PALEONTOLOGICAL IDENTIFICATION REPORT AND EVALUATION REPORT

West Valley Connector Project

sbcta
San Bernardino County Transportation Authority

OmniTrans
Connecting Our Community.

April 2018
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Revision Log

Date	Description
April 2018	Original report prepared
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LIST OF ACRONYMS

ADA	Americans with Disabilities Act
BRT	Bus Rapid Transit
CCR	California Code of Regulations
CNG	Compressed Natural Gas
CEQA	California Environmental Quality Act
EA	Environmental Assessment
EVVMF	East Valley Vehicle Maintenance Facility
EIR	Environmental Impact Report
FTA	Federal Transit Administration
LACM	Natural History Museum of Los Angeles County
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act
O&M	Operation and Maintenance
PER	Paleontological Evaluation Report
PIR	Paleontological Identification Report
PMP	Paleontological Monitoring Plan
PMR	Paleontological Monitoring Report
PRPA	Paleontological Resources Preservation Act
Pub L.	Public Law
ROW	Right-of-Way
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SBCM	San Bernardino County Museum
SBCTA	San Bernardino County Transportation Authority

SCAG	Southern California Association of Governments
TSP	Transit Signal Priority
U.S.C.	United States Code
VMF	Vehicle Maintenance Facility
WEAP	Workers' Environmental Awareness Program
WVVMF	West Valley Vehicle Maintenance Facility

EXECUTIVE SUMMARY

This combined Paleontological Identification and Evaluation Report (PIR/PER) presents the results of the paleontological study for the West Valley Connector (WVC) Project (the WVC Project or the proposed project) conducted by Paleo Solutions, Inc. (Paleo Solutions) under contract to Parsons, and on behalf of the San Bernardino County Transportation Authority (SBCTA). This combined PIR/PER analyzes the potential paleontological impacts of the project in order to determine if paleontological resources are known or reasonably anticipated within the project site, to assess the potential for the proposed project to result in significant impacts/effects on paleontological resources, and recommend measures to reduce these impact/effects to below the level of significance pursuant to the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA).

SBCTA, in cooperation with the cities of Pomona, Montclair, Ontario, Rancho Cucamonga, and Fontana, proposes construction of the West Valley Connector Project, a 35-mile-long Bus Rapid Transit (BRT) project that will decrease travel times and improve the existing public transit system within the corridor.

Paleontological research for the project included a geologic map review, literature search, institutional records search, and review of project construction plans and geotechnical reports. The results of the study were used to complete paleontological sensitivity and impact analyses and to develop paleontological mitigation recommendations.

There are no documented paleontological localities within the boundaries of the project site. The younger Quaternary deposits mapped at the surface have low sensitivity for paleontological resource. However, the underlying older Quaternary (Pleistocene) sediments have high potential for producing significant paleontological resources, and these sediments are known to have produced significant fossil resources within the project vicinity. Therefore, project activities may potentially result in significant impacts on paleontological resources if these sensitive older sediments are encountered during excavation.

Preparation and implementation of a Paleontological Monitoring Plan (PMP) is recommended in order to reduce impacts to below the level of significance pursuant to CEQA and NEPA. The PMP should require and provide guidance for a workers' environmental awareness program (WEAP); periodic paleontological spot checks when excavation exceeds depths of five feet into the younger Quaternary deposits; full time monitoring during excavations into sensitive older sediments (if encountered); daily, monthly, and final reporting requirements; and salvage and treatment of fossils, including curation at an accredited repository.

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1.0 INTRODUCTION

This combined Paleontological Identification and Evaluation Report (PIR/PER) analyzes the potential paleontological impacts along the West Valley Connector (WVC) Project (the WVC Project or the proposed project). The objectives of this analysis are to determine if paleontological resources are known or reasonably anticipated within the project site, to assess the potential for the proposed project to result in significant impacts/effects on paleontological resources, and recommend measures to reduce these impact/effects to below the level of significance.

The San Bernardino County Transportation Authority (SBCTA), in cooperation with the cities of Pomona, Montclair, Ontario, Rancho Cucamonga, and Fontana, proposes construction of the WVC Project, a 35-mile-long Bus Rapid Transit (BRT) project that will decrease travel times and improve the existing public transit system within the corridor.

In January 2017, SBCTA entered into a cooperative agreement with Omnitrans designating SBCTA as the lead agency for the proposed WVC Project. SBCTA intends to construct the WVC, which will then be operated by Omnitrans. SBCTA has the authority to allocate Federal Transit Administration (FTA) funds; however, it does not have the ability to receive funds directly from FTA. Omnitrans is the direct FTA grantee for the San Bernardino Valley. As a result, SBCTA and Omnitrans have developed a successful direct recipient/ subrecipient working relationship to deliver projects with FTA funds. The current relationship allows the delivery of FTA-funded projects that meet FTA requirements without duplicating staff, assuring the best use of limited public funds available. Omnitrans and SBCTA executed Memorandum of Understanding (MOU) 15-1001289 in October 2015, setting forth the roles and responsibilities of the recipient/subrecipient relationship.

The project is subject to state and federal environmental review requirements because it involves the use of federal funds from the Federal Transit Administration (FTA). An Environmental Impact Report (EIR)/Environmental Assessment (EA) has been prepared for the proposed project in compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). SBCTA is the CEQA lead agency, and FTA is the NEPA lead agency. This PIR/PER has been prepared as part of the technical analysis required to support the EIR/EA.

1.1 Project Location and Setting

The proposed project is located primarily along Holt Avenue/Boulevard and Foothill Boulevard, which would connect the cities of Pomona, Montclair, Ontario, Rancho Cucamonga, and Fontana in the counties of Los Angeles and San Bernardino, California. The project limits extend from Main Street in the City of Pomona on the west side to Sierra Avenue in the City of Fontana on the east side and Church Street in the City of Rancho Cucamonga on the north side

to Ontario International Airport on the south side (see Figures 1 and 2). The proposed project area is primarily urban, and generalized land uses include low-, medium-, and medium-high-density residential, commercial, industrial, open space and recreation, transportation and utilities, agriculture, vacant, public facilities, airport, educational facilities, and offices.

1.2 Purpose and Need

The purpose of the proposed project is to improve corridor mobility and transit efficiency in the western San Bernardino Valley from the City of Pomona, in Los Angeles County, to the City of Fontana, in San Bernardino County, with an enhanced, state-of-the-art BRT system (i.e., the system that includes off-board fare vending, all-door boarding, transit signal priority [TSP], optimized operating plans, and stations that consist of a branded shelter/canopy, security cameras, benches, lighting, and variable message signs).

The proposed project would address the growing traffic congestion and travel demands of the nearly one million people that would be added to Los Angeles and San Bernardino County by 2040 per Southern California Association of Government's (SCAG) 2016 Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS) growth forecast. Improved rapid transit along the project corridor would help Omnitrans/SBCTA achieve its long-range goals to cost effectively enhance lifeline mobility and accessibility, improve transit operations, increase ridership, support economic growth and redevelopment, conserve nonrenewable resources, and improve corridor safety.

Recognizing the importance of the WVC transit corridor, SBCTA is proposing a project that is designed to achieve the following objectives:

- Improve transit service by better accommodating high existing bus ridership.
- Improve ridership by providing a viable and competitive transit alternative to the automobile.
- Improve efficiency of transit service delivery while lowering Omnitrans' operating costs per rider.
- Support local and regional planning goals to organize development along transit corridors and around transit station.

The project purpose and objectives stated above would respond to the following needs:

- Current and future population and employment conditions establish a need for higher-quality transit service.
- Current and future transportation conditions establish a need for an improved transit system.
- Transit-related opportunities exist in the project area.

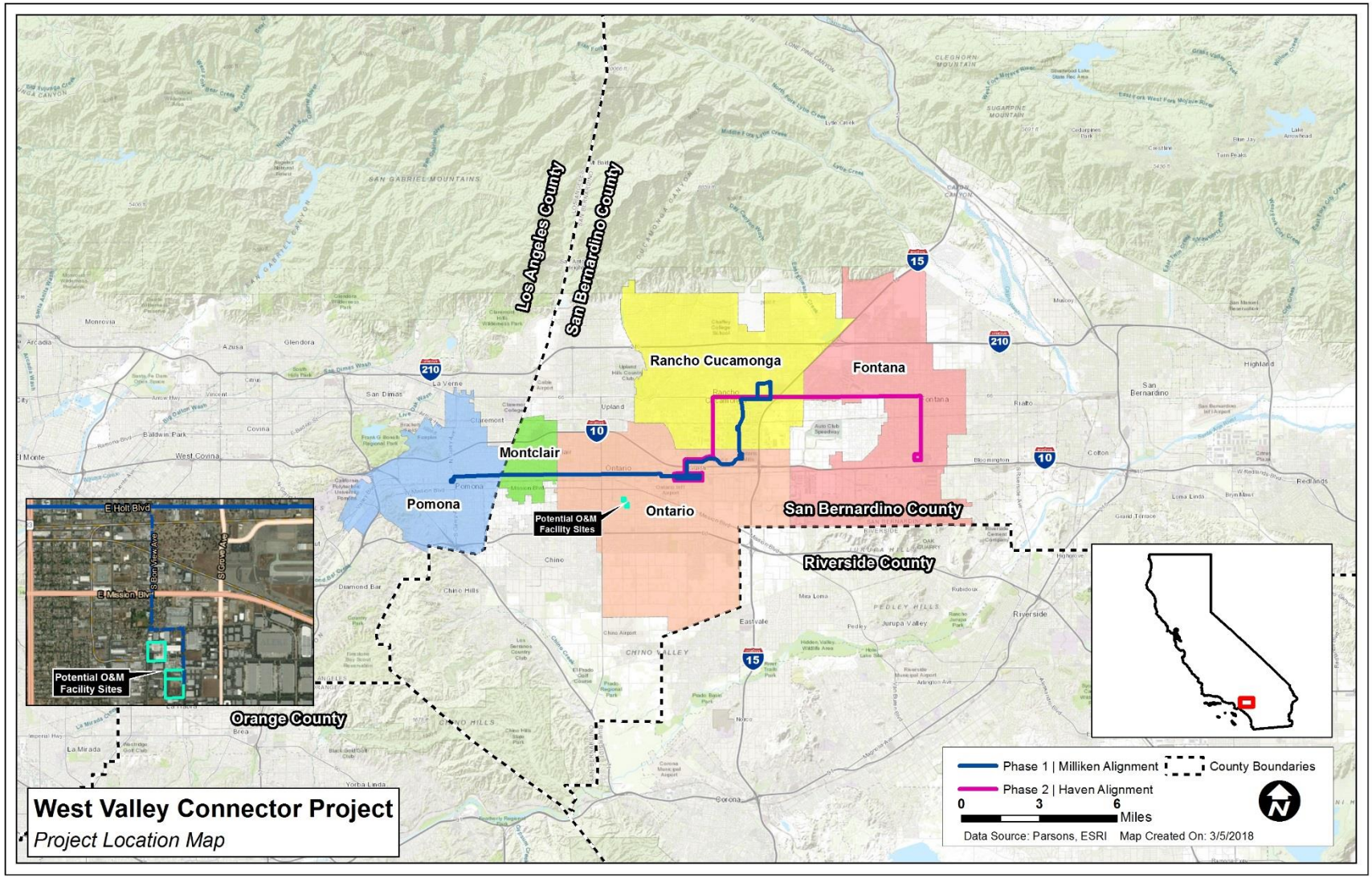

Figure 1: Project Location Map

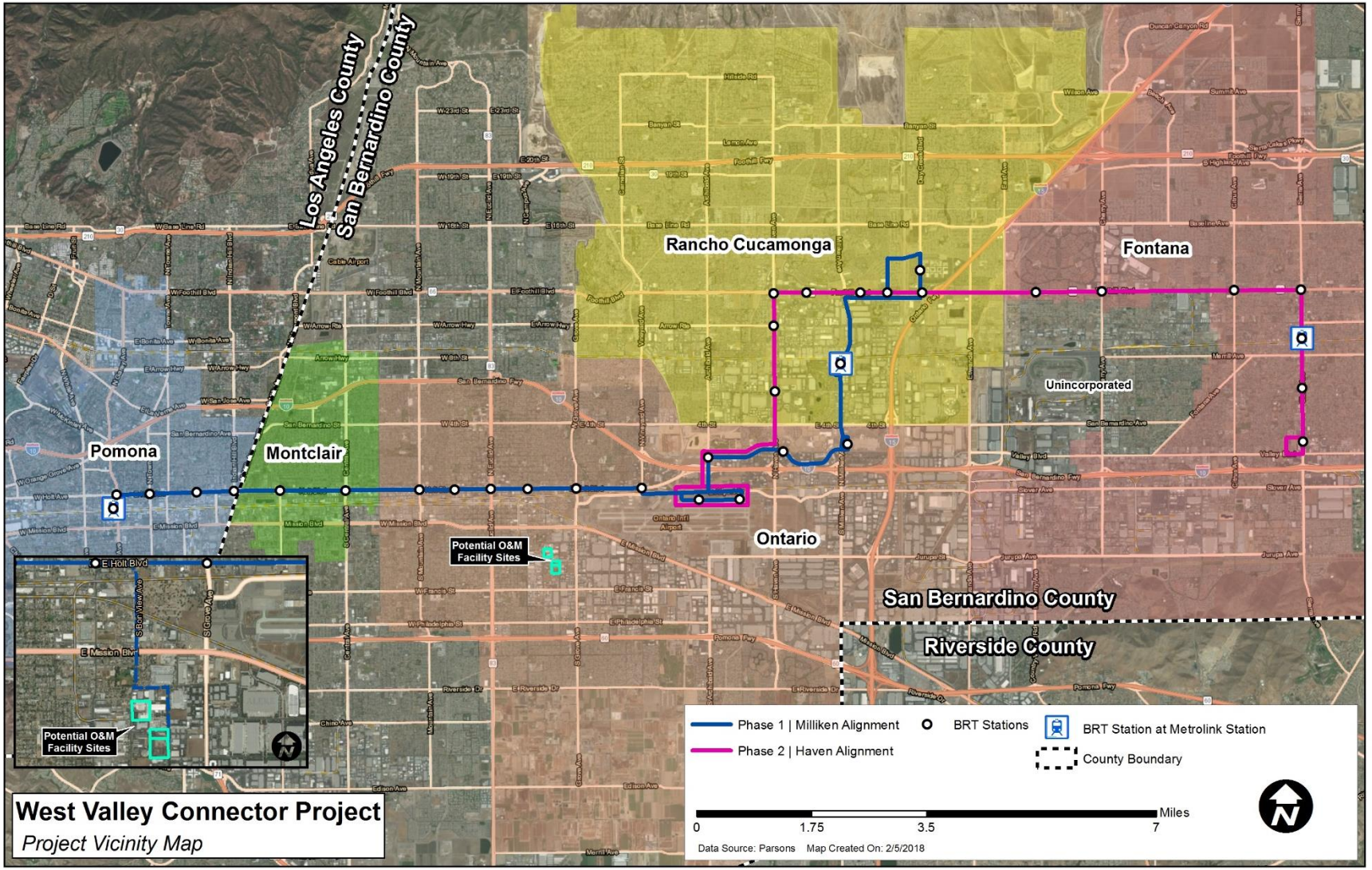

Figure 2: Project Vicinity Map

1.3 Methods

Paleontological research for the project included a geologic map review, literature search, institutional records search, and review of the project geotechnical report and construction plans. The geology underlying the project site was reviewed, as well as any geologic units occurring within a one-mile radius. The literature reviewed included published and unpublished scientific papers and available online databases. Paleontological records searches of the project site and a one-mile radius buffer were conducted by Dr. Sam McLeod at the Natural History Museum of Los Angeles County (LACM) and Robert Reynolds, formally of the San Bernardino County Museum (SBCM) (see Appendix A). Due to the low sensitivity of the surficial deposits within the project site, a survey was not conducted. The results of the geologic map review, literature and museum records searches were used to complete a paleontological sensitivity analysis using Caltrans' sensitivity criteria; impact analysis; and to develop paleontological mitigation recommendations.

Courtney Richards, M.S. reviewed the geology and available literature and co-authored this report with Geraldine Aron, M.S. Barbara Webster, M.S. prepared the GIS maps (see Appendix B for qualifications). Copies of this report will be submitted to Parsons, SBCTA, and the FTA. Paleo Solutions will retain an archival copy of all project information.

