Paleontological Resource Mitigation and Monitoring Plan

West of Devers Transmission Line Upgrade Project

Prepared for

Southern California Edison

May 2017

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

911 S. Primrose Ave., Unit N
Monrovia, CA 91016

BLM ☒
Non BLM ☒

Applies Project-Wide

Mitigation Measures Covered:

MM PAL-1b	Develop Paleontological Resource Mitigation and Monitoring Plan

The following mitigation measures support implementation of the Paleontological Resource Mitigation and Monitoring Plan:

MM PAL-1c	Train Construction Personnel
MM PAL-1d	Monitor Construction for Paleontological Resources
MM PAL-1e	Final Reporting and Curation

This page intentionally left blank.

Contents

This page intentionally left blank.

Acronyms and Abbreviations

BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
CEQA	California Environmental Quality Act
CH2M	CH2M HILL Engineers, Inc.
CPUC	California Public Utilities Commission
EI	Environmental Inspector
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ESA	Environmentally Sensitive Area
FA	Field Agent
IM	Instructional Memorandum
kV	kilovolt
MM	mitigation measure
MMRP	Mitigation and Monitoring Reporting Program
MW	Megawatt
NEPA	National Environmental Policy Act
Paleo Solutions	Paleo Solutions, Inc.
PFYC	Potential Fossil Yield Classification
PI	Principal Investigator
Plan	Paleontological Resources Mitigation and Monitoring Plan
PPE	Personal Protective Equipment
PRMMP	Paleontological Resources Mitigation and Monitoring Plan
PRPA	Paleontological Resources Protection Act
ROW	right-of-way
SCE	Southern California Edison
SVP	Society of Vertebrate Paleontology
WEAP	Workers Employee Awareness Program
WOD	West of Devers
WOD Project	West of Devers Upgrade Project

This page intentionally left blank.

Introduction

Paleo Solutions, Inc. (Paleo Solutions), under contract to CH2M HILL Engineers, Inc. (CH2M) prepared this paleontological resource mitigation and monitoring plan (PRMMP or Plan) for Southern California Edison's (SCE) West of Devers Transmission Line Project (WOD Project). This PRMMP was designed to reduce WOD Project impacts on paleontological resources to below the level of significance pursuant to the National Environmental Quality Act (NEPA) and the California Environmental Quality Act (CEQA). This report was prepared in compliance with Mitigation Measure (MM) PAL-1b of the WOD Project's Mitigation and Monitoring Reporting Program (MMRP), NEPA, CEQA, Riverside County, San Bernardino County, the Cities of Calimesa, Grand Terrace, Loma Linda, and Redlands, and Bureau of Land Management (BLM) guidelines (BLM H-8270-1, BLM IM 2016-124, BLM IM 2009-011). The WOD Project spans approximately 43 linear miles from Grand Terrace to Whitewater, and encompasses approximately 2,522 acres.

1.1 Project Overview

WOD will be constructed to upgrade the existing transmission lines between the Devers, El Casco, San Bernardino, and Vista Substations to increase the system transfer capacity from 1,600 megawatts (MW) to 4,800 MW. Until the recent installation of SCE's West of Devers Interim Project, the transmission transfer capability of the existing WOD 220-kilovolt (kV) corridor was limited to approximately 500 MW.

The WOD Project would be located primarily within the existing WOD right-of-way (ROW) in incorporated and unincorporated parts of Riverside and San Bernardino Counties. The WOD Project upgrades would:

- Replace the existing 220-kV transmission lines and associated structures with higher-capacity 220-kV transmission lines and new 200-kV structures. Upgrades would occur on approximately 30 miles of the Devers–El Casco line, approximately 14 miles of the El Casco–San Bernardino line, approximately 43 miles of the Devers–San Bernardino line, approximately 45 miles of the Devers-Vista No. 1 and No. 2 lines, approximately 3.5 miles of the Etiwanda–San Bernardino line, and approximately 3.5 miles of the San Bernardino–Vista line.
- Upgrade substation equipment at Devers, El Casco, Etiwanda, San Bernardino, and Vista Substations to accommodate increased power transfer on the 220-kV lines.
- Upgrade substation equipment at Timoteo and Tennessee Substations to accommodate 66-kV subtransmission line relocations.
- Remove and relocate approximately 2 miles of existing 66-kV subtransmission lines.
- Remove and relocate approximately 4 miles of existing 12-kV distribution lines.
- Install telecommunication lines and equipment for the protection, monitoring, and control of transmission lines and substation equipment.

The existing WOD corridor traverses a combination of residential, commercial, agricultural, recreation, and open-space land uses. The existing structures and existing conductor would be removed and replaced primarily within the existing ROW, except for an approximately 3-mile portion of Segment 5 on the Morongo Band of Mission Indians Reservation that would be in new ROW.

The California Public Utilities Commission (CPUC) and BLM prepared a combined Final Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) (CPUC/BLM, 2015) evaluating potential impacts of the WOD Project on the existing environment. Upon receipt of the Record of Decision, this Plan may be amended to reflect the information in the clearance and approval documents.

1.2 Lead Agencies

The WOD Project is subject to federal environmental statutes governing paleontological resources because it is partially sited on federally administered lands and requires federal permits. The BLM is the federal agency responsible for WOD Project compliance with NEPA. The WOD Project is also subject to discretionary approval by the CPUC, and therefore must comply with CEQA and Public Resources Code (PRC) 5097.5.

1.3 Mitigation Measures

This PRMMP was developed in compliance with MM PAL-1b (Table 1). It was developed based on the results of the paleontological resources inventory of the WOD Project area, which is listed as a requirement of MM PAL-1a (CPUC, 2015). The inventory included a literature search, geologic map review, museum record search, and field survey completed by Paleo Solutions (Aron et al., 2016), and is provided as Appendix A. Potential effects of the WOD Project to sensitive paleontological resources will be mitigated or reduced to a less-than-significant level by implementing this Paleontological Resource Mitigation and Monitoring Plan. Appendix B lists detailed recommended paleontological monitoring locations. Appendix C consists of maps of the recommended monitoring locations. Appendix D consists of maps showing an overview of the paleontological potential of each segment.

TABLE 1. SCE WOD PROJECT MITIGATION MEASURES (CPUC, 2015)
Paleontological Resources Mitigation and Monitoring Plan

Mitigation Measure	Description*
PAL-1a	**Inventory and Evaluate Paleontological Resources:** Prior to construction and all other surface-disturbing activities, the Applicant shall have conducted and submitted an inventory of significant paleontological resources within the Project area. The report shall be based on the paleontological field reconnaissance surveys (conducted by Paleo Solutions, February 2012, and April 2013). If any changes are made to the extent or alignment of the Proposed Project subsequent to the completed field surveys, then additional field surveys shall be conducted within new project areas. The additional field surveys shall be conducted in areas identified as having moderate, undetermined, or high paleontological resource potential. The purpose of the field survey is to visually inspect the ground surface for exposed fossils and to evaluate geologic exposures for their potential to contain preserved fossil material at the subsurface. Field surveys shall be conducted in all areas of potential ground disturbance, outside of the previously surveyed potential impact areas. As part of the inventory report, the paleontological sensitivity rankings of geologic units examined in the field shall be evaluated using the BLM's [2016] Potential Fossil Yield Classification (PFYC) System and refined based on the results of the pedestrian surveys. The report shall be submitted to the CPUC and BLM for review at least 60 days before the start of construction, and shall be modified in response to agency comments, with the final report completed at least 30 days before the first ground disturbance.
PAL-1b	**Develop Paleontological Resource Mitigation and Monitoring Plan:** Following completion and approval of the Paleontological Resources Report (required in Mitigation Measure PAL-1a) and prior to the start of ground-disturbing construction, the Applicant shall prepare and submit to CPUC and BLM for review and approval, a Paleontological Resources Mitigation and Monitoring Plan (Plan), consistent with the following requirements: • The Plan shall be prepared by a Qualified Paleontologist, based on Society of Vertebrate Paleontology (SVP) guidelines, and meet all regulatory requirements. The qualified paleontologist shall have a Master's Degree or Ph.D. in paleontology, shall have knowledge of the local paleontology, and shall be familiar with paleontological procedures and techniques.

	• The Plan shall include a site-specific investigation to identify construction impact areas of moderate (PFYC 3) to very high (PFYC 5) sensitivity for encountering significant resources and the approximate depths at which those resources are likely to be encountered for each component of each segment of the Proposed Project. • The Plan shall require the qualified paleontological monitor to monitor all construction-related ground disturbance in sediments determined to have a moderate (PFYC 3) to very high (PFYC 5) potential. • The Plan shall define monitoring procedures and methodology, and shall specify that sediments of undetermined sensitivity shall be monitored on a part-time basis (as determined by the Qualified Paleontologist). [These include sediments ranked as PFYC U]. Sediments with very low or low potential will not require paleontological monitoring [PFYC 1 and 2]. • The Plan shall state which resources will be avoided and which shall be recovered for their data potential. Where possible, recovery is preferred over avoidance in order to mitigate the potential for looting of paleontological resources. The Plan shall also detail methods of recovery, preparation and analysis of specimens, final curation of specimens at a federally accredited repository, data analysis, and reporting. • The Plan shall specify that all paleontological work undertaken by the Applicant on public lands administered by BLM shall be carried out by qualified, permitted paleontologists with the appropriate current Paleontological Resources Use Permit.
PAL-1c	**Train Construction Personnel:** Prior to the initiation of construction, all construction personnel shall be trained regarding the recognition of possible subsurface paleontological resources and protection of all paleontological resources during construction. The Applicant shall complete training for all construction personnel. Training shall inform all construction personnel of the procedures to be followed upon the discovery of paleontological materials. Training shall inform all construction personnel that Environmentally Sensitive Areas (ESAs) may include areas determined to be paleontologically sensitive. The ESAs must be avoided and travel and construction activity must be confined to designated roads and areas. All personnel shall be instructed that unauthorized collection or disturbance of protected fossils on or off the right-of-way by the Applicant, his representatives, or employees will not be allowed. Violators will be subject to prosecution under the appropriate State and federal laws and violations will be grounds for removal from the project. Unauthorized resource collection or disturbance may constitute grounds for the issuance of a stop work order. The following issues shall be addressed in training or in preparation for construction: • The Applicant shall provide a background briefing for supervisory personnel describing the potential for exposing paleontological resources, the location of any potential ESAs, and procedures and notifications required in the event of discoveries by project personnel or paleontological monitors. Supervisory personnel shall enforce restrictions on collection or disturbance of fossils. • Upon discovery of paleontological resources by paleontologists or construction personnel, work in the immediate area of the find shall be halted and the Applicant's paleontologist notified. Once the find has been inspected and a preliminary assessment made, the Applicant's paleontologist will notify the BLM and CPUC and proceed with data recovery in accordance with the approved Plan consistent with Mitigation Measure PAL-1b (Develop Paleontological Resource Mitigation and Monitoring Plan).
PAL-1d	**Monitor Construction for Paleontological Resources:** Based on the paleontological sensitivity assessment and Paleontological Resource Mitigation and Monitoring Plan consistent with Mitigation Measure PAL-1b (Develop Paleontological Mitigation and Monitoring Plan), the Applicant shall conduct full-time construction monitoring through its qualified paleontological monitor in areas determined to have moderate (PFYC 3) to very high (PFYC 5) sensitivity. Sediments of unknown (PFYC U) sensitivity shall be monitored by a qualified paleontological monitor on a part-time basis (as outlined in the Plan). Geologic Units with very low (PFYC 1) or low (PFYC 2) sensitivity shall not be monitored. Monitoring will entail the visual inspection of excavated or graded areas and trench sidewalls. In the event that a paleontological resource is discovered, the monitor will have the authority to temporarily halt the construction equipment around the find until it is assessed for

	scientific significance and collected. A temporary construction exclusion zone (i.e., environmentally sensitive area [ESA]) of at least 50 feet, consisting at a minimum of lath and flagging tape, will be erected around the discovery. The exclusion zone acts as a buffer around the discovery and is maintained for safety. SCE will report the discovery to the CPUC and BLM within 24 hours and/or as outlined in the Plan. Construction activities can occur outside the buffer if it is safe to do so. The size of the buffer may be increased or decreased once the monitor adequately explores the discovery to determine its size and significance. If indicators of potential microvertebrate fossils are found, screening of a test sample shall be carried out as outlined in SVP 2010. This procedure will be outlined in the Plan. Paleontological resource monitors per SVP (2010) shall have the equivalent of the following qualifications: • BS or BA degree in geology or paleontology and one year experience monitoring in the state or geologic province of the specific project. An associate degree and/or demonstrated experience showing ability to recognize fossils in a biostratigraphic context and recover vertebrate fossils in the field may be substituted for a degree. An undergraduate degree in geology or paleontology is preferable, but is less important than documented experience performing paleontological monitoring, or • AS or AA in geology, paleontology, or biology and demonstrated two years of experience collecting and salvaging fossil materials in the state or geologic province of the specific project, or • Enrollment in upper division classes pursuing a degree in the fields of geology or paleontology and two years of monitoring experience in the state or geologic province of the specific project. • Monitors must demonstrate proficiency in recognizing various types of fossils, in collection methods, and in other paleontological field techniques. Copies of Monitoring Reports shall be submitted to the CPUC/BLM on a weekly basis.
PAL-1e	**Final Reporting and Curation:** At the conclusion of laboratory work and museum curation, a final report will be prepared describing the results of the paleontological monitoring efforts associated with the project. The report will include a summary of the field and laboratory methods, an overview of the Proposed Project area geology and paleontology, a list of taxa recovered (if any), an analysis of fossils recovered (if any) and their scientific significance, and recommendations. If the monitoring efforts produced fossils, then a copy of the report will also be submitted to the designated museum repository. All significant fossils collected will be prepared in a properly equipped paleontology laboratory to a point ready forcuration no more than 60 days after all analyses are completed. Preparation will include the careful removal of excess matrix from fossil materials and stabilizing and repairing specimens, as necessary. Following laboratory work, all fossils specimens will be identified to the lowest taxonomic level, cataloged, analyzed, and delivered to an accredited museum repository for permanent curation and storage. The cost of curation is assessed by the repository and is the responsibility of the Applicant.

*Mitigation Measures as stated in the final EIR (CPUC, 2015) with minor modifications (denoted by brackets) to reflect updates to the PFYC system

1.4 Definition and Significance of Paleontological Resources

As defined by Murphey and Daitch (2007): “Paleontology is a multidisciplinary science that combines elements of geology, biology, chemistry, and physics in an effort to understand the history of life on earth. Paleontological resources, or fossils, are the remains, imprints, or traces of once-living organisms preserved in rocks and sediments. These include mineralized, partially mineralized, or unmineralized bones and teeth, soft tissues, shells, wood, leaf impressions, footprints, burrows, and microscopic remains. Paleontological resources include not only fossils themselves, but also the associated rocks or organic matter and the physical characteristics of the fossils’ associated sedimentary matrix.

The fossil record is the only evidence that life on earth has existed for more than 3.6 billion years. Fossils are considered non-renewable resources because the organisms they represent no longer exist. Thus, once destroyed, a fossil can never be replaced. Fossils are important scientific and educational resources because they are used to:

- Study the phylogenetic relationships amongst extinct organisms, as well as their relationships to modern groups;
- Elucidate the taphonomic, behavioral, temporal, and diagenetic pathways responsible for fossil preservation, including the biases inherent in the fossil record;
- Reconstruct ancient environments, climate change, and paleoecological relationships;
- Provide a measure of relative geologic dating that forms the basis for biochronology and biostratigraphy, and which is an independent and corroborating line of evidence for isotopic dating;
- Study the geographic distribution of organisms and tectonic movements of land masses and ocean basins through time;
- Study patterns and processes of evolution, extinction, and speciation; and
- Identify past and potential future human-caused effects to global environments and climates."

Paleontological resources vary widely in their relative abundance and distribution and not all are regarded as significant. Vertebrate fossils, whether preserved remains or track ways, are classed as significant by most state and federal agencies and professional groups (and are specifically protected under the California Public Resources Code). In some cases, fossils of plants or invertebrate animals are also considered significant and can provide important information about ancient local environments. According to the Society of Vertebrate Paleontology (2010):

"A Significant Fossiliferous Deposit is a rock unit or formation which contains significant nonrenewable paleontologic resources, here defined as comprising one or more identifiable vertebrate fossils, large or small, and any associated invertebrate and plant fossils, traces and other data that provide taphonomic, taxonomic, phylogenetic, ecologic, and stratigraphic information."

Assessment of significance is also subject to the CEQA criterion that the resource constitutes a "unique paleontological resource or site."

According to the Bureau of Land Management (BLM) Instruction Memorandum (IM) 2009-011 (BLM, 2008), a "Significant Paleontological Resource" is defined as: "Any paleontological resource that is considered to be of scientific interest, including most vertebrate fossil remains and traces, and certain rare or unusual invertebrate and plant fossils. A significant paleontological resource is considered to be of scientific interest if it is a rare or previously unknown species, it is of high quality and well-preserved, it preserves a previously unknown anatomical or other characteristic, provides new information about the history of life on earth, or has an identified educational or recreational value. Paleontological resources that may be considered not to have scientific significance include those that lack provenience or context, lack physical integrity due to decay or natural erosion, or that are overly redundant or are otherwise not useful for research. Vertebrate fossil remains and traces include bone, scales, scutes, skin impressions, burrows, tracks, tail drag marks, vertebrate coprolites (feces), gastroliths (stomach stones), or other physical evidence of past vertebrate life or activities."

1.5 Potential Fossil Yield Classification System

The PFYC System is a predictive resource-management tool founded on two basic facts of paleontology: Occurrences of paleontological resources are closely tied to the geologic units (i.e., formations, members, or beds) that contain them, and the likelihood of the presence of fossils can be broadly predicted from the distribution of geologic units at or near the surface (Table 2). Therefore, geologic mapping, as the documentation of geologic unit distribution, is a reliable method for assessing the potential of geologic units to preserve fossils.

The PFYC System classifies geologic units on the relative abundance of scientifically significant vertebrate, invertebrate, or plant fossils and their sensitivity to adverse impacts, with a higher classification number indicating a higher potential for fossil occurrences. Among paleontologists, it is understood that this classification is preferably applied to the geologic formation, member, or other distinguishable unit at the most detailed mappable level. The PFYC is not intended to be applied to specific paleontological localities or small geographic areas within geologic units. Although significant localities may occasionally occur in a geologic unit, the existence of a few important fossils or localities widely scattered over a large area does not necessarily indicate a higher classification for the unit. The relative abundance of significant localities is intended to serve as the major determinant for the class assignment. The PFYC System is intended to provide baseline guidance for predicting, assessing, and mitigating impacts on paleontological resources.

TABLE 2. THE PFYC, SUMMARIZED FROM BLM IM 2016-124 (BLM, 2016)
Paleontological Resources Mitigation and Monitoring Plan

PFYC Designation	Assignment Criteria Guidelines and Management Summary
1 = Very Low Potential	Geologic units are not likely to contain recognizable paleontological resources.
	Units are igneous or metamorphic, excluding air-fall and reworked volcanic ash units.
	Units are Precambrian in age.
	Management concern is usually negligible, and impact mitigation is unnecessary except in rare or isolated circumstances.
2 = Low Potential	Geologic units are not likely to contain paleontological resources.
	Field surveys have verified that significant paleontological resources are not present or are very rare.
	Units are generally younger than 10,000 years before present.
	Recent aeolian deposits
	Sediments exhibit significant physical and chemical changes (i.e., diagenetic alteration) that make fossil preservation unlikely
	Management concern is generally low, and impact mitigation is usually unnecessary except in occasional or isolated circumstances.
3 = Moderate Potential	Sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence.
	Marine in origin with sporadic known occurrences of paleontological resources.
	Paleontological resources may occur intermittently, but these occurrences are widely scattered
	The potential for authorized land use to impact a significant paleontological resource is known to be low-to-moderate.
	Management concerns are moderate. Management options could include record searches, pre-disturbance surveys, monitoring, mitigation, or avoidance. Opportunities may exist for hobby collecting. Surface-disturbing activities may require sufficient assessment to determine whether significant paleontological resources occur in the area of a proposed action and whether the action could affect the paleontological resources.
U = Unknown Potential	Geologic units that cannot receive an informed PFYC assignment
	Geological units may exhibit features or preservational conditions that suggest significant paleontological resources could be present, but little information about the actual paleontological resources of the unit or area is unknown.
	Geologic units represented on a map are based on lithologic character or basis of origin, but have not been studied in detail.
	Scientific literature does not exist or does not reveal the nature of paleontological resources.
	Reports of paleontological resources are anecdotal or have not been verified.
	Area or geologic unit is poorly or under-studied.
	BLM staff has not yet been able to assess the nature of the geologic unit
4 = High Potential	Geologic units that are known to contain a high occurrence of paleontological resources.
	Significant paleontological resources have been documented but may vary in occurrence and predictability.
	Surface-disturbing activities may adversely affect paleontological resources.

PFYC Designation	Assignment Criteria Guidelines and Management Summary
	Rare or uncommon fossils, including nonvertebrate (such as soft body preservation) or unusual plant fossils, may be present.
	Illegal collecting activities may impact some areas.
	Management concern is moderate to high depending on the proposed action. A field survey by a qualified paleontologist is often needed to assess local conditions. On-site monitoring or spot-checking may be necessary during land disturbing activities. Avoidance of known paleontological resources may be necessary.
5 = Very high Potential	Highly fossiliferous geologic units that consistently and predictably produce significant paleontological resources.
	Significant paleontological resources have been documented and occur consistently
	Paleontological resources are highly susceptible to adverse impacts from surface disturbing activities.
	Unit is frequently the focus of illegal collecting activities.
	Management concern is high to very high. A field survey by a qualified paleontologist is almost always needed and on-site monitoring may be necessary during land use activities. Avoidance or resource preservation through controlled access, designation of areas of avoidance, or special management designations should be considered.

1.6 Paleontological Resource Impacts

For the purpose of this project, scientifically significant fossils are generally defined as vertebrate fossils that are identifiable to Family or below, and/or element, and certain rare or unusual invertebrate and plant fossils, which are thus are potentially useful for scientific research purposes. Surface disturbing actions occurring in sedimentary geologic formations known to contain scientifically significant fossils are known to produce adverse impacts on non-renewable paleontological resources. These impacts vary depending upon the depth and lateral extent of ground disturbance. Activities that disturb only the ground surface may result in impacts to surface fossils due to crushing and fragmentation beyond repair, whereas activities that disturb both the surface and the subsurface may result in the destruction of both surface and subsurface fossils. For this project, these activities include the construction of transmission towers, access roads, staging yards, pull sites, substations, sub-transmission lines, and telecommunication lines. The loss of these fossils results in a permanent loss of an educational and scientific resource, and represents a significant adverse environmental impact.

Direct impacts to paleontological resources concern the physical destruction of fossils usually by human caused ground disturbance. Indirect impacts to paleontological resources typically concern loss of resources due to theft and vandalism due to increased public access to paleontologically sensitive areas. Cumulative impacts to paleontological resources concern the incremental loss to society as a whole of these non-renewable resources due to historical, current, and future construction projects.

The goal of mitigation paleontology is to reduce adverse impacts to a less than significant level by salvaging scientifically important fossil remains and associated data and housing them permanently in an accredited, and this case BLM approved, paleontological repository. Direct adverse impacts can be successfully mitigated by physically removing scientifically important fossils from the path of construction either during pre-construction paleontological survey or by monitoring of construction excavations. Indirect impacts are more difficult to mitigate, and typically involve limiting access to scientifically important fossils through a combination of law enforcement, protective enclosures, and land access to restrictions.

Applicable Laws, Ordinances, Regulations, and Standards

The WOD Project is subject to federal environmental statutes governing paleontological resources because it is partially sited on federally administered lands and requires federal permits. The WOD Project is subject to discretionary approval by the CPUC and therefore must comply with CEQA and Public Resources Code (PRC) 5097.5. The CPUC has sole and exclusive State jurisdiction over the siting and design of the WOD Project, because it regulates and authorizes the construction of investor-owned public utility facilities. Although such projects are exempt from local land use and zoning regulations and permitting, SCE considered local and State land use plans and policies, and local land use priorities and concerns as part of its environmental review process.

2.1 Federal Regulatory Setting

2.1.1 National Environmental Policy Act (16 USC Section 431 et seq.)

NEPA, as amended, requires analysis of potential environmental impacts to important historic, cultural, and natural aspects of our national heritage (USC, Section 431 et seq.; 40 CFR, Section 1502.25). NEPA directs Federal agencies to use all practicable means to "Preserve important historic, cultural, and natural aspects of our national heritage…" (Section 101(b) (4)). Regulations for implementing the procedural provisions of NEPA are found in 40 CFR 1500 1508.

2.1.2 Antiquities Act of 1906 (16 USC 431-433)

The Antiquities Act of 1906 states, in part "That any person who shall appropriate, excavate, injure or destroy any historic or prehistoric ruin or monument, or any object of antiquity, situated on lands owned or controlled by the Government of the United States, without the permission of the Secretary of the Department of the Government having jurisdiction over the lands on which said antiquities are situated, shall upon conviction, be fined in a sum of not more than five hundred dollars or be imprisoned for a period of not more than ninety days, or shall suffer both fine and imprisonment, in the discretion of the court." Although there is no specific mention of natural or paleontological resources in the Act itself, or in the Act's uniform rules and regulations (43 CFR 3), "objects of antiquity" has been interpreted to include fossils by the National Park Service, the BLM, the US Forest Service, and other Federal agencies. Permits to collect fossils on lands administered by Federal agencies are authorized under this Act. Therefore, projects involving Federal lands will require permits for both paleontological resource evaluation and mitigation efforts.

2.1.3 The National Historic Preservation Act of 1966

This law provides leadership, as well as financial and technical assistance to foster prehistoric and historic preservation of the resources of the United States and of the international community in partnership with States, Indian tribes, Native Hawaiians, and local governments. Specifically, Section 106 of the NHPA is relevant because it provides for the survey, recovery, and preservation of paleontological resources when they are found in culturally related contexts and when they may be destroyed or lost due to a federal, federally licensed, or federally funded project (Public Law 89-665; 80 Stat. 915; 16 United States Code 470 et seq. [Caltrans, 2012; National Park Service, 2013c]).

2.1.4 Federal Land Management and Policy Act (43 USC 1701)

Federal law including the Federal Land Management and Policy Act (FLMPA) of 1976 (43 USC 1701) includes objectives such as the evaluation, management, protection and location of fossils on BLM-managed lands, defines fossils, and lays out penalties for the destruction of significant fossils. Also, NEPA requires the preservation of “historic, cultural, and natural aspects of our national heritage.” Most recently, the Omnibus Public Lands Act refines NEPA and FLMPA guidelines and strictures, as well as outlines minimum punishments for removal or destruction of fossils from Federal/public lands (see below).

2.1.5 Paleontological Resources Preservation Act (PRPA)

Paleontological Resources Preservation, Title VI, Subtitle D in the Omnibus Public Lands Act of 2009, Public Law 111-011 Purpose: The Secretary (Interior and Agriculture) shall manage and protect paleontological resources on Federal land using scientific principles and expertise. With the passage of the PRPA, Congress officially recognizes the importance of paleontological resources on federal lands (U.S. Department of the Interior, US Department of Agriculture) by declaring that fossils from federal lands are federal property that must be preserved and protected using scientific principles and expertise. The PRPA provides:

- Uniform definitions for “paleontological resources” and “casual collecting”;
- Uniform minimum requirements for paleontological resource use permit issuance (terms, conditions, and qualifications of applicants);
- Uniform criminal and civil penalties for illegal sale and transport, and theft and vandalism of fossils from Federal lands; and
- Uniform requirements for curation of federal fossils in approved repositories.

2.1.6 Bureau of Indian Affairs and the Morongo Band of Mission Indians Tribal Lands

The authority of the Bureau of Indian Affairs (BIA) to manage fossil resources on Indian lands is limited and not mandated by statute. The government's role in managing Indian lands is that of a trustee and it does not exercise the same rights of ownership or control over these lands as it does over federal lands (BIA, 2012). Fossils that have commercial value have been found to be trust resources, and the BIA must manage the fossils as a trust resource. In managing trust resources, the BIA is limited to approving either leases of Indian lands, or contractual agreements between Indian landowners and third parties for the extraction of such fossils. Since Indian lands are lands held in trust, the Indian tribe or individual Indian landowners may use fossil resources for their economic benefit. The BIAs role in these transactions is to ensure that the transaction benefits the Indian landowner. The BIA has no other authority to manage paleontological resources within its jurisdiction.

The BIA is the lead federal agency for NEPA for the portion of the WOD Project located on the Morongo Band of Mission Indians land.

2.1.7 Code of Federal Regulations, Title 43.

Under the Title 43, Code of Federal Regulations, Section 8365.1-5, the collection of scientific and paleontological resources, including vertebrate fossils, on federal land is prohibited. The collection of a “reasonable amount” of common invertebrate or plant fossils for non-commercial purposes is permissible (43 CFR 8365.1-5 [United States Government Printing Office, 2014]).

2.2 State Regulatory Setting

2.2.1 California Environmental Quality Act (CEQA)

The procedures, types of activities, persons, and public agencies required to comply with the California Environmental Quality Act (CEQA) are defined in the Guidelines for Implementation of CEQA (State CEQA Guidelines), as amended on March 18, 2010 (Title 14, Section 15000 et seq. of the California Code of Regulations [i.e., 14 CCR Section 15000 et seq.]) and further amended January 4th, 2013. One of the questions listed in the CEQA Environmental Checklist is: "Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" (State CEQA Guidelines Section 15064.5 and Appendix G, Section V, Part C).

2.2.3 State of California Public Resources Code

The State of California Public Resources Code (Chapter 1.7), Sections 5097 and 30244, includes additional state level requirements for the assessment and management of paleontological resources. These statutes require reasonable mitigation of adverse impacts to paleontological resources resulting from development on state lands, and define the excavation, destruction, or removal of paleontological "sites" or "features" from public lands without the express permission of the jurisdictional agency as a misdemeanor. As used in Section 5097, "state lands" refers to lands owned by, or under the jurisdiction of, the state or any state agency. "Public lands" is 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.

2.3 Local Regulatory Setting

The assessment, mitigation, and treatment of paleontological resources are addressed in the County of Riverside General Plan (2003), County of San Bernardino General Plan (2007), Resource Management Chapter of the Calimesa General Plan (2014), Open Space Element of the City of Grand Terrace General Plan (2010), Conservation and Open Space Element of the Loma Linda General Plan (2009), and Open Space and Conservation Element of the Redlands General Plan (1995). The cities of Banning, Beaumont, and Colton do not have planning and permitting policies that specifically address potential adverse impacts to paleontological resources.

2.4 Permits and Approvals

All paleontological work on BLM lands will be approved and coordinated by the BLM Palm Springs Field Office. The paleontological Principal Investigator (PI) must have a current BLM Paleontological Resources Use Permit. All fossils collected from BLM lands must be housed in a federally approved paleontological repository.

Mitigation and Fossil Recovery Plan

A pre-construction paleontological field survey of the WOD Project area was completed by Paleo Solutions in 2012 and 2013 (see Aron et al., 2016) (Appendix A).

The mitigation and fossil recovery plan is designed to reduce WOD Project impacts on paleontological resources to below the level of significance pursuant to federal, state, and local laws. The proposed mitigation plan consists of the following 10 components that will be more fully described below:

1) Construction Monitoring
2) Construction Personnel Training
3) Fossil Salvage
4) Screen-washing of Bulk Matrix Samples
5) Laboratory Preparation, Analysis, and Museum Curation
6) Final Monitoring Report
7) Significance Criteria
8) Unanticipated Discoveries
9) Geologic Units and Monitoring Level of Effort
10) Staffing and Scheduling

3.1 Construction Monitoring

The purpose of monitoring is to reduce damage or destruction (i.e., minimize adverse impacts) to scientifically important fossils that are unearthed during construction. Monitoring entails systematic inspections of excavation sidewalls, graded surfaces, trenches, and spoils piles for evidence of fossils exposed by excavations, often on surfaces that are obscured by debris and clouds of dust. Dry-screening of potentially fossiliferous unconsolidated sediment should be a part of the monitoring routine and should be conducted as time permits while watching the active cut. Monitoring inspections must be conducted at a safe distance from the excavation equipment in the controlled chaos of a construction site. Time is critical because if equipment is running, the freshly exposed fossil can be destroyed by construction equipment, making it imperative to notify the equipment operator immediately before the fossil is irreparably damaged (Murphey et al., 2014). The primary responsibility of paleontological monitors should always be to adhere to all project safety requirements, and to only inspect and evaluate fossil discoveries when conditions are safe to do so. Microfossil sampling and macrofossil salvage of fossils may all occur during any monitoring program, but are discussed separately below in Sections 3.3 and 3.4.

All paleontological monitors will receive safety training provided by SCE or their representative. This training will include construction site safety protocols and site specific construction and environmental compliance training. All monitors will also receive a Workers Environmental Awareness Program (WEAP) training prior to working onsite.

Monitors will comply with all requirements established by the construction managers regarding personal protective equipment (PPE). This generally includes safety vests, hard hats, steel-toed boots, and safety glasses. The construction managers may also require gloves, hearing protection, or other protective equipment. Monitors should also be equipped with flagging, survey stakes, and tools for fossil exploration and salvage including x-acto knives, awls, brushes, picks, chisels and shovels. Other essential tools for monitors include chemical preservatives such as Paraloid B-72, specimen containers such as vials and plastic bags, a GPS receiver, a field notebook, data recording forms or tablets, a digital camera, and a plaster kit. All paleontological monitors will have sufficient paleontological training and field experience to demonstrate acceptable knowledge of fossil identification, collection methods, paleontological techniques, and stratigraphy.

In addition to completing SCE's standard web-based project database (FRED), monitors must keep daily paleontological monitoring logs documenting at a minimum the locations and construction activites monitored, observed geology, and fossil discoveries. The daily logs shall be archived by the paleontological consultant. Weekly monitoring reports must be prepared by the PI and submitted to the CPUC and BLM no later than Monday of the following week. These reports must include a list of all locations monitored, all paleontological personnel who worked on the WOD Project including their hours and a description of their activities, locations and a detailed description of any fossil discoveries made and their significance, and any recommendations for changes to the monitoring program.

Recommended monitoring locations are identified in Appendices B and C.

3.2 Construction Personnel Training

As required by MM PAL-1c, prior to earthmoving activities, all construction personnel will be trained regarding the recognition and protection of possible subsurface paleontological resources encountered during construction. Training will include procedures to be followed upon the discovery of paleontological resources and the recognition of Environmentally Sensitive Areas (ESAs), which may include areas determined to be paleontologically sensitive. The procedures will include a notification protocol for all personnel to follow if any paleontological resources, or potential paleontological resources, are discovered and a paleontological monitor is not present. ESAs must be avoided, and travel and construction activity must be confined to designated roads and areas. All personnel will be instructed that unauthorized collection or disturbance of paleontological resources on or off the right-of-way is not permissible. Violators will be subject to prosecution under the appropriate state and federal laws, and violations will be grounds for removal from the WOD Project. Unauthorized resource collection or disturbance may constitute grounds for the issuance of a stop work order (CPUC, 2015).

3.3 Fossil Salvage

When fossil discoveries are made by construction monitors, they will be quickly and professionally explored and recovered in order to minimize construction delays. The monitor will first notify the equipment operator and environmental inspector (EI) and cordon off the area of the fossil discovery with flagging, providing a sufficient buffer to protect surface and subsurface paleontological resources using his or her professional judgement. A typical appropriate buffer size is a 25-foot diameter from the fossil locality, outside of which normal construction activities could continue. The monitor will then notify the BLM approved paleontological PI or Field Agent (FA) to evaluate the significance of the discovery. It should be noted that no construction work is allowed to occur in geologic units with PFYC 3-5 paleontological potential without a monitor present, whereas in geologic units assigned as PFYC 2 and U, part time monitoring is required. Depending upon how much of the fossil is visible, it may be necessary to remove more sedimentary matrix in order to more fully expose the fossil in order to properly evaluate the significance of the fossils. Significance determinations should be made by a PI or FA either in person or using photographs. If the fossil discovery is deemed non-significant (i.e., it does not meet BLM's significance criteria), no further mitigation will be implemented. If the discovery is deemed to be significant, the PI or FA will notify SCE, and SCE will notify the CPUC and BLM points of contact for paleontological resources assigned to the WOD Project within 24 hours. The BLM and CPUC, in consultation with SCE and the PI, will determine the most appropriate course of action for recovery of the fossil(s) and associated data. Additional qualified and BLM approved paleontologists will be mobilized to assist with the salvage of the fossil(s) as needed. Fossil salvages may consist of the relatively rapid removal of small isolated fossils from an active cut, to hand-quarrying of larger fossils over several hours, to excavations of large fossils or large numbers of smaller fossils from a bone bed over several days. The duration of each excavation is determined by the size, preservation, and number of fossils at each locality. All scientifically important fossils should be salvaged and fully documented within a detailed stratigraphic framework as construction conditions and safety considerations permit.

Upon discovery of a paleontological resource (or potential paleontological resource) by construction personnel, an EI will be immediately notified, and work in the immediate vicinity (25-foot radius) will be temporarily halted. The EI will then notify a paleontological monitor who will mobilize to the site and initiate the protocol described above to explore and evaluate the fossil locality with input from the PI or FA.

At each paleontological locality, data recorded will minimally include field number, date of discovery and date of collection, geographic coordinates, elevation, formation, stratigraphic provenance, lithologic description of sediment that produced the fossil(s), type(s) of fossils and type(s) of element(s), taphonomic and paleoenvironmental interpretations, associations with other fossils, photograph(s), and collector(s). All fossils must be properly labeled prior to removal from the locality where they were discovered.

3.4 Screen-Washing of Bulk Matrix Samples

Scientifically significant fossils of small or even microscopic size consisting of vertebrates, invertebrates, plants, or trace fossils, may be discovered during the monitoring program. At the discretion of the PI in consultation with the BLM, CPUC, SCE, and CH2M, bulk matrix samples should be collected from such localities if it is determined that the fossils could yield scientifically important information. Such samples would be transported to the paleontological laboratory for soaking, re-drying, washing, and picking in order to fully document the microfaunal and microfloral diversity. SVP (2010) recommends a minimum sample size of 2,000 pounds. However, in practice, the amount of matrix sampled should depend on the abundance or lack thereof of fossils preserved within the matrix (Murphey et al., 2014), which is typically ascertained by wet-screening of 20-pound test samples in the field. Sampling should be done in such a way as to prevent or minimize interference with construction. For example, construction equipment can often expedite the sampling process by assisting with the removal of matrix from the excavation and establishment of a stockpile in an area removed from construction equipment in order to permit the paleontological monitor to transfer the matrix from the stockpile to buckets and remove them from the site.

3.5 Laboratory Preparation, Pre-Curation, Analysis, and Museum Curation

All fossils and bulk matrix samples collected at the WOD Project site(s) will be removed to a secure paleontological laboratory for preparation to the point of identification and curation. Fossil preparation involves the removal of sedimentary rock matrix or sediment from the fossil remains, treatment with archival chemical stabilizers, gluing and repair of broken fragments using archival adhesives, and construction of a supporting storage cradle as appropriate (mostly for larger specimens). Preparation of small fossils may require the use of a binocular microscope. Fossil-rich concentrate from bulk matrix samples may require heavy liquid separation prior to picking under a microscope. Prior to any heavy liquid separation, a safety plan must be submitted to CH2M and SCE for review and approval.

Following preparation, all fossils should be inventoried as part of the pre-curation process and then identified to taxon and element by a technical specialist, as necessary. Pre-curation involves the assignment of locality numbers and preparation of fossil locality forms, the assignment of unique catalogue numbers to each specimen, the application of specimen numbers to each fossil specimen, entry of specimen data into a computerized database, and the placement of each fossil into archival vials, trays or cradles, depending upon its size. The inventoried collection should be transferred to a paleontological repository along with all associated data. Fossil identification should be to the lowest taxonomic possible level (ideally Family or lower). All fossils should be labeled with their field locality number, which is traceable to the metadata including collector, date of collection, UTM coordinates (NAD83 datum), elevation, lithologic description, taxon, and element description at a minimum. The properly inventoried fossil collection should then be analyzed taxonomically, taphonomically, and/or biostratigraphically. The types of analyses that can be performed will be dependent upon the nature of the fossil collection. All data, including the results of the analysis, should be compiled along with the fossil specimen inventory and detailed paleontological locality forms (BLM form 8270-3 or equivalent), maps and photos for inclusion in the paleontological monitoring report. All scientifically significant fossils collected during the monitoring program will be transferred to a BLM approved public curation facility where those fossils deemed to be appropriate for curation by the museum will be accessioned and permanently housed so they will be available for scientific research, education and display. Upon receipt of the fossil collection, a signed repository receipt form will be provided to the BLM.

3.6 Report

Following completion of the laboratory work and museum curation, a draft paleontological monitoring report will be submitted to CH2M, SCE, BLM, CPUC, the Riverside and San Bernardino County Planning Departments, and the paleontological curation facility for the WOD Project. After addressing comments, a final paleontological monitoring report will be submitted. Report contents should strictly adhere (at a minimum) to BLM H-8280-1 (1998) and BLM IM 2009-011 (2008). GIS Shapefiles of all paleontological locality data (point, line and polygon) and areas monitored should be provided to the BLM. Paleontological locality data should be compiled in a confidential appendix which is included only with the BLM's and repository's copy of the monitoring report.

3.7 Significance Criteria

Section 1.4 details the BLM's paleontological resource significance criteria, which will should be implemented for this project within the context of the following discussion. For the purpose of this project, scientifically significant fossils are generally defined as those that are identifiable to taxon and/or element, and thus are potentially useful for scientific research purposes. However, unidentifiable fossils may also be collected if they are potentially useful to the overall analysis, and at the discretion of the PI. Rock or sediment samples may also be collected if they provide information necessary for depositional and paleoenvironmental interpretations. Depending upon the paleontological expertise of the PI (i.e., vertebrate or invertebrate paleontology, or paleobotany), technical experts should be available to provide additional expertise to the paleontological resource team as needed.

Paleontological monitors should always use caution when making decisions about significance in the field, and collect fossils all if they are unsure of their significance until they can be evaluated by a PI or FA. For example, when monitoring construction sites, it is often difficult to see the full extent of a fossil being salvaged, because it is collected partially covered with sedimentary matrix and as a result, it may not be possible to determine the significance of a fossil specimen until it has been more fully prepared in a paleontological laboratory. Generally, isolated bone fragments with no articular surfaces or other diagnostic features that are not associated with other fragments to which they could potentially be reassembled in the laboratory should not be collected. At the discretion of the PI, if a vertebrate fossil possesses morphological characteristics that will permit identification to the level of Order or below, it should be collected. Well preserved or otherwise noteworthy fossil plants, invertebrates and trace fossils may be scientifically important if they are identifiable to the level of Family or below. Fossils that are collected but later deemed to be non-scientifically significant should ideally donated to an educational institution, but maybe discarded with written permission from the BLM.

In order to guide all WOD Project paleontological personnel in significance determinations and decisions regarding fossil collection during the monitoring program, a project-specific training session should be presented to the paleontological resource team by the PI and other technical experts as needed prior to construction.

3.8 Unanticipated Discoveries

As outlined in Sections 3.2 and 3.3, prior to construction, all construction personnel will receive training by a BLM permitted PI or FA on the types and appearances of fossils that could be unearthed during construction.

If a paleontological resource (or potential paleontological resource) is discovered by construction personnel and a paleontological monitor is not present, an EI will be immediately notified, and work in the immediate vicinity (25-foot radius) will be temporarily halted. The EI will then notify a paleontological monitor who will mobilize to the site and initiate the protocol described in Section 3.3 to explore and evaluate the fossil locality with input from the PI or FA.

3.9 Geologic Units and Monitoring Level of Effort

3.9.1 Full-Time Paleontological Monitoring

Full-time paleontological monitoring will be implemented during excavations into native sediments of moderate to very high paleontological potential (PFYC 3-5). Units ranked as PFYC 5 include all mapped members of the Pliocene-Pleistocene San Timoteo Formation (Qstu, Qstcq, Qstr, QTsf, Tstl, Tstm) and, if encountered, Palm Spring Formation (Tps). Units ranked as PFYC 3 include Quaternary older sediments (Qvoa3, Qvofa, Qvof3, Qvor, Qofa, Qof3, Qols, Qyls, Qoa, Qoa1, Qof, Qog).

Types of construction activities that require monitoring when impacting moderate to high potential sediments include:

- Grading
- Drilling (if drill bit is greater than two feet in diameter)
- Excavation for retaining walls
- Excavation of construction areas

Types of construction activities that ***will not*** require monitoring when impacting moderate to high potential sediments include:

- Small diameter drill holes (less than two feet in diameter)*
- Pile driving*
- Project activities that do not involve ground disturbance, such as
    - Pull sites
    - Addition of telecom to existing poles
    - Work in established substations
    - Establishment of material yards

*Small diameter drill holes and pile driving generally do not result in the recovery of identifiable fossils.

If the geological evidence indicates that sediments mapped as PFYC 3-5 geologic units are in fact younger alluvium or previously disturbed sediments and have a low potential to yield paleontological resources (PFYC 2), the level of effort should be reduced from full-time to spot-checking monitoring or halted completely (see section 3.9.3 for required documentation). If bedrock of the San Timoteo Formation, Palm Spring Formation, or Quaternary older alluvium is encountered unexpectedly and a paleontological monitor is not present, the crew must immediately notify the Environmental Inspector (EI), who in turn will notify the PI.

3.9.2 Paleontological Spot-Checking

Initial spot-checking of PFYC 2 units is recommended when excavation exceeds depths of five feet to ensure that older deposits (San Timoteo Formation and Quaternary older alluvium) are not being impacted underneath the PFYC 2 layer. Geologic units ranked as PFYC 2 include Quaternary younger sediments (Qa, Qf, Qls, Qw, Qya3, Qya4, Qya5, Qya6, Qyf3, Qyf, Qyfl, Qyf4, Qyf5, Qyf7, Qyfag, Qyf5ag, Qwag, Qyaag, Qls, Qyw, Qg).

Although PFYC 2 units shall not be monitored per PAL-1d, these units are likely shallowly underlain by older deposits with higher paleontological potential (PFYC 3-5) (San Timoteo, Palm Springs Formation, and Quaternary older alluvium), and excavations that disturb these older sediments could adversely impact paleontological resources preserved within them. As stated in the record search conducted by the Natural History Museum of Los Angeles County, shallow excavations in the Quaternary younger deposits (PFYC 2) in the lowland areas will probably not encounter significant fossils vertebrate remains, however, excavations in these areas that extend into underlying older Quaternary deposits (PFYC 3) or San Timoteo Formation (PFYC 5) may well encounter significant vertebrate fossils (McLeod, 2012, 2013). Furthermore, in the El Casco Substation area, Paleo Solutions and LSA data and direct field observation indicate that much of the area mapped as landslide deposits (Aron et al., 2016) is, in fact, the very highly sensitive San Timoteo Formation. This demonstrates that there is also the potential for the precise locations of geologic units to be mismapped.

In order to reduce unnecessary project costs, spot-checking of PFYC 2 units should only occur when a paleontological monitor is already onsite for monitoring in a higher sensitivity (PFYC 3-5) area of the WOD Project, and only when excavations are deeper than 5 feet. Should it be determined during spot-checking that excavations in an area will not impact any (PFYC 3-5) units at depth, or if observed sediments are not conducive to fossil preservation, the spot-checks in that area should immediately be halted and documented as outlined in section 3.9.3. Results of any spot-checks shall be submitted to SCE on a weekly basis (at a minimum) along with recommendations (and supporting documentation) for each checked area to 1.) Continue spot-checking, 2.) Increase to full-time monitoring, or 3.) Cease spot-checking.

Types of construction activities that require initial spot-checking include:

- Grading deeper than 5 feet
- Drilling (if drill bit is greater than two feet in diameter) greater than 5 feet in depth
- Excavation for retaining walls greater than 5 feet in depth
- Excavation of construction areas greater than 5 feet in depth

Types of construction activities that ***<u>will not</u>*** require initial spot-checking include:

- Small diameter drill holes (less than two feet in diameter)*
- Pile driving*
- Project activities that do not involve ground disturbance, such as
    - Pull sites
    - Addition of telecom to existing poles
    - Work in established substations
    - Establishment of material yards

At the direction of the PI, if San Timoteo Formation or other older geologic units are observed in areas designated as PFYC 2 where spot checking is taking place, the monitoring should be increased to full-time.

In accordance with PAL-1d, spot-checking will, also initially be conducted during excavations into geologic units ranked as PFYC U, which includes Cabazon fanglomerate (Qcf) and Coachella fanglomerate (Tcf) deposits. Based on field observations, the PFYC U units will be assigned to PFYC 1-5 by the PI as appropriate.

Paleontological monitoring and spot checking will not be implemented in PFYC 1 units, regardless of sensitivity.

3.9.3 Documenting Changes in Monitoring/Spot Checking Efforts

Changes in monitoring or spot-checking efforts (increase, decrease, or cessation) will be based on observations made by the paleontological field monitor, taking into account the construction activities remaining in the areas and the lithology, structure, and extent of the geologic units to be impacted. Any changes (intensity of monitoring or locations to be monitored) must be approved by SCE and either the BLM or the CPUC depending on the jurisdiction of the affected area. The PI will submit a letter describing the circumstances for the reduction/increase in monitoring and accompanying photographic documentation to SCE, who shall submit it to the BLM and/or CPUC representative for approval.

3.10 Staffing and Scheduling

The construction schedule has not been determined at this time. SCE will be responsible for providing copies of all construction design drawings and plans, and regular updates to the project schedule to the PI.

All paleontological monitoring will be conducted under the direction of Qualified Paleontologist as defined in PAL-1b. All paleontological personnel must be approved by the BLM as a Field Monitor, Field Agent or Principal investigator, and must be listed on a BLM Paleontological Resource Use Permit accordingly.

SECTION 4

Plan Approval

This PRMMP has been prepared per the requirements of MM PAL-1b and will be submitted to CH2M, SCE, CPUC, BLM, and Riverside County and San Bernardino County Planning departments. The stipulations of this plan, including the appended paleontological resources inventory review (Appendix A), address MMs PAL-1a, PAL-1b, PAL-1c, PAL-1d and PAL-1e. This plan is subject to revisions following review by the lead agencies. Subsequent amendments will be resubmitted to the above listed agencies.

This page intentionally left blank.

References

Aron, G.L., C.D. Richards, and J.T. Raum. 2016. *Paleontological Resource Inventory Review For the Southern California Edison West of Devers Transmission Line Project*. Unpublished report on file with Paleo Solutions, Inc.

Bureau of Land Management. 2008. *Assessment and Mitigation of Potential Impacts to Paleontological Resources*. BLM Instruction Memorandum No. 2009-011.

Bureau of Land Management. 2016. *Potential Fossil Yield Classification system*. BLM Instruction Memorandum No. 2016-124 (PFYC revised from USFS, 2008).

Bureau of Indian Affairs (BIA, United States). 2012. Electronic resources available at: http://www.bia.gov/WhatWeDo/index.htm

California Public Utilities Commission Energy Division (CPUC). 1995. *Rules Relating to the Planning and Construction of Electric Generation, Transmission/Power/Distribution Line Facilities and Substations Located in California*. General Order No. 131-D, Section III. http://docs.cpuc.ca.gov/PUBLISHED/ Graphics/589.PDF

California Public Utilities Commission Energy Division (CPUC). 2015. *Final Environmental Impact Report for Southern California Edison's West of Devers Upgrade Project*. December. http://www.cpuc.ca.gov/environment/info/aspen/ westofdevers/toc-feir.htm

City of Calimesa. 2014. *General Plan*. Available at: http://www.cityofcalimesa.net/Forms/Calimesa%20General%20Plan.pdf

City of Grand Terrace. 2010. *General Plan*. Available at: http://www.grandterrace-ca.gov/uploads/8/1/1/9/8119166/adopted_general_plan.pdf

City of Loma Linda. 2009. *General Plan*. Available at: http://www.lomalinda-ca.gov/PDFs/General%20Plan/May%2009/Cover%20&%20TOC.pdf

City of Redlands. 1995. *General Plan Open Space Element*. Available at: http://cityofredlands.org/sites/default/files/pdfs/DSD/Section%207.pdf

County of Riverside. 2003. *General Plan*. Available at: http://www.rctlma.org/genplan/

County of San Bernardino. 2007. *General Plan*. Available at: http://www.sbcounty.gov/sbcountygeneralplan/

California Public Utilities Commission (CPUC). 2015. *Final Environmental Impact Report - Southern California Edison's West of Devers Upgrade Project*. December. http://www.cpuc.ca.gov/environment/info/aspen/westofdevers/toc-feir.htm

McLeod, S.A. 2012. Paleontological resources records search for the proposed West of Devers Project area: Natural History Museum of Los Angeles County, 2p.

McLeod, S.A. 2013. Paleontological resources records search, additional, for the proposed West of Devers Project area: Natural History Museum of Los Angeles County, 2p.

Murphey, P.C., and D. Daitch. 2007. *Paleontological overview of oil shale and tar sands areas in Colorado, Utah and Wyoming*: U.S. Department of Energy, Argonne National Laboratory Report Prepared for the U.S. Department of Interior Bureau of Land Management, 468 p. and 6 maps (scale 1:500,000).

Murphey, P.C., Knauss, G.E., Fisk, L.H, Demere, T.A., Reynolds, R.E., Trujillo, K.C., and J.J. Strauss. 2014. *A foundation for best practices in mitigation paleontology*: In: V.L. Santucci, G.A. Liggett, B.A. Beasley, H.G.

McDonald, and J. Tweet (eds.): Proceedings of the 10th Conference on Fossil Resources. Dakoterra 6:243-285.

Society of Vertebrate Paleontologists (SVP). 2010. *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources*. 11 p.

This page intentionally left blank.

Figures

This page intentionally left blank.

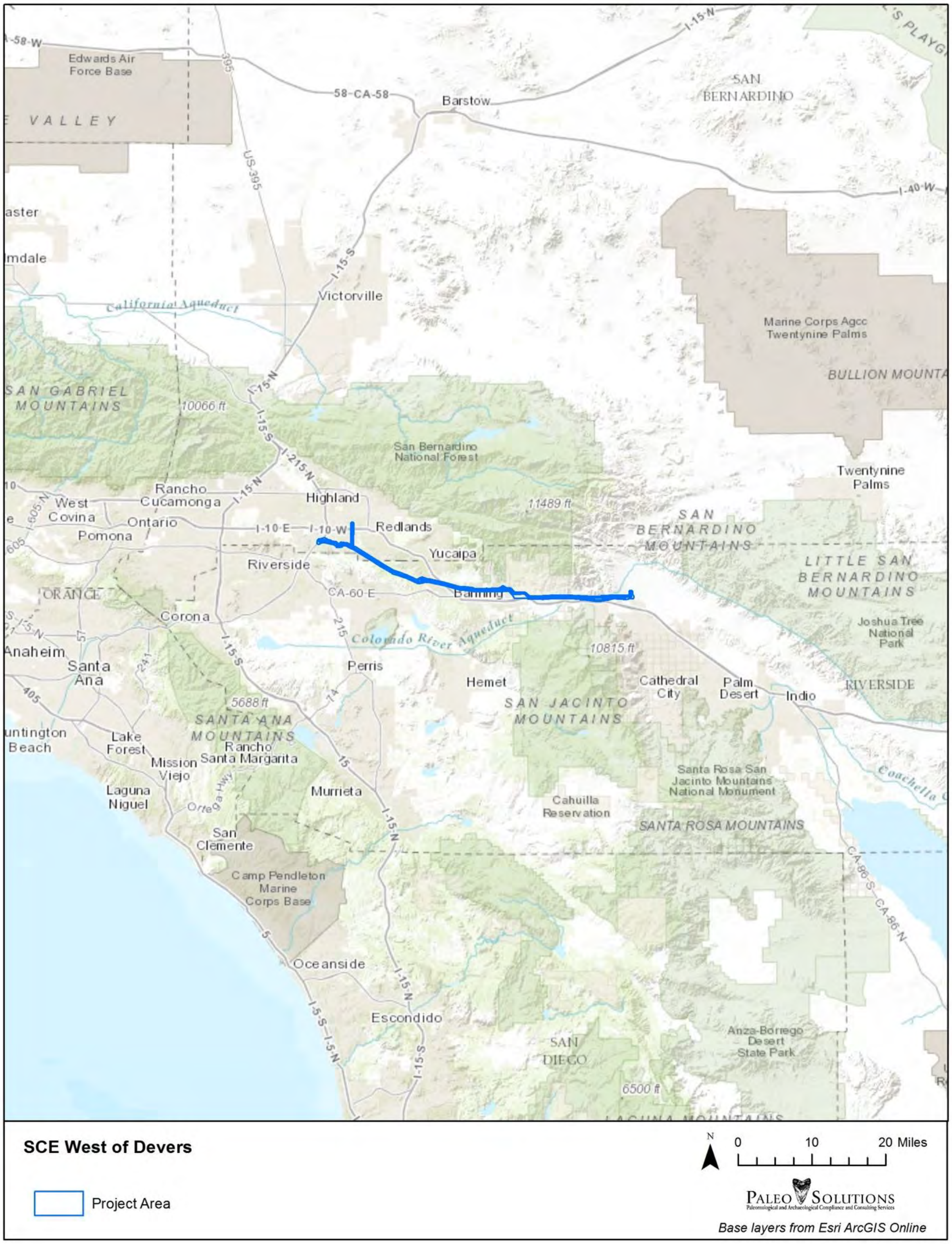


Figure 1. SCE West of Devers Project Vicinity Map

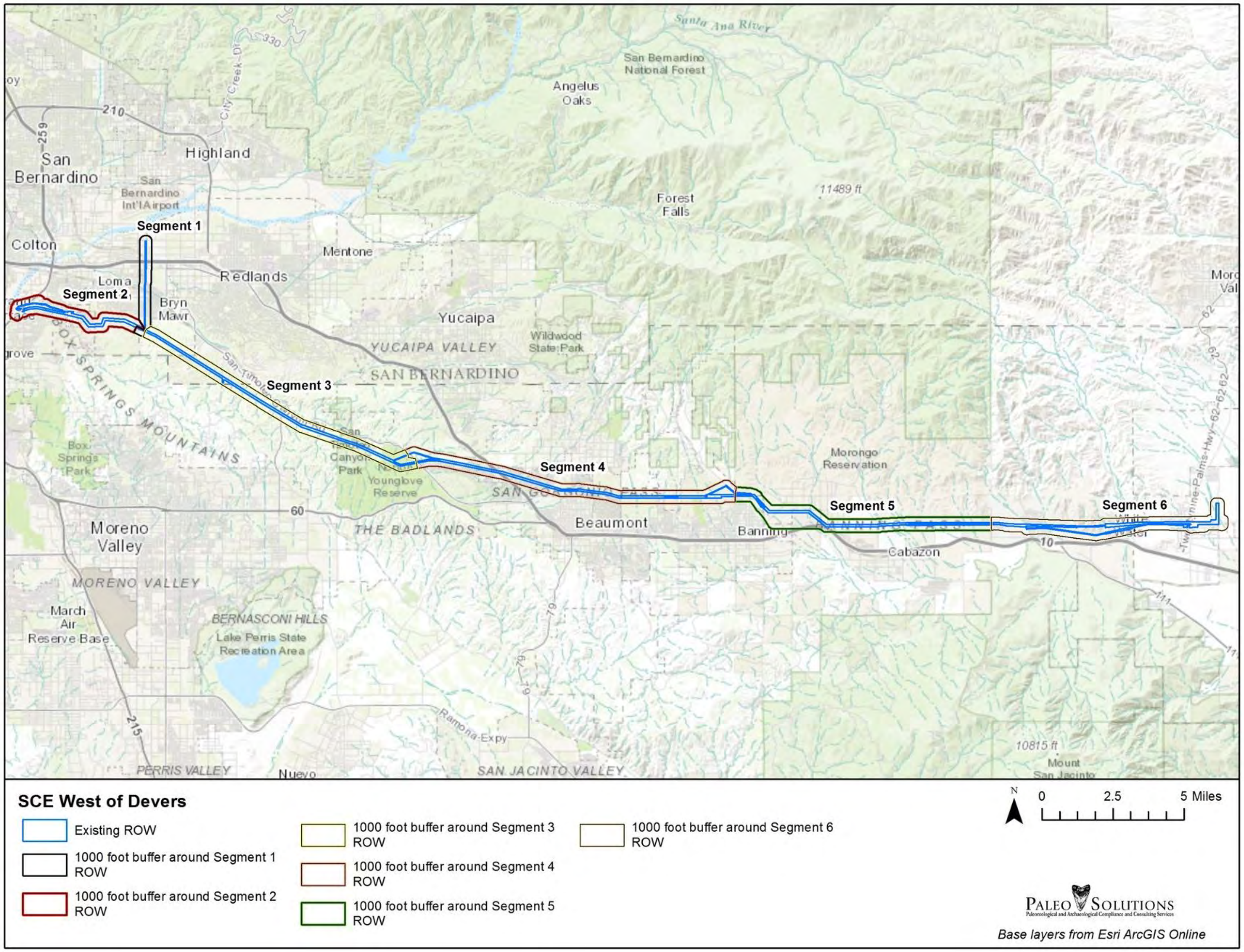


Figure 2. SCE West of Devers Project Location and Component Map

This page intentionally left blank.

Appendix A
Paleontological Resource Inventory Report

This page intentionally left blank.

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

PALEONTOLOGICAL RESOURCE INVENTORY REVIEW FOR THE SOUTHERN CALIFORNIA EDISON WEST OF DEVERS TRANSMISSION LINE PROJECT

Prepared for:

CH2M HILL ENGINEERS, INC.

Michael A. Cox
6 Hutton Centre Drive, Suite 700
Santa Ana, CA 92707

and

SOUTHERN CALIFORNIA EDISON

Audry Williams
6040 Irwindal Ave., Suite A
Irwindale, CA 92702

Prepared by:

PALEO SOLUTIONS, INC.

911 S. Primrose Ave., Unit N
Monrovia, CA 91016
geraldine@paleosolutions.com
(562) 818-7713

Geraldine L. Aron – Principal Investigator
Courtney D. Richards – Assistant Project Manager
Joey Raum – Report Author

AUGUST 5, 2016 (REVISED FEBRUARY 14, 2017)

PSI Report #: CA16RiversideSanBernardinoCH2M01R-P

This page intentionally left blank

CONTENTS

FIGURES

TABLES

1.0 INTRODUCTION

Paleo Solutions, Inc. (Paleo Solutions), under contract to CH2M Hill Engineers, Inc. (CH2M) prepared this paleontological resource inventory review (Review) as part of the paleontological resource mitigation and monitoring plan (PRMMP) for Southern California Edison's (SCE) West of Devers Transmission Line Project (Project or WOD Project). This report was prepared in compliance with Mitigation Measure (MM) PAL-1a of the Project's Mitigation and Monitoring Reporting Program (MMRP), NEPA, CEQA, Riverside County, San Bernardino County, the Cities of Calimesa, Grand Terrace, Loma Linda, and Redlands, and Bureau of Land Management (BLM) guidelines (BLM H-8270-1, BLM IM 2008-009, BLM IM 2009-011). The Project spans approximately 64 linear miles from Grand Terrace to Whitewater, and encompasses approximately 2,522 acres. Copies of this report will be submitted to CH2M, SCE, the California Public Utilities Commission (CPUC), and BLM.

1.1 PROJECT OVERVIEW

Construction of the WOD Project will upgrade existing electrical transmission infrastructures and associated facilities to deliver new renewable energy resources from the area east of the Devers Substation located in North Palm Springs. The Project will include removal of existing 220-kV transmission lines and replacement with new lattice tower structures and tubular steel poles (TSPs) in two parallel 220-kV lines within the existing SCE corridor. The Project will include construction of approximately 600 new structures, which will generally follow the existing SCE WOD 220-kV transmission line alignment. The Project consists of approximately 64 miles of transmission line, which has been divided into six segments and includes several ancillary components, including laydown yards, two buried telecommunications lines, and a 66-kV sub-transmission line (Figures 1 and 2). The Project corridor begins at both the San Bernardino Substation in the City of San Bernardino and the Vista Substation in the City of Grand Terrace and extends southeast through the San Timoteo Canyon area to the El Casco Substation in the City of Beaumont. From here, the alignment continues east through the San Gorgonio Pass and through the Morongo Indian Reservation towards White Water before terminating at the Devers Substation. The ROW crosses multiple land jurisdictions including privately owned land, Riverside County land, San Bernardino County land, California State Lands Commission (CSLC) land, Band of Mission Indians land, and federal lands. Federal lands are administered by BLM, United States Forest Service (USFS), and United States Fish and Wildlife Service (USFWS). The WOD Project lies in the Beaumont, El Casco, Cabazon, Desert Hot Springs, Redlands, San Bernardino South, Sunnymead and White Water, California U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles.

The WOD Project will consist of the following work packages:

- San Bernardino Substation to El Casco Substation transmission line
- Vista Substation to El Casco Substation transmission line
- El Casco Substation to Devers Substation transmission line
- 66-kV sub-transmission line
- Telecommunications Line 1

- Telecommunications Line 2
- Ancillary access roads, staging areas, laydown areas, and temporary disturbance areas

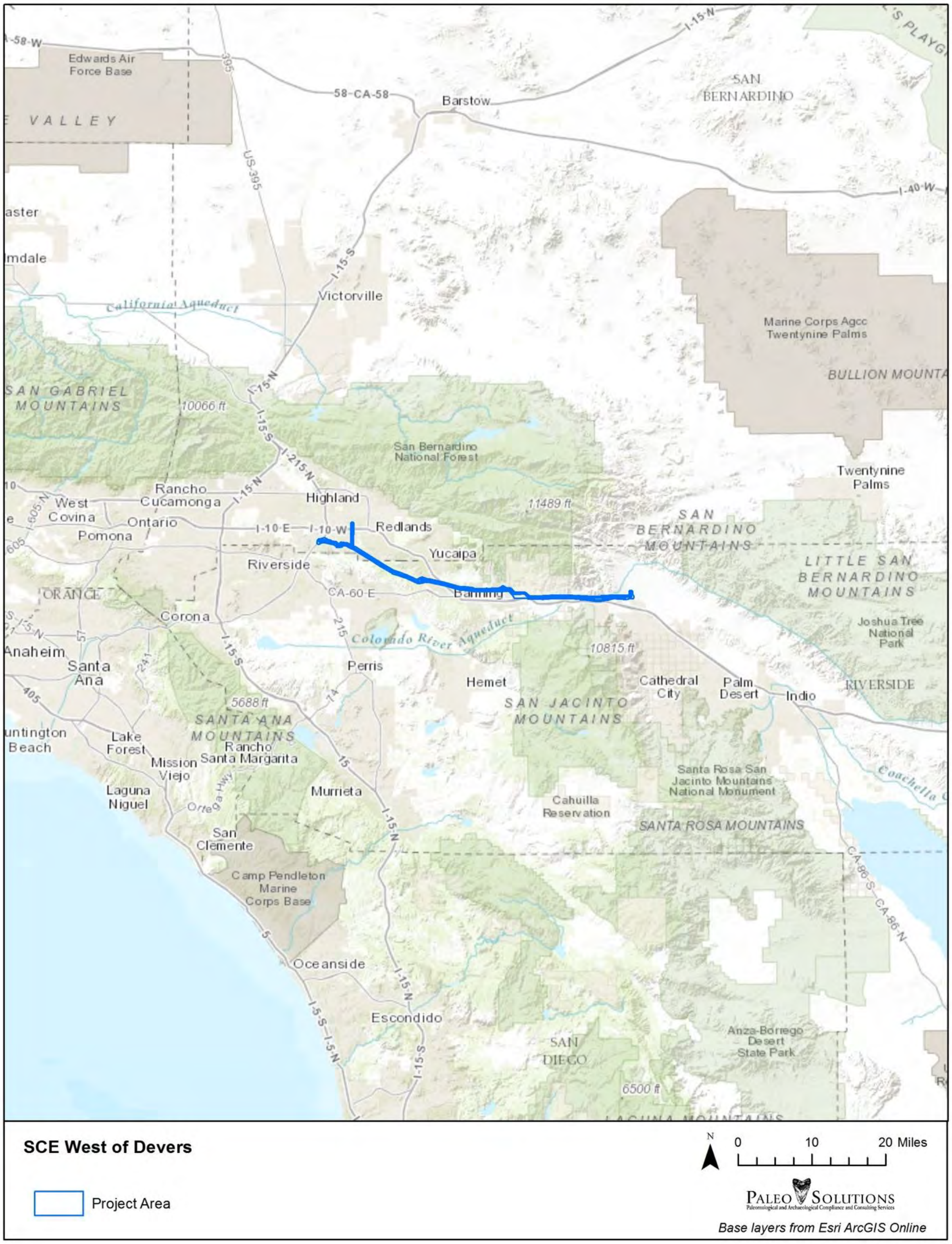


Figure 1. SCE West of Devers Project Vicinity Map.

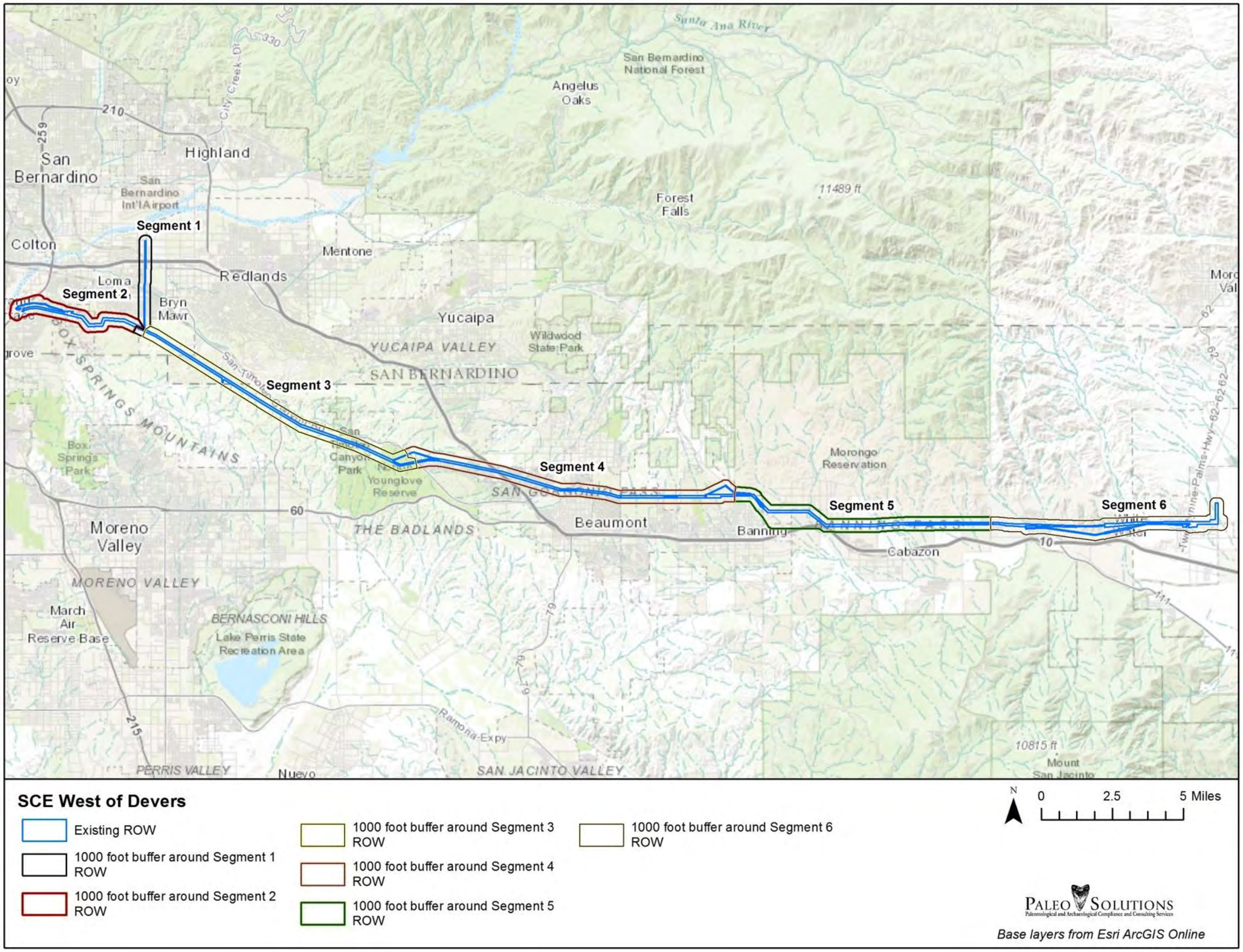


Figure 2. SCE West of Devers Project Location and Component Map.

1.2 LEAD AGENCIES

The WOD Project is subject to federal environmental statutes governing paleontological resources because it is partially sited on federally administered lands and requires federal permits. The BLM is the federal agency responsible for Project compliance with NEPA. The WOD Project is also subject to discretionary approval by the CPUC and therefore must comply with CEQA and Public Resources Code (PRC) 5097.5.

1.3 MITIGATION MEASURES

This Review was developed in compliance with MM PAL-1a (Table 1). A paleontological resource inventory review of the WOD Project area is listed as a submittal requirement. The Review is based on literature and geologic map assessments, museum locality records searches, and the results of the paleontological field reconnaissance surveys performed by Paleo Solutions between February 2012 and April 2013.

TABLE 1. SCE WOD PROJECT MITIGATION MEASURES (CPUC, 2015)

Mitigation Measure	Description*
PAL-1a	**Inventory and Evaluate Paleontological Resources:** Prior to construction and all other surface-disturbing activities, the Applicant shall have conducted and submitted an inventory of significant paleontological resources within the Project area. The report shall be based on the paleontological field reconnaissance surveys (conducted by Paleo Solutions, February, 2012, and April, 2013). As part of the inventory report, the paleontological sensitivity rankings of geologic units examined in the field shall be evaluated using the BLM's (2008) PFYC System and refined based on the results of the pedestrian surveys. The report shall be submitted to the CPUC and BLM for review at least 60 days before the start of construction, and shall be modified in response to agency comments, with the final report completed at least 30 days before the first ground disturbance.
PAL-1b	**Develop Paleontological Resource Mitigation and Monitoring Plan:** Following completion and approval of the Paleontological Resources Report (required in Mitigation Measure PAL-1a) and prior to the start of ground-disturbing construction, the Applicant shall prepare and submit to CPUC and BLM for review and approval, a Paleontological Resources Mitigation and Monitoring Plan (Plan), consistent with the following requirements: • The Plan shall be prepared by a Qualified Paleontologist and shall be based on Society of Vertebrate Paleontology (SVP) guidelines and meet all regulatory requirements. The qualified paleontologist shall have a Master's Degree or Ph.D. in paleontology, shall have knowledge of the local paleontology, and shall be familiar with paleontological procedures and techniques. • The Plan shall include a site-specific investigation to identify

	construction impact areas of moderate (PFYC 3) to very high (PFYC 5) sensitivity for encountering significant resources and the approximate depths at which those resources are likely to be encountered for each component of each segment of the Proposed Project. • The Plan shall require the qualified paleontological monitor to monitor all construction-related ground disturbance in sediments determined to have a moderate (PFYC 3) to very high (PFYC 5) potential. • The Plan shall define monitoring procedures and methodology, and shall specify that sediments of undetermined sensitivity shall be monitored on a part-time basis (as determined by the Qualified Paleontologist). Sediments with very low or low sensitivity will not require paleontological monitoring. • The Plan shall state which resources will be avoided and which shall be recovered for their data potential. Where possible, recovery is preferred over avoidance in order to mitigate the potential for looting of paleontological resources. The Plan shall also detail methods of recovery, preparation and analysis of specimens, final curation of specimens at a federally accredited repository, data analysis, and reporting. • The Plan shall specify that all paleontological work undertaken by the Applicant on public lands administered by BLM shall be carried out by qualified, permitted paleontologists with the appropriate current Paleontological Resources Use Permit.
PAL-1c	**Train Construction Personnel:** Prior to the initiation of construction, all construction personnel shall be trained regarding the recognition of possible subsurface paleontological resources and protection of all paleontological resources during construction. The Applicant shall complete training for all construction personnel. Training shall inform all construction personnel of the procedures to be followed upon the discovery of paleontological materials. Training shall inform all construction personnel that Environmentally Sensitive Areas (ESAs) may include areas determined to be paleontologically sensitive. The ESAs must be avoided and travel and construction activity must be confined to designated roads and areas. All personnel shall be instructed that unauthorized collection or disturbance of protected fossils on or off the right-of-way by the Applicant, his representatives, or employees will not be allowed. Violators will be subject to prosecution under the appropriate State and federal laws and violations will be grounds for removal from the project. Unauthorized resource collection or disturbance may constitute grounds for the issuance of a stop work order. The following issues shall be addressed in training or in preparation for construction: • The Applicant shall provide a background briefing for supervisory personnel describing the potential for exposing paleontological resources, the location of any potential ESAs, and procedures and notifications

	required in the event of discoveries by project personnel or paleontological monitors. Supervisory personnel shall enforce restrictions on collection or disturbance of fossils. • Upon discovery of paleontological resources by paleontologists or construction personnel, work in the immediate area of the find shall be halted and the Applicant's paleontologist notified. Once the find has been inspected and a preliminary assessment made, the Applicant's paleontologist will notify the BLM and CPUC and proceed with data recovery in accordance with the approved Plan consistent with Mitigation Measure PAL-1b (Develop Paleontological Resource Mitigation and Monitoring Plan).
PAL-1d	**Monitor Construction for Paleontological Resources:** Based on the paleontological sensitivity assessment and Paleontological Resource Mitigation and Monitoring Plan consistent with Mitigation Measure PAL-1b (Develop Paleontological Mitigation and Monitoring Plan), the Applicant shall conduct full-time construction monitoring through its qualified paleontological monitor in areas determined to have moderate (PFYC 3) to very high (PFYC 5) sensitivity. Sediments of unknown (PFYC U) sensitivity shall be monitored by a qualified paleontological monitor on a part-time basis (as outlined in the Plan). Geologic Units with very low (PFYC 1) or low (PFYC 2) sensitivity shall not be monitored. Monitoring will entail the visual inspection of excavated or graded areas and trench sidewalls. In the event that a paleontological resource is discovered, the monitor will have the authority to temporarily halt the construction equipment around the find until it is assessed for scientific significance, and collected. A temporary construction exclusion zone (i.e., environmentally sensitive area [ESA]) of at least 50 feet, consisting at a minimum of lath and flagging tape, will be erected around the discovery. The exclusion zone acts as a buffer around the discovery and is maintained for safety. SCE will report the discovery to the CPUC and BLM within 24 hours and/or as outlined in the Plan. Construction activities can occur outside the buffer if it is safe to do so. The size of the buffer may be increased or decreased once the monitor adequately explores the discovery to determine its size and significance. If indicators of potential microvertebrate fossils are found, screening of a test sample shall be carried out as outlined in SVP 2010. This procedure will be outlined in the Plan. Paleontological resource monitors per SVP (2010) shall have the equivalent of the following qualifications: • BS or BA degree in geology or paleontology and one year experience monitoring in the state or geologic province of the specific project. An associate degree and/or demonstrated experience showing ability to recognize fossils in a biostratigraphic context and recover vertebrate fossils in the field may be substituted for a degree. An undergraduate degree in geology or paleontology is preferable, but is less important than documented experience performing paleontological monitoring, or • AS or AA in geology, paleontology, or biology and demonstrated two

	years of experience collecting and salvaging fossil materials in the state or geologic province of the specific project, or Enrollment in upper division classes pursuing a degree in the fields of geology or paleontology and two years of monitoring experience in the state or geologic province of the specific project. • Monitors must demonstrate proficiency in recognizing various types of fossils, in collection methods, and in other paleontological field techniques. Copies of Monitoring Reports shall be submitted to the CPUC/BLM on a weekly basis.
PAL-1e	**Final Reporting and Curation:** At the conclusion of laboratory work and museum curation, a final report will be prepared describing the results of the paleontological monitoring efforts associated with the project. The report will include a summary of the field and laboratory methods, an overview of the Proposed Project area geology and paleontology, a list of taxa recovered (if any), an analysis of fossils recovered (if any) and their scientific significance, and recommendations. If the monitoring efforts produced fossils, then a copy of the report will also be submitted to the designated museum repository. All significant fossils collected will be prepared in a properly equipped paleontology laboratory to a point ready for curation no more than 60 days after all analyses are completed. Preparation will include the careful removal of excess matrix from fossil materials and stabilizing and repairing specimens, as necessary. Following laboratory work, all fossils specimens will be identified to the lowest taxonomic level, cataloged, analyzed, and delivered to an accredited museum repository for permanent curation and storage. The cost of curation is assessed by the repository and is the responsibility of the Applicant.

