Ontario International Airport Connector Project

ONTCONNECTOR



APPENDIX P

PALEONTOLOGICAL RESOURCES TECHNICAL REPORT

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Prepared by:

San Bernardino County Transportation Authority
1170 West Third Street, Second Floor
San Bernardino, CA 92410-1715

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ABBREVIATIONS AND ACRONYMS

%	percent
ADA	Americans with Disabilities Act
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
EIR	Environmental Impact Report
FAA	Federal Aviation Administration
FTA	Federal Transit Administration
I-10	Interstate 10
I-15	Interstate 15
LACM VP	Los Angeles County Museum vertebrate paleontology
Ma	million years ago
MEP	mechanical, electrical, and plumbing
MM	Mitigation measure
MSF	Maintenance and Storage Facility
NALMA	North American Land Mammal Age
NEPA	National Environmental Policy Act
NHMLAC	Natural History Museum of Los Angeles County
OIAA	Ontario International Airport Authority
ONT	Ontario International Airport
PRC	Public Resources Code
PRIMP	Paleontological Resources Impact Mitigation Plan
Project	Ontario International Airport Connector Project
PRS	paleontological resources specialist
ROW	right-of-way
RSA	Resource Study Area
SANBAG	San Bernardino Associated Governments
SBCM	San Bernardino County Museum
SBCTA	San Bernardino County Transportation Authority
SCE	Southern California Edison
SCRRA	Southern California Regional Rail Authority
SVP	Society of Vertebrate Paleontology
TBM	tunnel boring machine
UPRR	Union Pacific Railroad
USC	United States Code
USGS	United States Geological Survey

Vent shaft	Ventilation shaft
VMT	Vehicle Miles Traveled
WEAP	Worker Environmental Awareness Program

1 INTRODUCTION

San Bernardino County Transportation Authority (SBCTA), in cooperation with the Federal Transit Administration (FTA), proposes to construct a 4.2-mile-long transit service tunnel directly connecting the Southern California Regional Rail Authority (SCRRA) Cucamonga Metrolink Station to the Ontario International Airport (ONT). The proposed SBCTA ONT Connector Project (Project) is to expand access options to ONT by providing a direct transportation connection from Cucamonga Metrolink Station to ONT. The proposed Project is subject to federal and state environmental review requirements pursuant to National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). FTA is the lead agency for NEPA, while SBCTA is the lead agency under CEQA. Partner agencies include the Ontario International Airport Authority (OIAA), Omnitrans, the City of Ontario and the City of Rancho Cucamonga.

ONT is located approximately two miles east of downtown Ontario in San Bernardino County. The airport services more than 25 major cities via 10 commercial carriers. ONT is owned and operated under a joint powers agreement between the City of Ontario and San Bernardino County. OIAA provides overall direction, management, operations, and marketing for ONT. In 2014, the San Bernardino Associated Governments (SANBAG), now SBCTA, prepared the Ontario Airport Rail Access Study (SANBAG 2014), which identified the need for a direct rail-to-airport connection to ONT to support its projected growth. ONT is one of the fastest growing commercial airports, forecasted to serve 14 million annual passengers by 2045 (OIAA 2019).

The purpose of this technical report is to evaluate potential environmental impacts/effects to paleontological resources that the proposed Project may have within the proposed Project area. This technical report describes existing setting, applicable regulatory settings, methodology, and potential impacts from construction and operation of the proposed Project and the No Project Alternative. The information contained in this technical report will be used to prepare the required environmental documents under CEQA.

2 PROJECT DESCRIPTION

2.1 PROJECT PURPOSE AND OBJECTIVES

The purpose of the proposed Project is to expand access options to ONT by providing a direct transportation connection from Cucamonga Metrolink Station to ONT. This new connection would increase mobility and connectivity for transit patrons, improve access to existing transportation services, provide a connection to future Brightline West service to/from ONT, and support the use of clean, emerging technology for transit opportunities between Cucamonga Metrolink Station and ONT. More specifically, the proposed Project's objectives are as follows:

- Expand access options to ONT by providing a convenient and direct connection between ONT and the Metrolink network, and other transportation services at the Cucamonga Station.
- Reduce roadway congestion by encouraging a mode shift to transit from single-occupancy vehicles and provide reliable trips to and from ONT.
- Support autonomous electric vehicle technology usage for transit projects.

2.2 PROJECT NEED

The proposed Project need includes:

- Lack of direct transit connection coinciding with Metrolink trains and peak airport arrival and departure schedules. The lack of a direct transit connection between Cucamonga Metrolink Station and ONT creates mobility challenges for air passengers accessing ONT. In many cases, the lack of a last-mile connection between the Metrolink system and ONT forces airport passengers to use rideshare services or private single-occupancy vehicles, adding congestion to the local roads between the Cucamonga Metrolink Station and ONT. This congestion results in delays for the public to reach their destination, community services, and facilities.
- Roadway congestion affecting trip reliability and causing traffic delays. ONT travelers using rideshare services or private single-occupancy vehicles adds traffic volumes and increasing congestion on the local roads between Cucamonga Metrolink Station and ONT. Increases in future traffic volumes and roadway congestion affects trip reliability for travelers and commuters to and from ONT.
- Increasing Vehicle Miles Traveled (VMT) resulting from ONT travelers and lack of a direct transit connection.
- Increased greenhouse gas emissions within communities surrounding ONT from single-occupancy vehicle travel to and from ONT.

2.3 ALTERNATIVES EVALUATED

2.3.1 No Project Alternative

CEQA requires that existing conditions and the proposed Project be evaluated against a No Project Alternative in an Environmental Impact Report (EIR). The No Project Alternative represents the proposed Project area if the proposed Project is not constructed, and additional municipal projects would still be developed in the area. The No Project Alternative is used for comparison purposes to assess the relative benefits and impacts of constructing a new transit project versus only constructing projects which are already funded and planned for in local and regional plans.

The No Project Alternative would result in no new direct electrically powered, on-demand fixed transit guideway connection from the Cucamonga Metrolink Station to ONT. Omnitrans currently operates a limited-service bus route to ONT, known as ONT Connect or Route 380, which would remain operational under the No Project Alternative. ONT Connect currently operates Monday through Sunday, with bidirectional (northbound and southbound) service frequencies ranging from 35-60 minutes. However, ONT Connect travels with general/mixed traffic on existing roadways. The No Project Alternative assumes that the existing roadway system near ONT (such as the Interstate 10 [I-10] and Interstate 15 [I-15]) will implement some planned expansion and improvement projects and undergo routine maintenance activities. The SBCTA and California Department of Transportation (Caltrans) propose to construct Express Lanes, including tolled facilities, in both directions of I-15. In addition, Caltrans is proposing to improve I-10 by constructing freeway lane(s) and other improvements through all or a portion of the 33-mile-long segment of I-10 from the Los Angeles/San Bernardino County line to Ford Street in San Bernardino County.

A detailed list of the planned projects included in the No Project Alternative is found in the Cumulative Impacts Technical Report (SBCTA 2024a).

2.3.2 Proposed Project

The proposed Project includes a 4.2-mile tunnel alignment, three passenger stations, a maintenance and storage facility (MSF), and an access and ventilation shaft (vent shaft) in the cities of Rancho Cucamonga and Ontario within San Bernardino County (see Figure 2-1). The proposed Project would include autonomous electric vehicles that would be grouped and queued at their origin station and depart toward the destination station once boarded with passengers. The following sections provide additional details on the proposed Project location and land uses, and on the proposed design, construction, and operation, as applicable, for these project elements.