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2.0 PROJECT DESCRIPTION

2.1 Proposed Project

The WVC Project is a 35-mile-long BRT corridor project located primarily along Holt Avenue/ Boulevard and Foothill Boulevard that would connect the cities of Pomona, Montclair, Ontario, Rancho Cucamonga, and Fontana in the counties of Los Angeles and San Bernardino, California. The project proposes limited stops, providing speed and quality improvements to the public transit system within the corridor. The project includes BRT stations at up to 33 locations/major intersections and associated improvements, premium transit service, TSP and queue jump lanes, dedicated lanes, and integration with other bus routes.

The project alignment consists of two phases. Phase I of the project would construct the "Milliken Alignment," from the Pomona Regional Transit Center (downtown Pomona Metrolink Station) to Victoria Gardens in Rancho Cucamonga. Phase II of the project would construct the "Haven Alignment," from Ontario International Airport to Kaiser Permanente Medical Center in Fontana. The Phase I/Milliken Alignment would begin construction in 2020 and is proposed to have 10-minute peak and 15-minute off-peak headways. Phase II is intended to be constructed immediately following completion of Phase I, depending on the availability of funding.

2.1.1 Phase I/Milliken Alignment

Phase I of the project would construct the Milliken Alignment from the eastern boundary limit in Pomona to Victoria Gardens in Rancho Cucamonga. In Pomona, the alignment starts from the Pomona Regional Transit Center station, travels along Holt Avenue and into Montclair.

In Montclair, the alignment runs on Holt Boulevard between Mills Avenue and Benson Avenue and into Ontario.

In Ontario, the alignment continues on Holt Boulevard, starting from Benson Avenue, and then continues to Vineyard Avenue and into Ontario International Airport (loop through Terminal Way). From the airport, it heads north on Archibald Avenue to Inland Empire Boulevard and turns right to go east on Inland Empire Boulevard.

On Inland Empire Boulevard, the alignment goes straight into Ontario Mills (loop through Mills Circle) and then heads north on Milliken Avenue into Rancho Cucamonga.

In Rancho Cucamonga, the alignment makes a loop into the Rancho Cucamonga Metrolink Station off Milliken Avenue and then continues up Milliken Avenue and turns east onto Foothill Boulevard.

The alignment continues east on Foothill Boulevard, turns north onto Day Creek Boulevard, and then terminates with a layover at Victoria Gardens at Main Street. From Victoria Gardens, the bus line begins a return route by continuing north on Day Creek Boulevard, turns west onto

Church Street, turns south onto Rochester Avenue, and then turns west back onto Foothill Boulevard.

2.1.2 Phase II/Haven Alignment

Phase II of the project would construct the Haven Alignment, from Ontario International Airport to Kaiser Permanente Medical Center in Fontana. In Ontario, the alignment makes a loop through Terminal Way at Ontario International Airport. From the airport, it heads north on Archibald Avenue to Inland Empire Boulevard and turns right to go east on Inland Empire Boulevard.

From Inland Empire Boulevard, the alignment turns left to go north up Haven Avenue into Rancho Cucamonga, then turns right to go east onto Foothill Boulevard and into Fontana.

In Fontana, the alignment continues east on Foothill Boulevard until turning south onto Sierra Avenue. The alignment follows Sierra Avenue, including a stop at the Fontana Metrolink Station, and then continues until turning west onto Marygold Avenue, where the bus line would begin a turn-around movement by heading south onto Juniper Avenue, east onto Valley Boulevard, and north back onto Sierra Avenue to Kaiser Permanente Medical Center before heading northward for the return trip.

2.2 Project Alternatives

Many alternatives were considered during the project development phase of the project. A No Build Alternative and two build alternatives (Alternatives A and B) are being analyzed in the EIR/EA.

2.2.1 No Build Alternative

The No Build Alternative proposes no improvements to the existing local bus services. Under the No Build Alternative, the existing local bus service on Routes 61 and 66 would maintain current service of 15-minute headways (total of four buses per hour in each direction).

2.2.2 Build Alternatives

Figure 3 presents the map of both build alternatives. All design features of both build alternatives are the same, as described in more details in Section 2.3, with the exception of the following:

Alternative A – Full BRT with no Dedicated Bus-only Lanes

Alternative A would include the 35-mile-long BRT corridor, which is comprised of the Phase I/Milliken Alignment, Phase II/ Haven Alignment, and 60 side-running stations at up to 33 locations/major intersections. The BRT buses will operate entirely in the mixed-flow lanes. The right-of-way (ROW) limits and travel lane width vary in other segments of the corridor. Implementation of Build Alternative A will not require permanent or temporary ROW acquisition.

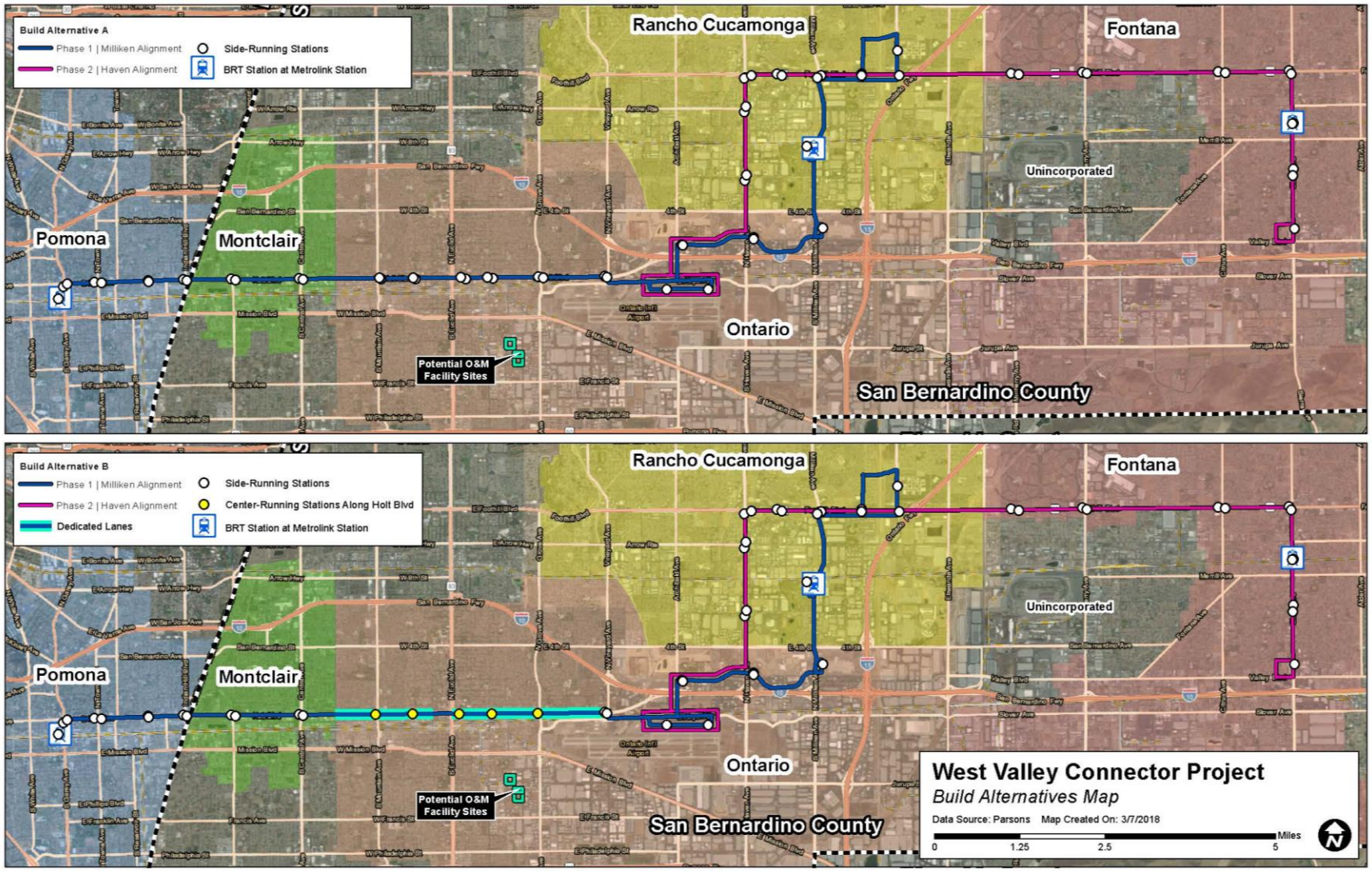

Figure 3: Build Alternatives Map

Alternative B – Full BRT with 3.5 miles of Dedicated Bus-only Lanes in Ontario

Alternative B would include the full 35-mile-long BRT corridor, which is comprised of the Phase I/Milliken Alignment, Phase II/Haven Alignment, 3.5 miles of dedicated bus-only lanes, and five center-running stations and 50 side-running stations at up to 33 locations/ major intersections. The dedicated lanes segment would include two mixed-flow lanes and one transit lane in each direction and five center-running stations. To accommodate the dedicated lanes, roadway widening and additional utilities, such as electrical and fiber-optic lines, would require permanent and temporary ROW acquisition. In addition, some areas of the project corridor would require reconfiguration, relocation, or extension of adjacent driveways, curbs, medians, sidewalks, parking lots, and local bus stops.

2.3 Design Features of Build Alternatives

2.3.1 Bus Rapid Transit Stations

BRT stations at 33 locations/major intersections and associated improvements are proposed to be located approximately 0.5 to 1 mile apart to facilitate higher operating speeds by reducing dwell time (see Figure 2 and Figure 3 for station locations). Table 1 lists the BRT stations to be constructed as part of Phase I/Milliken Alignment. Note that under Alternative A, all 21 stations will be side-running stations. Under Alternative B, five center platform stations are proposed as follows:

- Holt Boulevard/Mountain Avenue
- Holt Boulevard/San Antonio Avenue
- Holt Boulevard/Euclid Avenue
- Holt Boulevard/Campus Avenue
- Holt Boulevard/Grove Avenue

As part of Phase II/Haven Alignment, additional 12 side-running stations will be constructed for both build alternatives as list in Table 2.

Table 1: Stations along Phase I/Milliken Alignment

City	Stations
Pomona	• Pomona Regional Transit Center Station • Holt Avenue/Garey Avenue • Holt Avenue/Towne Avenue • Holt Avenue/Clark Avenue • Holt Avenue/Indian Hill Boulevard
Montclair	• Holt Boulevard/Ramona Avenue • Holt Boulevard/Central Avenue
Ontario	• Holt Boulevard/Mountain Avenue* • Holt Boulevard/San Antonio Avenue* • Holt Boulevard/Euclid Avenue* • Holt Boulevard/Campus Avenue* • Holt Boulevard/Grove Avenue* • Holt Boulevard/Vineyard Avenue • Ontario International Airport • Inland Empire Boulevard/Archibald Way • Inland Empire Boulevard/Porsche Way • Ontario Mills
Rancho Cucamonga	• Rancho Cucamonga Metrolink Station • Foothill Boulevard/Milliken Avenue • Foothill Boulevard/Rochester Avenue • Victoria Gardens between North and South Main Street
Note: * denoted the center-running stations to be constructed under Alternative B.	

Source: 30% Preliminary Engineering Design, Parsons 2017

Table 2: Addition Stations to be Constructed as Part of Phase II/Haven Alignment

City	Stations
Rancho Cucamonga	• Haven Avenue/6th Street • Haven Avenue/Arrow Route • Haven Avenue/Foothill Boulevard • Foothill Boulevard/Spruce Avenue • Foothill Boulevard/Day Creek Boulevard
Fontana	• Foothill Boulevard/Mulberry Avenue • Foothill Boulevard/Cherry Avenue • Foothill Boulevard/Citrus Avenue • Foothill Boulevard/Sierra Avenue • Fontana Metrolink Station • Sierra Avenue/Randall Avenue • Sierra Avenue/Kaiser Permanente

Source: 30% Preliminary Engineering Design, Parsons 2017

Side-Running Stations

Side-running stations would typically be located on the far side of an intersection to facilitate transit priority and to avoid a stopped bus from blocking those turning right from the corridor. Where curb cuts for driveways and other conditions do not provide enough space along the curbside for both the San Bernardino Valley Express (sbX) and the local bus on the far side of the intersection, the local buses would be located on the near side of the intersection.

In the side-running condition, stations may include new or improved shelters with passenger amenities, or only an sbX-branded pylon with signature light. Proposed shelters would be approximately 18 feet in length and a width that would fit a 10-foot-wide-minimum sidewalk. Passenger amenities at the side platform stations would include benches, bicycle racks, trash receptacles, variable message signs, security cameras, and lighting integrated with the shelter. There would be no fare collection equipment on the sidewalks or shelters when the available ROW is less than 10 feet, and the passengers may pay the fee on the bus. Side-running stations would also include various amenities.

For all stations in Rancho Cucamonga, only an sbX-branded pylon with signature light is proposed. Should shelters be implemented in the future, coordination between the City of Rancho Cucamonga and SBCTA would be required to environmentally clear the shelters at a later time.

Center Platform Stations

As indicated in Section 2.3.1, five center-running platform stations are proposed to be constructed as part of the Phase I/Milliken Alignment (in Ontario) under Alternative B.

The center-running platform stations would be in the center of the street ROW on a raised platform with an end-block crossing. Access would be provided by crosswalks at intersections and Americans with Disabilities Act (ADA)-compliant ramps to the station platforms. Center-running platforms would be placed as close to the intersection as possible while still maintaining left-turn pockets, where required.

In the optimum center-running platform configuration, the platform would accommodate a canopy with its seating area, passenger amenities, fare equipment, and a ramp to comply with relevant accessibility requirements and provide clearance in front of ticket vending machines. Stations would include amenities that can be assembled and laid out to suit the functionality of the station and fit with the surrounding land uses.

2.3.2 sbX Bus Operations

The proposed project would require 18 buses during the Phase I operation and increase to 27 buses for the Phase I and Phase II operation to serve the designed headways and have sufficient spare vehicles.

Under Alternative A, sbX buses would operate entirely in mixed-flow lanes along the proposed 35 miles of the Phase I and Phase II alignments. For Alternative B, sbX buses would operate in mixed-flow lanes similar to Alternative A, except where dedicated bus-only lanes (3.5 miles) are proposed along Holt Boulevard, between Benson Avenue and Vine Avenue and between Euclid Avenue and Vineyard Avenue, in Ontario.

Roadway sections where the sbX would operate in mixed-flow lanes would generally be kept as existing conditions, although some modifications, such as relocated curb and gutter, may be necessary near the stations to provide sufficient room for bus stopping and loading. Reconstruction of curb and gutters would only be required for the segment where dedicated bus-only lanes are proposed. Vehicular lanes where the sbX buses would operate in dedicated bus-only lanes would feature concrete roadways, painted or striped to visually separate the exclusive lanes from mixed-flow lanes. Transition areas from mixed-flow to exclusive lanes would be provided at each end of an exclusive lane location. Such transitions would be clearly marked to separate bus movements from other vehicular traffic. Reinforced concrete bus pad in the pavement would be placed at all station locations for the sbX buses.

sbX buses would operate from 6:00 a.m. to 8:00 p.m. with peak headways for 4 hours and off-peak headways for 10 hours per day for a total span of service of 14 hours per day, Monday through Friday. From the Pomona Metrolink Transit Center station to Inland Empire Boulevard, the sbX buses would operate on 10-minute peak headways and 15-minute off-peak headways. Additional service hours, including weekend service, may be added if additional operating funds become available in the future.

2.3.3 Operations and Maintenance

Fleet Composition

The proposed project's fleet would be comprised of 60-foot-long articulated compressed natural gas (CNG) propulsion buses. sbX buses would hold approximately 96 passengers at maximum capacity with up to 8 bicycles on board. Today, the average local bus operating speeds are only 12 to 15 miles per hour (mph), and they are getting slower as corridor congestion worsens. In calculating run times, it was assumed that the average dwell time at stations would be 30 seconds (peak service), and average overall speed would be 20 mph. The average speed for sbX buses would be 18 mph.

Maintenance Requirements and Associated Facilities

Omnitrans operates and maintains its existing bus fleets from two major Operations and Maintenance (O&M) facilities: East Valley Vehicle Maintenance Facility (EVVMF), located at 1700 W. 5th Street in the City of San Bernardino and West Valley Vehicle Maintenance Facility (WVVMF), located at 4748 E. Arrow Highway in the City of Montclair. EVVMF is a Level III facility capable of full maintenance of buses and WVVMF is a Level II facility suitable for light maintenance. Neither facility has sufficient capacity to accommodate the additional

maintenance and storage requirements of the bus fleet associated with the proposed WVC Project.

The purpose of the new O&M facility is to provide operations and maintenance support to the existing full-service EVVMF. The new facility would be designed and constructed to provide Level I service maintenance with a capacity to be upgraded to provide Level II service maintenance. Heavy repair functions and administrative functions would remain exclusively with the EVVMF in San Bernardino.