*Mitigation Measures as stated in the final EIR (CPUC, 2015)

1.4 DEFINITION AND SIGNIFICANCE OF PALEONTOLOGICAL RESOURCES

As defined by Murphey and Daitch (2007): “Paleontology is a multidisciplinary science that combines elements of geology, biology, chemistry, and physics in an effort to understand the history of life on earth. Paleontological resources, or fossils, are the remains, imprints, or traces of once-living organisms preserved in rocks and sediments. These include mineralized, partially mineralized, or unmineralized bones and teeth, soft tissues, shells, wood, leaf impressions, footprints, burrows, and microscopic remains. Paleontological resources include not only fossils themselves, but also the associated rocks or organic matter and the physical characteristics of the fossils’ associated sedimentary matrix.

The fossil record is the only evidence that life on earth has existed for more than 3.6 billion years. Fossils are considered non-renewable resources because the organisms they represent no longer exist. Thus, once destroyed, a fossil can never be replaced. Fossils are important scientific and educational resources because they are used to:

- Study the phylogenetic relationships amongst extinct organisms, as well as their relationships to modern groups;
- Elucidate the taphonomic, behavioral, temporal, and diagenetic pathways responsible for fossil preservation, including the biases inherent in the fossil record;
- Reconstruct ancient environments, climate change, and paleoecological relationships;
- Provide a measure of relative geologic dating that forms the basis for biochronology and biostratigraphy, and which is an independent and corroborating line of evidence for isotopic dating;
- Study the geographic distribution of organisms and tectonic movements of land masses and ocean basins through time;
- Study patterns and processes of evolution, extinction, and speciation; and
- Identify past and potential future human-caused effects to global environments and climates."

Fossil resources vary widely in their relative abundance and distribution and not all are regarded as significant. Vertebrate fossils, whether preserved remains or track ways, are classed as significant by most state and federal agencies and professional groups (and are specifically protected under the California Public Resources Code). In some cases, fossils of plants or invertebrate animals are also considered significant and can provide important information about ancient local environments. According to the Society of Vertebrate Paleontology (2010):

> *"A Significant Fossiliferous Deposit is a rock unit or formation which contains significant nonrenewable paleontologic resources, here defined as comprising one or more identifiable vertebrate fossils, large or small, and any associated invertebrate and plant fossils, traces and other data that provide taphonomic, taxonomic, phylogenetic, ecologic, and stratigraphic information."*

Assessment of significance is also subject to the CEQA criterion that the resource constitutes a "unique paleontological resource or site." A significant paleontological resource is considered to be of scientific interest if it is a rare or previously unknown species, it is of high quality and well-preserved, it preserves a previously unknown anatomical or other characteristic, provides new information about the history of life on earth, or has an identified educational or recreational value. Paleontological resources that may be considered not to have scientific significance include those that lack provenience or context, lack physical integrity due to decay or natural erosion, or that are overly redundant or are otherwise not useful for research. Vertebrate fossil remains and traces include bone, scales, scutes, skin impressions, burrows, tracks, tail drag marks, vertebrate coprolites (feces), gastroliths (stomach stones), or other physical evidence of past vertebrate life or activities (BLM, 2008).

1.5 PALEONTOLOGICAL RESOURCE IMPACTS

For the purpose of this Project, scientifically significant fossils are generally defined as those that are identifiable to taxon and/or element, and thus are potentially useful for scientific research purposes. Surface disturbing actions occurring in sedimentary geologic formations known to contain scientifically significant fossils are known to produce adverse impacts on non-renewable paleontological resources. These impacts vary depending upon the depth and lateral extent of ground disturbance. Activities that disturb only the ground surface may result in impacts to surface fossils due to crushing and fragmentation beyond repair. Activities that disturb both the surface and subsurface may result in fossils located on the surface and preserved in subsurface sediments. These activities include all proposed tower locations, access roads, staging yards, pull sites, substations, sub-transmission lines, and telecommunication lines. The loss of these fossils and associated scientific data results in a permanent loss of an educational and scientific resource, and represents a significant adverse environmental impact. Table 5 of Appendix A (Paleontological Resources Inventory Review) shows the relative distribution of PFYC sensitivities within the Project area.

Direct impacts to paleontological resources concern the physical destruction of fossils usually by human caused ground disturbance. Indirect impacts to paleontological resources typically concern loss of resources due to theft and vandalism due to increased public access to paleontologically sensitive areas. Cumulative impacts to paleontological resources concern the incremental loss to society as a whole of these non-renewable resources.

The goal of mitigation paleontology is to reduce adverse impacts to a less than significant level by salvaging scientifically important fossil remains and associated data and housing them permanently in a natural history museum. Direct adverse impacts can be successfully mitigated by physically removing scientifically important fossils from the path of construction either during pre-construction paleontological survey or by monitoring of construction excavations. Indirect impacts are more difficult to mitigate, and typically involve limiting access to scientifically important fossils through a combination of law enforcement, protective enclosures, and land access to restrictions.

2.0 METHODS

2.1 RESOURCE ASSESSMENT CRITERIA

Paleontological sensitivity assignments for the geologic units within the WOD Project area were determined following the Paleontological Fossil Yield Classification guidelines (PFYC) (BLM, 2007) and Riverside County guidelines (Riverside County General Plan, 2010). The PFYC is generally only used on Federal lands, but for consistency, the classifications were applied to all formations and geologic units along the Project ROW. The PFYC unit descriptors are consistent with the units designated on the Riverside County Paleontological Resources Sensitivity Map (PRSM). Where the Riverside County PRSM mapping does not agree with the mapped PFYC sensitivities, the higher assigned unit sensitivity was used. PFYC and PRSM rankings were assigned to the Project's underlying geologic units using the results of the San Bernardino County Museum (SBCM) and the Natural History Museum of Los Angeles County (LACM) records searches (SBCM, 2012; LACM, 2012, 2013), geologic maps, literature reviews, and previous work in the Project area (Figure 3).

The PFYC follows, and is excerpted directly from BLM IM 2008-009 (2007):

> "Occurrences of paleontological resources are closely tied to the geologic units (i.e., formations, members, or beds) that contain them. The probability for finding paleontological resources can be broadly predicted from the geologic units present at or near the surface. Therefore, geologic mapping can be used for assessing the potential for the occurrence of paleontological resources. However, it is impossible to predict the specific types of fossils that will be found or their exact locations in a geologic formation.
>
> Using the PFYC system, geologic units are classified based on the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts, with a higher class number indicating a higher potential. This classification is applied to the geologic formation, member, or other distinguishable unit, preferably at the most detailed mappable level. It is not intended to be applied to specific paleontological localities or small areas within units. Although significant localities may occasionally occur in a geologic unit, a few widely scattered important fossils or localities do not necessarily indicate a higher class; instead, the relative abundance of significant localities is intended to be the major determinant for the class assignment.
>
> The PFYC system is meant to provide baseline guidance for predicting, assessing, and mitigating paleontological resources. The classification should be considered at an intermediate point in the analysis, and should be used to assist in determining the need for further mitigation assessment or actions.
>
> The descriptions for the classes below are written to serve as guidelines rather than as strict definitions. Knowledge of the geology and the paleontological potential for individual units or preservational conditions should be considered when determining the appropriate class assignment. Assignments are best made by collaboration between land managers and knowledgeable researchers.
>
> **Class 1 –Very Low:** Geologic units that are not likely to contain recognizable fossil remains.
>
> - Units that are igneous or metamorphic, excluding reworked volcanic ash units.
> - Units that are Precambrian in age or older.
>
> (1) Management concern for paleontological resources in Class 1 units is usually negligible or not applicable; and (2) Assessment or mitigation is usually unnecessary except in very rare or isolated circumstances.
>
> The probability for affecting any fossils is negligible. Assessment or mitigation of paleontological resources is usually unnecessary. The occurrence of significant fossils is non-existent or extremely rare.

Class 2 – **Low:** Sedimentary geologic units that are not likely to contain vertebrate fossils or scientifically significant non-vertebrate fossils.

- Vertebrate or significant invertebrate or plant fossils not present or very rare.
- Units that are generally younger than 10,000 years before present.
- Recent aeolian deposits.
- Sediments that exhibit significant physical and chemical changes (i.e., diagenetic alteration).

(1) Management concern for paleontological resources is generally low; and (2) Assessment or mitigation is usually unnecessary except in rare or isolated circumstances.

The probability for affecting vertebrate fossils or scientifically significant invertebrate or plant fossils is low. Assessment or mitigation of paleontological resources is not likely to be necessary. Localities containing important resources may exist, but would be rare and would not influence the classification. These important localities would be managed on a case-by-case basis.

Class 3 or U – **Moderate** or **Unknown:** Fossiliferous sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence; or sedimentary units of unknown fossil potential.

- Often marine in origin with sporadic known occurrences of vertebrate fossils.
- Vertebrate fossils and scientifically significant invertebrate or plant fossils known to occur intermittently; predictability known to be low. (or)
- Poorly studied and/or poorly documented. Potential yield cannot be assigned without ground reconnaissance.

Class 3 – **Moderate Potential:** Units are known to contain vertebrate fossils or scientifically significant nonvertebrate fossils, but these occurrences are widely scattered. Common invertebrate or plant fossils may be found in the area and opportunities may exist for hobby collecting. The potential for a project to be sited on or impact a significant fossil locality is low, but is somewhat higher for common fossils.

Class U – **Unknown Potential:** Units exhibit geologic features and preservation conditions that suggest significant fossils could be present, but little information about the paleontological resources of the unit or the area is known. This may indicate the unit or area is poorly studied, and field surveys may uncover significant finds. The units in this class may eventually be placed in another class when sufficient survey and research is performed. The unknown potential of the units in this class should be carefully considered when developing any mitigation or management actions.

(1) Management concern for paleontological resources is moderate, or cannot be determined from existing data; and (2) Surface-disturbing activities may require field assessment to determine appropriate course of action.

This classification includes a broad range of paleontological potential. It includes geologic units of unknown potential, as well as units of moderate or infrequent occurrence of significant fossils. Management considerations cover a broad range of options as well, and could include pre-disturbance surveys, monitoring, or avoidance. Surface-disturbing activities will require sufficient assessment to determine whether significant paleontological resources occur in the area of a proposed action, and whether the action could affect the paleontological resources. These units may contain areas that would be appropriate to designate as hobby collection areas due to the higher occurrence of common fossils and a lower concern about affecting significant paleontological resources.

Class 4 – High: Geologic units containing a high occurrence of significant fossils. Vertebrate fossils or scientifically significant invertebrate or plant fossils are known to occur and have been documented, but may vary in occurrence and predictability. Surface-disturbing activities may adversely affect paleontological resources in many cases.

Class 4a: Unit is exposed with little or no soil or vegetative cover. Outcrop areas are extensive with exposed bedrock areas often larger than two acres. Paleontological resources may be susceptible to adverse impacts from surface-disturbing actions. Illegal collecting activities may affect some areas.

Class 4b: These are areas underlain by geologic units with high potential but have lowered risks of human-caused adverse impacts and/or lowered risk of natural degradation due to moderating circumstances. The bedrock unit has high potential, but a protective layer of soil, thin alluvial material, or other conditions may lessen or prevent potential impacts to the bedrock resulting from the activity.

- Extensive soil or vegetative cover; bedrock exposures are limited or not expected to be impacted.
- Areas of exposed outcrop are smaller than two contiguous acres.
- Outcrops form cliffs of sufficient height and slope so that impacts are minimized by topographic conditions.
- Other characteristics are present that lower the vulnerability of both known and unidentified paleontological resources.

(1) Management concern for paleontological resources in Class 4 is moderate to high, depending on the proposed action; (2) A field survey by a qualified paleontologist is often needed to assess local conditions; (3) Management prescriptions for resource preservation and conservation through controlled access or special management designation should be considered; and (4) Class 4 and Class 5 units may be combined as Class 5 for broad applications, such as planning efforts or preliminary assessments, when geologic mapping at an appropriate scale is not available. Resource assessment, mitigation, and other management considerations are similar at this level of analysis, and impacts and alternatives can be addressed at a level appropriate to the application.

The probability for affecting significant paleontological resources is moderate to high and is dependent on the proposed action. Mitigation considerations must include assessment of the disturbance, such as removal or penetration of protective surface alluvium or soils, potential for future accelerated erosion, or increased ease of access resulting in greater looting potential. If impacts to significant fossils can be anticipated, on-the-ground surveys prior to authorizing the surface-disturbing action will usually be necessary. On-site monitoring or spot-checking may be necessary during construction activities.

Class 5 – Very High: Highly fossiliferous geologic units that consistently and predictably produce vertebrate fossils or scientifically significant invertebrate or plant fossils, and that are at risk of human-caused adverse impacts or natural degradation.

Class 5a: Unit is exposed with little or no soil or vegetative cover. Outcrop areas are extensive with exposed bedrock areas often larger than two contiguous acres. Paleontological resources are highly susceptible to adverse impacts from surface-disturbing actions. Unit is frequently the focus of illegal collecting activities.

Class 5b: These are areas underlain by geologic units with very high potential but have lowered risks of human-caused adverse impacts and/or lowered risk of natural degradation due to moderating circumstances. The bedrock unit has very high potential, but a protective layer of soil, thin alluvial material, or other conditions may lessen or prevent potential impacts to the bedrock resulting from the activity.

- Extensive soil or vegetative cover; bedrock exposures are limited or not expected to be impacted.
- Areas of exposed outcrop are smaller than two contiguous acres.
- Outcrops form cliffs of sufficient height and slope so that impacts are minimized by topographic conditions.
- Other characteristics are present that lower the vulnerability of both known and unidentified paleontological resources.

(1) Management concern for paleontological resources in Class 5 areas is high to very high; and (2) A field survey by a qualified paleontologist is usually necessary prior to surface-disturbing activities or land tenure adjustments. Mitigation will often be necessary before and/or during these actions. (3) Official designation of areas of avoidance, special interest, and concern may be appropriate.

The probability for affecting significant fossils is high. Vertebrate fossils or scientifically significant invertebrate fossils are known or can reasonably be expected to occur in the impacted area. On-the-ground surveys prior to authorizing any surface-disturbing activities will usually be necessary. On-site monitoring may be necessary during construction activities."

2.2 EXISTING DATA REVIEW

An analysis of existing paleontological data was completed in conjunction with the preparation of the paleontological resource mitigation and monitoring plan (PRMMP) and included the following elements: 1) a review of the Project FEIR, background data, and required mitigation measures and conditions of approval; 2) a review of geologic mapping by Dibblee (2003, 2004a, 2004b, 2004c) and Morton and Miller (2003, 2004) to determine the distribution of geologic units within the Project area; 3) a literature search to document the paleontological sensitivity of the WOD Project area and the same geologic units in adjacent areas of Riverside and San Bernardino counties, California; and 4) records searches of regional museum repositories to document existing localities recorded within the Project vicinity. Paleontological sensitivity assignments for the geologic units within the Project area were determined following the PFYC (BLM, 2007) and Riverside County guidelines (Riverside County General Plan, 2010).

The following geologic maps were reviewed to determine the names and number of geologic formations and surficial deposits within the Project ROW:

- Dibblee (2003) Geologic Map of the Beaumont Quadrangle
- Dibblee (2004a) Geologic Map of the Cabazon Quadrangle
- Dibblee (2004b) Geologic Map of the Whitewater Quadrangle
- Dibblee (2004c) Geologic Map of the Desert Hot Springs Quadrangle
- Morton and Miller (2003) Geologic Map of the San Bernardino 30’ x 60’ Quadrangle
- Morton and Miller (2004) Geologic Map of the Santa Ana 30’x 60’ Quadrangle

Paleontological records searches were performed at the following museum repositories:

- The San Bernardino County Museum (SBCM), Division of Geological Sciences, Regional Paleontological Local Inventory
- The Los Angeles County Museum of Natural History (LACM), Vertebrate Paleontology Section

2.3 FIELD SURVEY

Confidential material removed from the public version of this document.

Confidential material removed from the public version of this document.

2.4 MUSEUM RECORD SEARCHES

Confidential material removed from the public version of this document.

TABLE 3B. RECORDS SEARCH SUMMARY OF THE LACM FOR THE SCE WOD PROJECT

Confidential material removed from the public version of this document.

*LACM = Natural History Museum of Los Angeles County

3.0 RESULTS OF THE INVENTORY REVIEW

The WOD Project ROW and half mile buffer contains 44 geologic units ranging in age from Cretaceous to Holocene/recent (Table 4 and Figure 3). These units include, from oldest to youngest, gneiss (gn), metasedimentary rocks (ms), granite (gr), Box Springs granodiorite (Kbfg, Kbft, Kbg), basalt (Tb), Coachella fanglomerate (Tcf), San Timoteo Formation (Qstu, Qstcq, Qstr, QTsf, Tstl, Tstm), Palm Spring Formation (Tps), Cabazon fanglomerate (Qcf), Quaternary older sedimentary deposits (Qvoa3, Qvoa, Qofa, Qvof3, Qvor, Qof3, Qyls, Qols, Qoa, Qoa1, Qof, Qog), and Quaternary younger sedimentary deposits (Qf, Qyw, Qa*, Qf*, Qw, Qya3, Qyf3, Qls, Qya5, Qya6, Qyw, Qa, Qwag, Qyf5, Qyf5ag, Qg) (Note: “*” denotes multiple map descriptions for a single symbol).

3.1 GEOLOGIC FORMATIONS & PALEONTOLOGICAL RESOURCES SENSITIVITY

3.1.1 Gneiss (gn) (Precambrian?)

Resource Potential – Very Low (PFCY 1)

Limited outcrops of Precambrian (?) age gneiss (gn) are restricted to a small area in the vicinity of Banning, adjacent to both the San Timoteo Formation and the Coachella Fanglomerate. Metamorphic rocks have been deformed by heat and pressure and will be devoid of recognizable vertebrate fossil remains. This unit has a very low paleontological sensitivity (PFYC 1).

3.1.2 Metasedimentary Rocks (ms) (Paleozoic?)

Resource Potential – Very Low (PFCY 1)

Limited outcrops of Paleozoic (?) age metasedimentary rocks (ms) are restricted to a small area near the western end of the Project alignment. These rocks are mapped south of the Project alignment, within the half mile buffer. Metamorphic rocks have been deformed by heat and pressure and will be devoid of recognizable vertebrate fossil remains. This unit has a very low paleontological sensitivity (PFYC 1).

3.1.3 Granite (gr) (Cretaceous)

Resource Potential – Very Low (PFCY 1)

Limited outcrops of Cretaceous age leucocratic granitic rocks (gr) are restricted to a small area in the vicinity of Banning, adjacent to both the San Timoteo Formation and the Coachella Fanglomerate. These rocks are mapped north of the Project alignment, within the half mile buffer. Plutonic rocks are formed by magma crystallizing deep underneath the surface where fossils cannot be preserved. This unit has a very low paleontological sensitivity (PFYC 1).

3.1.4 Box Springs Complex (Kbfg, Kbft, Kbg) (Cretaceous)

Resource Potential – Very Low (PFCY 1)

Limited outcrops of Cretaceous age undifferentiated granite and granodiorite rocks (Kbfg, Kbft, Kbg) occur in the westernmost portion of the Project area. Plutonic rocks are formed by magma crystallizing deep underneath the surface where fossils cannot be preserved. These units have a very low paleontological sensitivity (PFYC 1).

3.1.5 Basalts (Tb) (Miocene)

Resource Potential – Very Low (PFYC 1)

Miocene age basalts (Tb) are restricted to a small area in the vicinity of Banning, adjacent to both the San Timoteo Formation and the Coachella Fanglomerate. While basalt, as a volcanic rock, has a very low paleontological sensitivity (PFYC 1) since it forms under high temperatures which are unsuitable for the preservation of organic remains, the geologic units that the basalts are found within have moderate/unknown to high paleontological sensitivities (Coachella fanglomerate: PFYC 3b and San Timoteo Formation: PYFC 5, respectively).

3.1.6 Coachella Fanglomerate (Tcf) (Miocene)

Resource Potential – =Unknown (PFYC U)

The Coachella Fanglomerate (Tcf) is a highly variable unit laterally in terms of composition and thickness, reflecting the sourcing of clasts and varied depositional environments from debris-flow to riverine/stream. Largely made up of clasts from the local San Bernardino Mountains, it may contain granitic or schist clasts, as well as some basalt flow. This unit is generally well-indurated, poorly-sorted, variable in color, and has a medium-grained sand matrix (Allen, 1954). No fossils have been reported in this formation; however, during surveying for the WOD Project, numerous paleosols and root casts were observed within this formation in finer-grained beds. These conditions illustrate the possibility that fossils may be found in this formation. This formation has an unknown paleontological sensitivity (PFYC U).

3.1.7 San Timoteo Formation (Qstu, Qstcq, Qstr, QTsf, Tstm, Tstl) (Pliocene-Pleistocene)

Resource Potential – Very High (PFYC 5)

The Pliocene-Pleistocene San Timoteo Formation is a very high sensitivity terrestrial sedimentary sequence. It was deposited between ~6.2 MYA and 0.78 MYA. The San Timoteo Formation is a largely badlands-type exposure of sedimentary rock that extends about 30 km southeast from the San Bernardino Basin. The basal member is a ripple-bedded, laminated sandstone, located in the Jackrabbit Trail and Eden Springs area (Albright, 1999a). Above this member lies a sequence of poorly-indurated sandstone, siltstone, and sandy mudstone with conglomeratic lenses, which is discussed below. Overlying this is a sequence of generally coarser, reddish sediment that is characterized by thick, sheet-like pebble sandstone and cobble conglomerate that may exhibit some scouring into underlying units (Albright, 1999a). This unit is thought to represent intermittent braided stream sheetwash (Matti and Morton, 1975), with clasts sourced from the adjacent mountains. Some lenses of massive, fine-grained calcareous ‘marls’ representing shallow marshes have been reported (Albright, 1999a). The San Timoteo Formation is generally laterally very inconsistent due to both uplift and the nature of lacustrine and riverine depositional environments (Paleo Solutions, unpublished observations, 2012).

The San Timoteo Formation is a lithologically diverse formation composed of sandstone, conglomeratic sandstone, conglomerate, and occasional mudstone. It is an entirely terrestrial alluvial deposit with sediment sources appearing to be entirely derived from a Transverse Range source similar in composition to rocks presently exposed in the eastern San Gabriel Mountains, central San Bernardino Mountains, and the San Bernardino-Yucaipa area (Matti and Morton, 1993). Most sandstone is arkosic (composed of at least 25% of the mineral feldspar) and much of the sand composition is lithic (small rock fragments). This formation was first named by Frick (1921) for an upper Pliocene, vertebrate-bearing, non-marine strata in San Timoteo Canyon. According to Albright (1999a), the San Timoteo Formation may reach a maximum thickness of 2,000 feet, but this is only an estimate due to extensive vegetation cover, discontinuous beds, and movement along faults. The upper portion of the San Timoteo beds contains vertebrate fauna of earliest Pleistocene, while the lower beds are from the Pliocene (Morton and Miller, 2003, 2004).

Based on mapping by Morton and Miller (2003, 2004) and Dibblee (2003, 2004a), five members of the San Timoteo Formation have been identified as occurring in the WOD Project alignment, and one member has been identified as occurring within the half mile buffer. The division of the formation members is based primarily on lithologic composition and location. The five members mapped in the Project area include the upper member (Qstu), the middle member (Tstm), the lower sandstone member (Tstl), the undifferentiated sandstone member (QTsf), and the Reche Canyon member (Qstr). Additionally, although not mapped within the alignment, the quartz-bearing conglomerate beds of the upper member (Qstcq) are mapped adjacent to the Project. The Upper Member was deposited during the early to middle Pleistocene (1.8 million years–700,000 years), and all the other members were deposited 4.3–1.8 million years ago during the Pliocene (Morton and Miller, 2003, 2004). Within the study area, sediments from the Upper Member (Qstu), the Reche Canyon Member of the Upper Member (Qstr), the Middle Member (Tstm), the Lower Sandstone Member (Tstl), and the Ripple Laminated Member (Tstrl) are exposed. These sediments are described in more detail below.

The Upper Member (Qstu)

This member is composed of yellowish-gray, medium to thick bedded, moderately to well sorted, moderately indurated, very fine-grained to coarse-grained sandstone with some gravel and cobbles (Morton and Miller, 2003, 2004). The gravels and cobbles are subrounded to subangular and are derived from nearby basement rock sources. The Upper Member was deposited between 700,000 and 1.8 million years ago. Also within the study area is a local division known as the Reche Canyon Member (Qstr), which is dominated by coarse-grained arkosic sandstone with pebbles. Based on the fossils recovered, the Reche Canyon Member was deposited between 780,000 and 900,000 years ago (Morton and Miller, 2003, 2004).

Reche Canyon Member (Qstr)

The Reche Canyon member is a sub-unit of the upper member of the San Timoteo Formation (Qstu). This unit is characterized by coarse grained, arkosic sandstone, and pebble-sized gravel (Morton and Miller, 2003, 2004).

The Middle Member (Tstm)

This member is primarily a light-gray, pebbly to cobbley, moderately to well-indurated, medium- to coarse-grained sandstone that also contains conglomerate beds up to nine meters thick. In addition, there are some pale brown to light-gray, fined-grained sandstone to pebbly sandstone interbeds. In general, this member is composed of approximately 70 percent sandstone and 30 percent conglomerate; with the conglomerate beds being more concentrated in upper portions of this member (Morton and Miller, 2003, 2004). According to Morton and Miller (2003, 2004), this member contains fairly common reddish-brown stratigraphic intervals consisting of oxidized sandstone, which are not paleosols, and reddish-brown clay-rich intervals, which may be paleosols.

Lower Sandstone and Undifferentiated Sandstone Members (Tstl, QTsf)

These sandstone members are composed of primarily gray, moderately well indurated, well-sorted, fine-grained sandstone that contains occasional interbeds of medium-grained sandstone and pebble lenses (Morton and Miller, 2003, 2004). The lower sandstone member is generally finer grained then the undifferentiated member and was deposited in a distal floodplain type environment. It erodes to form slightly more rounded badlands topography than younger part of San Timoteo beds. In some areas, the basal portion of this member is composed of a buff to reddish-brown fine- to thick-bedded, coarse-grained arkosic sandstone, which is overlain by a section of greenish-gray claystone, siltstone, and thick, poorly bedded, coarse-grained sandstone (Morton and Miller, 2003, 2004).

All members of the San Timoteo Formation have a very high paleontological sensitivity (PFYC 5).

3.1.8 Palm Spring Formation (Tps) (Pliocene-Pleistocene)

Resource Potential – Very High (PFYC 5)

The Palm Spring Formation (Tps) consists of interbedded siltstone, claystone, arkosic sandstone, and pebble conglomerate. These sediments were deposited in alluvial fan, fluvial, and lacustrine environments and record the Colorado River delta barring off marine waters from the Salton Trough during the early Pleistocene (Cassiano, 2002). The Palm Spring Formation is restricted to a small area near the eastern end of the Project alignment, in the vicinity of White Water. These rocks are mapped north of the Project alignment, within the half mile buffer. The Palm Spring Formation, particularly in the Anza-Borrego Desert State park, has produced over 100 species of Plio-Pleistocene fossil vertebrates including skulls, teeth, and/or bones of amphibians (frog), reptiles (tortoise, lizard, snake), birds (loon, grebe, pelican, condor, flamingo, duck, hawk, eagle, turkey, quail, crane, coot, owl, and crow), and mammals (shrew, mole, bat, ground sloth, rabbit, squirrel, gopher, kangaroo rat, woodrat, vole, wolf, coyote, fox, short-faced bear, raccoon, skunk, badger, jaguar, horse, tapir, camel, llama, deer, pronghorn, and mammoth) (Deméré and Walsh, 1993; Lundelius et al., 1987; San Diego DPW, 2009). The Palm Spring Formation has been noted to be of particular scientific importance because its Irvingtonian-Blancan faunas provide critical information for our understanding of the evolution and diversification of Pliocene-Pleistocene paleocommunities (Casilliano, 2002). The Palm Spring Formation has a very high paleontological sensitivity (PFYC 5).

3.1.9 Cabazon Fanglomerate (Qcf) (Pleistocene)

Resource Potential – Unknown (PFYC U)

The Cabazon fanglomerate (Qcf) is a coarse cobble to boulder sized conglomerate containing clay, silt and sand. The range of clasts size suggests high energy deposition, mainly from rivers and streams transporting material derived from the San Bernardino Mountains (Scott, 2003). No fossils are recorded from within this unit; however, during the paleontological surveys, sediments conducive to fossilization were observed. This formation has unknown paleontological sensitivity (PFYC U).

3.1.10 Quaternary Older Sedimentary Deposits (Qvoa3, Qvofa, Qvof3, Qvor, Qofa, Qof3, Qls, Qols, Qoa, Qoa1, Qof, Qog) (Pleistocene)

Resource Potential – Moderate (PFYC 3)

Quaternary older sedimentary deposits include very old alluvial fan deposits (Qvofa, Qvof3), very old axial-channel deposits (Qvoa3), very old regolith (Qvor), older alluvium (Qoa), older fan deposits (Qof, Qofa, Qof3), older gravel deposits (Qog), old axial-channel deposits (Qoa1), old landslide deposits (Qols), and young landslide deposits (Qyls). These units are all terrestrial alluvial deposits of Early to Late Pleistocene age. They are described as consisting of sandy alluvium or gravel that is generally reddish-brown, often well-indurated, and often well-dissected (Morton and Miller, 2003, 2004). They may be present as deeply weathered rock and soil (Morton and Miller, 2003, 2004). No records of fossils from these units were found in the literature from within the Project area. However, these units are similar to those found throughout southern California of the same age, which have produced numerous scientifically important Pleistocene-aged fossils (Jefferson, 1991). Furthermore, in the El Casco Substation area, Paleo Solutions and LSA data and direct field observation indicate that much of the area mapped as landslide deposits (unpublished data, LSA; unpublished data, Paleo Solutions) is, in fact, the very highly sensitive San Timoteo Formation. In combination, these very old deposits are considered to have moderate paleontological sensitivity (PFYC 3).

3.1.11 Quaternary Younger Sedimentary Deposits (Qa, Qf, Qls, Qw, Qya3, Qya4, Qya5, Qya6, Qyf, Qyf1, Qyf3, Qyf4, Qyf5, Qyf7, Qyfag, Qyf5ag, Qwag, Qyaag, Qyw, Qg) (Pleistocene to Holocene)

Resource Potential – Low (PFYC 2)

Quaternary younger sedimentary deposits include Quaternary very young axial-channel deposits (Qa; Morton and Miller, 2003), axial-channel deposits (Qa; Morton and Miller, 2004), Quaternary alluvium (Qa; Dibblee, 2003, 2004b), Quaternary very young alluvial fan deposits (Qf; Morton and Miller, 2003), Quaternary fan deposits (Qf; Dibblee, 2003), fan deposits (Qf; Dibblee, 2004a), Quaternary very young landslide deposits (Qls), Quaternary very young wash deposits (Qw), Quaternary young alluvial fan deposits (Qyf, Qyf1, Qyf3, Qyf4, Qyf5, Qyf7, Qyfag, Qyf5ag), Quaternary young wash deposits (Qyw, Qwag), young axial-channel deposits (Qyaag, Qya3, Qya4, Qya5, Qya6), and Quaternary gravel deposits (Qg). These units are all alluvial and landslide deposits of Late Pleistocene to Holocene age (Morton and Miller, 2003, 2004). Because they are too young to contain in-situ fossils, they are considered to have low paleontological sensitivity (PFYC 2), although it should be noted that they may shallowly cover units of higher PFYC ranking. Furthermore, in the El Casco Substation area, Paleo Solutions and LSA data and direct field observation indicate that much of the area mapped as landslide deposits (unpublished data, LSA; unpublished data, Paleo Solutions) is, in fact, the very highly sensitive San Timoteo Formation.

TABLE 4. SUMMARY OF GEOLOGIC FORMATIONS OCCURRING IN PROJECT AREA

Geologic Unit	Map Symbol	Age	Paleontological Potential (PFYC*)	Map
Gneiss	gn	Precambrian?	1 (Very Low)	Dibblee (2003)
Metasedimentary	ms	Paleozoic?	1 (Very Low)	Dibblee (2003)
Leucocratic granitic rocks	gr	Cretaceous	1 (Very Low)	Dibblee (2003)
Box Springs plutonic complex, biotite granodiorite and tonalite	Kbfg	Cretaceous	1 (Very Low)	Morton and Miller (2003)
Box Springs plutonic complex, porphyritic granodiorite	Kbft	Cretaceous	1 (Very Low)	Morton and Miller (2003)
Box Springs plutonic complex, porphyritic granodiorite	Kbg	Cretaceous	1 (Very Low)	Morton and Miller (2003)

Basalt	Tb	Miocene	1 (Very Low)	Dibblee (2004a)
Very young axial-channel deposits	Qa	Late Holocene	2 (Low)	Morton and Miller (2003)
Very young alluvial fan deposits (late Holocene)	Qf	Late Holocene	2 (Low)	Morton and Miller (2003)
Very young wash deposits	Qw	Late Holocene	2 (Low)	Morton and Miller (2003)
Young axial-channel deposits, Unit 3	Qya3	Middle Holocene	2 (Low)	Morton and Miller (2003)
Young alluvial fan deposits	Qyf	Middle Holocene	2 (Low)	Morton and Miller (2003)
Young alluvial fan deposits, Unit 1	Qyf1	Middle Holocene	2 (Low)	Morton and Miller (2003)
Young alluvial fan deposits, Unit 3	Qyf3	Middle Holocene	2 (Low)	Morton and Miller (2003)
Young alluvial fan deposits, Unit 4	Qyf4	Middle Holocene	2 (Low)	Morton and Miller (2003)
Young alluvial fan deposits, Unit 7	Qyf7	Middle Holocene	2 (Low)	Morton and Miller (2003)
Young alluvial fan deposits	Qyfag	Middle Holocene	2 (Low)	Morton and Miller (2003)
Very young landslide deposits	Qls	Late Holocene	2 (Low)	Morton and Miller (2003)
Young axial-channel deposits	Qyaag	Late Holocene	2 (Low)	Morton and Miller (2003, 2004)
Young axial-channel deposits, Unit 3	Qya3	Late Holocene	2 (Low)	Morton and Miller (2003, 2004)
Young axial-channel deposits, Unit 4	Qya4	Late Holocene	2 (Low)	Morton and Miller (2003, 2004)
Young axial-channel deposits, Unit 5	Qya5	Late Holocene	2 (Low)	Morton and Miller (2003, 2004)
Young axial-channel deposits, Unit 6	Qya6	Late Holocene	2 (Low)	Morton and Miller (2004)
Young wash deposits	Qyw	Late Pleistocene to Holocene	2 (Low)	Morton and Miller (2003)
Axial-channel deposits	Qa	Late Holocene	2 (Low)	Morton and Miller (2004)
Wash deposits, arenaceous gravel	Qwag	Late Holocene	2 (Low)	Morton and Miller (2004)
Young alluvial fan deposits, Unit 5	Qyf5	Late Holocene	2 (Low)	Morton and Miller (2004)

Young alluvial fan deposits, Unit 5, arenaceous gravel	Qyf5ag	Late Holocene	2 (Low)	Morton and Miller (2004)
Quaternary alluvium	Qa	Holocene	2 (Low)	Dibblee (2003, 2004c)
Quaternary fan deposit	Qf	Pleistocene to Holocene	2 (Low)	Dibblee (2003)
Quaternary gravel deposit	Qg	Holocene	2 (Low)	Dibblee (2003, 2004b)
Fan deposit	Qf	Pleistocene	2 (Low)	Dibblee (2004a)
Old alluvial fan deposits, Unit 3	Qof3	Middle to Late Pleistocene	3 (Moderate)	Morton and Miller (2003)
Old alluvial fan deposits	Qofa	Middle to Late Pleistocene	3 (Moderate)	Morton and Miller (2003)
Very old alluvial fan deposits, Unit 3	Qvof3	Early to Middle Pleistocene	3 (Moderate)	Morton and Miller (2003, 2004)
Very old alluvial fan deposits	Qvofa	Early to Middle Pleistocene	3 (Moderate)	Morton and Miller (2003, 2004)
Old landslide deposits	Qols	Late to Middle Pleistocene	3 (Moderate)	Morton and Miller (2003, 2004)
Young landslide deposits	Qyls	Late Pleistocene to Holocene	3 (Moderate)	Morton and Miller (2003, 2004)
Very old axial-channel deposits, Unit 3	Qvoa3	Early to Middle Pleistocene	3 (Moderate)	Morton and Miller (2003)
Quaternary older alluvium	Qoa	Pleistocene	3 (Moderate)	Dibblee (2003, 2004c)
Old axial-channel deposits, Unit 1	Qoa1	Middle Pleistocene	3 (Moderate)	Morton and Miller (2004)
Quaternary older fan deposit	Qof	Pleistocene	3 (Moderate)	Dibblee (2003)
Quaternary older gravel deposit	Qog	Pleistocene	3 (Moderate)	Dibblee (2003)
Very old regolith	Qvor	Pleistocene	3 (Moderate)	Morton and Miller (2004)
Cabazon fanglomerate	Qcf	Pleistocene	U (Uknown)	Dibblee (2004a, 2004b)
Coachella fanglomerate	Tcf	Miocene	U (Uknown)	Dibblee (2004a, 2004b)
San Timoteo Formation, upper member	Qstu	Pleistocene	5 (Very High)	Morton and Miller (2003, 2004)
San Timoteo Formation, upper member	Qstcq	Pleistocene	5 (Very High)	Morton and Miller (2003, 2004)
San Timoteo Formation, Reche Canyon member	Qstr	Pleistocene	5 (Very High)	Morton and Miller (2003)

San Timoteo Formation, lower sandstone member	Tstl	Pliocene	5 (Very High)	Morton and Miller (2003)
San Timoteo Formation, middle member	Tstm	Pliocene	5 (Very High)	Morton and Miller (2004)
San Timoteo Formation, sandstone member	QTsf	Pliocene to Early Pleistocene	5 (Very High)	Dibblee (2003, 2004a)
Palm Spring Formation	Tps	Pliocene to Pleistocene	5 (Very High)	Dibblee (2004b)

*PFYC = Paleontological Fossil Yield Classification; based on BLM guidelines

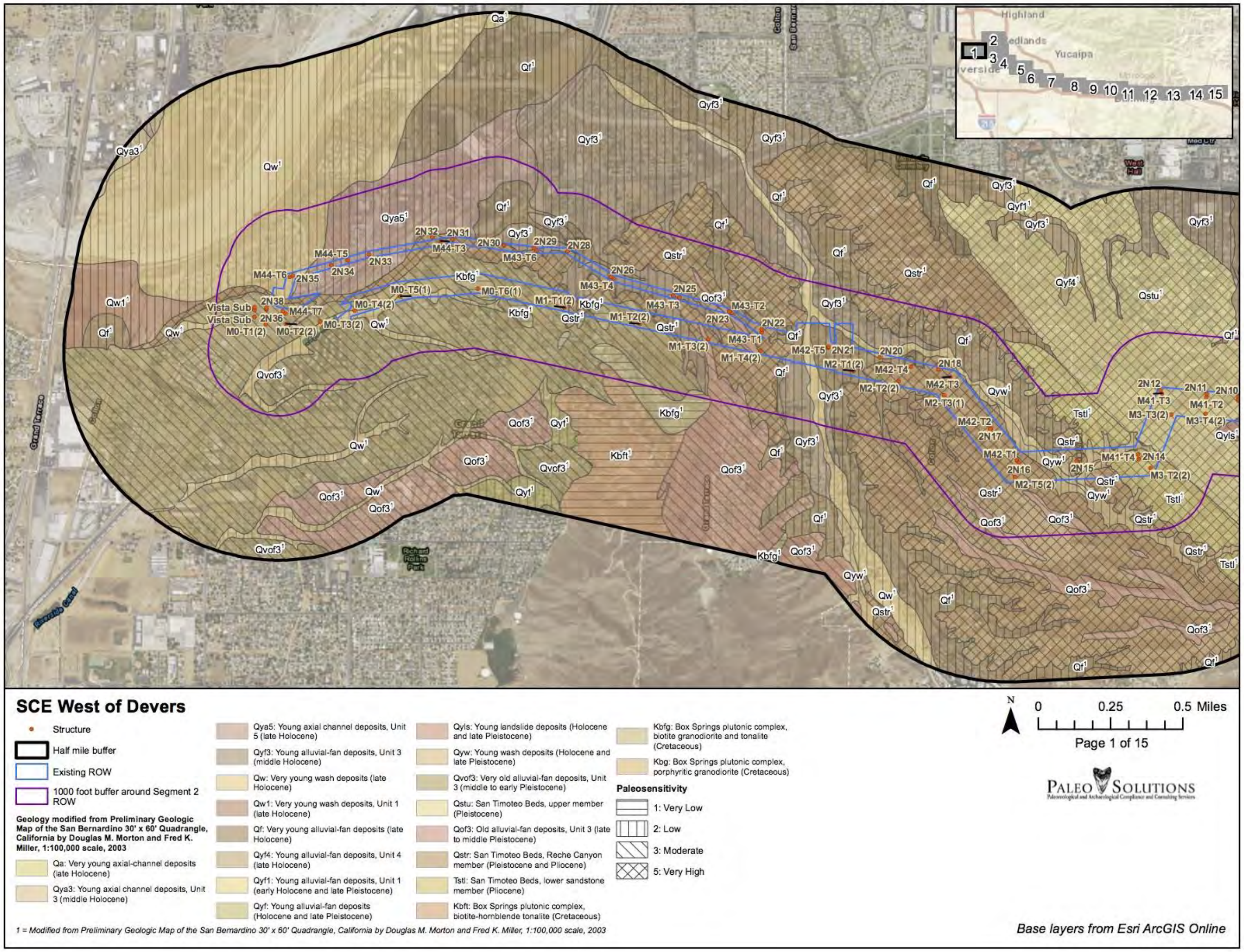


Figure 3a. SCE West of Devers Geologic Unit and Paleontological Sensitivity Map (1 of 15).

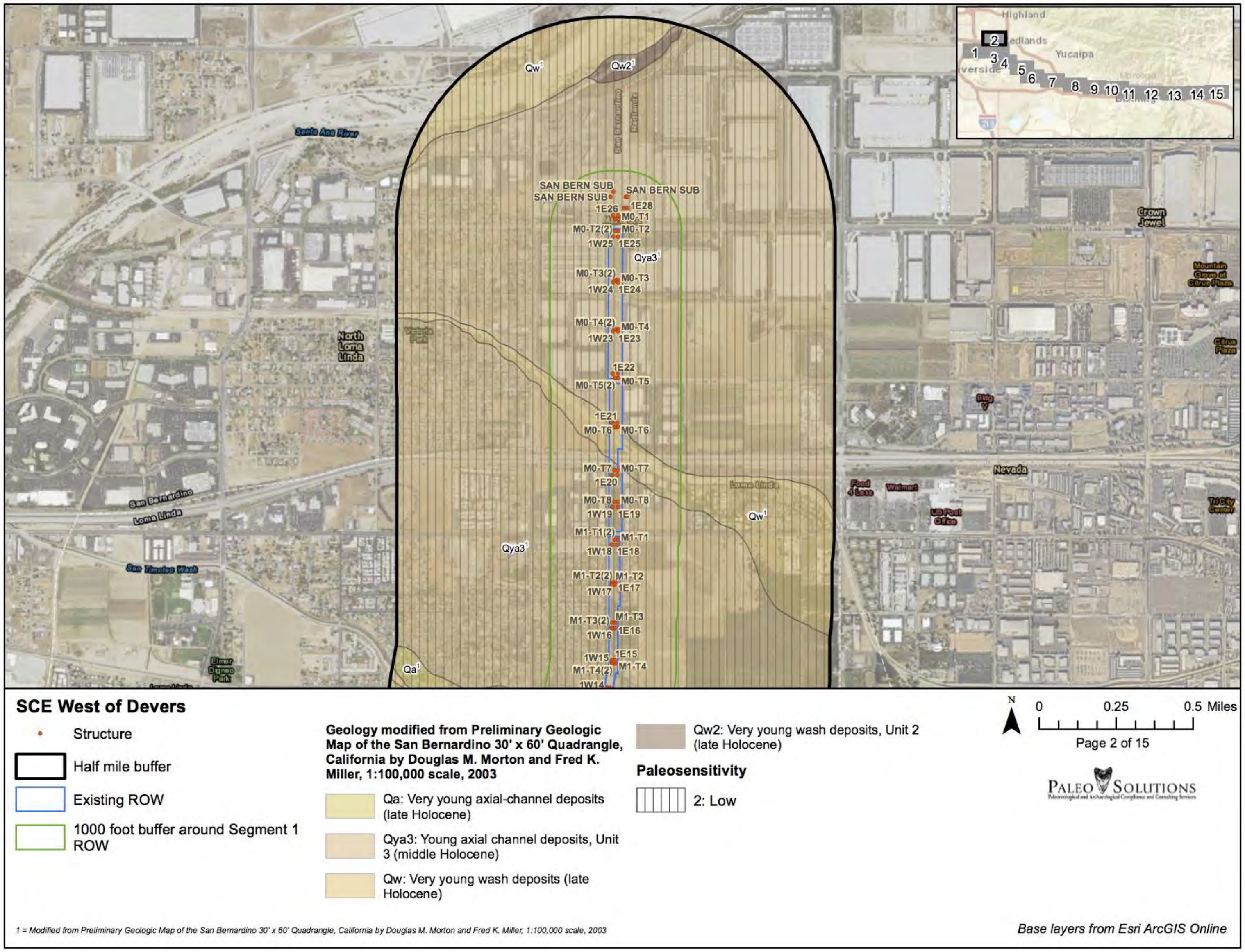


Figure 3b. SCE West of Devers Geologic Unit and Paleontological Sensitivity Map (2 of 15).

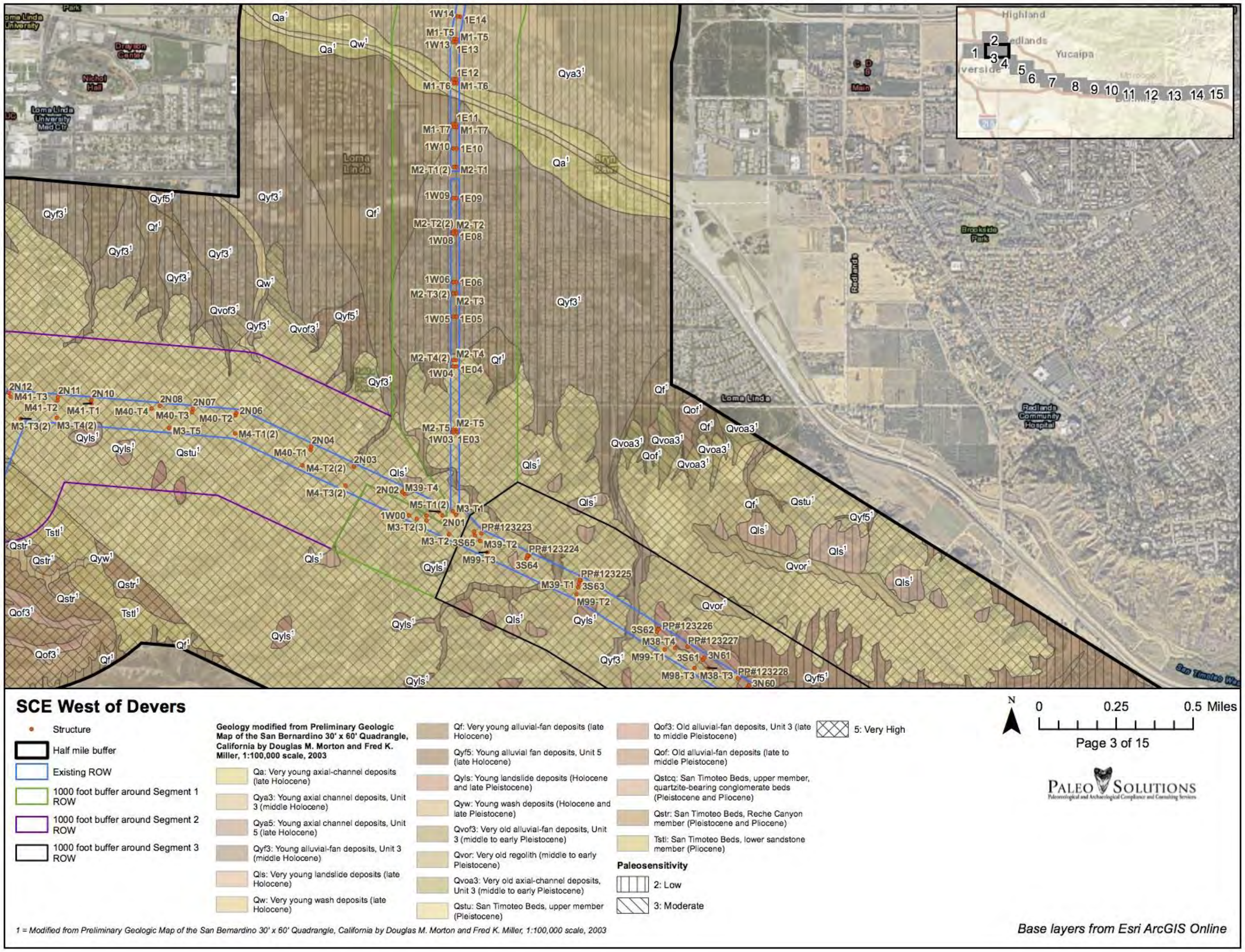


Figure 3c. SCE West of Devers Geologic Unit and Paleontological Sensitivity Map (3 of 15).

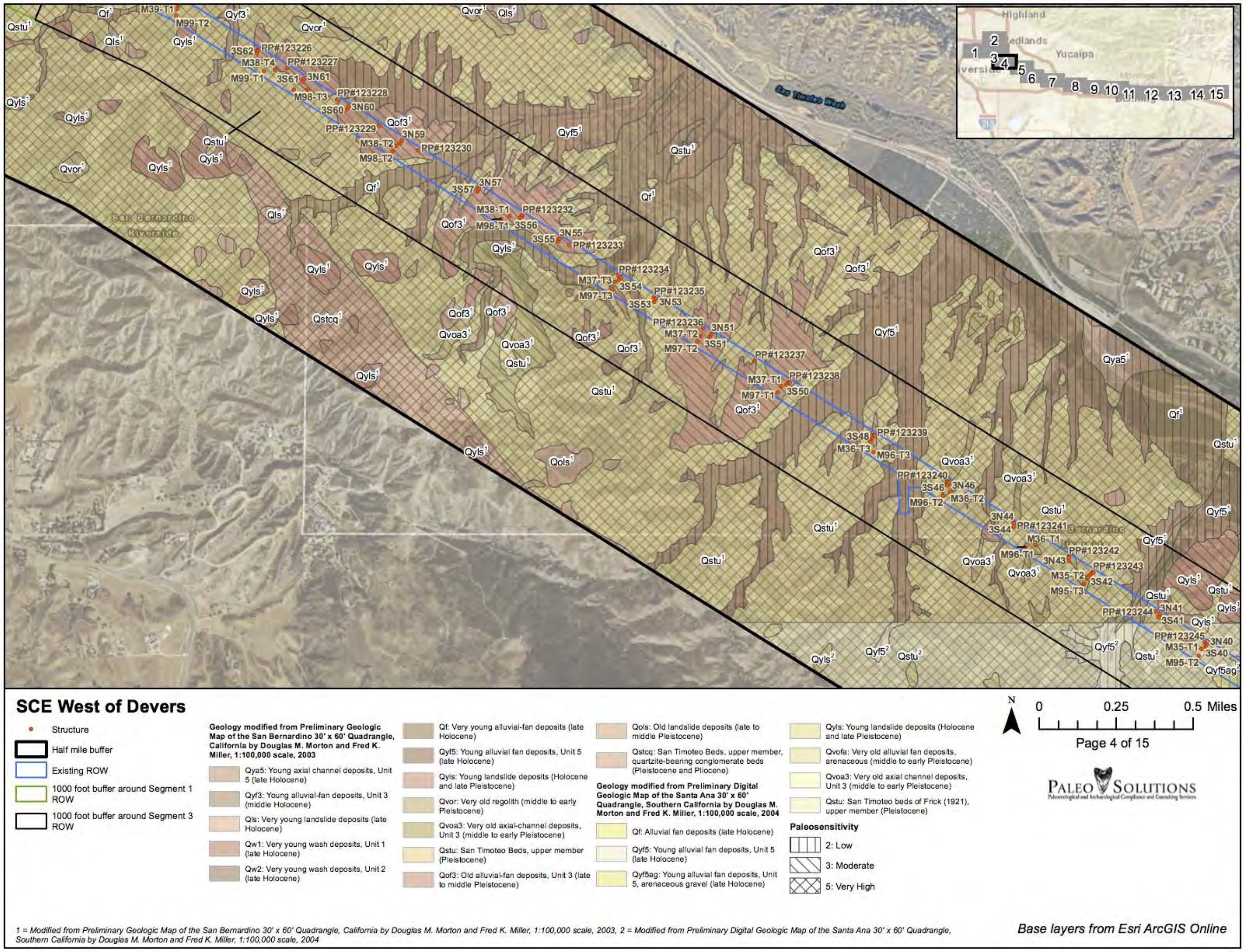


Figure 3d. SCE West of Devers Geologic Unit and Paleontological Sensitivity Map (4 of 15).

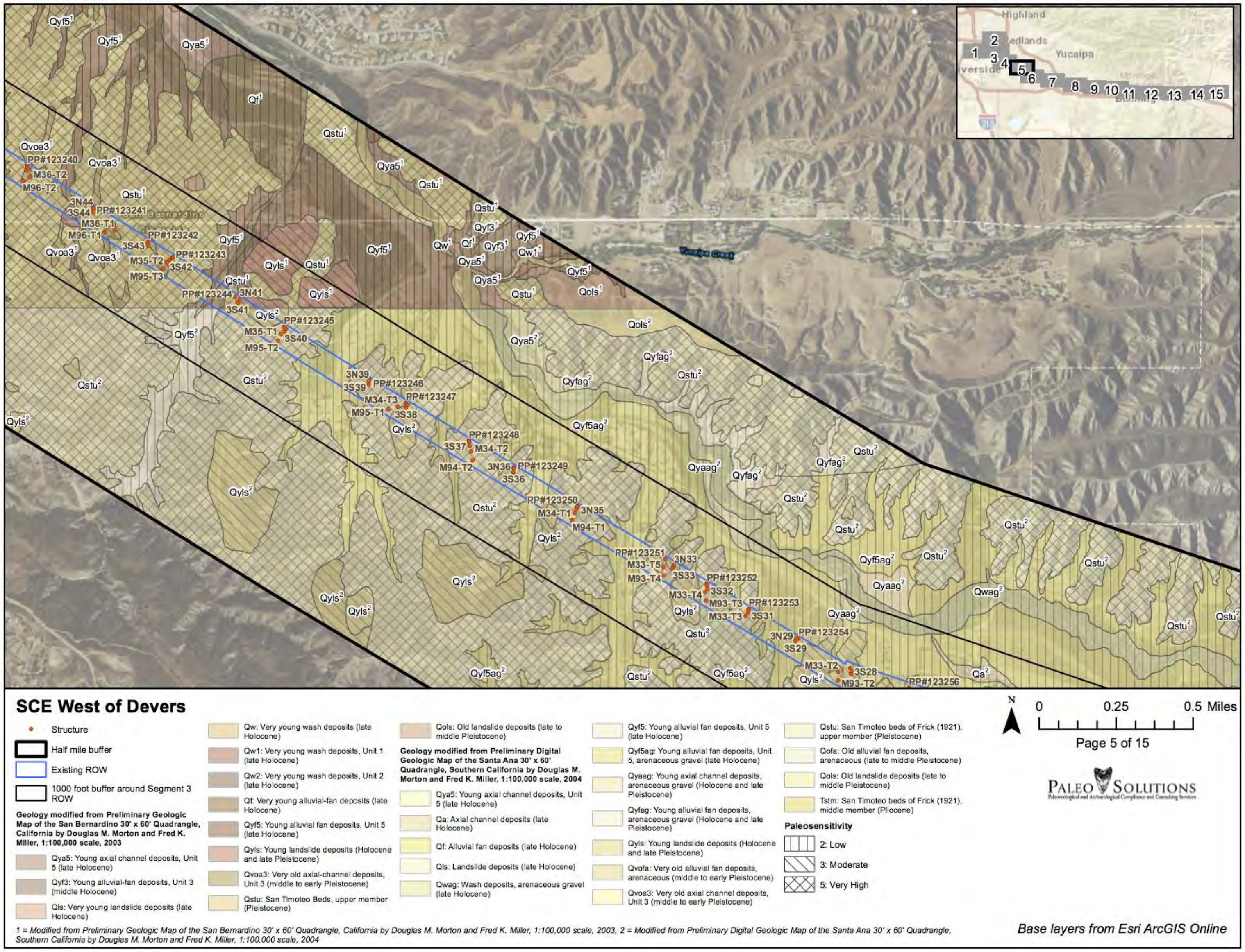


Figure 3e. SCE West of Devers Geologic Unit and Paleontological Sensitivity Map (5 of 15).

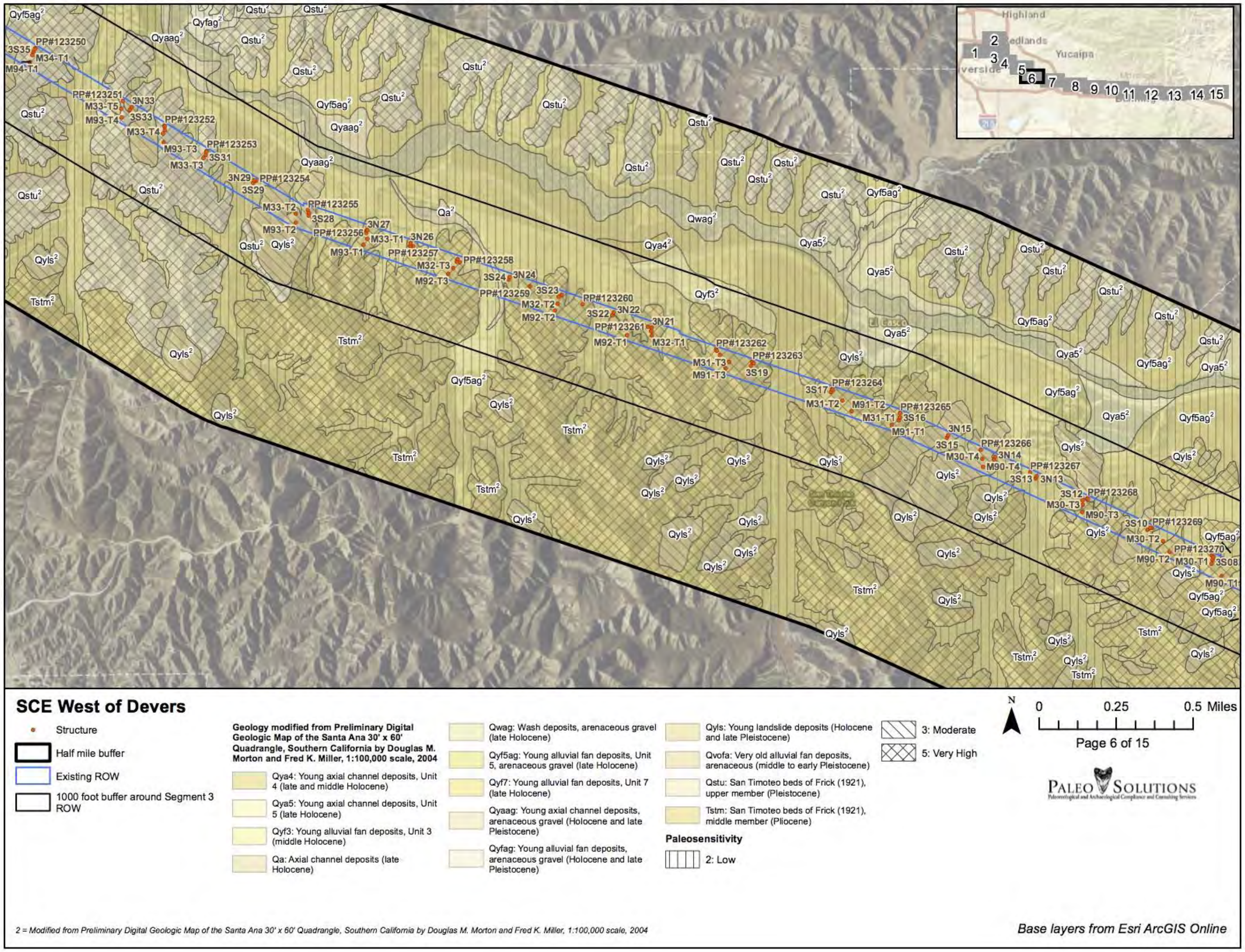


Figure 3f. SCE West of Devers Geologic Unit and Paleontological Sensitivity Map (6 of 15).

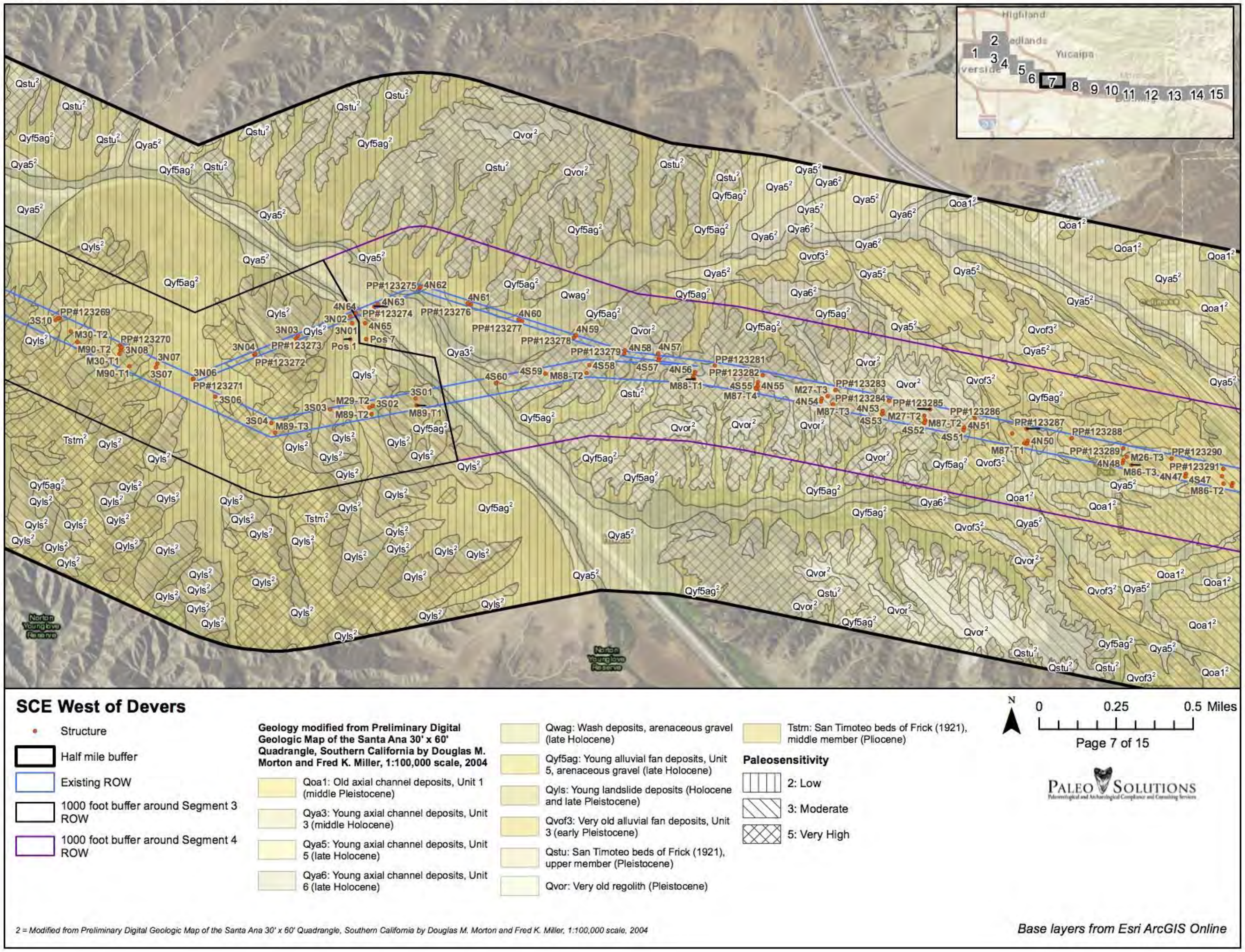


Figure 3g. SCE West of Devers Geologic Unit and Paleontological Sensitivity Map (7 of 15).

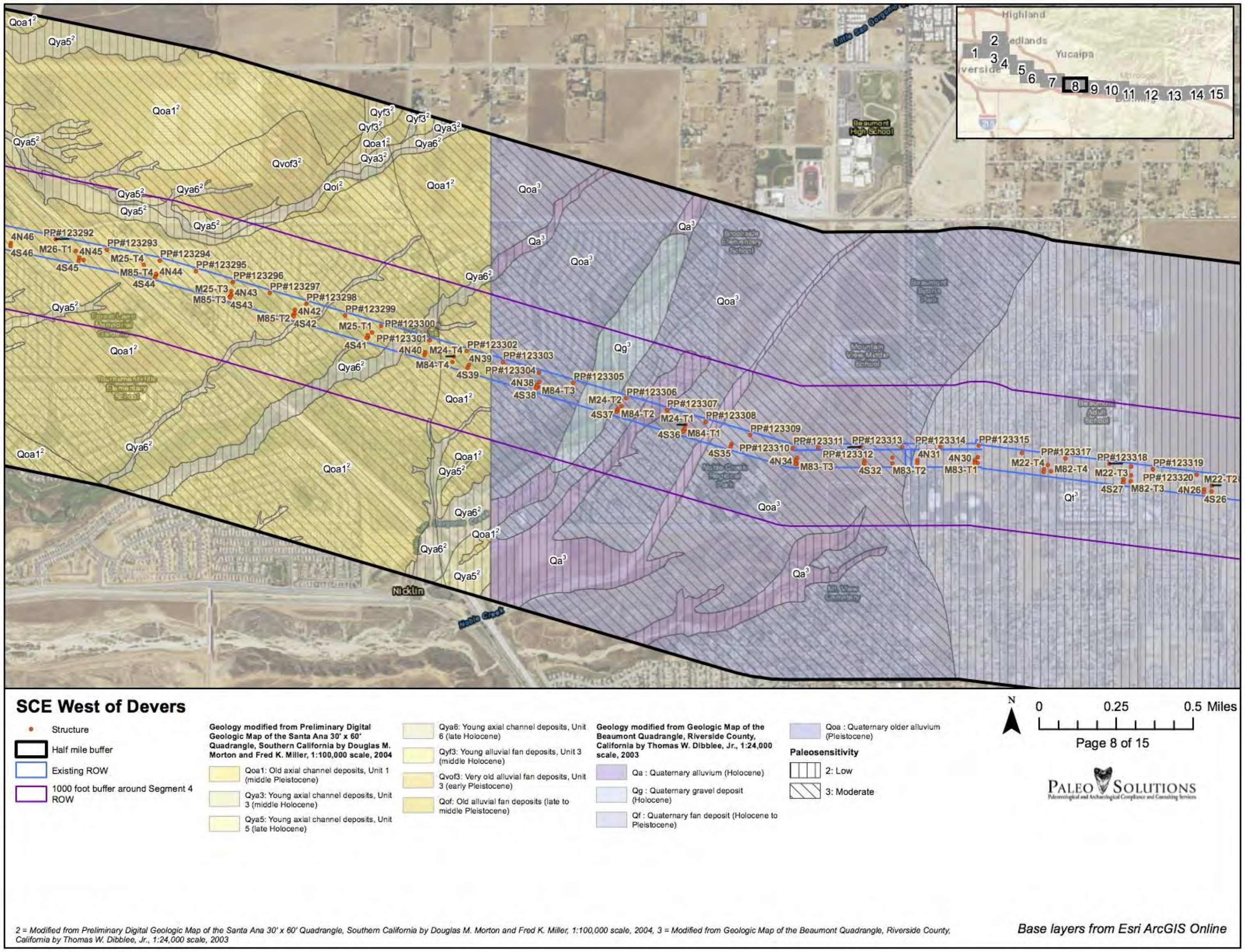


Figure 3h. SCE West of Devers Geologic Unit and Paleontological Sensitivity Map (8 of 15).

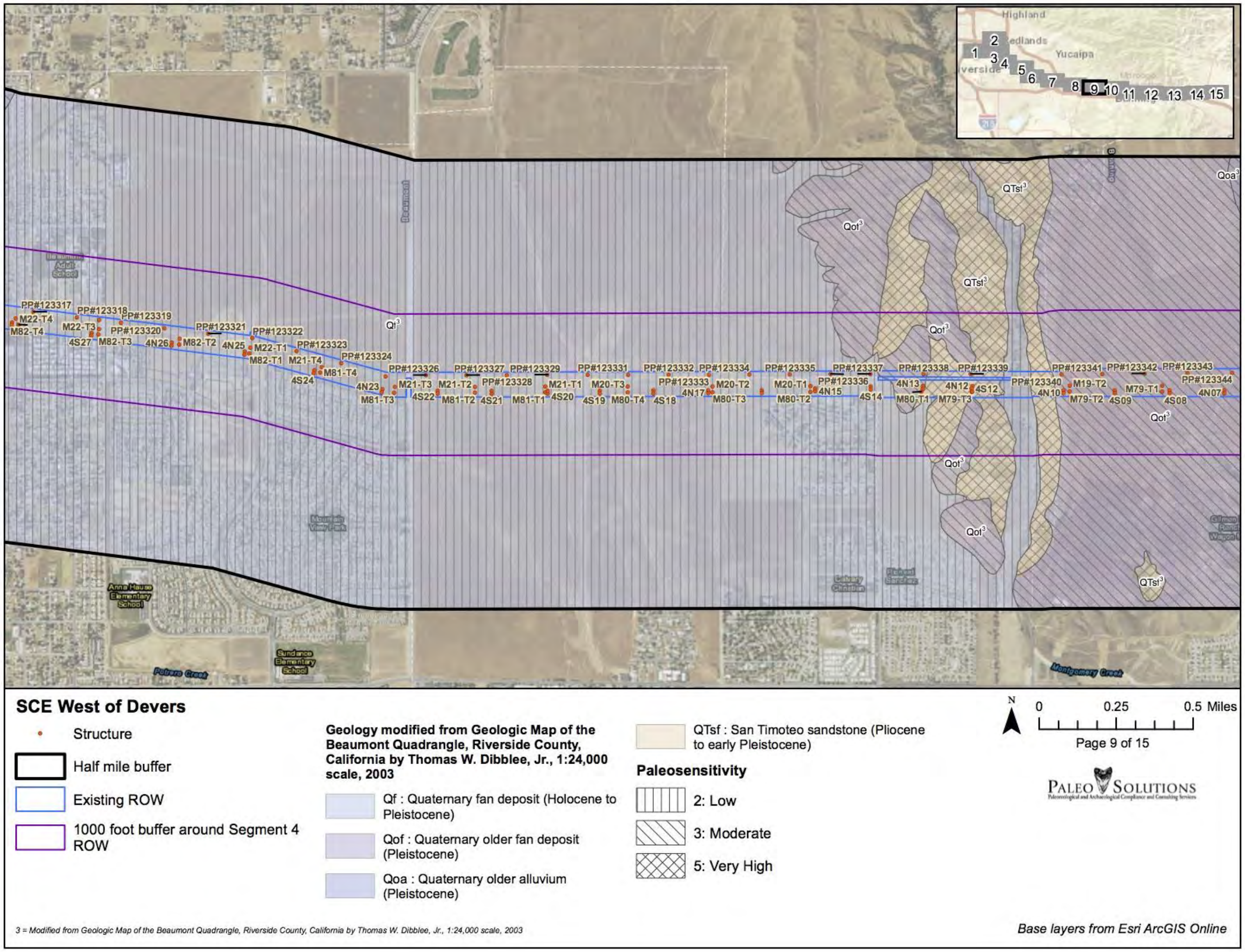


Figure 3i. SCE West of Devers Geologic Unit and Paleontological Sensitivity Map (9 of 15).

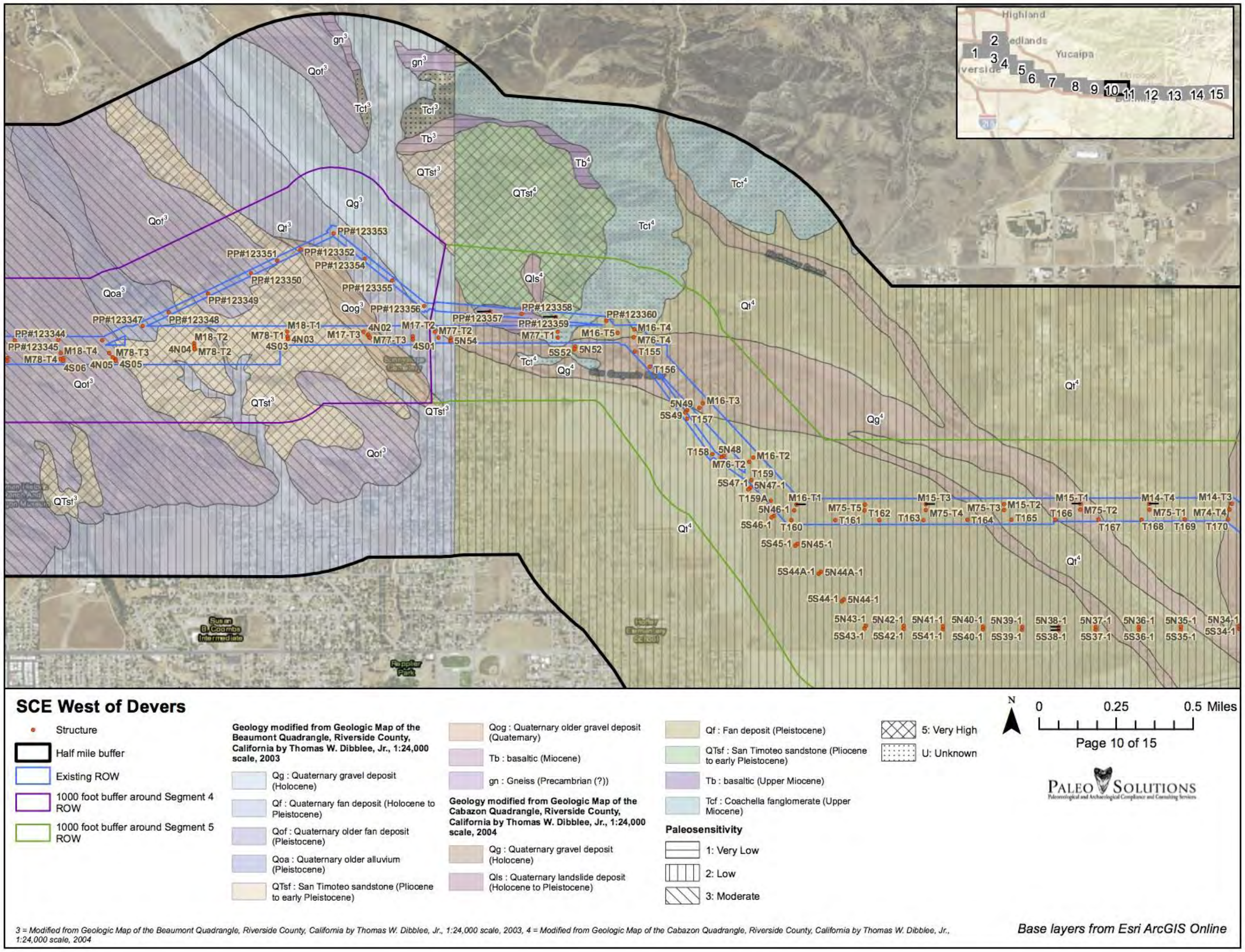


Figure 3j. SCE West of Devers Geologic Unit and Paleontological Sensitivity Map (10 of 15).