2.3.2.1 Project Location

The proposed Project is located in the City of Rancho Cucamonga and in the City of Ontario within San Bernardino County. Figure 2-1 illustrates the proposed Project site's regional location and vicinity. The proposed Project alignment is a reversed L-shaped alignment consisting of the Cucamonga Metrolink

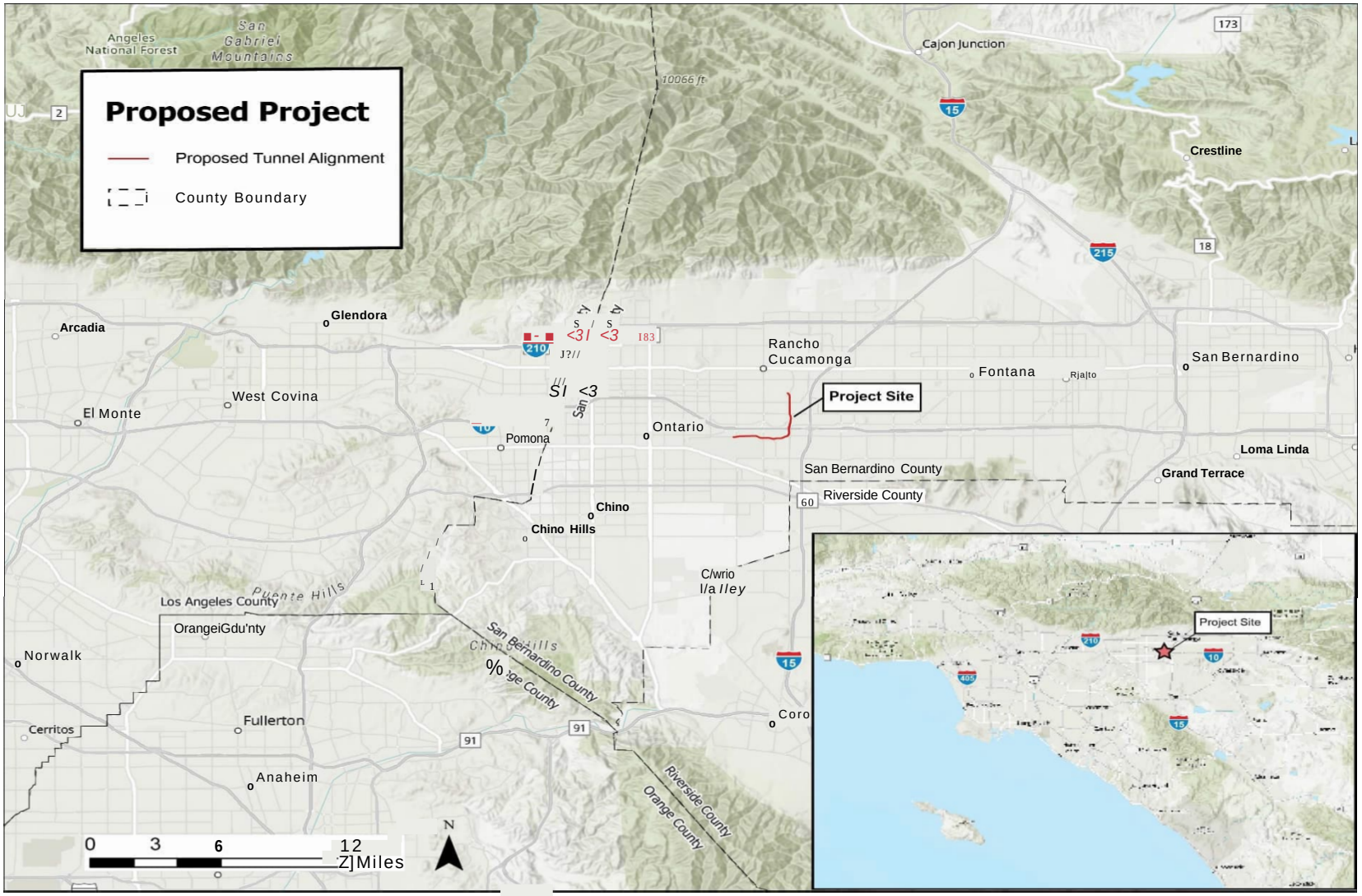
Station, Milliken Avenue, East Airport Drive, and ONT. Figure 2-2 illustrates the proposed Project area. Cucamonga Metrolink Station is located at 11208 Azusa Court in the City of Rancho Cucamonga and serves the Metrolink San Bernardino Line commuter rail. ONT is located at 1923 East Aviation in the City of Ontario and provides international airport service with over 10 different airline partners. Information related to the proposed Project Design is found in Section 2.3.2.3.

2.3.2.2 Existing Land Uses

The northwestern portion of the proposed Project alignment includes the Cucamonga Metrolink Station. There 980 standard parking stalls and 24 Americans with Disabilities Act (ADA) compliant stalls at the Cucamonga Metrolink Station (Metrolink 2022).

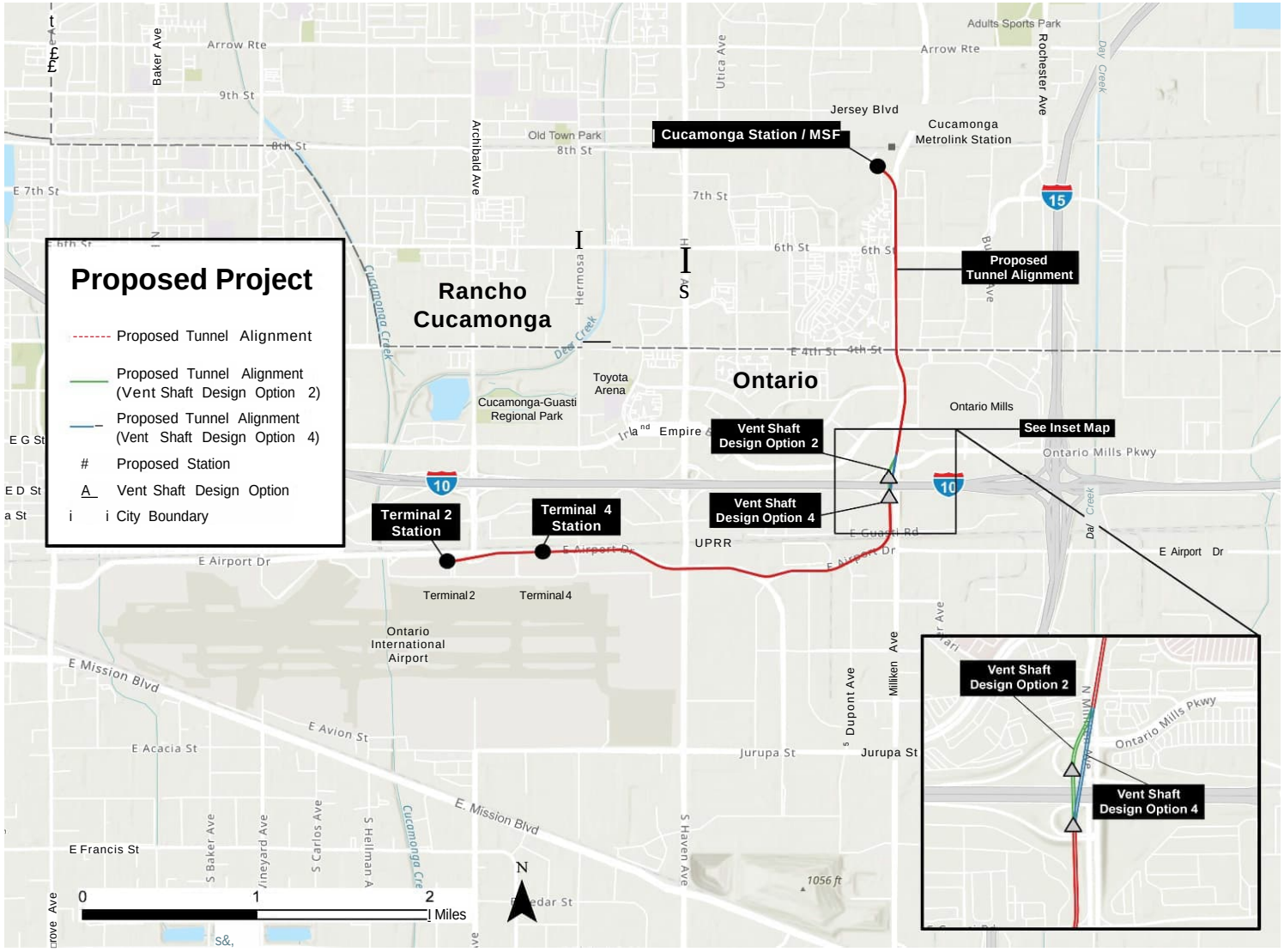
From the northwestern portion of the proposed Project site, the tunnel alignment travels under Milliken Avenue, which is a major north-south arterial roadway. Milliken Avenue consists of three travel lanes north of Inland Empire Boulevard and four travel lanes south of Inland Empire Boulevard. From Milliken Avenue, the alignment travels south crossing under the existing I-10. I-10 is an east-west cross-country highway and has six lanes in each direction at the proposed Project site. The alignment eventually connects to East Airport Drive, which is an east-west arterial roadway with three travel lanes in each direction. The southwestern portion of the proposed Project tunnel alignment terminates at ONT. Parking Lots 2 through 5 are located on the northern side of ONT. Parking Lots 2, 3, and 4 are surface lots that provide general parking and are a short walk away from the terminals at ONT. Parking Lot 5 is a surface economy lot at which a shuttle service is available.