Facility Components

Conceptually, the new O&M facility would be built on an approximate 5-acre site. The Level I facility would include a parking area, bus washing area, fueling area, and a personnel and storage building. As needs arise, the facility could be upgraded to provide Level II service, which will include the addition of a maintenance shop and a larger administrative building. Landscaping and irrigation would be provided to enhance the comfort of employees and the appearance of the facility, and to help screen maintenance facilities and operations from offsite viewpoints within the community. Figure 4 shows the conceptual site plan of the Level II facility.

Depending on the service level to be performed, approximately 50-100 staff would be using this facility including bus operators and O&M staff.

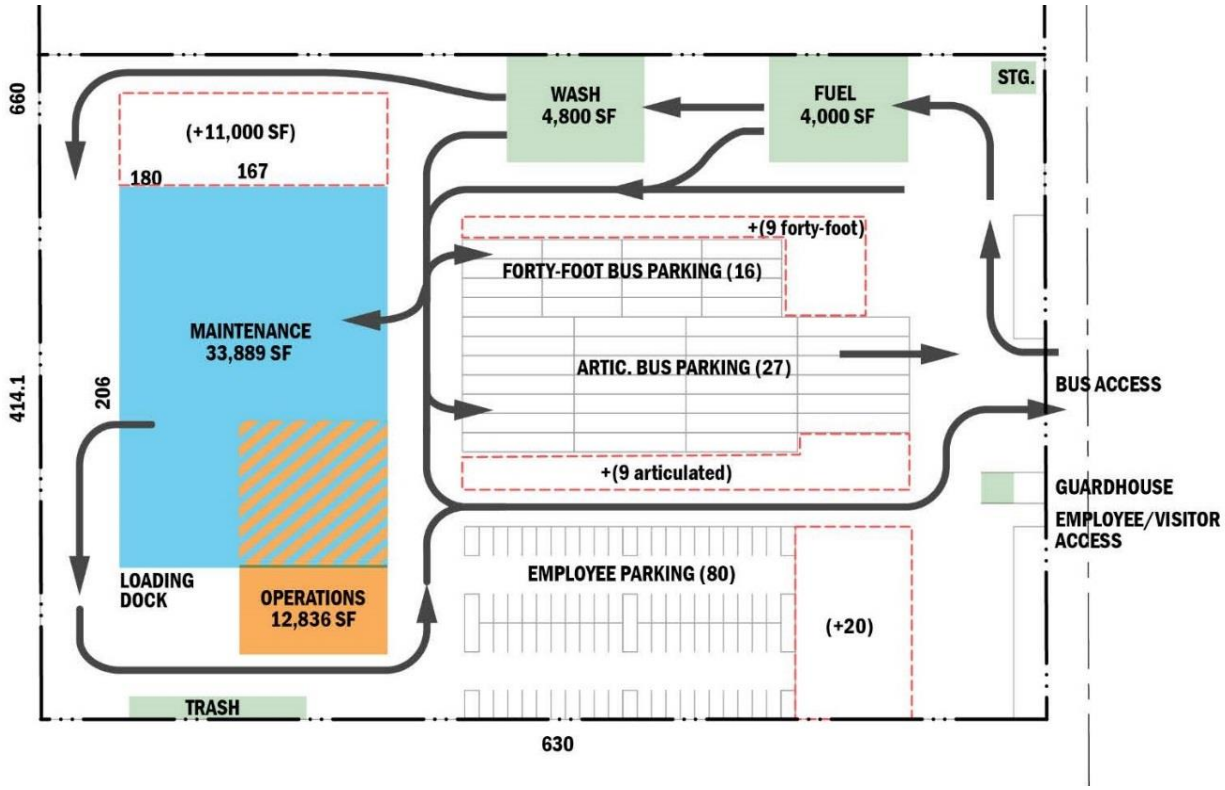

Figure 4: O&M Facility Conceptual Site Plan

Potential Sites

Three sites are being considered for the placement of the new O&M facility (see Figure 5). All are owned by the City of Ontario and are located in the industrial zoned area, slightly more than a mile from the proposed BRT corridor alignment on Holt Boulevard:

- Site 1: 1516 S. Cucamonga Avenue, Ontario (APN 1050-131-03-0000 and APN 1050-131-02-0000). The current use of this property is public works storage yard. If selected, the O&M facility will be built at the bottom portion of the parcel encompassing an area of approximately 6.0 acres.
- Site 2: 1440 S. Cucamonga Avenue, Ontario (APN 1050-141-07-0000). The current use of this property is compressed natural gas fueling station. If selected, the O&M facility will utilize the entire parcel encompassing an area of approximately 4.8 acres.
- Site 3: 1333 S. Bon View Avenue, Ontario (APN 1049-421-01-0000 and APN 1049-421-02-0000). The current use of this property is municipal utility and customer service center. If selected, the O&M facility will be built at the bottom portion of the parcel encompassing an area of approximately 6.6 acres.

Buses coming to and from the new facility could use nearby access roads that directly connect to the BRT corridor such as South Campus Avenue, South Bon View Avenue, and South Grove Avenue.

The O&M facility will be constructed during the same period as the Phase I/Milliken Alignment and would be open for operation at the same time as the Phase I alignment. Construction duration is estimated at 12 months.

2.4 Implementation Schedule

Implementation of the proposed project is planned over the next 5 years and would entail many activities, including:

- Completion of the environmental compliance phase (March 2020)
- Completion of Preliminary Engineering (March 2020)
- Completion of Final Design (May 2021) and begin construction in early 2022.
- Completion of O&M facility (December 2023)
- Completion of Construction of Phase I/Milliken Alignment and testing (December 2023)
- System operation (begin revenue operation in December 2023)
- Construction of Phase II/Haven Alignment is scheduled to occur after completion of the Phase I/Milliken Alignment pending funding availability

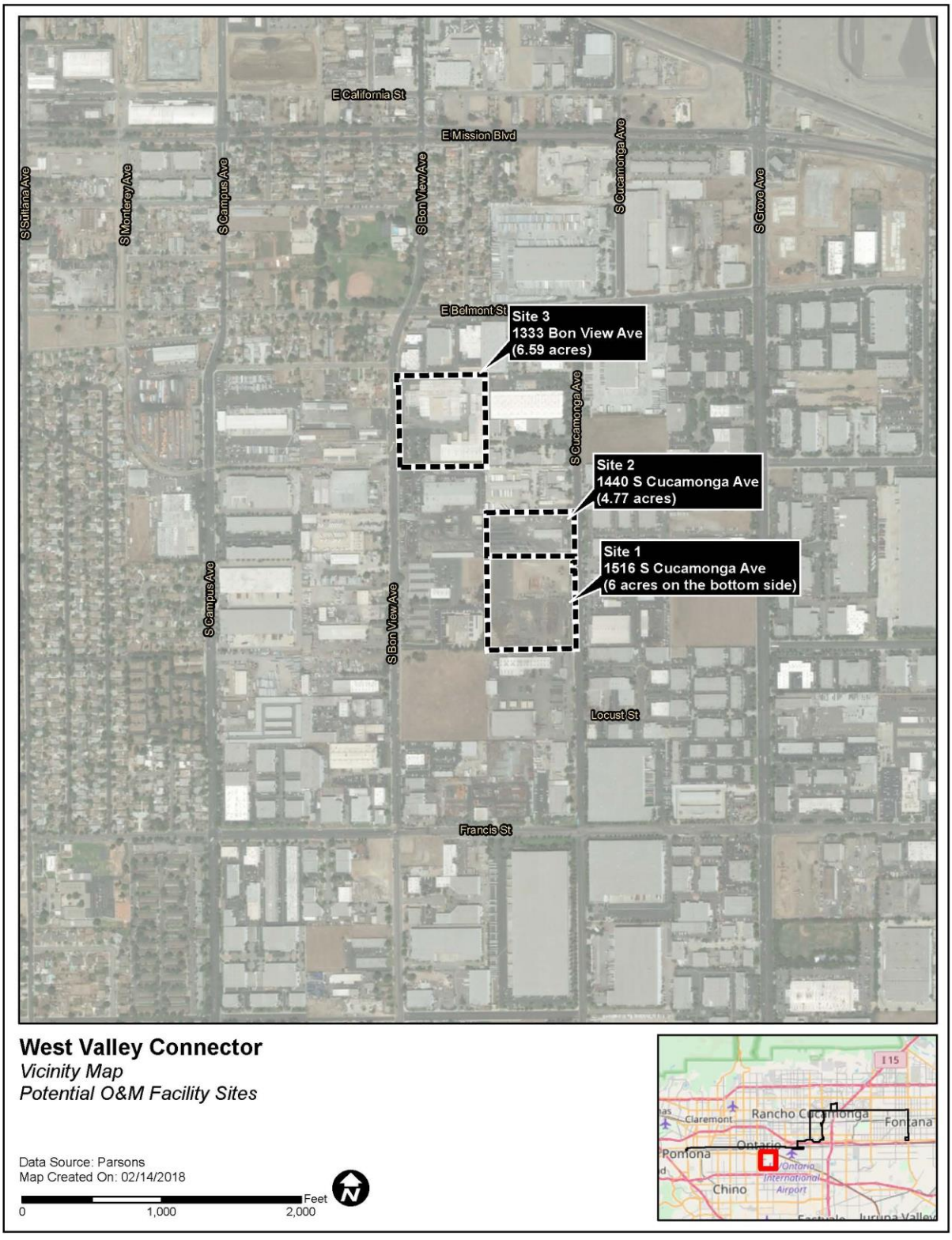

Figure 5: Potential Operations and Maintenance Facility Sites

3.0 REGULATORY SETTING

This section of the report presents the federal, state, and local regulatory requirements pertaining to paleontological resources that will apply to this project.

3.1 Federal Regulatory Setting

If any federal funding is used to wholly or partially finance a project, occurs on federal lands, involves a federal permit, and/or includes a perceived federal impact, federal laws and standards apply, and an evaluation of potential impacts on paleontological resources may be required. The federal laws, regulations, and guidelines that apply to the West Valley Connector BRT Project are described below.

3.1.1 The National Environmental Policy Act of 1969 (NEPA)

The National Environmental Policy Act of 1969, [NEPA] as amended (Pub. L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258 § 4(b), Sept. 13, 1982) recognizes the continuing responsibility of the Federal Government to "preserve important historic, cultural, and natural aspects of our national heritage . . ." (Sec. 101 [42 USC § 4321]) (#382). With the passage of the Paleontological Resources Preservation Act (PRPA) (2009), paleontological resources are considered to be a significant resource and it is therefore now standard practice to include paleontological resources in NEPA studies in all instances where there is a possible impact.

3.2 State Regulatory Setting

3.2.1 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).

3.2.2 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.

3.3 Local Regulatory Setting

3.3.1 Los Angeles County

The Conservation and Natural Resources Element of the County of Los Angeles General Plan (County of Los Angeles, 2015) recognizes paleontological resources as non-renewable and irreplaceable resources that are an important part of the County’s identity. The general plan includes four policies to protect paleontological resources (Goal C/NR 14):

- **Policy C/NR 14.1:** Mitigate all impacts from new development on or adjacent to historic, cultural, and paleontological resources to the greatest extent feasible;
- **Policy C/NR 14.2:** Support an inter-jurisdictional collaborative system that protects and enhances historic, cultural, and paleontological resources;
- **Policy C/NR 14.5:** Promote public awareness of historic, cultural, and paleontological resources; and
- **Policy C/NR 14.6:** Ensure proper notification and recovery processes are carried out for development on or near historic, cultural, and paleontological resources.

3.3.2 San Bernardino County

The County of San Bernardino General Plan Conservation Element (2007) contains goals and policies regarding paleontological resources. The General Plan states that the study of non-renewable paleontological resources helps to interpret the past history of the county; therefore the county requires consideration of these paleontological resources in county activities via the County of San Bernardino Paleontologic Resources Overlay (2007), which mitigates impacts on significant fossil resources.

3.3.3 City of Pomona

The City of Pomona’s General Plan (City of Pomona, 2014) has four policies regarding paleontological resource management within the city, and additional information listed in Section 7F, Community Design, Historic Preservation, Goal 10. Per the guidelines for CEQA, the City requires that new development avoid or reduce potential impacts to archaeological, paleontological and historic resources. The City shall maintain sources of information regarding paleontological and archeological sites and the names and addresses of responsible organizations and qualified individuals, who can analyze, classify, record, and preserve paleontological or archeological findings. The City requires a qualified paleontologist/archeologist to monitor all grading and/or excavation where there is a potential

to affect cultural, archeological or paleontological resources. If these resources are found, the applicant shall implement the recommendations of the paleontologist/archeologist, subject to the approval of the Planning Division. Finally, the General Plan requires new development to donate scientifically valuable paleontological or archaeological materials to a responsible public or private institution with a suitable repository, located within Pomona, or Los Angeles County, whenever possible.

3.3.4 City of Rancho Cucamonga

The City of Rancho Cucamonga's General Plan (City of Rancho Cucamonga, 2010) does not list any specific policies regarding paleontological resources, but does state that while the Planning Area has a low potential to contain significant paleontological resources, the City will continue to screen development proposal in accordance with CEQA and that they will take steps to properly handle, document and preserve any resources due to their scientific and education enrichment value.

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4.0 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. According to Bureau of Land Management Instructional Memorandum 2009-011, 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" (BLM, 2008).

Vertebrate fossils, whether preserved remains or track ways, are classified 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. Assessment of significance is also subject to the CEQA criterion that the resource constitutes a “unique paleontological resource or site.”

The full significance of fossil specimens or fossil assemblages cannot be accurately predicted before they are collected, and in many cases, before they are prepared in the laboratory and compared with previously collected material. Pre-construction assessment of significance associated with an area or formation must be made based on previous finds, characteristics of the sediments, and other methods that can be used to determine paleoenvironmental and taphonomic conditions.

5.0 BACKGROUND

5.1 Geologic Context

Geologic mapping by Morton and Miller (2006) indicates that the surface of the project site and the proposed new O&M sites are entirely mapped as younger Quaternary surficial deposits including artificial fill (Qaf), eolian deposits (Qye), wash deposits (Qw), and fan deposits (Qf, Qf2, Qyf1, Qyf3, Qyf4, Qyf5). While not mapped at the surface, these younger deposits are likely underlain by older Pleistocene deposits at depth (McLeod, 2016). The distribution of the geologic units within the project area is illustrated in Figure 6; and the O&M sites are illustrated in Figure 7.

5.1.1 Older Quaternary Alluvium

Quaternary older alluvium, which is not mapped at the surface but is likely present at depth within the project site, was deposited during the Pleistocene (~2.6 million years ago – 11,700 years ago). Quaternary older alluvium typically consists of alluvial fan, colluvial, and valley fill deposits. The sediments are comprised of moderately to well consolidated silt, sand and gravel that is typically oxidized to a reddish brown hue, dissected, and exhibits soil profile development (Morton and Miller, 2006).

Taxonomically diverse and locally abundant Pleistocene animals and plants have been collected from older alluvial deposits throughout southern California and include mammoth, mastodon, camel, horse, bison, giant ground sloth, peccary, cheetah, lion, saber tooth cat, capybara, dire wolf, and numerous taxa of smaller mammals, birds, reptiles, and amphibians (Blake, 1991; Jefferson, 1991; McLeod, 2016; Reynolds, 2016; UCMP, 2016).

5.1.2 Younger Quaternary Alluvium

Quaternary alluvium includes surficial deposits that are Holocene to latest Pleistocene to in age (Morton and Miller, 2006) and may overlie older units. Within the project area, they primarily occur as fan deposits derived from the San Gabriel Mountains to the north by drainages including the San Antonio, Cucamonga, Deer, Day, Etiwanda, and Lytle creeks (McLeod, 2016). The fan deposits (Qf, Qf2, Qyf1, Qyf3, Qyf4, Qyf5) consist of unconsolidated to moderately consolidated silt, sand, pebble, cobble and boulder alluvial fans that are slightly to moderately dissected. There are also lesser amounts of silt and medium to fine grained sand eolian (windblown) deposits (Qye) and unconsolidated sand and gravel of active washes, streams and channels (Qw) that may be impacted by project construction (Morton and Miller, 2006).

Fossils are generally unknown from the younger alluvial deposits. It should be noted that though this unit typically does not contain significant vertebrate fossils at the surface, it often

overlies older geologic units that may contain significant vertebrate fossils at varying depths (McLeod, 2016).

5.1.3 Artificial Fill

Artificial fill (Qaf) is recent and consists of previously disturbed sediment that has been transported by humans. It is commonly used in construction projects (e.g., structures, roadways, concrete channels, railway embankments, etc.). Artificial fill is only mapped in the vicinity of the Ontario International Airport (Morton and Miller, 2006), but is likely present in other areas of the alignment based on the developed nature of the project vicinity. However, the specific locations, depth and extent of artificial fill along the rest of the alignment is unknown. Although these deposits may contain fossil resources depending on the source of the fill, they have been removed from their original locations and lack significance.