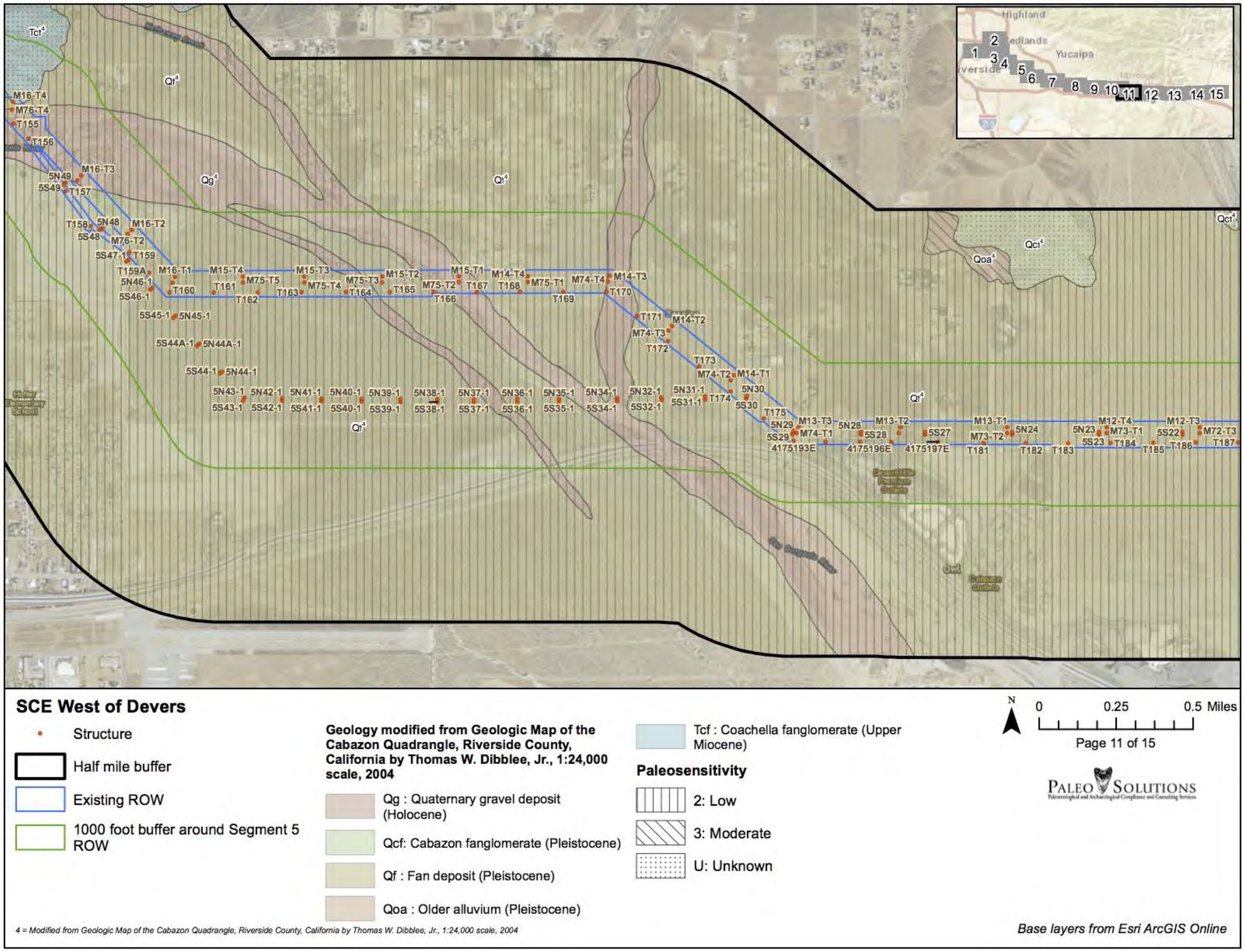


Figure 3k. SCE West of Devers Geologic Unit and Paleontological Sensitivity Map (11 of 15).

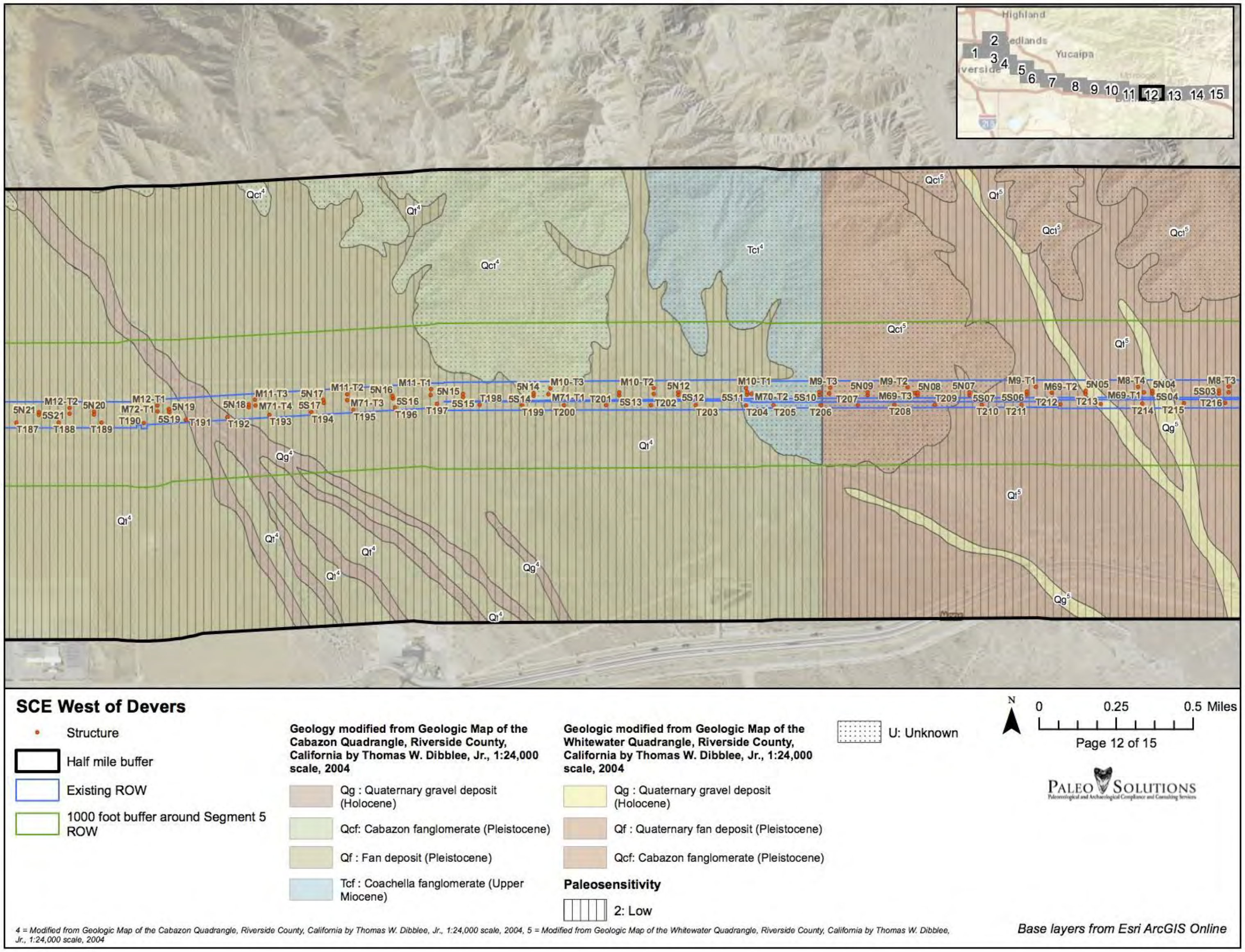


Figure 3l. SCE West of Devers Geologic Unit and Paleontological Sensitivity Map (12 of 15).

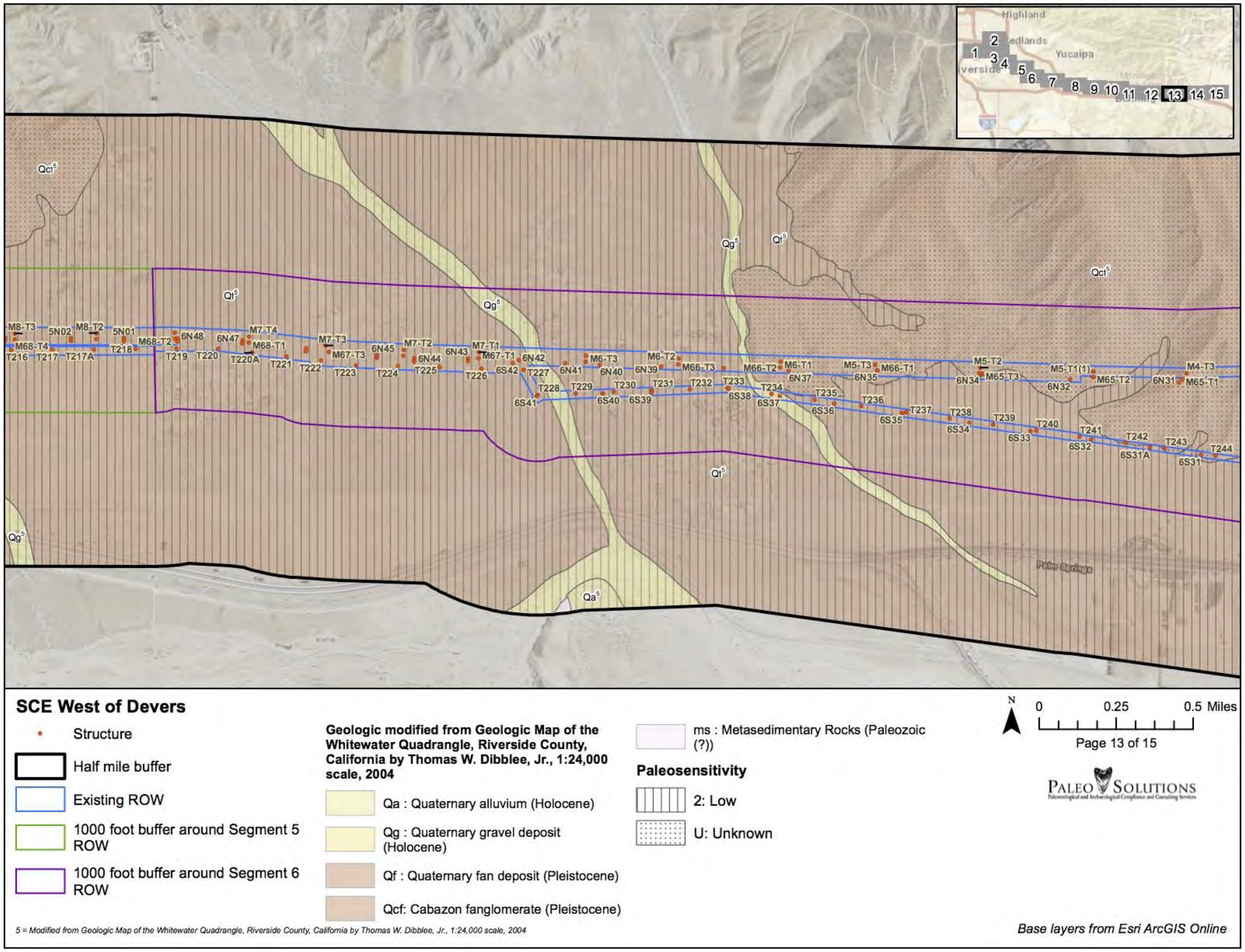


Figure 3m. SCE West of Devers Geologic Unit and Paleontological Sensitivity Map (13 of 15).

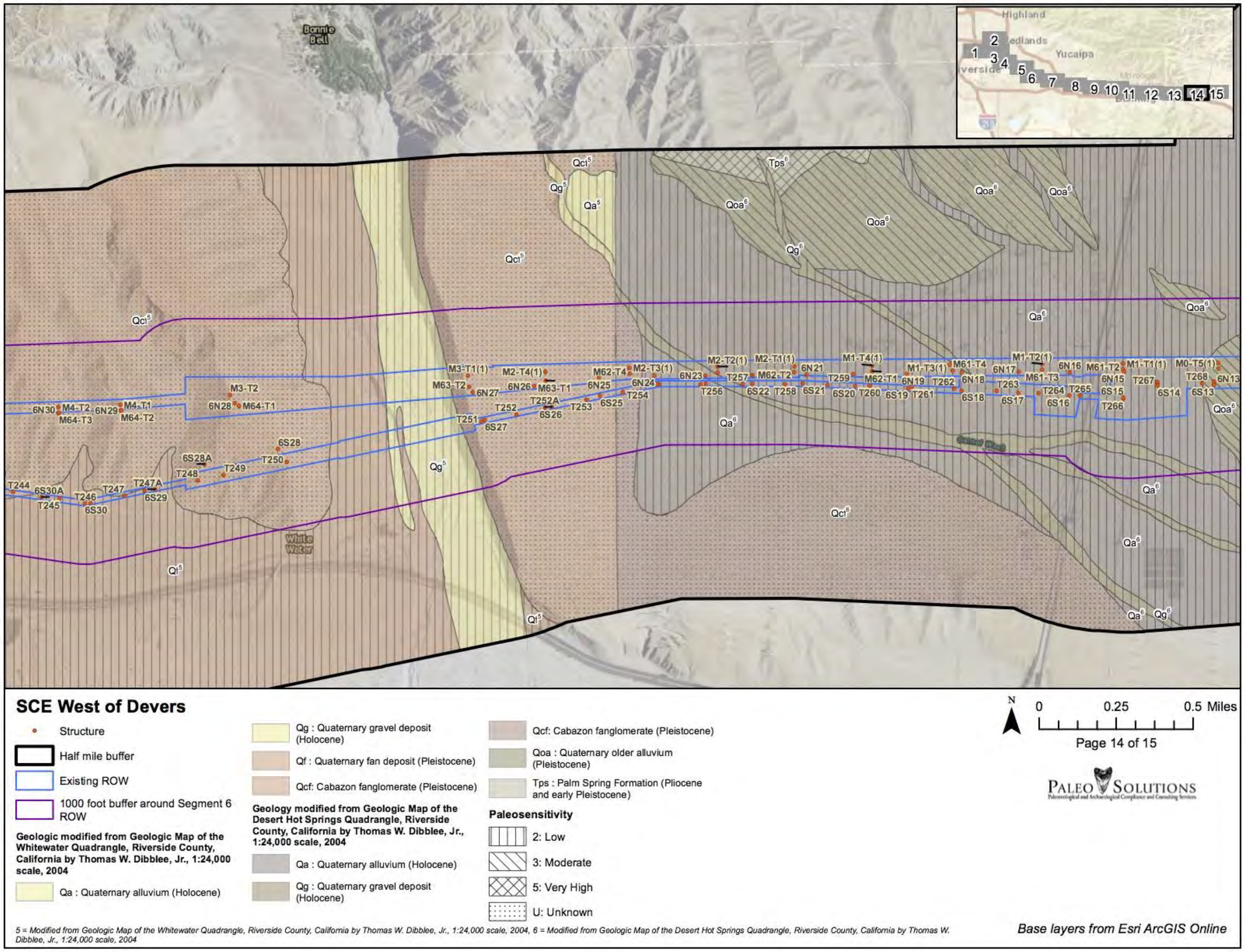


Figure 3n. SCE West of Devers Geologic Unit and Paleontological Sensitivity Map (14 of 15).

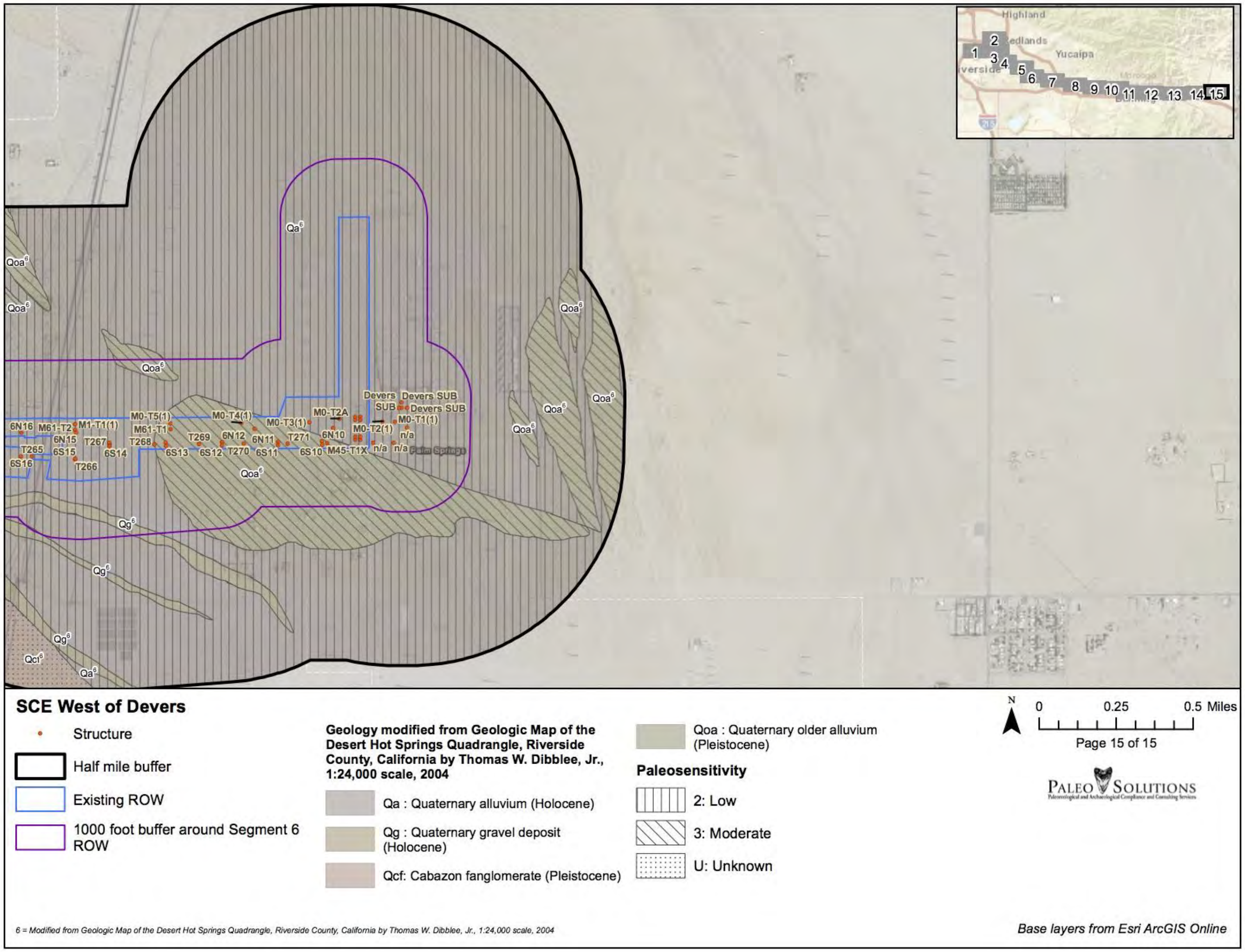


Figure 3o. SCE West of Devers Geologic Unit and Paleontological Sensitivity Map (15 of 15).

3.2 SUMMARY OF PALEONTOLOGICAL SENSITIVITY RANKINGS

As a result of the pre-survey sensitivity assessment, all areas mapped as PFYC 1 and PFYC 2 were recommended for immediate surface and subsurface paleontological clearance with no further action required other than the implementation of the standard stipulation that the BLM or Tribe be notified immediately if any fossils are found by workers during construction. PFYC 1 and 2 units are estimated to comprise approximately 1,558 acres of the total study area. Areas mapped as PFYC U, PFYC 3, and PFYC 5 were subject to a 100 percent pedestrian inventory. (No PFYC 4 is found within the WOD Project area.)

Based on the results of the literature and maps reviews, museum record searches, and the paleontological field surveys, the geologic formations within the Project area were ranked for paleontological resource potential using the PFYC and Riverside County guidelines. The results are summarized in the Table 4, and are projected on a series of paleontological sensitivity maps (Figure 3).

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 SUMMARY OF THE PALEONTOLOGICAL POTENTIAL FOR THE SCE WOD PROJECT COMPONENTS

From the western terminus of the WOD Project at the Vista Substation, east through the San Timoteo Badlands and El Casco Substation, to approximately the intersection of the Project lines with Interstate-10 (I-10), the WOD Project is largely underlain by the Pliocene-Pleistocene San Timoteo Formation, which has a very high potential (PFYC 5) for containing paleontological resources (Figure 3). From the Project area east of I-10 to approximately Beaumont Avenue, and again from Sunset Avenue to Bluff Street in the City of Banning, the sediments largely have a moderate sensitivity (PFYC 3a), consisting of Pleistocene to Holocene alluvial sediments that may contain some Rancholabrean North American Land Mammal Age (NALMA; approximately 1.8 million to 11,700 years ago) fossils such as camel, bison, horse, mammoth and mastodon, small rodents, and many others. From east of Bluff Street in Banning to the Devers Substation, the rock units are largely made up of low-sensitivity sediments (PFYC 2), due either to their age (younger than 10,000 years before the present) or rock or sediment type not being well-suited to contain or preserve fossils.

Segment 1
Segment 1 is located largely in areas previously disturbed and mapped as low sensitivity units (PFYC 2), including Quaternary younger alluvium, Quaternary fan, and Quaternary younger fan deposits. As the Project ROW enters the foothills at its southern end, it crosses into very high sensitivity (PFYC 5) San Timoteo Formation. Full-time monitoring will be implemented for any excavations impacting undisturbed native PFYC 5 sediments. Part-time monitoring or spot-checking will be required for excavations impacting PFYC 2 units.

Segment 2
Along its westernmost expanse from the Vista Substation and after it crosses Barton Road, Segment 2 contains small portions of low sensitivity (PFYC 2) units, including Quaternary

younger fan deposits, Quaternary fan deposits, and Quaternary younger alluvium. Much of the westernmost Segment 2 area is disturbed by urban development. However, eastward from that point, the Project ROW largely lies in the very high sensitivity (PFYC 5) San Timoteo Formation. Full-time monitoring will be implemented for any excavations impacting undisturbed native PFYC 5 sediments. Part-time monitoring or spot-checking will be implemented for excavations impacting PFYC 2 units.

Segment 3
The majority of Segment 3 lies in very high sensitivity (PFYC 5) San Timoteo Formation. There are small portions of access road crossing low sensitivity (PFYC 2) Quaternary younger fan deposits as well as some areas mapped as low sensitivity (PFYC 2) Quaternary younger landslide deposits, which are likely also to overlie or contain San Timoteo Formation. Full-time monitoring will be implemented for any excavations impacting undisturbed native PFYC 5 sediments. Part-time monitoring or spot-checking will be implemented for excavations impacting PFYC 2 units.

Segment 4
In its westernmost portion, where there are areas of previous disturbances, Segment 4 is mapped as very high sensitivity (PFYC 5) San Timoteo Formation. The segment passes to the east through areas of low sensitivity (PFYC 2), including areas mapped as Quaternary younger alluvium, Quaternary younger fan deposits, and Quaternary fan deposits. At the easternmost portion of Segment 4, there are expanses of moderately sensitive (PFYC 3) Quaternary older alluvium and also areas of San Timoteo Formation. Full-time monitoring will be implemented for any excavations impacting undisturbed native PFYC 5 and PFYC 3 sediments, and part-time monitoring or spot-checking will be required for excavations impacting PFYC 2 units.

Segment 5
Segment 5 lies largely in areas of low sensitivity (PFYC 2) units, including Quaternary fan deposits, with some transitory areas of very high sensitivity (PFYC 5) San Timoteo Formation in the western end (exposed as finger-shaped hills leading down from the hills and mountains to the north). There are also transitory areas of unknown sensitivity (PFYC U) Coachella Fanglomerate and, in the far eastern portion, moderately sensitive (PFYC 3) Quaternary older fan. Full-time monitoring will be implemented for any excavations impacting undisturbed native PFYC 5 and PFYC 3 sediments. Part-time monitoring or spot-checking will be required for excavations impacting PFYC 2 units.

Segment 6
The western portion of Segment 6 lies in low sensitivity (PFYC 2) Quaternary fan deposits. The segment passes through areas of unknown sensitivity (PFYC U) Coachella Fanglomerate and continues eastward through low sensitivity (PFYC 2) Quaternary gravels, Quaternary alluvium and Quaternary Fan deposits. Before terminating at Devers Substation, which occurs in an area of low sensitivity (PFYC 2) Quaternary alluvium, Segment 6 crosses areas of moderate sensitivity (PFYC 3) Quaternary older alluvium. Full-time monitoring will be implemented for any excavations impacting undisturbed native PFYC 5 and PFYC 3 sediments, and part-time monitoring or spot-checking will be implemented for excavations impacting undisturbed native PFYC 2 and PFYC U sediments.

Telecommunications Line 1
Telecommunications line 1 lies entirely in low sensitivity (PFYC 2) Quaternary gravels and Quaternary alluvium units. These low sensitivity (PFYC 2) sediments will not require full-time paleontological monitoring; however, spot-checking is recommended to check for moderate to very high sensitivity sediments that may be impacted during excavations.

Telecommunications Line 2
Telecommunications line 2 lies mostly in low sensitivity (PFYC 2) Quaternary alluvium, although a very small portion lies in very high sensitivity (PFYC 5) San Timoteo Formation. Full-time monitoring will be implemented for any excavations impacting undisturbed native PFYC 5 sediments. Full-time monitoring will not be required for excavations impacting PFYC 2 units; however, spot-checking is recommended to check for moderate to very high sensitivity sediments that may be impacted during excavations.

66-kV Sub-transmission Line
The 66-kV sub-transmission line lies partly in low sensitivity (PFYC 2) Quaternary wash deposits and Quaternary younger alluvium as well as moderately sensitive (PFYC 3) Quaternary very old alluvium. Full-time monitoring will be implemented for excavations impacting undisturbed native PFYC 3 sediments. Full-time monitoring will not be required for excavations impacting PFYC 2 units; however, spot-checking is recommended to check for moderate to very high sensitivity sediments that may be impacted during excavations.

A summary of the the relative distributions of PFYC sensitivities for each Project component is shown in Table 5.

TABLE 5. SUMMARY OF ACREAGES FOR EACH GEOLOGIC UNIT AND CORRESPONDING PFYC RANKINGS BY PROJECT COMPONENT FOR WOD PROJECT

Project Component	Paleontological Sensitivity (PFYC)	Geologic Unit	Map Symbol	Map Author(s)	Map Year	Acres
Segment 1	2 (Low)	Very young axial-channel deposits (late Holocene)	Qa	Douglas M. Morton and Fred K. Miller	2003	0.5735
Segment 1	2 (Low)	Very young alluvial-fan deposits (late Holocene)	Qf	Douglas M. Morton and Fred K. Miller	2003	2.174
Segment 1	5 (Very High)	San Timoteo Beds, upper member (Pleistocene)	Qstu	Douglas M. Morton and Fred K. Miller	2003	21.74
Segment 1	2 (Low)	Very young wash deposits (late Holocene)	Qw	Douglas M. Morton and Fred K. Miller	2003	3.476

Segment 1	2 (Low)	Young axial channel deposits, Unit 3 (middle Holocene)	Qya3	Douglas M. Morton and Fred K. Miller	2003	37.94
Segment 1	2 (Low)	Young alluvial-fan deposits, Unit 3 (middle Holocene)	Qyf3	Douglas M. Morton and Fred K. Miller	2003	13.29
Segment 2	1 (Very Low)	Box Springs plutonic complex, biotite granodiorite and tonalite (Cretaceous)	Kbfg	Douglas M. Morton and Fred K. Miller	2003	6.476
Segment 2	1 (Very Low)	Box Springs plutonic complex, porphyritic granodiorite (Cretaceous)	Kbg	Douglas M. Morton and Fred K. Miller	2003	0.06736
Segment 2	2 (Low)	Very young alluvial-fan deposits (late Holocene)	Qf	Douglas M. Morton and Fred K. Miller	2003	21.39
Segment 2	2 (Low)	Very young landslide deposits (late Holocene)	Qls	Douglas M. Morton and Fred K. Miller	2003	0.3678
Segment 2	3 (Moderate)	Old alluvial-fan deposits, Unit 3 (late to middle Pleistocene)	Qof3	Douglas M. Morton and Fred K. Miller	2003	3.641
Segment 2	5 (Very High)	San Timoteo Beds, Reche Canyon member (Pleistocene and Pliocene)	Qstr	Douglas M. Morton and Fred K. Miller	2003	79.18
Segment 2	5 (Very High)	San Timoteo Beds, upper member (Pleistocene)	Qstu	Douglas M. Morton and Fred K. Miller	2003	89.43
Segment 2	3 (Moderate)	Very old alluvial-fan deposits, Unit 3 (middle to early Pleistocene)	Qvof3	Douglas M. Morton and Fred K. Miller	2003	30.71
Segment 2	2 (Low)	Very young wash deposits (late Holocene)	Qw	Douglas M. Morton and Fred K. Miller	2003	14.95
Segment 2	2 (Low)	Young axial channel deposits, Unit 5 (late Holocene)	Qya5	Douglas M. Morton and Fred K. Miller	2003	5.392

Segment 2	2 (Low)	Young alluvial-fan deposits, Unit 3 (middle Holocene)	Qyf3	Douglas M. Morton and Fred K. Miller	2003	14.04
Segment 2	3 (Moderate)	Young landslide deposits (Holocene and late Pleistocene)	Qyls	Douglas M. Morton and Fred K. Miller	2003	0.3287
Segment 2	2 (Low)	Young wash deposits (Holocene and late Pleistocene)	Qyw	Douglas M. Morton and Fred K. Miller	2003	9.397
Segment 2	5 (Very High)	San Timoteo Beds, lower sandstone member (Pliocene)	Tstl	Douglas M. Morton and Fred K. Miller	2003	9.057
Segment 3	2 (Low)	Axial channel deposits (late Holocene)	Qa	Douglas M. Morton	2004	1.019
Segment 3	2 (Low)	Very young alluvial-fan deposits (late Holocene)	Qf	Douglas M. Morton and Fred K. Miller	2003	14.68
Segment 3	2 (Low)	Very young landslide deposits (late Holocene)	Qls	Douglas M. Morton and Fred K. Miller	2003	0.8405
Segment 3	3 (Moderate)	Old alluvial-fan deposits, Unit 3 (late to middle Pleistocene)	Qof3	Douglas M. Morton and Fred K. Miller	2003	48.37
Segment 3	5 (Very High)	San Timoteo beds of Frick (1921), upper member (Pleistocene)	Qstu	Douglas M. Morton	2004	62.85
Segment 3	5 (Very High)	San Timoteo Beds, upper member (Pleistocene)	Qstu	Douglas M. Morton and Fred K. Miller	2003	110.2
Segment 3	3 (Moderate)	Very old axial-channel deposits, Unit 3 (middle to early Pleistocene)	Qvoa3	Douglas M. Morton and Fred K. Miller	2003	4.084
Segment 3	2 (Low)	Wash deposits, arenaceous gravel (late Holocene)	Qwag	Douglas M. Morton	2004	0.1138
Segment 3	2 (Low)	Young axial channel deposits, Unit 5 (late Holocene)	Qya5	Douglas M. Morton	2004	0.8993

Segment 3	2 (Low)	Young alluvial-fan deposits, Unit 3 (middle Holocene)	Qyf3	Douglas M. Morton and Fred K. Miller	2003	1.789
Segment 3	2 (Low)	Young alluvial fan deposits, Unit 5 (late Holocene)	Qyf5	Douglas M. Morton	2004	0.02710
Segment 3	2 (Low)	Young alluvial fan deposits, Unit 5 (late Holocene)	Qyf5	Douglas M. Morton and Fred K. Miller	2003	23.12
Segment 3	2 (Low)	Young alluvial fan deposits, Unit 5, arenaceous gravel (late Holocene)	Qyf5ag	Douglas M. Morton	2004	104.2
Segment 3	3 (Moderate)	Young landslide deposits (Holocene and late Pleistocene)	Qyls	Douglas M. Morton	2004	58.55
Segment 3	3 (Moderate)	Young landslide deposits (Holocene and late Pleistocene)	Qyls	Douglas M. Morton and Fred K. Miller	2003	2.240
Segment 3	5 (Very High)	San Timoteo beds of Frick (1921), middle member (Pliocene)	Tstm	Douglas M. Morton	2004	95.73
Segment 4	2 (Low)	Quaternary alluvium (Holocene)	Qa	Thomas W. Dibblee, Jr.	2003	4.666
Segment 4	2 (Low)	Quaternary fan deposit (Holocene to Pleistocene)	Qf	Thomas W. Dibblee, Jr.	2003	183.0
Segment 4	2 (Low)	Quaternary gravel deposit (Holocene)	Qg	Thomas W. Dibblee, Jr.	2003	6.820
Segment 4	3 (Moderate)	Quaternary older alluvium (Pleistocene)	Qoa	Thomas W. Dibblee, Jr.	2003	63.33
Segment 4	3 (Moderate)	Old axial channel deposits, Unit 1 (middle Pleistocene)	Qoa1	D. M. Morton	2004	94.10
Segment 4	3 (Moderate)	Quaternary older fan deposit (Pleistocene)	Qof	Thomas W. Dibblee, Jr.	2003	62.46

Segment 4	3 (Moderate)	Quaternary older gravel deposit (Quaternary)	Qog	Thomas W. Dibblee, Jr.	2003	4.197
Segment 4	5 (Very High)	San Timoteo beds of Frick (1921), upper member (Pleistocene)	Qstu	Douglas M. Morton	2004	47.20
Segment 4	5 (Very High)	San Timoteo sandstone (Pliocene to early Pleistocene)	QTsf	Thomas W. Dibblee, Jr.	2003	63.36
Segment 4	3 (Moderate)	Very old alluvial fan deposits, Unit 3 (early Pleistocene)	Qvof3	Douglas M. Morton	2004	11.43
Segment 4	3 (Moderate)	Very old regolith (Pleistocene)	Qvor	Douglas M. Morton	2004	24.04
Segment 4	2 (Low)	Wash deposits, arenaceous gravel (late Holocene)	Qwag	Douglas M. Morton	2004	5.261
Segment 4	2 (Low)	Young axial channel deposits, Unit 5 (late Holocene)	Qya5	Douglas M. Morton	2004	13.90
Segment 4	2 (Low)	Qya6: Young axial channel deposits, Unit 6 (late Holocene)	Qya6	Douglas M. Morton	2004	3.912
Segment 4	2 (Low)	Young alluvial fan deposits, Unit 5, arenaceous gravel (late Holocene)	Qyf5ag	Douglas M. Morton	2004	9.118
Segment 5	3 (Moderate)	Cabazon fanglomerate (Pleistocene)	Qcf	Thomas W. Dibblee, Jr.	2004	5.807
Segment 5	3 (Moderate)	Cabazon fanglomerate (Pleistocene)	Qcf	Thomas W. Dibblee, Jr.	2004	23.25
Segment 5	2 (Low)	Fan deposit (Pleistocene)	Qf	Thomas W. Dibblee, Jr.	2004	315.2
Segment 5	2 (Low)	Quaternary fan deposit (Holocene to Pleistocene)	Qf	Thomas W. Dibblee, Jr.	2003	1.594

Segment 5	2 (Low)	Quaternary fan deposit (Pleistocene)	Qf	Thomas W. Dibblee, Jr.	2004	61.82
Segment 5	2 (Low)	Quaternary gravel deposit (Holocene)	Qg	Thomas W. Dibblee, Jr.	2003	2.622
Segment 5	2 (Low)	Quaternary gravel deposit (Holocene)	Qg	Thomas W. Dibblee, Jr.	2004	50.09
Segment 5	2 (Low)	Quaternary gravel deposit (Holocene)	Qg	Thomas W. Dibblee, Jr.	2004	6.946
Segment 5	5 (Very High)	San Timoteo sandstone (Pliocene to early Pleistocene)	QTsf	Thomas W. Dibblee, Jr.	2004	2.245
Segment 5	1 (Very Low)	Basaltic (Upper Miocene)	Tb	Thomas W. Dibblee, Jr.	2004	5.513
Segment 5	U (Unknown)	Coachella fanglomerate (Miocene)	Tcf	Thomas W. Dibblee, Jr.	2004	0.06883
Segment 5	U (Unknown)	Coachella fanglomerate (Upper Miocene)	Tcf	Thomas W. Dibblee, Jr.	2004	12.82
Segment 5	U (Unknown)	Coachella fanglomerate (Upper Miocene)	Tcf	Thomas W. Dibblee, Jr.	2004	5.892
Segment 6	2 (Low)	Quaternary alluvium (Holocene)	Qa	Thomas W. Dibblee, Jr.	2004	179.3
Segment 6	U (Unknown)	Cabazon fanglomerate (Pleistocene)	Qcf	Thomas W. Dibblee, Jr.	2004	4.204
Segment 6	U (Unknown)	Cabazon fanglomerate (Pleistocene)	Qcf	Thomas W. Dibblee, Jr.	2004	139.7
Segment 6	2 (Low)	Quaternary fan deposit (Pleistocene)	Qf	Thomas W. Dibblee, Jr.	2004	152.7

Segment 6	2 (Low)	Quaternary gravel deposit (Holocene)	Qg	Thomas W. Dibblee, Jr.	2004	3.643
Segment 6	2 (Low)	Quaternary gravel deposit (Holocene)	Qg	Thomas W. Dibblee, Jr.	2004	26.55
Segment 6	3 (Moderate)	Quaternary older alluvium (Pleistocene)	Qoa	Thomas W. Dibblee, Jr.	2004	33.38
Segment 6	3 (Moderate)	Coachella fanglomerate (Miocene)	Tcf	Thomas W. Dibblee, Jr.	2004	0.007209

4.2 MONITORING REQUIREMENTS

From the western terminus of the WOD Project at the Vista Substation, east through the San Timoteo Badlands and El Casco Substation, to approximately the intersection of the Project lines with I-10, the WOD Project is largely underlain by the Pliocene-Pleistocene San Timoteo Formation, which has a very high potential (PFYC 5) for containing paleontological resources (Figure 3). From the Project area east of I-10 to approximately Beaumont Avenue, and again from Sunset Avenue to Bluff Street in the City of Banning, the sediments largely have a moderate sensitivity (PFYC 3), consisting of Pleistocene to Holocene alluvial sediments that may contain some Rancholabrean North American Land Mammal Age (NALMA; approximately 1.8 million to 11,700 years ago) fossils such as camel, bison, horse, mammoth and mastodon, small rodents, and many others. From east of Bluff Street in Banning to the Devers Substation, the rock units are largely made up of low sensitivity sediments (PFYC 2), due either to their age (younger than 10,000 years before the present) or rock or sediment type not being well-suited to contain or preserve fossils.

Paleontological monitors should always use caution when making decisions about significance in the field, and collect fossils if they are unsure of their significance. For example, when monitoring construction site(s) it is often difficult to see the full extent of a fossil being salvaged because it is collected partially encased in sedimentary matrix and as a result it may not be possible to determine the significance of a fossil specimen until it has been partially prepared. Generally, bone fragments with no articular surfaces that are not associated with other fragments to which they might be re-assembled in the laboratory should not be collected. If a fossil retains morphological characteristics that will allow for identification to a low taxonomic order (Family or below), it is generally collected for further analysis. In the event of large invertebrate deposits, such as shell beds, a representative sample should be collected. Fossils should be discarded or used for educational purposes if they are found to be non-significant once they have been partially prepared in the laboratory. In line with most repository agreements, only fossils determined to be significant will be transferred to a repository for permanent curation.

In order to prevent over or under collection of fossils, all monitors will receive training at the Paleo Solutions' office prior to the Project start, which will cover fossil significance criteria and field assessments. The training will be provided by a Project Manager with a minimum of a Masters degree in the field of paleontology and five years of experience. Additionally, photographs and descriptions of all fossil observations will be sent to Paleo Solutions' Principal Investigators at the time of discovery. The Principal Investigator shall make the final decision on the significance of the discovery and if it should be collected for further analysis.

5.0 REFERENCES

Albright, L.B.
1999 Magnetostratigraphy and biochronology of the San Timoteo Badlands, southern California, with implications for local Pliocene-Pleistocene tectonic and depositional patterns: Geological Society of America Bulletin, v. 111, p. 1265-1293.

Allen, C.R.
1954 The San Andreas Fault Zone in San Gorgonio Pass, California. Dissertation (Ph.D.), California Institute of Technology.

Bureau of Indian Affairs (BIA, United States)
2012 Electronic resources available at: http://www.bia.gov/WhatWeDo/index.htm

Bureau of Land Management
2007 Potential Fossil Yield Classification System: BLM Instruction Memorandum No. 2008-009 (PFYC revised from USFS, 1996).

Bureau of Land Management
2008 Assessment and Mitigation of Potential Impacts to Paleontological Resources: BLM Instruction Memorandum No. 2009-011.

Cassiliano, M.L.
2002 Revision of the stratigraphic nomenclature of the Plio-Pleistocene Palm Spring Group (new rank), Anza Borrego Desert, Southern California: Proceedings of the San Diego Society of Natural History, v. 38, p. 1-30.

County of Riverside
2003 General Plan. Available at: http://www.rctlma.org/genplan/

County of San Bernardino
2007 General Plan. Available at: http://www.sbcounty.gov/sbcountygeneralplan/

Deméré, T.A. and S.L. Walsh
1993 Paleontological Resources, County of San Diego: Prepared for the San Diego Planning Commission. Pp. 1-68.

Dibblee, T.W.
2003 Geologic Map of the Beaumont Quadrangle: Dibblee Geology Center of the Santa Barbara Museum of Natural History, Map #DF-114 (scale 1: 24,000).

Dibblee, T.W.
2004a Geologic Map of the Cabazon Quadrangle: Dibblee Geology Center of the Santa Barbara Museum of Natural History, Map #DF-119 (scale 1: 24,000).

Dibblee, T.W.

2004b Geologic Map of the Whitewater Quadrangle: Dibblee Geology Center of the Santa Barbara Museum of Natural History, Map #DF-120 (scale 1: 24,000).

Dibblee, T.W.
2004c Geologic Map of the Desert Hot Springs Quadrangle: Dibblee Geology Center of the Santa Barbara Museum of Natural History, Map #DF-121 (scale 1: 24,000).

Frick, C.
1921 Extinct vertebrate faunas of the Badlands of Bautista Creek and San Timoteo Canon, southern California: University of California Publications in Geology, v. 12, no. 5, p. 277-424.

Jefferson, G.T.
1991 A catalogue of late Quaternary vertebrates from California: Part Two, mammals. Natural History

LACM (McLeod, S.A.)
2012 Paleontological resources records search for the proposed West of Devers Project area: Natural History Museum of Los Angeles County, 2 p.

LACM (McLeod, S.A.)
2013 Paleontological resources records search, additional, for the proposed West of Devers Project area: Natural History Museum of Los Angeles County, 2 p.

LSA, Inc.
2012 Unpublished data, faunal lists and paleontological monitoring and mitigation report, SCE El Casco System project.

Lundelius, E.L., Jr., C.S. Churcher, T. Downs, C.R. Harington, E.H. Lindsay, G.E. Schultz, H.A. Semken, S.D. Webb, and R.J. Zakrzewski
1987 The North American Quaternary sequence. In Cenozoic Mammals of North America, ed. M.O. Woodburne, pp. 211-35, Berkeley: Univservity of California Press.

Matti, J. C., and D.M. Morton
1975 Geologic history of the San Timoteo Badlands, southern
California: Geological Society of America Abstracts with Programs, v. 7, p. 344.

Morton, D.M. and F.K. Miller
2003 Preliminary Geologic Map of the San Bernardino 30’ x 60’ Quadrangle, Southern California: U.S. Geological Survey Open-File Report 03-293. (scale 1:100,000)

Morton, D.M. and F.K. Miller
2004 Preliminary Geologic Map of the Santa Ana 30’ × 60’ Quadrangle, Southern California: U.S. Geological Survey Open-File Report 99-172. (scale 1:100,000)

Murphey, P.C., and D. Daitch

2007 Paleontological overview of oil shale and tar sands areas in Colorado, Utah and Wyoming: U.S. Department of Energy, Argonne National Laboratory Report Prepared for the U.S. Department of Interior Bureau of Land Management, 468 p. and 6 maps (scale 1:500,000).

Paleo Solutions
2012 Unpublished data, observations, and log sheets from the SCE El Casco System Project.

San Diego Department of Public Works (DPW)
2009 San Diego County Guidelines for Determining Significance, Paleontological Resources: Available at: http://www.co.san- diego.ca.us/dplu/docs/Paleo-Guidelines.pdf.

SBCM (Scott, E.)
2012 Paleontology literature and records review, West of Devers Project. 7 pp and confidential appendices.

Scott, Eric
2003 Paleontology Literature and records Review, Proposed Devers Palo Verde II Transmission Line Project, Arizona and Southern California. Docket No. PT08-1- 000. Appendix D9.

Society of Vertebrate Paleontologists (SVP)
2010 Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. 11 p.

Appendix B
Recommended Monitoring Locations

This page intentionally left blank.

QUALIFYING EXCAVATIONS

Types of construction activities that require monitoring or spot-checking include:

- Grading
- Drilling (if drill bit is greater than two feet in diameter)
- Excavation for retaining walls
- Excavation of construction areas

Types of construction activities that *will not* require monitoring or spot-checking, regardless of paleontological sensitivity include:

- Small diameter drill holes (less than two feet in diameter)
- Pile driving
- Project activities that do not involve ground disturbance, such as
  - Pull sites
  - Addition of telecom to existing poles
  - Work in established substations
  - Establishment of material yards

REQUIRED LEVEL OF MONITORING

- **Full-time monitoring** is required in geologic units with PFYC 3-5 during qualifying excavations.
  - The monitoring level of effort may be reduced at the discretion of the Principal Investigator (PI), and with SCE/BLM/CPUC approval, if it is determined that there is a low potential for significant fossils.
  - If bedrock of the San Timoteo Formation (PFYC 5), Palm Springs Formation (PFYC 5) or Quaternary older alluvium (PFYC 3) is encountered unexpectedly and a paleontological monitor is not present, the construction crew must immediately notify the Environmental Inspector (EI), who in turn will notify the PI.
- **Spot-checking** is initially required in geologic units with PFYC 2-U during qualifying excavations when excavation is greater than 5 feet in depth.
  - Spot-checking of PFYC 2 units will **only** occur when a paleontological monitor is already onsite for monitoring in a higher sensitivity (PFYC 3-5) area of the project.
  - Spot-checking will immediately be halted in an area if it is determined that older, sensitive San Timoteo Formation (PFYC 5), Palm Springs Formation (PFYC 5) or Quaternary older alluvium (PFYC 3) will not be impacted at depth, or if sediments are not conducive to fossil preservation.
  - Spot-checking will be increased to full-time monitoring if it is determined that excavation is impacting San Timoteo Formation (PFYC 5), Palm Springs Formation (PFYC 5), or Quaternary older alluvium (PFYC 3).
  - Based on field observations, the PFYC U units will be assigned to PFYC 1-5 by the PI as appropriate and the monitoring level will be changed accordingly.
- **No monitoring** is required in geologic units with PFYC 1 regardless of excavation type or depth.

CHANGES IN MONITORING LEVEL

Changes in monitoring or spot-checking efforts (increase, decrease, or cessation) will be based on observations made by the paleontological field monitor, taking into account the construction activities remaining in the areas and the lithology, structure, and extent of the geologic units to be impacted. **Any changes must be approved by SCE and either the BLM or the CPUC depending on the jurisdiction of the affected area.** The PI will submit a letter describing the circumstances for the reduction/increase in monitoring and accompanying photographic documentation to SCE, who shall submit it to the BLM and/or CPUC representative for approval.

FULL-TIME PALEONTOLOGICAL MONITORING LOCATIONS (PFYC 5)

(When qualifying excavations are occurring as described on first page of Appendix B)

Tower	Map Unit	Author(s)	Map Year	Paleontological Potential (PFYC)
M3-T2(2)	Tstl	Morton and Miller (2003)	2003	5 (Very High)
2N14	Tstl	Morton and Miller (2003)	2003	5 (Very High)
M41-T4	Tstl	Morton and Miller (2003)	2003	5 (Very High)
M89-T3	Tstm	Morton and Miller (2004)	2004	5 (Very High)
3S04	Tstm	Morton and Miller (2004)	2004	5 (Very High)
M90-T1	Tstm	Morton and Miller (2004)	2004	5 (Very High)
PP#123272	Tstm	Morton and Miller (2004)	2004	5 (Very High)
3N04	Tstm	Morton and Miller (2004)	2004	5 (Very High)
M30-T1	Tstm	Morton and Miller (2004)	2004	5 (Very High)
3S08	Tstm	Morton and Miller (2004)	2004	5 (Very High)
3N08	Tstm	Morton and Miller (2004)	2004	5 (Very High)
PP#123270	Tstm	Morton and Miller (2004)	2004	5 (Very High)
M90-T2	Tstm	Morton and Miller (2004)	2004	5 (Very High)
3S10	Tstm	Morton and Miller (2004)	2004	5 (Very High)
PP#123269	Tstm	Morton and Miller (2004)	2004	5 (Very High)
3N10	Tstm	Morton and Miller (2004)	2004	5 (Very High)
M90-T3	Tstm	Morton and Miller (2004)	2004	5 (Very High)
M30-T3	Tstm	Morton and Miller (2004)	2004	5 (Very High)
M91-T1	Tstm	Morton and Miller (2004)	2004	5 (Very High)
M31-T1	Tstm	Morton and Miller (2004)	2004	5 (Very High)
3S16	Tstm	Morton and Miller (2004)	2004	5 (Very High)
3N16	Tstm	Morton and Miller (2004)	2004	5 (Very High)
PP#123265	Tstm	Morton and Miller (2004)	2004	5 (Very High)
M91-T2	Tstm	Morton and Miller (2004)	2004	5 (Very High)
M31-T2	Tstm	Morton and Miller (2004)	2004	5 (Very High)

3S17	Tstm	Morton and Miller (2004)	2004	5 (Very High)
3N17	Tstm	Morton and Miller (2004)	2004	5 (Very High)
PP#123264	Tstm	Morton and Miller (2004)	2004	5 (Very High)
M91-T3	Tstm	Morton and Miller (2004)	2004	5 (Very High)
3S19	Tstm	Morton and Miller (2004)	2004	5 (Very High)
3N19	Tstm	Morton and Miller (2004)	2004	5 (Very High)
PP#123263	Tstm	Morton and Miller (2004)	2004	5 (Very High)
M31-T3	Tstm	Morton and Miller (2004)	2004	5 (Very High)
3S20	Tstm	Morton and Miller (2004)	2004	5 (Very High)
3N20	Tstm	Morton and Miller (2004)	2004	5 (Very High)
PP#123262	Tstm	Morton and Miller (2004)	2004	5 (Very High)
M32-T1	Tstm	Morton and Miller (2004)	2004	5 (Very High)
M92-T1	Tstm	Morton and Miller (2004)	2004	5 (Very High)
3S21	Tstm	Morton and Miller (2004)	2004	5 (Very High)
3N21	Tstm	Morton and Miller (2004)	2004	5 (Very High)
PP#123261	Tstm	Morton and Miller (2004)	2004	5 (Very High)
3S22	Tstm	Morton and Miller (2004)	2004	5 (Very High)
M92-T2	Tstm	Morton and Miller (2004)	2004	5 (Very High)
PP#123260	Tstm	Morton and Miller (2004)	2004	5 (Very High)
M32-T2	Tstm	Morton and Miller (2004)	2004	5 (Very High)
3S23	Tstm	Morton and Miller (2004)	2004	5 (Very High)
3N23	Tstm	Morton and Miller (2004)	2004	5 (Very High)
PP#123259	Tstm	Morton and Miller (2004)	2004	5 (Very High)
M92-T3	Tstm	Morton and Miller (2004)	2004	5 (Very High)
M32-T3	Tstm	Morton and Miller (2004)	2004	5 (Very High)
PP#123258	Tstm	Morton and Miller (2004)	2004	5 (Very High)
3S25	Tstm	Morton and Miller (2004)	2004	5 (Very High)

3N25	Tstm	Morton and Miller (2004)	2004	5 (Very High)
PP#123257	Tstm	Morton and Miller (2004)	2004	5 (Very High)
3S26	Tstm	Morton and Miller (2004)	2004	5 (Very High)
M93-T1	Tstm	Morton and Miller (2004)	2004	5 (Very High)
3N26	Tstm	Morton and Miller (2004)	2004	5 (Very High)
M33-T1	Tstm	Morton and Miller (2004)	2004	5 (Very High)
3S27	Tstm	Morton and Miller (2004)	2004	5 (Very High)
3N27	Tstm	Morton and Miller (2004)	2004	5 (Very High)
PP#123256	Tstm	Morton and Miller (2004)	2004	5 (Very High)
M2-T5(2)	Qstr	Morton and Miller (2003)	2003	5 (Very High)
2N16	Qstr	Morton and Miller (2003)	2003	5 (Very High)
2N15	Qstr	Morton and Miller (2003)	2003	5 (Very High)
M42-T1	Qstr	Morton and Miller (2003)	2003	5 (Very High)
2N17	Qstr	Morton and Miller (2003)	2003	5 (Very High)
M42-T2	Qstr	Morton and Miller (2003)	2003	5 (Very High)
M2-T3(1)	Qstr	Morton and Miller (2003)	2003	5 (Very High)
M2-T2(2)	Qstr	Morton and Miller (2003)	2003	5 (Very High)
M42-T3	Qstr	Morton and Miller (2003)	2003	5 (Very High)
2N18	Qstr	Morton and Miller (2003)	2003	5 (Very High)
M42-T4	Qstr	Morton and Miller (2003)	2003	5 (Very High)
M1-T4(2)	Qstr	Morton and Miller (2003)	2003	5 (Very High)
M43-T1	Qstr	Morton and Miller (2003)	2003	5 (Very High)
2N22	Qstr	Morton and Miller (2003)	2003	5 (Very High)
2N25	Qstr	Morton and Miller (2003)	2003	5 (Very High)
M43-T6	Qstr	Morton and Miller (2003)	2003	5 (Very High)
2N30	Qstr	Morton and Miller (2003)	2003	5 (Very High)
M44-T3	Qstr	Morton and Miller (2003)	2003	5 (Very High)

2N31	Qstr	Morton and Miller (2003)	2003	5 (Very High)
2N32	Qstr	Morton and Miller (2003)	2003	5 (Very High)
4S51	Qstu	Morton and Miller (2004)	2004	5 (Very High)
4N51	Qstu	Morton and Miller (2004)	2004	5 (Very High)
M87-T2	Qstu	Morton and Miller (2004)	2004	5 (Very High)
4S52	Qstu	Morton and Miller (2004)	2004	5 (Very High)
PP#123286	Qstu	Morton and Miller (2004)	2004	5 (Very High)
4S53	Qstu	Morton and Miller (2004)	2004	5 (Very High)
4N53	Qstu	Morton and Miller (2004)	2004	5 (Very High)
M87-T3	Qstu	Morton and Miller (2004)	2004	5 (Very High)
PP#123284	Qstu	Morton and Miller (2004)	2004	5 (Very High)
4S59	Qstu	Morton and Miller (2004)	2004	5 (Very High)
M88-T2	Qstu	Morton and Miller (2004)	2004	5 (Very High)
4N56	Qstu	Morton and Miller (2004)	2004	5 (Very High)
4S58	Qstu	Morton and Miller (2004)	2004	5 (Very High)
4S57	Qstu	Morton and Miller (2004)	2004	5 (Very High)
PP#123280	Qstu	Morton and Miller (2004)	2004	5 (Very High)
PP#123279	Qstu	Morton and Miller (2004)	2004	5 (Very High)
4N58	Qstu	Morton and Miller (2004)	2004	5 (Very High)
PP#123278	Qstu	Morton and Miller (2004)	2004	5 (Very High)
4N59	Qstu	Morton and Miller (2004)	2004	5 (Very High)
PP#123275	Qstu	Morton and Miller (2004)	2004	5 (Very High)
4N62	Qstu	Morton and Miller (2004)	2004	5 (Very High)
M33-T3	Qstu	Morton and Miller (2004)	2004	5 (Very High)
3S31	Qstu	Morton and Miller (2004)	2004	5 (Very High)
3N31	Qstu	Morton and Miller (2004)	2004	5 (Very High)
PP#123253	Qstu	Morton and Miller (2004)	2004	5 (Very High)

M93-T3	Qstu	Morton and Miller (2004)	2004	5 (Very High)
M33-T4	Qstu	Morton and Miller (2004)	2004	5 (Very High)
3S32	Qstu	Morton and Miller (2004)	2004	5 (Very High)
3N32	Qstu	Morton and Miller (2004)	2004	5 (Very High)
PP#123252	Qstu	Morton and Miller (2004)	2004	5 (Very High)
M93-T4	Qstu	Morton and Miller (2004)	2004	5 (Very High)
M33-T5	Qstu	Morton and Miller (2004)	2004	5 (Very High)
PP#123251	Qstu	Morton and Miller (2004)	2004	5 (Very High)
M94-T1	Qstu	Morton and Miller (2004)	2004	5 (Very High)
M34-T1	Qstu	Morton and Miller (2004)	2004	5 (Very High)
3S35	Qstu	Morton and Miller (2004)	2004	5 (Very High)
3N35	Qstu	Morton and Miller (2004)	2004	5 (Very High)
PP#123250	Qstu	Morton and Miller (2004)	2004	5 (Very High)
3S36	Qstu	Morton and Miller (2004)	2004	5 (Very High)
3N36	Qstu	Morton and Miller (2004)	2004	5 (Very High)
PP#123249	Qstu	Morton and Miller (2004)	2004	5 (Very High)
M94-T2	Qstu	Morton and Miller (2004)	2004	5 (Very High)
M34-T2	Qstu	Morton and Miller (2004)	2004	5 (Very High)
3S37	Qstu	Morton and Miller (2004)	2004	5 (Very High)
3N37	Qstu	Morton and Miller (2004)	2004	5 (Very High)
PP#123248	Qstu	Morton and Miller (2004)	2004	5 (Very High)
M95-T1	Qstu	Morton and Miller (2004)	2004	5 (Very High)
M34-T3	Qstu	Morton and Miller (2004)	2004	5 (Very High)
PP#123247	Qstu	Morton and Miller (2004)	2004	5 (Very High)
3S39	Qstu	Morton and Miller (2004)	2004	5 (Very High)
3N39	Qstu	Morton and Miller (2004)	2004	5 (Very High)
PP#123246	Qstu	Morton and Miller (2004)	2004	5 (Very High)

M95-T2	Qstu	Morton and Miller (2004)	2004	5 (Very High)
M35-T1	Qstu	Morton and Miller (2004)	2004	5 (Very High)
3S40	Qstu	Morton and Miller (2004)	2004	5 (Very High)
3N40	Qstu	Morton and Miller (2004)	2004	5 (Very High)
PP#123245	Qstu	Morton and Miller (2004)	2004	5 (Very High)
3S41	Qstu	Morton and Miller (2003)	2003	5 (Very High)
PP#123244	Qstu	Morton and Miller (2003)	2003	5 (Very High)
3N42	Qstu	Morton and Miller (2003)	2003	5 (Very High)
PP#123243	Qstu	Morton and Miller (2003)	2003	5 (Very High)
3S43	Qstu	Morton and Miller (2003)	2003	5 (Very High)
3S44	Qstu	Morton and Miller (2003)	2003	5 (Very High)
3N44	Qstu	Morton and Miller (2003)	2003	5 (Very High)
PP#123241	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M96-T3	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M36-T3	Qstu	Morton and Miller (2003)	2003	5 (Very High)
3S53	Qstu	Morton and Miller (2003)	2003	5 (Very High)
3N53	Qstu	Morton and Miller (2003)	2003	5 (Very High)
PP#123235	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M37-T3	Qstu	Morton and Miller (2003)	2003	5 (Very High)
3S54	Qstu	Morton and Miller (2003)	2003	5 (Very High)
3N54	Qstu	Morton and Miller (2003)	2003	5 (Very High)
PP#123234	Qstu	Morton and Miller (2003)	2003	5 (Very High)
PP#123228	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M98-T3	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M99-T1	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M38-T4	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M99-T2	Qstu	Morton and Miller (2003)	2003	5 (Very High)

M39-T1	Qstu	Morton and Miller (2003)	2003	5 (Very High)
3S63	Qstu	Morton and Miller (2003)	2003	5 (Very High)
PP#123225	Qstu	Morton and Miller (2003)	2003	5 (Very High)
3N63	Qstu	Morton and Miller (2003)	2003	5 (Very High)
3S64	Qstu	Morton and Miller (2003)	2003	5 (Very High)
PP#123224	Qstu	Morton and Miller (2003)	2003	5 (Very High)
3N64	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M99-T3	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M39-T2	Qstu	Morton and Miller (2003)	2003	5 (Very High)
3S65	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M3-T2	Qstu	Morton and Miller (2003)	2003	5 (Very High)
PP#123223	Qstu	Morton and Miller (2003)	2003	5 (Very High)
3N65	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M3-T2(3)	Qstu	Morton and Miller (2003)	2003	5 (Very High)
1W01	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M39-T3	Qstu	Morton and Miller (2003)	2003	5 (Very High)
2N01	Qstu	Morton and Miller (2003)	2003	5 (Very High)
1W00	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M3-T1	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M5-T1(2)	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M3-T1(2)	Qstu	Morton and Miller (2003)	2003	5 (Very High)
2N02	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M4-T3(2)	Qstu	Morton and Miller (2003)	2003	5 (Very High)
2N03	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M4-T2(2)	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M40-T1	Qstu	Morton and Miller (2003)	2003	5 (Very High)
2N04	Qstu	Morton and Miller (2003)	2003	5 (Very High)

1W03	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M4-T1(2)	Qstu	Morton and Miller (2003)	2003	5 (Very High)
1.00E+03	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M2-T5	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M2-T5	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M3-T5	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M3-T3(2)	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M3-T4(2)	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M40-T2	Qstu	Morton and Miller (2003)	2003	5 (Very High)
2N06	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M40-T3	Qstu	Morton and Miller (2003)	2003	5 (Very High)
2N07	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M40-T4	Qstu	Morton and Miller (2003)	2003	5 (Very High)
2N08	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M41-T1	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M41-T2	Qstu	Morton and Miller (2003)	2003	5 (Very High)
2N10	Qstu	Morton and Miller (2003)	2003	5 (Very High)
2N11	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M41-T3	Qstu	Morton and Miller (2003)	2003	5 (Very High)
2N12	Qstu	Morton and Miller (2003)	2003	5 (Very High)
1.00E+04	Qstu	Morton and Miller (2003)	2003	5 (Very High)
1W04	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M2-T4	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M2-T4(2)	Qstu	Morton and Miller (2003)	2003	5 (Very High)
M79-T3	QTsf	Thomas W. Dibblee, Jr.	2003	5 (Very High)
4S12	QTsf	Thomas W. Dibblee, Jr.	2003	5 (Very High)
4N12	QTsf	Thomas W. Dibblee, Jr.	2003	5 (Very High)

M19-T3	QTsf	Thomas W. Dibblee, Jr.	2003	5 (Very High)
4S04	QTsf	Thomas W. Dibblee, Jr.	2003	5 (Very High)
M78-T2	QTsf	Thomas W. Dibblee, Jr.	2003	5 (Very High)
4N04	QTsf	Thomas W. Dibblee, Jr.	2003	5 (Very High)
M18-T2	QTsf	Thomas W. Dibblee, Jr.	2003	5 (Very High)
4S03	QTsf	Thomas W. Dibblee, Jr.	2003	5 (Very High)
PP#123339	QTsf	Thomas W. Dibblee, Jr.	2003	5 (Very High)
M78-T1	QTsf	Thomas W. Dibblee, Jr.	2003	5 (Very High)
4N03	QTsf	Thomas W. Dibblee, Jr.	2003	5 (Very High)
M18-T1	QTsf	Thomas W. Dibblee, Jr.	2003	5 (Very High)
PP#123359	QTsf	Thomas W. Dibblee, Jr.	2004	5 (Very High)
PP#123351	QTsf	Thomas W. Dibblee, Jr.	2003	5 (Very High)

FULL-TIME PALEONTOLOGICAL MONITORING LOCATIONS (PFYC 3)

(When qualifying excavations are occurring as described on first page of Appendix B)

6S10	Qoa	Thomas W. Dibblee, Jr.	2004	3 (Moderate)
6S11	Qoa	Thomas W. Dibblee, Jr.	2004	3 (Moderate)
6S12	Qoa	Thomas W. Dibblee, Jr.	2004	3 (Moderate)
6S13	Qoa	Thomas W. Dibblee, Jr.	2004	3 (Moderate)
M45-T1X	Qoa	Thomas W. Dibblee, Jr.	2004	3 (Moderate)
T271	Qoa	Thomas W. Dibblee, Jr.	2004	3 (Moderate)
T270	Qoa	Thomas W. Dibblee, Jr.	2004	3 (Moderate)
T269	Qoa	Thomas W. Dibblee, Jr.	2004	3 (Moderate)
T268	Qoa	Thomas W. Dibblee, Jr.	2004	3 (Moderate)
6N11	Qoa	Thomas W. Dibblee, Jr.	2004	3 (Moderate)
6N10	Qoa	Thomas W. Dibblee, Jr.	2004	3 (Moderate)
6N12	Qoa	Thomas W. Dibblee, Jr.	2004	3 (Moderate)

6N13	Qoa	Thomas W. Dibblee, Jr.	2004	3 (Moderate)
M61-T1	Qoa	Thomas W. Dibblee, Jr.	2004	3 (Moderate)
M60-T3	Qoa	Thomas W. Dibblee, Jr.	2004	3 (Moderate)
M0-T5(1)	Qoa	Thomas W. Dibblee, Jr.	2004	3 (Moderate)
M0-T4(1)	Qoa	Thomas W. Dibblee, Jr.	2004	3 (Moderate)
PP#123347	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
PP#123348	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4S34	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
M83-T2	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4S32	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
M83-T3	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4N32	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4N34	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
M23-T2	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
M23-T3	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
PP#123310	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
PP#123313	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
PP#123312	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
PP#123311	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4S35	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4N35	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
PP#123309	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4S36	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
M84-T1	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4N36	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
M24-T1	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
PP#123308	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)

4S37	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
M84-T2	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4N37	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
M24-T2	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
PP#123306	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4S38	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
M84-T3	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4N38	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
PP#123305	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
M24-T3	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
PP#123304	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
PP#123303	Qoa	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4S39	Qoa1	Morton (2004)	2004	3 (Moderate)
4N39	Qoa1	Morton (2004)	2004	3 (Moderate)
M84-T4	Qoa1	Morton (2004)	2004	3 (Moderate)
M24-T4	Qoa1	Morton (2004)	2004	3 (Moderate)
4S40	Qoa1	Morton (2004)	2004	3 (Moderate)
4N40	Qoa1	Morton (2004)	2004	3 (Moderate)
PP#123302	Qoa1	Morton (2004)	2004	3 (Moderate)
PP#123301	Qoa1	Morton (2004)	2004	3 (Moderate)
4S41	Qoa1	Morton (2004)	2004	3 (Moderate)
M85-T1	Qoa1	Morton (2004)	2004	3 (Moderate)
4N41	Qoa1	Morton (2004)	2004	3 (Moderate)
M25-T1	Qoa1	Morton (2004)	2004	3 (Moderate)
PP#123300	Qoa1	Morton (2004)	2004	3 (Moderate)
4S42	Qoa1	Morton (2004)	2004	3 (Moderate)
PP#123299	Qoa1	Morton (2004)	2004	3 (Moderate)
M85-T2	Qoa1	Morton (2004)	2004	3 (Moderate)
4N42	Qoa1	Morton (2004)	2004	3 (Moderate)
M25-T2	Qoa1	Morton (2004)	2004	3 (Moderate)
PP#123298	Qoa1	Morton (2004)	2004	3 (Moderate)
4S43	Qoa1	Morton (2004)	2004	3 (Moderate)
M85-T3	Qoa1	Morton (2004)	2004	3 (Moderate)
4N43	Qoa1	Morton (2004)	2004	3 (Moderate)

PP#123297	Qoa1	Morton (2004)	2004	3 (Moderate)
M25-T3	Qoa1	Morton (2004)	2004	3 (Moderate)
PP#123296	Qoa1	Morton (2004)	2004	3 (Moderate)
4S44	Qoa1	Morton (2004)	2004	3 (Moderate)
M85-T4	Qoa1	Morton (2004)	2004	3 (Moderate)
4N44	Qoa1	Morton (2004)	2004	3 (Moderate)
PP#123295	Qoa1	Morton (2004)	2004	3 (Moderate)
M25-T4	Qoa1	Morton (2004)	2004	3 (Moderate)
PP#123294	Qoa1	Morton (2004)	2004	3 (Moderate)
4S45	Qoa1	Morton (2004)	2004	3 (Moderate)
M86-T1	Qoa1	Morton (2004)	2004	3 (Moderate)
4N45	Qoa1	Morton (2004)	2004	3 (Moderate)
M26-T1	Qoa1	Morton (2004)	2004	3 (Moderate)
PP#123293	Qoa1	Morton (2004)	2004	3 (Moderate)
4S46	Qoa1	Morton (2004)	2004	3 (Moderate)
M86-T2	Qoa1	Morton (2004)	2004	3 (Moderate)
4N46	Qoa1	Morton (2004)	2004	3 (Moderate)
PP#123292	Qoa1	Morton (2004)	2004	3 (Moderate)
4S47	Qoa1	Morton (2004)	2004	3 (Moderate)
M26-T2	Qoa1	Morton (2004)	2004	3 (Moderate)
4N47	Qoa1	Morton (2004)	2004	3 (Moderate)
PP#123291	Qoa1	Morton (2004)	2004	3 (Moderate)
M86-T3	Qoa1	Morton (2004)	2004	3 (Moderate)
4S48	Qoa1	Morton (2004)	2004	3 (Moderate)
4N48	Qoa1	Morton (2004)	2004	3 (Moderate)
PP#123290	Qoa1	Morton (2004)	2004	3 (Moderate)
M26-T3	Qoa1	Morton (2004)	2004	3 (Moderate)
4S05	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4S06	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4S07	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4S08	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4S09	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4S10	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
M78-T3	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
M78-T4	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)

M79-T1	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4N06	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4N05	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
M79-T2	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4N07	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4N08	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
M80-T1	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4N09	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4N10	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4S13	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
M18-T3	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
M18-T4	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
M19-T1	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
M19-T2	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4N13	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
PP#123340	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
PP#123346	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
PP#123341	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
PP#123342	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
PP#123343	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
PP#123344	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
PP#123345	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
PP#123338	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
PP#123349	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
PP#123350	Qof	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
3S48	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
3N48	Qof3	Morton and Miller (2003)	2003	3 (Moderate)

PP#123239	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
M97-T1	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
M37-T1	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
3S50	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
3N50	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
PP#123238	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
PP#123237	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
M97-T2	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
3S51	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
M37-T2	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
3N51	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
PP#123236	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
M97-T3	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
PP#123233	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
3S55	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
3N55	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
M98-T1	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
3S56	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
M38-T1	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
PP#123232	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
3N56	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
3S57	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
3N57	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
PP#123231	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
M98-T2	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
PP#123230	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
M38-T2	Qof3	Morton and Miller (2003)	2003	3 (Moderate)

3S59	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
3N59	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
PP#123229	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
3S60	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
3N60	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
M38-T3	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
3S61	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
3N61	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
PP#123227	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
3S62	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
3N62	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
PP#123226	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
M1-T3(2)	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
M43-T2	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
2N23	Qof3	Morton and Miller (2003)	2003	3 (Moderate)
M77-T3	Qog	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4S02	Qog	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
4N02	Qog	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
M17-T3	Qog	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
PP#123352	Qog	Thomas W. Dibblee, Jr.	2003	3 (Moderate)
M95-T3	Qvoa3	Morton and Miller (2003)	2003	3 (Moderate)
M35-T2	Qvoa3	Morton and Miller (2003)	2003	3 (Moderate)
3S42	Qvoa3	Morton and Miller (2003)	2003	3 (Moderate)
3N43	Qvoa3	Morton and Miller (2003)	2003	3 (Moderate)
PP#123242	Qvoa3	Morton and Miller (2003)	2003	3 (Moderate)
M96-T1	Qvoa3	Morton and Miller (2003)	2003	3 (Moderate)
M36-T1	Qvoa3	Morton and Miller (2003)	2003	3 (Moderate)

M96-T2	Qvoa3	Morton and Miller (2003)	2003	3 (Moderate)
M36-T2	Qvoa3	Morton and Miller (2003)	2003	3 (Moderate)
3S46	Qvoa3	Morton and Miller (2003)	2003	3 (Moderate)
3N46	Qvoa3	Morton and Miller (2003)	2003	3 (Moderate)
PP#123240	Qvoa3	Morton and Miller (2003)	2003	3 (Moderate)
4S50	Qvof3	Morton (2004)	2004	3 (Moderate)
M87-T1	Qvof3	Morton (2004)	2004	3 (Moderate)
4N50	Qvof3	Morton (2004)	2004	3 (Moderate)
PP#123288	Qvof3	Morton (2004)	2004	3 (Moderate)
M27-T1	Qvof3	Morton (2004)	2004	3 (Moderate)
PP#123287	Qvof3	Morton (2004)	2004	3 (Moderate)
M1-T2(2)	Qvof3	Morton and Miller (2003)	2003	3 (Moderate)
M0-T1(2)	Qvof3	Morton and Miller (2003)	2003	3 (Moderate)
M0-T2(2)	Qvof3	Morton and Miller (2003)	2003	3 (Moderate)
M0-T3(2)	Qvof3	Morton and Miller (2003)	2003	3 (Moderate)
Vista Sub	Qvof3	Morton and Miller (2003)	2003	3 (Moderate)
M44-T7	Qvof3	Morton and Miller (2003)	2003	3 (Moderate)
2N36	Qvof3	Morton and Miller (2003)	2003	3 (Moderate)
Vista Sub	Qvof3	Morton and Miller (2003)	2003	3 (Moderate)
M1-T1(2)	Qvof3	Morton and Miller (2003)	2003	3 (Moderate)
M44-T8	Qvof3	Morton and Miller (2003)	2003	3 (Moderate)
2N37	Qvof3	Morton and Miller (2003)	2003	3 (Moderate)
2N38	Qvof3	Morton and Miller (2003)	2003	3 (Moderate)
Vista Sub	Qvof3	Morton and Miller (2003)	2003	3 (Moderate)
M0-T5(1)	Qvof3	Morton and Miller (2003)	2003	3 (Moderate)
4N52	Qvor	Morton (2004)	2004	3 (Moderate)
M27-T2	Qvor	Morton (2004)	2004	3 (Moderate)
PP#123285	Qvor	Morton (2004)	2004	3 (Moderate)
4S54	Qvor	Morton (2004)	2004	3 (Moderate)
4N54	Qvor	Morton (2004)	2004	3 (Moderate)
M27-T3	Qvor	Morton (2004)	2004	3 (Moderate)

PP#123283	Qvor	Morton (2004)	2004	3 (Moderate)
M87-T4	Qvor	Morton (2004)	2004	3 (Moderate)
4S55	Qvor	Morton (2004)	2004	3 (Moderate)
4N55	Qvor	Morton (2004)	2004	3 (Moderate)
M27-T4	Qvor	Morton (2004)	2004	3 (Moderate)
M88-T1	Qvor	Morton (2004)	2004	3 (Moderate)
4S56	Qvor	Morton (2004)	2004	3 (Moderate)
PP#123282	Qvor	Morton (2004)	2004	3 (Moderate)
PP#123281	Qvor	Morton (2004)	2004	3 (Moderate)
4N57	Qvor	Morton (2004)	2004	3 (Moderate)
M89-T2	Qyls	Morton (2004)	2004	3 (Moderate)
3S03	Qyls	Morton (2004)	2004	3 (Moderate)
M29-T2	Qyls	Morton (2004)	2004	3 (Moderate)
M89-T1	Qyls	Morton (2004)	2004	3 (Moderate)
3S02	Qyls	Morton (2004)	2004	3 (Moderate)
3S01	Qyls	Morton (2004)	2004	3 (Moderate)
PP#123273	Qyls	Morton (2004)	2004	3 (Moderate)
3N03	Qyls	Morton (2004)	2004	3 (Moderate)
3S12	Qyls	Morton (2004)	2004	3 (Moderate)
3N12	Qyls	Morton (2004)	2004	3 (Moderate)
PP#123268	Qyls	Morton (2004)	2004	3 (Moderate)
M90-T4	Qyls	Morton (2004)	2004	3 (Moderate)
3S14	Qyls	Morton (2004)	2004	3 (Moderate)
M30-T4	Qyls	Morton (2004)	2004	3 (Moderate)
PP#123266	Qyls	Morton (2004)	2004	3 (Moderate)
3S15	Qyls	Morton (2004)	2004	3 (Moderate)
3N15	Qyls	Morton (2004)	2004	3 (Moderate)
M93-T2	Qyls	Morton (2004)	2004	3 (Moderate)
3S28	Qyls	Morton (2004)	2004	3 (Moderate)
M33-T2	Qyls	Morton (2004)	2004	3 (Moderate)
3N28	Qyls	Morton (2004)	2004	3 (Moderate)
PP#123255	Qyls	Morton (2004)	2004	3 (Moderate)
3S33	Qyls	Morton (2004)	2004	3 (Moderate)
3N33	Qyls	Morton (2004)	2004	3 (Moderate)
3S38	Qyls	Morton (2004)	2004	3 (Moderate)
3N38	Qyls	Morton (2004)	2004	3 (Moderate)
3N41	Qyls	Morton and Miller (2003)	2003	3 (Moderate)