Figure 2-1: Regional Location Map



Source: AECOM 2024

Figure 2-2: Proposed Project Site



Source: AECOM 2024

2.3.2.2.1 Surrounding Land Uses

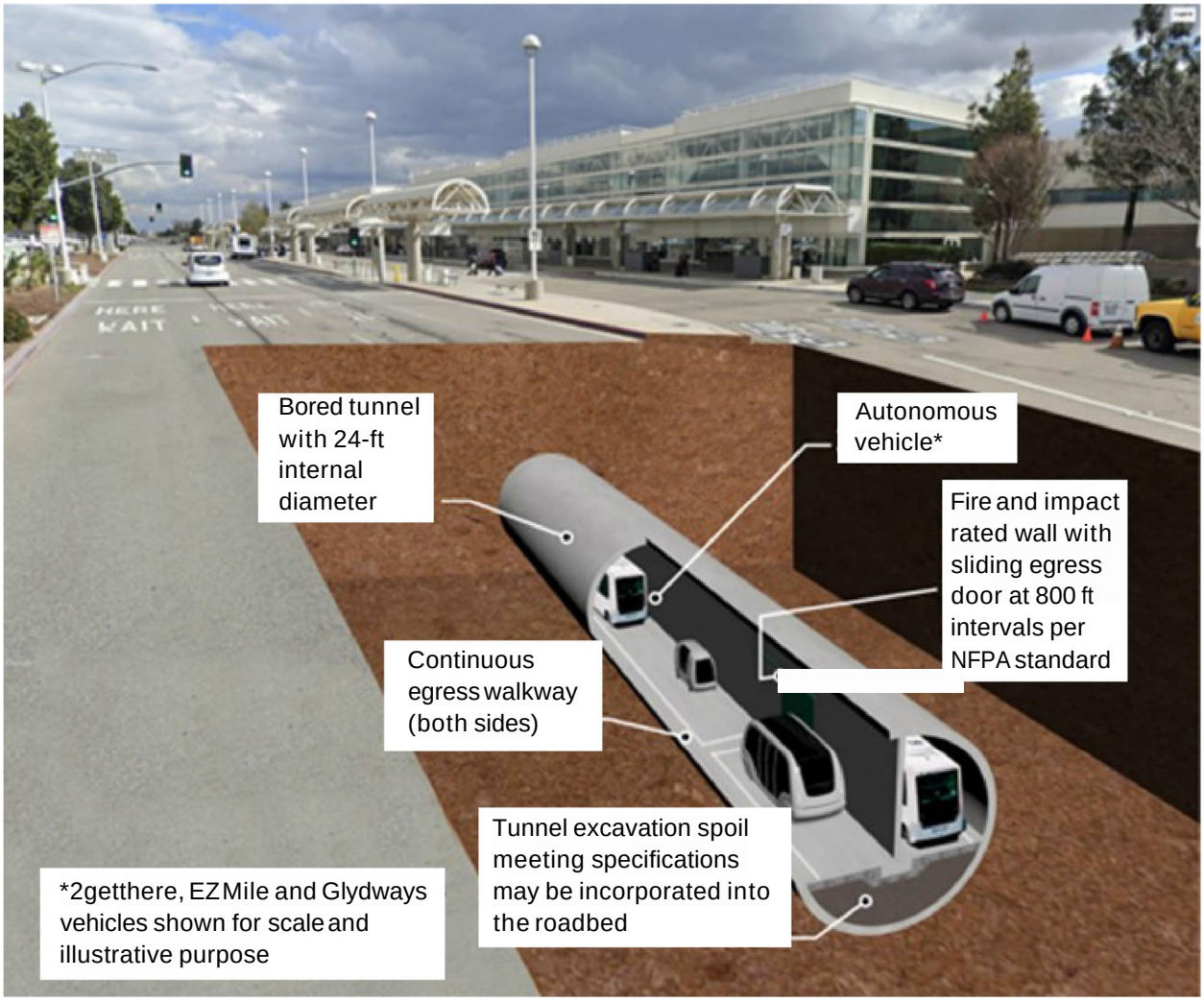
Development in the immediate vicinity of the proposed Project site includes a mix of industrial, commercial, manufacturing, transportation, office, multi-family residential, hotel, and airport related land uses. The proposed Project site's surrounding land uses are located within the City of Rancho Cucamonga and City of Ontario. Immediately adjacent uses include the following:

- North: Railroad tracks, industrial and manufacturing uses, trucking facilities, surface parking lots, Rancho Cucamonga Fire Station Number 174, and All Risk Training Center for the Rancho Cucamonga Fire Protection District.
- South: Industrial and manufacturing uses, along with trucking facilities, rental car facilities, parking lots, hotel uses, and other airport related uses. ONT includes two passenger terminals, general aviation facilities, air freight buildings, parking lots, and numerous airport and aircraft maintenance and support services.
- East: The eastern side of Milliken Avenue from 5th Street south to 4th Street consists primarily of hotel uses. Concentrated areas of commercial uses and restaurants are located along Milliken Avenue from 4th Street south to I-10, including Ontario Mills, which is a regional shopping mall complex. Hotel uses are also located adjacent to the Ontario Mills shopping mall.
- West: The western side of Milliken Avenue from approximately 7th Street south to 4th Street consists primarily of multi-family residential uses. Concentrated areas of large retail, commercial uses, restaurants, hotels, and the Toyota Arena are located along Milliken Avenue from 4th Street south to I-10.

2.3.2.3 Proposed Project Design

The proposed Project includes construction of transit facilities, including three at-grade passenger stations, one MSF, and one emergency access and vent shaft. The proposed alignment would run primarily within a 4.2-mile single underground tunnel (24-foot-inner-diameter bidirectional tunnel) alignment that begins at the Cucamonga Metrolink Station and travels south along Milliken Avenue and crosses beneath 6th Street and 4th Street, I-10, and the Union Pacific Railroad (UPRR), before traveling west beneath East Airport Drive to connect to Terminals 2 and 4 at ONT. A tunnel configuration has been identified as the proposed Project based on technical analysis, evaluation, and stakeholder input. Figure 2-3 depicts a typical transit tunnel section. Please see the Alternatives Considered Report for additional background on the development and refinement of the proposed Project design.