5.2 Paleontological Resources

Paleo Solutions requested a paleontological search of records maintained by LACM and from former SBCM paleontology curator, Robert E. Reynolds. Both LACM and Reynolds reported that they do not have any vertebrate fossil localities within the proposed site boundaries, but they do have localities nearby from sedimentary deposits similar to those that occur at depth within the project site (McLeod, 2016; Reynolds, 2016; Appendix A).

Fossils are generally unknown from the Holocene-aged alluvial deposits, due to their young age. However, these young deposits are often underlain by older, paleontologically sensitive sediments at depth (McLeod, 2016). Pleistocene-aged (2.6 million to 11.7 thousand years old) deposits in the project vicinity have produced over 200 fossilized specimens. Recovered taxa include giant ground sloth, saber-tooth cat, camel, bison, mammoth, mastodon, horse, deer, rodents such as pocket gopher and desert woodrat, whipsnake, and snails from depths between one and 20 feet below the surface (McLeod, 2016; Reynolds, 2016). Based on the locations reported for the fossil localities (McLeod, 2016; Reynolds, 2016), the fossils recovered from shallow depths between one and five feet are generally from, or immediately adjacent to, mapped exposures of older alluvium (Morton and Miller, 2006).

Additional fossil localities were reported from in the project vicinity from Miocene-aged formations (Reynolds, 2016). However, these Miocene formations are not anticipated to be impacted either at the surface or at depth during construction activities, and the associated localities are therefore not discussed in this report.

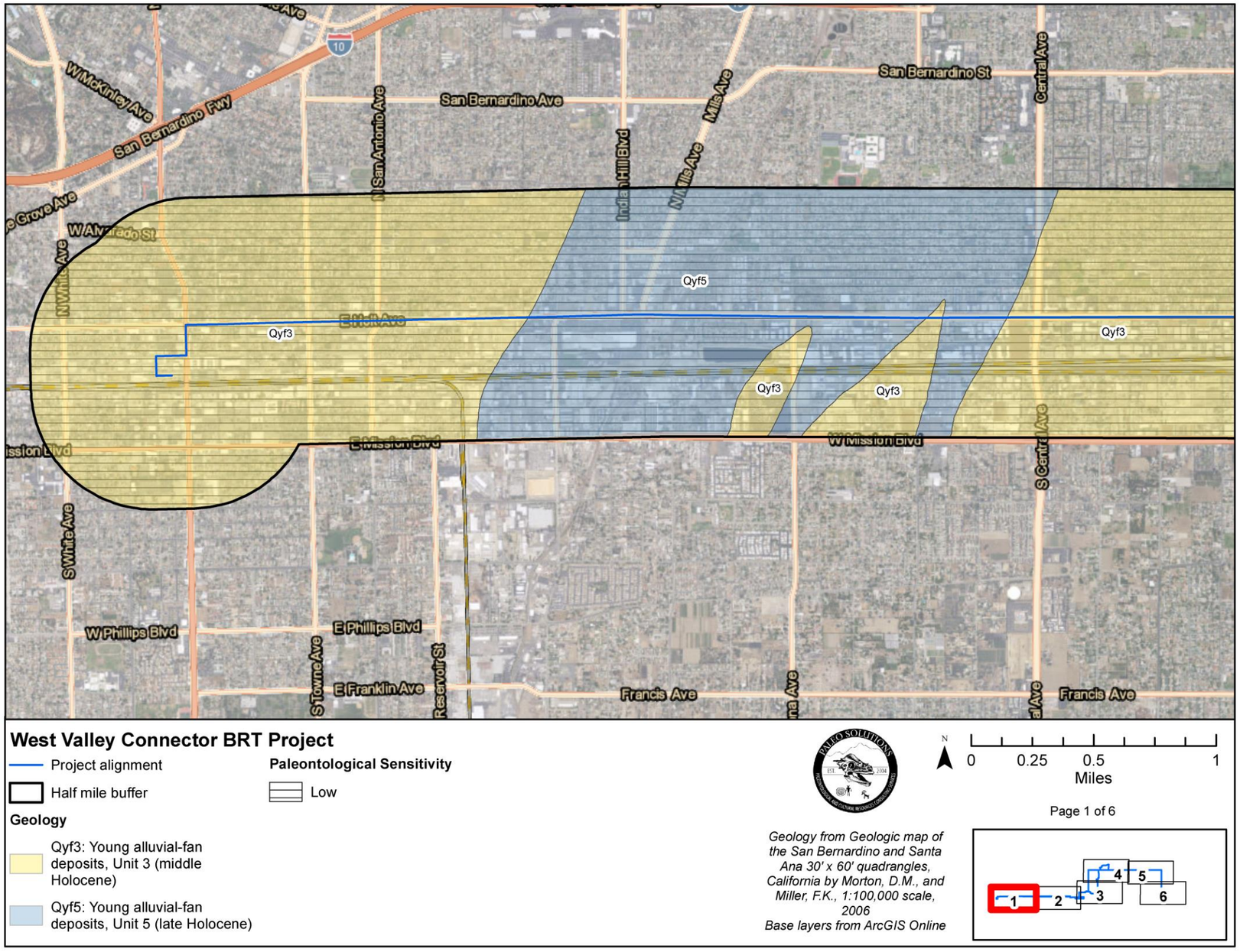

Figure 6a: Project Geology Map 1 of 6

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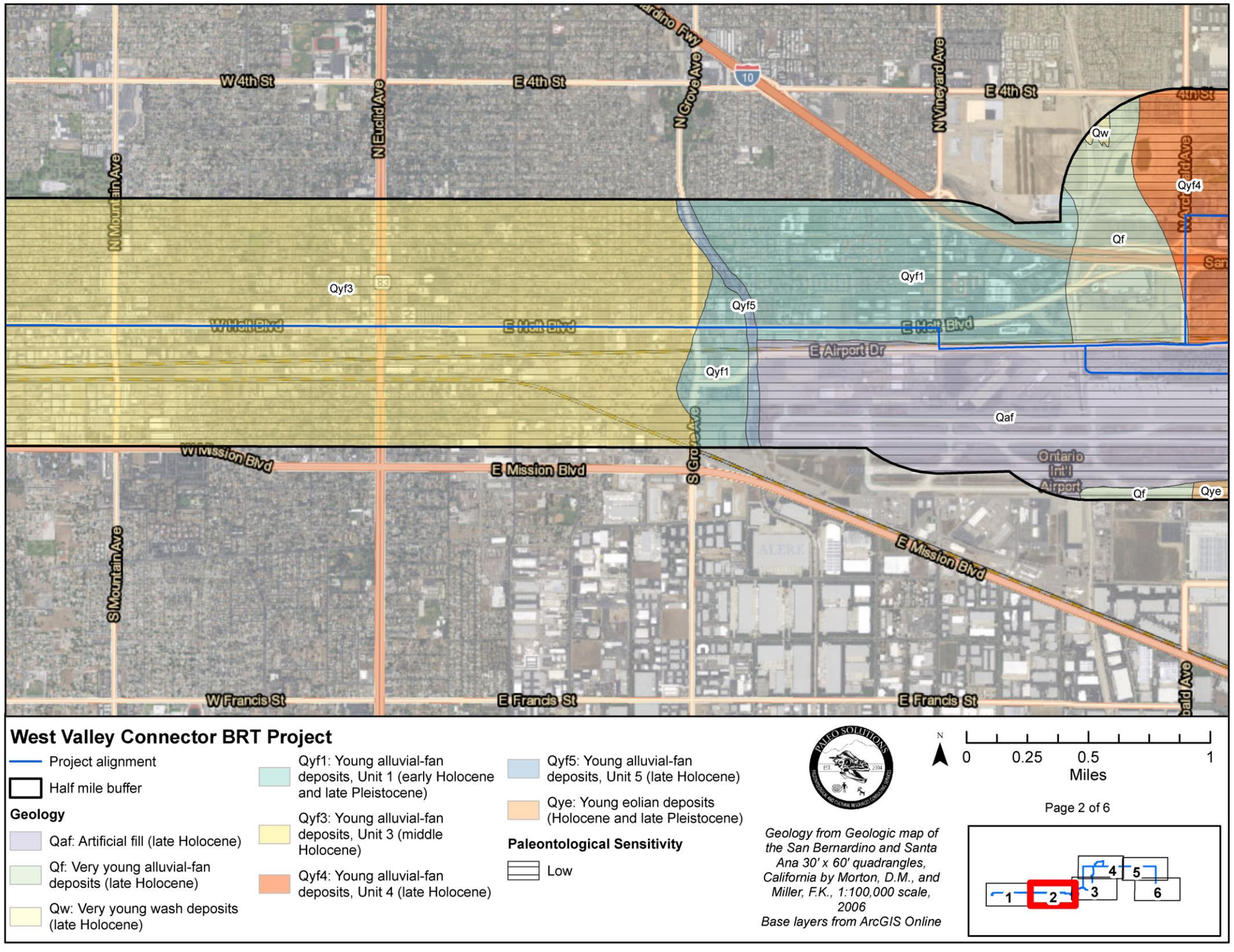

Figure 6b: Project Geology Map 2 of 6

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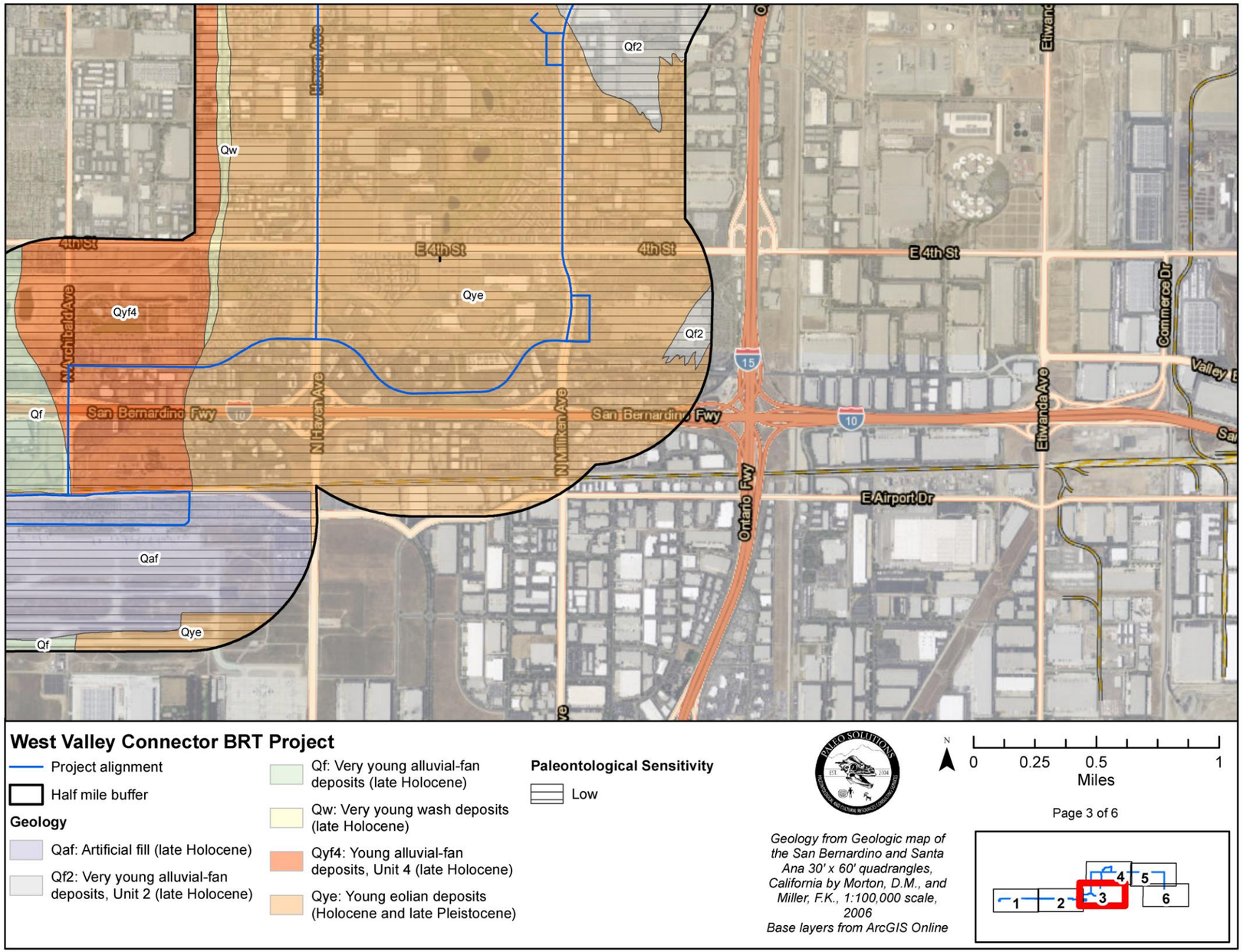

Figure 6c: Project Geology Map 3 of 6

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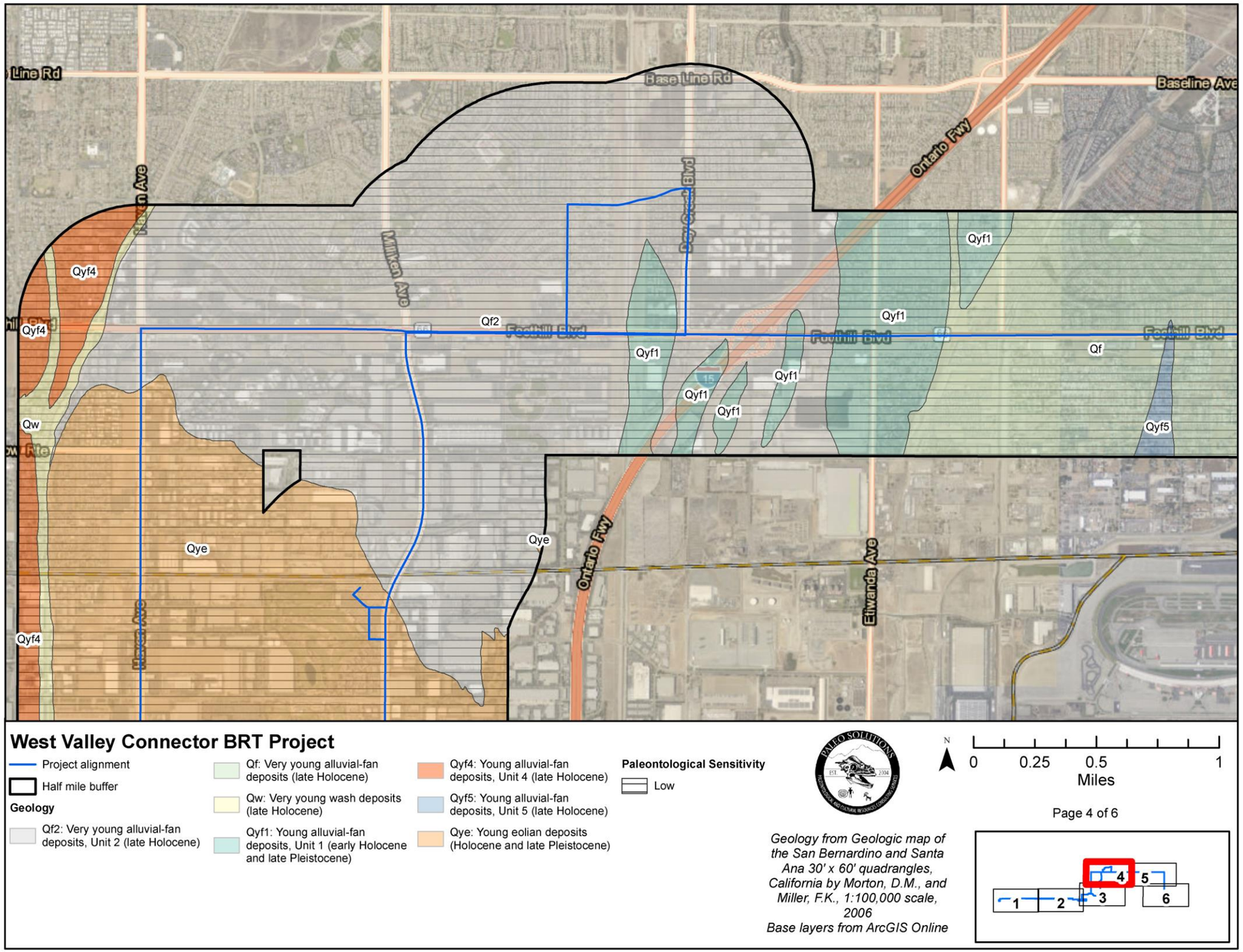