PART-TIME/SPOT-CHECK PALEONTOLOGICAL MONITORING LOCATIONS (PFYC U)

(When qualifying excavations are occurring as described on first page of Appendix B **AND** are greater than 5 feet deep)

Tower	Map Unit	Author(s)	Map Year	Paleontological Potential (PFYC)
T244	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
6S31	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
T243	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
T248	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
T242	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
T249	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
6S28A	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
T250	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
6S28	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
T251	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
6S27	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
6N31	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
T252	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M65-T1	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
6N32	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M64-T3	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
6N30	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M65-T2	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M64-T2	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
6S26	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
6N29	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
T252A	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M4-T3	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M65-T3	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)

6N34	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M64-T1	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M4-T2	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M5-T1(1)	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M4-T1	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
6N28	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M66-T1	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
6N35	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
T253	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
6N37	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M5-T2	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M66-T2	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
6S25	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M5-T3	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
T254	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M3-T2	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
6N27	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M6-T1	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M63-T2	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
6N26	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M63-T1	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
6N25	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M3-T1(1)	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M62-T4	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
T209	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
T208	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
T207	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)

M2-T4(1)	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M2-T3(1)	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
5S08	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
5S09	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M69-T3	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
5S14	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M70-T1	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
5N08	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
5N09	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M71-T1	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
5N14	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M9-T2	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M9-T3	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M10-T3	Qcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
T206	Tcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
T205	Tcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
T204	Tcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
5S10	Tcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
5S11	Tcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M70-T2	Tcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
5N10	Tcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
5N11	Tcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M10-T1	Tcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M77-T1	Tcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M17-T1	Tcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)
M16-T4	Tcf	Thomas W. Dibblee, Jr.	2004	U (Unknown)

PART-TIME/SPOT-CHECK PALEONTOLOGICAL MONITORING LOCATIONS (PFYC 2)

(When qualifying excavations are occurring as described on first page of Appendix B **AND** are greater than 5 feet deep)

Tower	Map Unit	Author(s)	Map Year	Paleontological Potential (PFYC)
T266	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S15	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S16	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
T265	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
T264	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S17	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
T263	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S18	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
T262	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S19	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S14	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
T261	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S20	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
n/a	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
n/a	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
T260	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
T267	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
T259	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
6N14	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
T258	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
T256	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
T257	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S21	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S22	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)

T255	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
Interim West	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
Interim East	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S23	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S24	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
Interim West	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
Interim East	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
6N22	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
6N24	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
6N19	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
6N21	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
6N20	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
6N15	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
6N16	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
6N18	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
6N17	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
M62-T3	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
M62-T2	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
M62-T1	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
M61-T4	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
M61-T3	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
M61-T2	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
n/a	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
M60-T2X	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
M2-T2(1)	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
M2-T1(1)	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
M1-T4(1)	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)

M1-T3(1)	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
M1-T2(1)	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
M1-T1(1)	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
M0-T3(1)	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
M0-T1(1)	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
M0-T2(1)	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
Interim West	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
Interim East	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
M0-T2A	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
Interim East	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
Interim West	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
Devers SUB	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
Devers SUB	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
Devers SUB	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
Devers SUB	Qa	Thomas W. Dibblee, Jr.	2004	2 (Low)
PP#123307	Qa	Thomas W. Dibblee, Jr.	2003	2 (Low)
M1-T6	Qa	Morton and Miller (2003)	2003	2 (Low)
M1-T6	Qa	Morton and Miller (2003)	2003	2 (Low)
T190	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T189	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T188	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T187	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T186	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T185	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T184	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T183	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T182	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)

T181	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T191	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
4175197E	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
4175196E	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
4175195E	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
4175194E	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
4175193E	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T193	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S21	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S20	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S22	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T194	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S23	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M72-T2	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S24	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M72-T3	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S19	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S27	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M73-T1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S28	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M72-T1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T195	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N21	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M73-T2	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N20	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N22	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S29	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)

M73-T3	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N23	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N24	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M74-T1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N19	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T203	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T196	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N27	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T202	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N28	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T201	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T200	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S18	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T199	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N29	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T198	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M12-T2	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M12-T3	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M71-T4	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T197	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M12-T4	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M12-T1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M13-T1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N18	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M13-T2	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S17	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M13-T3	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)

M71-T3	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N17	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S16	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M11-T3	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S15	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S13	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S12	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M70-T3	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N16	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M71-T2	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N15	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N13	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N12	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M11-T2	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T175	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M10-T2	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M11-T1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S35-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S36-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S37-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S38-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S32-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S39-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S31-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S40-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S30	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S41-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)

5S42-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N35-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N36-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N37-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S43-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N38-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N32-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N39-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N31-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N40-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N30	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N41-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N42-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N43-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T174	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M74-T2	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M14-T1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S44-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N44-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T173	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S44A-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T172	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N44A-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M74-T3	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M14-T2	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T171	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S45-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)

5N45-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T169	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T168	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T166	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T165	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T164	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T163	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T162	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T161	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T160	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S46-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N46-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M75-T1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M75-T3	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M75-T4	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M75-T5	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M76-T1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M14-T4	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M15-T2	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M15-T3	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M15-T4	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M16-T1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T159A	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S47-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N47-1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T159	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M76-T2	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)

M16-T2	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S48	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N48	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T158	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T157	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S49	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N49	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M16-T5	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
PP#123360	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
4S16	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4S17	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4S18	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M80-T2	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4S19	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4S20	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M80-T3	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4S21	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4S15	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M80-T4	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4S22	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M81-T1	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M81-T2	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4S14	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4N16	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M81-T3	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4N17	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4N18	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)

4S23	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4N19	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4N20	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4N21	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4N15	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4N22	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4N14	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4N23	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M20-T1	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M20-T2	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M20-T3	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M21-T1	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M21-T2	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M21-T3	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
5S54	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4S01	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M77-T2	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4N01	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123337	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123336	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123335	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123334	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123333	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123332	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123331	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123330	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123325	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)

PP#123329	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123328	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123327	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123326	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M17-T2	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4S24	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M81-T4	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4N24	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M21-T4	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123324	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4S25	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M82-T1	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4N25	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123323	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M22-T1	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4S26	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M82-T2	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4N26	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M22-T2	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123322	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4S27	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M82-T3	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123321	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4N27	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M22-T3	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123320	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4S29	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)

M82-T4	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123355	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123319	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4N29	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123318A	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M22-T4	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123318	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4S30	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M83-T1	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4S31	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4N30	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
4N31	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123317	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
M23-T1	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123316	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123354	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123314	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123315	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123353	Qf	Thomas W. Dibblee, Jr.	2003	2 (Low)
6S30	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T246	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T245	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S30A	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T247	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S29	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T247A	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S31A	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)

6S32	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T241	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S33	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T240	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T239	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S34	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T238	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S35	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T237	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T236	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S36	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T235	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S41	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T228	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S40	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T229	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S39	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T230	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T231	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T232	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S38	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T233	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T227	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6N38	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T226	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6N39	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T225	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)

M66-T3	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6N40	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T224	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T223	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6N41	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S42	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M66-T4	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S43	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S44	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6N42	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M6-T2	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T222	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6N43	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M67-T1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6N44	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S45	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M6-T3	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M67-T2	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T221	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6N45	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M7-T1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T220A	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M67-T3	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S46	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M7-T2	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6N46	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T212	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)

T211	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T214	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T215	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T220	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T216	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T210	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T217	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T219	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T217A	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
T218	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M7-T3	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S47	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M68-T1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6S48	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6N47	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S01	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S02	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S03	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S07	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S06	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M68-T2	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M68-T3	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
6N48	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M68-T4	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M69-T1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N01	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M69-T2	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)

M7-T4	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N02	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N03	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N07	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N06	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M8-T1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M8-T2	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M8-T3	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M8-T4	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M9-T1	Qf	Thomas W. Dibblee, Jr.	2004	2 (Low)
M2-T1(2)	Qf	Morton and Miller (2003)	2003	2 (Low)
M42-T5	Qf	Morton and Miller (2003)	2003	2 (Low)
2N21	Qf	Morton and Miller (2003)	2003	2 (Low)
1W11	Qf	Morton and Miller (2003)	2003	2 (Low)
6S37	Qg	Thomas W. Dibblee, Jr.	2004	2 (Low)
T234	Qg	Thomas W. Dibblee, Jr.	2004	2 (Low)
T192	Qg	Thomas W. Dibblee, Jr.	2004	2 (Low)
6N23	Qg	Thomas W. Dibblee, Jr.	2004	2 (Low)
T213	Qg	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S04	Qg	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S05	Qg	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N04	Qg	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N05	Qg	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S34-1	Qg	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N34-1	Qg	Thomas W. Dibblee, Jr.	2004	2 (Low)
T170	Qg	Thomas W. Dibblee, Jr.	2004	2 (Low)
T167	Qg	Thomas W. Dibblee, Jr.	2004	2 (Low)

M74-T4	Qg	Thomas W. Dibblee, Jr.	2004	2 (Low)
M75-T2	Qg	Thomas W. Dibblee, Jr.	2004	2 (Low)
M14-T3	Qg	Thomas W. Dibblee, Jr.	2004	2 (Low)
M15-T1	Qg	Thomas W. Dibblee, Jr.	2004	2 (Low)
M76-T3	Qg	Thomas W. Dibblee, Jr.	2004	2 (Low)
M16-T3	Qg	Thomas W. Dibblee, Jr.	2004	2 (Low)
T156	Qg	Thomas W. Dibblee, Jr.	2004	2 (Low)
T155	Qg	Thomas W. Dibblee, Jr.	2004	2 (Low)
5S52	Qg	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N52	Qg	Thomas W. Dibblee, Jr.	2004	2 (Low)
M76-T4	Qg	Thomas W. Dibblee, Jr.	2004	2 (Low)
5N54	Qg	Thomas W. Dibblee, Jr.	2003	2 (Low)
PP#123356	Qg	Thomas W. Dibblee, Jr.	2003	2 (Low)
M39-T4	Qls	Morton and Miller (2003)	2003	2 (Low)
2N20	Qw	Morton and Miller (2003)	2003	2 (Low)
M0-T4(2)	Qw	Morton and Miller (2003)	2003	2 (Low)
M44-T6	Qw	Morton and Miller (2003)	2003	2 (Low)
2N35	Qw	Morton and Miller (2003)	2003	2 (Low)
M0-T6	Qw	Morton and Miller (2003)	2003	2 (Low)
M0-T6	Qw	Morton and Miller (2003)	2003	2 (Low)
1W21	Qw	Morton and Miller (2003)	2003	2 (Low)
4S60	Qwag	Morton (2004)	2004	2 (Low)
PP#123277	Qwag	Morton (2004)	2004	2 (Low)
4N60	Qwag	Morton (2004)	2004	2 (Low)
1E12	Qya3	Morton and Miller (2003)	2003	2 (Low)
1W12	Qya3	Morton and Miller (2003)	2003	2 (Low)
1E13	Qya3	Morton and Miller (2003)	2003	2 (Low)
1W13	Qya3	Morton and Miller (2003)	2003	2 (Low)

M1-T5	Qya3	Morton and Miller (2003)	2003	2 (Low)
M1-T5	Qya3	Morton and Miller (2003)	2003	2 (Low)
1E14	Qya3	Morton and Miller (2003)	2003	2 (Low)
1W14	Qya3	Morton and Miller (2003)	2003	2 (Low)
M1-T4	Qya3	Morton and Miller (2003)	2003	2 (Low)
M1-T4(2)	Qya3	Morton and Miller (2003)	2003	2 (Low)
1W15	Qya3	Morton and Miller (2003)	2003	2 (Low)
1E15	Qya3	Morton and Miller (2003)	2003	2 (Low)
1E16	Qya3	Morton and Miller (2003)	2003	2 (Low)
1W16	Qya3	Morton and Miller (2003)	2003	2 (Low)
M1-T3	Qya3	Morton and Miller (2003)	2003	2 (Low)
M1-T3(2)	Qya3	Morton and Miller (2003)	2003	2 (Low)
1E17	Qya3	Morton and Miller (2003)	2003	2 (Low)
1W17	Qya3	Morton and Miller (2003)	2003	2 (Low)
M1-T2	Qya3	Morton and Miller (2003)	2003	2 (Low)
M1-T2(2)	Qya3	Morton and Miller (2003)	2003	2 (Low)
1W18	Qya3	Morton and Miller (2003)	2003	2 (Low)
1E18	Qya3	Morton and Miller (2003)	2003	2 (Low)
M1-T1	Qya3	Morton and Miller (2003)	2003	2 (Low)
M1-T1(2)	Qya3	Morton and Miller (2003)	2003	2 (Low)
1E19	Qya3	Morton and Miller (2003)	2003	2 (Low)
1W19	Qya3	Morton and Miller (2003)	2003	2 (Low)
M0-T8	Qya3	Morton and Miller (2003)	2003	2 (Low)
M0-T8	Qya3	Morton and Miller (2003)	2003	2 (Low)
1E20	Qya3	Morton and Miller (2003)	2003	2 (Low)
1W20	Qya3	Morton and Miller (2003)	2003	2 (Low)
M0-T7	Qya3	Morton and Miller (2003)	2003	2 (Low)

M0-T7	Qya3	Morton and Miller (2003)	2003	2 (Low)
1.00E+21	Qya3	Morton and Miller (2003)	2003	2 (Low)
M0-T5	Qya3	Morton and Miller (2003)	2003	2 (Low)
M0-T5(2)	Qya3	Morton and Miller (2003)	2003	2 (Low)
1.00E+22	Qya3	Morton and Miller (2003)	2003	2 (Low)
1W22	Qya3	Morton and Miller (2003)	2003	2 (Low)
1E23	Qya3	Morton and Miller (2003)	2003	2 (Low)
1W23	Qya3	Morton and Miller (2003)	2003	2 (Low)
M0-T4	Qya3	Morton and Miller (2003)	2003	2 (Low)
M0-T4(2)	Qya3	Morton and Miller (2003)	2003	2 (Low)
1E24	Qya3	Morton and Miller (2003)	2003	2 (Low)
1W24	Qya3	Morton and Miller (2003)	2003	2 (Low)
M0-T3	Qya3	Morton and Miller (2003)	2003	2 (Low)
M0-T3(2)	Qya3	Morton and Miller (2003)	2003	2 (Low)
1E25	Qya3	Morton and Miller (2003)	2003	2 (Low)
1W25	Qya3	Morton and Miller (2003)	2003	2 (Low)
M0-T2	Qya3	Morton and Miller (2003)	2003	2 (Low)
M0-T2(2)	Qya3	Morton and Miller (2003)	2003	2 (Low)
M0-T1	Qya3	Morton and Miller (2003)	2003	2 (Low)
M0-T1(2)	Qya3	Morton and Miller (2003)	2003	2 (Low)
1E26	Qya3	Morton and Miller (2003)	2003	2 (Low)
1W26	Qya3	Morton and Miller (2003)	2003	2 (Low)
1E27	Qya3	Morton and Miller (2003)	2003	2 (Low)
1E28	Qya3	Morton and Miller (2003)	2003	2 (Low)
SAN BERN SUB	Qya3	Morton and Miller (2003)	2003	2 (Low)
SAN BERN SUB	Qya3	Morton and Miller (2003)	2003	2 (Low)
SAN BERN SUB	Qya3	Morton and Miller (2003)	2003	2 (Low)

SAN BERN SUB	Qya3	Morton and Miller (2003)	2003	2 (Low)
PP#123289	Qya5	Morton (2004)	2004	2 (Low)
PP#123274	Qya5	Morton (2004)	2004	2 (Low)
4N63	Qya5	Morton (2004)	2004	2 (Low)
2N34	Qya5	Morton and Miller (2003)	2003	2 (Low)
M44-T5	Qya5	Morton and Miller (2003)	2003	2 (Low)
2N33	Qya5	Morton and Miller (2003)	2003	2 (Low)
1E05	Qyf3	Morton and Miller (2003)	2003	2 (Low)
1W05	Qyf3	Morton and Miller (2003)	2003	2 (Low)
M2-T3	Qyf3	Morton and Miller (2003)	2003	2 (Low)
M2-T3(2)	Qyf3	Morton and Miller (2003)	2003	2 (Low)
M43-T3	Qyf3	Morton and Miller (2003)	2003	2 (Low)
1E06	Qyf3	Morton and Miller (2003)	2003	2 (Low)
1W06	Qyf3	Morton and Miller (2003)	2003	2 (Low)
M43-T4	Qyf3	Morton and Miller (2003)	2003	2 (Low)
2N26	Qyf3	Morton and Miller (2003)	2003	2 (Low)
2N28	Qyf3	Morton and Miller (2003)	2003	2 (Low)
2N29	Qyf3	Morton and Miller (2003)	2003	2 (Low)
1E08	Qyf3	Morton and Miller (2003)	2003	2 (Low)
1W08	Qyf3	Morton and Miller (2003)	2003	2 (Low)
M2-T2	Qyf3	Morton and Miller (2003)	2003	2 (Low)
M2-T2(2)	Qyf3	Morton and Miller (2003)	2003	2 (Low)
1E09	Qyf3	Morton and Miller (2003)	2003	2 (Low)
1W09	Qyf3	Morton and Miller (2003)	2003	2 (Low)
M2-T1	Qyf3	Morton and Miller (2003)	2003	2 (Low)
M2-T1(2)	Qyf3	Morton and Miller (2003)	2003	2 (Low)
1E10	Qyf3	Morton and Miller (2003)	2003	2 (Low)
1W10	Qyf3	Morton and Miller (2003)	2003	2 (Low)

M1-T7	Qyf3	Morton and Miller (2003)	2003	2 (Low)
M1-T7	Qyf3	Morton and Miller (2003)	2003	2 (Low)
1.00E+11	Qyf3	Morton and Miller (2003)	2003	2 (Low)
3S06	Qyf5ag	Morton (2004)	2004	2 (Low)
PP#123271	Qyf5ag	Morton (2004)	2004	2 (Low)
3N06	Qyf5ag	Morton (2004)	2004	2 (Low)
3S07	Qyf5ag	Morton (2004)	2004	2 (Low)
3N07	Qyf5ag	Morton (2004)	2004	2 (Low)
Pos 7	Qyf5ag	Morton (2004)	2004	2 (Low)
Pos 1	Qyf5ag	Morton (2004)	2004	2 (Low)
M30-T2	Qyf5ag	Morton (2004)	2004	2 (Low)
4N65	Qyf5ag	Morton (2004)	2004	2 (Low)
3N01	Qyf5ag	Morton (2004)	2004	2 (Low)
3N02	Qyf5ag	Morton (2004)	2004	2 (Low)
4N64	Qyf5ag	Morton (2004)	2004	2 (Low)
PP#123276	Qyf5ag	Morton (2004)	2004	2 (Low)
4N61	Qyf5ag	Morton (2004)	2004	2 (Low)
3S13	Qyf5ag	Morton (2004)	2004	2 (Low)
3N13	Qyf5ag	Morton (2004)	2004	2 (Low)
PP#123267	Qyf5ag	Morton (2004)	2004	2 (Low)
3N14	Qyf5ag	Morton (2004)	2004	2 (Low)
3N22	Qyf5ag	Morton (2004)	2004	2 (Low)
3S24	Qyf5ag	Morton (2004)	2004	2 (Low)
3N24	Qyf5ag	Morton (2004)	2004	2 (Low)
3S29	Qyf5ag	Morton (2004)	2004	2 (Low)
PP#123254	Qyf5ag	Morton (2004)	2004	2 (Low)
3N29	Qyf5ag	Morton (2004)	2004	2 (Low)

LOCATIONS WITH NO REQUIRED PALEONTOLOGICAL MONITORING (PFYC 1)

(No monitoring requried regardless of the type or depth of excavation)

Tower	**Map Unit**	**Author(s)**	**Map Year**	**Paleontological Potential (PFYC)**
M0-T6(1)	Kbfg	Morton and Miller (2003)	2003	1 (Very Low)
PP#123358	Tb	Thomas W. Dibblee, Jr.	2004	1 (Very Low)
PP#123357	Tb	Thomas W. Dibblee, Jr.	2004	1 (Very Low)

Appendix C
Construction Monitoring Maps

This page intentionally left blank.

QUALIFYING EXCAVATIONS

Types of construction activities that require monitoring or spot-checking include:

- Grading
- Drilling (if drill bit is greater than two feet in diameter)
- Excavation for retaining walls
- Excavation of construction areas

Types of construction activities that *will not* require monitoring or spot-checking, regardless of paleontological sensitivity include:

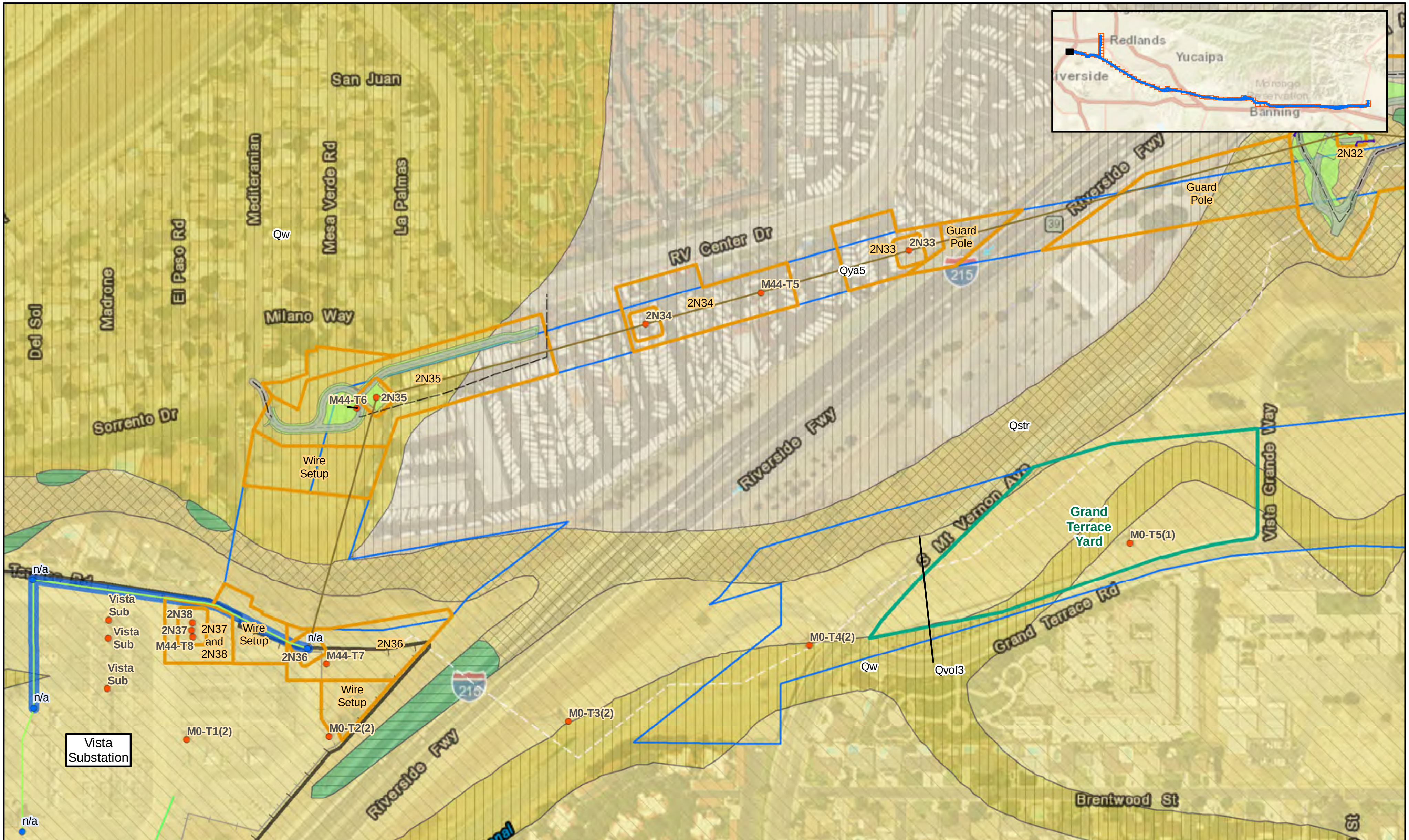
- Small diameter drill holes (less than two feet in diameter)
- Pile driving
- Project activities that do not involve ground disturbance, such as
  - Pull sites
  - Addition of telecom to existing poles
  - Work in established substations
  - Establishment of material yards

REQUIRED LEVEL OF MONITORING

- **Full-time monitoring** is required in geologic units with PFYC 3-5 during qualifying excavations.
  - The monitoring level of effort may be reduced at the discretion of the Principal Investigator (PI), and with SCE/BLM/CPUC approval, if it is determined that there is a low potential for significant fossils.
  - If bedrock of the San Timoteo Formation (PFYC 5), Palm Springs Formation (PFYC 5), or Quaternary older alluvium (PFYC 3) is encountered unexpectedly and a paleontological monitor is not present, the construction crew must immediately notify the Environmental Inspector (EI), who in turn will notify the PI.
- **Spot-checking** is initially required in geologic units with PFYC 2-U during qualifying excavations when excavation is greater than 5 feet in depth.
  - Spot-checking of PFYC 2 units will **only** occur when a paleontological monitor is already onsite for monitoring in a higher sensitivity (PFYC 3-5) area of the project.
  - Spot-checking will immediately be halted in an area if it is determined that older, sensitive San Timoteo Formation (PFYC 5), Palm Springs Formation (PFYC 5), or Quaternary older alluvium (PFYC 3) will not be impacted at depth, or if sediments are not conducive to fossil preservation.
  - Spot-checking will be increased to full-time monitoring if it is determined that excavation is impacting San Timoteo Formation (PFYC 5), Palm Springs Formation (PFYC 5), or Quaternary older alluvium (PFYC 3).
  - Based on field observations, the PFYC U units will be assigned to PFYC 1-5 by the PI as appropriate and the monitoring level will be changed accordingly.
- **No monitoring** is required in geologic units with PFYC 1 regardless of excavation type or depth.

CHANGES IN MONITORING LEVEL

Changes in monitoring or spot-checking efforts (increase, decrease, or cessation) will be based on observations made by the paleontological field monitor, taking into account the construction activities remaining in the areas and the lithology, structure, and extent of the geologic units to be impacted. **Any changes must be approved by SCE and either the BLM or the CPUC depending on the jurisdiction of the affected area.** The PI will submit a letter describing the circumstances for the reduction/increase in monitoring and accompanying photographic documentation to SCE, who shall submit it to the BLM and/or CPUC representative for approval.



- Telcom
- Structure

Line name

- Devers-Vista
- OFNR 09076
- Vista-Moreno FOC (10133)-Tap Splice to Vista

Access road

- Existing
- New

- Retaining wall
- Construction area
- Construction Yard
- Telcom area

Substation

- Boundary
- Fence
- Access road
- Disturbance limit area
- Existing ROW

Geologic Unit

- Qw: Very young wash deposits (late Holocene)
- Qya5: Young axial channel deposits, Unit 5 (late Holocene)
- Qvof3: Very old alluvial-fan deposits, Unit 3 (middle to early Pleistocene)
- Qstr: San Timoteo Beds, Reche Canyon member (Pleistocene and Pliocene)
- Kbg: Box Springs plutonic complex, porphyritic granodiorite (Cretaceous)

Paleosensitivity (PFYC)

- 5: Very High
- 3: Moderate
- 2: Low
- 1: Very Low

SCE West of Devers

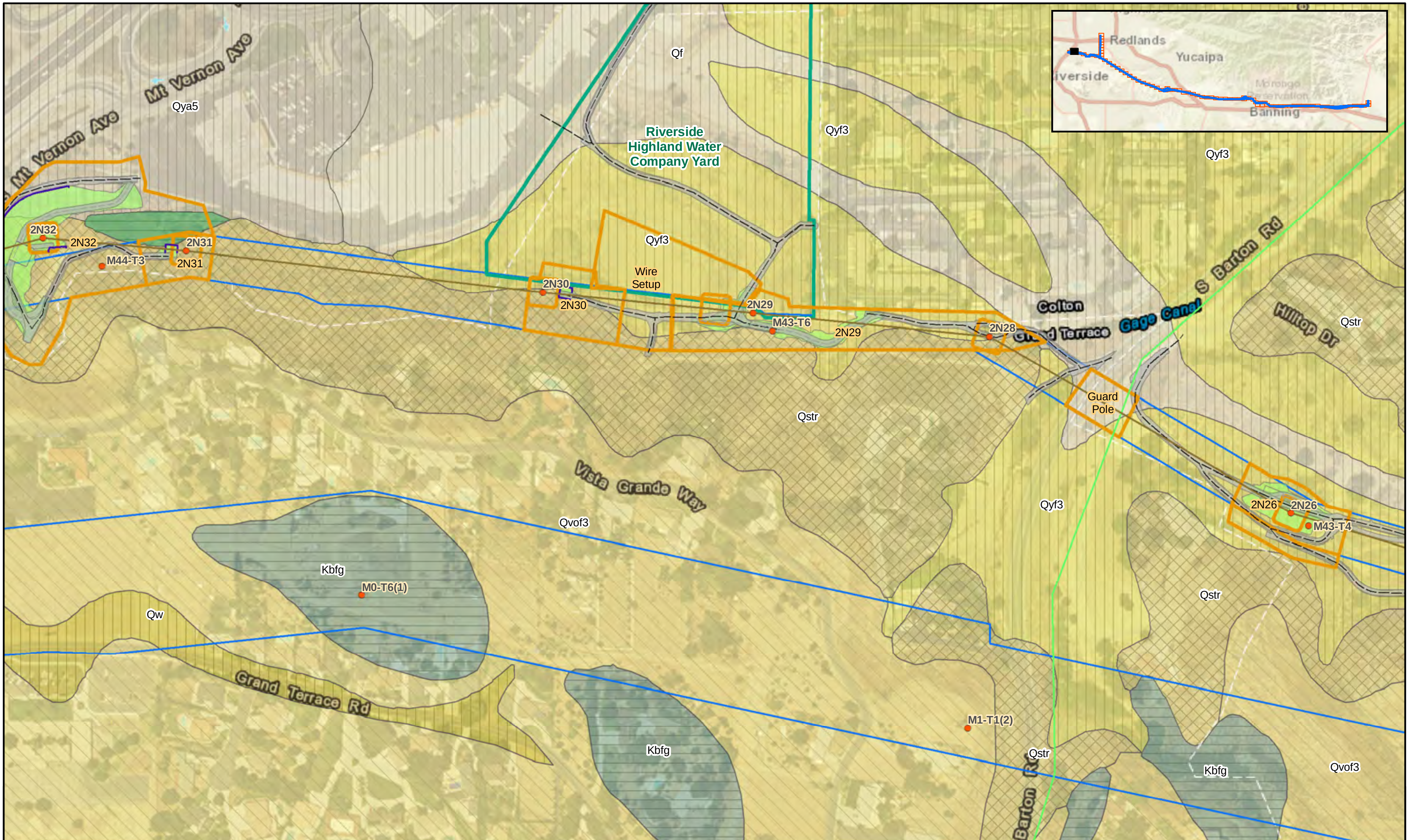
Page 1 of 81

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Geologic Map of the San Bernardino 30' x 60' Quadrangle, California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2003
Base layers from Esri ArcGIS Online



- Structure

Line name

- Devers-Vista
- Vista-Moreno FOC (10133)-Tap Splice to Vista

Access road

- Existing
- New
- Retaining wall
- Construction area
- Construction Yard
- Access road
- Disturbance limit area
- Existing ROW

Geologic Unit

- Qf: Very young alluvial-fan deposits (late Holocene)
- Qw: Very young wash deposits (late Holocene)
- Qya5: Young axial channel deposits, Unit 5 (late Holocene)
- Qyf3: Young alluvial-fan deposits, Unit 3 (middle Holocene)
- Qvof3: Very old alluvial-fan deposits, Unit 3 (middle to early Pleistocene)
- Qstr: San Timoteo Beds, Reche Canyon member (Pleistocene and Pliocene)
- Kbfg: Box Springs plutonic complex, biotite granodiorite and tonalite (Cretaceous)
- Kbg: Box Springs plutonic complex, porphyritic granodiorite (Cretaceous)

Paleosensitivity (PFYC)

- 5: Very High
- 3: Moderate
- 2: Low
- 1: Very Low

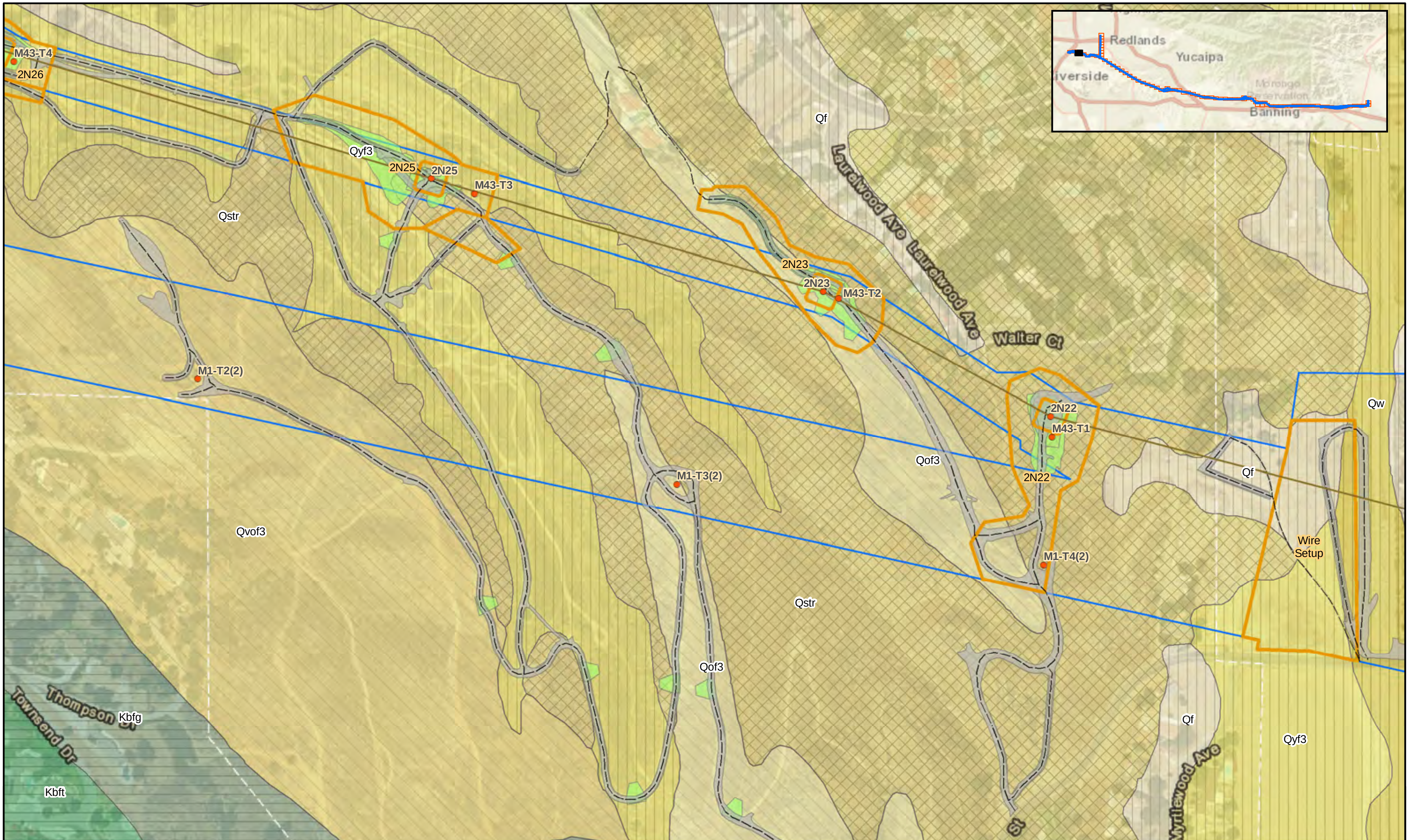
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Geologic Map of the San Bernardino 30' x 60' Quadrangle, California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2003
Base layers from Esri ArcGIS Online



- Structure

Line name

- Devers-Vista

Access road

- Existing
- New
- Construction area
- Access road
- Disturbance limit area
- Existing ROW

Geologic Unit

- Qf: Very young alluvial-fan deposits (late Holocene)
- Qw: Very young wash deposits (late Holocene)
- Qyf3: Young alluvial-fan deposits, Unit 3 (middle Holocene)
- Qof3: Old alluvial-fan deposits, Unit 3 (late to middle Pleistocene)
- Qvof3: Very old alluvial-fan deposits, Unit 3 (middle to early Pleistocene)
- Qstr: San Timoteo Beds, Reche Canyon member (Pleistocene and Pliocene)
- Kbft: Box Springs plutonic complex, biotite-hornblende tonalite (Cretaceous)
- Kbfg: Box Springs plutonic complex, biotite granodiorite and tonalite (Cretaceous)

Paleosensitivity (PFYC)

- 5: Very High
- 3: Moderate
- 2: Low
- 1: Very Low

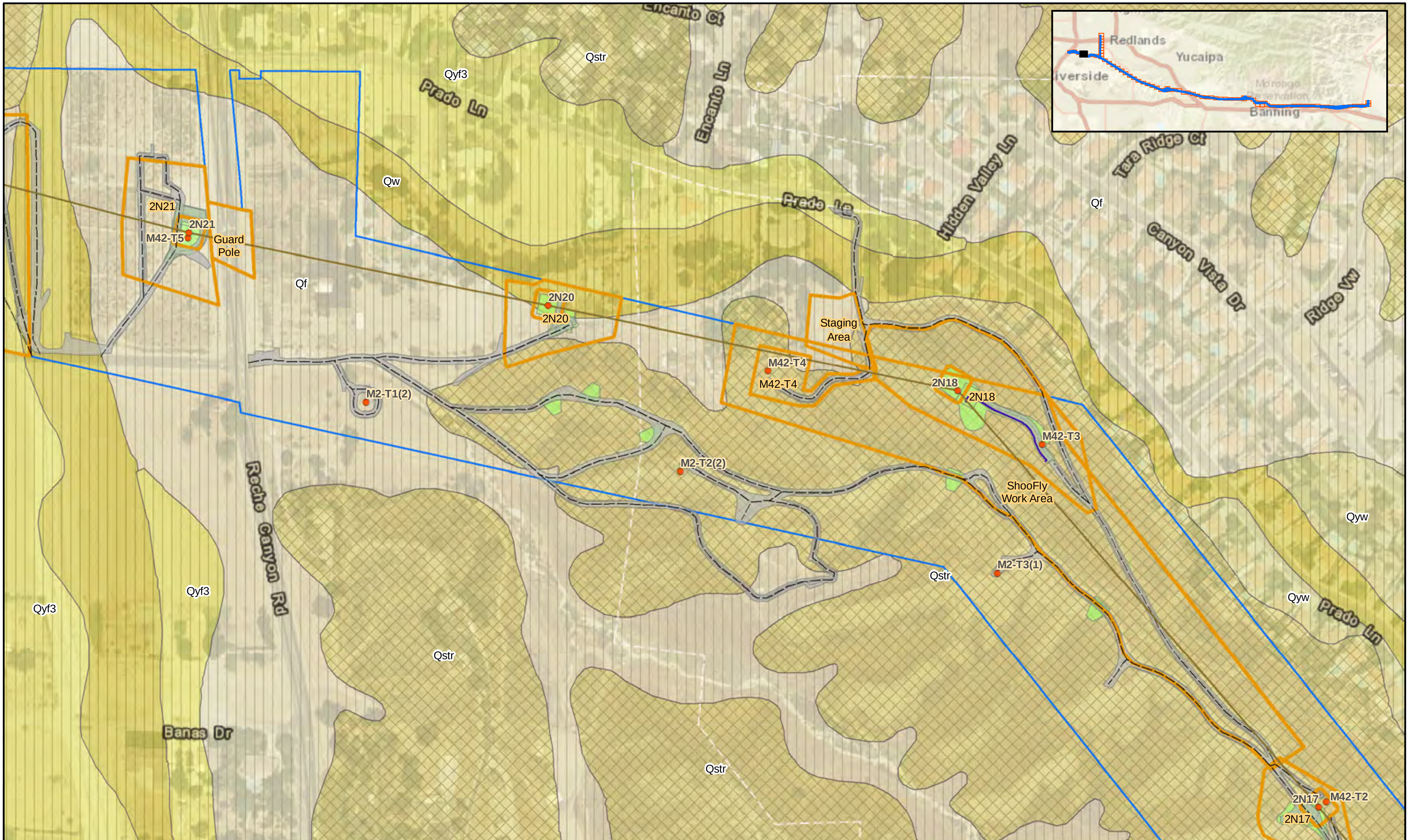
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Geologic Map of the San Bernardino 30' x 60' Quadrangle, California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2003
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-Vista

Access road

Existing

New

Retaining wall

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qf: Very young alluvial-fan deposits (late Holocene)

Qw: Very young wash deposits (late Holocene)

Qyf3: Young alluvial-fan deposits, Unit 3 (middle Holocene)

Qyw: Young wash deposits (Holocene and late Pleistocene)

Qstr: San Timoteo Beds, Reche Canyon member (Pleistocene and Pliocene)

Paleosensitivity (PFYC)

5: Very High

2: Low

SCE West of Devers

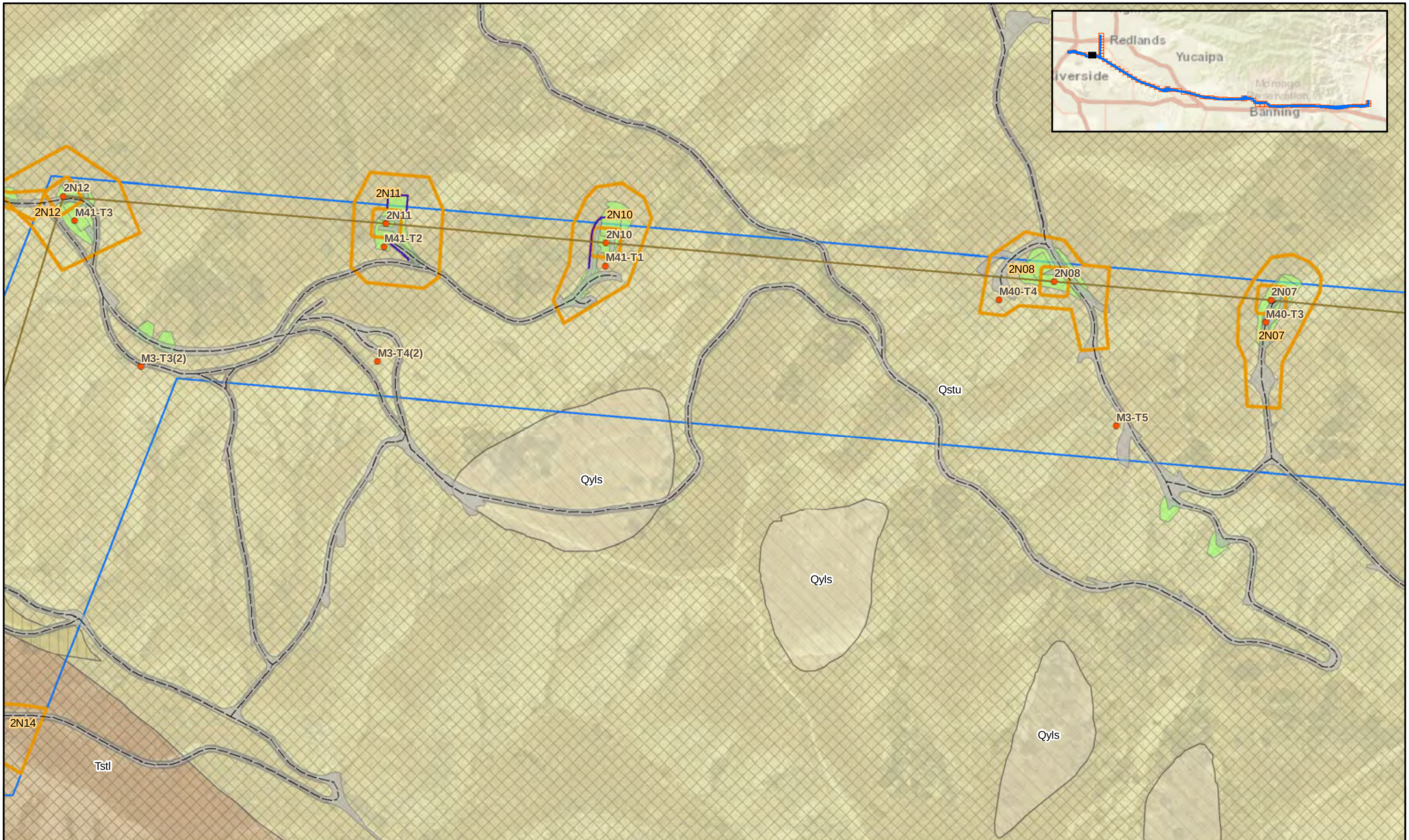
Page 4 of 81

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Geologic Map of the San Bernardino 30' x 60' Quadrangle, California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2003
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-Vista

Access road

Existing

New

Retaining wall

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qyls: Young landslide deposits (Holocene and late Pleistocene)

Qyw: Young wash deposits (Holocene and late Pleistocene)

Qstu: San Timoteo Beds, upper member (Pleistocene)

Tstl: San Timoteo Beds, lower sandstone member (Pliocene)

Paleosensitivity (PFYC)

5: Very High

3: Moderate

2: Low

SCE West of Devers

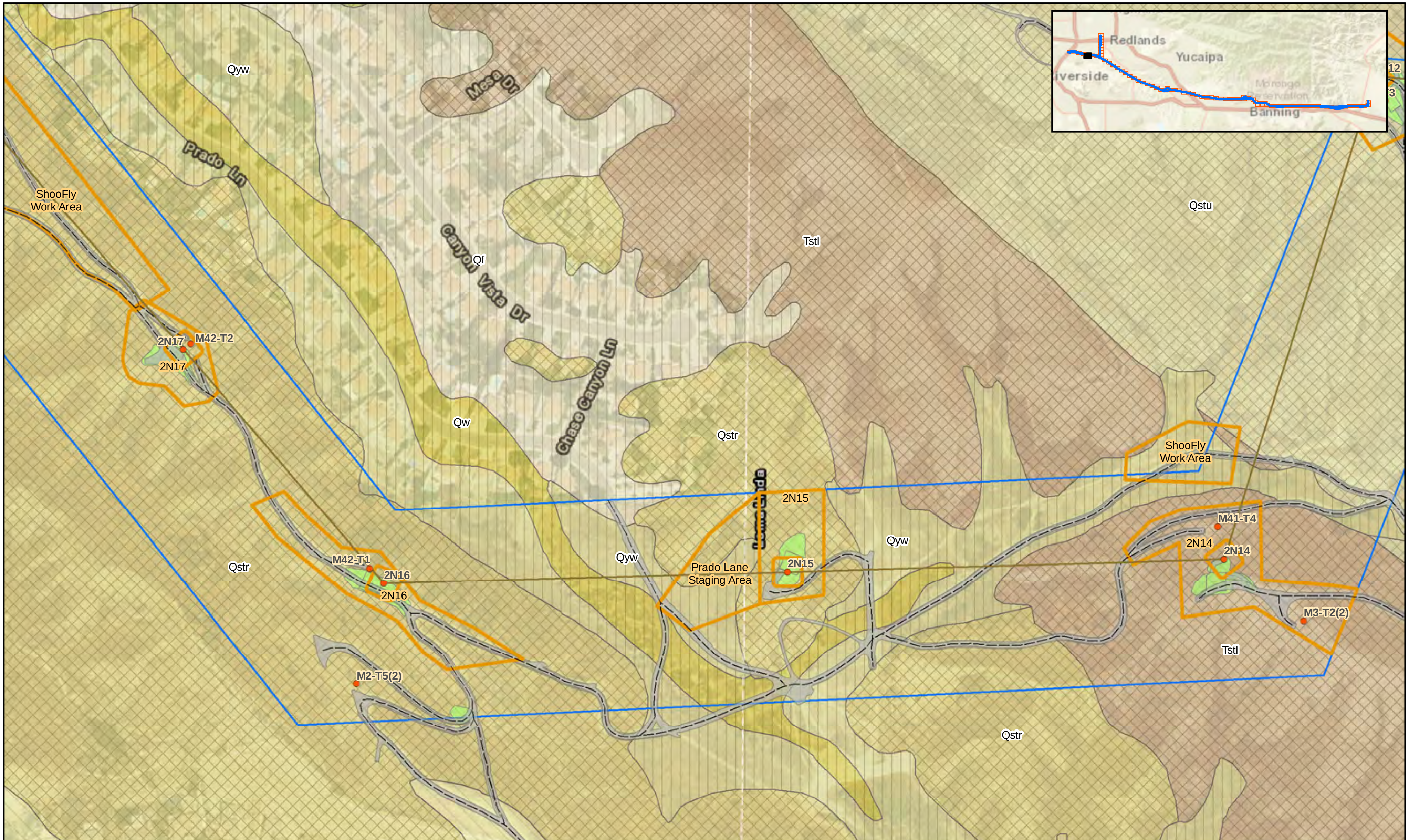
Page 5 of 81

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Geologic Map of the San Bernardino 30' x 60' Quadrangle, California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2003
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qf: Very young alluvial-fan deposits (late Holocene)

Qw: Very young wash deposits (late Holocene)

Qyw: Young wash deposits (Holocene and late Pleistocene)

Qof3: Old alluvial-fan deposits, Unit 3 (late to middle Pleistocene)

Qstu: San Timoteo Beds, upper member (Pleistocene)

Qstr: San Timoteo Beds, Reche Canyon member (Pleistocene and Pliocene)

Tstl: San Timoteo Beds, lower sandstone member (Pliocene)

Paleosensitivity (PFYC)

5: Very High

3: Moderate

2: Low

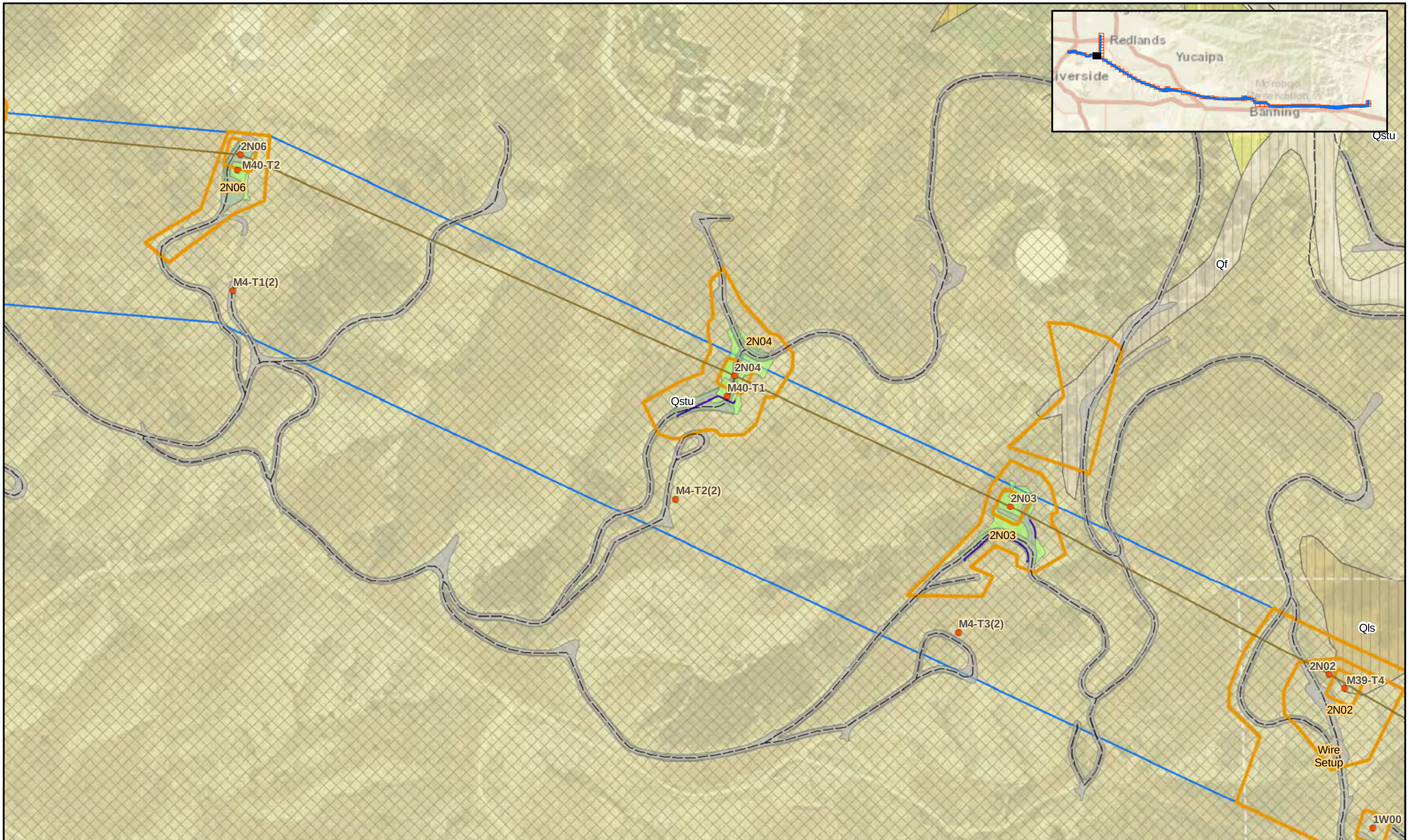
SCE West of Devers

0 250 500 Feet

N

Paleo Solutions
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Geologic Map of the San Bernardino 30' x 60' Quadrangle, California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2003
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-Vista

Access road

Existing

New

Retaining wall

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qf: Very young alluvial-fan deposits (late Holocene)

Qls: Very young landslide deposits (late Holocene)

Qyf5: Young alluvial fan deposits, Unit 5 (late Holocene)

Qyf3: Young alluvial-fan deposits, Unit 3 (middle Holocene)

Qstu: San Timoteo Beds, upper member (Pleistocene)

Paleosensitivity (PFYC)

5: Very High

2: Low

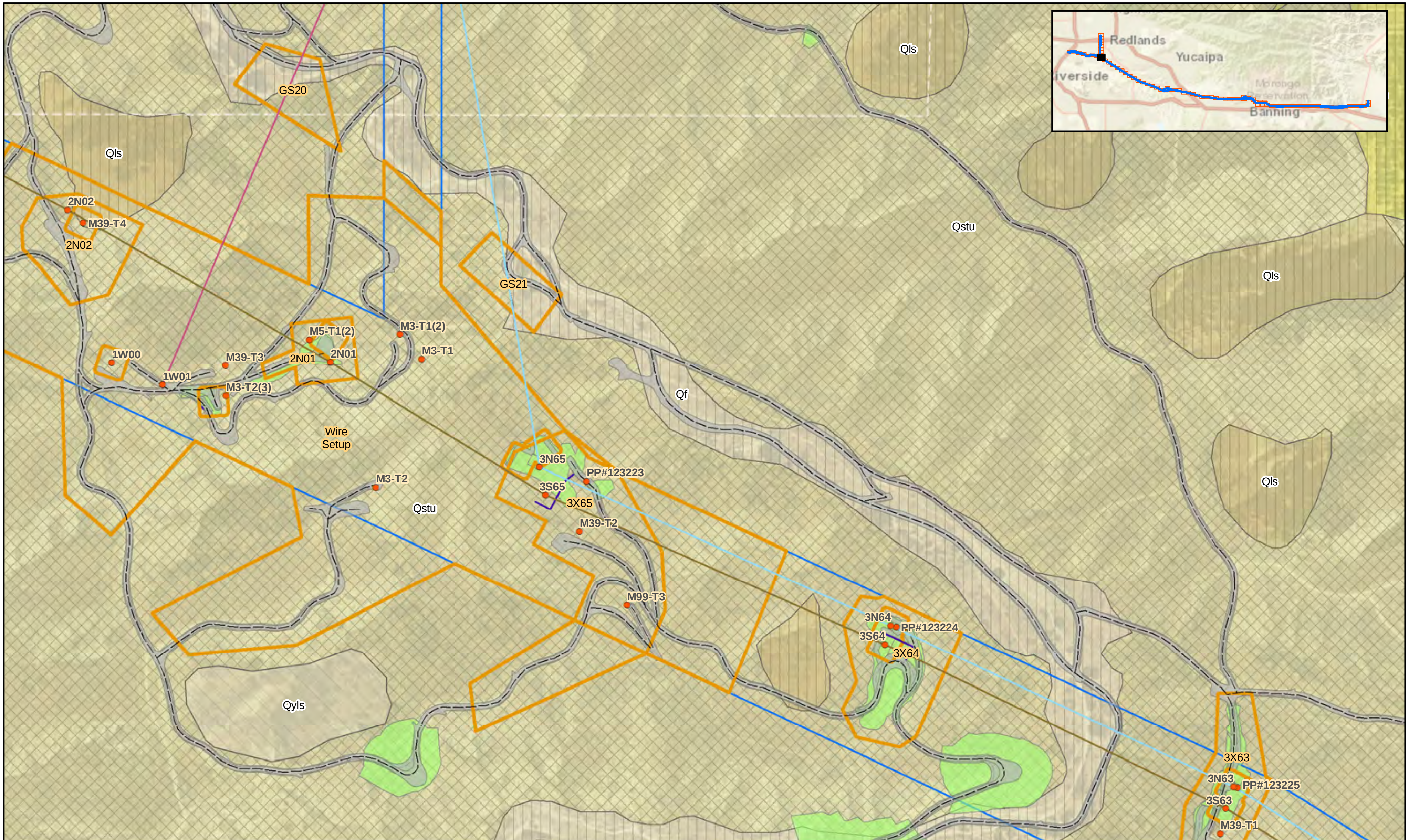
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Geologic Map of the San Bernardino 30' x 60' Quadrangle, California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2003
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-San Bernardino

Devers-Vista

San Bernardino-San Bernardino Junction

Access road

Existing

New

Retaining wall

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qf: Very young alluvial-fan deposits (late Holocene)

Qls: Very young landslide deposits (late Holocene)

Qyf3: Young alluvial-fan deposits, Unit 3 (middle Holocene)

Qyls: Young landslide deposits (Holocene and late Pleistocene)

Qstu: San Timoteo Beds, upper member (Pleistocene)

Paleosensitivity (PFYC)

5: Very High

3: Moderate

2: Low

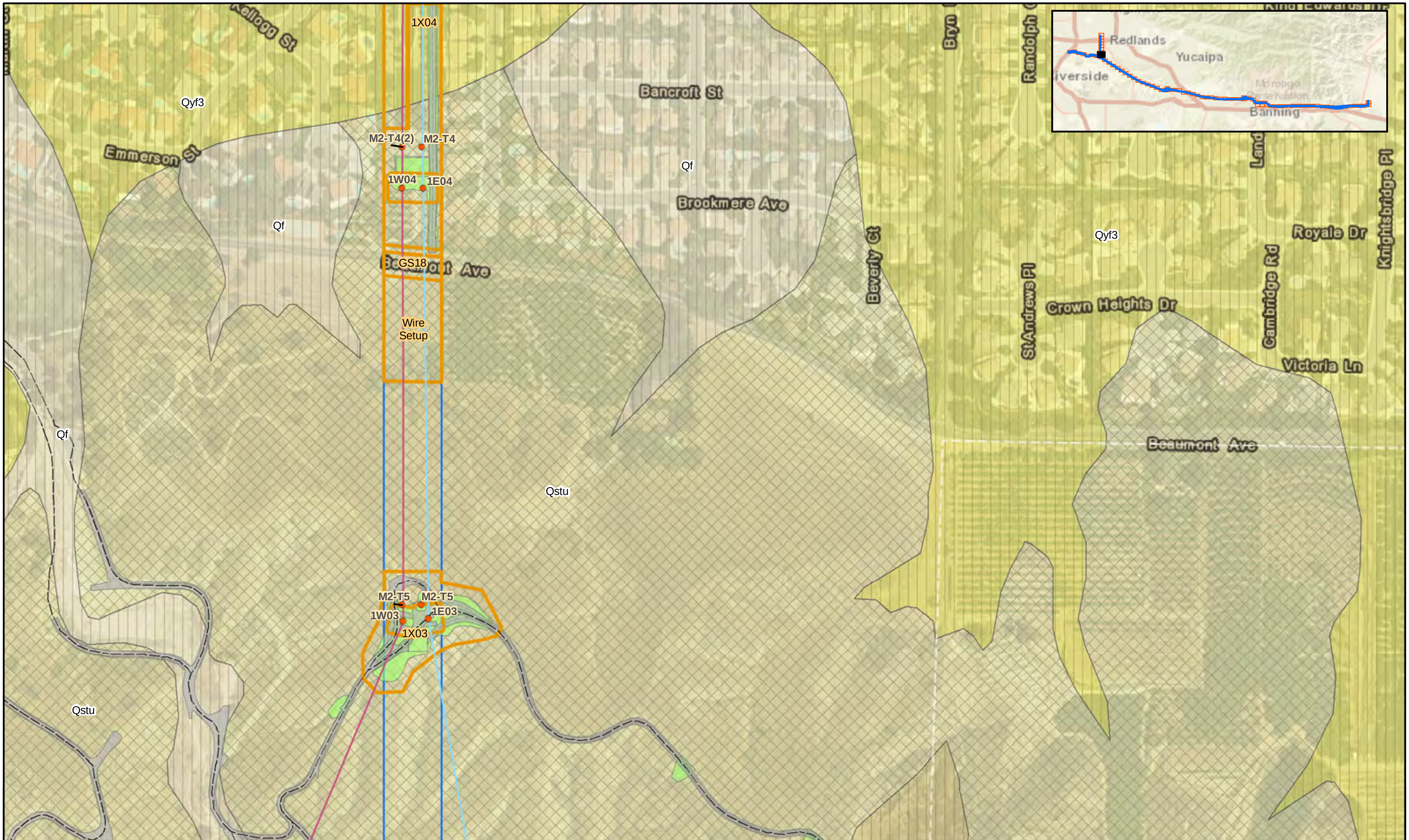
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Geologic Map of the San Bernardino 30' x 60' Quadrangle, California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2003
Base layers from Esri ArcGIS Online



- Structure

Line name

- Devers-San Bernardino
- San Bernardino-San Bernardino Junction

Access road

- Existing
- New
- Construction area
- Access road
- Disturbance limit area

- Existing ROW

Geologic Unit

- Qf: Very young alluvial-fan deposits (late Holocene)
- Qls: Very young landslide deposits (late Holocene)
- Qyf3: Young alluvial-fan deposits, Unit 3 (middle Holocene)
- Qstu: San Timoteo Beds, upper member (Pleistocene)

Paleosensitivity (PFYC)

- 5: Very High
- 2: Low

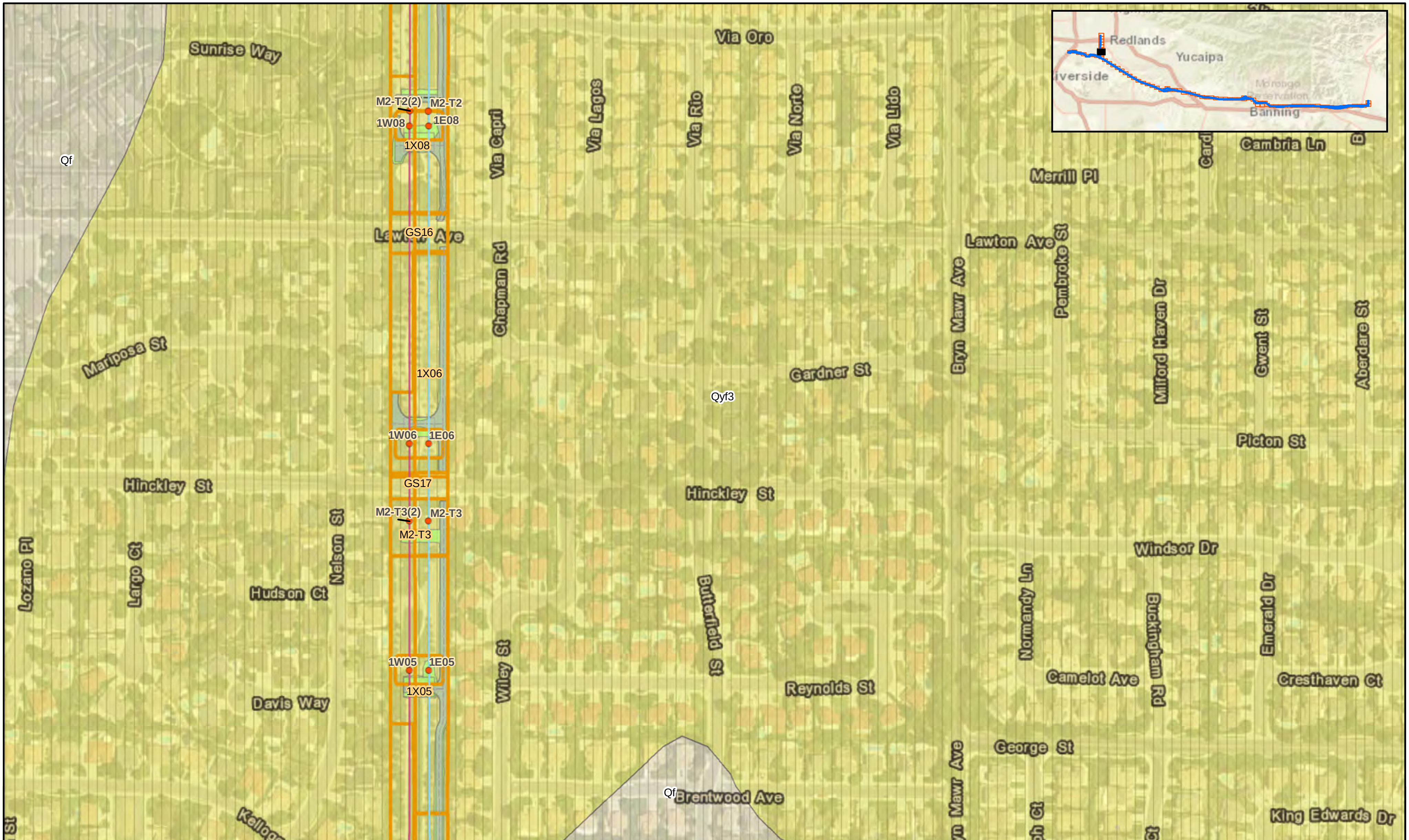
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Geologic Map of the San Bernardino 30' x 60' Quadrangle, California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2003
Base layers from Esri ArcGIS Online



- Structure

Line name

- Devers-San Bernardino
- San Bernardino-San Bernardino Junction

Access road

- Existing
- New
- Construction area
- Access road
- Disturbance limit area

- Existing ROW

Geologic Unit

- Qf: Very young alluvial-fan deposits (late Holocene)
- Qyf3: Young alluvial-fan deposits, Unit 3 (middle Holocene)

Paleosensitivity (PFYC)

- 2: Low

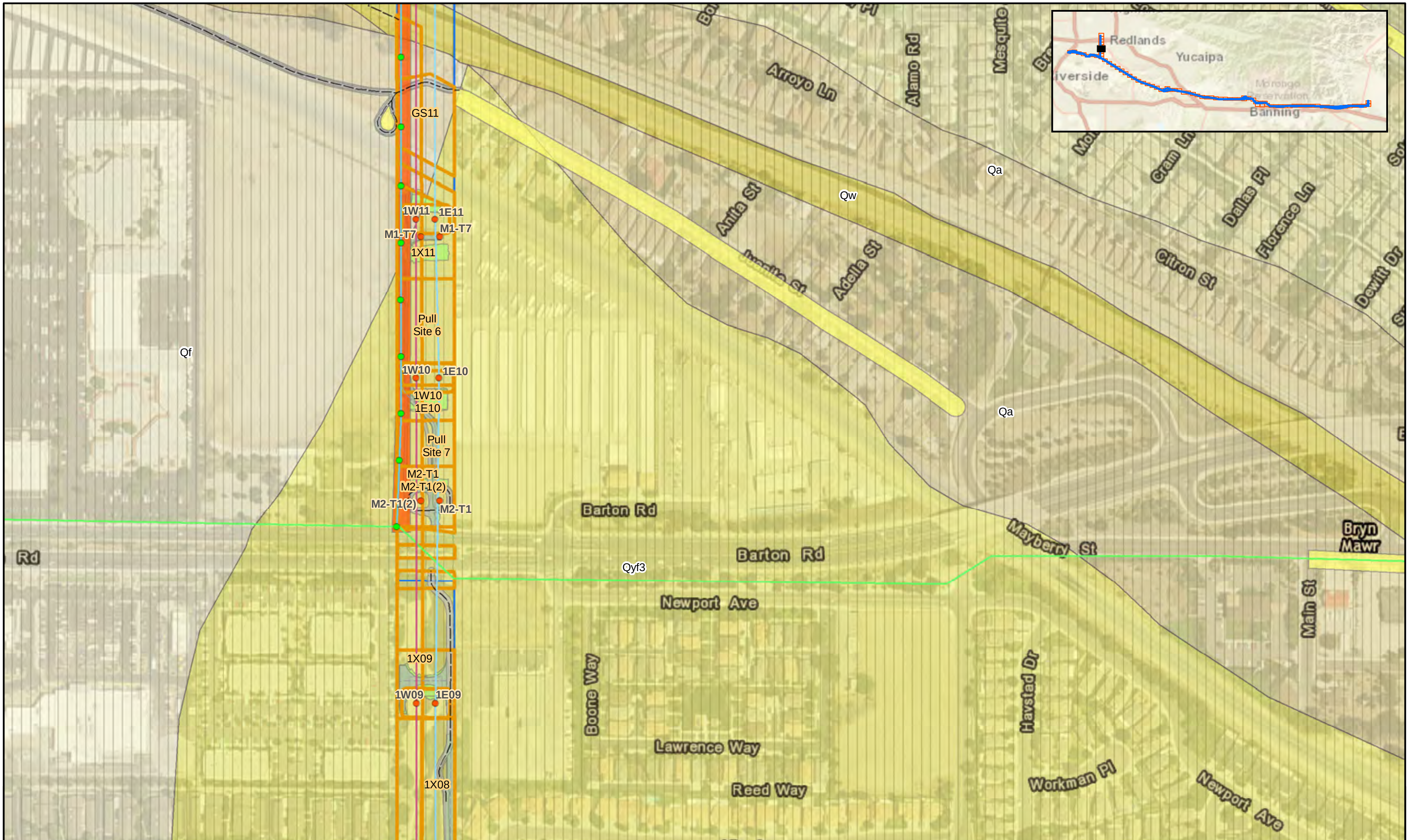
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Geologic Map of the San Bernardino 30' x 60' Quadrangle, California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2003
Base layers from Esri ArcGIS Online



Structure
SubTrans

Line name

Devers-San Bernardino
San Bernardino-San Bernardino Junction
Vista-Moreno FOC (10133)-Tap Splice to Vista

Subtrans Line

San Bernardino-Redlands-Tennessee-Yucaipa
San Bernardino-Timoteo-Redlands

Access road

Existing
New
Construction area
SubTrans work area
Disturbance area
Access road
Disturbance limit area
Existing ROW

Geologic Unit

Qa: Very young axial-channel deposits (late Holocene)
Qf: Very young alluvial-fan deposits (late Holocene)
Qw: Very young wash deposits (late Holocene)
Qya3: Young axial channel deposits, Unit 3 (middle Holocene)
Qyf3: Young alluvial-fan deposits, Unit 3 (middle Holocene)

Paleosensitivity (PFYC)

2: Low

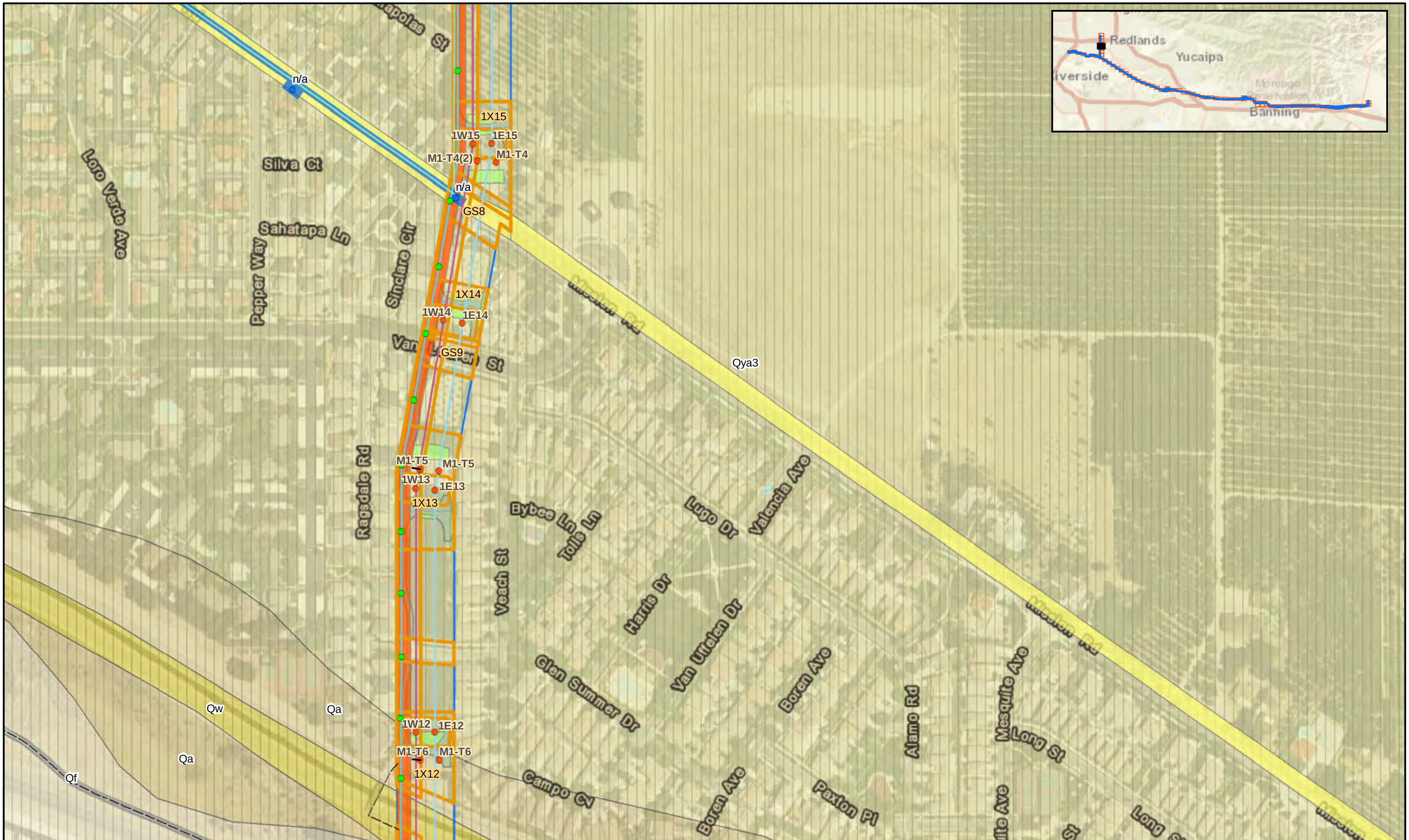
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Geologic Map of the San Bernardino 30' x 60' Quadrangle, California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2003
Base layers from Esri ArcGIS Online



- Telcom
- Structure
- SubTrans

Line name

- Devers-San Bernardino
- San Bernardino-San Bernardino Junction
- Timoteo-Redlands DO(10155)

Subtrans Line

- San Bernardino-Redlands-Tennessee-Yucaipa
- San Bernardino-Timoteo-Redlands

Access road

- Existing
- New
- Construction area
- Telcom area
- SubTrans work area
- Disturbance area
- Access road
- Disturbance limit area
- Existing ROW

Geologic Unit

- Qa: Very young axial-channel deposits (late Holocene)
- Qf: Very young alluvial-fan deposits (late Holocene)
- Qw: Very young wash deposits (late Holocene)
- Qya3: Young axial channel deposits, Unit 3 (middle Holocene)

Paleosensitivity (PFYC)