Figure 2-3: Typical Transit Tunnel Section View



Source: HNTB 2024

The three proposed at-grade stations would be constructed to serve Cucamonga Metrolink Station, ONT Terminal 2, and ONT Terminal 4. The MSF would be located adjacent to Cucamonga Metrolink Station and would support operations for the proposed Project by storing, maintaining, and cleaning autonomous electric transit vehicles, and it would also include employee amenities and parking. The access and vent shafts would be constructed to provide a means of emergency passenger egress and first responder access.

The proposed Project would include autonomous electric vehicles that would transport passengers on demand between Cucamonga Metrolink Station and ONT. The electric vehicles would run on rubber tires, and the vehicles are proposed to travel on a dedicated guideway within the proposed tunnel. The tunnel would include access ramps for the transit vehicles to surface to grade and provide access to the three proposed at-grade stations for passenger boarding and alighting.

2.3.2.3.1 Stations

The proposed Project includes three passenger stations. One station would be located in the northwestern corner of the existing Cucamonga Metrolink Station parking lot, which is owned and maintained by the City of Rancho Cucamonga. The other two proposed stations would be located within two of the existing parking lots at ONT, specifically Parking Lot 2 and Parking Lot 4, which are located across from Terminals 2 and 4. These proposed stations would be located at-grade and would connect to their associated tunnel portals along Terminal Way at ONT. Stations are proposed to be one to two stories and up to approximately 40 feet in height. All three stations would be connected to the bored tunnel via a cut-and-cover structure and an at-grade guideway. The guideway would be enclosed by fencing, and the walls would be buffered with landscaping. A pedestrian walkway would be provided bordering the outside of the guideway. Figure 2-4 and Figure 2-5 illustrate the overview of the proposed station footprint.

The proposed at-grade station Cucamonga Station would be approximately 8,000 square-feet and would be located at the northwest corner of the existing Cucamonga Metrolink Station parking lot. The existing Cucamonga Metrolink Station parking lot is owned and maintained by the City of Rancho Cucamonga. Approximately 180 parking stalls would be permanently removed from the existing Cucamonga Metrolink Station parking lot to accommodate the proposed Cucamonga Station. Two other stations, each approximately 10,000 square-feet, would be located at-grade within two of the existing parking lots at ONT Terminal 2 and Terminal 4. The Cucamonga Station also includes the proposed Project's MSF.

The two airport-serving stations would connect to their associated tunnel portals along Terminal Way via an at-grade connection. The proposed stations would be entirely located within the ONT right-of-way (ROW). Approximately 80 parking stalls would be permanently removed to accommodate the ONT Terminal 2 station, and approximately 115 spaces would be permanently removed to accommodate the ONT Terminal 4 station.

2.3.2.3.2 Maintenance and Storage Facility

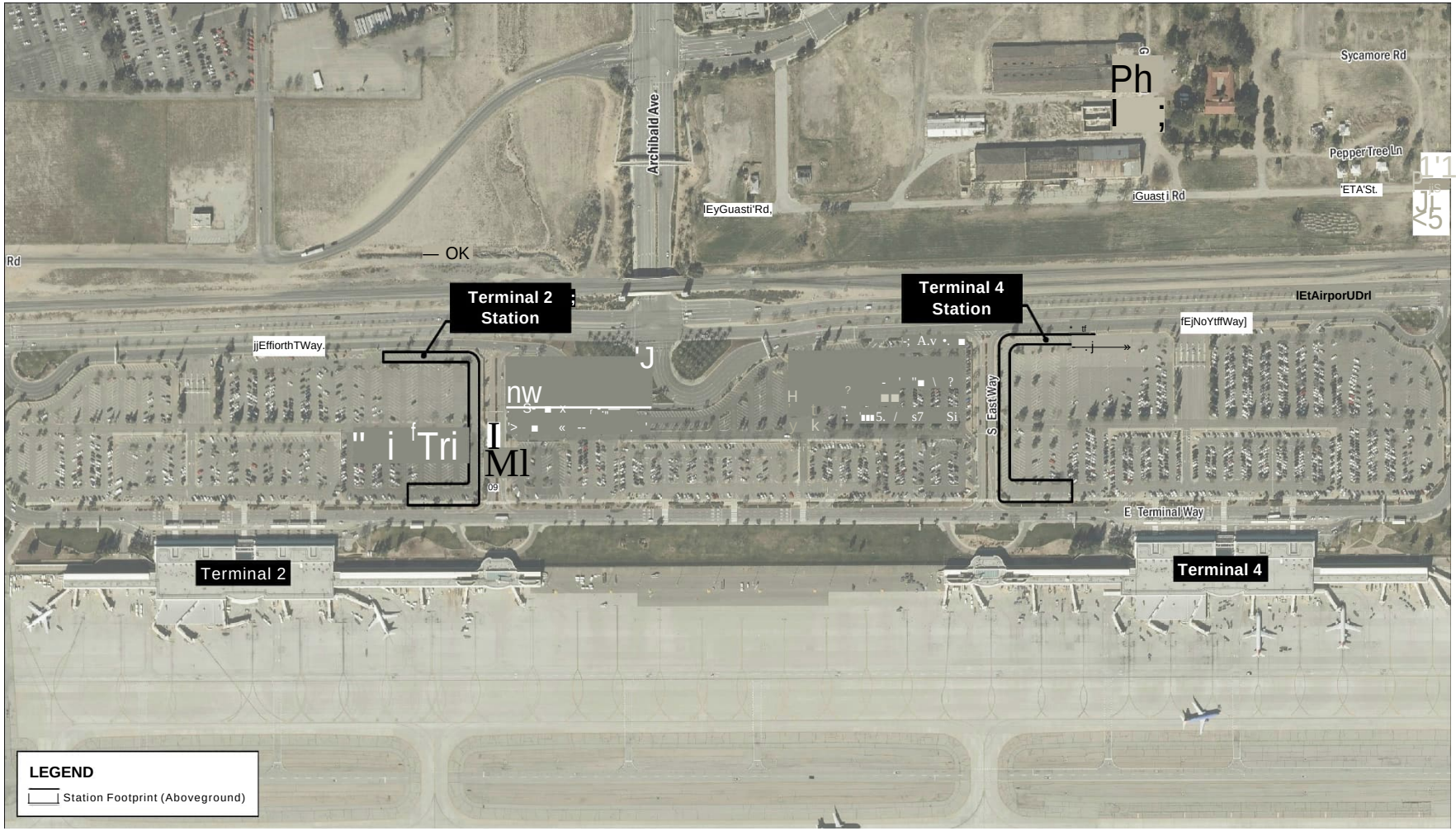
The proposed Cucamonga Station would include an adjacent maintenance and storage facility with enclosed bays to store, clean, and maintain vehicles. The MSF would be approximately 11,000 square feet, with an additional 5,000 square feet second story and would contain an operations control center with lockers, breakrooms, and restrooms. Employee parking for the facility would be provided at the existing parking lot owned by SBCTA, in the southeastern quadrant of the Milliken Avenue/Azusa Court intersection.

Figure 2-4: Cucamonga Station



Source: HNTB 2023

Figure 2-5: Ontario International Airport - Terminal 2 Station and Terminal 4 Station



Source: HNTB 2024

2.3.2.3.3 Description of Vent Shaft Design Options

A vent shaft would be constructed to provide a means of emergency passenger egress and first responder access to and from the tunnel. Two locations are being considered west of Milliken Avenue on the north and south sides of I-10, as shown in Figure 2-6. A final decision about the location of the vent shaft would be made after the completion of the CEQA and NEPA environmental processes, and consideration of operational needs, environmental impacts, and stakeholder coordination.

The location option on the north side of I-10 would be in the ROW for the westbound off-ramp and would provide surface ground access from the Milliken Avenue/I-10 westbound off ramp intersection or from the westbound off ramp right lane near the ramp termini or directly from Milliken Avenue. The location option on the south side of I-10 would be in the ROW for the eastbound on-ramp and would provide surface ground access from Milliken Avenue near the eastbound on-ramp.