Figure 6d: Project Geology Map 4 of 6

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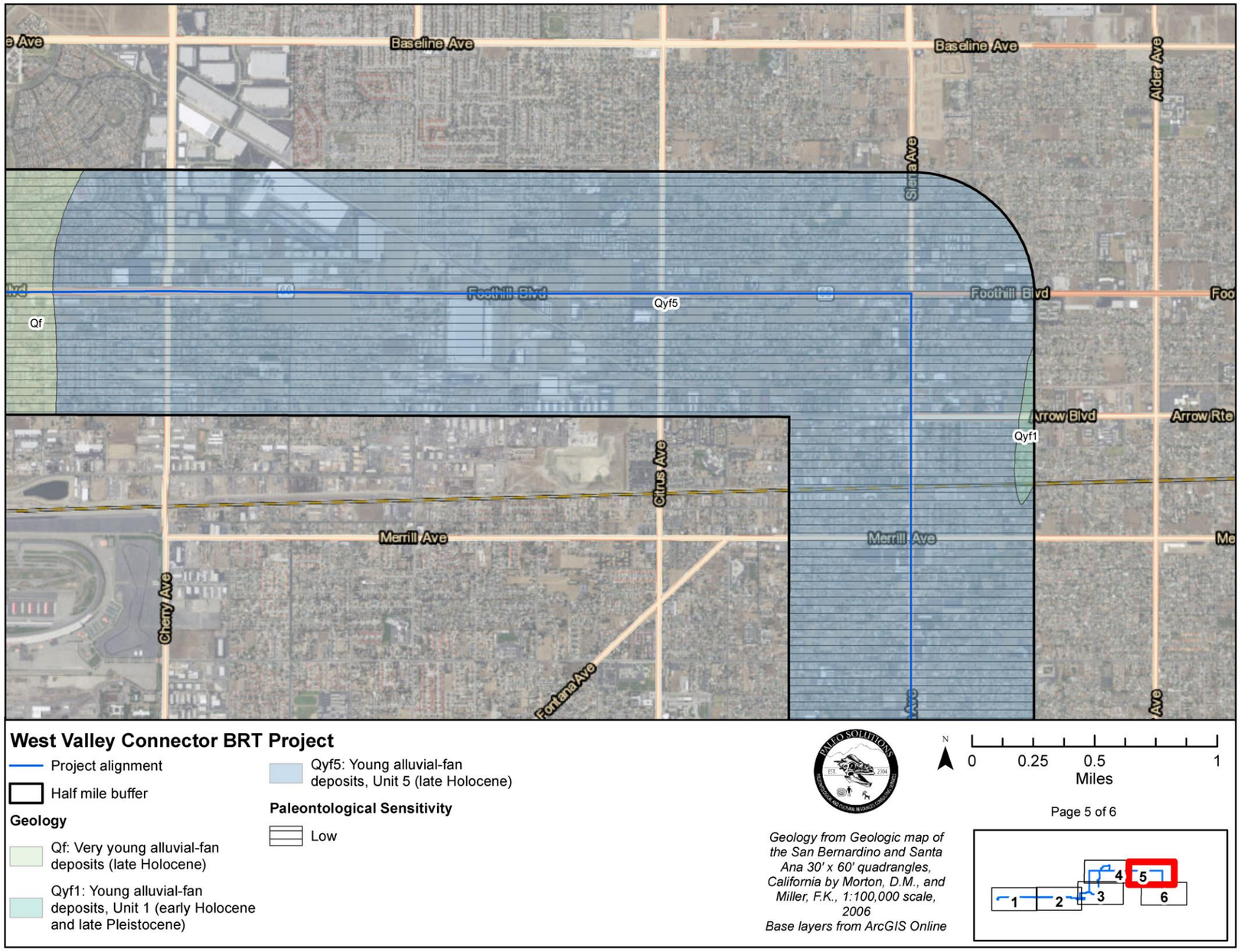

Figure 6e: Project Geology Map 5 of 6

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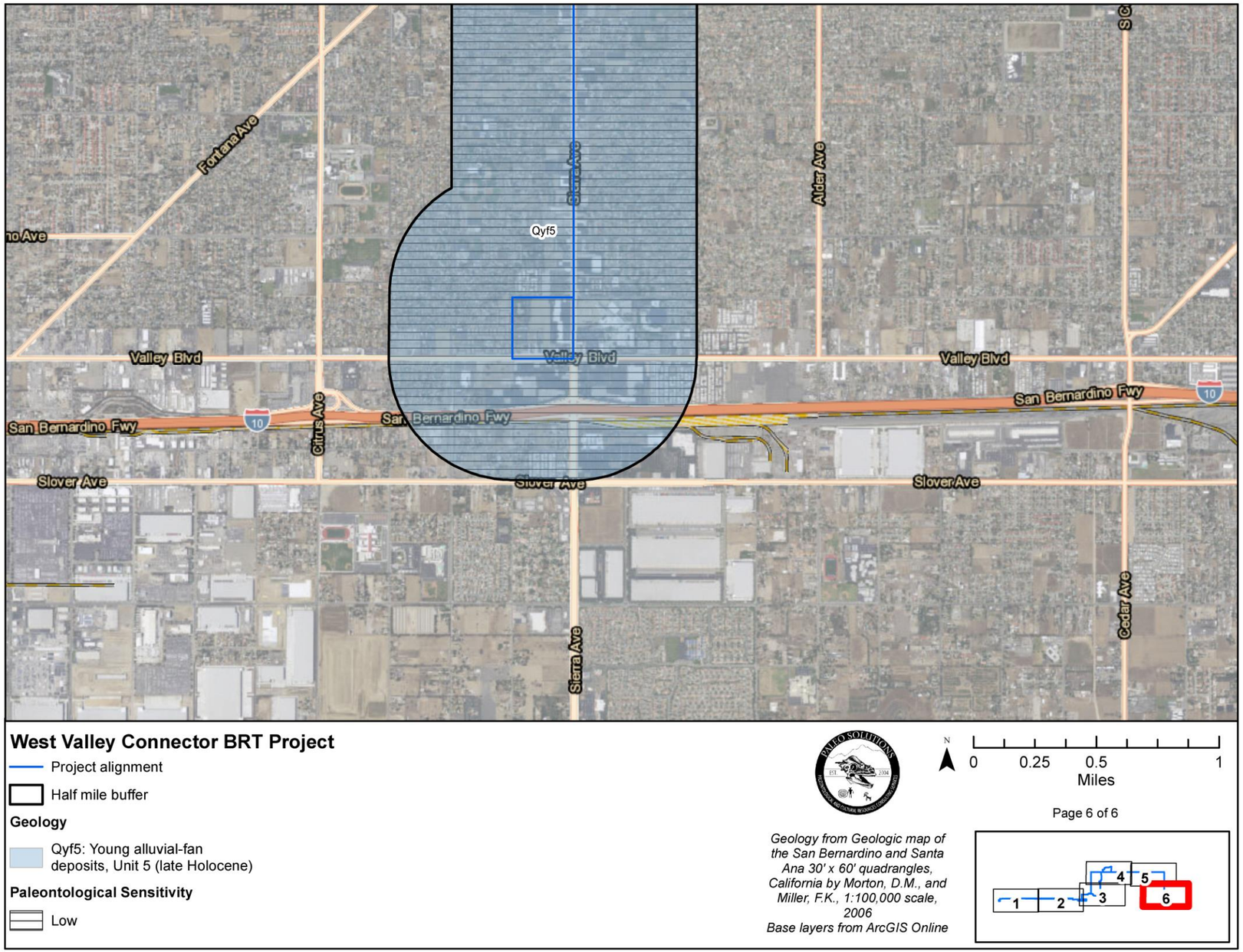

Figure 6f: Project Geology Map 6 of 6

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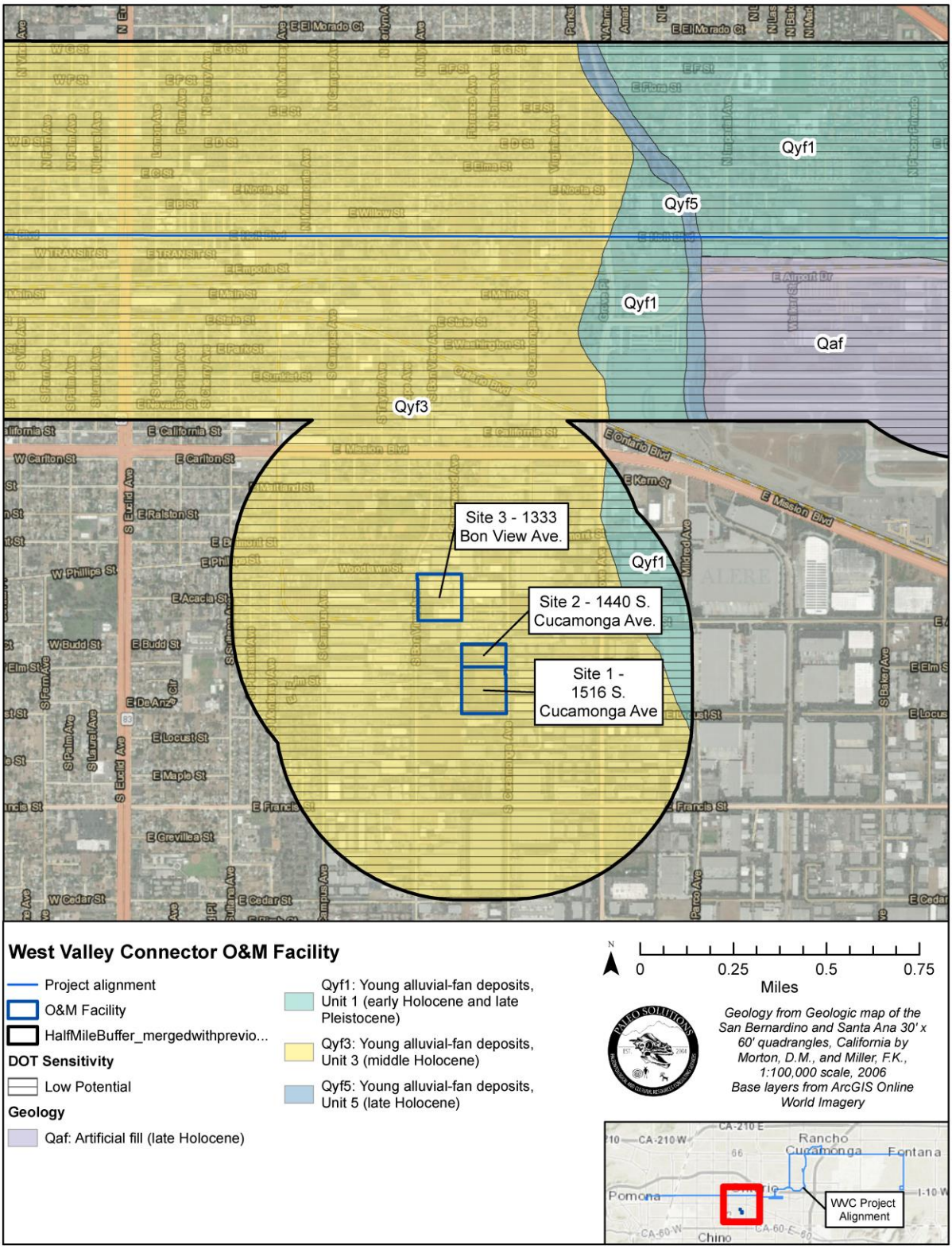

Figure 7: O&M Site Geology Map

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6.0 SENSITIVITY AND IMPACT ANALYSIS

Based on the results of the geologic map review and literature and museum records searches for the project, the paleontological sensitivity of the geologic units within the project site were ranked using Caltrans' tripartite scale (Caltrans, 2016) and an impact analysis was performed using available project design and excavation plans and geotechnical studies (Earth Mechanics, Inc., 2016). The Caltrans guidance and reporting system was used for consistency with paleontological evaluations and analyses performed for other transportation projects in the area.

6.1 Sensitivity Criteria

Caltrans' paleontological sensitivity scale comprises three rankings: High Potential, Low Potential, and No Potential. The criteria for each ranking, as stated in Caltrans SER Chapter 8 (Caltrans, 2016), are as follows:

6.1.1 High Potential

Rock units which, based on previous studies, contain or are likely to contain significant vertebrate, significant invertebrate, or significant plant fossils. These units include, but are not limited to, sedimentary formations that contain significant nonrenewable paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils. These units may also include some volcanic and low-grade metamorphic rock units. Fossiliferous deposits with very limited geographic extent or an uncommon origin (e.g., tar pits and caves) are given special consideration and ranked as highly sensitive. High sensitivity includes the potential for containing: 1) abundant vertebrate fossils; 2) a few significant fossils (large or small vertebrate, invertebrate, or plant fossils) that may provide new and significant taxonomic, phylogenetic, ecologic, and/or stratigraphic data; 3) areas that may contain datable organic remains older than Recent, including *Neotoma* (sp.) middens; or 4) areas that may contain unique new vertebrate deposits, traces, and/or trackways. Areas with a high potential for containing significant paleontological resources require monitoring and mitigation.

6.1.2 Low Potential

This category includes sedimentary rock units that: 1) are potentially fossiliferous, but have not yielded significant fossils in the past; 2) have not yet yielded fossils, but possess a potential for containing fossil remains; or 3) contain common and/or widespread invertebrate fossils if the taxonomy, phylogeny, and ecology of the species contained in the rock are well understood. Sedimentary rocks expected to contain vertebrate fossils are not placed in this category because vertebrates are generally rare and found in more localized stratum. Rock units designated as low potential generally do not require monitoring and mitigation. However, as excavation for construction gets underway it is possible that new and unanticipated paleontological resources might be encountered. If this occurs, a Construction Change Order

must be prepared in order to have a qualified Principal Paleontologist evaluate the resource. If the resource is determined to be significant, monitoring and mitigation is required.

6.1.3 No Potential

Rock units of intrusive igneous origin, most extrusive igneous rocks, and moderately to highly metamorphosed rocks are classified as having no potential for containing significant paleontological resources. For projects encountering only these types of rock units, paleontological resources can generally be eliminated as a concern when a project assessment report or technical study is prepared and no further action taken.

6.2 Sensitivity Analysis

Fossils are generally unknown from younger Quaternary alluvial deposits due to their young age. Reworked paleontological material from older deposits may be present, but would not meet significance criteria as the material would lack critical contextual information. Similarly, fossils from artificial fill would also have been removed from their original location of deposition and would not be considered significant. Therefore, the younger Quaternary deposits (Qf, Qf2, Qye, Qw, Qyf1, Qyf3, Qyf4, Qyf5), and artificial fill (Qaf) all have low paleontological potential at the surface. However, they may overlie older high sensitivity deposits at depth, such as Pleistocene older alluvium, which has produced scientifically significant vertebrate fossils in both Los Angeles and San Bernardino counties.

6.3 Impact Analysis

Ground disturbance in geologic units and geographic areas known to contain scientifically significant fossils may produce adverse impacts to nonrenewable paleontological resources (State CEQA Guidelines, 14 CCR Sections 15064.5[3] and 15023; State CEQA Guidelines Appendix G, Section V, Part C).

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

There are no documented paleontological localities within the boundaries of the project site, and the younger Quaternary deposits mapped at the surface have low sensitivity for paleontological resource. However, the underlying older Quaternary (Pleistocene) sediments have high potential for producing significant paleontological resources. Therefore, project activities may potentially result in significant impacts to paleontological resources if these paleontologically sensitive sediments are encountered during excavation.

Impacts to sediments with the potential to contain paleontological resources are anticipated to be limited to excavations that exceed five feet in depth, including excavations for a storm drain (15 foot depth) and utility relocations (6 foot depth) along the proposed alignments, and excavations to construct the maintenance shop and administrative building at the O&M facility (12 foot depth). The remaining excavations for roadway widening, bus shelters, bus pads, and pylon installation along the proposed alignments, and excavations for utility installation at the O&M facility are expected to be shallow (2.5 to 4 feet and 2 to 3 feet, respectively) and are anticipated to be entirely within low sensitivity younger Quaternary deposits.

The No Build Alternative will not result in any ground disturbance, and will therefore not result in any impacts on paleontological resources. Both build alternatives (Alternatives A and B) and construction of the O&M facility (see Appendix C) have the potential to result in significant impacts on paleontological resources, however, these impacts can be reduced to below the level of significance with incorporation of the mitigation recommendations provided in Section 7 below.