- 2: Low

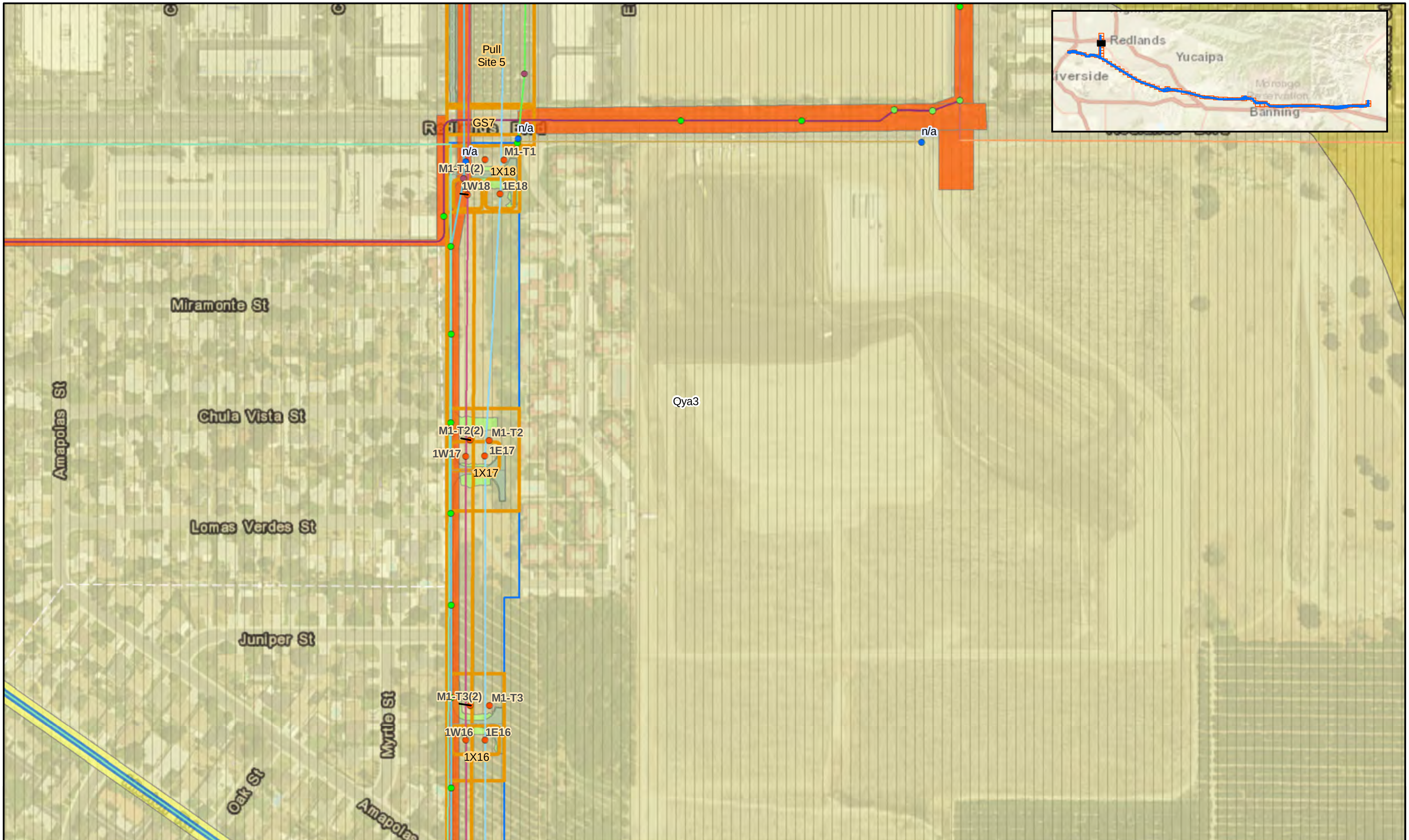
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Geologic Map of the San Bernardino 30' x 60' Quadrangle, California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2003
Base layers from Esri ArcGIS Online



- Telcom
- Structure
- SubTrans

SubTrans

- LST
- TSP

Line name

- Alternant Routh 10081 Sb-Inland DO
- Cable #10081 SB-Inland DO
- Devers-San Bernardino
- Remove ADSS Cable
- San Bernardino-San Bernardino Junction
- Timoteo-Redlands DO(10155)
- UG dip crossing Redlands Blvd

Subtrans Line

- San Bernardino-Redlands-Tennessee-Yucaipa
- San Bernardino-Timoteo
- San Bernardino-Timoteo-Redlands

Access road

- New
- Construction area
- Telcom area
- SubTrans work area
- Disturbance area
- Access road
- Disturbance limit area
- Existing ROW

Geologic Unit

- Qw: Very young wash deposits (late Holocene)
- Qya3: Young axial channel deposits, Unit 3 (middle Holocene)

Paleosensitivity (PFYC)

- 2: Low

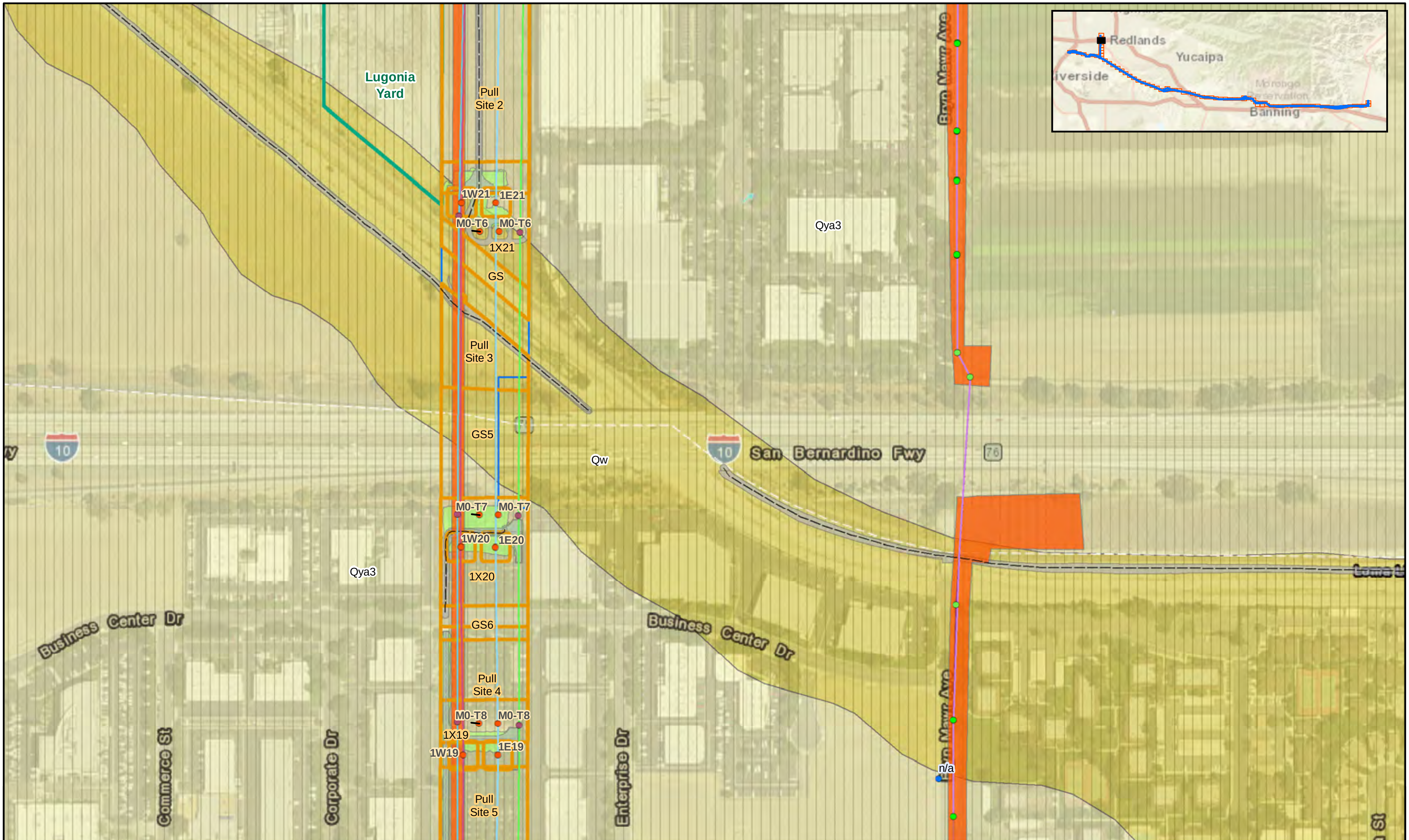
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Geologic Map of the San Bernardino 30' x 60' Quadrangle, California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2003
Base layers from Esri ArcGIS Online



- Telcom
- Structure
- SubTrans

SubTrans

- LST
- TSP

Line name

- Alternant Routh 10081 Sb-Inland DO
- Devers-San Bernardino
- San Bernardino-San Bernardino Junction
- UG dip crossing Redlands Blvd

Subtrans Line

- San Bernardino-Redlands-Tennessee-Yucaipa
- San Bernardino-Timoteo
- San Bernardino-Timoteo-Redlands

Access road

- Existing
- New
- Construction area
- Construction Yard
- SubTrans work area
- Access road
- Disturbance limit area
- Existing ROW

Geologic Unit

- Qw: Very young wash deposits (late Holocene)
- Qya3: Young axial channel deposits, Unit 3 (middle Holocene)

Paleosensitivity (PFYC)

- 2: Low

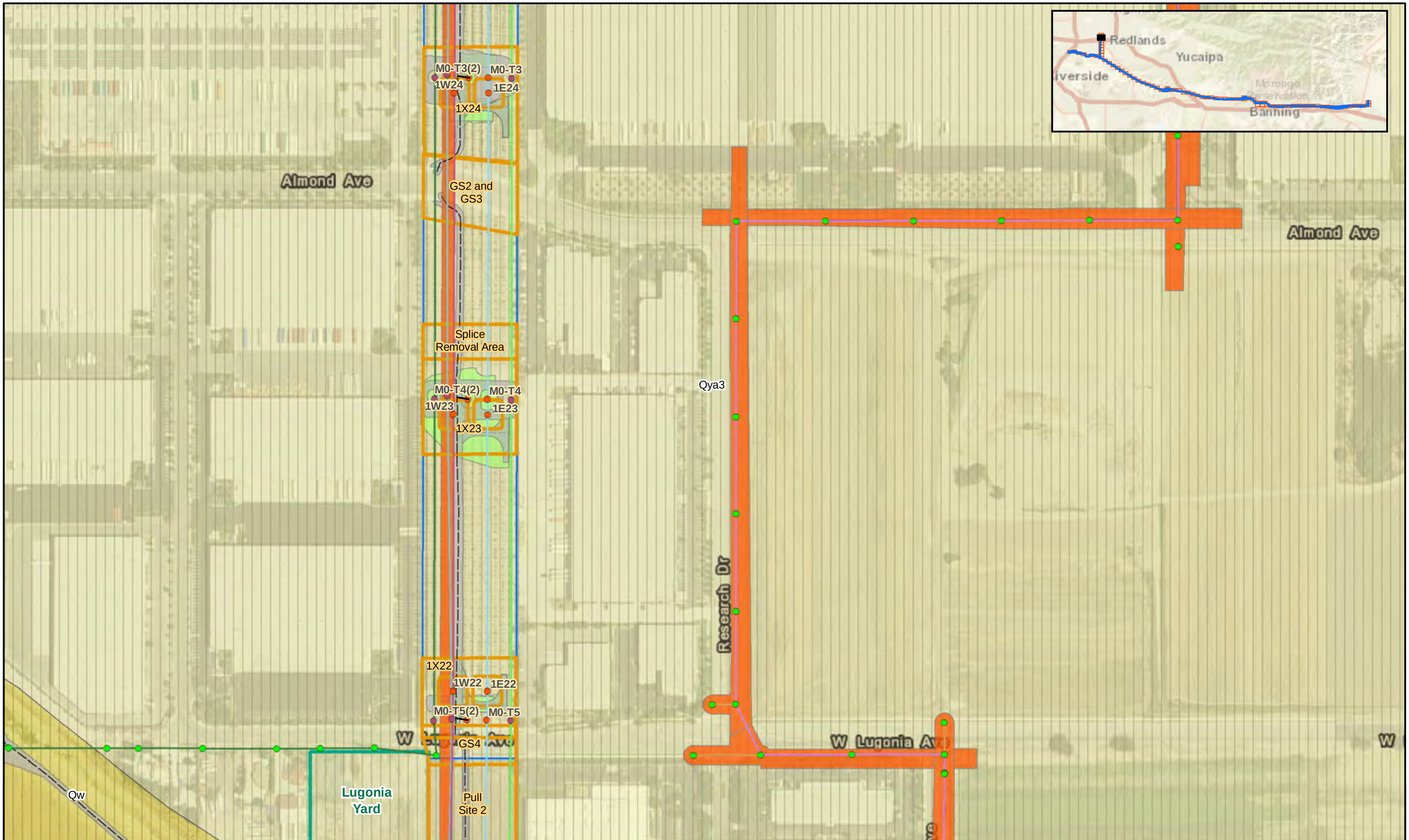
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Geologic Map of the San Bernardino 30' x 60' Quadrangle, California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2003
Base layers from Esri ArcGIS Online



- Structure
- SubTrans

SubTrans

- LST

Line name

- Alternant Routh 10081 Sb-Inland DO
- Devers-San Bernardino
- San Bernardino-San Bernardino Junction

Subtrans Line

- San Bernardino-Cardiff-Unimed-Vista
- San Bernardino-Redlands-Tennessee-Yucaipa
- San Bernardino-Timoteo
- San Bernardino-Timoteo-Redlands
- Span Guy

Access road

- Existing
- New
- Construction area
- Construction Yard
- SubTrans work area
- Access road
- Disturbance limit area
- Existing ROW

Geologic Unit

- Qw: Very young wash deposits (late Holocene)
- Qya3: Young axial channel deposits, Unit 3 (middle Holocene)

Paleosensitivity (PFYC)

- 2: Low

SCE West of Devers

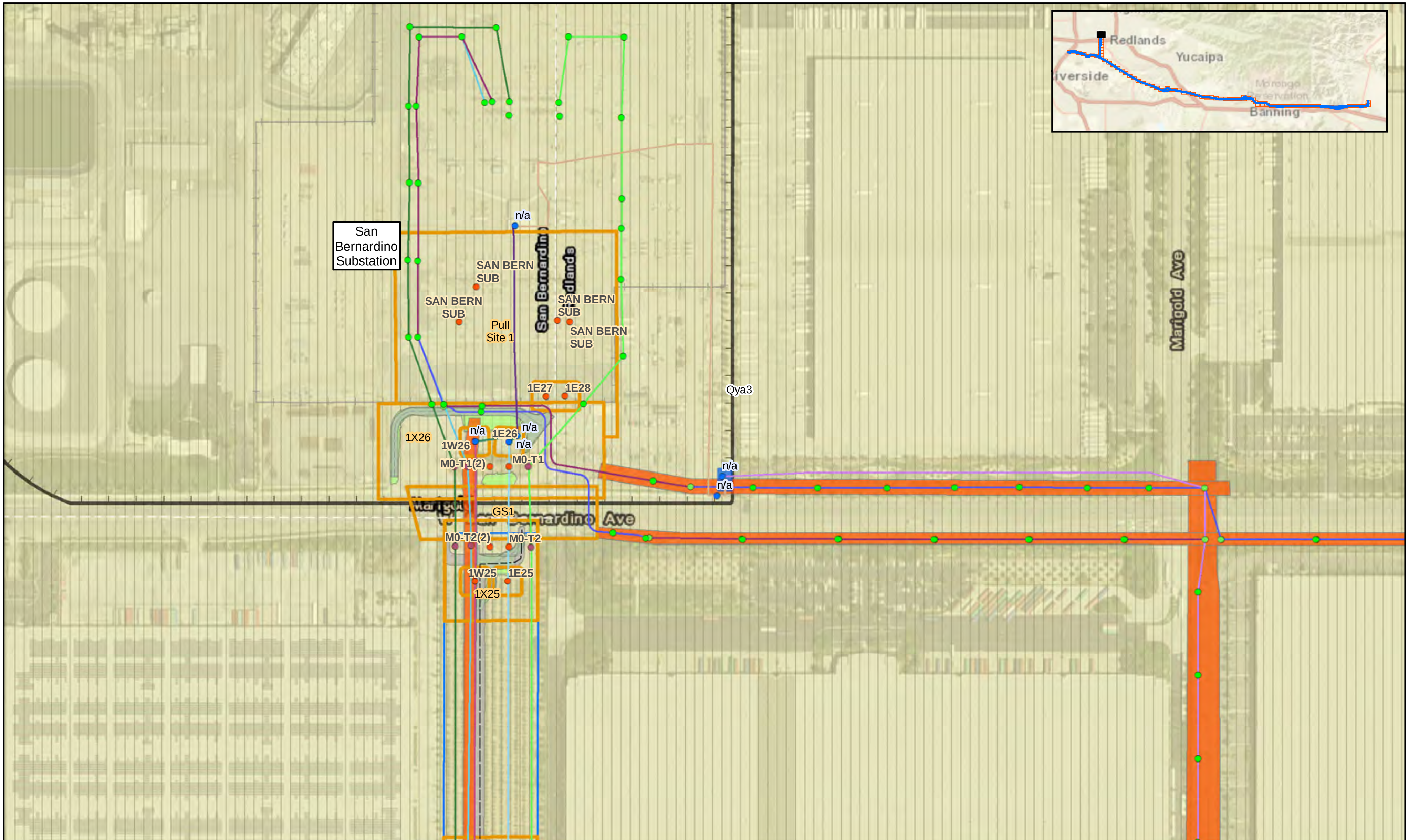
Page 15 of 81

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Geologic Map of the San Bernardino 30' x 60' Quadrangle, California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2003
Base layers from Esri ArcGIS Online



- Telcom
- Structure
- SubTrans

SubTrans
- LST
- TSP

Line name
- Alternant Routh 10081 Sb-Inland DO
- Devers-San Bernardino
- Entrance SB-Inland DO (10081)
- SB-SB junction OPGW (10081) SB Sub
- San Bernardino-San Bernardino Junction
- Splice

Subtrans Line
- San Bernardino-Cardiff-Unimed-Vista
- San Bernardino-Redlands-Tennessee
- San Bernardino-Redlands-Tennessee-Yucaipa
- San Bernardino-Timoteo
- San Bernardino-Timoteo-Redlands

Access road
- Existing
- New
- Construction area
- Telcom area
- SubTrans work area

Substation
- Boundary
- Fence
- Access road

- Disturbance limit area
- Existing ROW

Geologic Unit
- Qya3: Young axial channel deposits, Unit 3 (middle Holocene)

Paleosensitivity (PFYC)
- 2: Low

SCE West of Devers

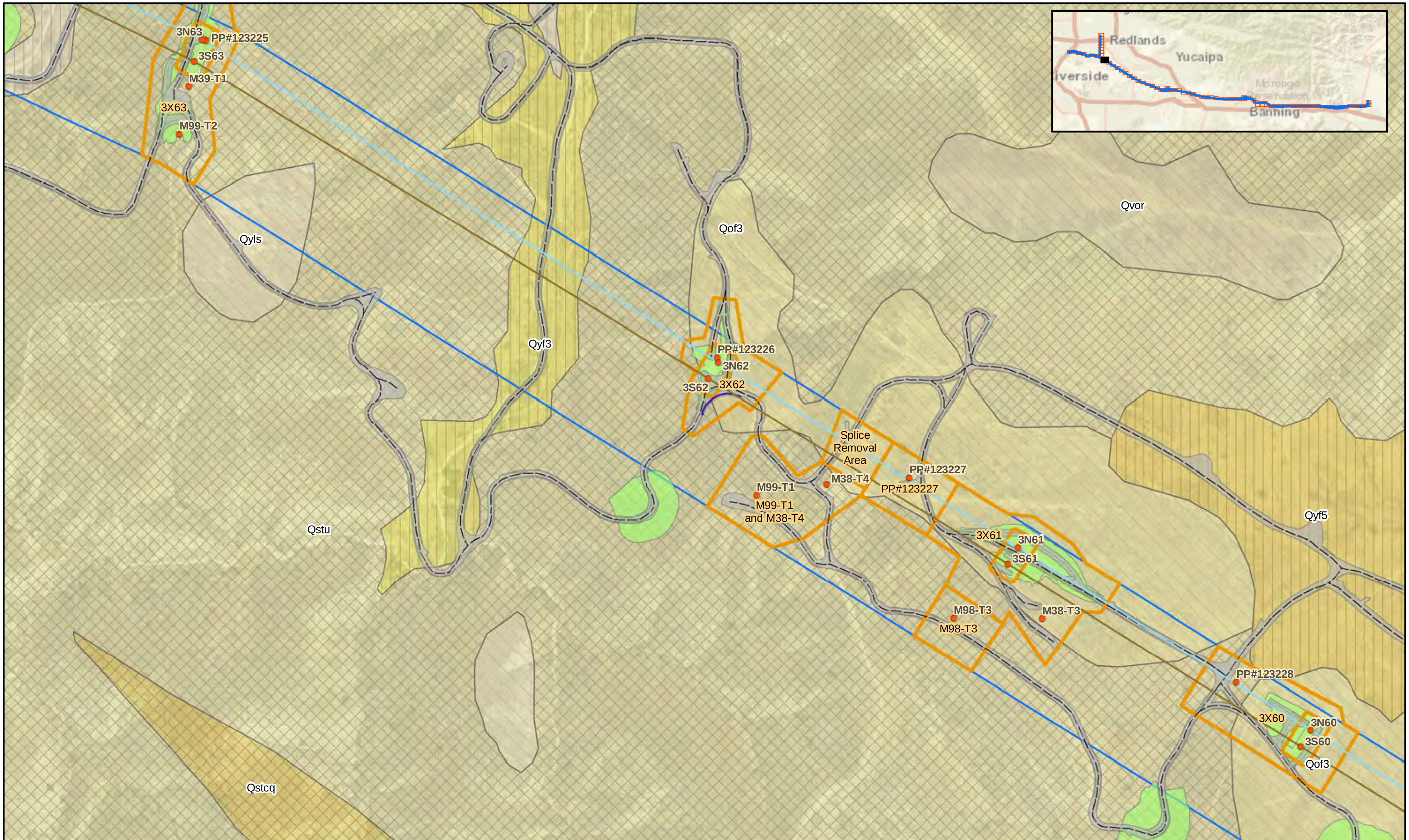
Page 16 of 81

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Geologic Map of the San Bernardino 30' x 60' Quadrangle, California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2003
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-San Bernardino

Devers-Vista

Access road

Existing

New

Retaining wall

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qf: Very young alluvial-fan deposits (late Holocene)

Qyf5: Young alluvial fan deposits, Unit 5 (late Holocene)

Qyf3: Young alluvial-fan deposits, Unit 3 (middle Holocene)

Qyls: Young landslide deposits (Holocene and late Pleistocene)

Qof3: Old alluvial-fan deposits, Unit 3 (late to middle Pleistocene)

Qvor: Very old regolith (middle to early Pleistocene)

Qstu: San Timoteo Beds, upper member (Pleistocene)

Qstcq: San Timoteo Beds, upper member, quartzite-bearing conglomerate beds (Pleistocene and Pliocene)

Paleosensitivity (PFYC)

5: Very High

3: Moderate

2: Low

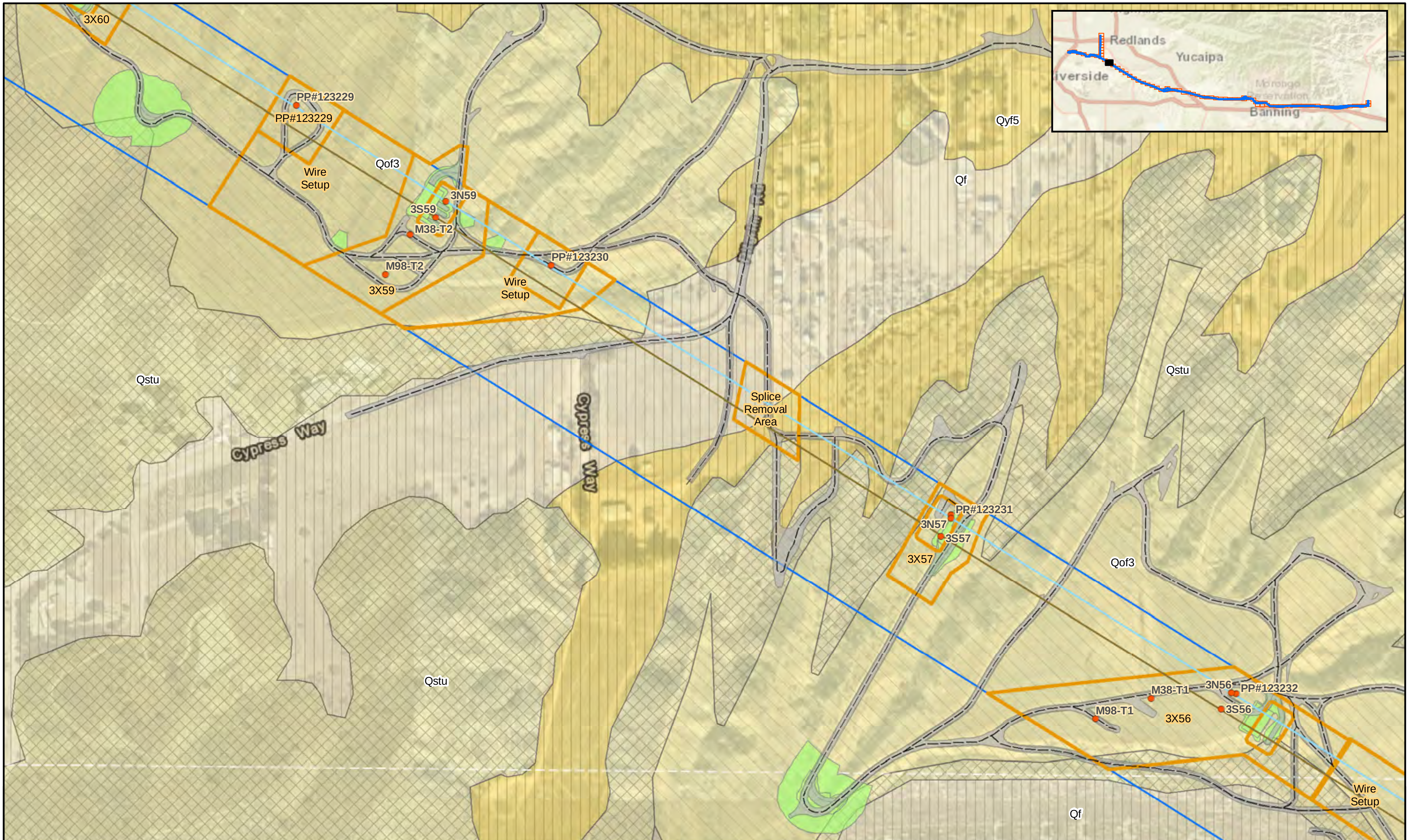
SCE West of Devers

0 250 500 Feet

N

Geology from Preliminary Geologic Map of the San Bernardino 30' x 60' Quadrangle, California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2003

Base layers from Esri ArcGIS Online



● Structure

Line name

Devers-San Bernardino

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qf: Very young alluvial-fan deposits (late Holocene)

Qyf5: Young alluvial fan deposits, Unit 5 (late Holocene)

Qof3: Old alluvial-fan deposits, Unit 3 (late to middle Pleistocene)

Qvoa3: Very old axial-channel deposits, Unit 3 (middle to early Pleistocene)

Qstu: San Timoteo Beds, upper member (Pleistocene)

Paleosensitivity (PFYC)

5: Very High

3: Moderate

2: Low

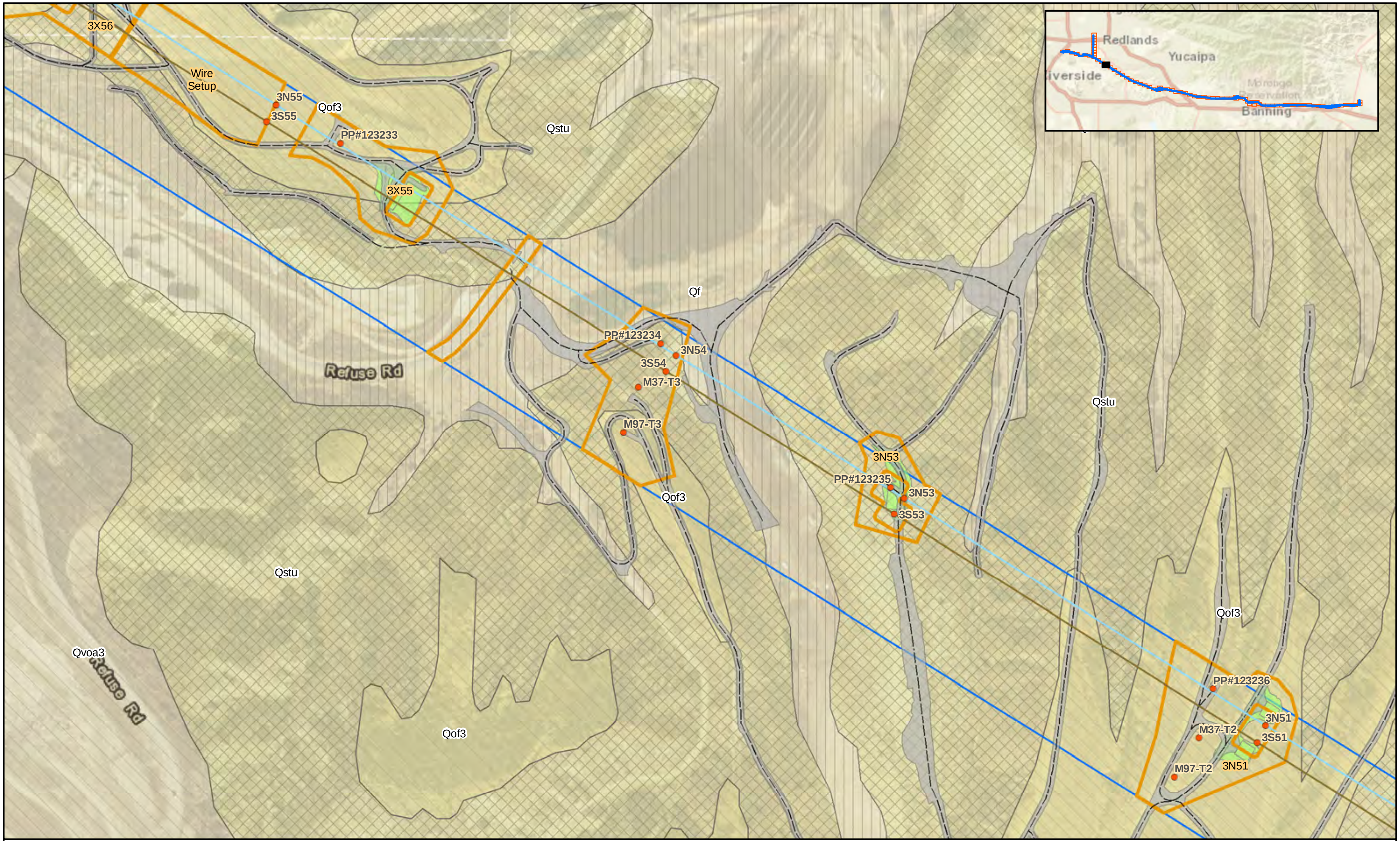
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Geologic Map of the San Bernardino 30' x 60' Quadrangle, California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2003
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-San Bernardino

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qf: Very young alluvial-fan deposits (late Holocene)

Qyls: Young landslide deposits (Holocene and late Pleistocene)

Qof3: Old alluvial-fan deposits, Unit 3 (late to middle Pleistocene)

Qvoa3: Very old axial-channel deposits, Unit 3 (middle to early Pleistocene)

Qstu: San Timoteo Beds, upper member (Pleistocene)

Paleosensitivity (PFYC)

5: Very High

3: Moderate

2: Low

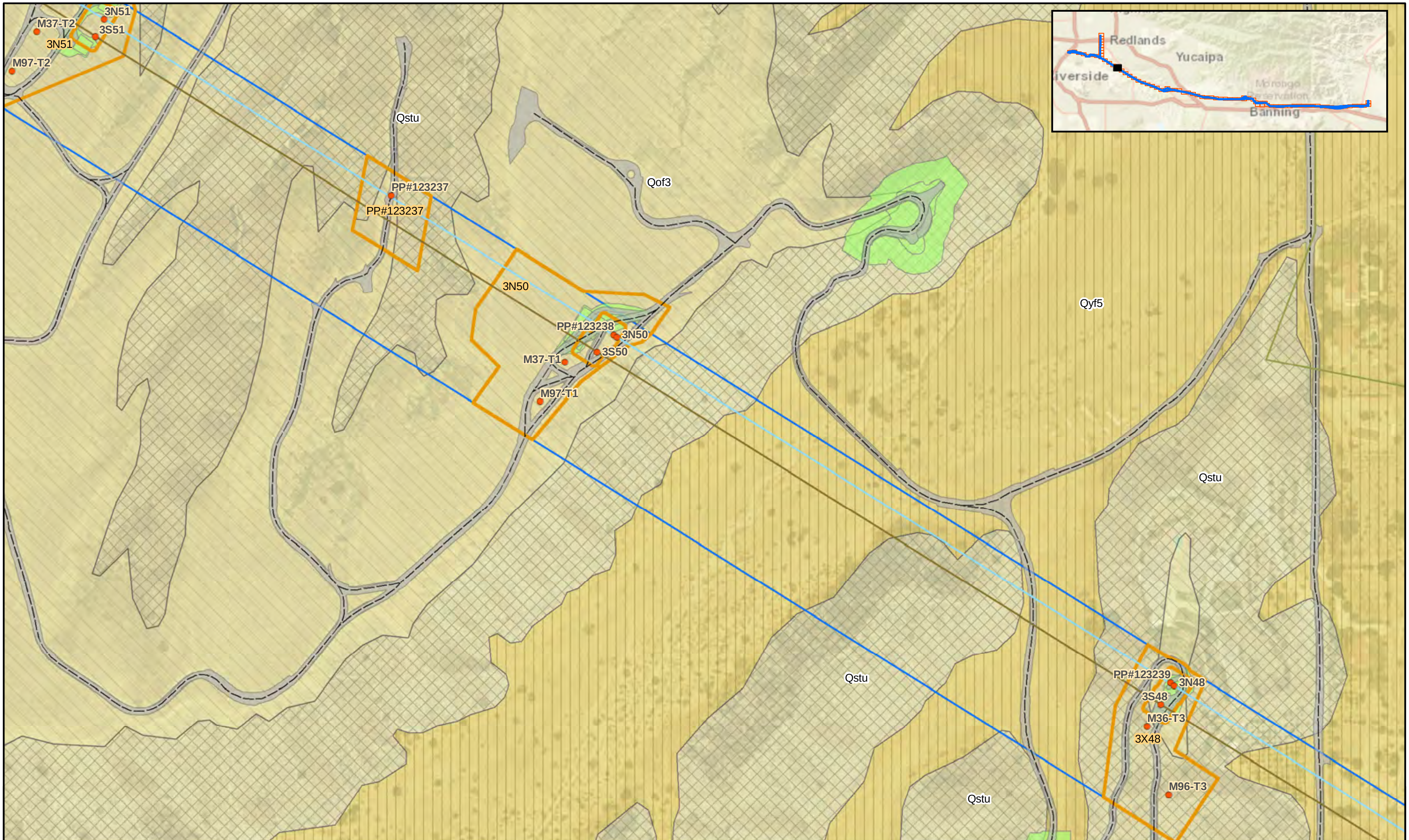
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Geologic Map of the San Bernardino 30' x 60' Quadrangle, California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2003
Base layers from Esri ArcGIS Online



- Structure

Line name

- Devers-San Bernardino
- Devers-Vista
- Vista-Moreno FOC (10133)-Moreno-Tap Splice

Access road

- Existing
- New
- Construction area

- Access road
- Disturbance limit area
- Existing ROW

Geologic Unit

- Qyf5: Young alluvial fan deposits, Unit 5 (late Holocene)
- Qof3: Old alluvial-fan deposits, Unit 3 (late to middle Pleistocene)
- Qstu: San Timoteo Beds, upper member (Pleistocene)

Paleosensitivity (PFYC)

- 5: Very High
- 3: Moderate
- 2: Low

SCE West of Devers

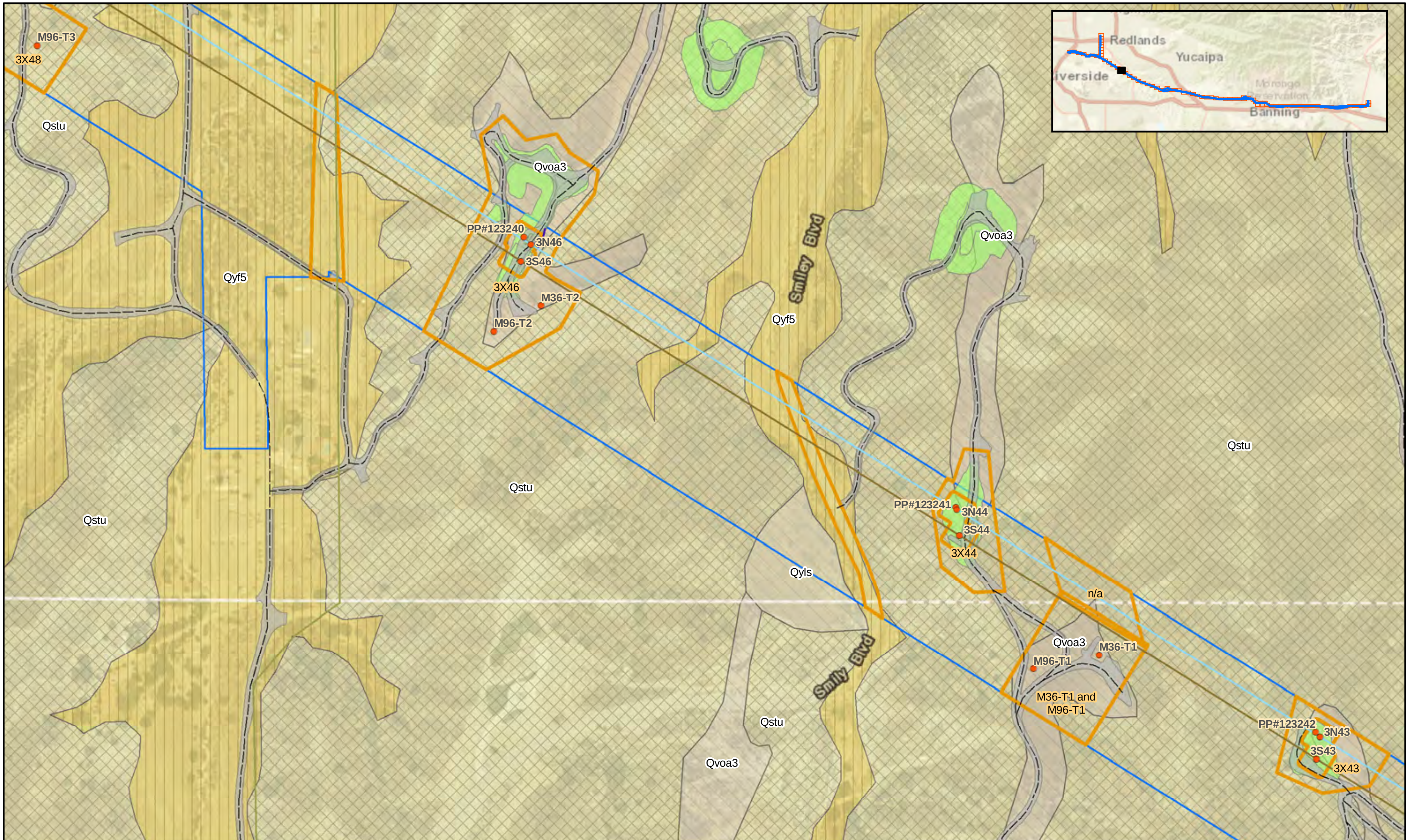
Page 20 of 81

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Geologic Map of the San Bernardino 30' x 60' Quadrangle, California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2003
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-San Bernardino

Devers-Vista

Vista-Moreno FOC (10133)-Moreno-Tap Splice

Access road

Existing

New

Retaining wall

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qyf5: Young alluvial fan deposits, Unit 5 (late Holocene)

Qyls: Young landslide deposits (Holocene and late Pleistocene)

Qof3: Old alluvial-fan deposits, Unit 3 (late to middle Pleistocene)

Qvoa3: Very old axial-channel deposits, Unit 3 (middle to early Pleistocene)

Qstu: San Timoteo Beds, upper member (Pleistocene)

Paleosensitivity (PFYC)

5: Very High

3: Moderate

2: Low

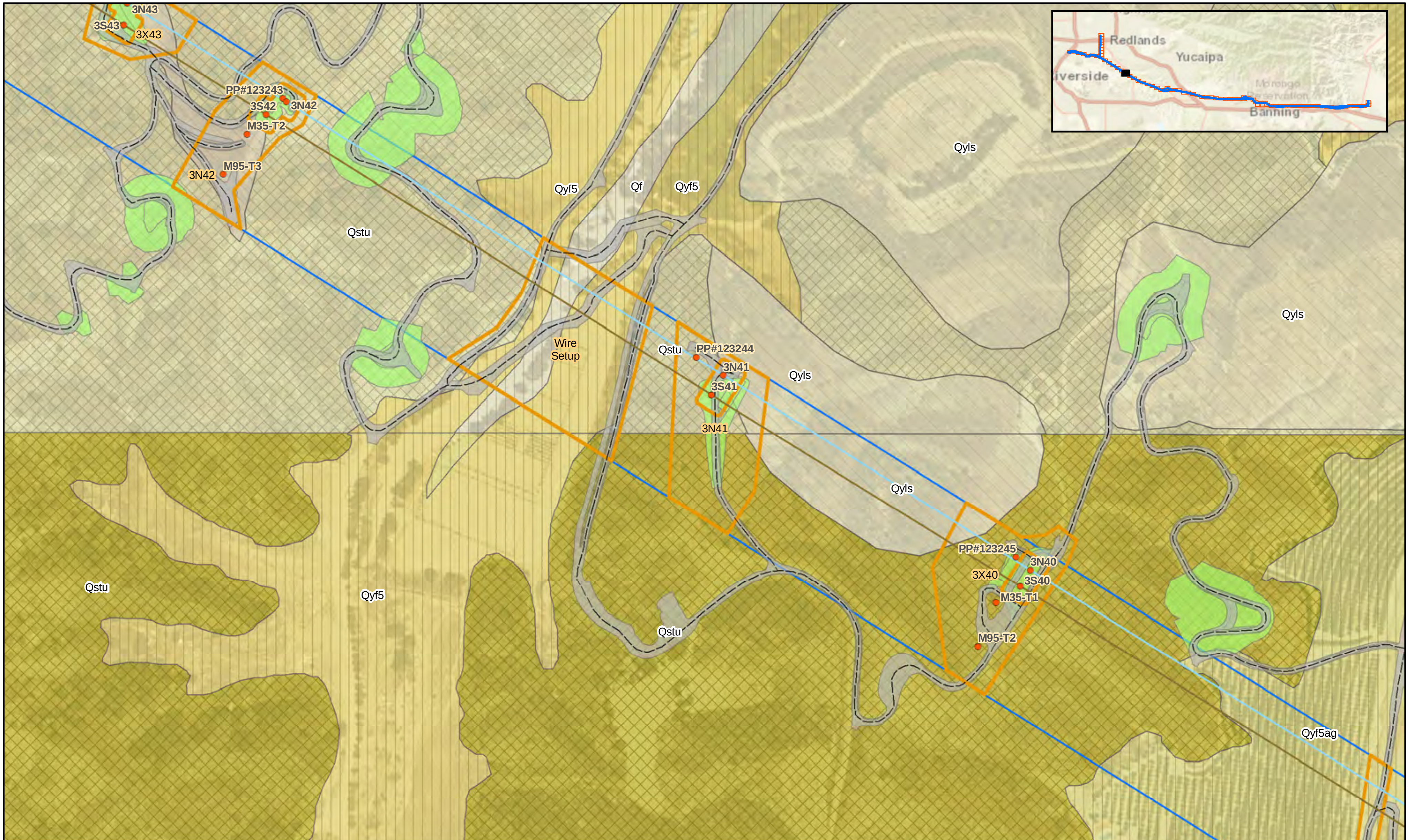
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Geologic Map of the San Bernardino 30' x 60' Quadrangle, California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2003
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-San Bernardino

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qf: Alluvial fan deposits (late Holocene)

Qf: Very young alluvial-fan deposits (late Holocene)

Qyf5: Young alluvial fan deposits, Unit 5 (late Holocene)

Qyf5ag: Young alluvial fan deposits, Unit 5, arenaceous gravel (late Holocene)

Qyls: Young landslide deposits (Holocene and late Pleistocene)

Qvoa3: Very old axial-channel deposits, Unit 3 (middle to early Pleistocene)

Qstu: San Timoteo beds of Frick (1921), upper member (Pleistocene)

Qstu: San Timoteo Beds, upper member (Pleistocene)

Paleosensitivity (PFYC)

5: Very High

3: Moderate

2: Low

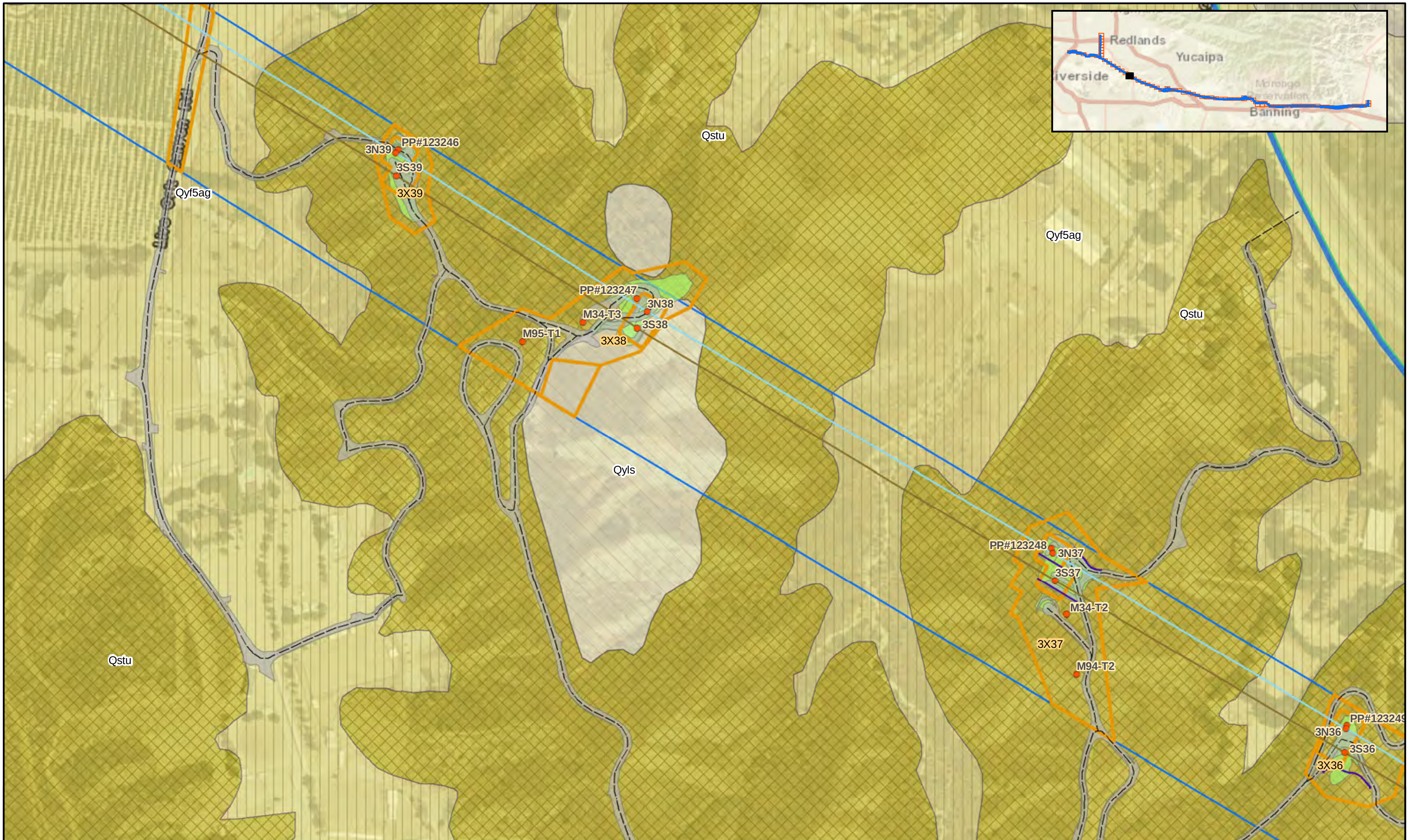
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Geologic Map of the San Bernardino 30' x 60' Quadrangle, California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2003 and Preliminary Digital Geologic Map of the Santa Ana 30' x 60' Quadrangle, Southern California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-San Bernardino

Devers-Vista

Tap 10133 to El Casco Segment 2

Access road

Existing

New

Retaining wall

Construction area

Telcom area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qwag: Wash deposits, arenaceous gravel (late Holocene)

Qya5: Young axial channel deposits, Unit 5 (late Holocene)

Qyf5ag: Young alluvial fan deposits, Unit 5, arenaceous gravel (late Holocene)

Qyls: Young landslide deposits (Holocene and late Pleistocene)

Qstu: San Timoteo beds of Frick (1921), upper member (Pleistocene)

Paleosensitivity (PFYC)

5: Very High

3: Moderate

2: Low

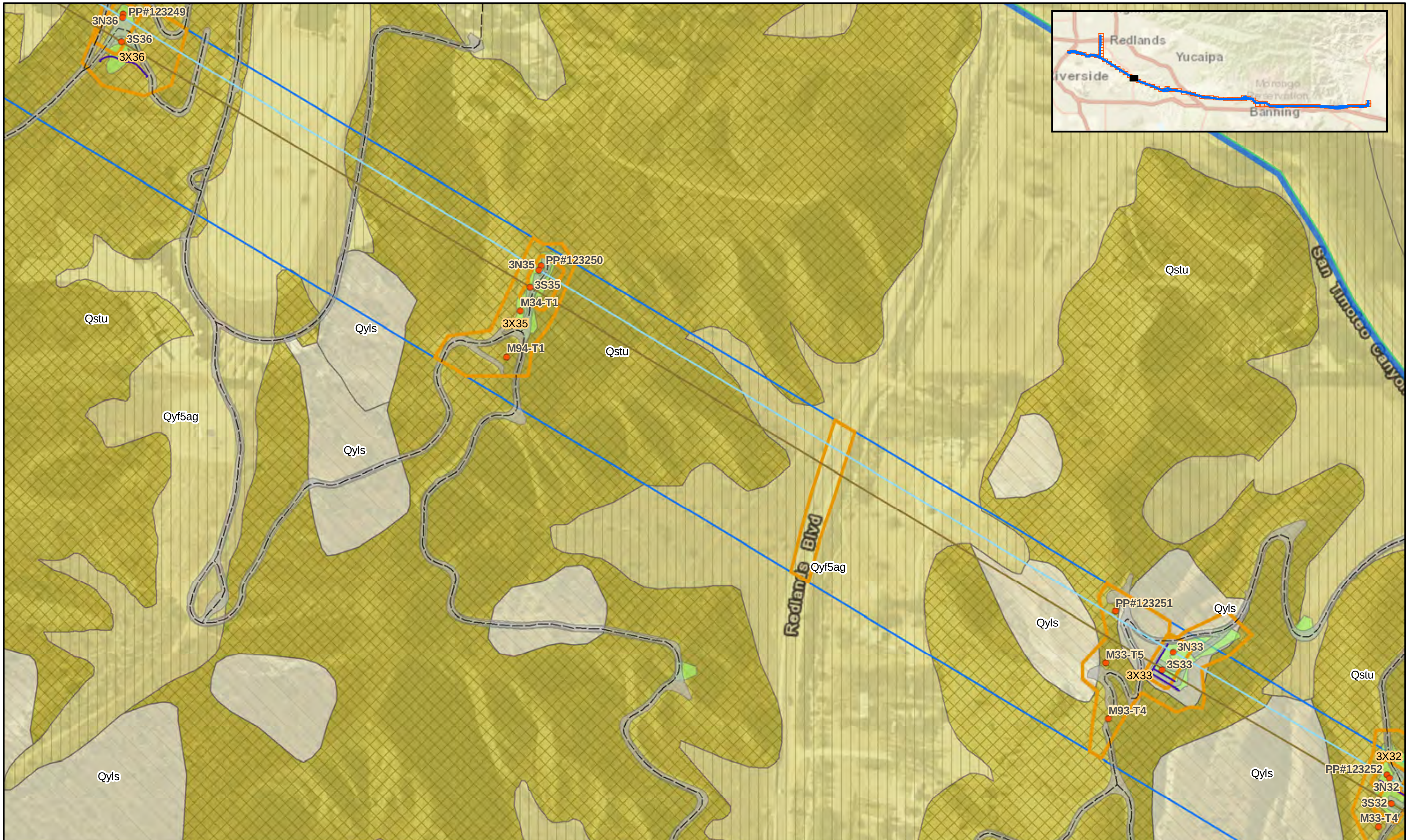
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Digital Geologic Map of the Santa Ana 30' x 60' Quadrangle, Southern California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

- Devers-San Bernardino
- Devers-Vista
- Tap 10133 to El Casco Segment 2

Access road

- Existing
- New
- Retaining wall
- Construction area

Telcom area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

- Qyf5ag: Young alluvial fan deposits, Unit 5, arenaceous gravel (late Holocene)
- Qyaag: Young axial channel deposits, arenaceous gravel (Holocene and late Pleistocene)
- Qyls: Young landslide deposits (Holocene and late Pleistocene)
- Qstu: San Timoteo beds of Frick (1921), upper member (Pleistocene)

Paleosensitivity (PFYC)

- 5: Very High
- 3: Moderate
- 2: Low

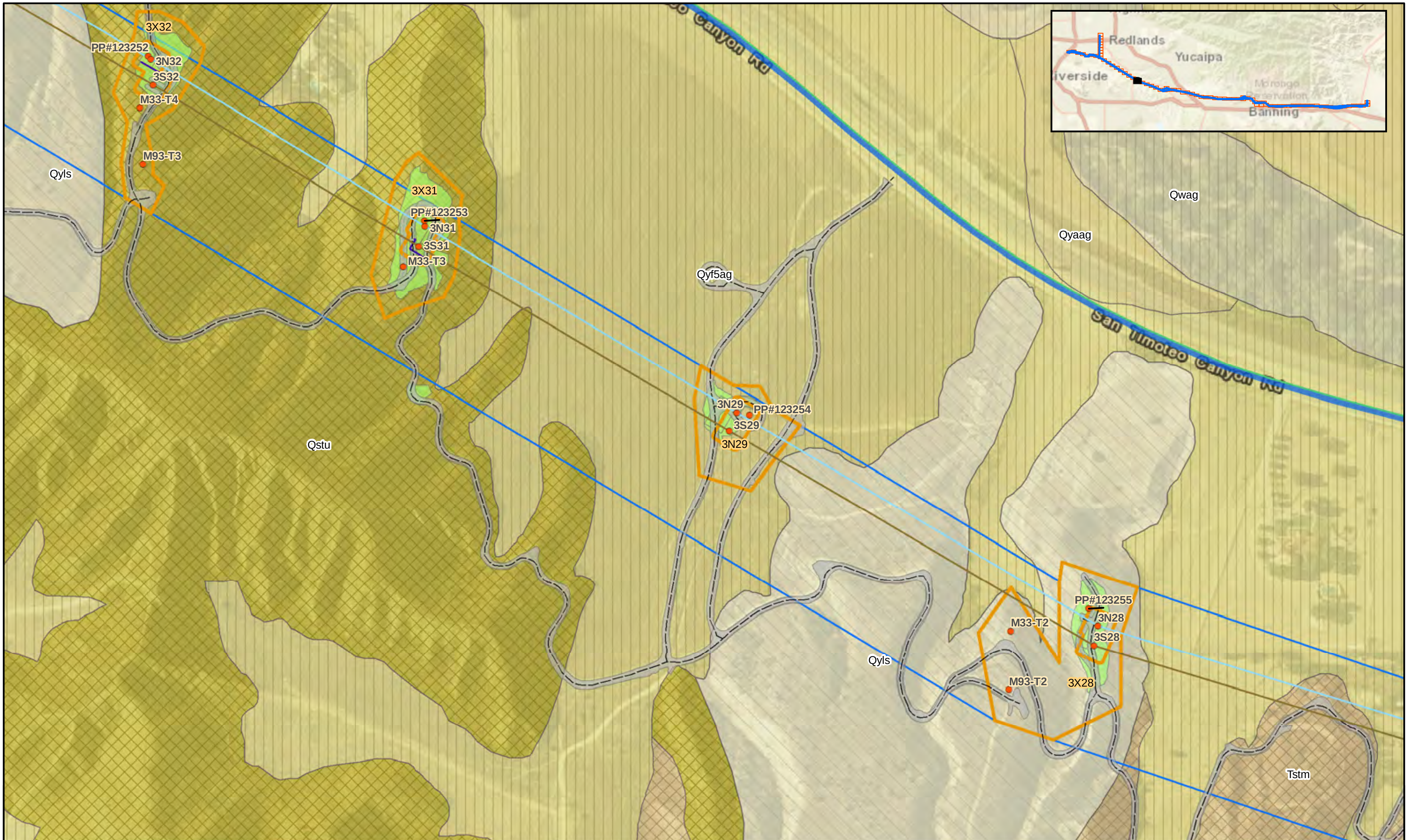
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Digital Geologic Map of the Santa Ana 30' x 60' Quadrangle, Southern California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-San Bernardino

Devers-Vista

Tap 10133 to El Casco Segment 2

Access road

Existing

New

Retaining wall

Construction area

Telcom area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qwag: Wash deposits, arenaceous gravel (late Holocene)

Qyf5ag: Young alluvial fan deposits, Unit 5, arenaceous gravel (late Holocene)

Qyaag: Young axial channel deposits, arenaceous gravel (Holocene and late Pleistocene)

Qyls: Young landslide deposits (Holocene and late Pleistocene)

Qstu: San Timoteo beds of Frick (1921), upper member (Pleistocene)

Tstm: San Timoteo beds of Frick (1921), middle member (Pliocene)

Paleosensitivity (PFYC)

5: Very High

3: Moderate

2: Low

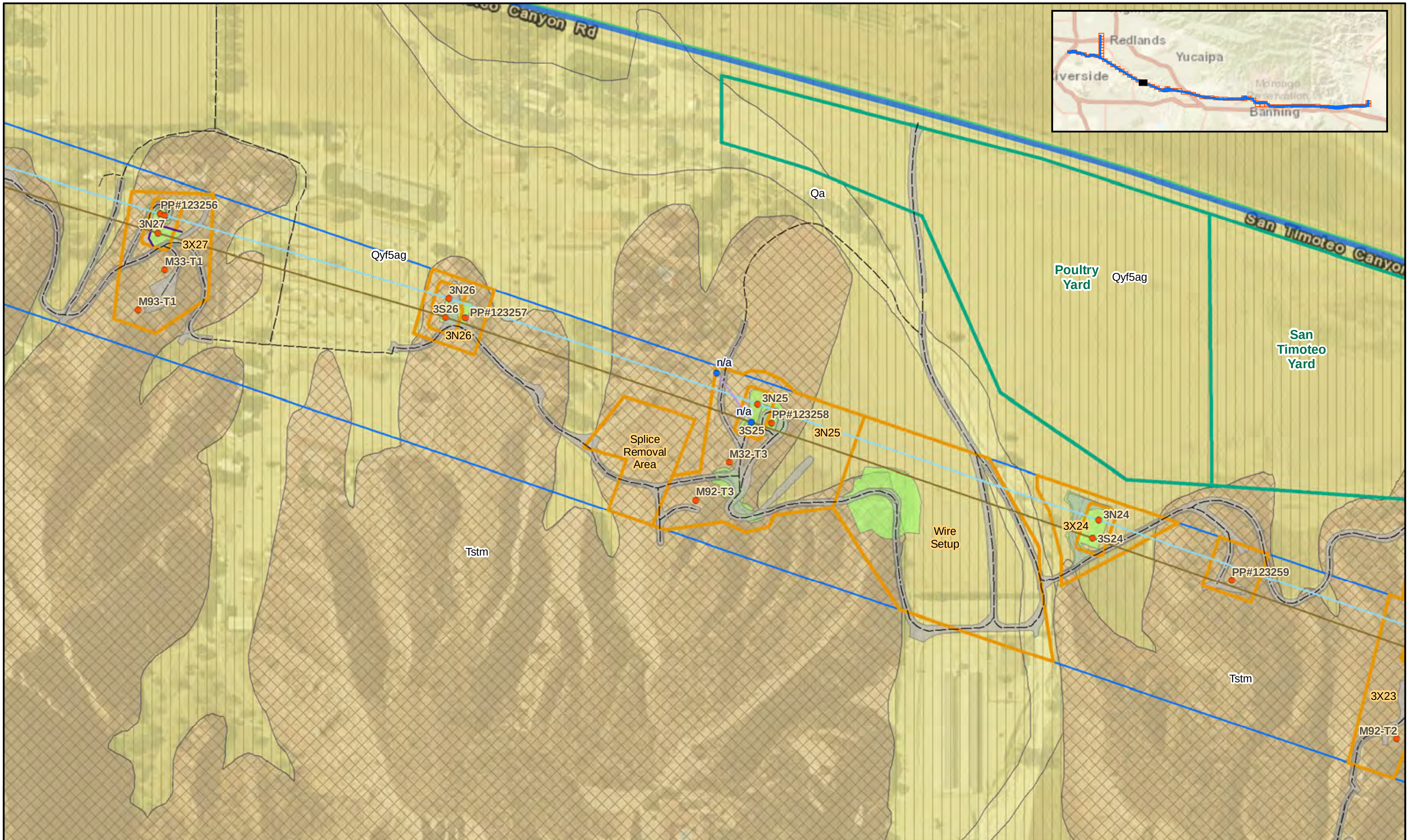
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Digital Geologic Map of the Santa Ana 30' x 60' Quadrangle, Southern California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2004
Base layers from Esri ArcGIS Online



Telcom
Structure

Line name

Devers-San Bernardino
Devers-Vista
Tap 10133 to El Casco Segment 2
UG D-V 87 to riser pole

Access road

Existing
New

Retaining wall
Construction area
Construction Yard
Telcom area
Access road
Disturbance limit area
Existing ROW

Geologic Unit

Qa: Axial channel deposits (late Holocene)
Qyf5ag: Young alluvial fan deposits, Unit 5, arenaceous gravel (late Holocene)
Tstm: San Timoteo beds of Frick (1921), middle member (Pliocene)

Paleosensitivity (PFYC)

5: Very High
2: Low

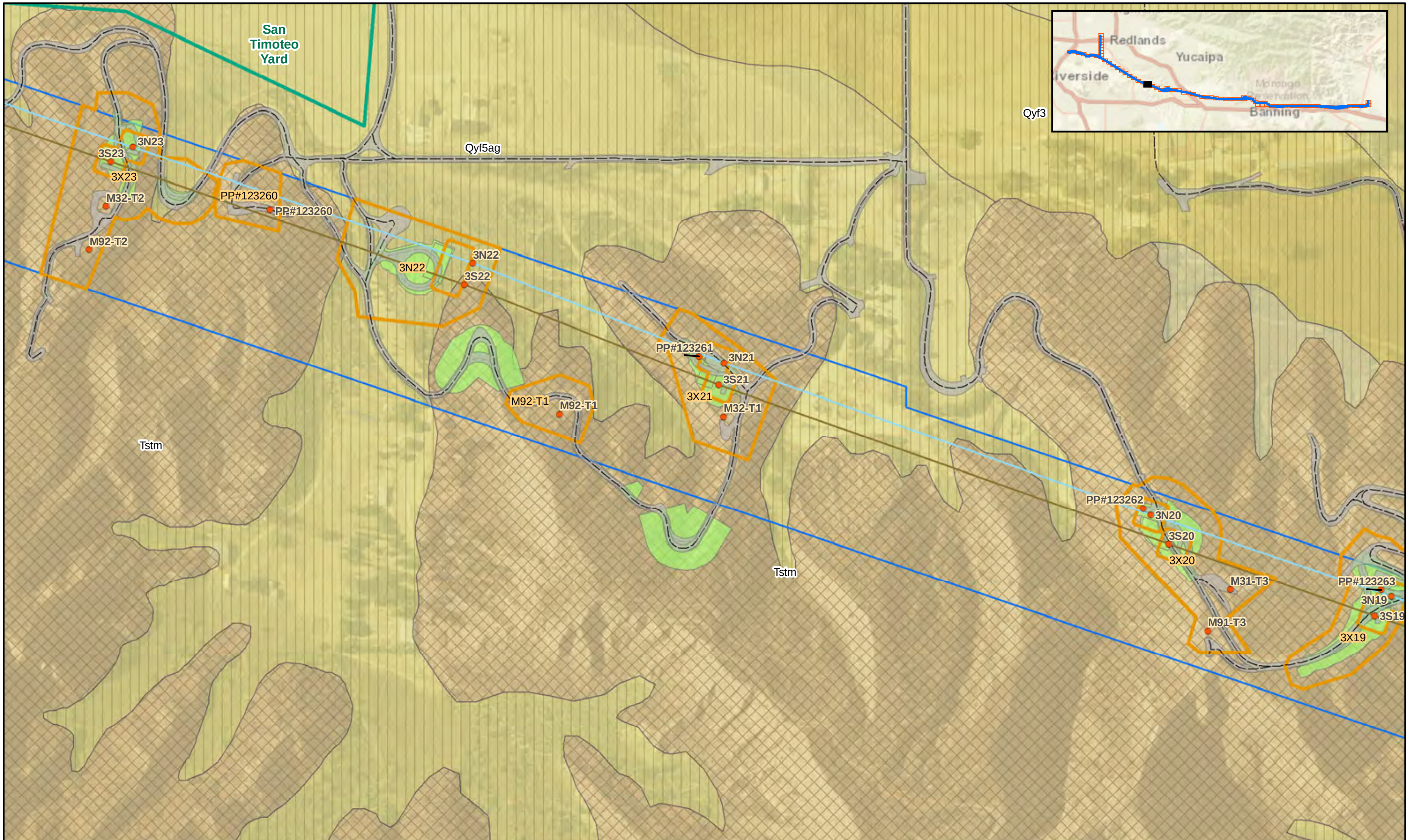
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Digital Geologic Map of the Santa Ana 30' x 60' Quadrangle, Southern California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-San Bernardino

Devers-Vista

Access road

Existing

New

Construction area

Construction Yard

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qyf7: Young alluvial fan deposits, Unit 7 (late Holocene)

Qyf5ag: Young alluvial fan deposits, Unit 5, arenaceous gravel (late Holocene)

Qyf3: Young alluvial fan deposits, Unit 3 (middle Holocene)

Tstm: San Timoteo beds of Frick (1921), middle member (Pliocene)

Paleosensitivity (PFYC)

5: Very High

2: Low

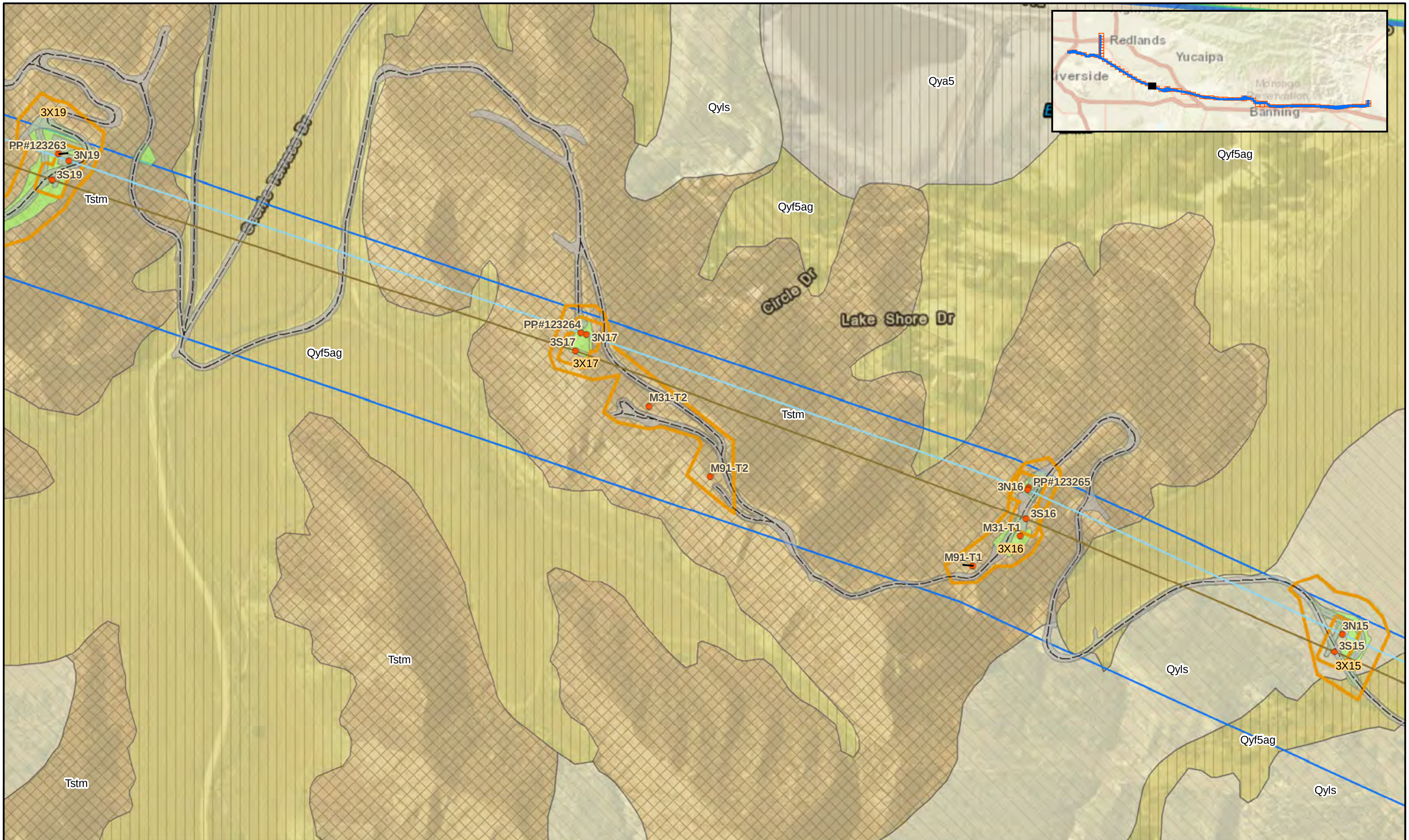
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Digital Geologic Map of the Santa Ana 30' x 60' Quadrangle, Southern California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-San Bernardino

Devers-Vista

Tap 10133 to El Casco Segment 2

Access road

Existing

New

Construction area

Telcom area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qya5: Young axial channel deposits, Unit 5 (late Holocene)

Qyf5ag: Young alluvial fan deposits, Unit 5, arenaceous gravel (late Holocene)

Qyls: Young landslide deposits (Holocene and late Pleistocene)

Tstm: San Timoteo beds of Frick (1921), middle member (Pliocene)

Paleosensitivity (PFYC)

5: Very High

3: Moderate

2: Low

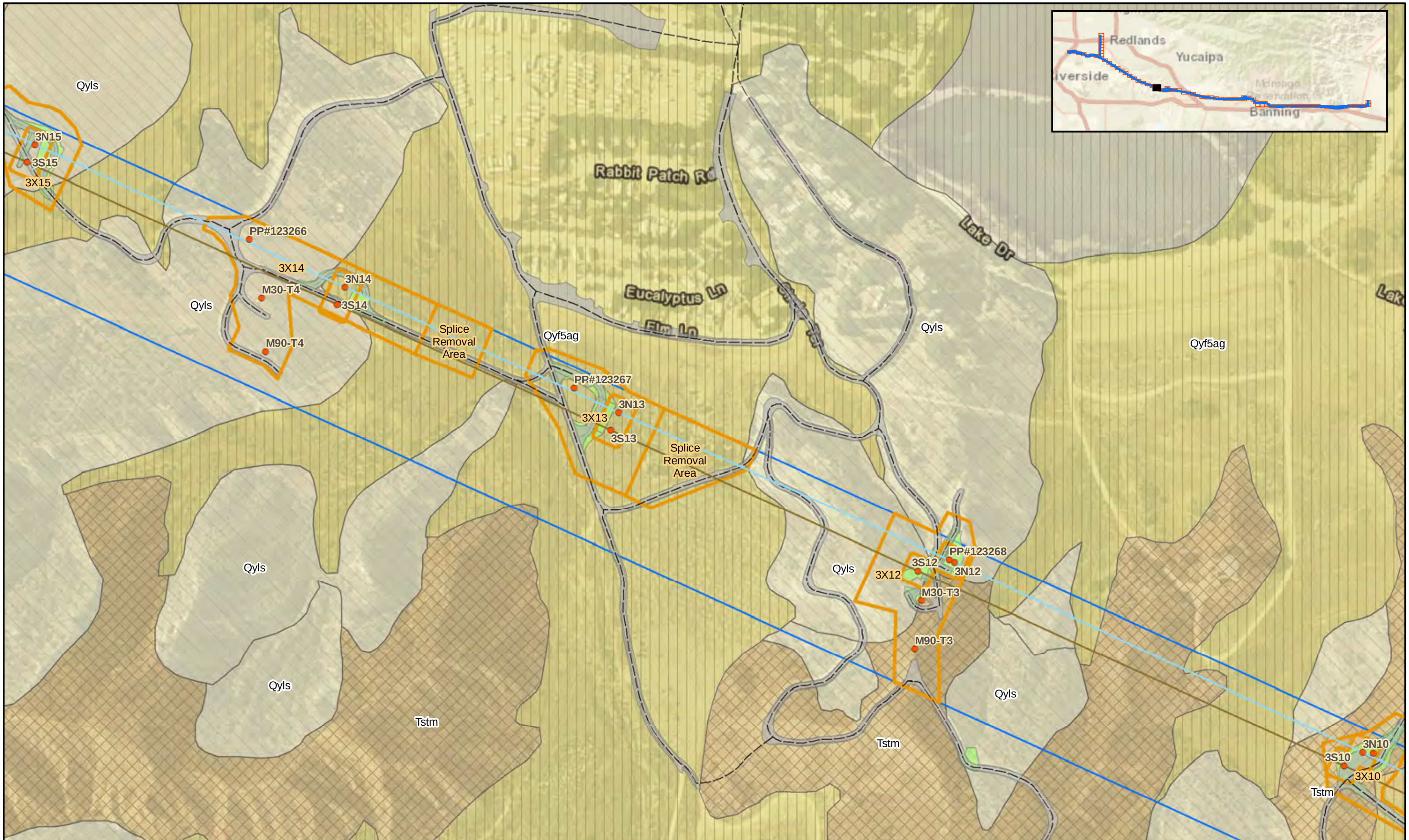
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Digital Geologic Map of the Santa Ana 30' x 60' Quadrangle, Southern California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-San Bernardino

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qya5: Young axial channel deposits, Unit 5 (late Holocene)

Qyf5ag: Young alluvial fan deposits, Unit 5, arenaceous gravel (late Holocene)

Qyls: Young landslide deposits (Holocene and late Pleistocene)

Tstm: San Timoteo beds of Frick (1921), middle member (Pliocene)

Paleosensitivity (PFYC)

5: Very High

3: Moderate

2: Low

SCE West of Devers

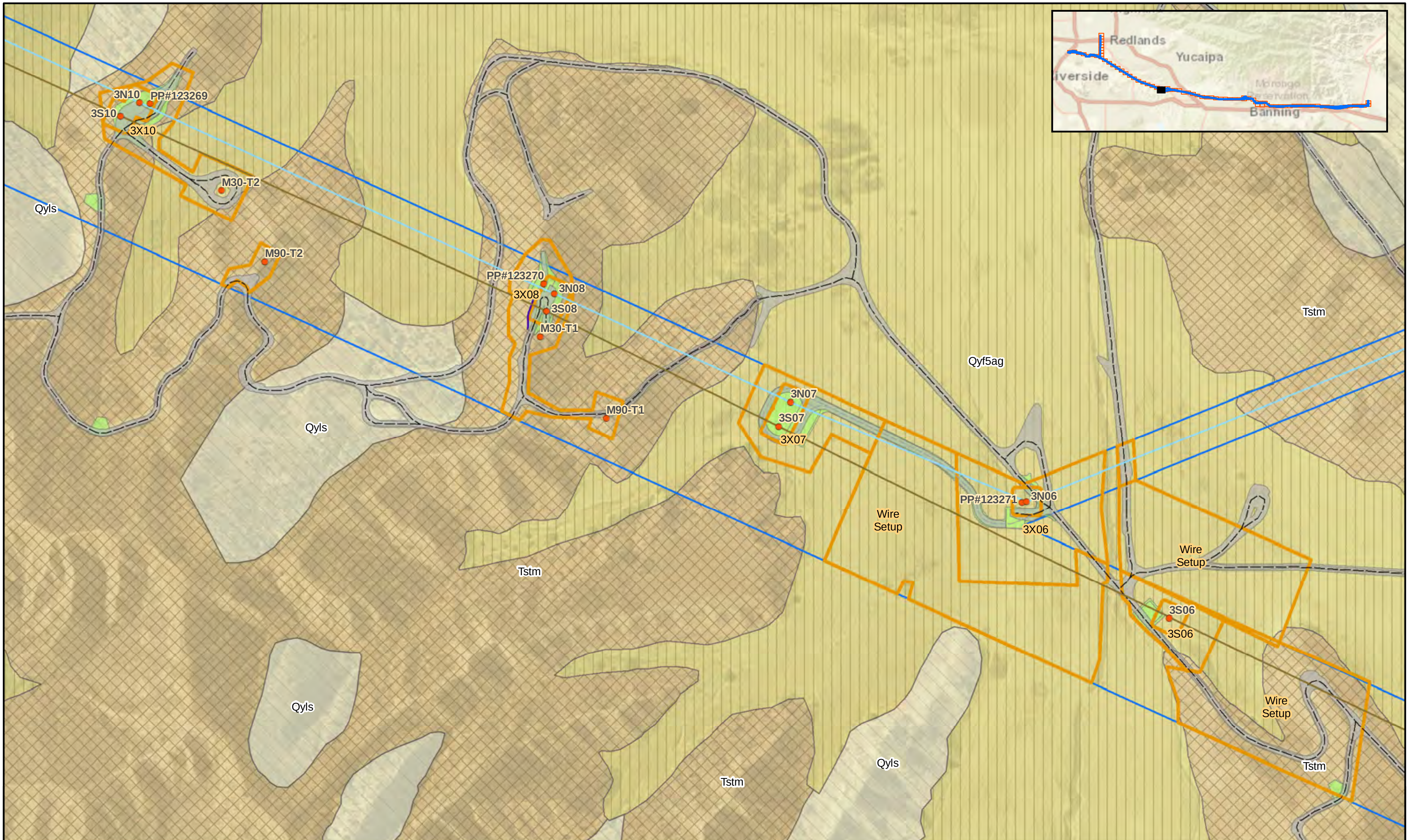
Page 29 of 81

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Digital Geologic Map of the Santa Ana 30' x 60' Quadrangle, Southern California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-San Bernardino