The vent shaft would consist of both underground and above ground structures. The underground shaft would extend to the tunnel level and the surface structures would consist of a one-(1) story structure above ground.

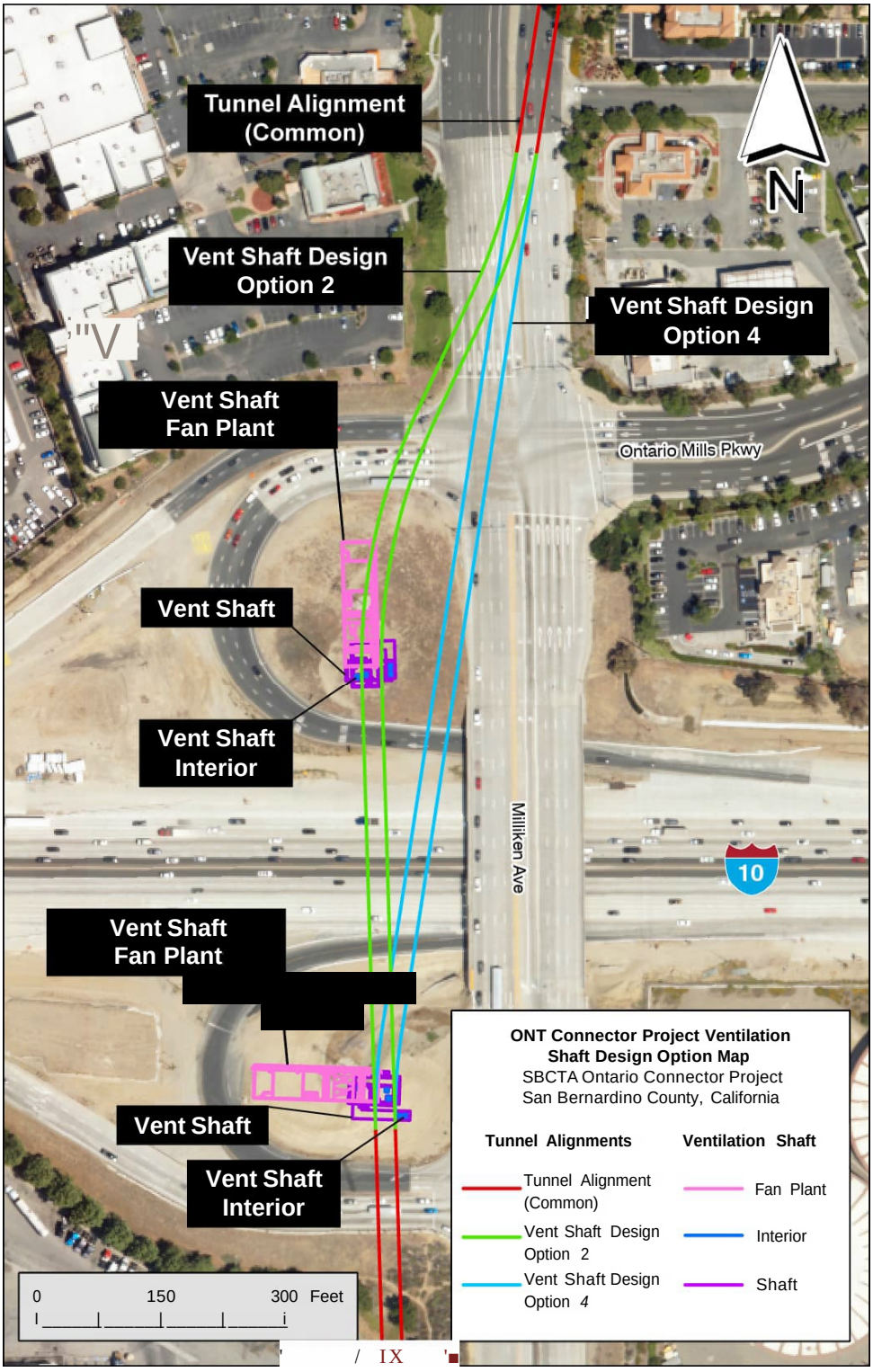
Access points would include underground, surface, and road access for emergencies to and from the tunnel. The proposed vent shaft would include associated electrical and ventilation equipment, and access would be controlled via a lock and key.

2.3.2.4 Proposed Operations

The proposed Project includes operation of autonomous electric vehicles to transport passengers to and from the proposed stations. The autonomous electric vehicles would be grouped and queued at their origin station and would depart toward the destination station once boarded with passengers. After the group of vehicles arrives at the destination station and passengers deboard, new passengers would board, and the group of vehicles would return to its origin station. If no new passengers are present, empty vehicles would be returned to the origin station to pick up new passengers. The proposed Project would provide a peak one-way passenger throughput of approximately a minimum of 100 per hour. Operations would be managed by Omnitrans, with on-demand service provided daily from 4:00 a.m. to 11:30 p.m., including weekends and holidays.

Fleet size and capacity of the vehicles will be up to the Operating System Provider and Design-Builder to determine to provide an initial operating system capable of transporting a minimum of 100 passengers per hour per direction and scalable to meet ridership demand. Based on the initial operating requirements and preliminary vehicle capacities, SBCTA is anticipating initial fleet sizes of between 7 and 60 vehicles to be required. Vehicles are rubber-tired electric autonomous vehicles.

Figure 2-6: Vent Shaft Design Option 2 and Vent Shaft Design Option 4



Source: HNTB 2024

2.3.2.5 Proposed Construction

This section describes the construction approach for the proposed Project. Overall construction of the proposed Project would last approximately 56 months, with project elements varying in their specific construction duration. Construction is projected to start in 2025 and is anticipated to be completed in 2031. The Construction Methods Technical Report provides additional details regarding the construction approach and process for the key project elements (stations, MSF, tunnel construction, and vent shaft) associated with the proposed Project (SBCTA 2024b).

2.3.2.5.1 Stations and Maintenance and Storage Facility Construction

A construction staging area would be required at each of the three proposed Project stations, which includes the MSF at Cucamonga Station, and at the vent shaft location. Construction staging areas would be used to store building materials and construction equipment, assemble the tunnel boring machine (TBM), temporarily store excavated materials, and serve as temporary field offices for the contractor. Heavy-duty, steel, track-out grates (i.e., rumble plates) would be staged at the entrance of the construction staging areas to capture dirt and soil debris from the wheels of trucks and construction equipment. Best management practices would minimize a public nuisance that can result from soil and mud tracks on the public roadway. For security purposes, construction staging areas would be equipped with fences, lighting, security cameras, and guards to prevent vandalism and theft.

Cut-and-cover sites would occur at each proposed station location. Cut-and-cover activities involve the excavation of a shallow underground guideway from the existing street surface. During the construction phase, the cut-and-cover sites at Cucamonga Metrolink Station and Terminal 2 at ONT would be used as the TBM launching and receiving pits. Ultimately, the station cut-and-cover sites would serve as the vehicle ramps for the proposed Project's operations where the underground guideway would transition to at-grade.

Following the mass excavation and grading, the stations would require the installation of the waterproof membrane around the station box. The construction sequence for the station structures would typically commence with construction of the foundation base slab, followed by installation of exterior walls any interior column elements, and pouring of the station roof. Once station structure work is complete, the station excavation would be backfilled, and the permanent roadway would be constructed. Decking removal and surface restoration would then occur. Stations are proposed to be 1 to 2 stories, up to approximately 40 feet in height.

Generally, stations would be built simultaneously with or following guideway construction. However, construction of the Cucamonga Station may need to occur after the completion of all excavation and in-tunnel work. Truck haul routes, described in Table 2-1, would be designated for each staging site to transport excavated material from the staging sites. Additional construction details for the proposed stations and MSF are described in Table 2-1 and in the Construction Methods Technical Report. Table 2-2 provides an overview of the typical sequencing for transit construction activities (SBCTA 2024b).