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7.0 CONCLUSIONS AND RECOMMENDATIONS

The project site is entirely underlain by young Quaternary deposits with low paleontological sensitivity at the surface. However, deeper excavations have the potential to impact older Quaternary deposits, which have produced numerous significant fossils within the project vicinity. Therefore, preparation and implementation of a Paleontological Monitoring Plan (PMP) is recommended in order to reduce impacts to below the level of significance pursuant to CEQA and NEPA.

A workers environmental awareness program (WEAP) should be presented to all construction personnel prior to the start of ground-disturbing activities. Periodic paleontological spot checks should be conducted by a qualified paleontologist when excavation exceeds depths of five feet into the younger Quaternary deposits to check for the presence of older, more paleontologically sensitive geologic units (including older Quaternary alluvium). If present, full time monitoring should be implemented during excavations in to the sensitive sediments. The five-foot depth at which spot checking should be triggered will initially be implemented, but shall be modified as needed by the qualified paleontologists, in consultation with SBCTA and FTA, based on the sediment types, depths, and distributions observed during monitoring during the life of the project. If unanticipated paleontological resources are discovered during project-related activities, work must be halted within 25 feet of the discovery until it can be evaluated by a qualified paleontologist. Upon completion of ground-disturbing activities, a Paleontological Monitoring Report (PMR) should be prepared and submitted to SBCTA, FTA, and the fossil repository.

All scientifically significant fossils recovered during excavation should at a minimum be collected, prepared to the point of curation, identified to the lowest possible taxonomic order, and curated at an accredited repository along with all associated field data and reports.

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APPENDIX A – RECORDS SEARCH RESULTS

Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

tel 213.763.DINO
www.nhm.org

Vertebrate Paleontology Section
Telephone: (213) 763-3325
Fax: (213) 746-7431
e-mail: smcleod@nhm.org

3 October 2016

Paleo Solutions, Inc.
911 South Primrose Avenue, Unit N
Monrovia, CA 91016

Attn: Courtney Richards, Supervisor & Assistant Project Manager

re: Paleontological resources for the proposed Omnitrans West Valley Connector Project, from Pomona to Fontana, Los Angeles and San Bernardino Counties, project area

Dear Courtney:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for the proposed Omnitrans West Valley Connector Project, from Pomona to Fontana, Los Angeles and San Bernardino Counties, project area as outlined on the portions of the San Dimas, Ontario, Guasti, and Fontana USGS topographic quadrangle maps that you sent to me via e-mail on 29 September 2016. We have no vertebrate fossil localities that lie directly within the boundaries of the proposed project area, but we do have localities somewhat nearby from sedimentary deposits similar to those that occur at depth in the proposed project area.

Surface deposits throughout the entire proposed project area consist of younger Quaternary Alluvium, as basinal deposits in the San Gabriel Valley derived broadly as alluvial fan deposits from the San Gabriel Mountains to the north via various drainages including San Antonio Creek, Cucamonga Creek, Deer Creek, Day Creek, Etiwanda Creek, and Lytle Creek. These younger Quaternary deposits typically do not contain significant vertebrate fossils in the uppermost layers, but they are usually underlain by older Quaternary Alluvium that may well contain significant fossil vertebrate remains.

Our closest older Quaternary vertebrate fossil locality to the western portion of the proposed project area is LACM 8014, just east of due south of the proposed project area just

southwest of the intersection of the Pomona Freeway (Highway 60) and the Corona Freeway (Highway 71), that produced a fossil specimen of bison, *Bison*. A little farther south-southeast from locality LACM 8014, in English Canyon of the Puente Hills, our older Quaternary vertebrate fossil locality LACM 1728 produced fossil specimens of horse, *Equus*, and camel, *Camelops*, at a depth of 15 to 20 feet below the surface.

Our closest older Quaternary vertebrate fossil locality to the central and eastern portions of the proposed project area is LACM 7811, south of Guasti in the central portion of the proposed project area in the Jurupa Valley north of Norco and west of Mira Loma, along Sumner Avenue north of Cloverdale Road, that produced a fossil specimen of whipsnake, *Masticophis*, at a depth of 9 to 11 feet below the surface. Further to the south of this portion of the proposed project area, between Corona and Norco, our older Quaternary vertebrate fossil locality LACM 1207 produced a fossil specimen of deer, *Odocoileus*, at unknown depth.

Shallow excavations in the younger Quaternary Alluvium exposed throughout the entire proposed project area probably will not uncover significant vertebrate fossil remains. Deeper excavations that extend down into older Quaternary deposits, however, may well encounter significant fossil vertebrate specimens. Any substantial excavations in the proposed project area, therefore, should be monitored closely to quickly and professionally recover any fossil remains discovered while not impeding development. Also, sediment samples should be collected and processed to determine the small fossil potential in the proposed project area. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

This records search covers only the vertebrate paleontology records of the Natural History Museum of Los Angeles County. It is not intended to be a thorough paleontological survey of the proposed project area covering other institutional records, a literature survey, or any potential on-site survey.

Sincerely,

Samuel A. McLeod

Samuel A. McLeod, Ph.D.
Vertebrate Paleontology

enclosure: invoice

WEST VALLEY CONNECTOR

GEOLOGY AND PALEONTOLOGICAL RESOURCES

The general geology and summary of paleontological resources known from the proposed Omnitrans West Valley Connector BRT Project (West Valley Connector) in southwestern San Bernardino County follows.

Methods

Maps provided by Paleo Solutions (Fig. 1) show a one mile search buffer around the multiple branches of the connector. In the case of paleontological records searches, buffers are not a limiting factor. Fossil localities in the west San Bernardino Valley are indicators that flat-lying strata have the potential to contain nonrenewable paleontological resources along their entire extent, whether inside or beyond the buffer. Paleo Solutions has been informed that there will be regular excavations in such sediments to a depth of five feet, as well as a three mile stretch with excavations to depths of 15 feet. Although the locations of excavations have not yet been determined, even the shallow excavations have potential for impacting late Pleistocene sediments containing fossils.

Project Description:

The proposed West Valley Connector runs from the vicinity of the west line of San Bernardino County at Pomona, easterly through Montclair, Ontario, Guasti, then north to Rancho Cucamonga and Fontana, then south to terminate in south Fontana at the I-10 Freeway.

Specifically, the proposed Connector starts at Holt and Garey avenues in Pomona, Los Angeles County, approximately two miles west of Mills Avenue/Indian Hill Boulevard, which is the southwestern line of San Bernardino County. The Connector runs easterly along Holt Avenue, through Ontario, to the Ontario International Airport at Guasti. At Archibald Avenue, the route moves to the north side on the I-10 Freeway and proceeds east along Inland Empire Boulevard. The route branches, and the two branches turn north along Haven Avenue and Milliken Avenue. At Foothill Boulevard, the route recombines and turns easterly, and includes a branch looping north, then south to Foothill Boulevard.

The proposed route continues easterly along Foothill Boulevard, past Interstate 15, and through Fontana. At Sierra Avenue, the proposed route turns south and follows Sierra Avenue to Valley Boulevard, where the eastern portion of the line terminates approximately one-quarter mile north of Interstate 10.

General Geology

The western terminus at Holt and Garey avenues in Pomona is west of the northwestern projected trace of the Chino Fault, which elevates fossiliferous Miocene sediments on the west side of that fault. Most of the proposed West Valley Connector alignment is east of the Chino Fault, and is located on Late Pleistocene, early and middle Holocene sediments, the older containing Late Pleistocene small and large mammal fossils. The entire proposed right-of-way is underlain at relatively shallow depths by fossiliferous sediments that have potential to be impacted by the use of earth-moving equipment.

Literature Search Results

San Dimas Quadrangle

San Jose Hills, Puddingstone Area: The San Jose Hills (Bortugno and Spittler, 1986) lie northwest of the western termination of the proposed Connector in Pomona. These hills contain both Miocene volcanic rocks consisting of andesite, basalt and volcanic conglomerate (Tga, Tgb, Tgc: Morton and Miller, 2006) as well as the fossiliferous La Vida Member of the mid-Miocene Puente Group (Tplv: Morton and Miller, 2006; Durham and Yerkes, 1959).

Diamond Bar: Southwest of the western termination of the proposed Connector is the Diamond Bar area of the northern Chino Hills. This portion of the Chino Hills is elevated west of the trace of the Chino Fault. The exposed Miocene Marine Puente Group includes the Yorba and Soquel Members (Tpy; Tps; Morton and Miller, 2006; Durham and Yerkes, 1959), each member having a record of producing significant marine fossils, including whales, porpoise, sharks and basking sharks, multiple species of fish, rare birds, cephalopods, pelecypods, marine algae and dicot leaves from the adjacent continent (Durham and Yerkes, 1959; Reynolds, 1985, 1989a, 1989b; Kinoshita, 1992).

The fossiliferous marine sediments of the Miocene Puente Group (La Vida, Yorba and Soquel Members, Durham and Yerkes, 1959; Tplv; Tpy; Tps; Morton and Miller, 2006) may be present at an undetermined depth near the west end of the Connector, and there is potential that deep excavation might contact fossiliferous sediments.

Chino Hills: Canyons incised into Miocene marine sediments of the Chino Hills contain late Pleistocene sedimentary fill with Ice Age vertebrate fossils. At the Carbon Canyon Wastewater Facility in the Chino Hills, giant ground sloth and camel were discovered 11 feet below surface (Reynolds and Reynolds, 1991a). The Miocene marine and Pleistocene sediments are covered by a thin layer of Holocene soil.

Depending on depth of excavation, fossiliferous Miocene marine and Pleistocene continental sediments might be encountered at the west end of the project.

Ontario Quadrangle

Chino: The Chino area is located east of the Chino Hills on flat lands that consist of a thin layer of Holocene (Recent) sediments overlying fossiliferous sediments at shallow depth. South of the proposed West Valley Connector route, Ice Age bison, mammoth, and horse have been recovered north of the intersection of Euclid and Pine avenues (M. Roeder, pers. comm. to Reynolds, 2014). The "Majestic" mammoth was recovered from a project along Kimball Avenue. At Los Serranos Creek, near-surface Pleistocene terrace deposits produced Ice Age bison, horse, and deer.

Cucamonga Peak Quadrangle

Upland – Rancho Cucamonga: The area south of Interstate 210 contains yellowish silty sands at depths between1 and 5 feet. The KB Home Lexington and Brighton Tracts 16454 and 16455 are located immediately north of the KB Home Tract 16643 on Emma Lane. The excavation monitoring program for these tracts (Reynolds, 2004a) located the first Pleistocene fossils known from Rancho Cucamonga. These included fossil remains of *Thomomys* sp. cf. *T. bottae*, (Botta's pocket gopher) and *Neotoma* sp., cf. *N. lepida* (desert woodrat).

Excavations in Rancho Cucamonga along or north of Base Line Road (Reynolds, 2004b, 2004c, 2004d) exposed yellow silty sand at a depth of 2 to 3 feet below coarse topsoil. Geotechnical reports from parcels along Archibald Avenue (Riddell and Bartee, 2003) indicated that yellow, sandy clay and clayey sand occur between depths of 1 to 5 feet or more below the surface of the parcel and are recorded in boring logs. These yellowish silty sands record an unusual depositional event, and they have potential to contain Pleistocene vertebrate fossils.

Guasti Quadrangle

Western Fontana: At the site of Champagne, on the east side of the Interstate 15, a mammoth was recovered from a 5-foot depth in a flood control basin. These localities suggest that there is a high potential for significant vertebrate fossils to be encountered by construction excavation below a depth of three feet in the San Bernardino Basin (Reynolds and Reynolds, 1991a).

Near Banana Street, in western Fontana, the uncommon occurrence of partially articulated adult and juvenile mastodons were located approximately four feet deep.

Cloverdale: South of the proposed Connector route in the Cloverdale area of San Bernardino County, the Lewis Homes Resorts Project at Hamner Avenue and Bellgrave Avenue produced an extensive fauna (200+ fossil specimens) of diverse taxonomy (12 species). Represented were jaws and many articulated elements of mammoth, camel, bison, and large and small horse.

Rodents from the project include gopher and woodrat. The fossil bison is important since it is the indicator species of the Rancholabrean North American Land Mammal Age.

Fossil snails from the Resorts Project (*Vertigo modesto*, *Pupisoma* sp., *Succinea* sp., *Catinella* sp., *Columella* sp. cf. *alticola*) indicate a poorly drained marsh land interspersed with scrub brush and copses of trees.

Fontana Quadrangle

South Fontana: In south Fontana, vertebrate fossils have been found at relatively shallow depth south of Interstate 10 and north of the Jurupa Hills. The saber-tooth cat, *Smilodon*, was reported from Declezville (western Fontana), five feet below surface on the north side of the Jurupa Hills (Reynolds and Reynolds, 1991a).

Summary

Paleontological resource localities have been recorded from sedimentary strata that are likely to extend to the area beneath the proposed Omnitrans West Valley Connector Project. These fossil localities occur at shallow depths, between one and five feet from areas near Chino, Ontario, Upland, Rancho Cucamonga, Guasti, and Fontana. Since these fossils occurrences are at shallow depth, there is potential for excavation associated with the development of the Connector to impact significant nonrenewable paleontological resources.

Recommendations

The route of the West Valley Connector has potential to contact sediments that contain paleontological resources. Therefore, a paleontological resources impact mitigation program (PRIMP) must be developed for the excavation phase of the project. This program must conform to the guidelines of the San Bernardino County, Caltrans (Caltrans, 2008) and to those of the Society of Vertebrate Paleontology (SVP, 1995, 2010), including the following steps: This program must include, but not be limited to the following tasks:

- A trained paleontological monitor must be present during ground-disturbing activities within the project area in sediments that are determined likely to contain paleontological resources. The monitoring for paleontological resources must be conducted on a full-time basis during excavation. The monitor must be empowered to temporarily halt or redirect construction activities to ensure avoidance of adverse impacts to paleontological resources. The monitor must be equipped to rapidly remove any large fossil specimens encountered during excavation.

- During monitoring, samples must be collected and processed to recover microvertebrate fossils. Processing includes wet screen-washing and microscopic examination of the residual materials to identify small vertebrate remains.

- If a large deposit of bone is encountered, salvage of all bone in the area will be conducted with additional field staff and in accordance with modern paleontological techniques.

- All fossils collected during the project must be prepared to a reasonable point of identification. Excess sediment or matrix should be removed from the specimens to reduce the bulk and cost of storage. Itemized catalogs of all material collected and identified must be provided to the museum repository with the specimens.

- A report documenting the results of the monitoring and salvage activities and the significance of the fossils must be prepared.

- All fossils collected during this work, along with the itemized inventory of these specimens, must be deposited in federally approved museum repository for permanent curation and storage.

Compliance with these recommendations will ensure that excavation impacts to the paleontological resources are maintained below a level of significance.

Sincerely,

Robert E. Reynolds
Retired Curator, San Bernardino County Museum
Convener, California State University Desert Symposium

REFERENCES

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Reynolds, R.E. 1989a. Paleontological Salvage, Green Valley Project, Chino Hills, San Bernardino County, CA. San Bernardino County Museum for Lewis Homes, Upland, CA. p. 112.

Reynolds, R.E. 1989b. Paleontological Salvage, Soquel Canyon Road Project AD-85, Chino Hills, San Bernardino County, CA. San Bernardino County Museum for Chino Valley Managers Office, Chino, CA. p. 127.

Reynolds, R.E. 2004a. Paleontological Resource Impact Mitigation Program, KB Home Lexington and Brighton Tracts 16454 and 16455, Rancho Cucamonga, California. Report to KB Home by LSA Associates, Inc. 8 p.

Reynolds, R.E. 2004b. Paleontological Resource Impact Mitigation Program, Manning Homes, Archibald Tract 16430, Rancho Cucamonga, California. Report to Manning Homes by LSA Associates, Inc. 8 p.

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Reynolds, R.E. 2004d. Paleontological Resource Impact Mitigation Program, Rancho Cucamonga Central Park, California. Report to the City of Rancho Cucamonga by LSA Associates, Inc. 8 p.

Reynolds, R. E., and R. L. Reynolds, 1991a, The Pleistocene Beneath our Feet: Near-surface Pleistocene Fossils from Inland Southern California Basins. San Bernardino County Museum Association Quarterly V. 38(3 & 4), p. 41-43.

Riddell, E.C, and L.R. Bartee. 2003. Geotechnical Exploration Report (Project No. 02-5508), Proposed Residential Development, west of Archibald Avenue. Report to Manning Homes from Associated Soils Engineering, Inc. 25 p. with plates.

SVP (Society of Vertebrate Paleontology). 1995. Assessment and mitigation of adverse impacts to nonrenewable paleontologic resources – standard guidelines: Committee Reports, News Bulletin, vol. 163, p. 22-27.