Devers-Vista

Access road

Existing

New

Retaining wall

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qyf5ag: Young alluvial fan deposits, Unit 5, arenaceous gravel (late Holocene)

Qyls: Young landslide deposits (Holocene and late Pleistocene)

Tstm: San Timoteo beds of Frick (1921), middle member (Pliocene)

Paleosensitivity (PFYC)

5: Very High

3: Moderate

2: Low

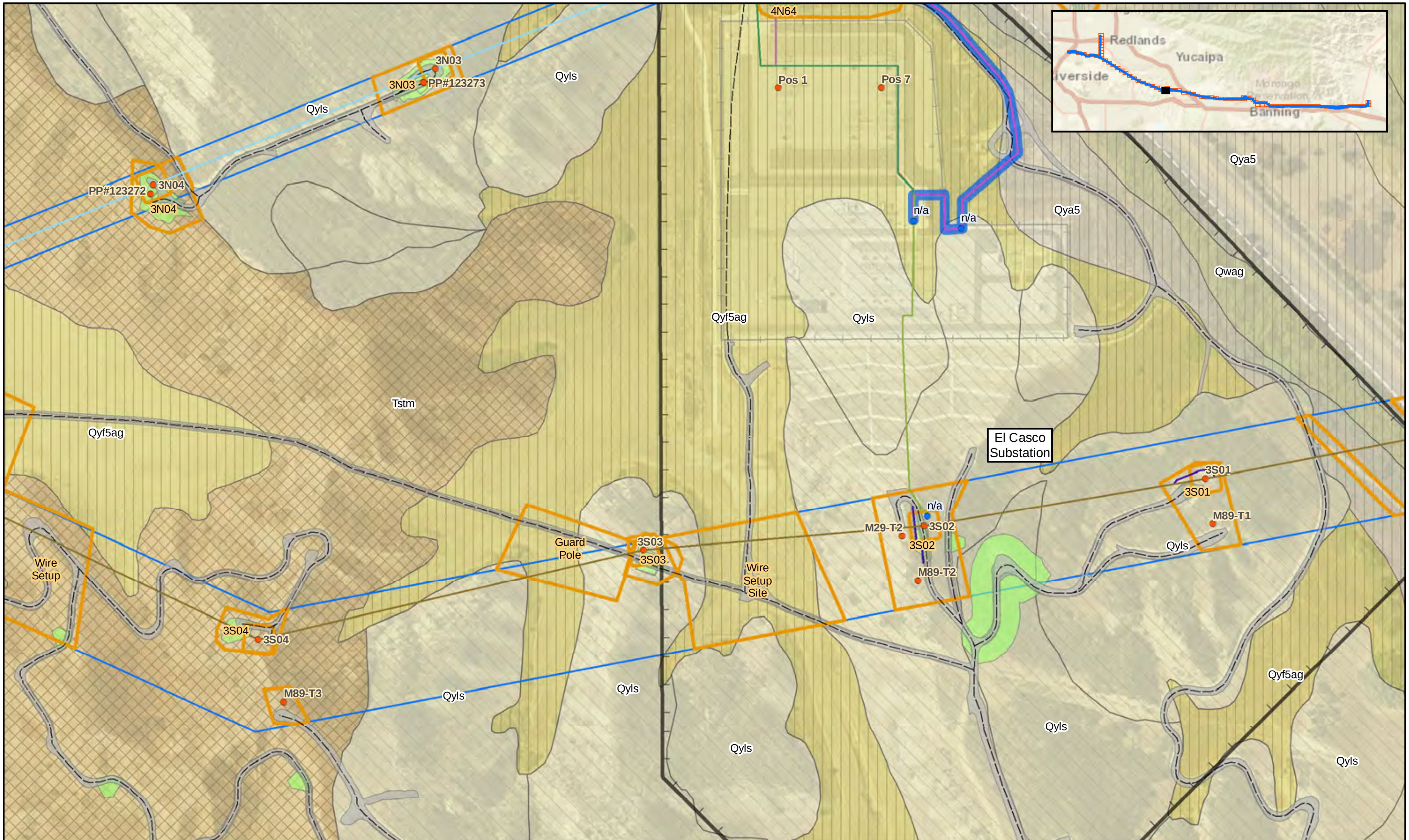
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Digital Geologic Map of the Santa Ana 30' x 60' Quadrangle, Southern California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2004
Base layers from Esri ArcGIS Online



Telcom

Structure

Line name

Devers-El Casco OPGW (09077)

Devers-San Bernardino

Devers-Vista

Devers-Vista OPGW East Tap to El Casco

El Casco Tap

El Casco-SB OPGW (10070) OFNR Cable

Access road

Existing

New

Retaining wall

Construction area

Telcom area

Substation

Boundary

Fence

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qwag: Wash deposits, arenaceous gravel (late Holocene)

Qya5: Young axial channel deposits, Unit 5 (late Holocene)

Qyf5ag: Young alluvial fan deposits, Unit 5, arenaceous gravel (late Holocene)

Qya3: Young axial channel deposits, Unit 3 (middle Holocene)

Qyls: Young landslide deposits (Holocene and late Pleistocene)

Tstm: San Timoteo beds of Frick (1921), middle member (Pliocene)

Paleosensitivity (PFYC)

5: Very High

3: Moderate

2: Low

SCE West of Devers

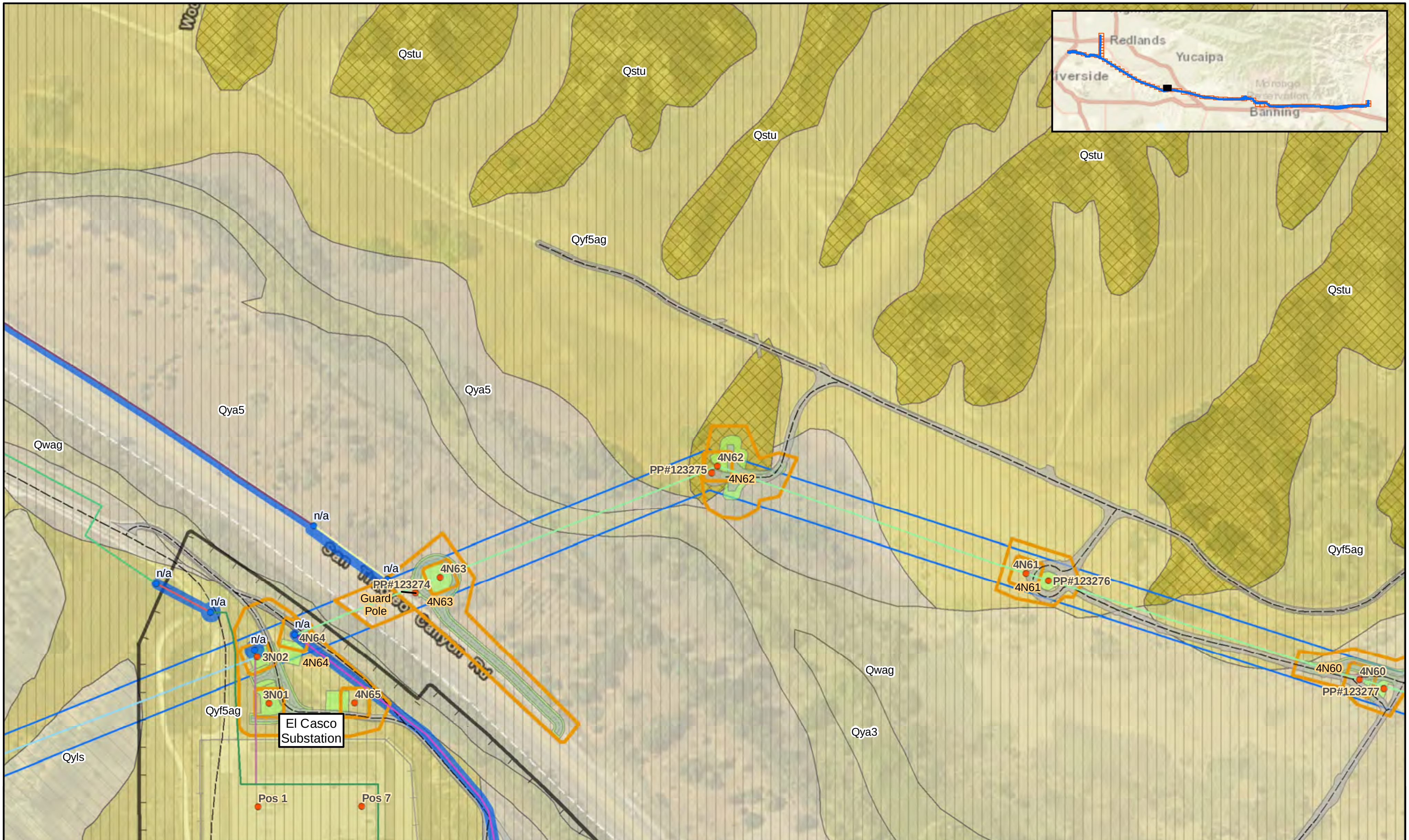
Page 31 of 81

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Digital Geologic Map of the Santa Ana 30' x 60' Quadrangle, Southern California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2004
Base layers from Esri ArcGIS Online



Telcom
Structure

Line name
Devers-El Casco
Devers-El Casco OPGW (09077)
Devers-San Bernardino
El Casco Tap
El Casco-SB OPGW (10070) OFNR Cable
ROUTE TO El Casco
San Timeteo Road UG

Tap 10133 to El Casco Segment 2
Third party Cable

Access road
Existing
New
Construction area
Telcom area

Substation
Boundary
Fence

Access road
Disturbance limit area
Existing ROW

Geologic Unit
Qwag: Wash deposits, arenaceous gravel (late Holocene)
Qya5: Young axial channel deposits, Unit 5 (late Holocene)
Qyf5ag: Young alluvial fan deposits, Unit 5, arenaceous gravel (late Holocene)
Qya3: Young axial channel deposits, Unit 3 (middle Holocene)
Qyls: Young landslide deposits (Holocene and late Pleistocene)
Qstu: San Timoteo beds of Frick (1921), upper member (Pleistocene)

Paleosensitivity (PFYC)
5: Very High
3: Moderate
2: Low

SCE West of Devers

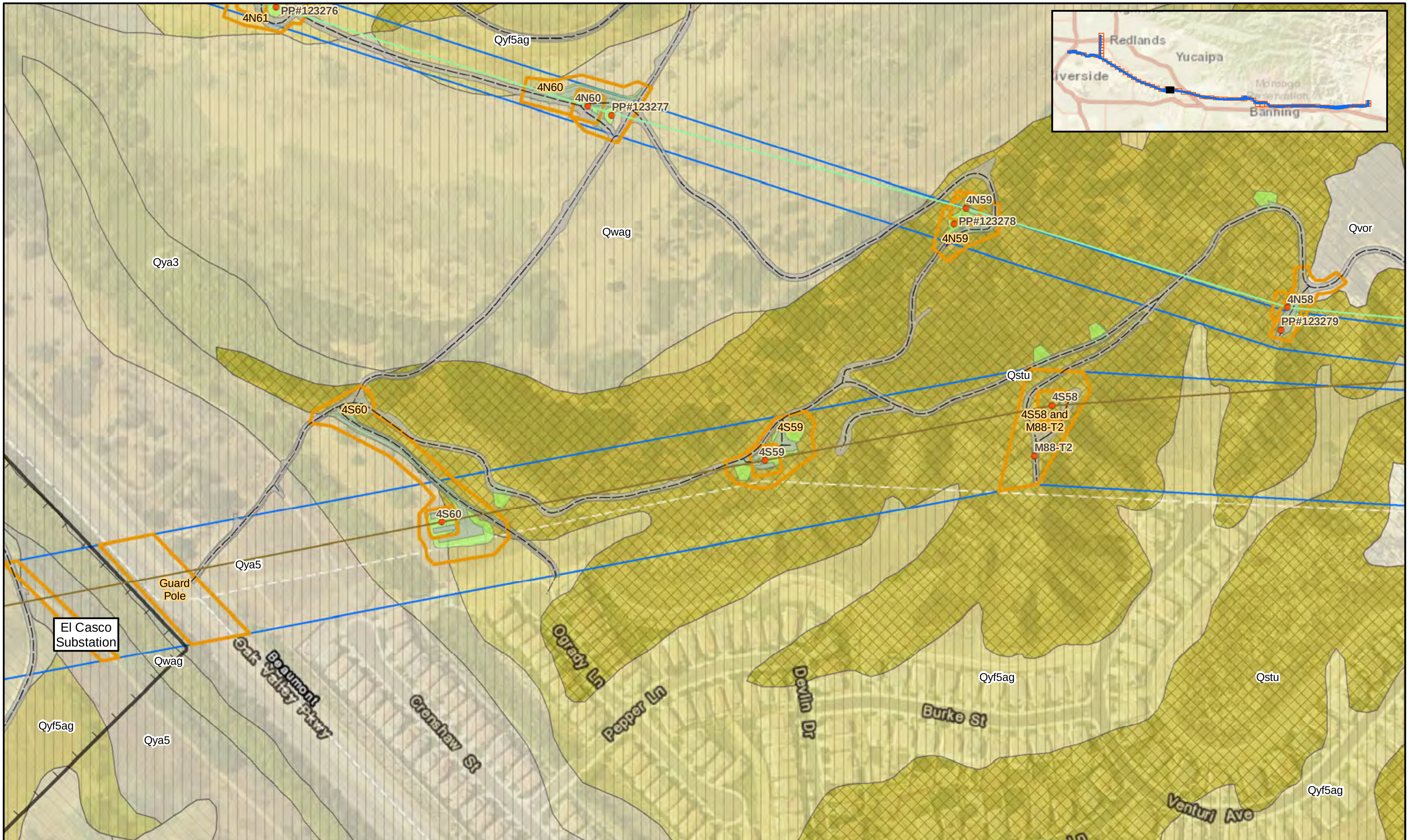
Page 32 of 81

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Digital Geologic Map of the Santa Ana 30' x 60' Quadrangle, Southern California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Retaining wall

Construction area

Substation

Boundary

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qwag: Wash deposits, arenaceous gravel (late Holocene)

Qya5: Young axial channel deposits, Unit 5 (late Holocene)

Qyf5ag: Young alluvial fan deposits, Unit 5, arenaceous gravel (late Holocene)

Qya3: Young axial channel deposits, Unit 3 (middle Holocene)

Qyls: Young landslide deposits (Holocene and late Pleistocene)

Qstu: San Timoteo beds of Frick (1921), upper member (Pleistocene)

Qvor: Very old regolith (Pleistocene)

Paleosensitivity (PFYC)

5: Very High

3: Moderate

2: Low

SCE West of Devers

Page 33 of 81

0 250 500 Feet

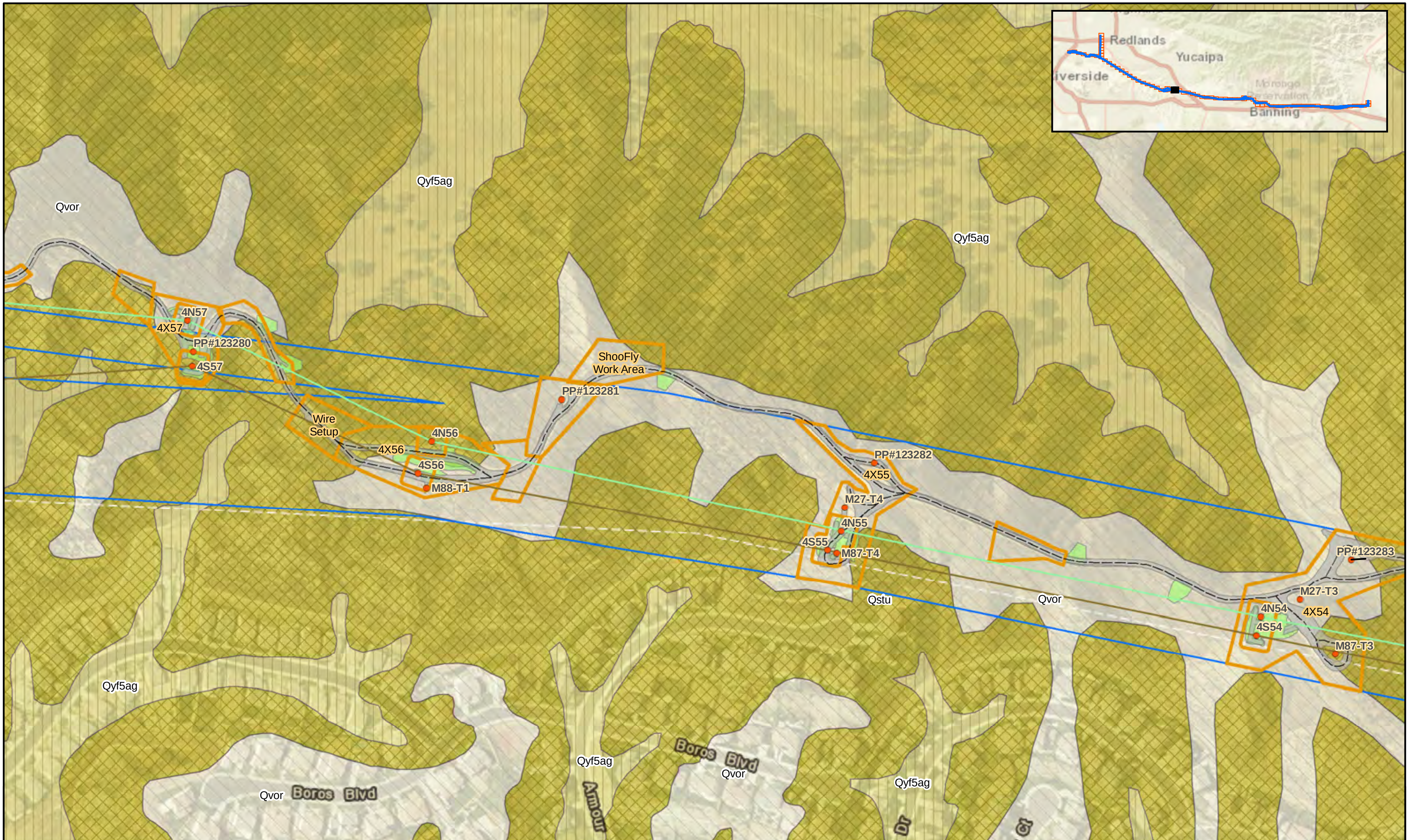
N

PALEO SOLUTIONS

Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Digital Geologic Map of the Santa Ana 30' x 60' Quadrangle, Southern California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2004

Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qya5: Young axial channel deposits, Unit 5 (late Holocene)

Qyf5ag: Young alluvial fan deposits, Unit 5, arenaceous gravel (late Holocene)

Qya6: Young axial channel deposits, Unit 6 (late Holocene)

Qstu: San Timoteo beds of Frick (1921), upper member (Pleistocene)

Qvor: Very old regolith (Pleistocene)

Paleosensitivity (PFYC)

5: Very High

3: Moderate

2: Low

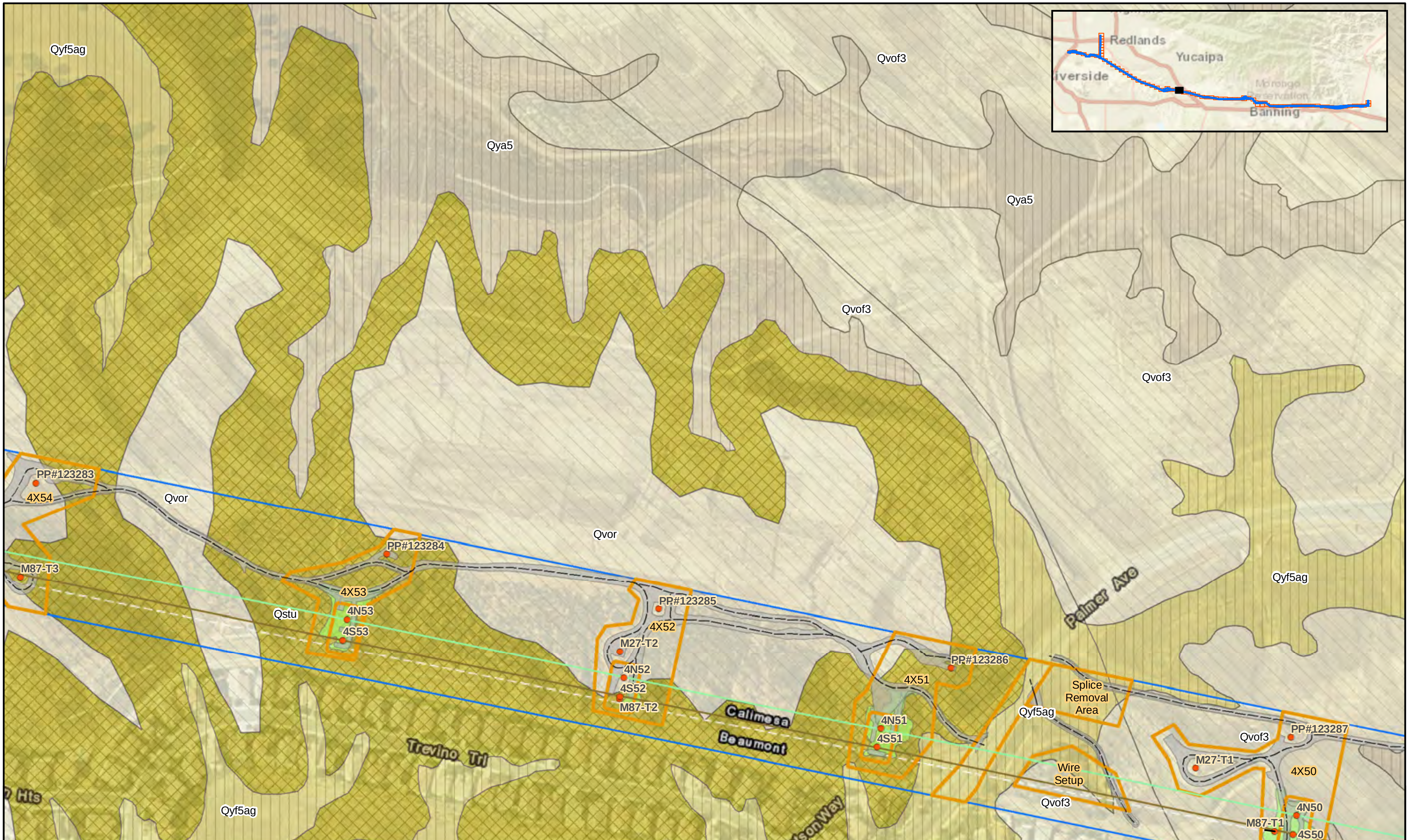
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Digital Geologic Map of the Santa Ana 30' x 60' Quadrangle, Southern California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Retaining wall

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qya5: Young axial channel deposits, Unit 5 (late Holocene)

Qyf5ag: Young alluvial fan deposits, Unit 5, arenaceous gravel (late Holocene)

Qya6: Young axial channel deposits, Unit 6 (late Holocene)

Qvof3: Very old alluvial fan deposits, Unit 3 (early Pleistocene)

Qstu: San Timoteo beds of Frick (1921), upper member (Pleistocene)

Qvor: Very old regolith (Pleistocene)

Paleosensitivity (PFYC)

5: Very High

3: Moderate

2: Low

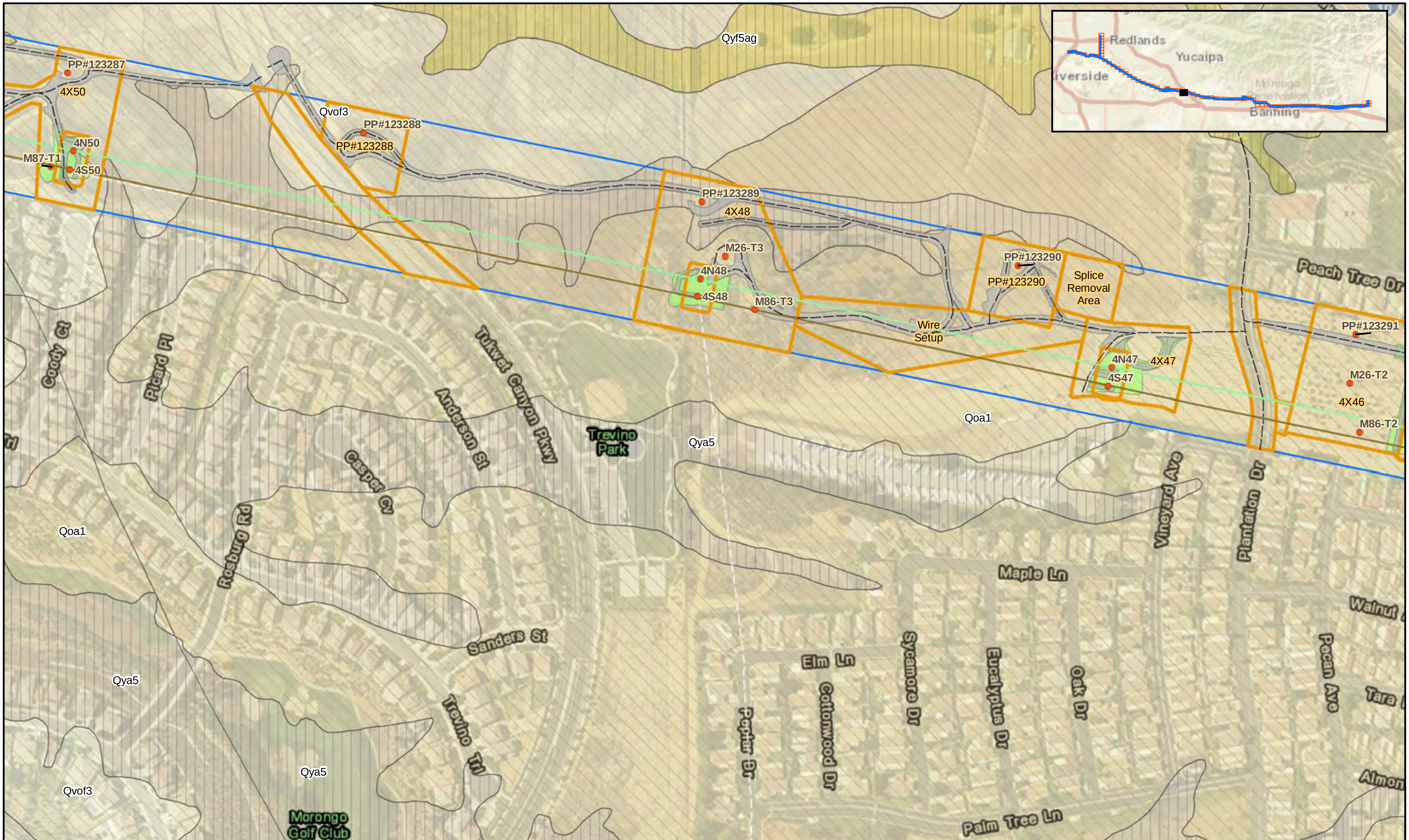
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Digital Geologic Map of the Santa Ana 30' x 60' Quadrangle, Southern California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qya5: Young axial channel deposits, Unit 5 (late Holocene)

Qyf5ag: Young alluvial fan deposits, Unit 5, arenaceous gravel (late Holocene)

Qoa1: Old axial channel deposits, Unit 1 (middle Pleistocene)

Qvof3: Very old alluvial fan deposits, Unit 3 (early Pleistocene)

Qvor: Very old regolith (Pleistocene)

Paleosensitivity (PFYC)

3: Moderate

2: Low

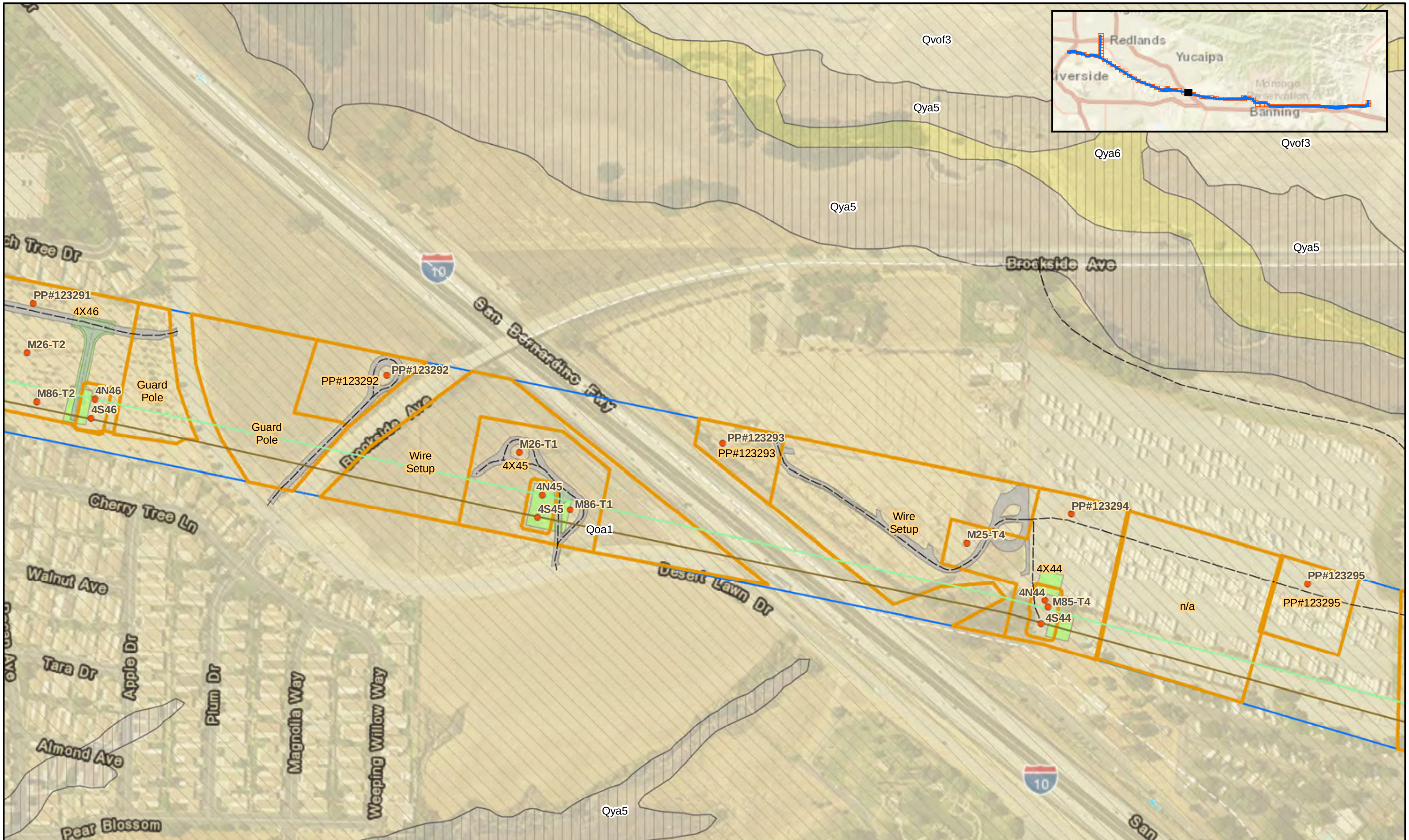
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Digital Geologic Map of the Santa Ana 30' x 60' Quadrangle, Southern California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qya5: Young axial channel deposits, Unit 5 (late Holocene)

Qya6: Young axial channel deposits, Unit 6 (late Holocene)

Qoa1: Old axial channel deposits, Unit 1 (middle Pleistocene)

Qvof3: Very old alluvial fan deposits, Unit 3 (early Pleistocene)

Paleosensitivity (PFYC)

3: Moderate

2: Low

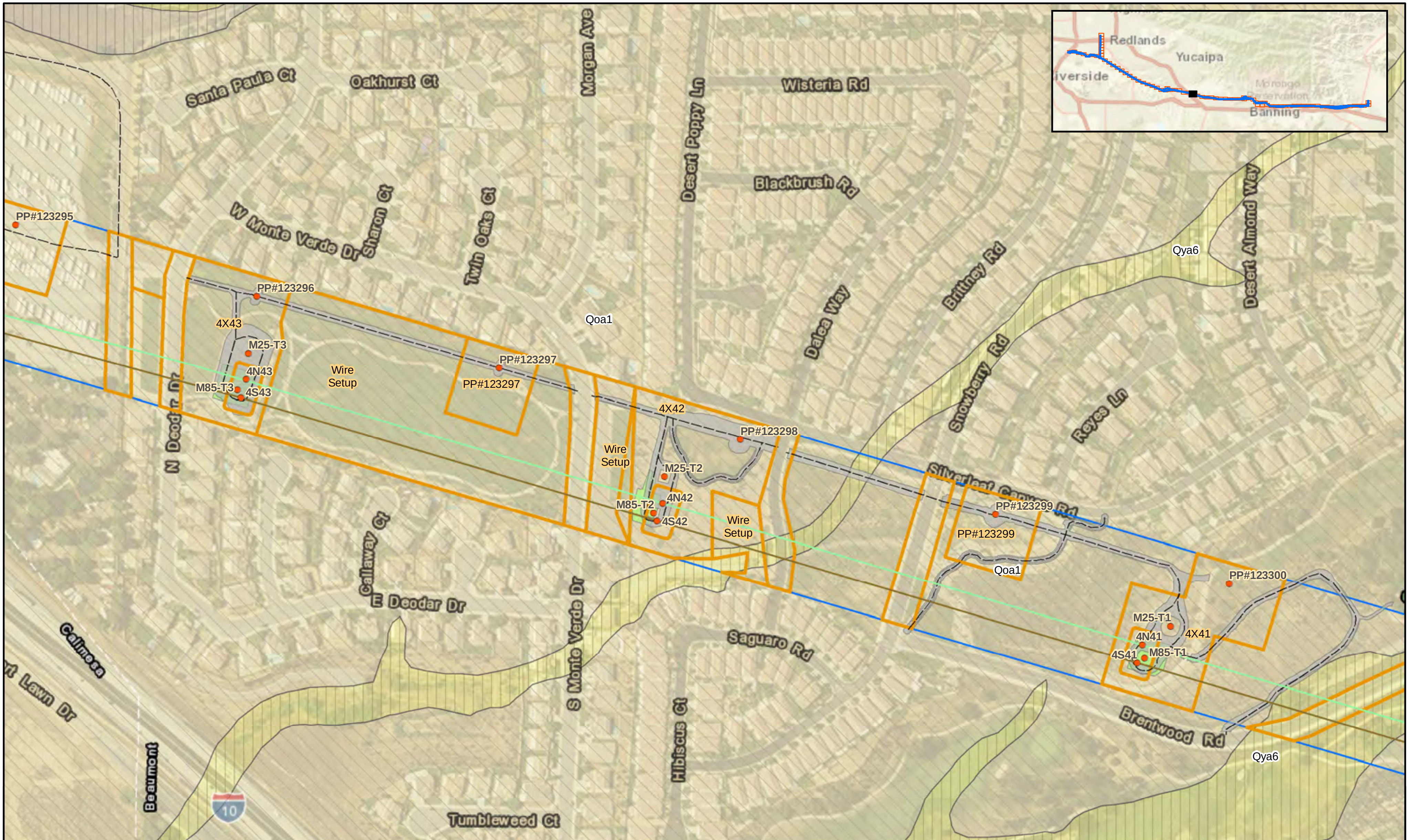
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Digital Geologic Map of the Santa Ana 30' x 60' Quadrangle, Southern California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qya5: Young axial channel deposits, Unit 5 (late Holocene)

Qya6: Young axial channel deposits, Unit 6 (late Holocene)

Qoa1: Old axial channel deposits, Unit 1 (middle Pleistocene)

Paleosensitivity (PFYC)

3: Moderate

2: Low

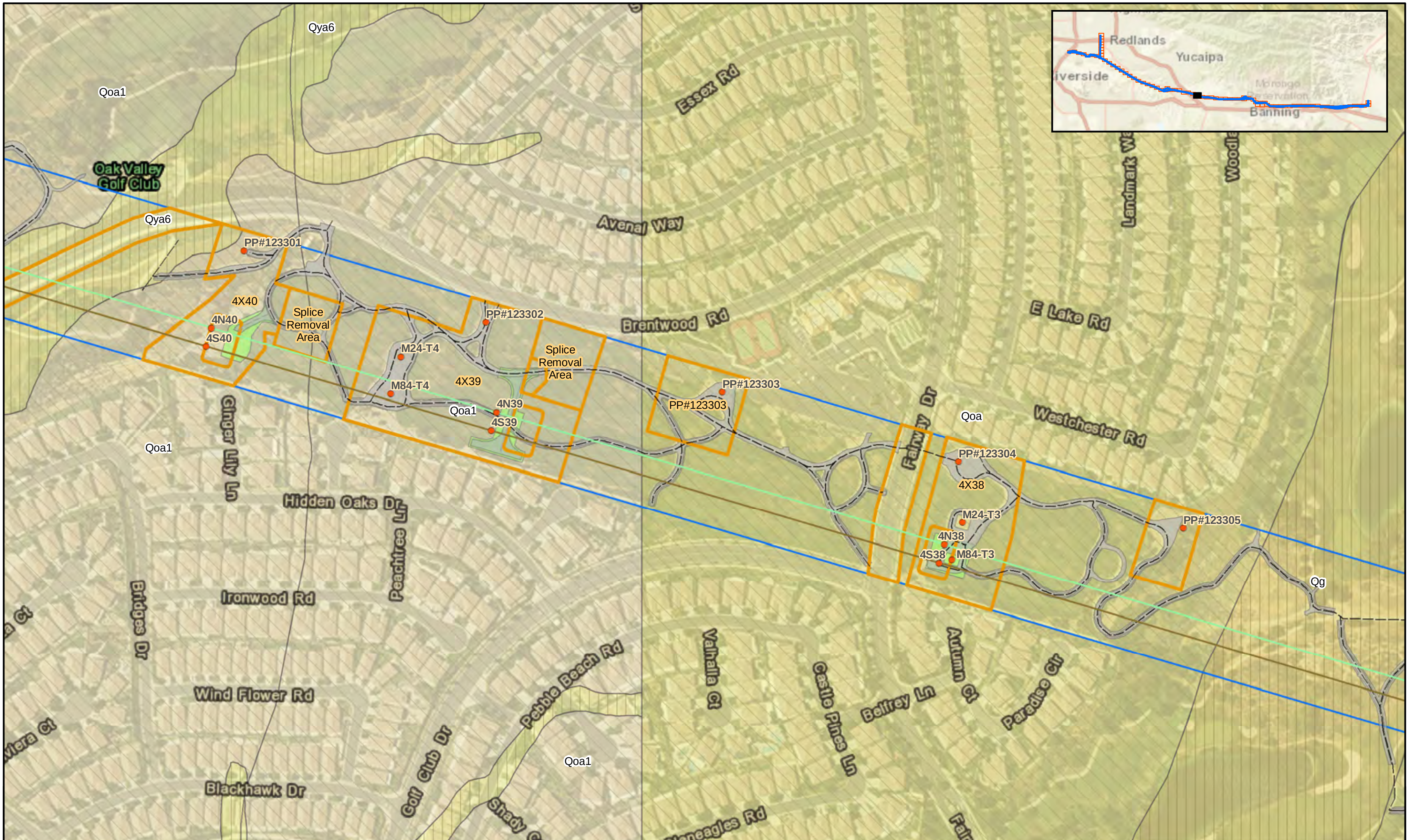
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Digital Geologic Map of the Santa Ana 30' x 60' Quadrangle, Southern California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qg : Quaternary gravel deposit (Holocene)

Qya6: Young axial channel deposits, Unit 6 (late Holocene)

Qoa1: Old axial channel deposits, Unit 1 (middle Pleistocene)

Qoa : Quaternary older alluvium (Pleistocene)

Paleosensitivity (PFYC)

3: Moderate

2: Low

SCE West of Devers

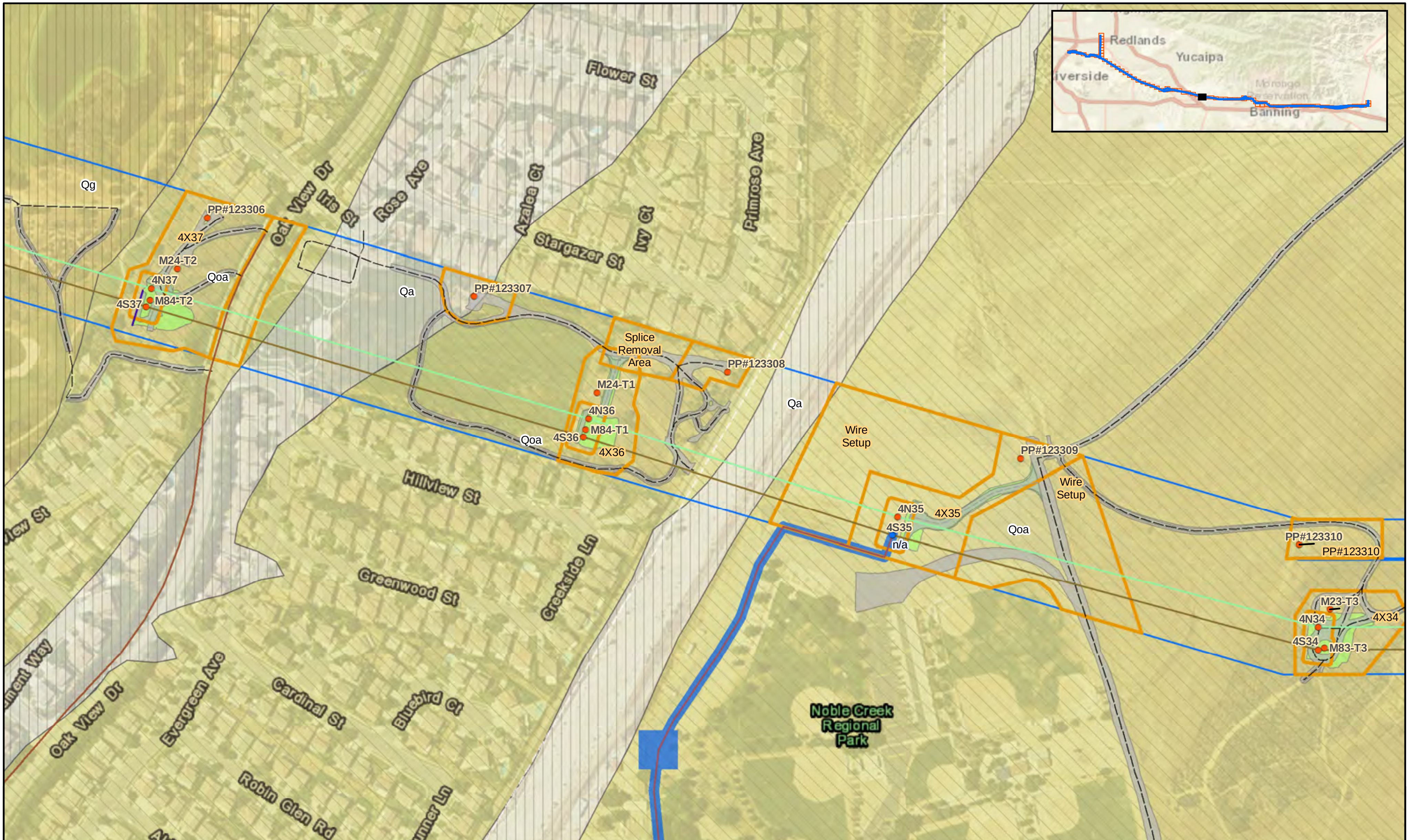
0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Preliminary Digital Geologic Map of the Santa Ana 30' x 60' Quadrangle, Southern California by Douglas M. Morton and Fred K. Miller, 1:100,000, 2004 and Geologic Map of the Beaumont Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2003

Base layers from Esri ArcGIS Online



Telcom
Structure

Line name

Devers-El Casco
Devers-Vista
Remove UG
n/a

Access road

Existing
New

Retaining wall
Construction area
Telcom area
Access road
Disturbance limit area
Existing ROW

Geologic Unit

Qg : Quaternary gravel deposit (Holocene)
Qa : Quaternary alluvium (Holocene)
Qoa : Quaternary older alluvium (Pleistocene)

Paleosensitivity (PFYC)

3: Moderate
2: Low

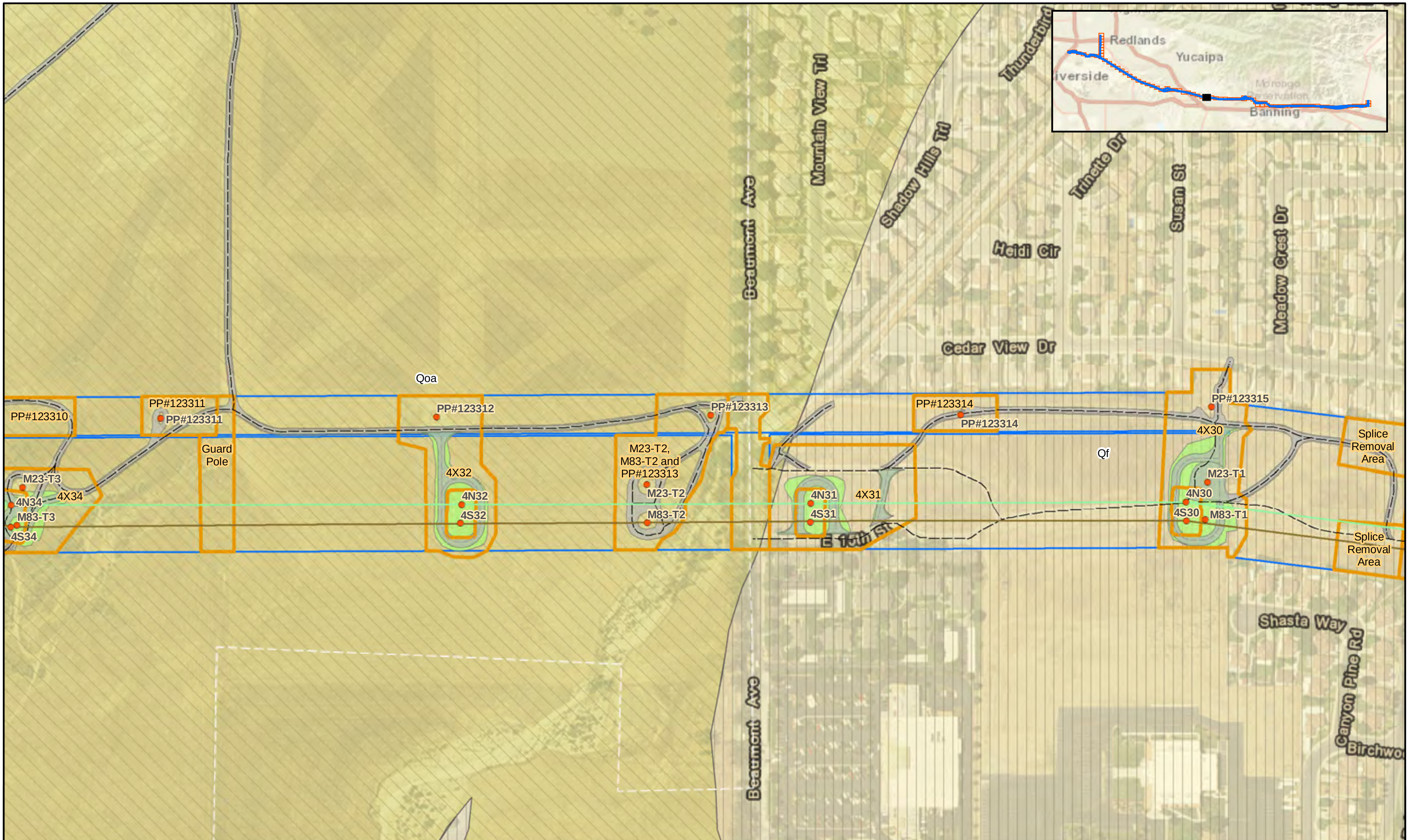
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Beaumont Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2003
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qa : Quaternary alluvium (Holocene)

Qf : Quaternary fan deposit (Holocene to Pleistocene)

Qoa : Quaternary older alluvium (Pleistocene)

Paleosensitivity (PFYC)

3: Moderate

2: Low

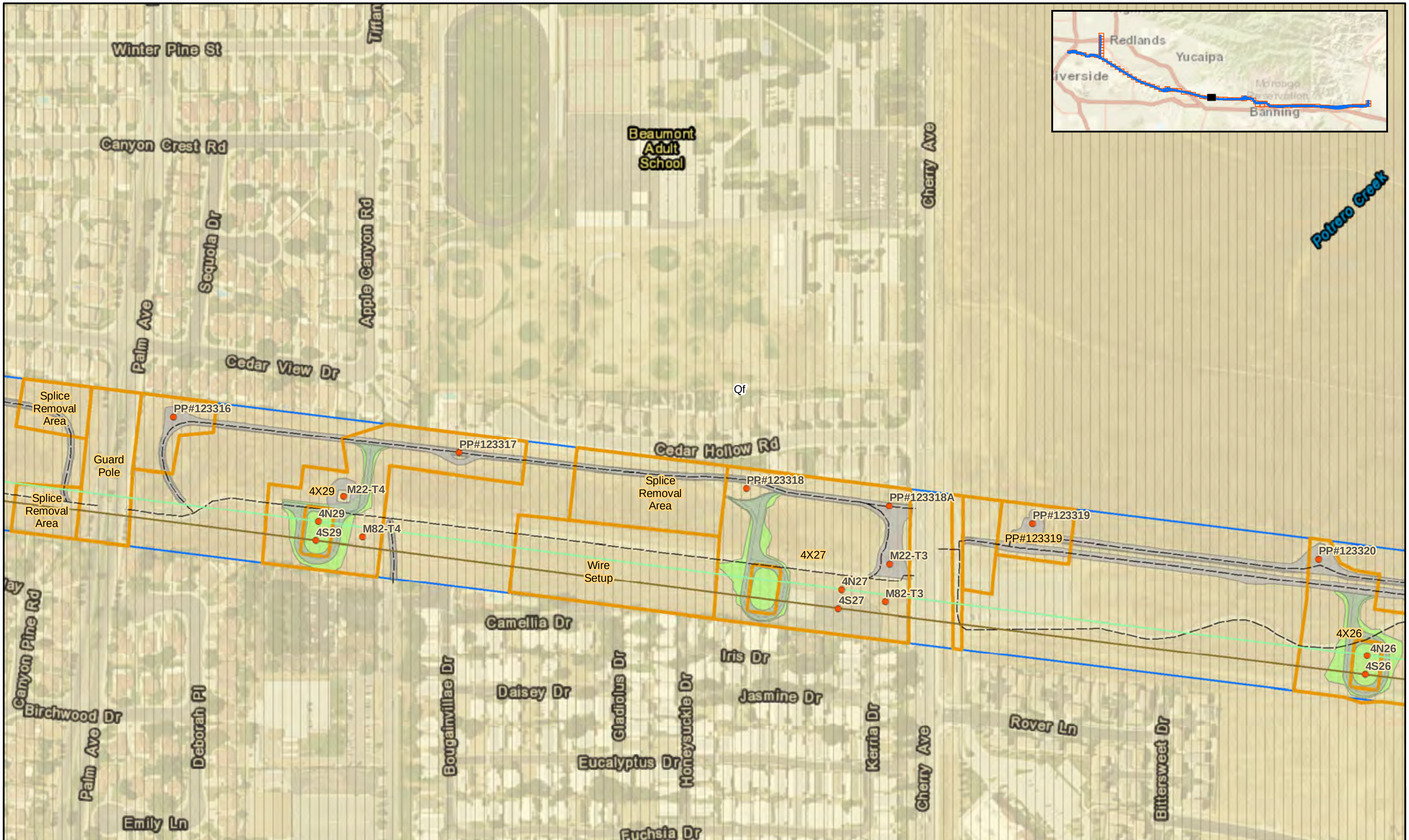
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Beaumont Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2003
Base layers from Esri ArcGIS Online



- Structure

Line name

- Devers-El Casco
- Devers-Vista

Access road

- Existing
- New
- Construction area
- Access road
- Disturbance limit area

- Existing ROW

Geologic Unit

- Qf : Quaternary fan deposit (Holocene to Pleistocene)

Paleosensitivity (PFYC)

- 2: Low

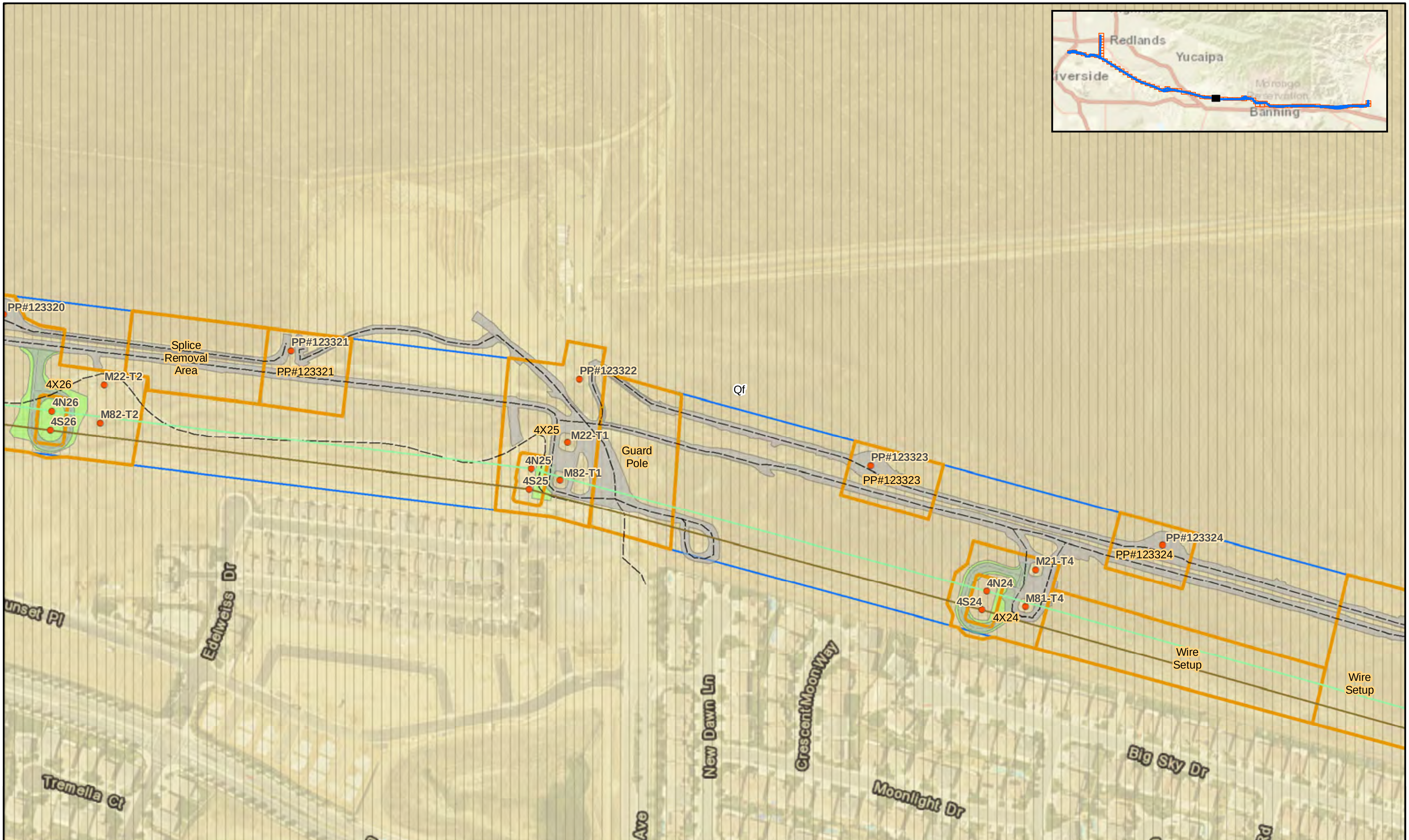
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Beaumont Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2003
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qf : Quaternary fan deposit (Holocene to Pleistocene)

Paleosensitivity (PFYC)

2: Low

SCE West of Devers

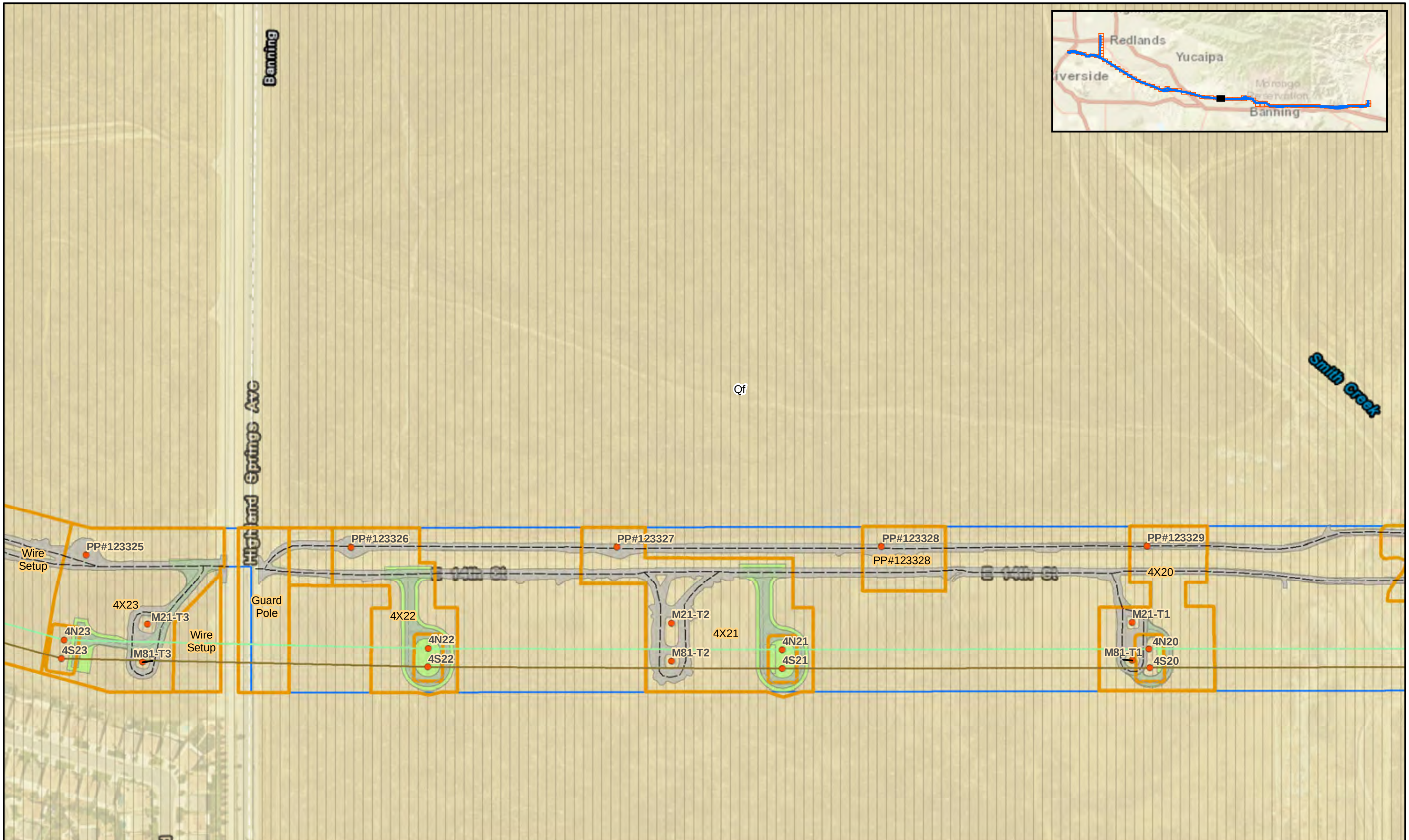
Page 43 of 81

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Beaumont Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2003
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qf : Quaternary fan deposit (Holocene to Pleistocene)

Paleosensitivity (PFYC)

2: Low

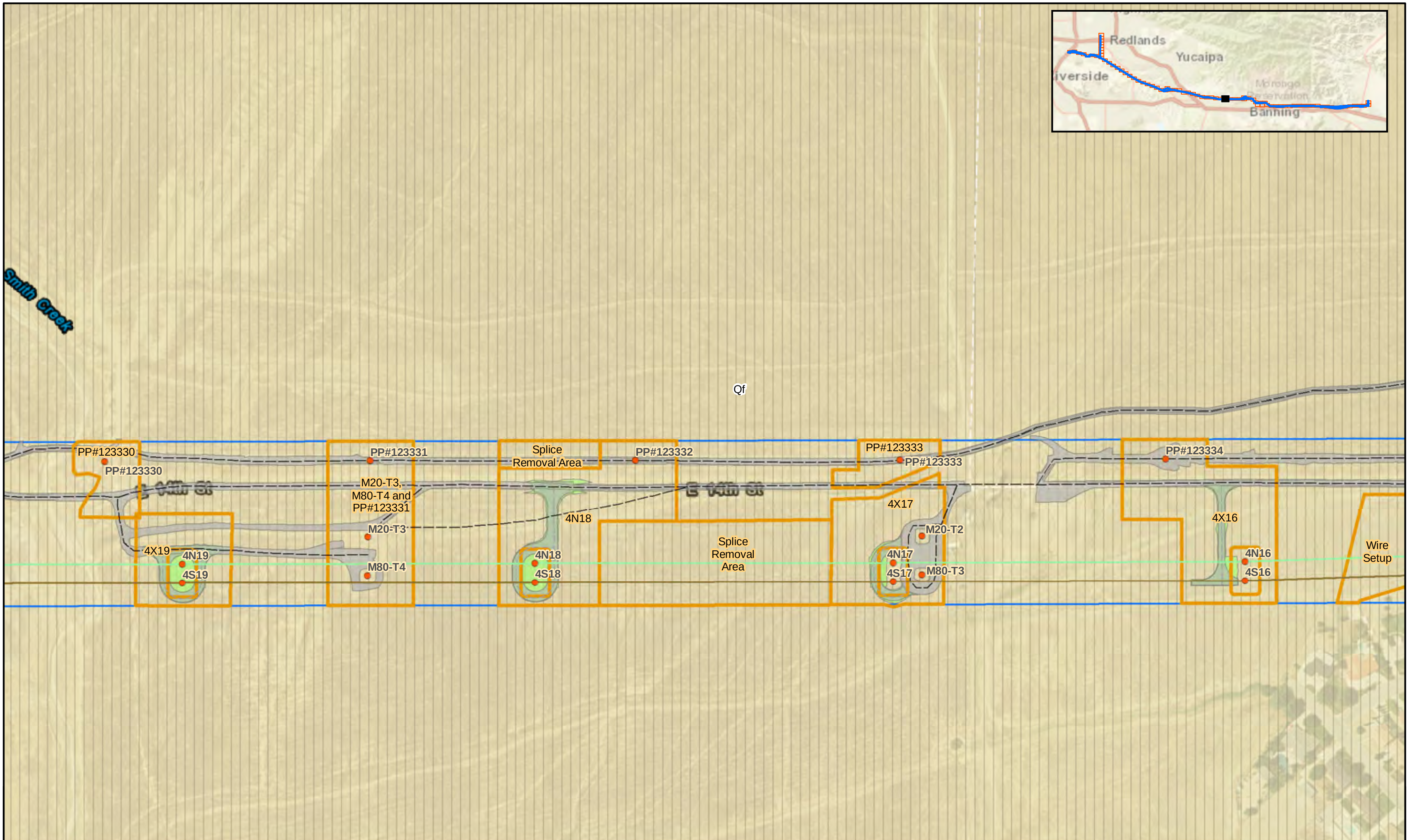
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Beaumont Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2003
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qf : Quaternary fan deposit (Holocene to Pleistocene)

Paleosensitivity (PFYC)

2: Low

SCE West of Devers

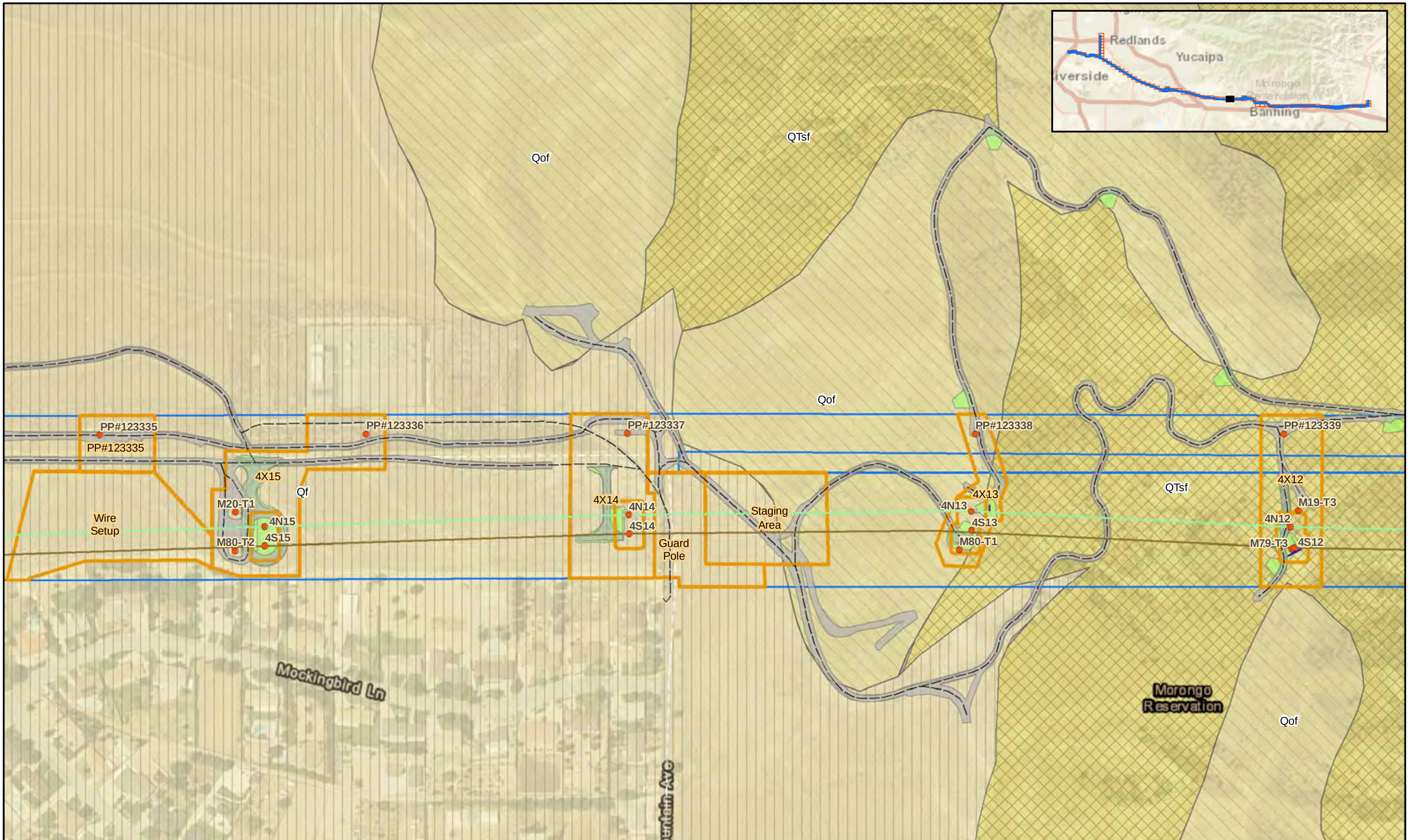
Page 45 of 81

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Beaumont Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2003
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Retaining wall

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qf : Quaternary fan deposit (Holocene to Pleistocene)

Qof : Quaternary older fan deposit (Pleistocene)

QTsf : San Timoteo sandstone (Pliocene to early Pleistocene)

Paleosensitivity (PFYC)

5: Very High

3: Moderate

2: Low

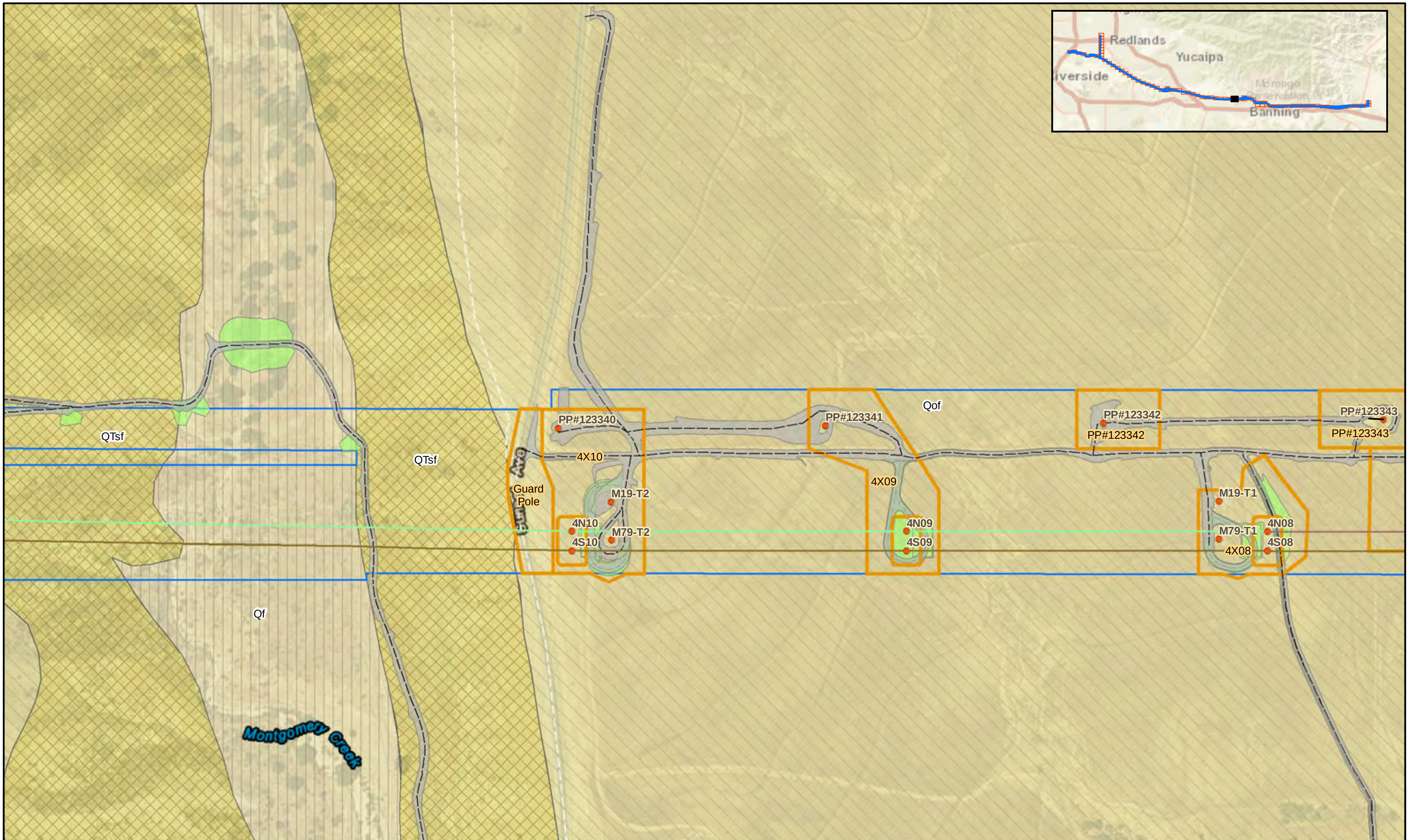
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Beaumont Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2003
Base layers from Esri ArcGIS Online



- Structure

Line name

- Devers-El Casco
- Devers-El Casco
- Devers-Vista

Access road

- Existing
- New
- Construction area
- Access road

- Disturbance limit area
- Existing ROW

Geologic Unit

- Qf : Quaternary fan deposit (Holocene to Pleistocene)
- Qof : Quaternary older fan deposit (Pleistocene)
- QTsf : San Timoteo sandstone (Pliocene to early Pleistocene)

Paleosensitivity (PFYC)

- 5: Very High
- 3: Moderate
- 2: Low

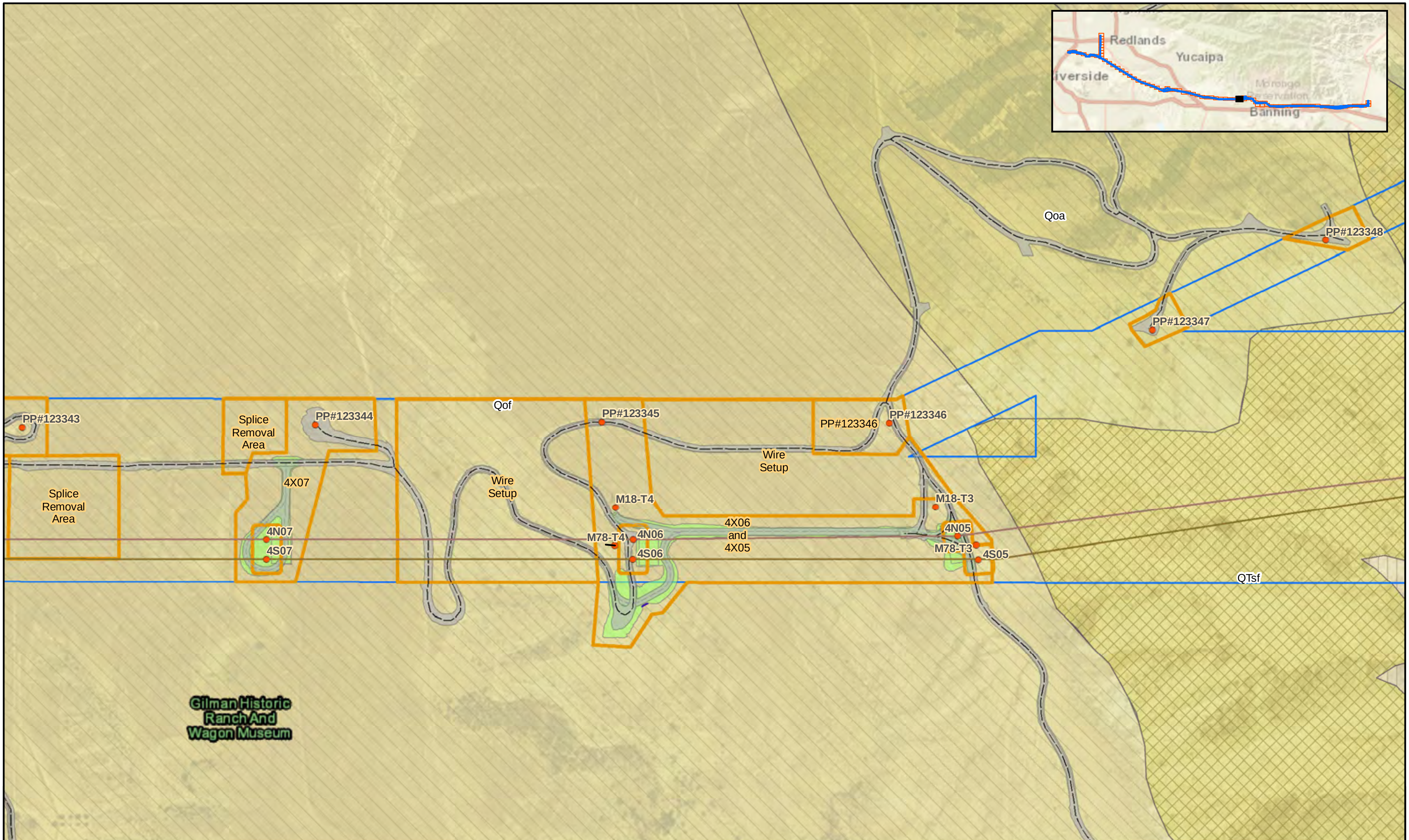
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Beaumont Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2003
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Retaining wall

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qf : Quaternary fan deposit (Holocene to Pleistocene)

Qof : Quaternary older fan deposit (Pleistocene)

Qoa : Quaternary older alluvium (Pleistocene)

QTsf : San Timoteo sandstone (Pliocene to early Pleistocene)

Paleosensitivity (PFYC)