2.3.2.5.1.1 Construction Details for Cucamonga Station and Maintenance and Storage Facility

Construction at the proposed Cucamonga Station would require a mass excavation and the TBM would be launched from the invert of the Cucamonga Station and retrieved from the ONT Terminal 2 Station construction site. Construction at the proposed Cucamonga Station would require approximately 3.2 acres. Approximately 170 parking stalls would be temporarily unavailable at the Cucamonga Metrolink Station parking lot. Construction at the Cucamonga Station would occur for up to 37 months. No road closures are anticipated for staging at the Cucamonga Station. Equipment needs would include the following: excavators, backhoes, a vertical conveyor system, a gantry crane, a crawler crane, concrete trucks, haul trucks, a wheel loader, Foamplant, cooling towers, a tunnel fan grout plant, segment cars, and flatcars.

Additionally, construction would not interrupt Metrolink service at the Cucamonga Metrolink Station, as construction activities and staging would occur within the existing Cucamonga Station parking lot. SBCTA will coordinate construction at Cucamonga Station with SCRRA, prior to the start of construction and throughout the construction period, to maintain station access and to coordinate station parking, as needed.

The proposed Cucamonga Station includes a MSF to store, clean, and maintain vehicles. The MSF would be approximately 11,000 square feet, with an additional 5,000 square feet second story and would contain an operations control center with lockers, breakrooms, and restrooms. The MSF would be constructed adjacent to the Cucamonga Station and would include enclosed bays.

2.3.2.5.1.2 Construction Details for ONT Terminal 2 Station

Construction staging at the proposed ONT Terminal 2 station would require approximately 3.4 acres within the existing ONT Terminal 2 parking lot. Approximately 300 parking stalls would be temporarily unavailable at the ONT Terminal 2 parking lot. Construction at the ONT Terminal 2 Station would occur for up to 27 months. No road closures are anticipated for staging at the ONT Terminal 2 Station. Equipment needs would include the following: a piling rig, a gantry crane, a crawler crane, excavators, concrete trucks, muck trucks, a wheel loader, Foamplant, cooling towers, a tunnel fan, a grout plant, segment cares, and flatcars.

Table 2-1: Stations, Maintenance and Storage Facility Construction Details

Proposed	Construction Area	Duration	Haul Route
Cucamonga Station and MSF	Would require approximately 3.2 acres within the existing Cucamonga Metrolink Station parking lot. Approximately 170 parking stalls would be temporarily unavailable from the existing Metrolink parking lot.	Construction at the Cucamonga Station would occur for up to 37 months.	Haul trucks are needed to support removal and transport of materials from the mass excavation for each construction site (for the stations and vent shaft) and from tunnel boring activities. Haul trucks would collect excavated material from the construction sites and transport it away from the sites, utilizing designated haul routes. Haul trucks would exit the staging area, travel north along Milliken Avenue, and turn right on Foothill Boulevard to access I-15. No road closures are anticipated for staging at the Cucamonga Station.
ONT Terminal 2 Station	Would require approximately 3.4 acres within the existing ONT Terminal 2 parking lot. Approximately 300 parking stalls would be temporarily unavailable from the ONT parking lot.	Construction at ONT Terminal 2 would occur for up to 27 months.	Haul trucks are needed to support removal and transport of materials from the mass excavation for each construction site (for the stations and vent shaft) and from tunnel boring activities. Haul trucks would collect excavated material from the construction sites and transport it away from the sites, utilizing designated haul routes. Haul trucks would exit the staging area, travel east along Terminal Way, and turn left on Haven Avenue to access I-10. No road closures are anticipated for staging at the Terminal 2 Station.
ONT Terminal 4 Station	Would require approximately 3.2 acres within the existing ONT Terminal 4 parking lot. Approximately 300 parking stalls would be temporarily unavailable from the ONT parking lot.	Construction at ONT Terminal 4 would occur for up to 15 months.	Haul trucks are needed to support removal and transport of materials from the mass excavation for each construction site (for the stations and vent shaft) and from tunnel boring activities. Haul trucks would collect excavated material from the construction sites and transport it away from the sites, utilizing designated haul routes. Haul trucks would exit the staging area, travel east along Terminal Way, and turn left on Haven Avenue to access I-10. No road closures are anticipated for staging at the Terminal 4 Station.

Table 2-2: Typical Sequencing of Transit Construction Activities

At Grade or Underground	Activity	Typical Duration (Total Months)	Description
At Grade Construction Activities	Utility Relocation	7-14	Relocate utilities from temporary and permanent elements related to the construction and/or operation of the Project.
At Grade Construction Activities	Construction Staging Laydown Yard	3-6	Prepare existing lots to store construction equipment and materials, including the TBM, office space.
At Grade Construction Activities	Roadway	6-18	Reconfigure roadway, demolition of existing roadway installation of curb and gutter and other public ROW improvements.
At Grade Construction Activities	At-grade Guideway	6-18	Install asphalt and striping for guideway.
At Grade Construction Activities	Station Construction (overall)	24-48	Install mechanical, electrical, and plumbing (MEP), canopies, faregates, ticketing, finishes, stairs, and walkways.
At Grade Construction Activities	Parking	3-6	Restoring existing parking stalls temporarily unavailable due to construction, as applicable.
At Grade Construction Activities	MSF	8-12	Install MEP, fencing, enclosed bays, specialized washing equipment, and rebar installation, and concrete pours.
Underground Construction Activities	Utility Relocation	7-14	Relocate and hang underground utilities from temporary and permanent elements related to the construction and operation of the Project.
Underground Construction Activities	Open Cut and Cut and Cover Construction	18-24	Supports the construction of the TBM launching and receiving pit, and of the access ramps connecting the tunnel with the at-grade stations. Install soldier piles for beam and lag support of excavation and excavation. Cover excavation with temporary decking.
Underground Construction Activities	Bored Tunnel	16-24	Underground guideway construction.
Underground Construction Activities	Ventilation and Emergency Access Shaft	6-8	Install ventilation and emergency access shaft.
Underground Construction Activities	Underground Guideway	12-18	Install asphalt and striping for guideway.

2.3.2.5.1.3 Construction Details for ONT Terminal 4 Station

Construction Staging at the proposed ONT Terminal 4 station would require approximately 3.2 acres within the existing ONT Terminal 4 parking lot. Approximately 300 parking stalls would be temporarily unavailable at the ONT Terminal 4 parking lot. Construction at the ONT Terminal 4 Station would occur for up to 15 months. No road closures are anticipated for staging at the ONT Terminal 4 Station. Equipment needs would include the following: a piling rig, a crawler crane, concrete trucks, muck trucks, a compressor, a generator, a water treatment plant, a wheel wash, a wheel loader, backhoes, and excavators.

2.3.2.5.2 Tunnel Construction

The proposed Project will travel in a below grade tunnel configuration for most of its proposed alignment. A TBM will be utilized in the construction of the tunnel. TBM are typically used in the construction of infrastructure projects to build deep underground tunnels by boring, or excavating, through soil, rocks, and/or other subsurface materials. The TBM would be launched from the Cucamonga Metrolink Station to construct the tunnel. Additional details regarding the underground construction process for the proposed Project are included in the Construction Methods Technical Report (SBCTA 2024b).

The TBM would be launched from the invert of the Cucamonga Station and retrieved from the ONT Terminal 2 Station construction site. A large crane would be used to assemble and disassemble the TBM from the excavation and receiving pits. Ontario International Airport Authority height limits at ONT and Rancho Cucamonga, 135 feet and 160 feet, respectively, would restrict crane heights. The TBM would operate six days a week, with maintenance occurring each Sunday. Construction of the entire tunnel would take approximately 22 months. Both ends of the tunnel would need to be constructed via direct excavation (cut and cover) to launch or retrieve the TBM. After mining is completed and TBM logistics are demobilized, both ends of the tunnel would be utilized to build the invert roadway, walkways, center wall and MEP systems, etc.

