locality LACM 1269 yielded fossil specimens of horse (*Equus*) from an unspecified depth bgs. The museum search did not yield locality records for the younger surficial sand dune deposits that immediately underlie the project area.

Results

Paleontological Resource Potential of the Project Area

The Holocene sand dune deposits mapped at the surface of the project are typically too young to contain fossilized remains and have been assigned a low paleontological sensitivity, in accordance with the SVP (2010) guidelines. These sediments may be underlain at moderate depth by the Quaternary Lake Cahuilla deposits, which have a high paleontological resource potential because they have yielded a well-documented record of significant vertebrate fossils in the vicinity of the project area and throughout the Coachella Valley (Arnal 1961; Deméré 2002; Ingwall 2008; McLeod 2017; Waters 1983; and Whistler et al. 1995).

Impact Analysis

Maximum depth for project excavation will be 8 feet bgs; therefore, the sensitive Quaternary Lake Cahuilla deposits that may be present at moderate depth (approximately 10 feet bgs) below younger Quaternary surficial sand dune deposits are unlikely to be impacted by project development. As a result, the potential for encountering fossil resources during project-related ground disturbance is low and impacts to paleontological resources are not anticipated. Therefore, further paleontological resource



management is not recommended. In the event an unanticipated fossil discovery is made during the course of project development, then in accordance with SVP guidelines (2010), a qualified Professional Paleontologist should be retained in order to examine the find and to determine if further paleontological resources mitigation is warranted.

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

Sincerely,

Rincon Consultants, Inc.

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Associate Paleontologist

Jessica DeBusk, B.S., M.B.A.
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Principal Environmental Scientist

Attachments

Attachment A Figures



References

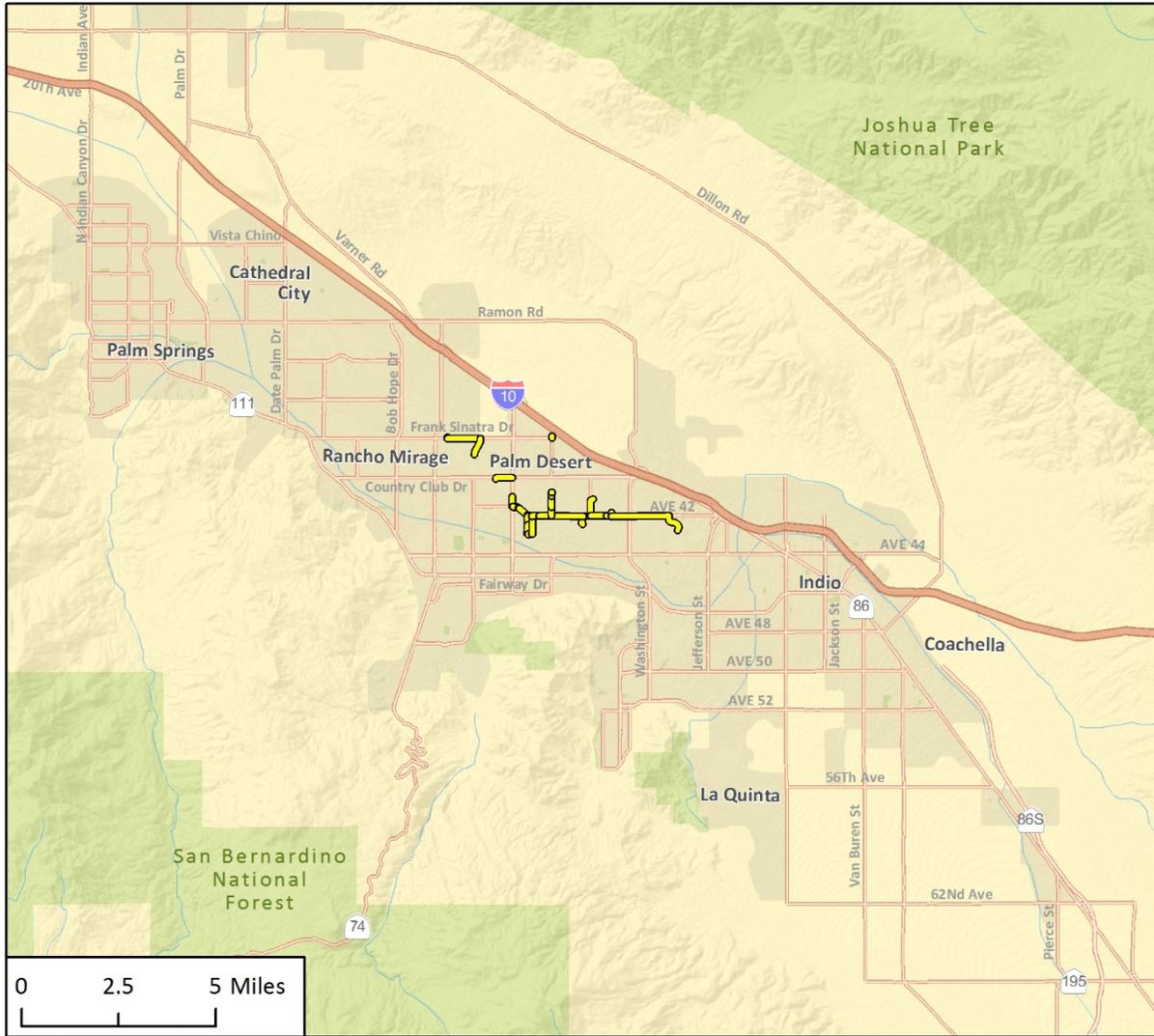
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Attachment A