5: Very High

3: Moderate

2: Low

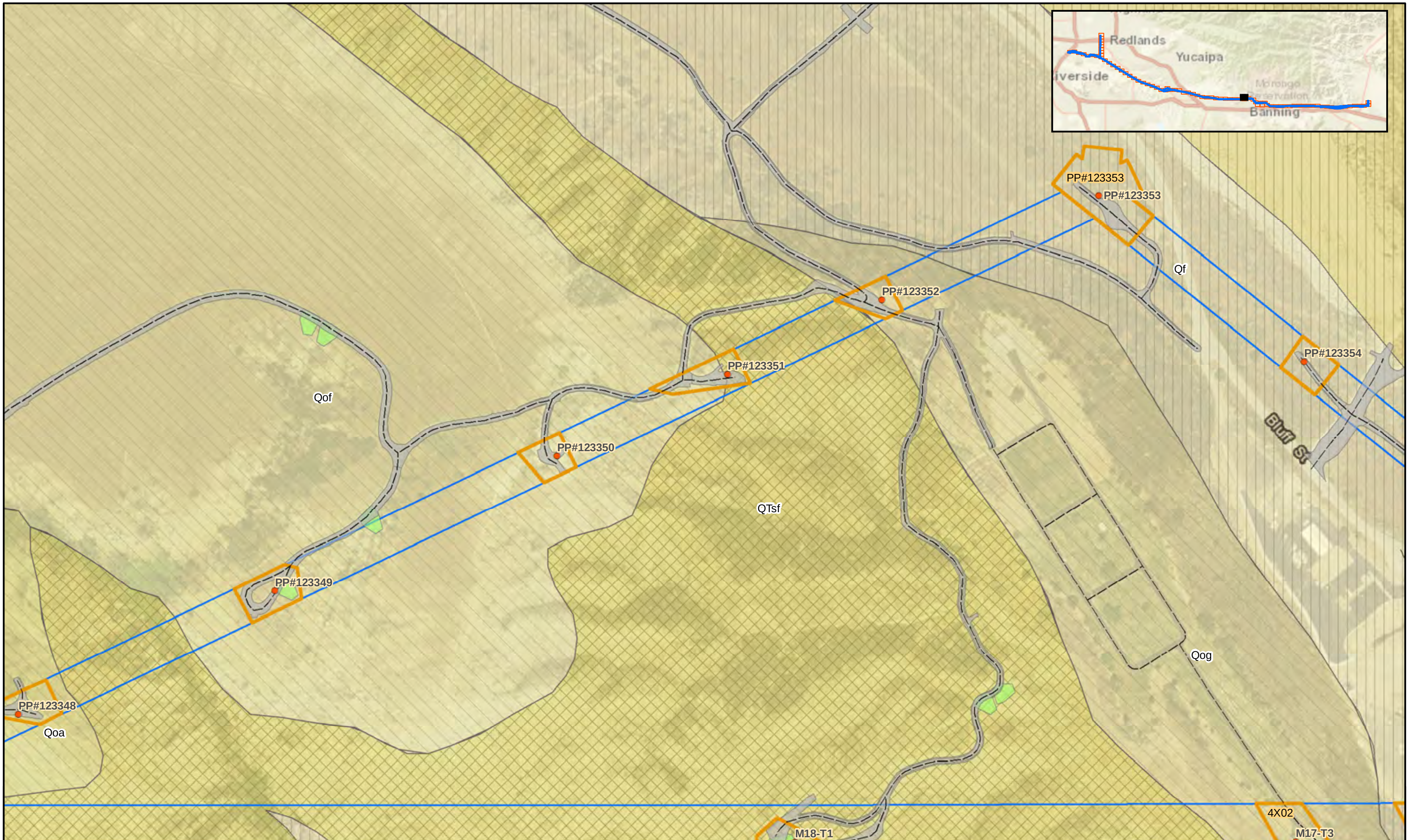
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Beaumont Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2003
Base layers from Esri ArcGIS Online



- Structure

Access road

- Existing
- Construction area
- Access road
- Disturbance limit area
- Existing ROW

Geologic Unit

- Qg : Quaternary gravel deposit (Holocene)
- Qf : Quaternary fan deposit (Holocene to Pleistocene)
- Qof : Quaternary older fan deposit (Pleistocene)
- Qoa : Quaternary older alluvium (Pleistocene)
- QTsf : San Timoteo sandstone (Pliocene to early Pleistocene)
- Qog : Quaternary older gravel deposit (Quaternary)

Paleosensitivity (PFYC)

- 5: Very High
- 3: Moderate
- 2: Low

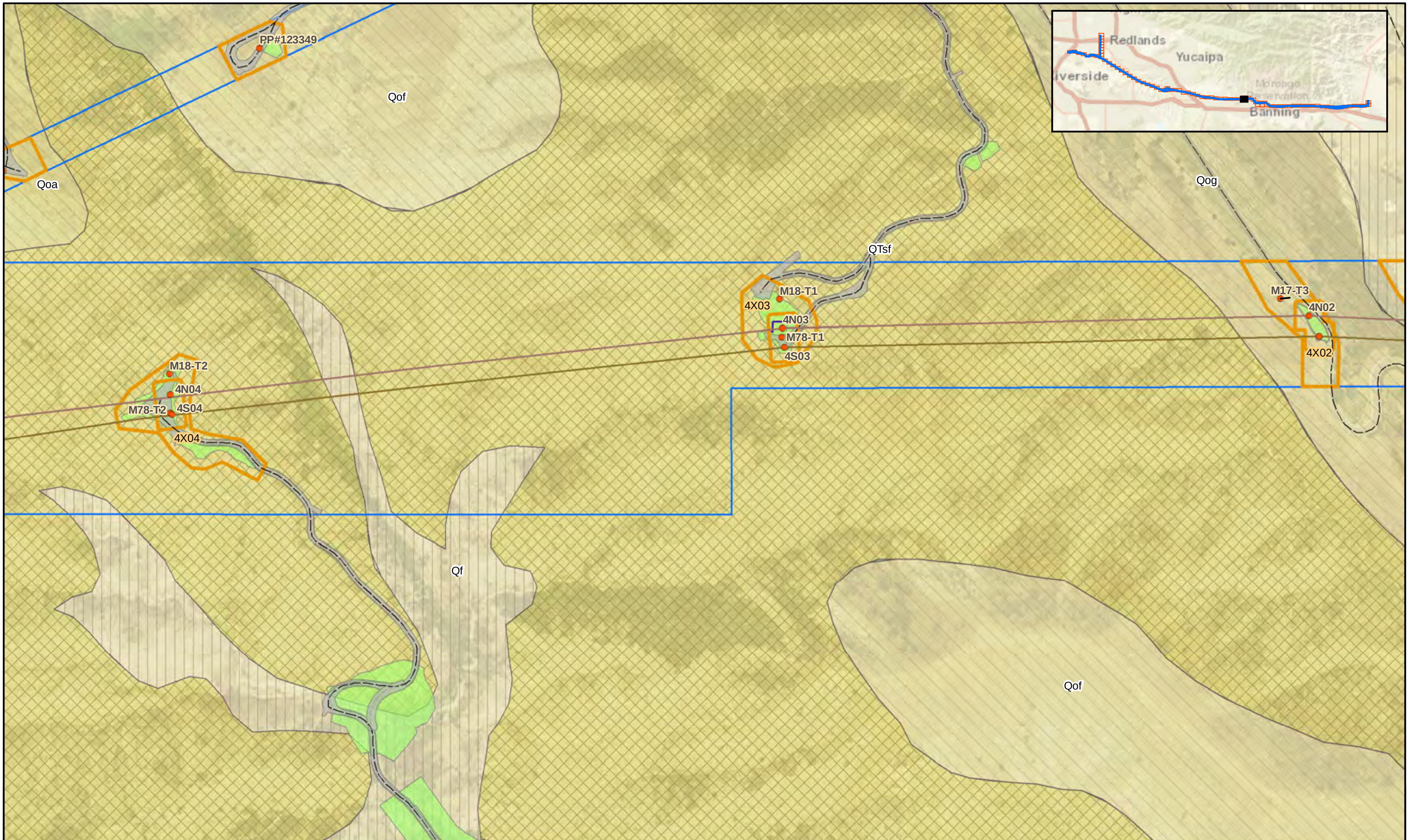
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Beaumont Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2003
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Retaining wall

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qf : Quaternary fan deposit (Holocene to Pleistocene)

Qof : Quaternary older fan deposit (Pleistocene)

Qoa : Quaternary older alluvium (Pleistocene)

QTsf : San Timoteo sandstone (Pliocene to early Pleistocene)

Qog : Quaternary older gravel deposit (Quaternary)

Paleosensitivity (PFYC)

5: Very High

3: Moderate

2: Low

SCE West of Devers

0 250 500 Feet

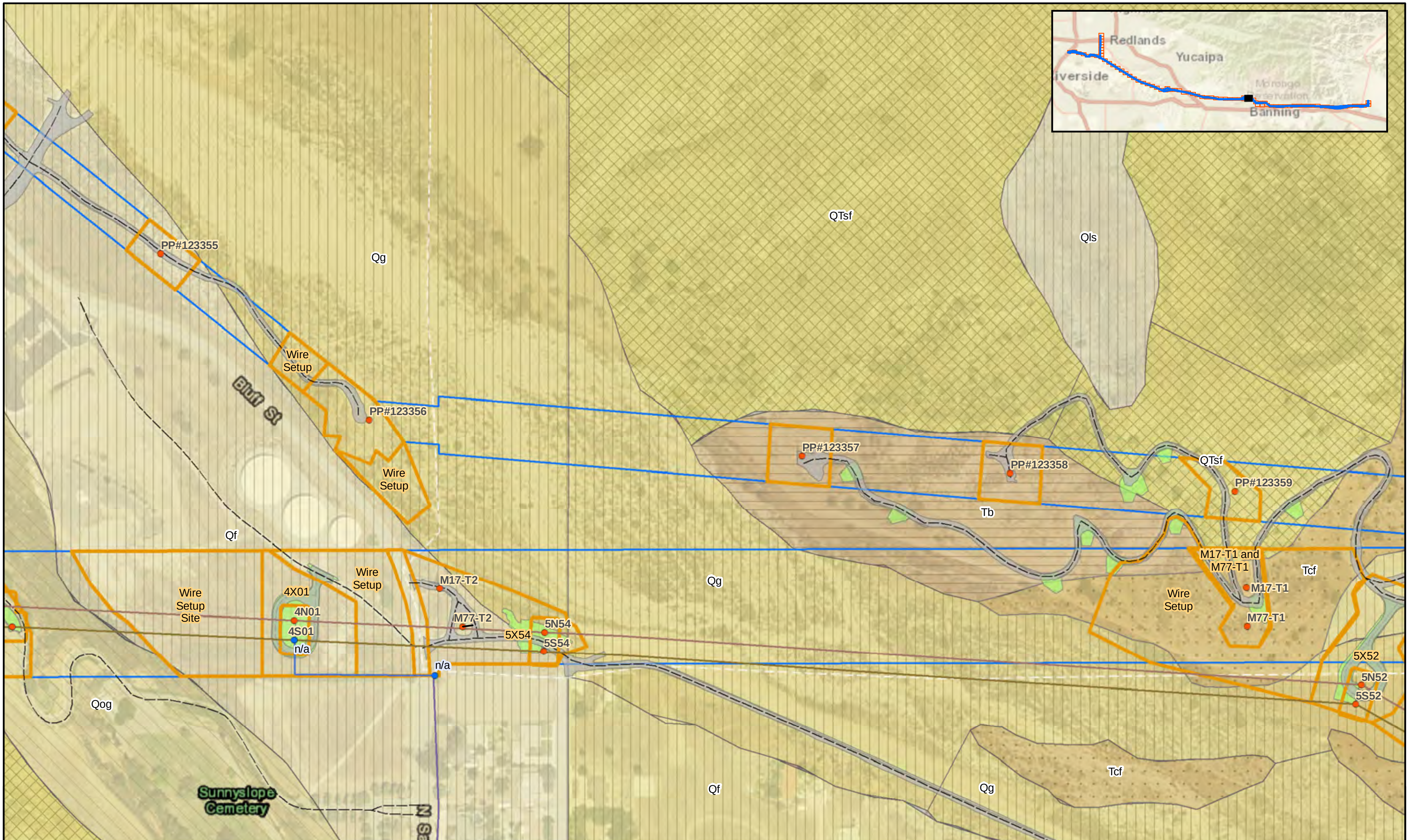
N

PALEO SOLUTIONS

Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Beaumont Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2003

Base layers from Esri ArcGIS Online



Telcom

Structure

Line name

Devers-El Casco

Devers-Vista

Existing Cable to Banning Sub (09033)

Restore tap to Banning

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qg : Quaternary gravel deposit (Holocene)

Qf : Quaternary fan deposit (Holocene to Pleistocene)

Qls : Quaternary landslide deposit (Holocene to Pleistocene)

Qf : Fan deposit (Pleistocene)

QTsf : San Timoteo sandstone (Pliocene to early Pleistocene)

Qog : Quaternary older gravel deposit (Quaternary)

Tb : basaltic (Upper Miocene)

Tcf : Coachella fanglomerate (Miocene)

Paleosensitivity (PFYC)

5: Very High

3: Moderate

2: Low

1: Very Low

U: Unknown

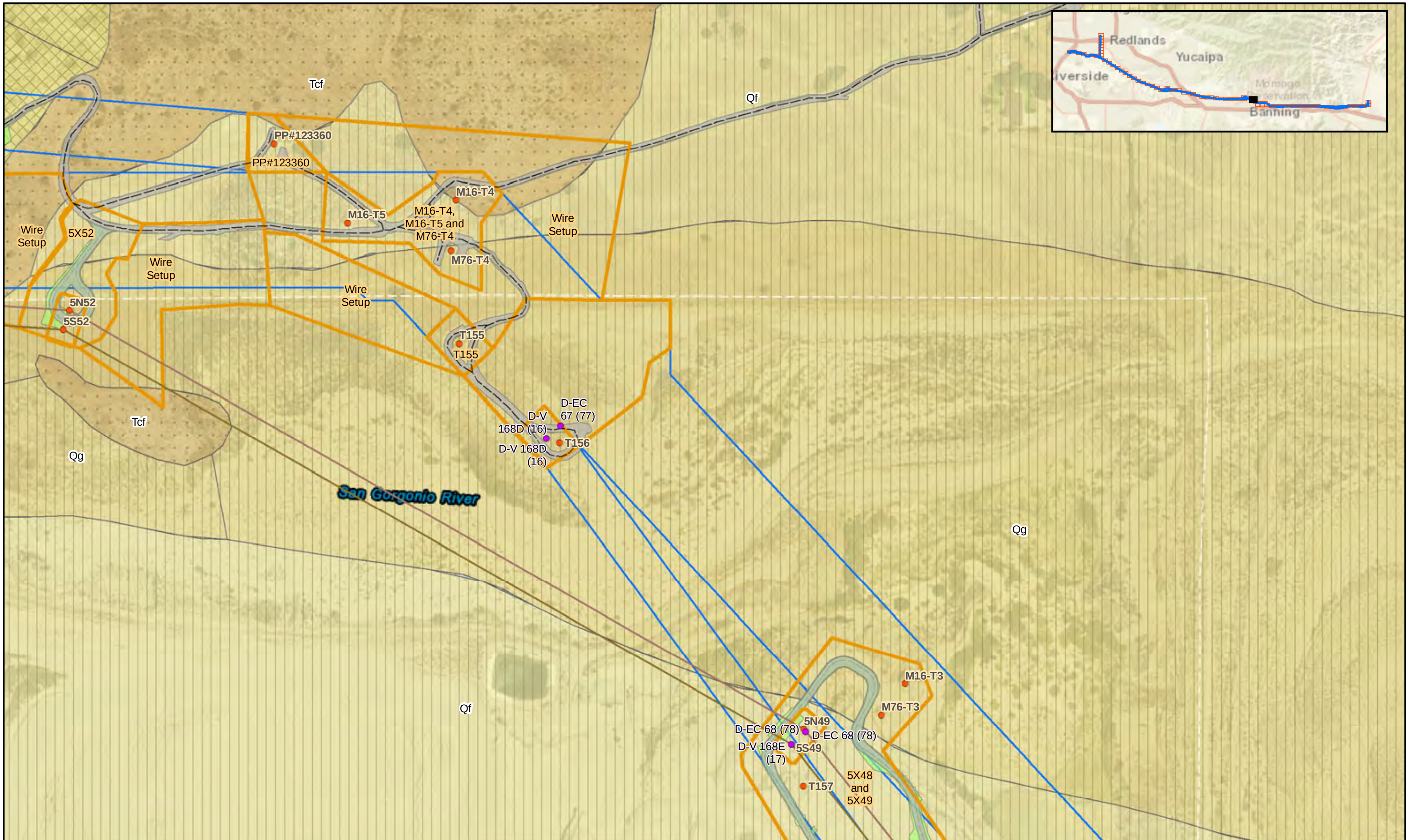
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Beaumont Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2003 and Geologic Map of the Cabazon Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online



FAA structure	Disturbance limit area	2: Low
Structure	Existing ROW	U: Unknown

Line name

- Devers-El Casco
- Devers-Vista

Access road

- Existing
- New
- Construction area
- Access road

Geologic Unit

- Qg : Quaternary gravel deposit (Holocene)
- Qf : Fan deposit (Pleistocene)
- QTsf : San Timoteo sandstone (Pliocene to early Pleistocene)
- Tcf : Coachella fanglomerate (Miocene)

Paleosensitivity (PFYC)

- 5: Very High

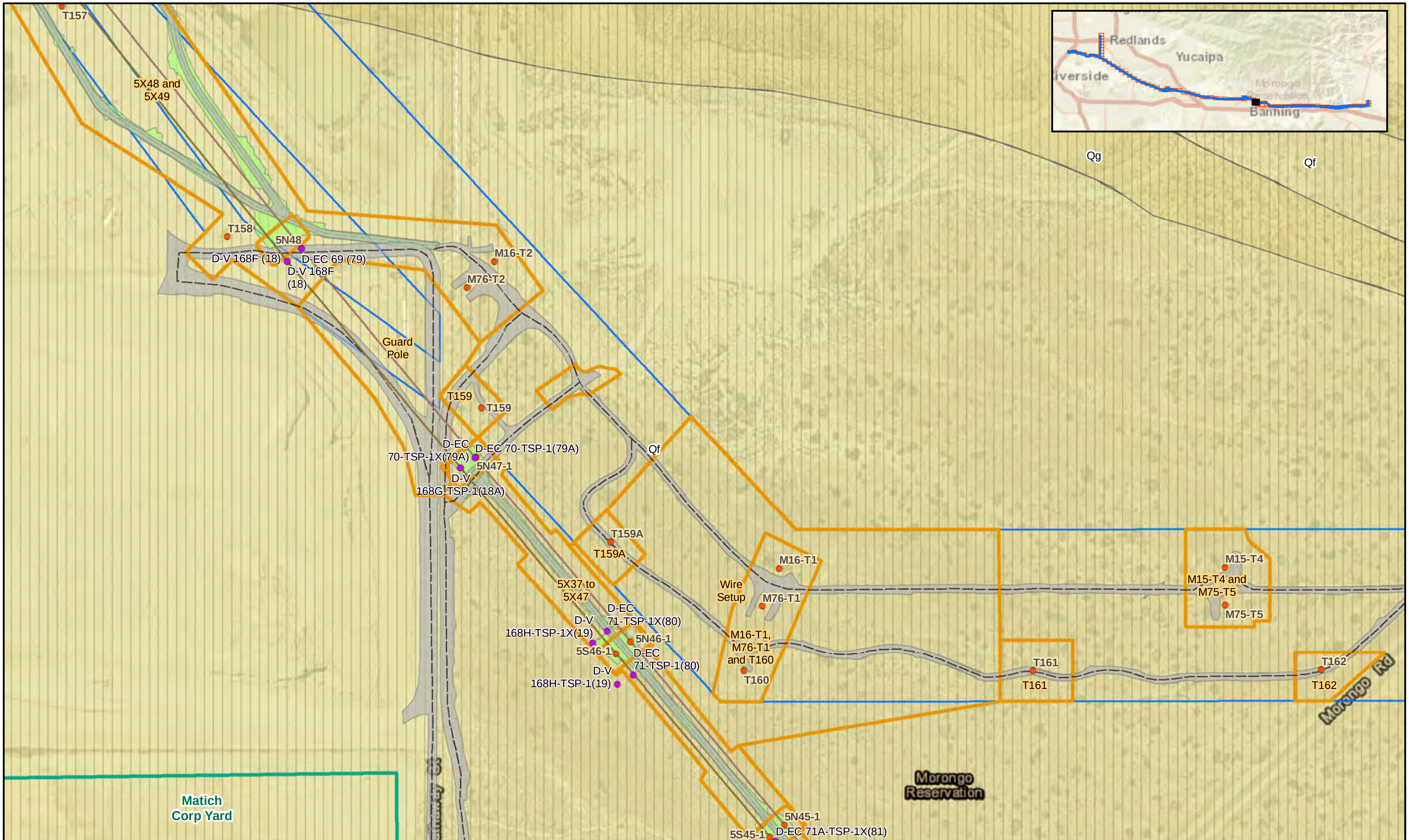
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Cabazon Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online



FAA structure

Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Construction Yard

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qg : Quaternary gravel deposit (Holocene)

Qf : Fan deposit (Pleistocene)

Paleosensitivity (PFYC)

2: Low

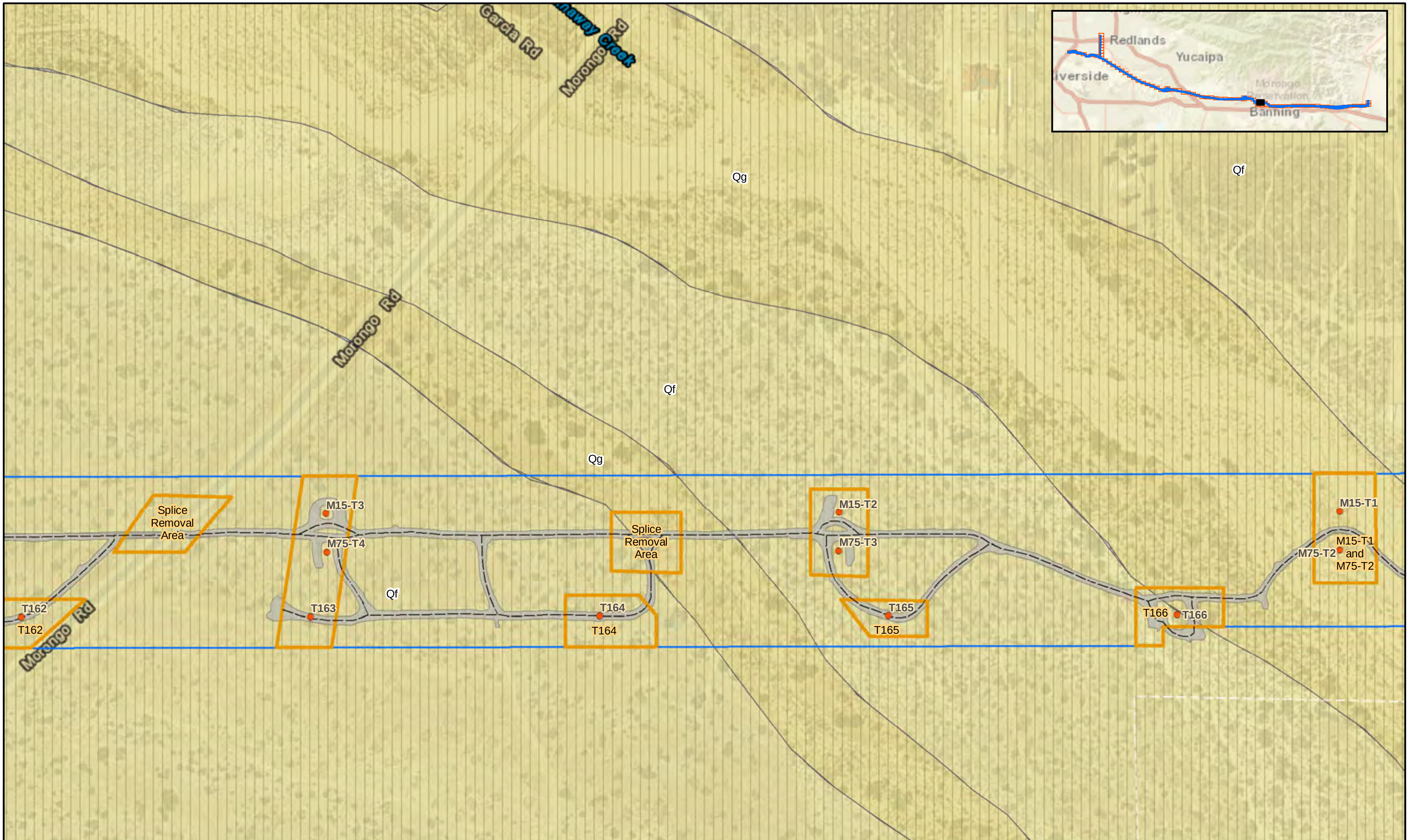
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Cabazon Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online



● Structure

Access road

— — Existing

Construction area

Access road

Existing ROW

Geologic Unit

Qg : Quaternary gravel deposit (Holocene)

Qf : Fan deposit (Pleistocene)

Paleosensitivity (PFYC)

2: Low

SCE West of Devers

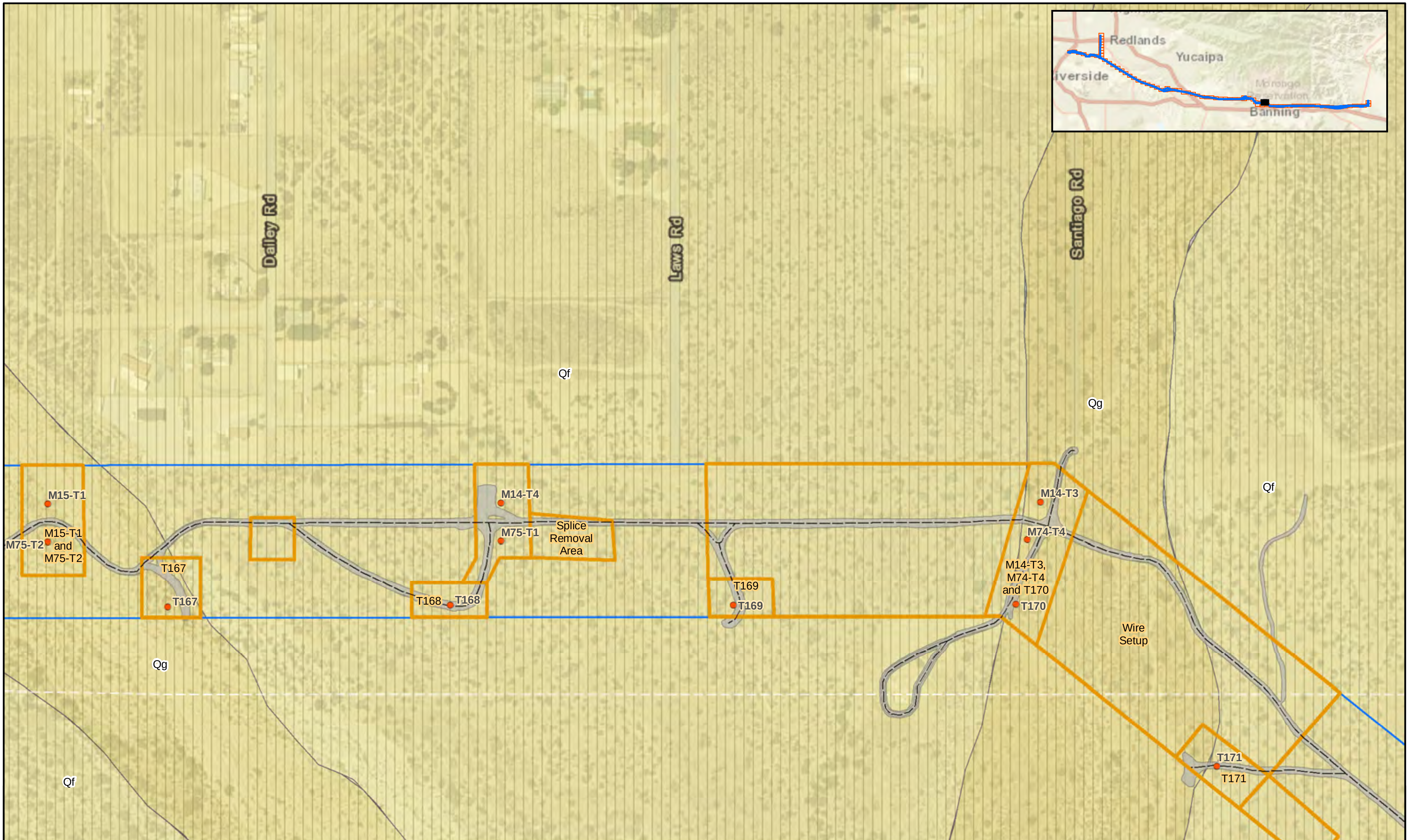
Page 54 of 81

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Cabazon Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online



Structure

Access road

Existing

Construction area

Access road

Existing ROW

Geologic Unit

Qg : Quaternary gravel deposit (Holocene)

Qf : Fan deposit (Pleistocene)

Paleosensitivity (PFYC)

2: Low

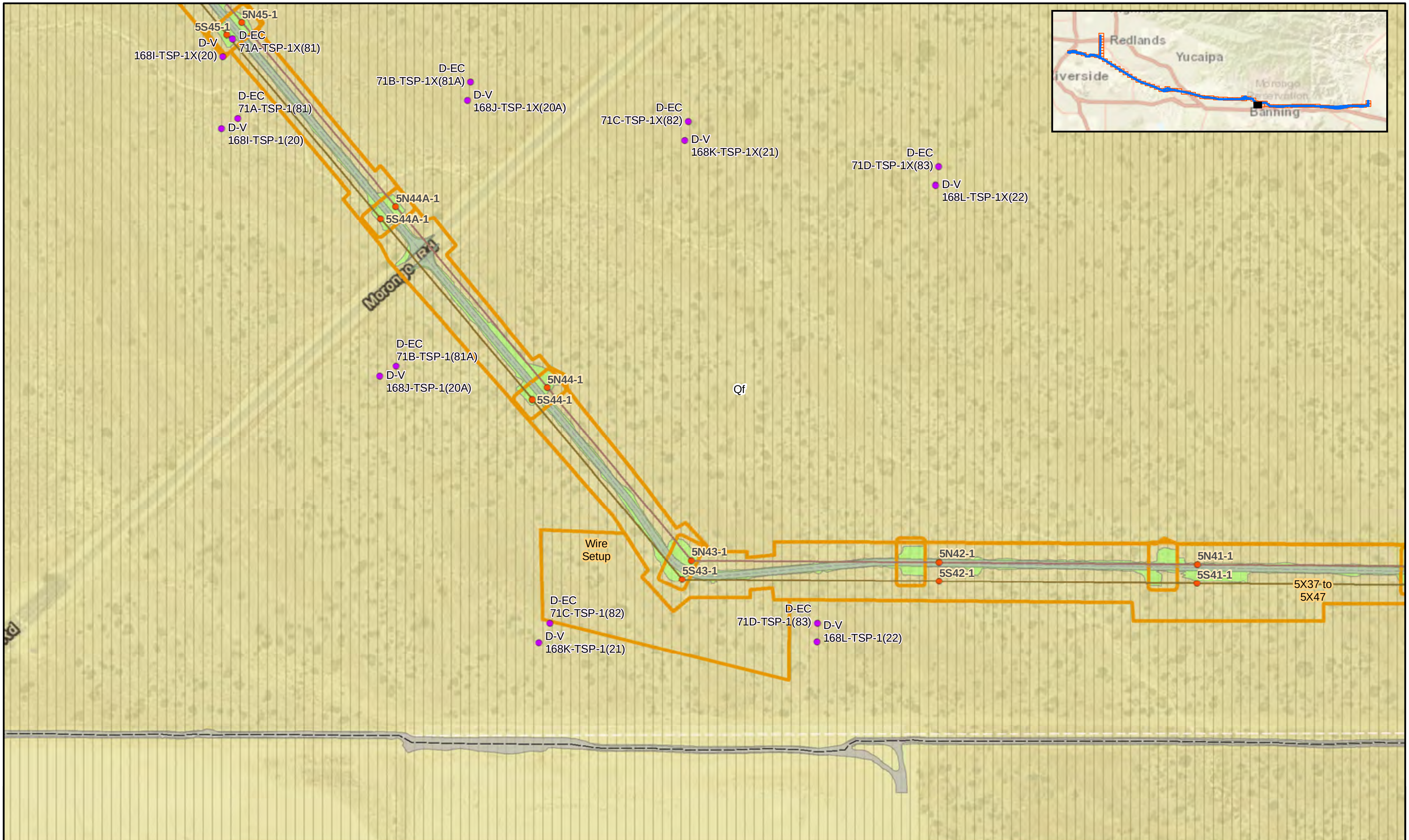
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Cabazon Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online



FAA structure
Structure

Line name

Devers-El Casco
Devers-Vista

Access road

Existing
New
Construction area
Access road

Disturbance limit area

Geologic Unit

Qf : Fan deposit (Pleistocene)

Paleosensitivity (PFYC)

2: Low

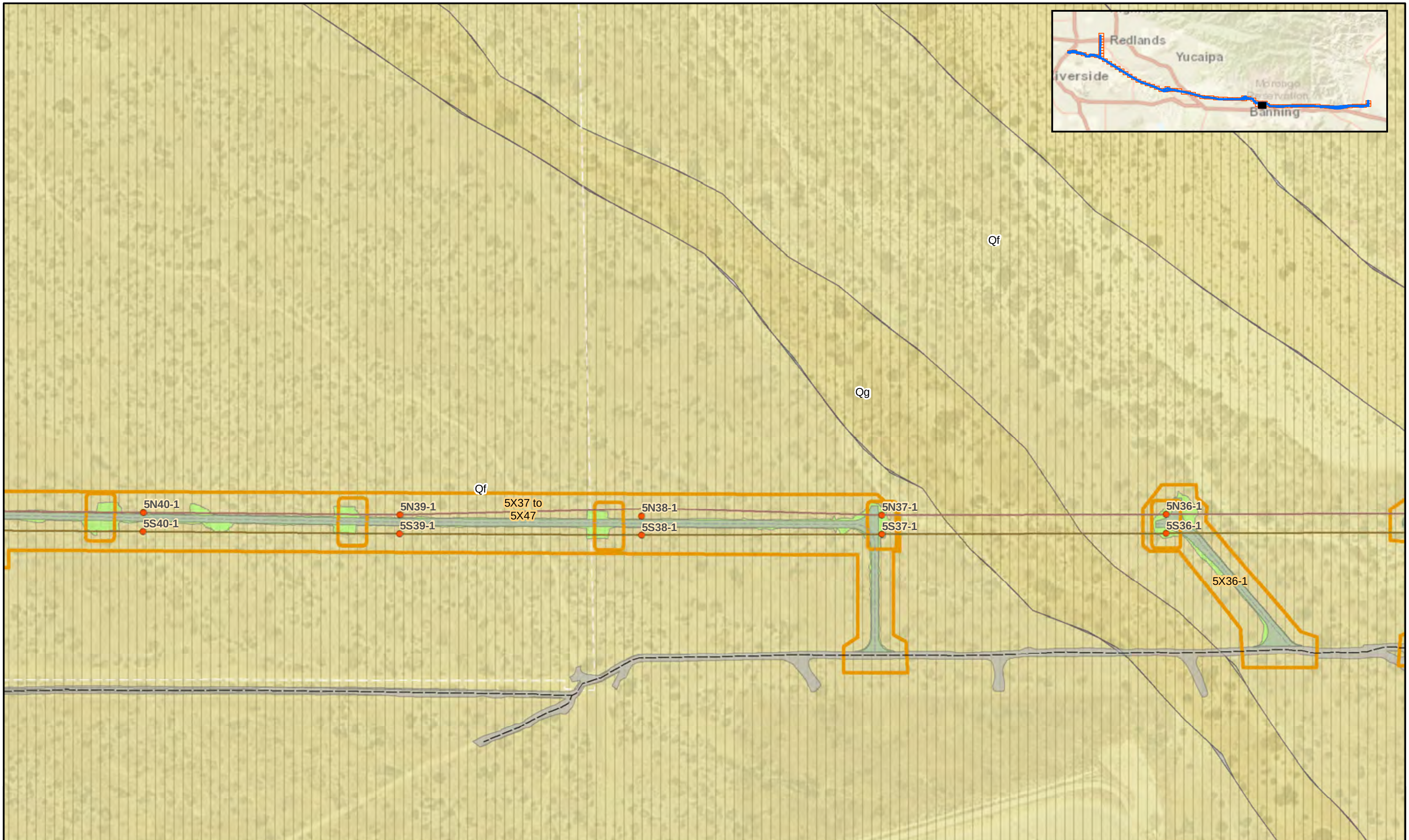
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Cabazon Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Geologic Unit

Qg : Quaternary gravel deposit (Holocene)

Qf : Fan deposit (Pleistocene)

Paleosensitivity (PFYC)

2: Low

SCE West of Devers

Page 57 of 81

0 250 500 Feet

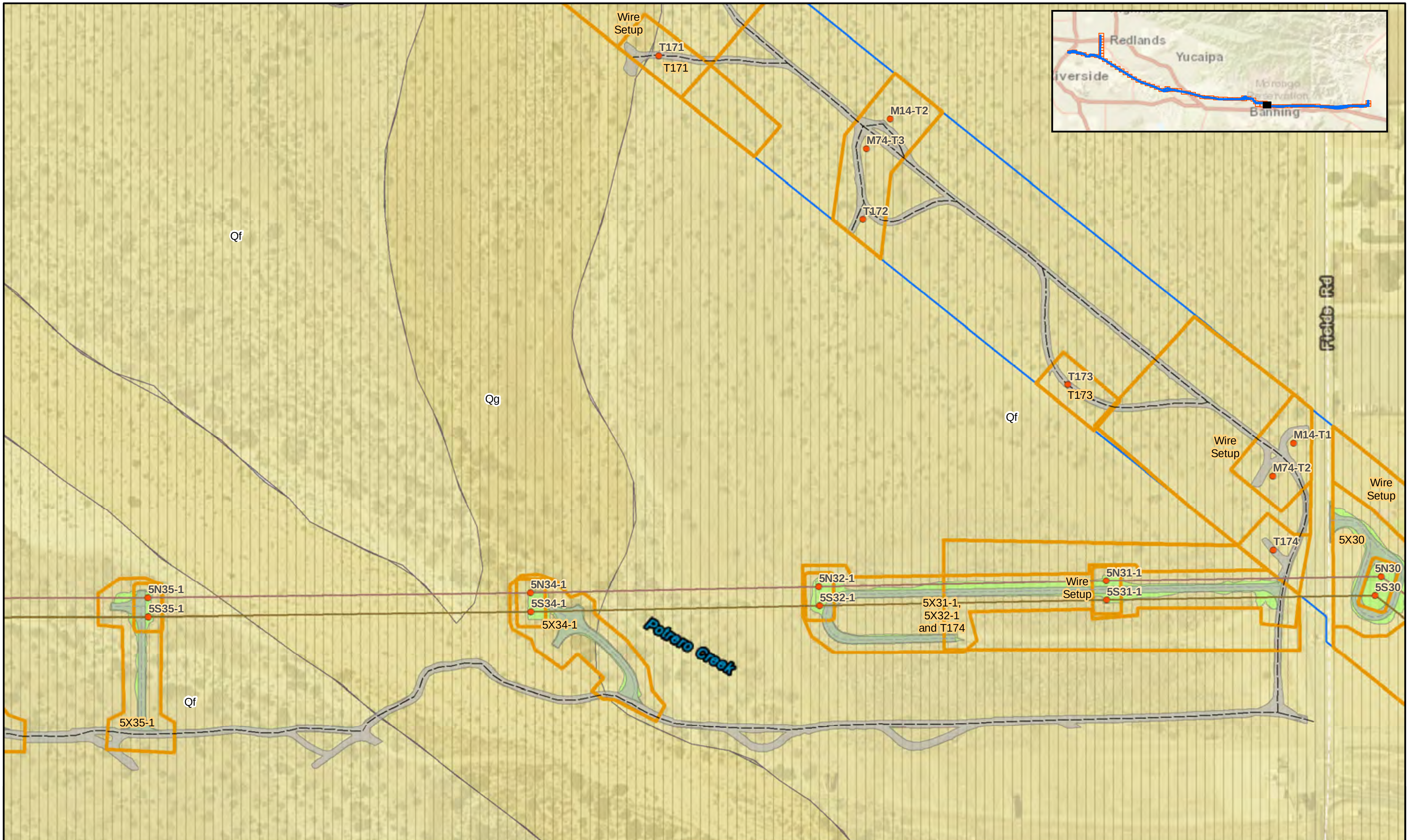
N

PALEO SOLUTIONS

Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Cabazon Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004

Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qg : Quaternary gravel deposit (Holocene)

Qf : Fan deposit (Pleistocene)

Paleosensitivity (PFYC)

2: Low

SCE West of Devers

Page 58 of 81

0 250 500 Feet

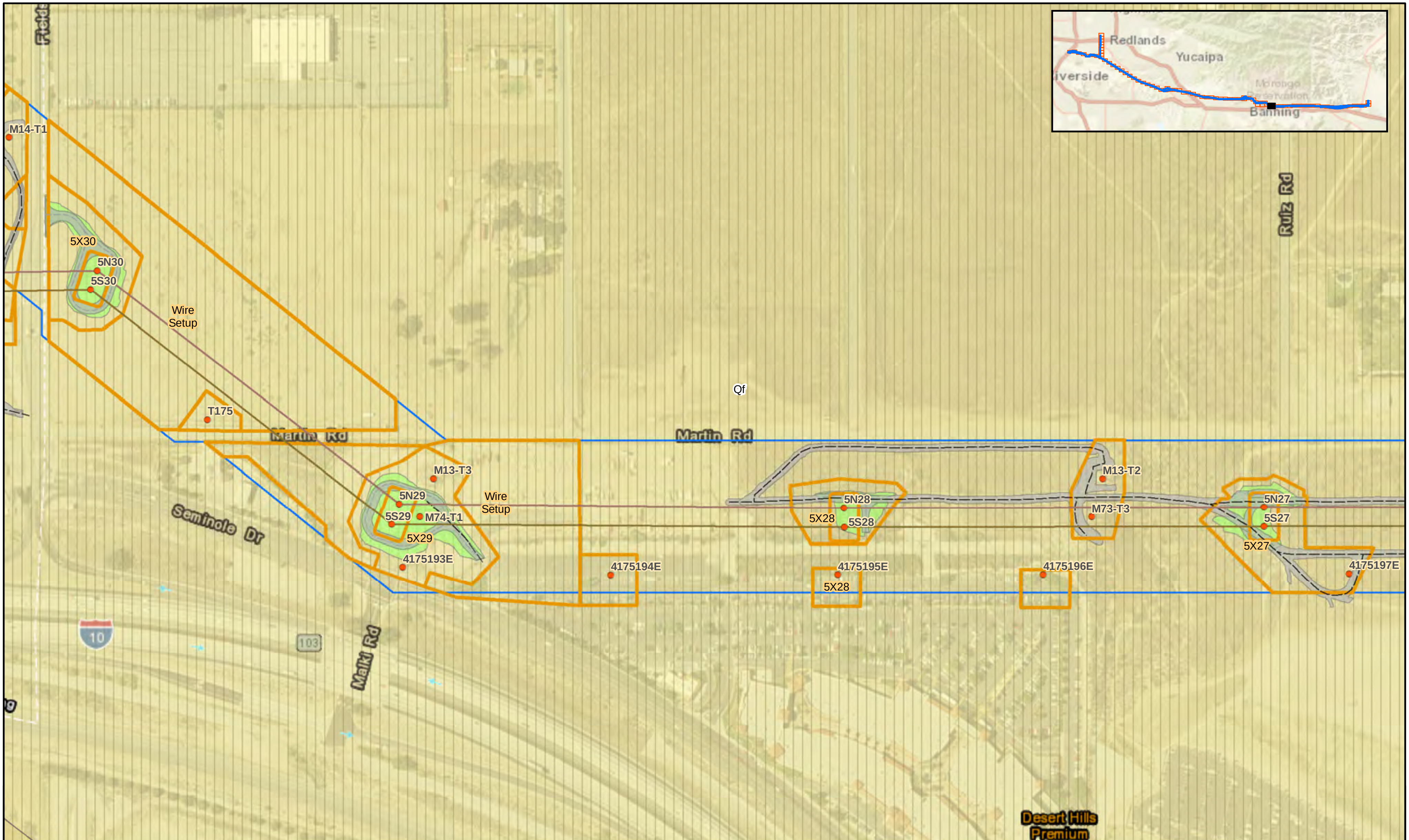
N

PALEO SOLUTIONS

Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Cabazon Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004

Base layers from Esri ArcGIS Online



- Structure

Line name

- Devers-El Casco
- Devers-Vista

Access road

- Existing
- New
- Construction area
- Access road
- Disturbance limit area

- Existing ROW

Geologic Unit

- Qg : Quaternary gravel deposit (Holocene)
- Qf : Fan deposit (Pleistocene)

Paleosensitivity (PFYC)

- 2: Low

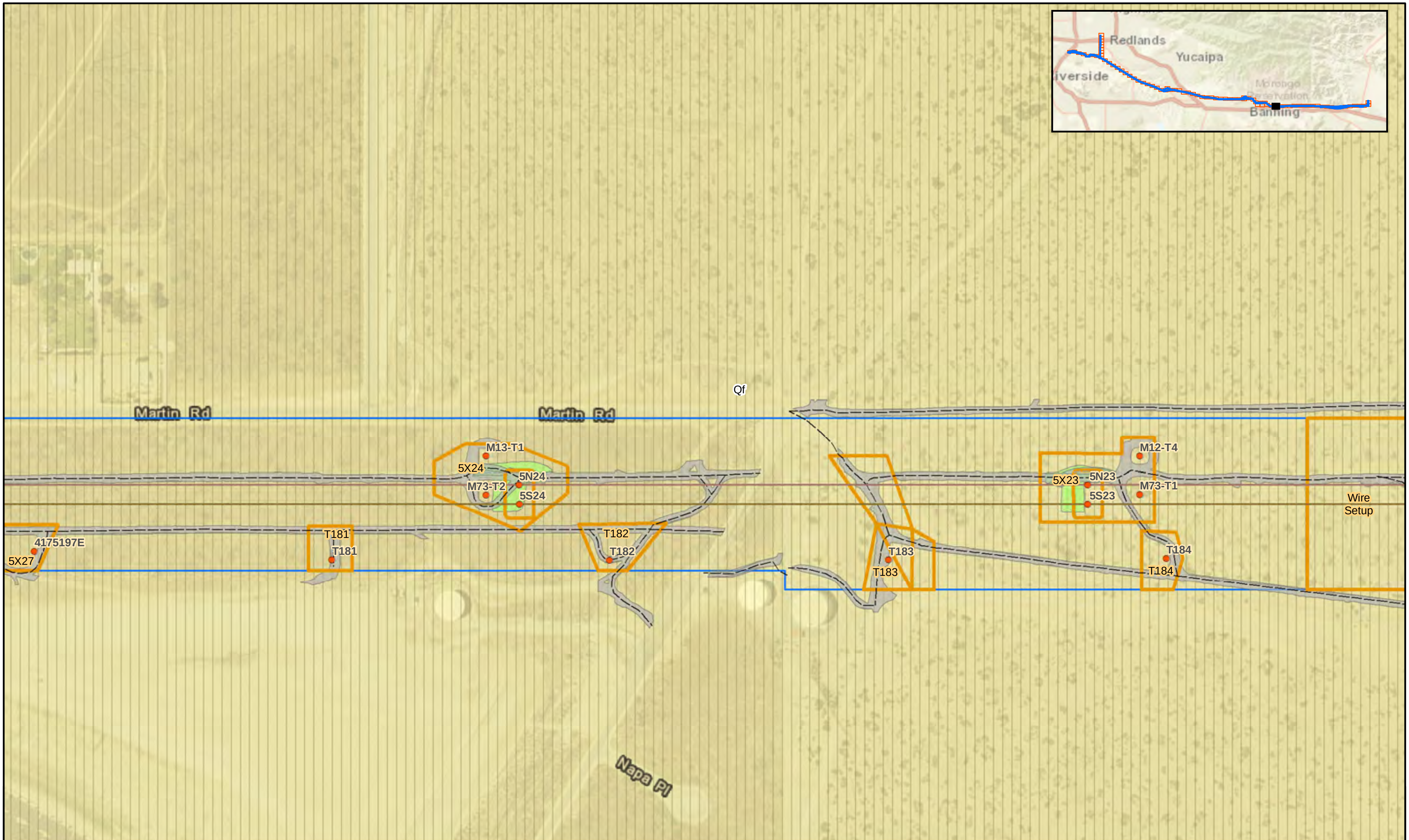
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Cabazon Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qf : Fan deposit (Pleistocene)

Paleosensitivity (PFYC)

2: Low

SCE West of Devers

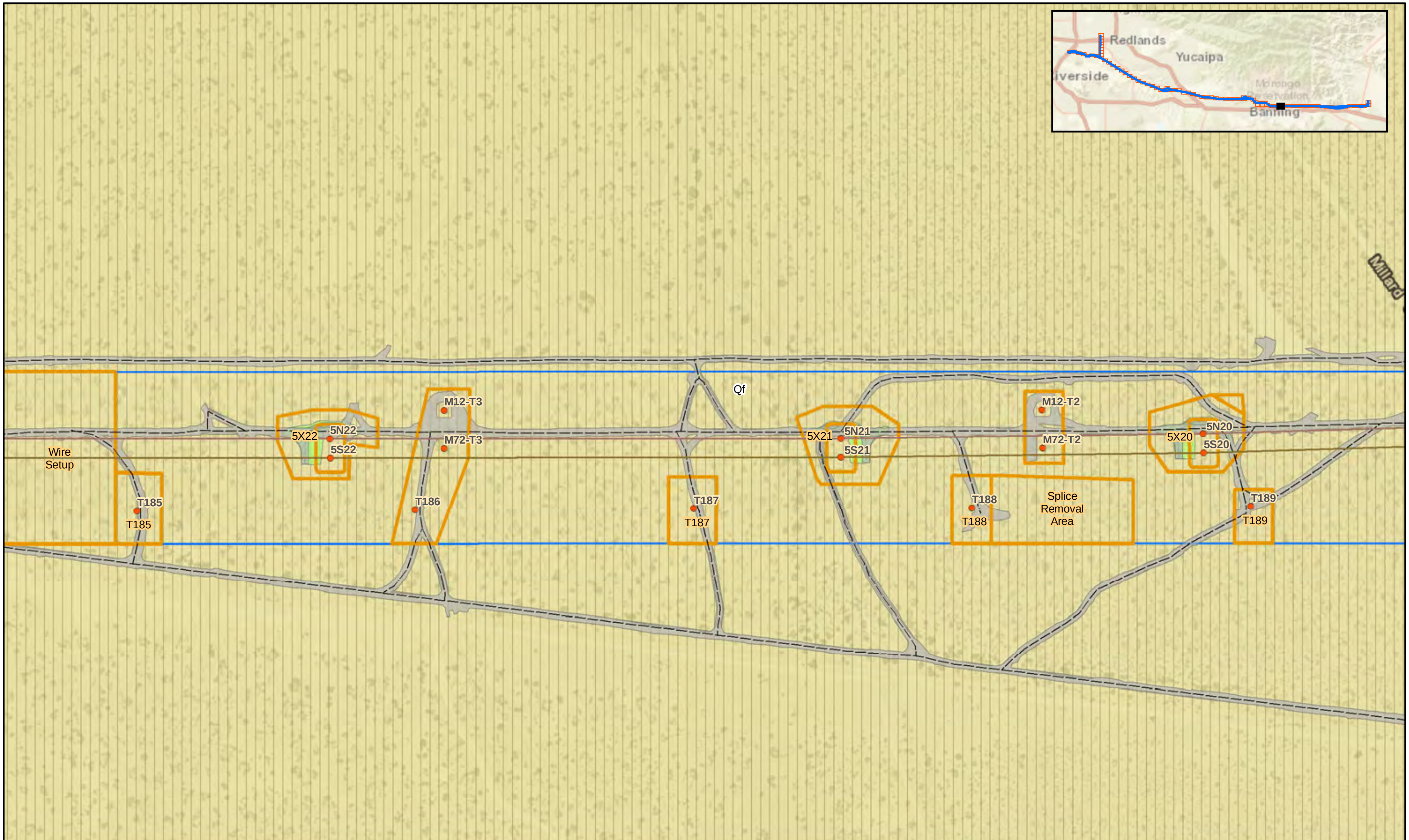
Page 60 of 81

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Cabazon Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qf : Fan deposit (Pleistocene)

Paleosensitivity (PFYC)

2: Low

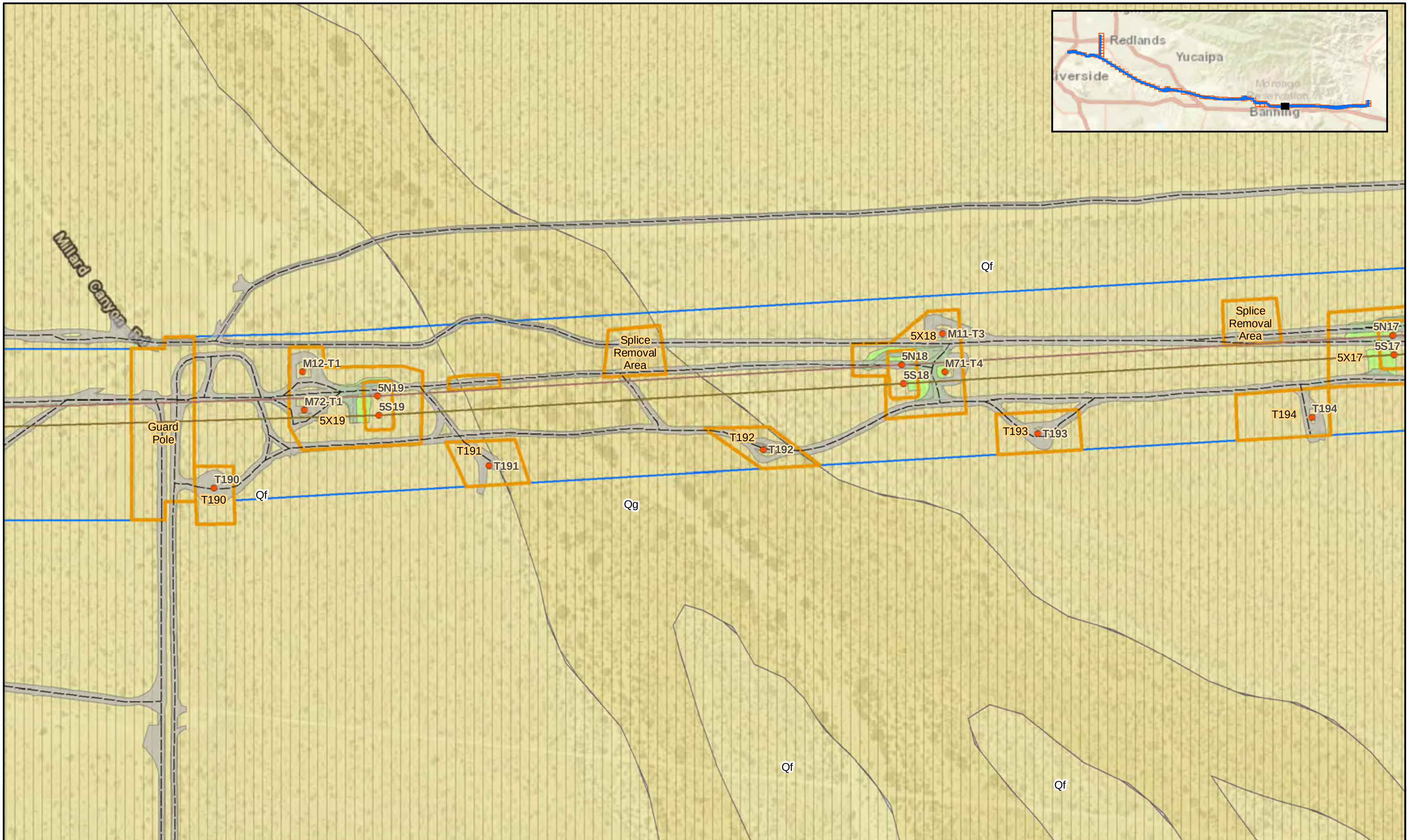
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Cabazon Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online



Structure
Existing ROW

Line name
Devers-El Casco
Devers-Vista

Geologic Unit
Qg : Quaternary gravel deposit (Holocene)
Qf : Fan deposit (Pleistocene)

Access road
Existing
New
Construction area
Access road
Disturbance limit area

Paleosensitivity (PFYC)
2: Low

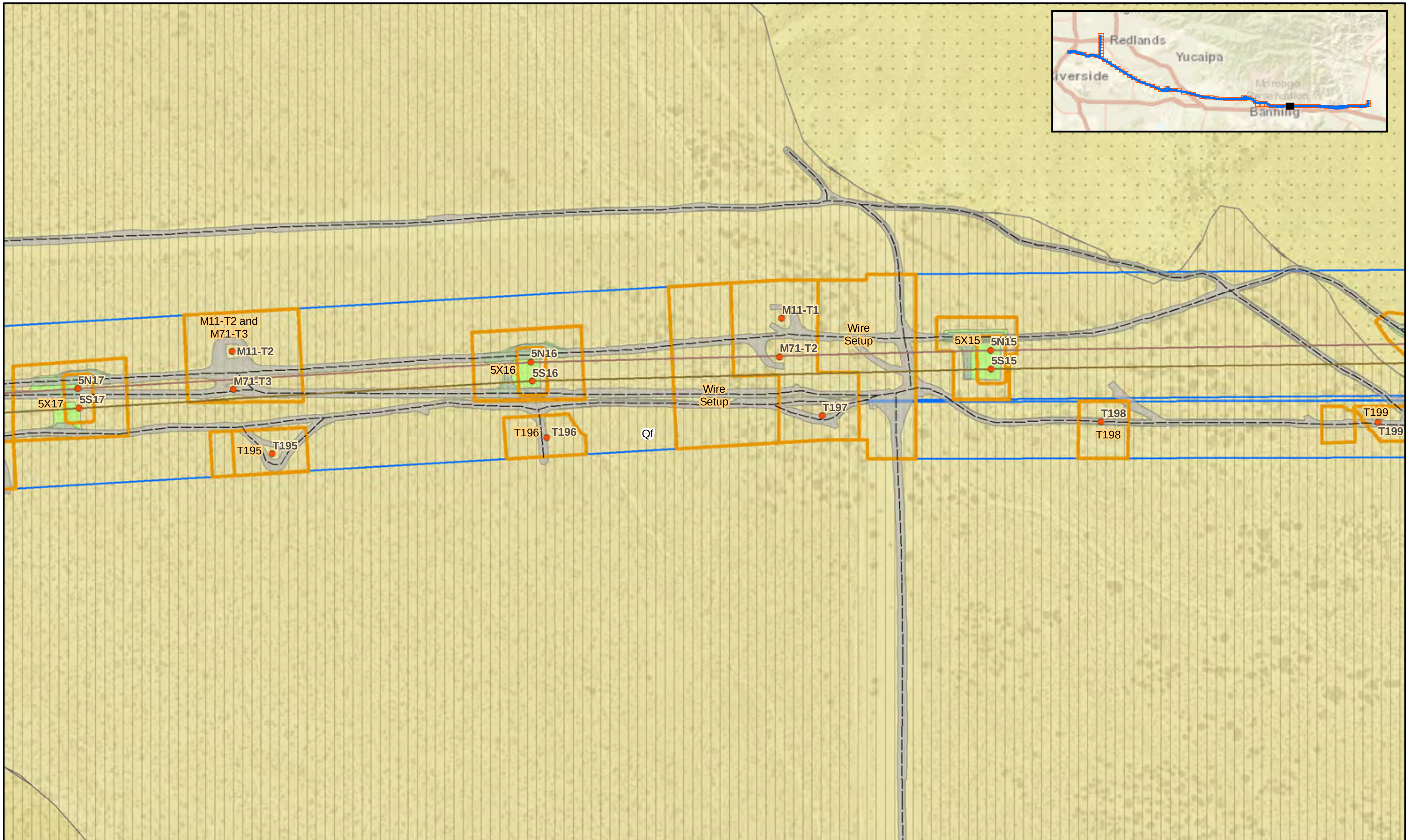
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Cabazon Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online



● Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qg : Quaternary gravel deposit (Holocene)

Qcf: Cabazon fanglomerate (Pleistocene)

Qf : Fan deposit (Pleistocene)

Paleosensitivity (PFYC)

2: Low

U: Unknown

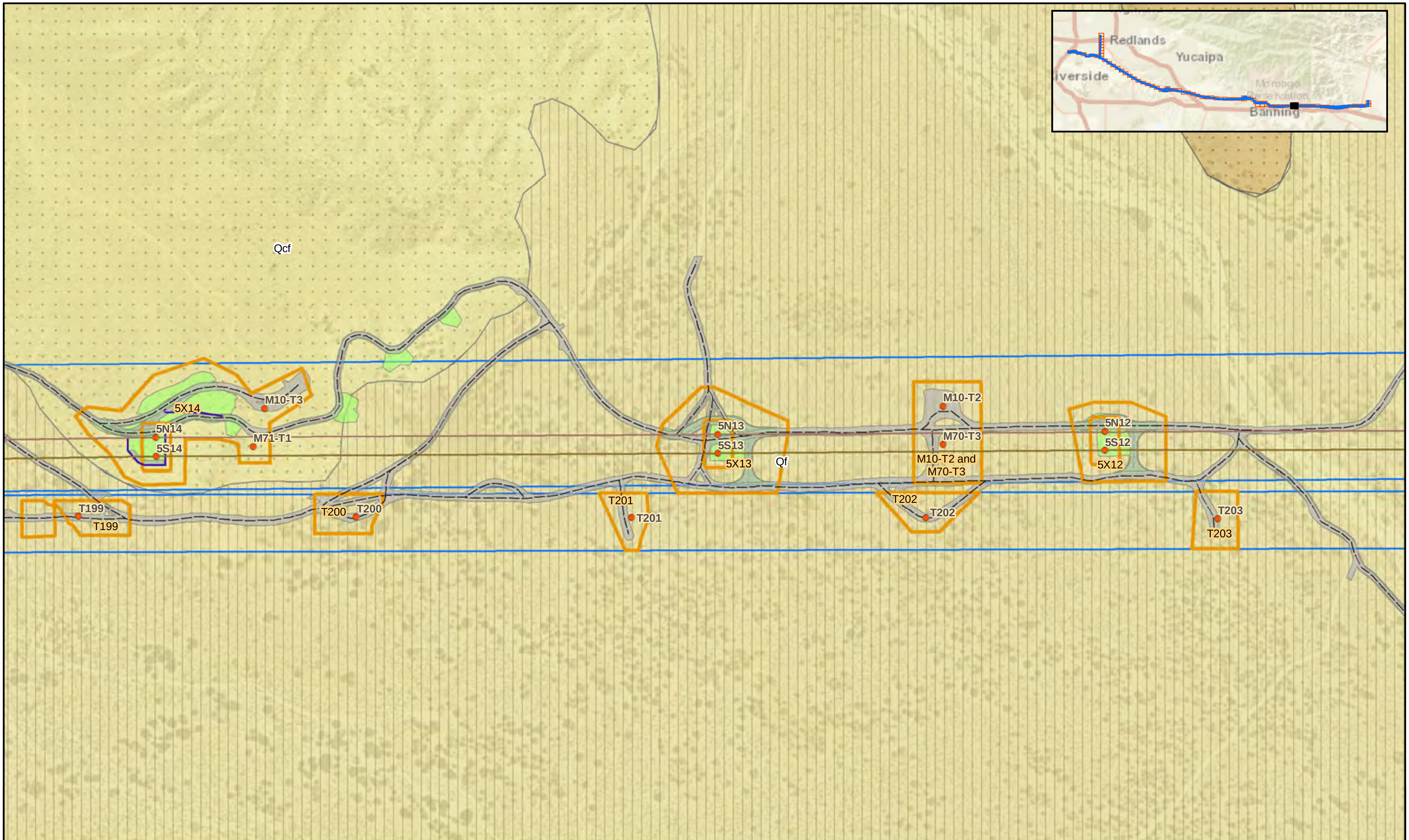
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Cabazon Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Retaining wall

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qcf: Cabazon fanglomerate (Pleistocene)

Qf : Fan deposit (Pleistocene)

Tcf : Coachella fanglomerate (Miocene)

Paleosensitivity (PFYC)

2: Low

U: Unknown

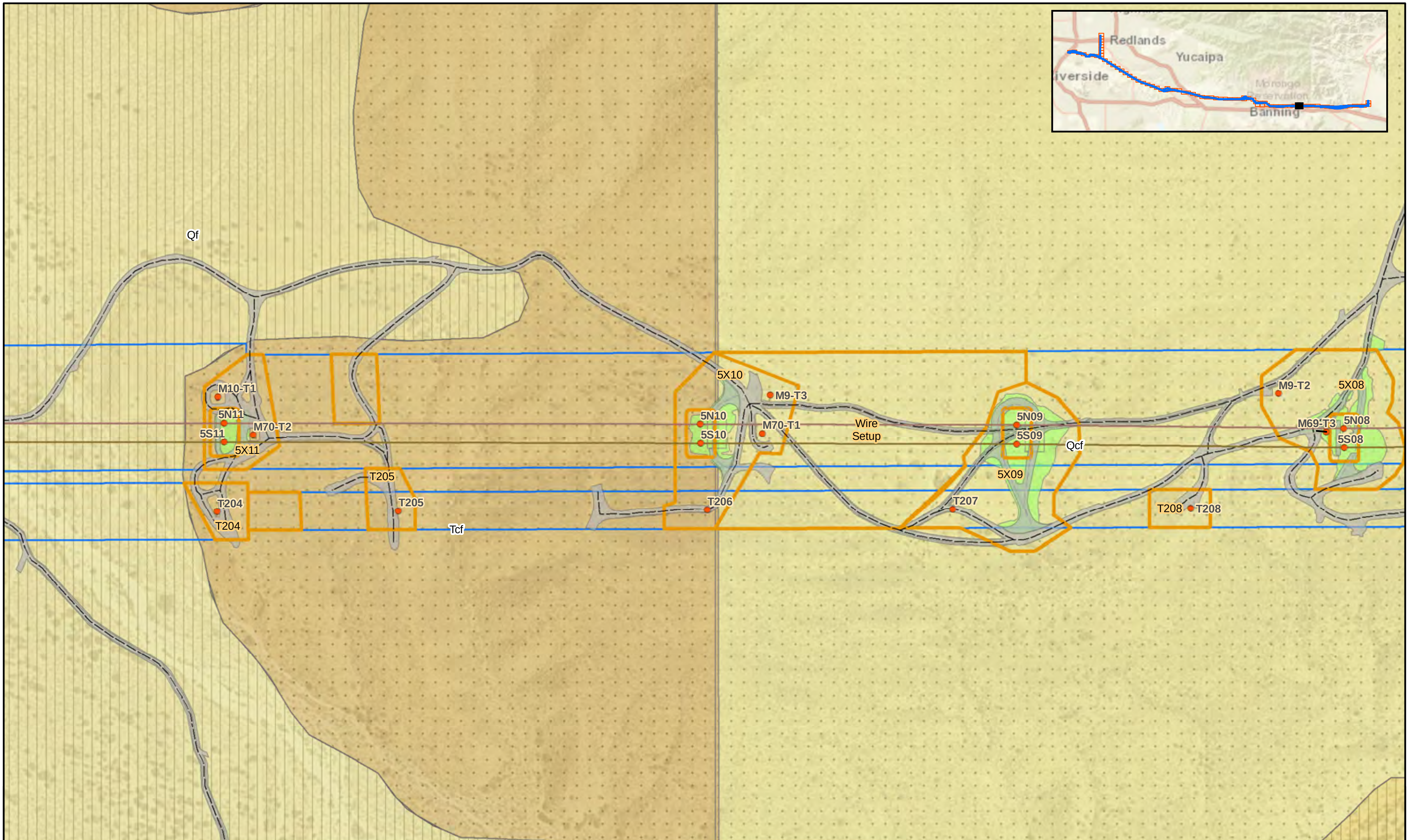
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Cabazon Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qcf: Cabazon fanglomerate (Pleistocene)

Qf : Quaternary fan deposit (Pleistocene)

Qf : Fan deposit (Pleistocene)

Tcf : Coachella fanglomerate (Miocene)

Paleosensitivity (PFYC)

2: Low

U: Unknown

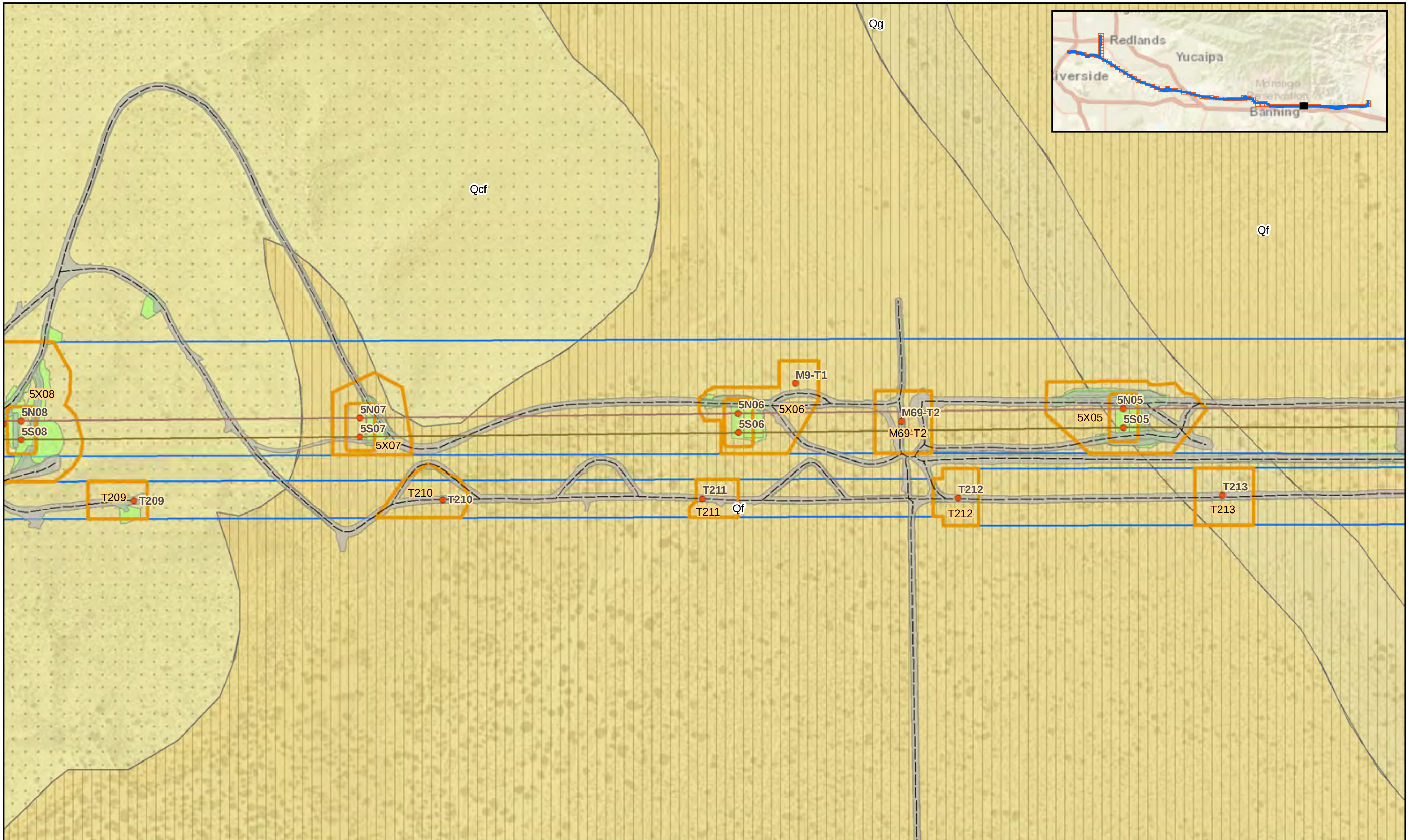
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Cabazon Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004 and Geologic Map of the Whitewater Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qg : Quaternary gravel deposit (Holocene)

Qcf: Cabazon fanglomerate (Pleistocene)

Qf : Quaternary fan deposit (Pleistocene)

Paleosensitivity (PFYC)

2: Low

U: Unknown

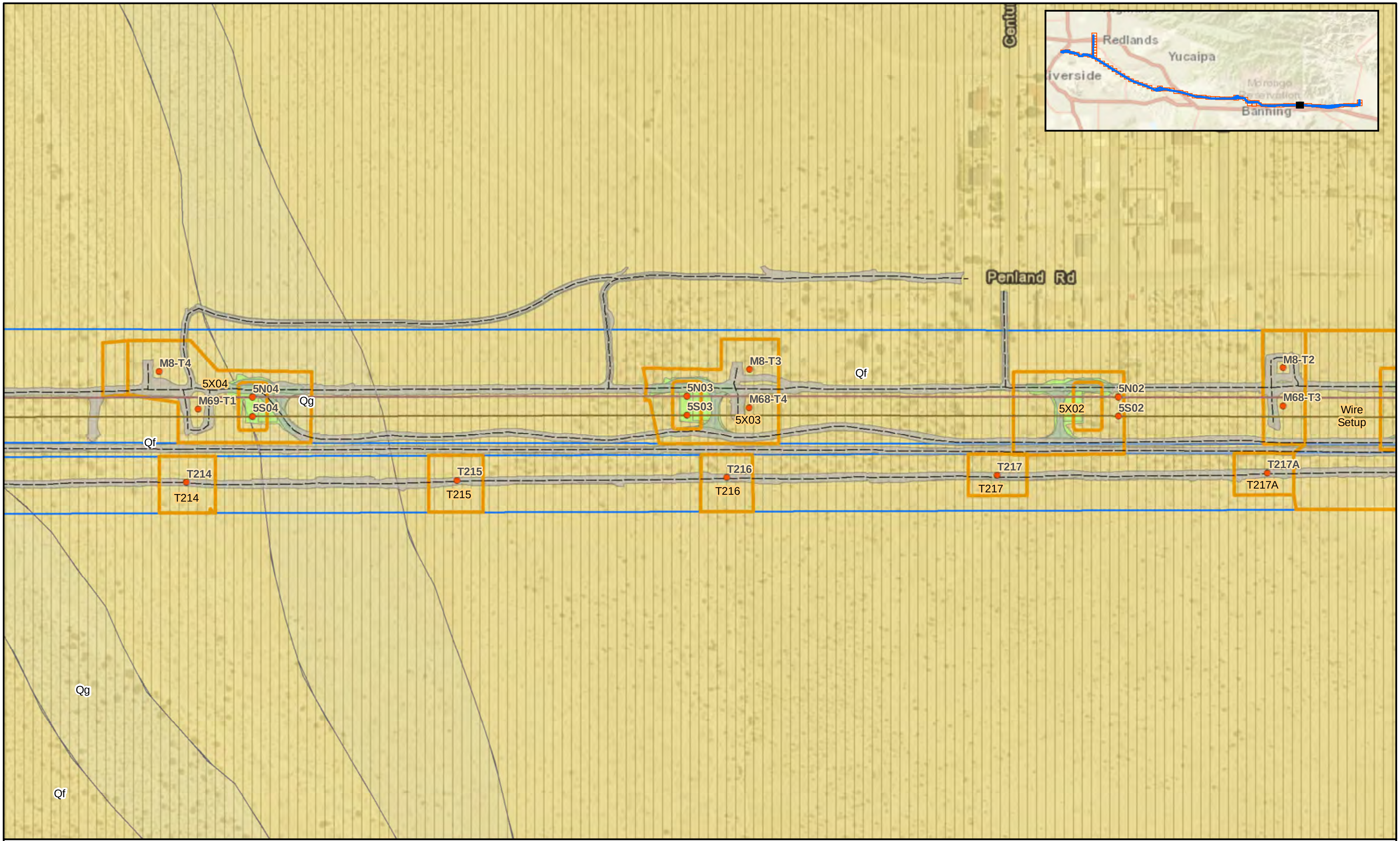
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Whitewater Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qg : Quaternary gravel deposit (Holocene)

Qf : Quaternary fan deposit (Pleistocene)

Paleosensitivity (PFYC)

2: Low

SCE West of Devers

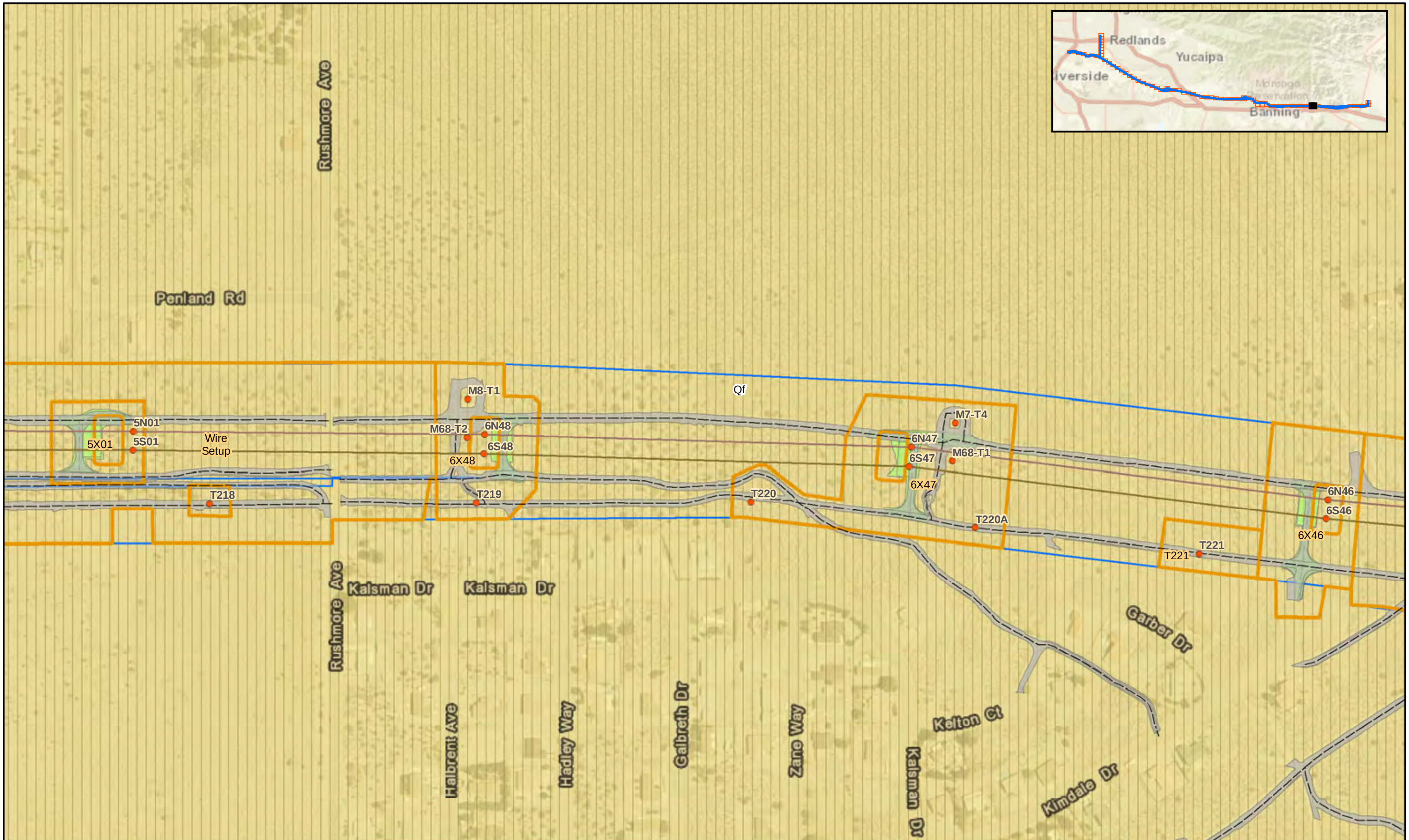
Page 67 of 81

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Whitewater Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qf : Quaternary fan deposit (Pleistocene)