SVP (Society of Vertebrate Paleontology). 2010. Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. 11 p. Available; http://vertpaleo.org/PDFS/68/68c554bb-86f1-442f-a0dc-25299762d36c.pdf

APPENDIX B – QUALIFICATIONS

PALEO SOLUTIONS

RESUME

Geraldine Aron, MS
Principal Paleontologist

SUMMARY

YEARS OF EXPERIENCE
17 Total Years

EDUCATION
MS Geological Sciences
CSU Long Beach, 2008

BS Geological Sciences
CSU Long Beach, 2000

CERTIFICATIONS

BUREAU OF LAND MANAGEMENT
Paleontological Permit - CA
Paleontological Permit - AZ
Paleontological Permit - NV

UNITED STATES FOREST SERVICE
Permit - Angeles National Forest

CARTOGRAPHY & GIS SYSTEMS
CSU Long Beach, 2000

QUALIFIED PALEONTOLOGIST
Orange County
Riverside County
County of San Diego
City of San Diego

AFFILIATIONS

Society of Vertebrate Paleontology
Geological Society of America
Association for Women Geoscientists
Society for Sedimentary Geology (SEPM)

PROFILE

Geraldine is President and a Principal Investigator at Paleo Solutions, Inc. (PSI). She has more than 17 years of experience as a professional paleontologist in natural resources management. She meets the professional standards as a paleontological Principal Investigator for the Society of Vertebrate Paleontologists, BLM, USFS, San Bernardino County, Orange County, San Luis Obispo County, San Diego County, and other agencies that retain a professional list for qualified paleontologists. Geraldine has produced hundreds of technical reports, which include paleontological assessments, DEIRs, EIR/EIS, Paleontological Mitigation and Monitoring Plans, document reviews, and survey reports for CEQA/NEPA compliance. Geraldine has worked on dozens of transportation projects from San Diego County to Humboldt County. She is responsible for maintaining the overall scientific integrity and oversight of all paleontological projects for PSI. Her areas of expertise include: Paleontological resources project scoping and management; compliance with Federal and State of California laws; Federal and California State agency consultation; preparing and implementing research designs; serving as Principal Investigator for surveys, significance evaluations and data recovery excavations; development of Paleontological Resources Management Plans and Treatment Plans; public outreach and involvement.

PROJECT EXPERIENCE

Dola and Lanzit Ditch Bridge Replacement
San Bernardino County Flood Control District | San Bernardino County, CA

Principal Investigator/Project Manager. Ms. Aron oversaw the completion of a Technical Report/Initial Study of paleontological resources for the Donnell Basin project. The scope of the paleontological analysis included a review of geologic maps, relevant scientific literature, and museum records. The report was prepared in accordance with San Bernardino County General Plan recommendations and California Environmental Quality Act requirements. Paleo Solutions recommended five mitigation measures to reduce any potential negative impacts on paleontological resources to a less than significant level and meet San Bernardino County requirements.

Topock Compressor Station
Pacific Gas & Electric | San Bernardino County, CA

Principal Investigator/Project Manager. Ms. Aron provided a memorandum summarizing the results that included the understanding of CERCLA. Paleo Solutions provided third party review of Paleontological documents to ensure adequacy of use in preparation of environmental documents. Documents included a report titled Paleontological Resources Management Plan, Topock Groundwater Remediation Project, San Bernardino County California and Mohave County, Arizona, prepared for Pacific Gas and Electric.

Coolwater-Lugo Transmission Line Project Southern California Edison
Southern California Edison | San Bernardino County, CA

Principal Investigator/Project Manager. Ms. Aron oversaw cultural and paleontological investigations of the alternative routes and substation locations identified by Southern California Edison for the construction of approximately 47-52 miles double-circuit 220 kV transmission lines, approximately 15-20 miles of single-circuit 550 kV transmission lines, removal of approximately 15-6 corridor miles of existing 220 kV transmission lines, and construction of a new 500/220/115 kV substation for completion of a Programmatic Environmental Assessment (PEA) required by the CPUC and an Environmental Impact Report/Environmental Impact Statement. Ms. Aron was the leader author on the facilitation of production of the paleontology sections in support of the EIR/EIS and PEA. Ms. Aron was also the permit holder for a BLM authorization and permit to conduct surveying and a research design for field reconnaissance related to the preparation of a Proponent's Environmental Assessment (PEA), as well as EIS/EIR documentation for the proposed transmission line.

PALEO SOLUTIONS

RESUME

Courtney Richards, MS
Principal Paleontologist

SUMMARY

YEARS OF EXPERIENCE
12 Years

EDUCATION
MS Biological Sciences
Marshall University, 2011

BS Earth and Space Science
University of Washington, 2006

CERTIFICATIONS

MINE SAFETY & HEALTH ADMINISTRATION
24-hr New/Inexperienced Metal/Non-Metal Surface Miners Certification

FIRST AID/CPR CERTIFIED

THE PRINCIPAL ACADEMY 2.0, ZWEIGWHITE

AFFILIATIONS

Society of Vertebrate Paleontology

SELECT PUBLICATIONS

Murphey, P.C., Zubin-Stathopoulos, K.D., Richards, C.D., and Fontana, M.A., 2015, Paleontological resource overview of the Royal Gorge Field Office Planning Area, Colorado: U.S. Department of Interior Bureau of Land Management Report, 178 p., and standalone confidential fossil locality geodatabase.

Richards, C. D., 2011. Plesiosaur Body Shape and its Impact on Hydrodynamic Properties: Master's thesis, Marshall University, 68 pp.

O'Keefe, F. R., H. Street, B. Wilhelm, C. Richards, and H. Zhu, 2011. A new skeleton of the cryptoclidid plesiosaur Tatenectes laramiensis reveals a novel body shape among plesiosaurs. Journal of Vertebrate Paleontology 31(2):330-339.

PROFILE

Ms. Richards is a qualified Principal Paleontologist with extensive research, field, and laboratory experience across the western United States. She has extensive experience with supervision of field crews; paleontological surveys; construction monitoring; geologic mapping; fossil salvage; and fossil preparation for transportation, water, energy, and land development projects. Ms. Richards maintains a comprehensive understanding of CEQA and NEPA regulations as they relate to paleontology, including Caltrans Standard Environmental Reference - Chapter 8, FHWA, FTA, BLM, and other various laws and regulations governing paleontological resources. Her master's thesis research focused on plesiosaur body shape and its influence on hydrodynamic properties. She has conducted paleontological field work in Mesozoic, Eocene, and Oligocene rock units in Montana, Utah, and Wyoming, and Pliocene, Miocene, and Pleistocene surficial deposits throughout California. Her previous professional experiences includes appointments as the vertebrate paleontology collection assistant at the Burke Museum of Natural History and Culture and field director at a cultural resources firm in southern California.

PROJECT EXPERIENCE

McCall Boulevard Interstate 215 Interchange Improvement
Caltrans District 8 | Menifee, CA

Paleontologist. Ms. Richards prepared the geology and paleontology sections of a Preliminary Environmental Analysis Report (PEAR) to support development of the Project Study Report-Project Development Study for Caltrans clearance on behalf of the City of Menifee.

Ranchero Road and BNSF Grade Separation
City of Hesperia | San Bernardino County, CA

Paleontologist. Ms. Richards processed paleontological samples recovered from mitigation monitoring for the Ranchero Road Grade Separation involving the installation of a new crossing under the Burlington North Santa Fe (BNSF) Railroad at the extension of Ranchero Road. This project will directly benefit the entire High Desert area of San Bernardino County by providing a new east-west corridor that will insure a second access for emergency personnel from one half of town to the other, as well as alleviate traffic congestion along Bear Valley Road and Main Street.

Groundwater Regional Replacement and Recharge Project R^3
Mojave Water Agency | San Bernardino County, CA

Paleontologist. Ms. Richards prepared portions of a Monitoring Compliance Report after completion of archaeological and paleontological monitoring for water conveyance, groundwater recharge, and groundwater extraction facilities in the Mojave Water Agency's service area.

Purple Line Extension Third-Party PRMMP Review
Los Angeles Metropolitan Transportation Authority | Los Angeles County, CA
Paleontologist. Ms. Richards conducted a third-party review of the Paleontological Resources Monitoring and Mitigation Plan for the Purple Line Extension Project.

Longboat Solar Photovoltaic Project
EDF Renewable Energy | San Bernardino County, CA

Paleontologist. Ms. Richards wrote the paleontology sections of the Phase I and Extended Phase I cultural resources report to support the Mitigated Negative Declaration (MND) for this 235-acre site.

RESUME

Barbara Webster, MS
GIS Specialist & Archaeologist

SUMMARY

YEARS OF EXPERIENCE
7 Total Years

EDUCATION
MS Geographic Information Systems
University of Redlands, 2014

BA History and Spanish
Gonzaga University, 2009

Graduate Level Archaeology Field School
Utah State University, 2009

CERTIFICATIONS

ORANGE COUNTY CERTIFIED ARCHAEOLOGIST

FIRST AID/CPR CERTIFIED

AFFILIATIONS

Society for American Archaeology
Society for California Archaeology

SELECT PUBLICATIONS

Webster, B. 2014. Emergency Siren Sound Propagation and Coverage Optimization Analysis. Master's Thesis, University of Redlands. Retrieve from http://inspire.redlands.edu/gis_gradproj/223.

PROFILE

Ms. Webster earned her MS in Geographic Information Systems (2014) from the University of Redlands and a BA in History and Spanish (2009) from Gonzaga University. As Paleo Solutions GIS Specialist, she specializes in GIS applications, spatial density analysis, database creation and management, spatial modeling, and geospatial project management. She creates innovative map products that synthesize and communicate complex information with clarity and elegance. In addition, she implements and regulates field data collection solutions and provides staff personnel with GIS/GPS technologies support, including Trimble and iPad management. Furthermore, Ms. Webster has monitoring experience on archaeological and paleontological projects, including historical and prehistoric archaeology. Finally, she gained paleontological excavation and lab experience as a volunteer at the Page Museum (La Brea Tar Pits). Other work experience includes work at the Smithsonian and with the US National Park Service.

PROJECT EXPERIENCE

TLRR Licensing Projects: Pre-Planning Phase (Archaeological Resources)
Southern California Edison | San Bernardino, Kern, Los Angeles, Inyo & Mono Counties, CA

Archaeologist III. Ms. Webster assisted in performing a large-scale record search at multiple CHRIS information centers. The record search was for over 400 linear miles of transmission lines, and Ms. Webster collected data at the information center, coordinated with the project investigator about project needs, and organized and processed the data that was collected.

Coolwater-Lugo Transmission Line and Supplemental Surveys
Southern California Edison | San Bernardino County, CA

Archaeological Survey Crew. Ms. Webster performed archaeological survey for more than two months in the Mojave Desert. She performed intensive pedestrian survey, recorded historic and prehistoric archaeological resources on DPR forms, and used a Trimble XT unit to navigate and to record sites.

On Call Deteriorated Pole Replacement
Southern California Edison | Southern California Territory, CA

GIS Specialist and Archaeologist III. Ms. Webster assisted with creating budgets, obtained permits, performed the archaeological records searches at the California Historical Resources Information System (CHRIS) information centers, performed the archaeological surveys, wrote the archaeological survey reports, completed DPR forms, produced the field maps, report maps, and DPR form maps, and was responsible for sending the completed reports and GIS to the client, info centers, and appropriate parks.

Vedder Pipeline Project
Bureau of Land Management | Kern County, CA

GIS Specialist. Ms. Webster produced the paleontological records search map and requested the records search. She also produced field maps and report maps that depict the project area, land ownership information, Public Land Survey System data, geologic formations, and paleontological sensitivity.

Royal Gorge Field Office Paleo Class I Report
Bureau of Land Management | Central and Eastern Colorado

GIS Specialist. Ms. Webster provided GIS support for a paleontological resource overview for a 35 million acre area of central and eastern Colorado. The project included the synthesis of previously recorded fossil locality GIS data from multiple data sources.

APPENDIX C – O&M FACILITY SITE SUPPLEMENTAL PALEONTOLOGICAL RESOURCES IMPACT ANALYSIS

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West Valley Connector Project – O&M Facility Site Supplemental Paleontological Resources Impact Analysis

This supplemental memorandum report documents the results of a paleontological resources impact analysis for the proposed Operation and Maintenance (O&M) Facility Sites for the West Valley Connector Project (WVC Project or Project). This analysis was completed by Paleo Solutions, Inc. (Paleo Solutions) under contract to Parsons, and on behalf of the San Bernardino County Transportation Authority (SBCTA). This supplemental memorandum report analyzes the potential paleontological impacts from construction and operation of the O&M Facility in order to determine if paleontological resources are known or reasonably anticipated within the proposed sites, to assess the potential for the proposed O&M Facility to result in significant impacts/effects on paleontological resources, and recommend measures to reduce these impact/effects to below the level of significance pursuant to the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA).

This memorandum report was prepared by Paleo Solutions' Qualified Paleontologist Courtney Richards, M.S., and reviewed by Project Manager Geraldine Aron, M.S. GIS mapping was provided by Barbara Webster, M.S.

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OFFICES
Denver, CO; Redlands, CA; Oceanside, CA; Bend, OR
CERTIFICATIONS
DBE • SBE • WBE • SDB • WOSB • EDWOSB

1.0 PROJECT DESCRIPTION

The WVC Project is a 35-mile-long BRT corridor located primarily along Holt Boulevard/Avenue, Haven Avenue, Milliken Avenue, Foothill Boulevard, and Sierra Avenue that would connect the City of Pomona in Los Angeles County, and the cities of Montclair, Ontario, Rancho Cucamonga, and Fontana in San Bernardino County. The proposed Project would construct up to 60 station platforms at 33 locations/major intersections and associated improvements. The proposed Project would be constructed in two phases, including Phase I/Milliken Alignment, from the Pomona Regional Transit Center to Victoria Gardens in Rancho Cucamonga and Phase II/Haven Alignment, from Ontario International Airport to Kaiser Permanente Medical Center in Fontana. Phase I is scheduled for operation in 2022. Construction of Phase II/Haven Alignment is scheduled to occur after the completion of Phase I when funding is available. Stations would be "rapid bus" style stations designed for fast boarding. One of the project alternatives also contemplates an approximately 3.5 miles of exclusive BRT lanes. A new O&M facility for light maintenance activities would be constructed and is scheduled to be completed by the time the Phase I/Milliken Alignment is complete.

Three alternatives are being analyzed in the Environmental Assessment being prepared in compliance with CEQA and NEPA, including a No-Build Alternative and two Build Alternatives, A and B, as discussed below.

1.1 Alternative A – Full BRT with no Dedicated Bus-only Lanes

Alternative A would include the 35-mile-long BRT corridor, comprised of the Phase I/Milliken Alignment, Phase II/Haven Alignment, and would together place 60 side-running stations at up to 33 locations/major intersections. The BRT buses would operate entirely in the mixed-flow traffic lanes. The right-of-way (ROW) limits and travel lane width vary in other segments of the corridor. Implementation of Alternative A would not require permanent ROW acquisition or temporary construction easements (TCEs).

1.2 Alternative B – Full BRT with 3.5 miles of Dedicated Bus-only Lanes in Ontario

Alternative B would include the full 35-mile-long BRT corridor, comprised of the Phase I/Milliken Alignment, Phase II/Haven Alignment, 3.5 miles of dedicated bus-only lanes, and place five center-running stations and 50 side-running stations at up to 33 locations/major intersections. The dedicated lanes segment would include two mixed-flow traffic lanes and one transit lane in each direction and five center-running stations. To accommodate the dedicated lanes, roadway widening and additional utilities, such as electrical and fiber-optic lines, would require permanent ROW acquisition and TCEs. In addition, some areas would

require the reconfiguration, relocation, or extension of adjacent driveways, curbs, medians, sidewalks, parking lots, and local bus stops.

1.3 Proposed New O&M Facility

Currently, Omnitrans operates and maintains its existing fleet from two major facilities: East Valley Vehicle Maintenance Facility (EVVMF), located at 1700 W. 5th Street in the City of San Bernardino and West Valley Vehicle Maintenance Facility (WVVMF), located at 4748 E. Arrow Highway in the City of Montclair. Neither facility has sufficient capacity to accommodate the additional maintenance and storage requirements of the bus fleet associated with the proposed WVC Project. The EVVMF is located on a parcel concurrently serving as Omnitrans Headquarters offices and is nestled in a built-out residential neighborhood, with no room for expansion. Likewise, the WVVMF is constricted to its parcel boundaries alternatively by a set of Metrolink rail tracks, San Antonio creek, and several privately-owned business properties. Therefore, an O&M facility is required to be constructed under both Build Alternatives A and B to provide parking and light maintenance to the new fleet.