Vehicle ramps connecting to the tunnel would be constructed via direct excavation, as well. Equipment at the TBM launch site would include trucks, a crane, excavators, a grout plant, a compressor plant, a tunnel fan, and cooling towers. The launch area would also store tunnel construction materials (rail, pipe, ducts, etc.) and stockpile excavated material.

Truck haul routes at the proposed launch site at Cucamonga Station and the proposed retrieval site at ONT Terminal 2 Station are described in Table 2-1. The Construction Methods Technical Report includes additional details on the overall construction approach for the proposed tunnel (SBCTA 2024b).

2.3.2.5.3 Vent Shaft Construction

Two vent shaft design options with different access points are being considered for the proposed Project. Vent shaft design option 2 would be located west of Milliken Avenue on the westbound off-ramp of the I-10. Vent shaft design option 4 would be located west of Milliken Avenue on the eastbound on-ramp of

the I-10. The vent shaft will consist of both underground and above ground structures. The underground shaft will extend to the tunnel level and the surface structure will consist of a one-(1) story structure above ground. One vent shaft would be constructed along the tunnel alignment.

The vent shaft could be constructed before or after the construction of the tunnel and would be installed using a similar construction methodology to that of the tunnel and take approximately 6 months to complete. A drill rig would install up to 5 piles deep per day, each 70 feet deep. Piles would be drilled (i.e., no impact driving). The access shaft would then be excavated. The excavation would be supported by an internal bracing system. The vent shaft would require a construction staging area approximately 0.62-acres (27,000 square feet). Anticipated equipment at the location would include haul trucks, a drill rig, a crane, an excavator, a wheel loader, a compressor, and a ventilation fan. The staging area would include material storage, stockpiles of excavated material, water treatment, a workshop, a construction office, and an employee parking. Additional details regarding the construction process for the vent shaft are included in the Construction Methods Technical Report (SBCTA 2024b).

2.3.2.5.4 Utilities

Utility relocations are anticipated at the launch and retrieval locations at the Cucamonga Metrolink Station site, ONT, and ventilation/emergency access shaft. Multiple utilities would be relocated to allow for the construction of the access shaft, including: potential electric underground distribution cables owned and operated by Southern California Edison; landscape irrigation line owned and operated by the City of Ontario; and Caltrans fiber optic duct bank. In a future project phase, coordination with the existing utility service providers prior to utility relocation would be conducted to reduce potential impacts to utility service and minimize disruptions. Relocations of existing utilities would be coordinated with utility service providers and would be in previously disturbed areas or established ROW close to their existing locations and would stay within the evaluated Project footprint.

2.3.2.6 Proposed Easements

The proposed Project would require easements from 19 properties. This includes the need for 12 permanent subsurface easements, two permanent surface easements, and five parcel acquisitions for both subsurface and surface easements. Seven of the easements would be for the three stations and would total approximately 2 acres. SBCTA would require these easements for construction and/or operation of the proposed Project. There are two locations that are options for the location of the Vent Shaft, both belonging to Caltrans. This document evaluates the impacts for both options without selection of a preferred site. The decision of the preferred site will depend in part on the CEQA and NEPA processes, including any potential input from the public. The final decision as to which option is preferred may occur after the completion of the CEQA/NEPA process. Land uses for the parcels where these easements would be required include industrial, transportation facilities, utilities, and commercial. The owners of these parcels include SBCTA and City of Rancho Cucamonga (Cucamonga Metrolink Station west and east

parking lots), OIAA, a utility service provider, and some private owners. No relocations of businesses and residences would be required to construct the proposed Project.

3 REGULATORY SETTING

3.1 FEDERAL REGULATIONS

A project must comply with one or more federal regulations concerning paleontological resources if: (1) the project involves land under the jurisdiction of a federal agency, (2) a federal agency has oversight on the project, and/or (3) a permit, a license, authorization, or funding from a federal agency is required to complete the project. Because this proposed Project is under the oversight of federal agencies and is federally funded, the following federal regulation applies to this proposed Project.

3.1.1 National Environmental Policy Act of 1969 (42 United States Code 4321–4375)

NEPA established a national policy for the protection, promotion, enhancement, and understanding of the environment and created the Council on Environmental Quality. As part of this act, Section 101(b)(4) (42 United States Code [USC] 4331) seeks to "…preserve important historic, cultural, and natural aspects of our natural heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice." NEPA requires that the environmental effects of a proposed federal project or action be evaluated, and regulations for implementing this evaluation are found in 40 Code of Federal Regulations (CFR) 1500–1508. Because the proposed Project is under the oversight of a federal agency (i.e., the FTA), is federally funded, and involves land under the jurisdiction of the Federal Highway Administration (under the intersection of I-10 and Milliken Avenue), compliance with NEPA regulations is required for the proposed Project as a whole. The applicability of NEPA to paleontological resources depends on whether Section 101(b)(4) is interpreted to include fossils. However, compliance with CEQA regulations regarding paleontological resources will meet the requirements of NEPA regardless of whether paleontological resources are deemed to be covered under this act.

3.2 STATE REGULATIONS

Under State law, paleontological resources are protected by both CEQA and Public Resources Code (PRC) Section 5097.5, both of which are discussed in more detail in this section.

3.2.1 California Environmental Quality Act (California Public Resources Code 21000 et seq.)

The purpose of CEQA is to provide a statewide policy of environmental protection. As part of this protection, state and local agencies are required to analyze, disclose, and, when feasible, mitigate the environmental impacts of, or find alternatives to, proposed projects.

The *State CEQA Guidelines* (California Code of Regulations 15000 et seq.) provide regulations for the implementation of CEQA and include more specific direction on the process of documenting, analyzing, disclosing, and mitigating the environmental impacts of a project. To assist in this process, Appendix G of the *State CEQA Guidelines* provides a sample checklist form that may be used to identify and explain the degree of impact a project will have on a variety of environmental aspects, including paleontological resources (Section VII[f]).

As stated in Section 15002(b)(1-3) of the *State CEQA Guidelines,* CEQA applies to governmental action, including activities that are undertaken by, financed by, or require approval from a governmental agency. Because this proposed Project is undertaken by governmental agencies, CEQA regulations apply.

3.2.2 California Public Resources Code, Section 5097.5

This law protects historic, archaeological, and paleontological resources on public lands in California and establishes criminal and civil penalties for violations.

Specifically, PRC Section 5097.5 states:

> *"(a) No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.*
>
> *(b) As used in this section, "public lands" means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof."*

Because this proposed Project involves public lands as defined in Section 5097.5(b), proposed Project proponents are required to comply with this regulation.

3.3 REGIONAL AND LOCAL REGULATIONS

San Bernardino County and the City of Rancho Cucamonga recognize the importance of paleontological resources and provide for their protection through various goals, policies, and programs, as described in more detail in this section.

3.3.1 San Bernardino County

San Bernardino County Policy Plan (San Bernardino County 2020) sets forth the goals, policies, and programs the County uses to manage future growth and land use. The Cultural Resources Element of this plan contains the following goal and policy designed to protect paleontological resources within San Bernardino County:

- Goal CR-2 Historic and Paleontological Resources. Historic resources (buildings, structures, or archaeological resources) and paleontological resources that are protected and preserved for their cultural importance to local communities as well as their research and educational potential.

- Policy CR-2.3. San Bernardino County strives to protect paleontological and archaeological resources from loss or destruction by requiring that new development include appropriate mitigation to preserve the quality and integrity of these resources. We require new development to avoid paleontological and archeological resources whenever possible. If avoidance is not possible, we require the salvage and preservation of paleontological and archeological resources.