Paleosensitivity (PFYC)

2: Low

SCE West of Devers

0 250 500 Feet

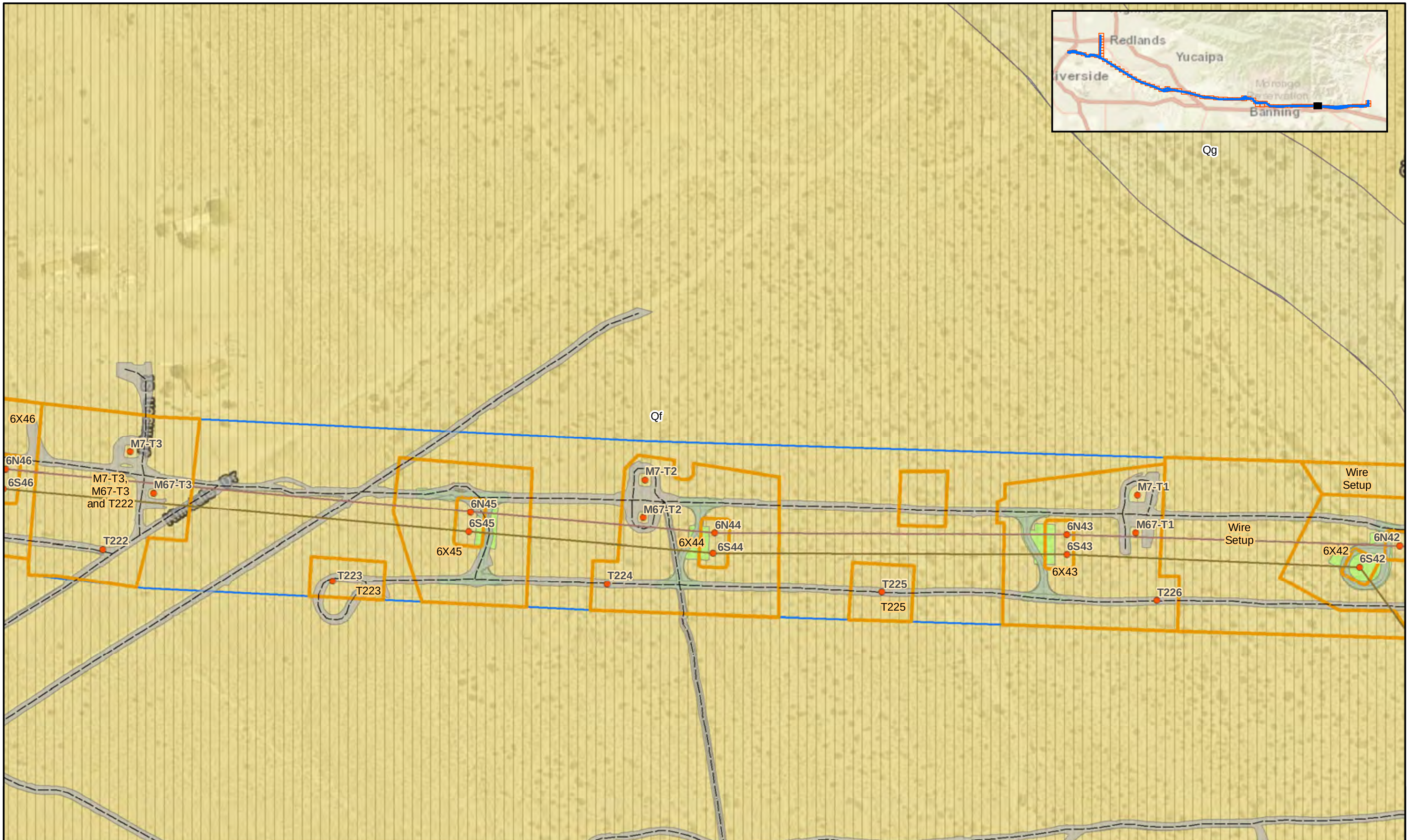
N

PALEO SOLUTIONS

Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Whitewater Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004

Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qg : Quaternary gravel deposit (Holocene)

Qf : Quaternary fan deposit (Pleistocene)

Paleosensitivity (PFYC)

2: Low

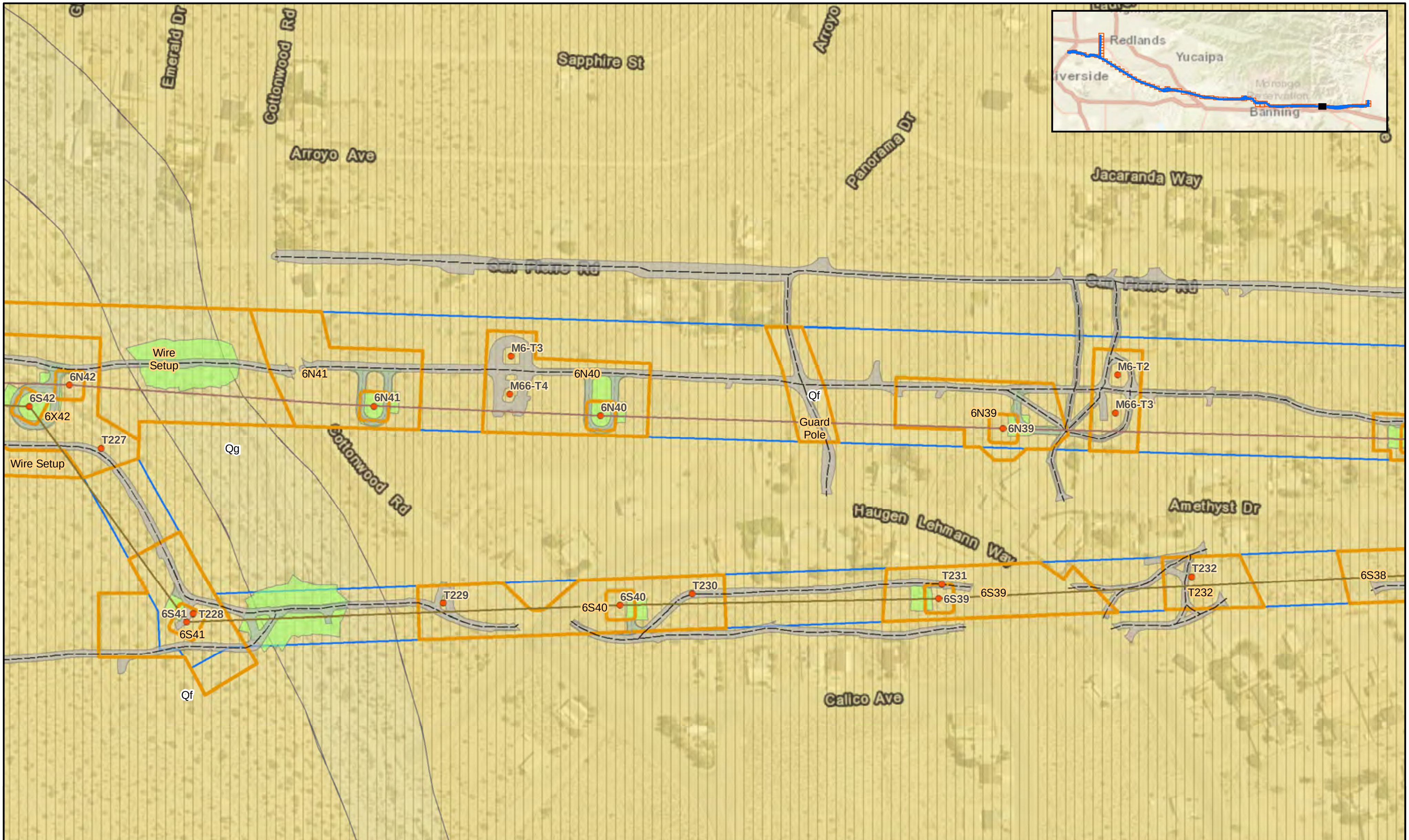
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Whitewater Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qg : Quaternary gravel deposit (Holocene)

Qf : Quaternary fan deposit (Pleistocene)

Paleosensitivity (PFYC)

2: Low

SCE West of Devers

0 250 500 Feet

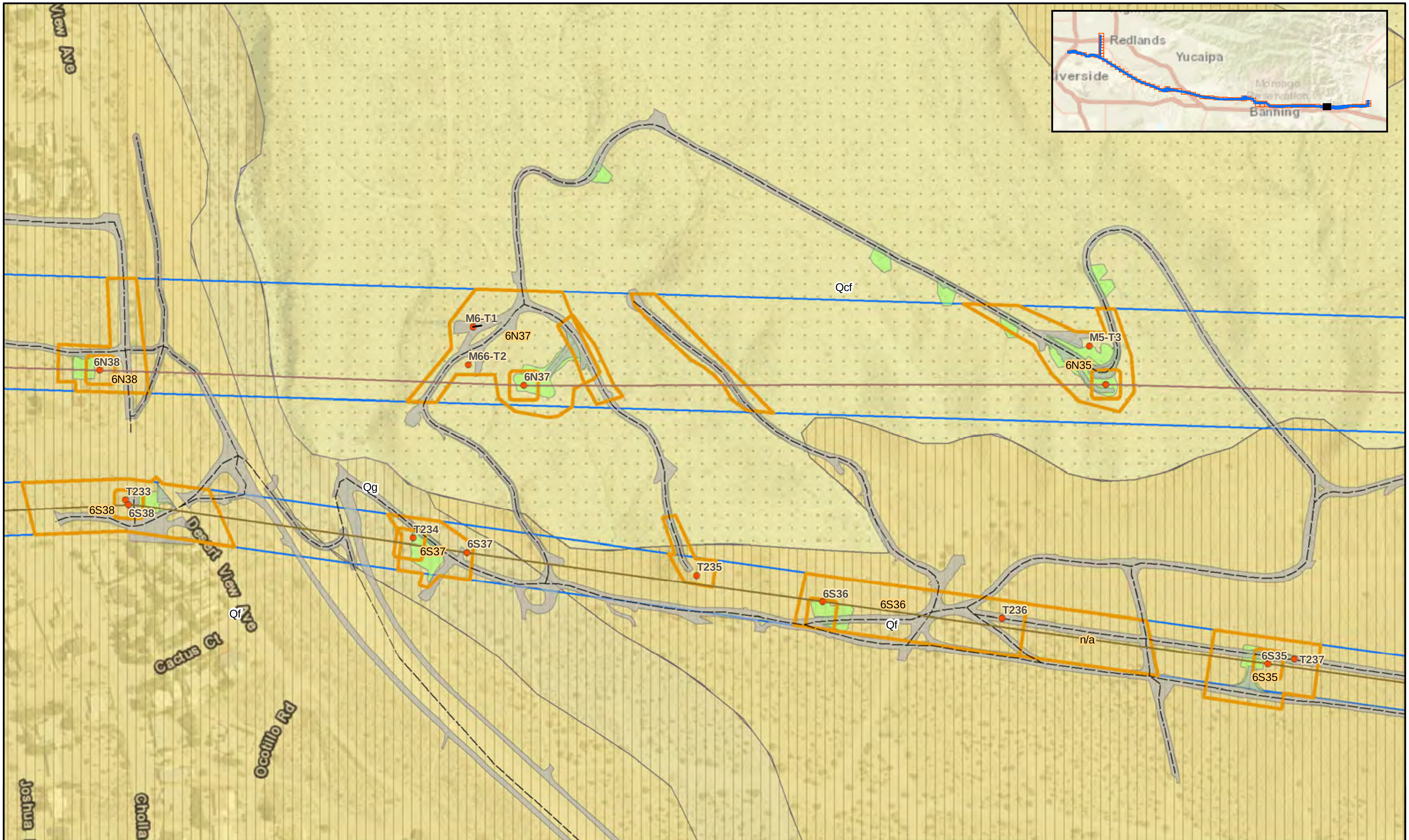
N

PALEO SOLUTIONS

Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Whitewater Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004

Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qg : Quaternary gravel deposit (Holocene)

Qcf: Cabazon fanglomerate (Pleistocene)

Qf : Quaternary fan deposit (Pleistocene)

Paleosensitivity (PFYC)

2: Low

U: Unknown

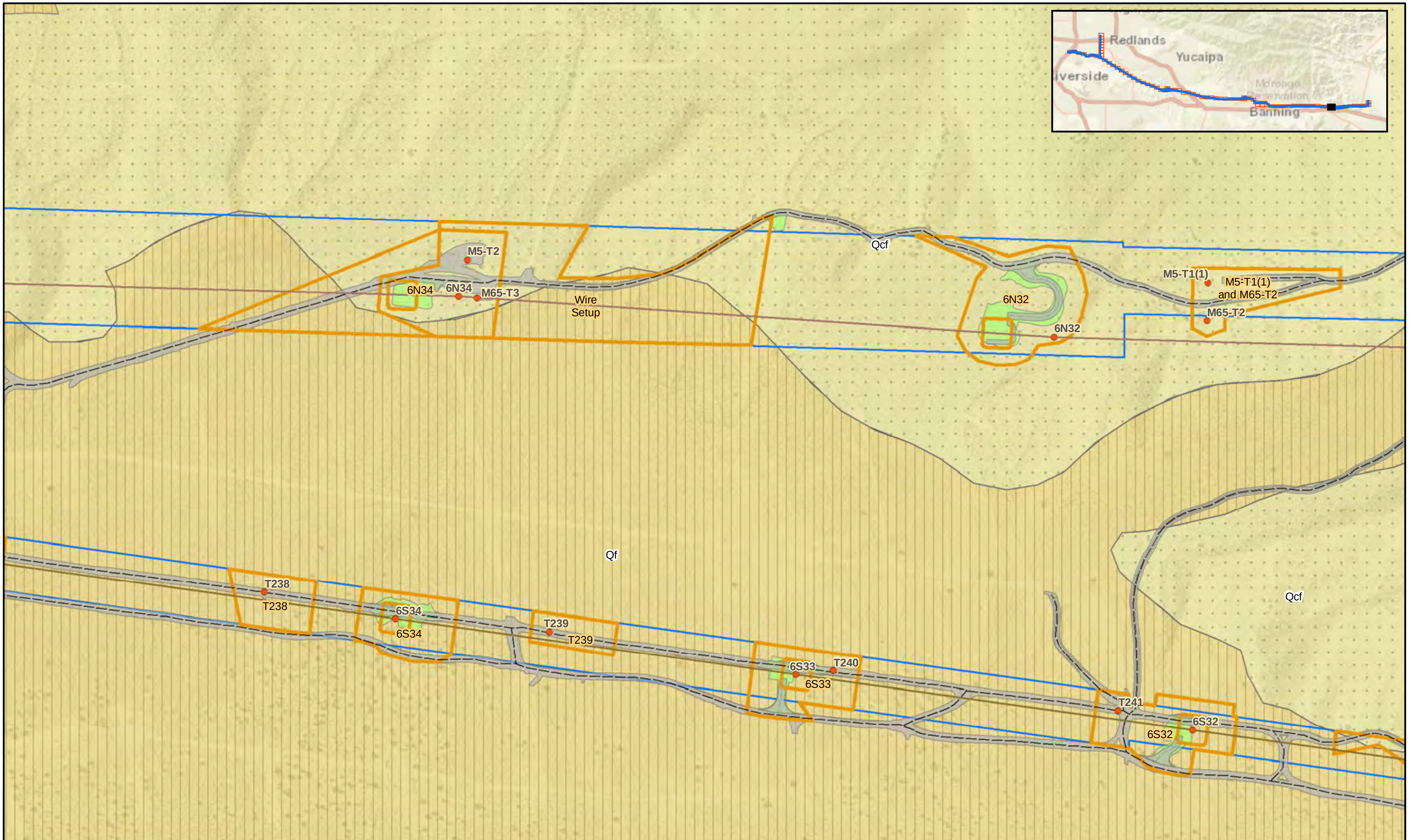
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Whitewater Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qcf: Cabazon fanglomerate (Pleistocene)

Qf : Quaternary fan deposit (Pleistocene)

Paleosensitivity (PFYC)

2: Low

U: Unknown

SCE West of Devers

0 250 500 Feet

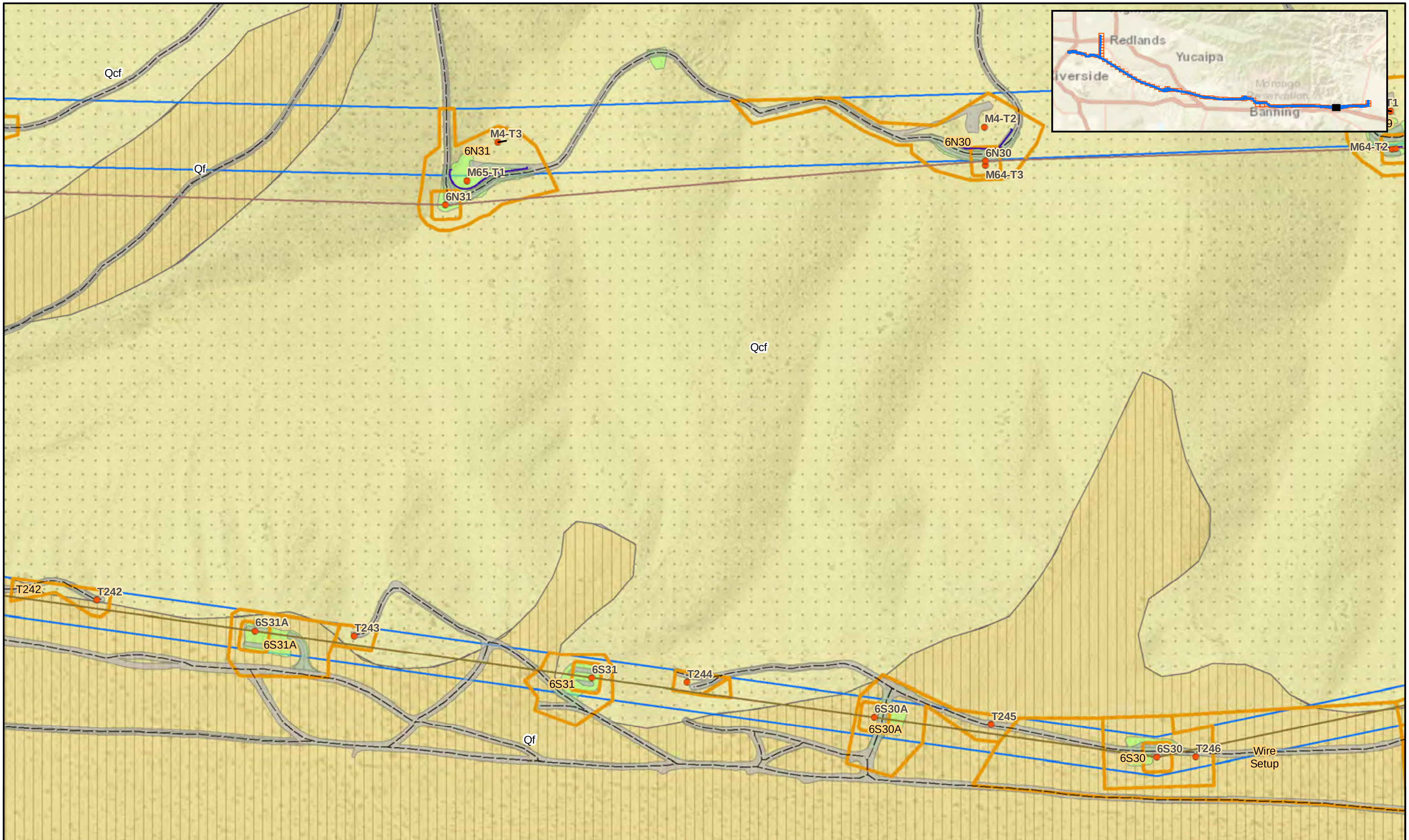
N

PALEO SOLUTIONS

Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Whitewater Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004

Base layers from Esri ArcGIS Online



- Structure

Line name

- Devers-El Casco
- Devers-Vista

Access road

- Existing
- New
- Retaining wall
- Construction area
- Access road
- Disturbance limit area
- Existing ROW

Geologic Unit

- Qcf: Cabazon fanglomerate (Pleistocene)
- Qf : Quaternary fan deposit (Pleistocene)

Paleosensitivity (PFYC)

- 2: Low
- U: Unknown

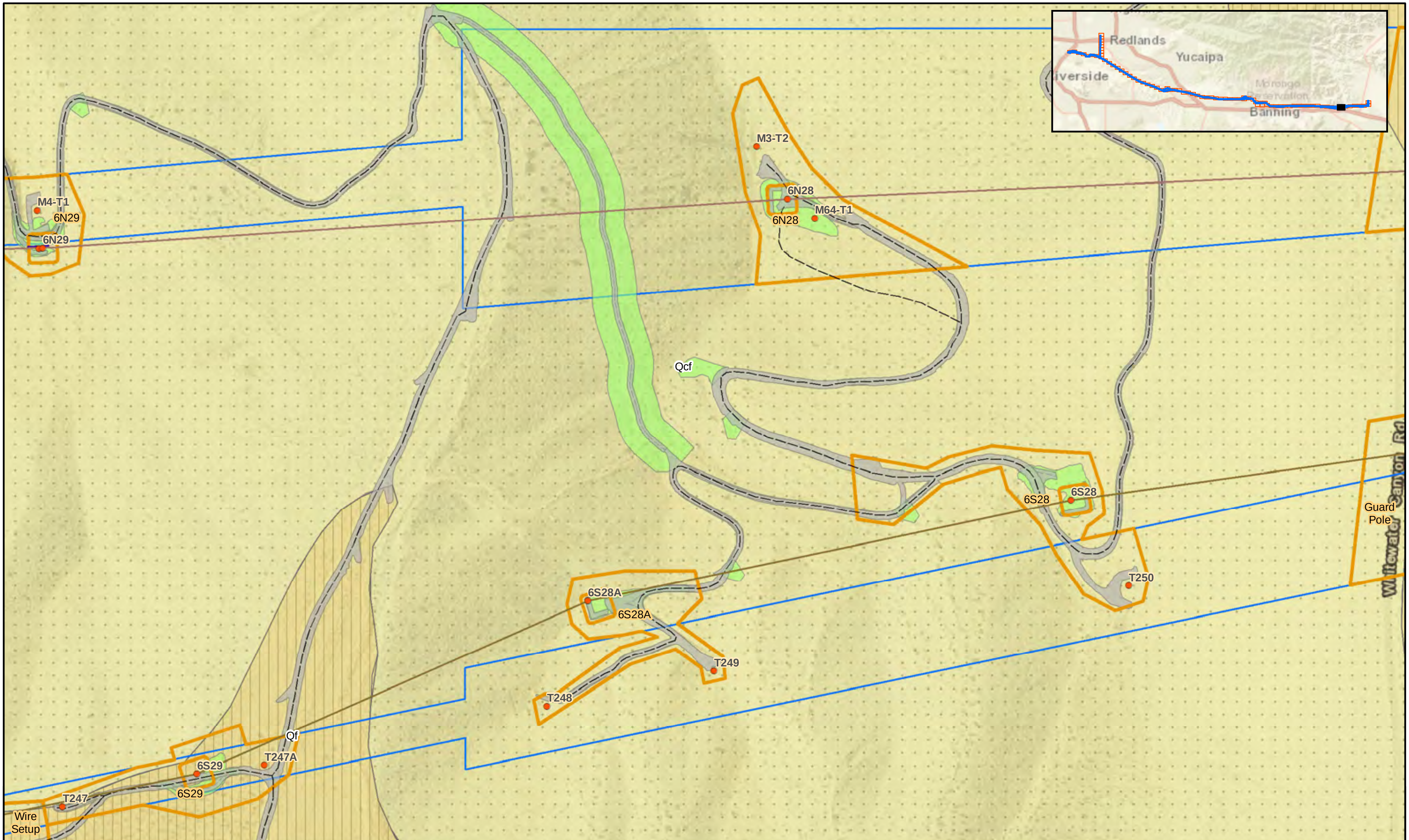
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Whitewater Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online



- Structure

Line name

- Devers-El Casco
- Devers-Vista

Access road

- Existing
- New
- Retaining wall
- Construction area
- Access road

- Disturbance limit area
- Existing ROW

Geologic Unit

- Qcf: Cabazon fanglomerate (Pleistocene)
- Qf : Quaternary fan deposit (Pleistocene)

Paleosensitivity (PFYC)

- 2: Low
- U: Unknown

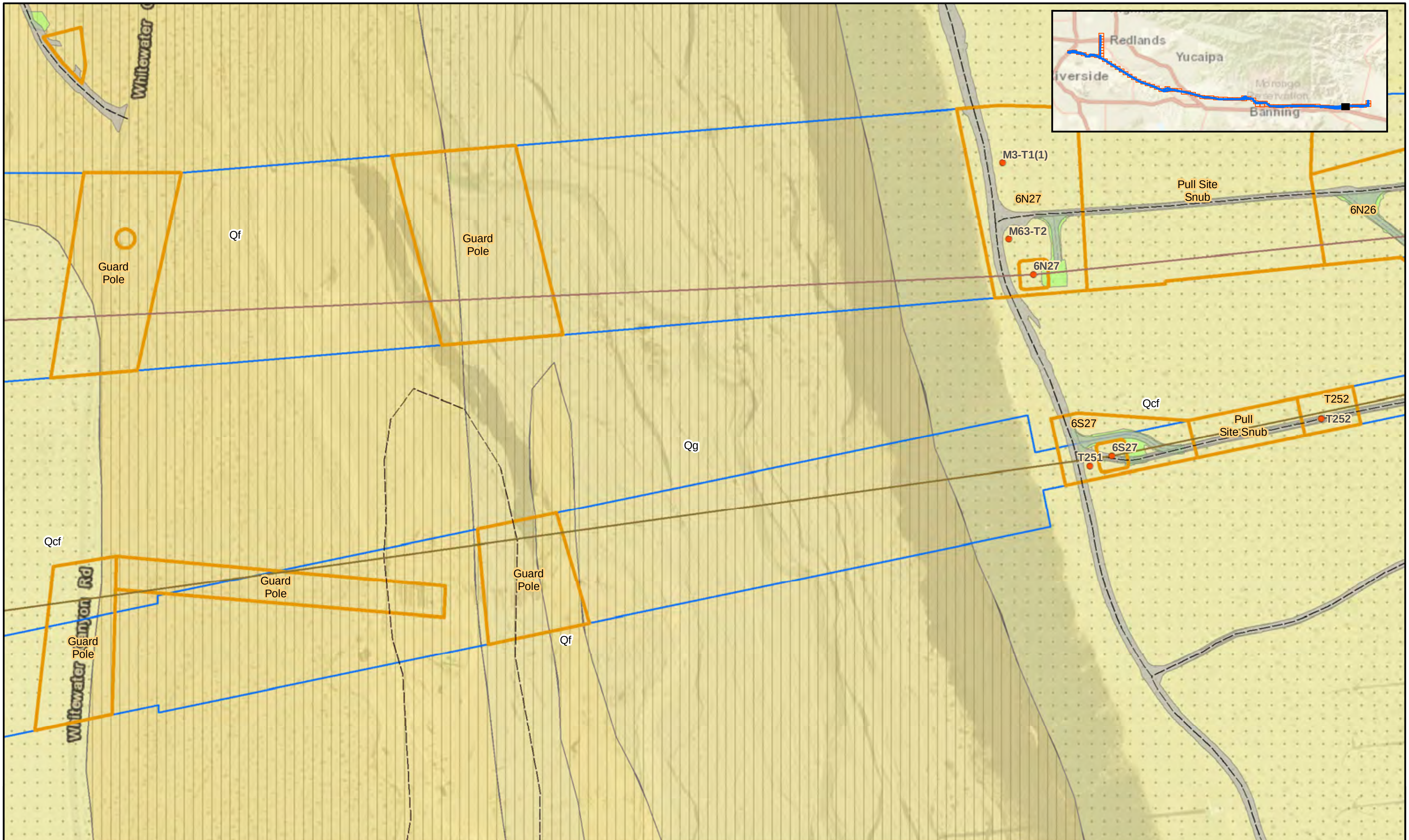
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Whitewater Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online



- Structure

Line name

- Devers-El Casco
- Devers-Vista

Access road

- Existing
- New
- Construction area
- Access road
- Disturbance limit area

- Existing ROW

Geologic Unit

- Qg : Quaternary gravel deposit (Holocene)
- Qcf: Cabazon fanglomerate (Pleistocene)
- Qf : Quaternary fan deposit (Pleistocene)

Paleosensitivity (PFYC)

- 2: Low
- U: Unknown

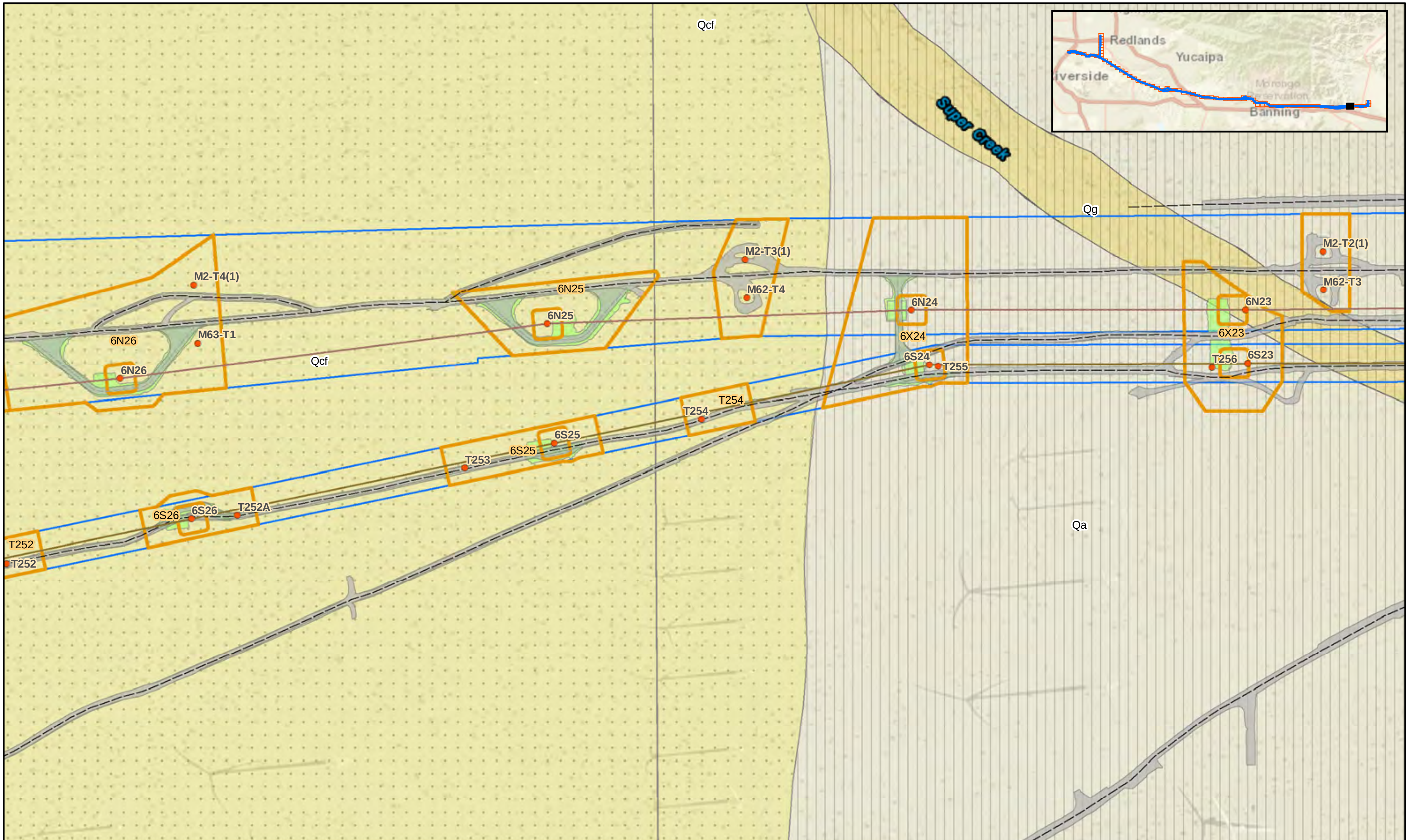
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Whitewater Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qg : Quaternary gravel deposit (Holocene)

Qa : Quaternary alluvium (Holocene)

Qcf: Cabazon fanglomerate (Pleistocene)

Tcf : Coachella fanglomerate (Miocene)

Paleosensitivity (PFYC)

2: Low

U: Unknown

SCE West of Devers

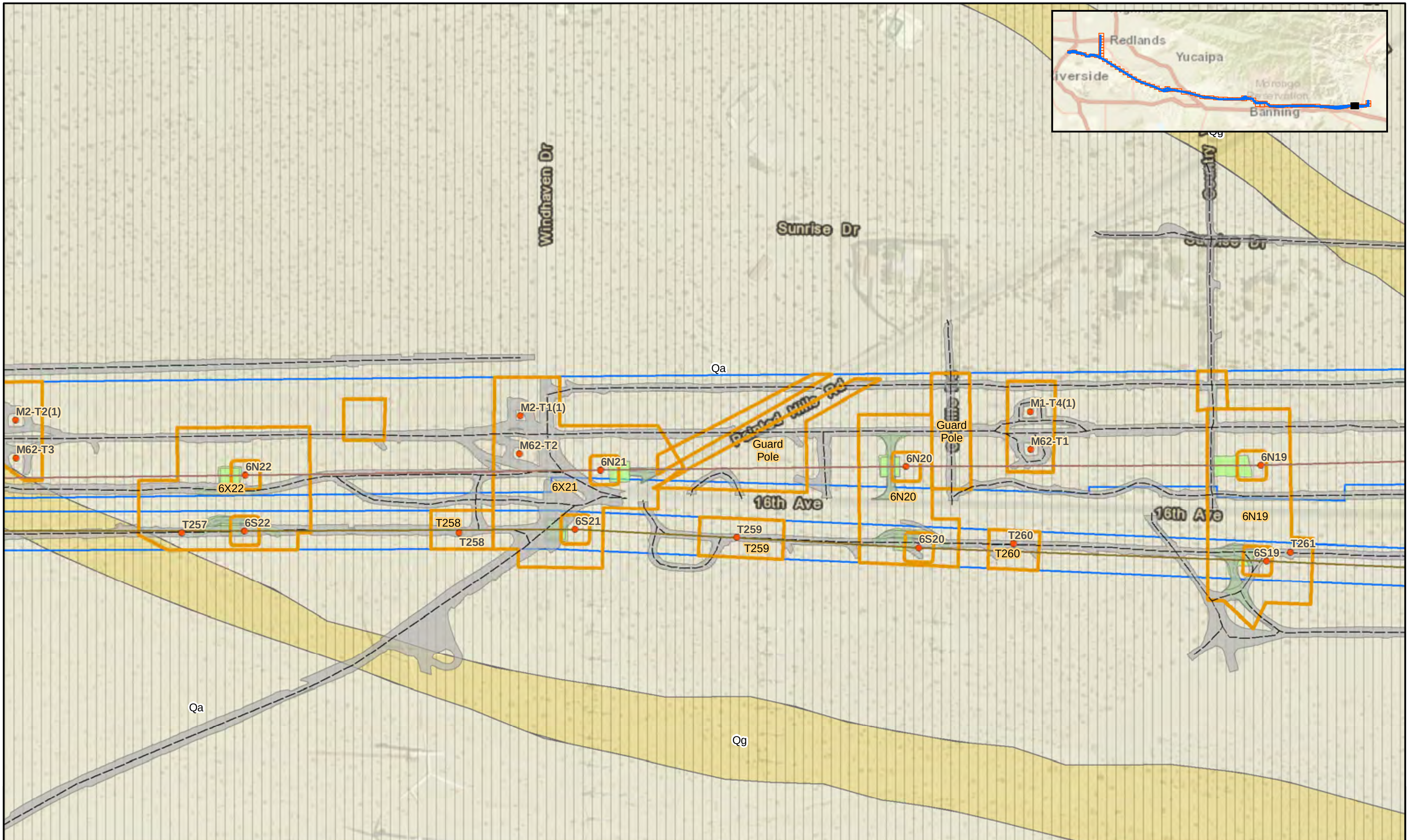
0 250 500 Feet

N

PALEO SOLUTIONS

Geology from Geologic Map of the Whitewater Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004 and Geologic Map of the Desert Hot Springs Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004

Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qg : Quaternary gravel deposit (Holocene)

Qa : Quaternary alluvium (Holocene)

Paleosensitivity (PFYC)

2: Low

SCE West of Devers

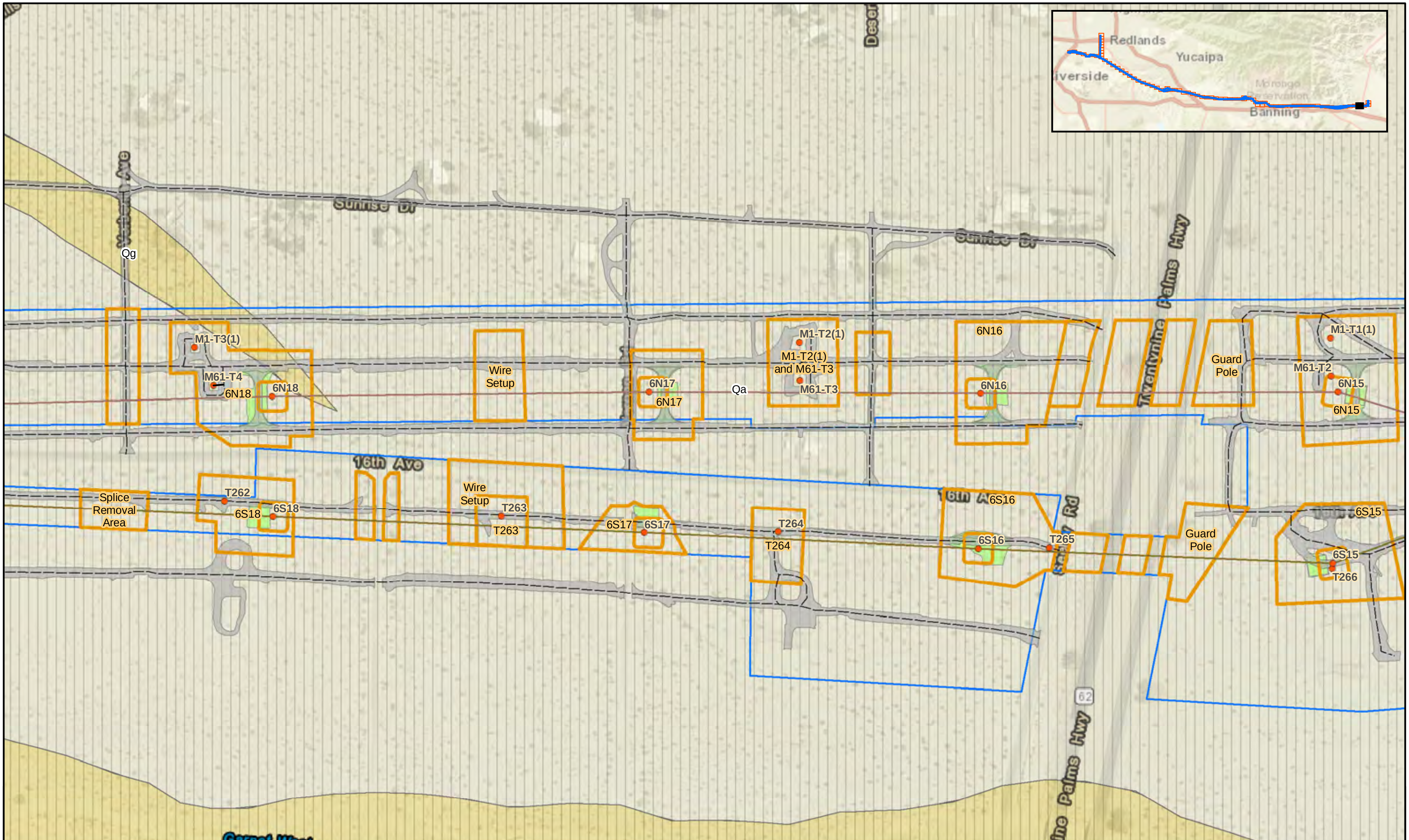
Page 77 of 81

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Desert Hot Springs Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qg : Quaternary gravel deposit (Holocene)

Qa : Quaternary alluvium (Holocene)

Paleosensitivity (PFYC)

2: Low

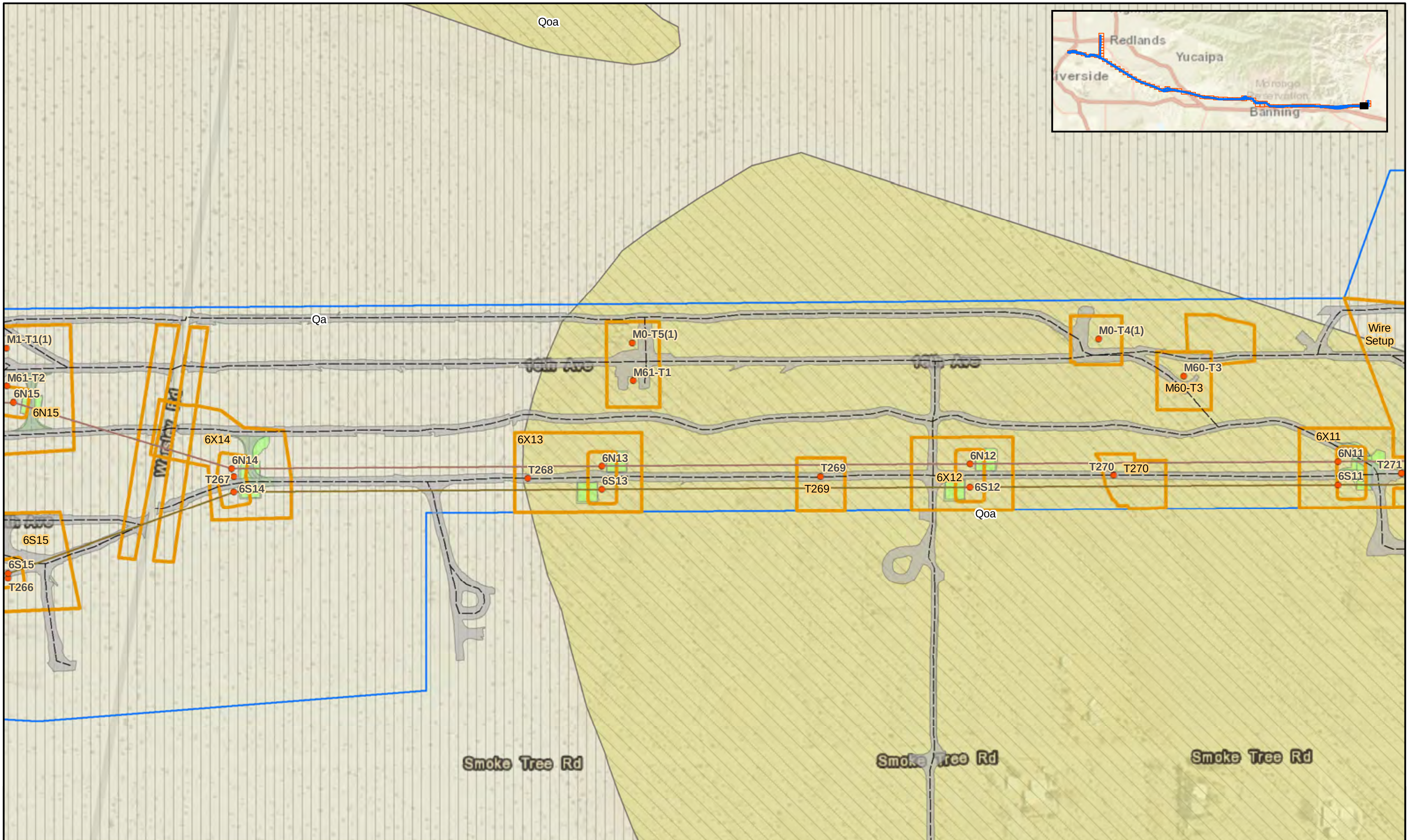
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Desert Hot Springs Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online



Structure

Line name

Devers-El Casco

Devers-Vista

Access road

Existing

New

Construction area

Access road

Disturbance limit area

Existing ROW

Geologic Unit

Qa : Quaternary alluvium (Holocene)

Qoa : Quaternary older alluvium (Pleistocene)

Paleosensitivity (PFYC)

3: Moderate

2: Low

SCE West of Devers

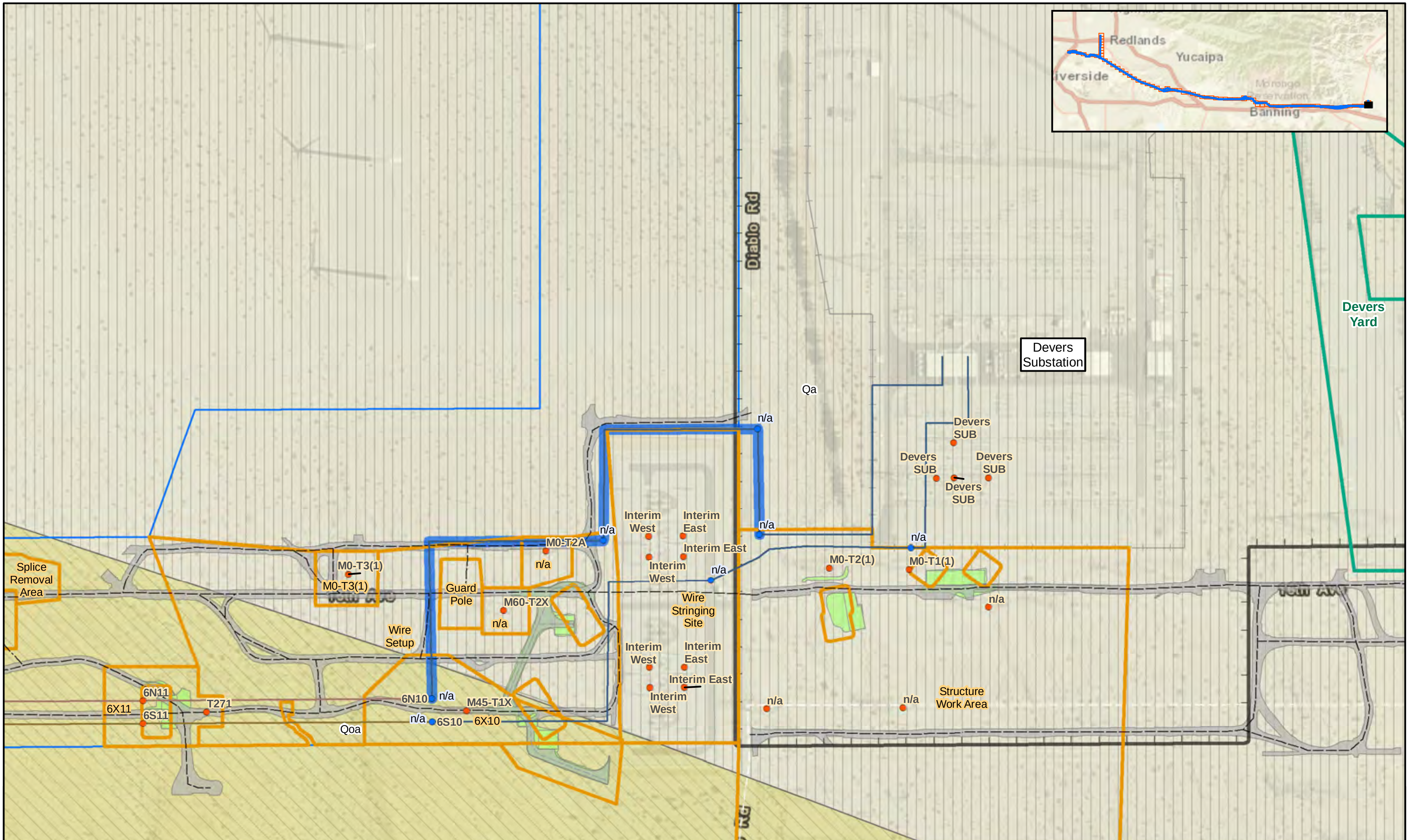
Page 79 of 81

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Desert Hot Springs Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online



- Telcom
- Structure

Line name
- Devers
- Devers-El Casco
- Devers-Vista

Access road
- Existing
- New
- Construction area
- Construction Yard
- Telcom area

Substation
- Boundary
- Fence
- Access road
- Disturbance limit area
- Existing ROW

Geologic Unit
- Qa : Quaternary alluvium (Holocene)
- Qoa : Quaternary older alluvium (Pleistocene)

Paleosensitivity (PFYC)
- 3: Moderate
- 2: Low

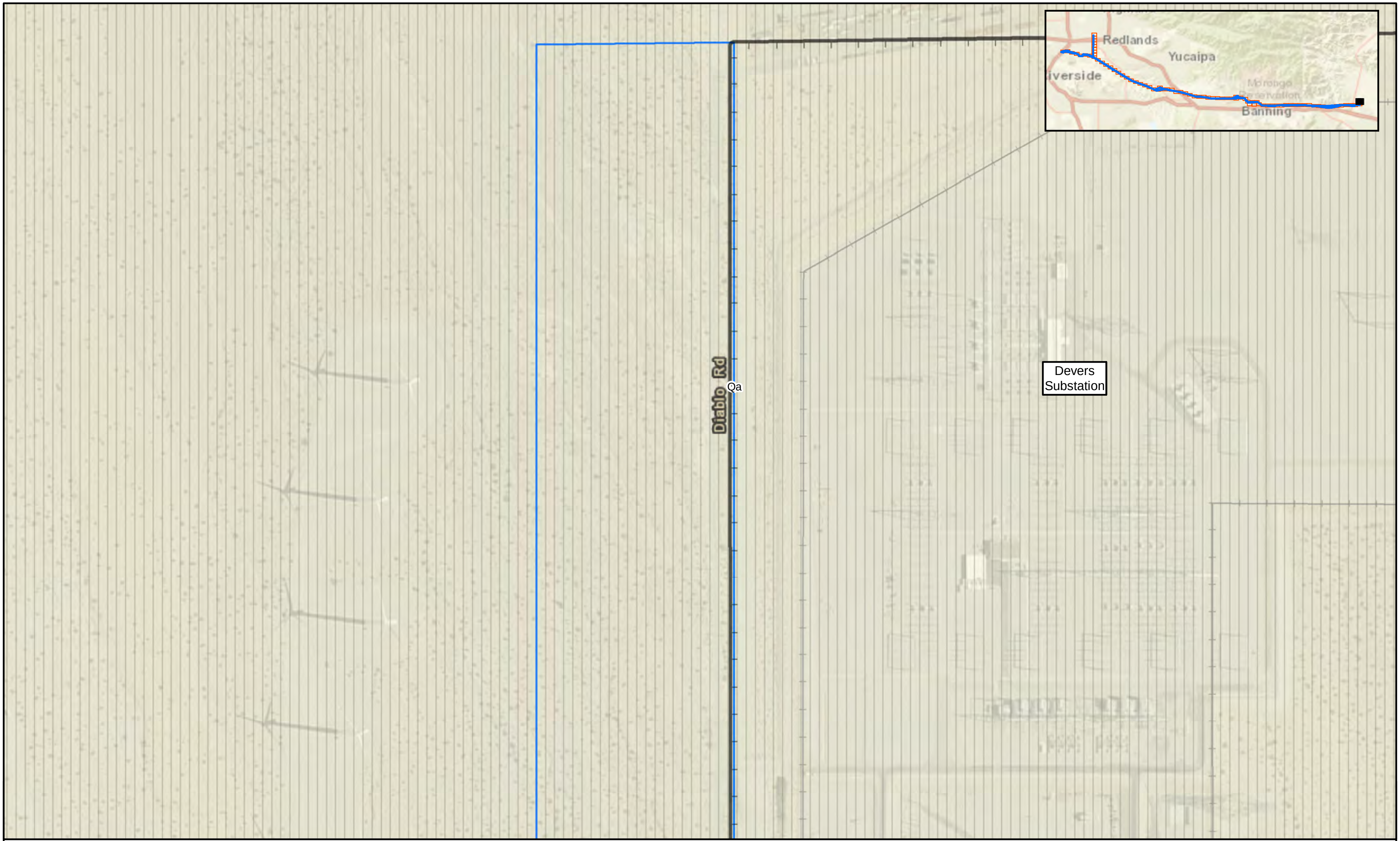
SCE West of Devers

0 250 500 Feet

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Desert Hot Springs Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online



Substation

Boundary

Fence

Existing ROW

Geologic Unit

Qa : Quaternary alluvium (Holocene)

Paleosensitivity (PFYC)

2: Low

SCE West of Devers

0 250 500 Feet

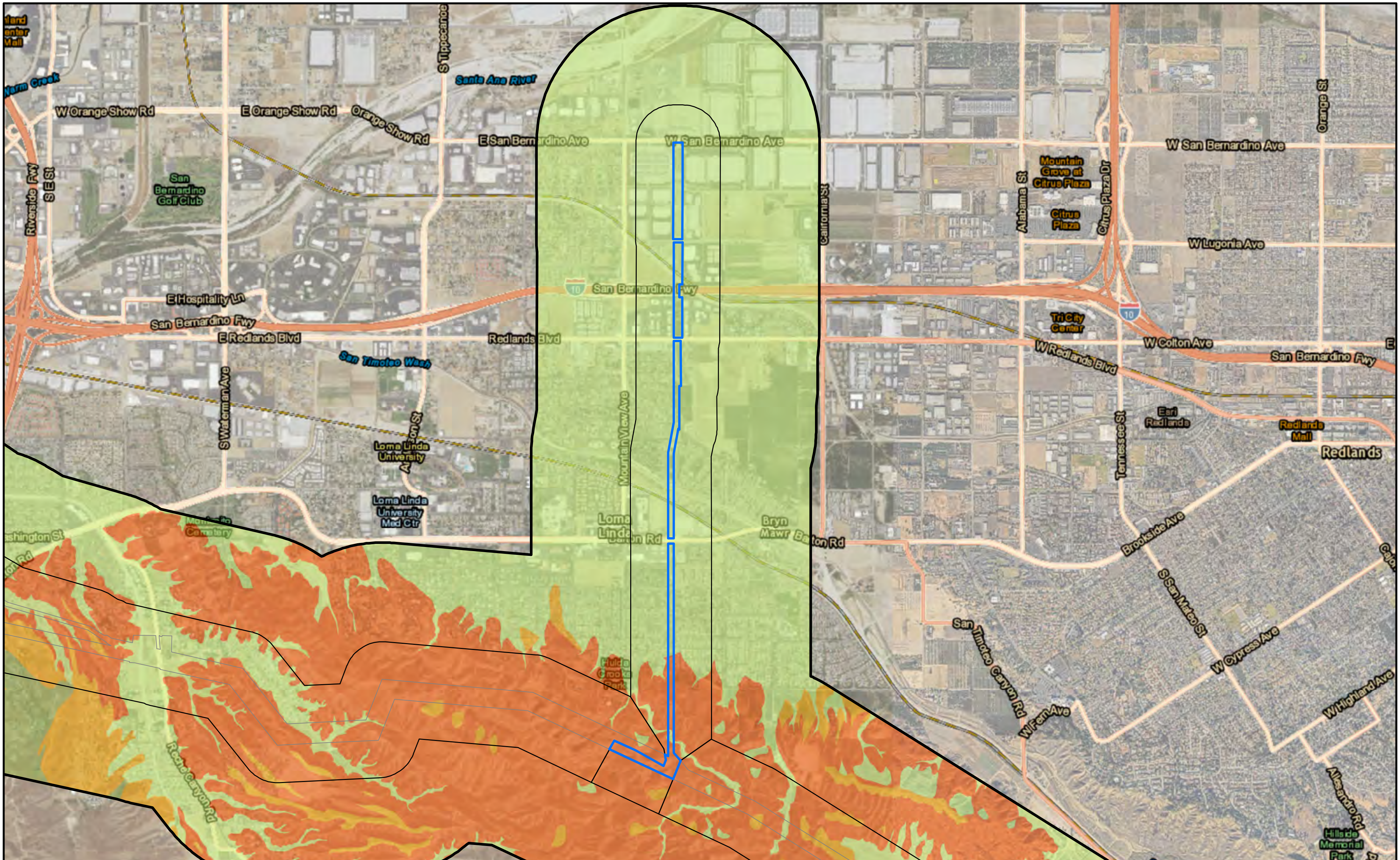
N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Geology from Geologic Map of the Desert Hot Springs Quadrangle, Riverside County, California by Thomas W. Dibblee, Jr., 1:24,000, 2004
Base layers from Esri ArcGIS Online

Appendix D
Paleontological Potential Overview Maps

This page intentionally left blank.



SCE West of Devers

Segment 1

Other segments

1000 foot buffer around right of way

Half mile buffer

Paleosensitivity

1: Very Low

2: Low

3: Moderate

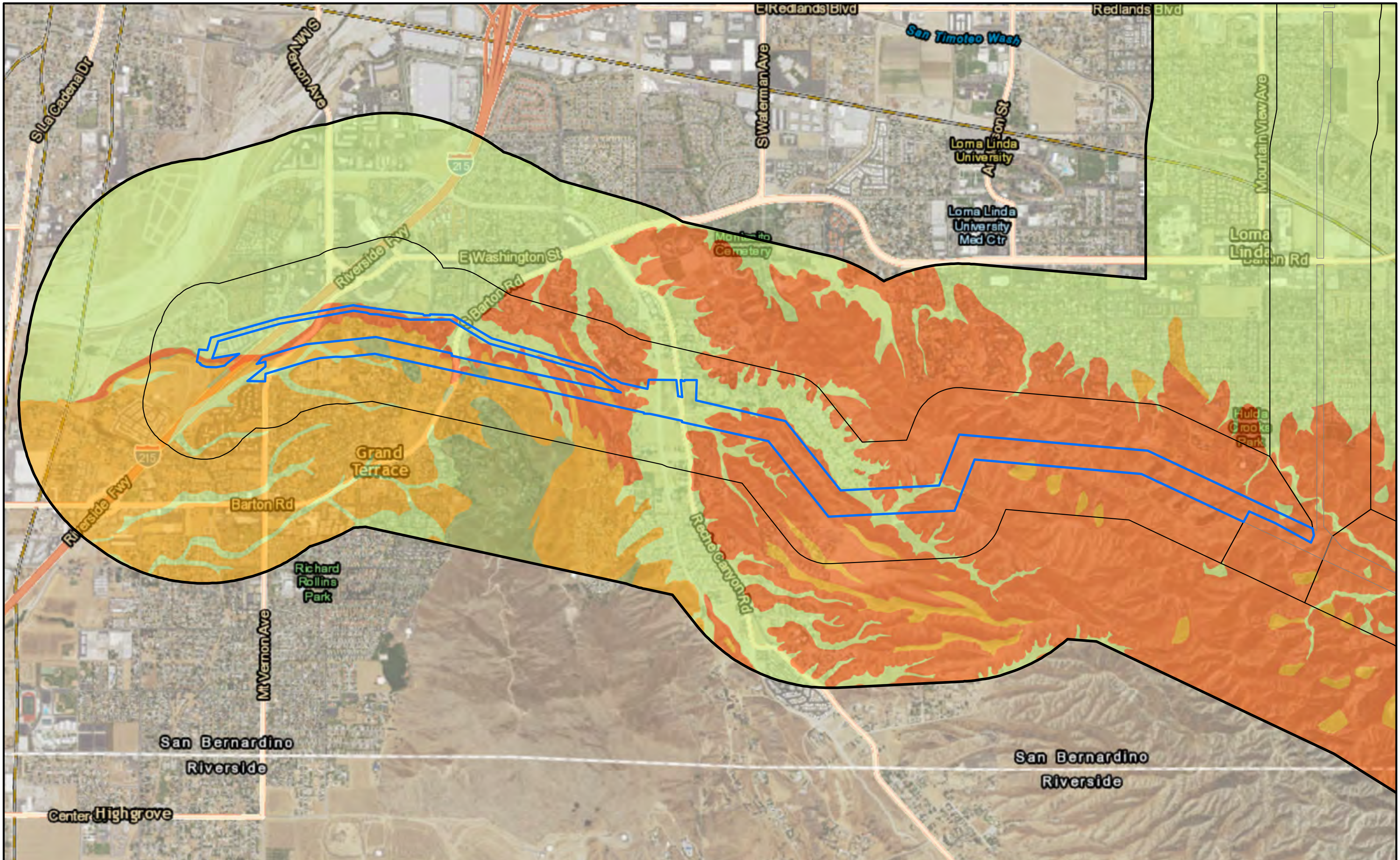
5: Very High

0 1 2 Miles

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Base layers from Esri ArcGIS Online



SCE West of Devers

Segment 2

Other segments

1000 foot buffer around right of way

Half mile buffer

Paleosensitivity

1: Very Low

2: Low

3: Moderate

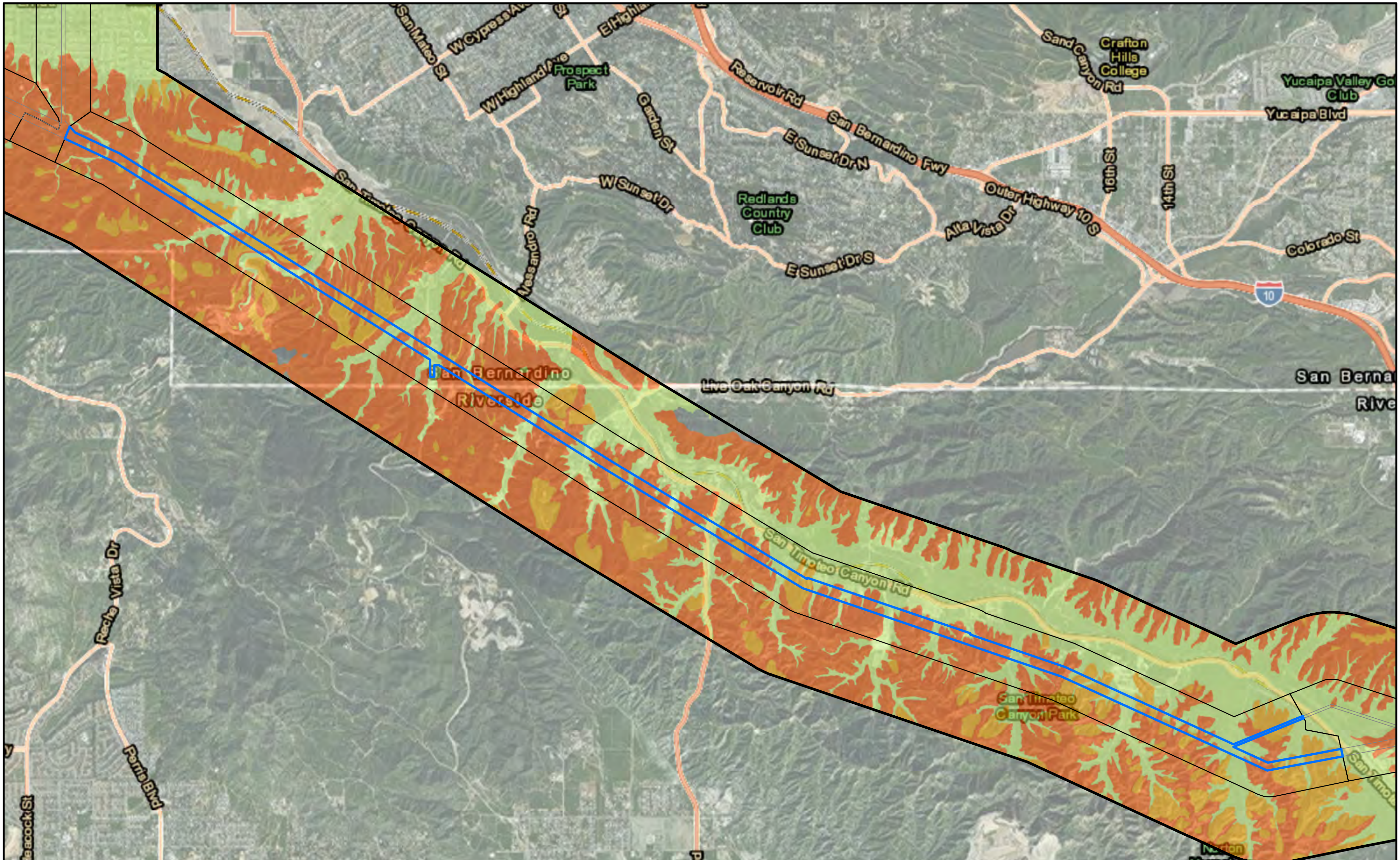
5: Very High

0 1 2 Miles

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Base layers from Esri ArcGIS Online



SCE West of Devers

Segment 3

Other segments

1000 foot buffer around right of way

Half mile buffer

Paleosensitivity

2: Low

3: Moderate

5: Very High

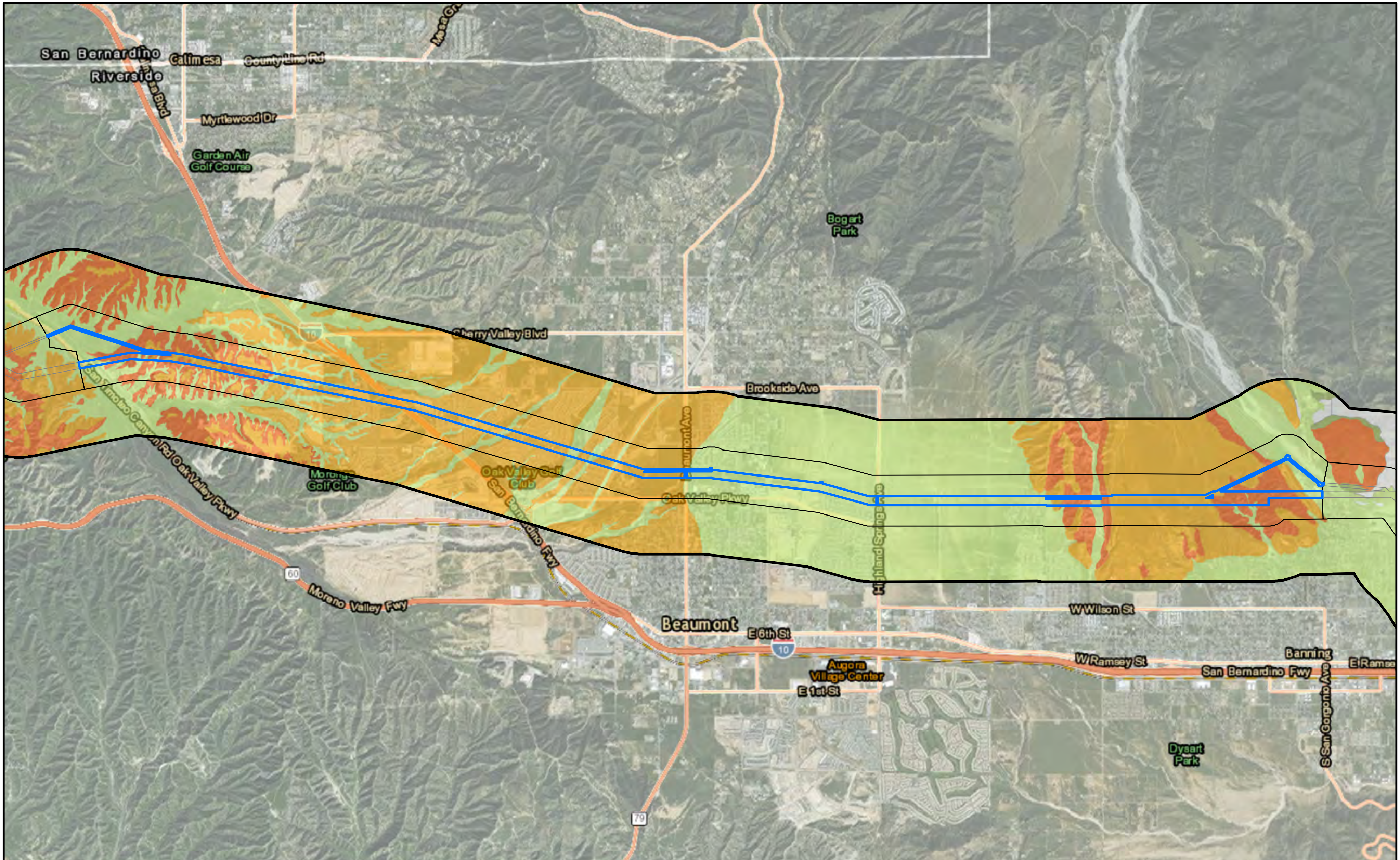
0 1 2 Miles

Page 3 of 6

N

Paleo Solutions
Paleontological and Archaeological Compliance and Consulting Services

Base layers from Esri ArcGIS Online



SCE West of Devers

Segment 4

Other segments

1000 foot buffer around right of way

Half mile buffer

Paleosensitivity

1: Very Low

2: Low

3: Moderate

5: Very High

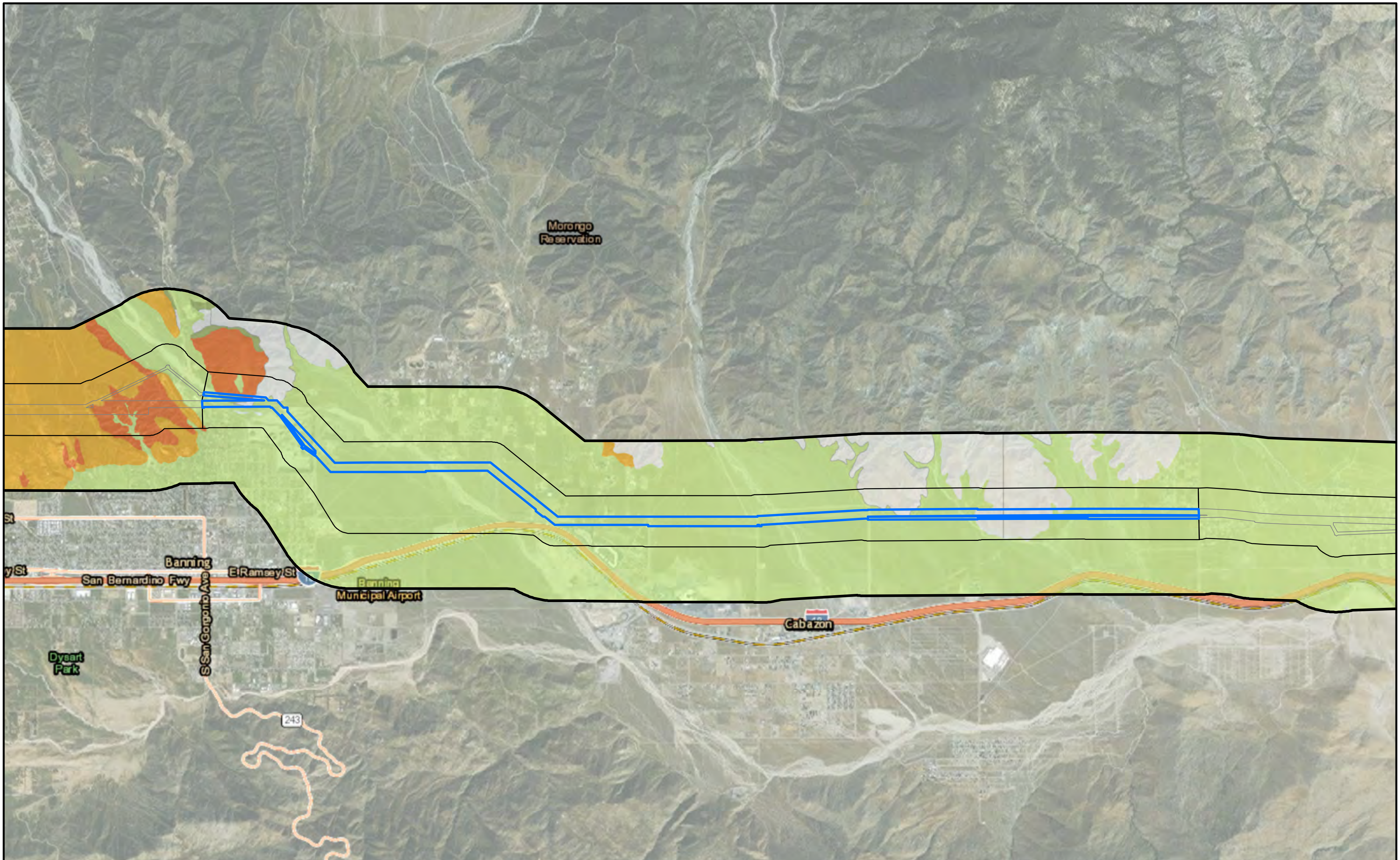
U: Undetermined

0 1 2 Miles

Page 4 of 6

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Base layers from Esri ArcGIS Online



SCE West of Devers

- Segment 5
- Other segments
- 1000 foot buffer around right of way
- Half mile buffer

Paleosensitivity

- 1: Very Low
- 2: Low
- 3: Moderate
- 5: Very High
- U: Undetermined

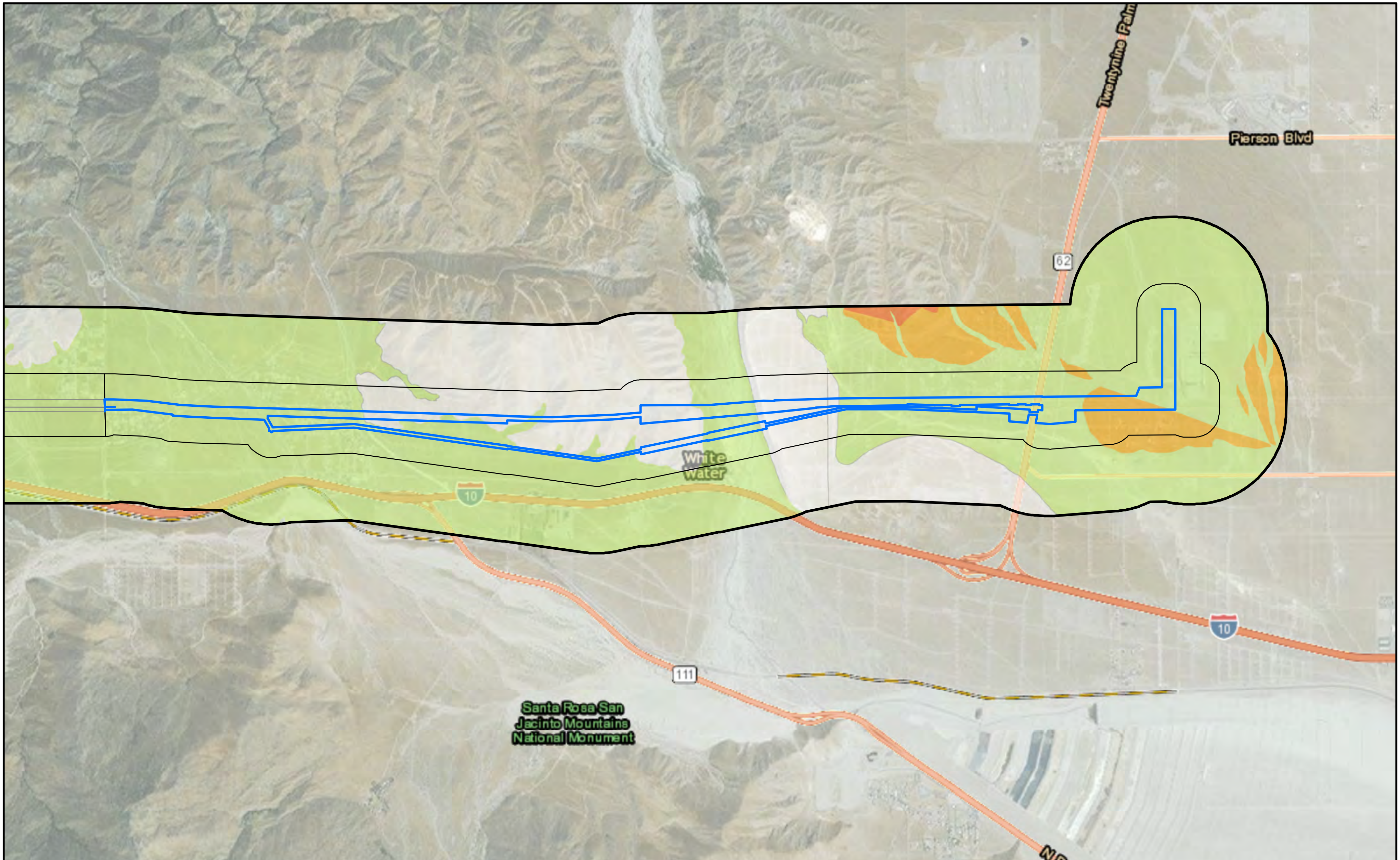
0 1 2 Miles

Page 5 of 6

N

PALEO SOLUTIONS

Base layers from Esri ArcGIS Online



SCE West of Devers

Segment 6

Other segments

1000 foot buffer around right of way

Half mile buffer

Paleosensitivity

2: Low

3: Moderate

5: Very High

U: Undetermined

0 1 2 Miles

Page 6 of 6

N

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

Base layers from Esri ArcGIS Online