Conceptually, the new O&M facility would be built on an approximate 5-acre site to provide Level I service bus maintenance with a capacity to be upgraded to provide Level II service maintenance.[1] Heavy repair functions and agency administrative functions would remain exclusively with the EVVMF in San Bernardino, which is a Level III facility. The Level I facility would include a parking area, bus washing area, fueling area, and a personnel and storage building. As needs arise, the facility could be upgraded to provide Level II service, which will include the addition of a maintenance shop and a larger administrative building. Landscaping and irrigation would be provided to enhance the comfort of employees and the appearance of the facility, and to help screen maintenance facilities and operations from offsite viewpoints within the community.

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[1] The American Public Transportation Association (APTA) separates bus transit operating and maintenance facilities into three types:

- Level I: A primary service facility providing running maintenance and storage. Activities include fueling, washing, fare collection, light bulb replacement, wiper-blade replacement, fuel level checks, etc.
- Level II: A secondary maintenance facility, sometimes called an inspection garage for light maintenance, e.g., engine tune-ups, lubrications, inspections, tire changing, brake repair, and minor body work, as well as unit change out. Level I activities are also included in this facility.
- Level III: A tertiary maintenance facility, one that provides all vehicle maintenance. Activities include engine and transmission rebuilding, testing, major body repairs, painting, etc. Level I and II activities are included in this facility.

West Valley Connector Project – O&M Facilities
Supplemental Paleontological Resources Analysis

Three sites are being considered for the placement of the new O&M facility (Figure 1). All are owned by the City of Ontario and are located in the industrial zoned area, slightly more than a mile from the proposed BRT corridor alignment on Holt Boulevard:

- Site 1: 1516 S. Cucamonga Avenue, Ontario (APN 1050-131-03-0000). The current use of this property is public works storage yard. If selected, the O&M facility will be built at the bottom portion of the parcel encompassing an area of approximately 6.0 acres.
- Site 2: 1440 S. Cucamonga Avenue, Ontario (APN 1050-141-07-0000). The current use of this property is compressed natural gas fueling station. If selected, the O&M facility will utilize the entire parcel encompassing an area of approximately 4.8 acres.
- Site 3: 1333 S. Bon View Avenue, Ontario (APN 1049-421-01-0000). The current use of this property is municipal utility and customer service center. If selected, the O&M facility will be built at the bottom portion of the parcel encompassing an area of approximately 6.6 acres.

Buses coming to and from the new facility could use nearby access roads that directly connect to the BRT corridor such as South Campus Avenue, South Bon View Avenue, and South Grove Avenue.

2.0 GEOLOGICAL AND PALEONTOLOGICAL CONTEXT

Geologic mapping by Morton and Miller (2006) indicates that the surface of the three proposed O&M Facility Sites are entirely mapped as younger Quaternary fan deposits (Qyf3). While not mapped at the surface, these younger deposits are likely underlain by older Pleistocene deposits at depth (McLeod, 2016). Additionally, aerial photography of the O&M Facility Sites indicates that the surface of the sites have been previously disturbed and developed; therefore, artificial fill is also likely to be present. The distribution of the geologic units within the proposed O&M Facility Sites are illustrated in Figure 2.

2.1 Older Quaternary Alluvium

Quaternary older alluvium, which is not mapped at the surface but is likely present at depth within the proposed O&M Facility Sites, was deposited during the Pleistocene (~2.6 million years ago – 11,700 years ago). Quaternary older alluvium typically consists of alluvial fan, colluvial, and valley fill deposits. The sediments are comprised of moderately to well consolidated silt, sand and gravel that is typically oxidized to a reddish brown hue, dissected, and exhibits soil profile development (Morton and Miller, 2006).

Taxonomically diverse and locally abundant Pleistocene animals and plants have been collected from older alluvial deposits throughout southern California and include mammoth, mastodon, camel, horse, bison, giant ground sloth, peccary, cheetah, lion, saber tooth cat, capybara, dire wolf, and numerous taxa of smaller mammals, birds, reptiles, and amphibians (Blake, 1991; Jefferson, 1991; McLeod, 2016; Reynolds, 2016; UCMP, 2016).

2.2 Younger Quaternary Alluvium

Quaternary alluvium includes surficial deposits that are Holocene to latest Pleistocene to in age (Morton and Miller, 2006). Within the O&M Facility Sites, they occur as fan deposits derived from the San Gabriel Mountains to the north (McLeod, 2016). The fan deposits (Qyf3) consist of unconsolidated to moderately consolidated silt, sand, pebble, cobble and boulder alluvial fans that are slightly to moderately dissected (Morton and Miller, 2006).

Fossils are generally unknown from the younger alluvial deposits. It should be noted that though this unit typically does not contain significant vertebrate fossils at the surface, it often overlies older geologic units that may contain significant vertebrate fossils at varying depths (McLeod, 2016).

2.3 Artificial Fill

Artificial fill (Qaf) is recent and consists of previously disturbed sediment that has been transported by humans. It is commonly used in construction projects (e.g., structures,

roadways, concrete channels, railway embankments, etc.). Artificial fill is not mapped in the vicinity of the proposed O&M Facility Sites (Morton and Miller, 2006), but is likely present based on the developed nature of the sites. However, the specific locations, depth and extent of artificial fill is unknown. Although these deposits may contain fossil resources depending on the source of the fill, they have been removed from their original locations and lack significance.

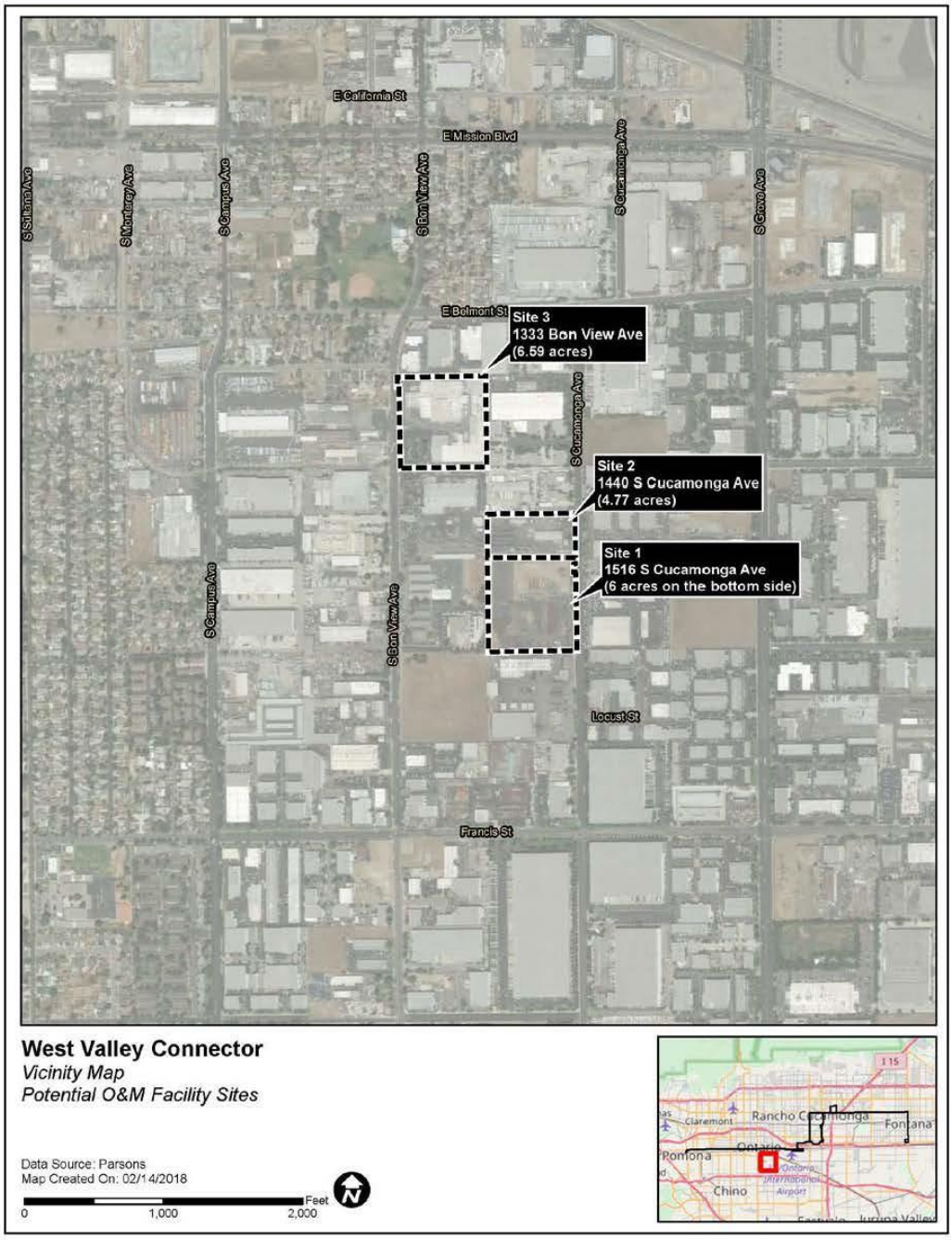

Figure 1. Potential Operations and Maintenance Facility Sites.

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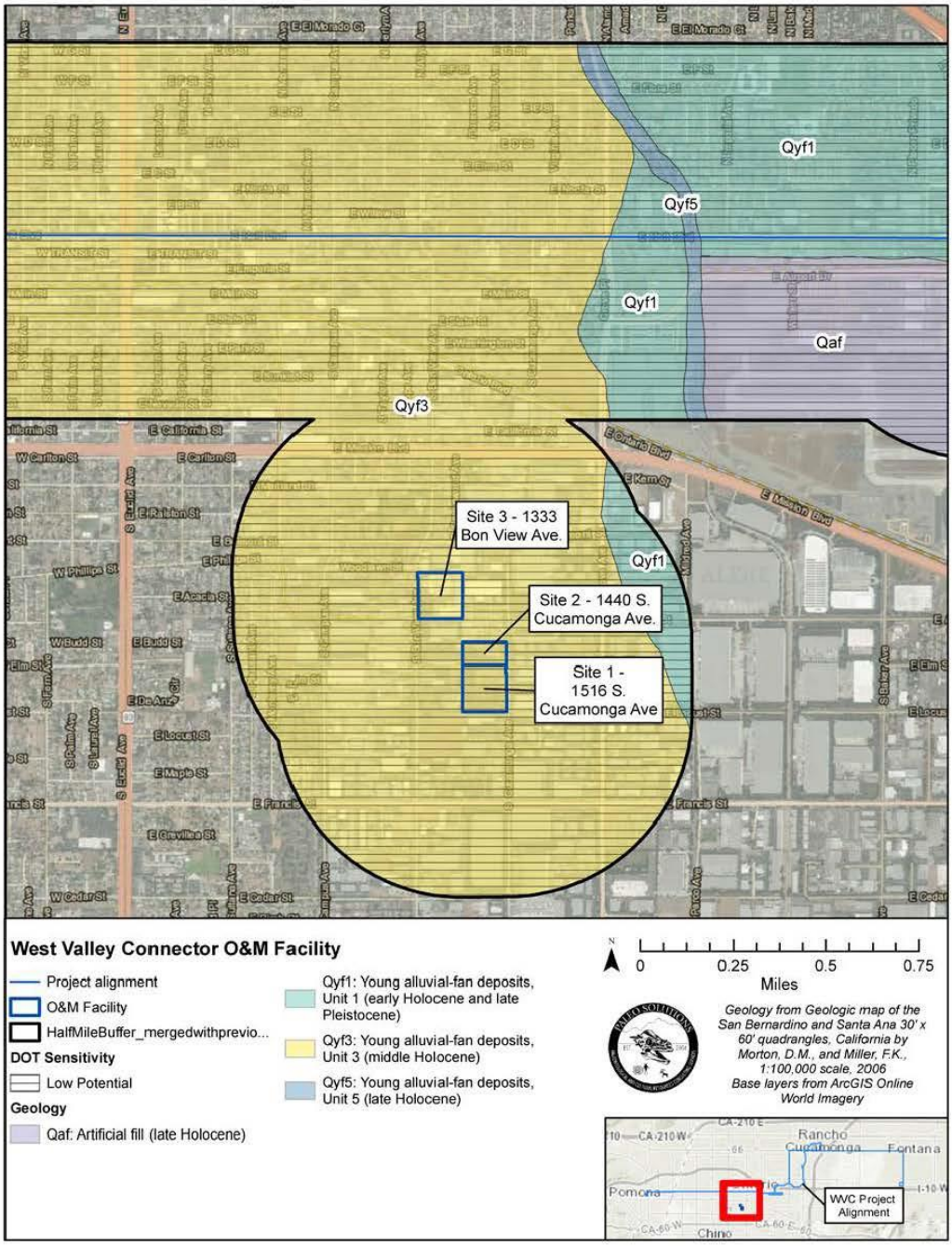

Figure 2. Geologic Map of Potential Operations and Maintenance Facility Sites

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3.0 SENSITIVITY ANALYSIS

Fossils are generally unknown from younger Quaternary fan deposits due to their young age. Reworked paleontological material from older deposits may be present, but would not meet significance criteria as the material would lack critical contextual information. Similarly, fossils from artificial fill would also have been removed from their original location of deposition and would not be considered significant. Therefore, the younger Quaternary fan deposits (Qyf3) and artificial fill (Qaf) have low paleontological potential at the surface using California Department of Transportation (Caltrans) Standard Environmental Reference Chapter 8 guidelines (Caltrans, 2016). However, they may overlie older deposits at depth, such as Pleistocene older alluvium, which has produced scientifically significant vertebrate fossils in San Bernardino County and is considered to have high paleontological potential.

4.0 IMPACT ANALYSIS

Ground disturbance in geologic units and geographic areas known to contain scientifically significant fossils may produce adverse impacts to nonrenewable paleontological resources (State CEQA Guidelines, 14 CCR Sections 15064.5[3] and 15023; State CEQA Guidelines Appendix G, Section V, Part C).

There are no documented paleontological localities within the boundaries of the proposed O&M Facility Sites, and the younger Quaternary fan deposits mapped at the surface have low sensitivity for paleontological resource. However, the underlying older Quaternary (Pleistocene) sediments have high potential for producing significant paleontological resources. Therefore, project activities may potentially result in significant impacts to paleontological resources if these paleontologically sensitive sediments are encountered during excavation.

Construction impacts to sediments with the potential to contain paleontological resources are anticipated to be limited to excavations that exceed five feet in depth, including excavations to construct the maintenance shop and administrative building (12 foot depth). These construction impacts can be reduced to below the level of significance with incorporation of the mitigation recommendations provided in Section 5 below.

The remaining construction excavations for utility installation are expected to be shallow (2 to 3 feet deep) and are anticipated to be entirely within low sensitivity younger Quaternary fan deposits. Therefore, no impacts on paleontological resources are anticipated from these activities

Operation of the O&M Facility will not result in any ground disturbance, and will therefore not result in any impacts on paleontological resources.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The potential O&M Facility Sites are entirely underlain by younger Quaternary fan deposits with low paleontological sensitivity at the surface. However, deeper excavations have the potential to impact older Quaternary deposits, which have produced numerous significant fossils within the Project vicinity. Therefore, preparation and implementation of a Paleontological Monitoring Plan (PMP) is recommended in order to reduce impacts to below the level of significance pursuant to CEQA and NEPA.

A workers environmental awareness program (WEAP) should be presented to all construction personnel prior to the start of ground-disturbing activities. Periodic paleontological spot checks should be conducted by a qualified paleontologist when excavation exceeds depths of five feet into the younger Quaternary fan deposits to check for the presence of older, more paleontologically sensitive geologic units (including older Quaternary alluvium). If present, full time monitoring should be implemented during excavations in to the sensitive sediments. The five-foot depth at which spot checking should be triggered will initially be implemented, but shall be modified as needed by the qualified paleontologists, in consultation with SBCTA and FTA, based on the sediment types, depths, and distributions observed during monitoring during the life of the Project. If unanticipated paleontological resources are discovered during project-related activities, work must be halted within 25 feet of the discovery until it can be evaluated by a qualified paleontologist. Upon completion of ground-disturbing activities, a Paleontological Monitoring Report (PMR) should be prepared and submitted to SBCTA, FTA, and the fossil repository.

All scientifically significant fossils recovered during excavation should at a minimum be collected, prepared to the point of curation, identified to the lowest possible taxonomic order, and curated at an accredited repository along with all associated field data and reports.

If you have any questions with regards to this supplemental paleontological resources impact analysis memorandum, please contact Courtney Richards at 626-716-2000 or crichards@paleosolutions.com.

Sincerely,

Courtney Richards, M.S.
Qualified Paleontologist

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