Figures



Figure 1 Project Vicinity Map



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-  Project Alignment
-  Project Location

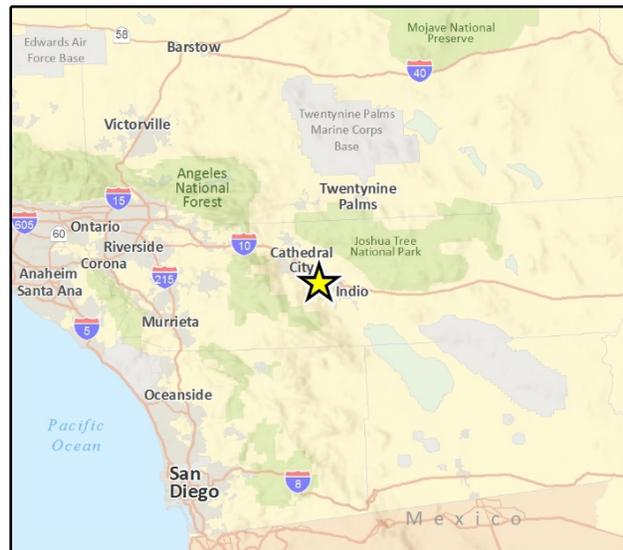


Fig 1 Regional Project Location 20180308



Figure 2 Geology and Paleontological Sensitivity of the Project Area

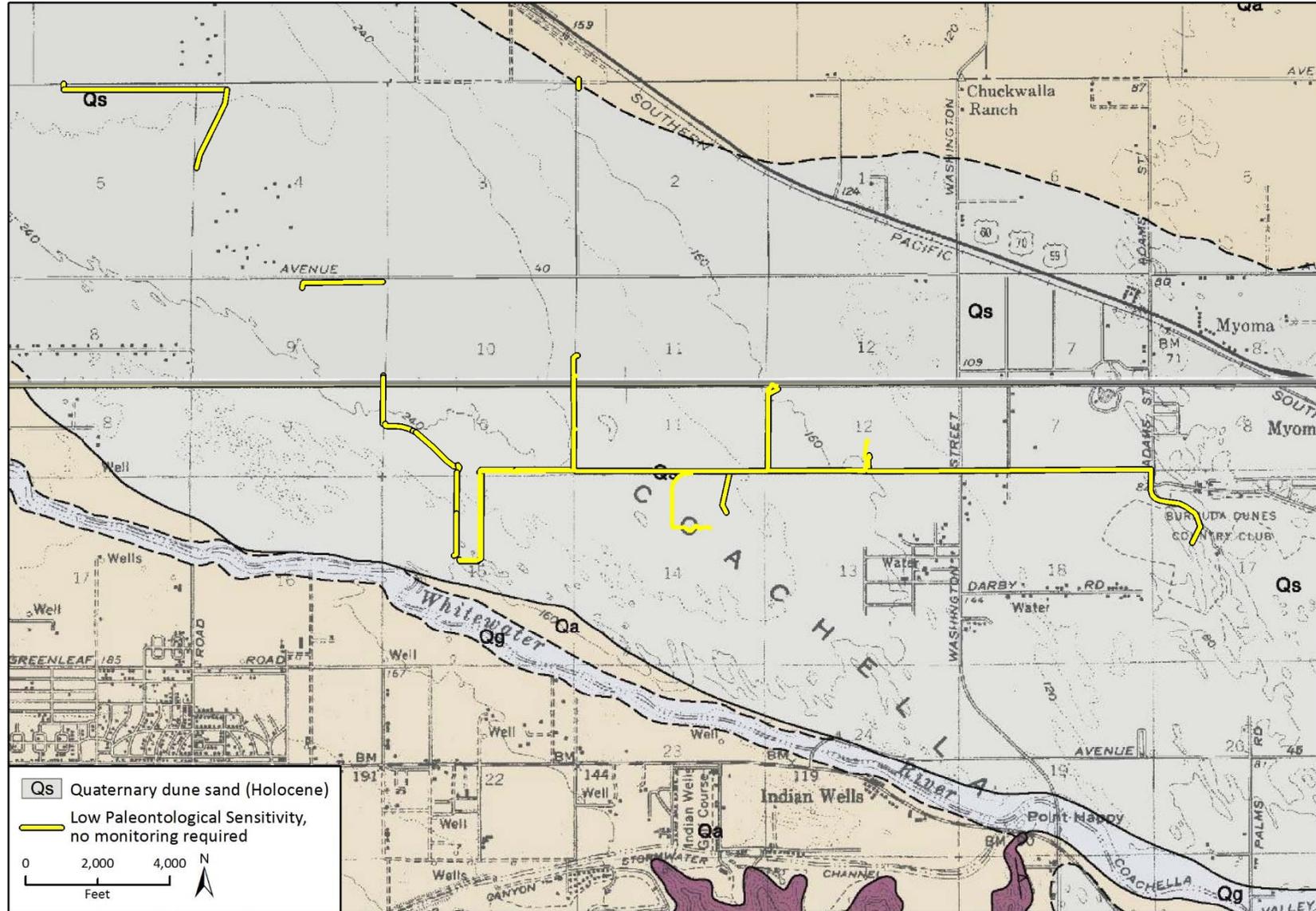


Fig 2 Geo Paleo