3.3.2 City of Rancho Cucamonga

The Resource Conservation Element (Volume 3: Environmental Performance) of the General Plan for the City of Rancho Cucamonga outlines a number of goals and policies regarding cultural and natural resources that guide decision making and future development (City of Rancho Cucamonga, 2021). The following policy addresses paleontological resources:

- Policy RC-4.6. Requires any paleontological artifacts found within the city or the Sphere of Influence to be preserved, reported, and offered for curation at local museums or research facilities.

4 METHODOLOGY

4.1 RESOURCE STUDY AREA

The Resource Study Area (RSA) for paleontological resources includes the horizontal and vertical extent of proposed Project activities within the proposed Project site. To determine the potential for fossils to be present within the proposed Project site, background research on the geologic units within the Project site was conducted, as described in more detail in this section. No paleontological subsurface exploration (i.e., geotechnical borings, logs, or other subsurface sampling) was conducted for this report.

4.2 FOSSIL LOCALITY SEARCHES

In June and July 2022, fossil locality searches were conducted through the Natural History Museum of Los Angeles County (NHMLAC) and the San Bernardino County Museum (SBCM), respectively. The locality searches included a 1-mile buffer around the proposed Project site. Additionally, a review of previously conducted fossil locality searches for other nearby projects was performed. The purpose of a locality search is to establish the status and extent of previously recorded paleontological resources in the proposed Project site and within the same or similar deposits as those mapped within the proposed Project site. The locality search results from NHMLAC and SBCM are summarized in Section 5.1, and copies of the results letters are provided in Appendices A and B, respectively.

4.3 LITERATURE REVIEW

Geologic maps and relevant geological and paleontological literature were studied to determine the geologic units that are present in the proposed Project site. As geologic formations and units may extend over large geographic areas and contain similar lithologies and fossils, the literature review includes areas beyond the proposed Project site and elsewhere in the region. The results of this literature review are provided in Section 5.2 and include an overview of the geology of the proposed Project site and a discussion of the paleontological sensitivity (or potential) of the geologic units within the proposed Project site.

4.4 FIELD SURVEY

The purpose of a field survey is to note the sediments and to identify any unrecorded paleontological resources exposed on the surface of the proposed Project site. In this way, impacts to existing, unrecorded paleontological material may be mitigated prior to beginning ground-disturbing activities, and portions of a project that are more likely to contain paleontological resources may be identified.

On September 6, 2022, Emily Chebul, M.Sc., conducted a field survey of safely accessible, surficial portions of the proposed Project site. Portions of the proposed Project site that could be safely accessed were examined opportunistically wherever there was visible ground. Portions that were built up, paved, or landscaped, or that could not be accessed safely, were not surveyed. Special attention was given to areas

that had exposed ground surfaces and cut slopes. The results of the field survey are summarized in Section 5.3.

4.5 SOCIETY OF VERTEBRATE PALEONTOLOGY CATEGORIES OF PALEONTOLOGICAL SENSITIVITY

According to the Society of Vertebrate Paleontology (SVP, 2010), paleontological sensitivity is the potential for the presence of scientifically significant, nonrenewable paleontological resources. All sedimentary rocks, some volcanic rocks, and some metamorphic rocks have potential for the presence of scientifically significant, nonrenewable paleontological resources, and review of available literature would further refine the potential of each geologic unit, formation, or facies. The SVP has four categories of potential, or sensitivity: High, Low, None, and Undetermined. If a geographic area or geological unit is classified as having undetermined potential for paleontological resources, studies must be undertaken to determine whether that geologic unit has a sensitivity of either High, Low, or None. These categories are described in more detail in this section.

- High Potential: Geologic units from which vertebrate or scientifically significant invertebrate, plant, or trace fossils have been recovered are considered to have a high potential for containing additional scientifically significant paleontological resources. Rock units classified as having high potential for producing paleontological resources include, but are not limited to:
    - Sedimentary formations and some volcaniclastic formations (e.g., ashes or tephras),
    - Some low-grade metamorphic rocks that contain scientifically significant paleontological resources anywhere within their geographical extent, and
    - Sedimentary geologic units temporally or lithologically suitable for the preservation of fossils (e.g., middle Holocene and older, fine-grained fluvial sandstones, argillaceous and carbonate-rich paleosols, cross-bedded point-bar sandstones, and fine-grained marine sandstones).

    Paleontological potential consists of both:

    a. The potential for yielding abundant or scientifically significant vertebrate fossils or for yielding a few scientifically significant fossils, large or small, vertebrate, invertebrate, plant, or trace fossils; and

    b. The importance of recovered evidence for new and scientifically significant taxonomic, phylogenetic, paleoecologic, taphonomic, biochronologic, or stratigraphic data.

    Geologic units that contain potentially datable organic remains older than late Holocene, including deposits associated with animal nests or middens, and geologic units that may contain new vertebrate deposits, traces, or trackways are also classified as having high potential.

- Low Potential: Geologic units that have a low potential for yielding scientifically significant fossils would be those poorly represented by fossil specimens in institutional collections, or (based on general scientific consensus) those where fossils are only preserved in rare circumstances. Thus, for low-potential geologic units, the presence of fossils is the exception, not the rule (e.g., basalt flows or Recent colluvium). Geologic units with low potential typically will not require impact mitigation measures to protect fossils.
- No Potential: Some geologic units have no potential to contain scientifically significant paleontological resources (e.g., high-grade metamorphic rocks [such as gneisses and schists] and plutonic igneous rocks [such as granites and diorites]). Geologic units with no potential require no protection or impact mitigation measures relative to paleontological resources.
- Undetermined Potential: Geologic units for which little information is available concerning their paleontological content, geologic age, and depositional environment are considered to have undetermined potential. Further study is necessary to determine whether these geologic units have high or low potential to contain scientifically significant paleontological resources. A field survey by a qualified professional to specifically determine the paleontological resource potential of these geologic units is required before a Paleontological Resources Impact Mitigation Program can be developed. In cases where no subsurface data are available, paleontological potential can sometimes be determined by strategically located excavations into subsurface stratigraphy.

4.6 EVALUATION OF IMPACTS UNDER CEQA

In accordance with Appendix G of the 2024 CEQA Guidelines, the Project would have a significant impact related to paleontological resources if it:

- Directly or indirectly destroys a unique paleontological resource or site.

5 EXISTING CONDITIONS

5.1 RESULTS OF THE FOSSIL LOCALITY SEARCHES

According to the fossil locality searches conducted by the NHMLAC and the SBCM, there are no known fossil localities within the proposed Project site. However, both museums have records of several fossil localities at the surface and to varying depths near the proposed Project site from geologic units similar to those found within the proposed Project site.

The NHMLAC noted six fossil localities approximately 11 to 36 miles from the proposed Project site, all of which are from unnamed sediments of Pleistocene age. The closest of these, Los Angeles County Museum vertebrate paleontology (LACM VP) 4619, is located on Wineville Avenue in Eastvale and produced remains of mammoth (*Mammuthus*) at a depth of 100 feet below the surface. The next closest locality, LACM VP 7811, located west of Orchard Park in Chino Valley, yielded remains of whip snake (*Masticophis*) at a depth of 9-11 feet below the surface. LACM VP 7268 and 7271, located at Sundance Condominiums south of Los Serranos Golf Course, produced remains of horse (*Equus*). From a hill on the east side of a sewage disposal plant one mile north-northwest of Corona, LACM VP 1207 produced remains from the cattle family (Bovidae). Finally, LACM VP 4540, located at the junction of Jackrabbit Trail and Gilman Springs Road in the San Jacinto Valley, yielded remains from the horse family (Equidae).

The SBCM noted nine fossil localities near the proposed Project site, all of which are from unnamed sediments of Pleistocene age. The closest fossil locality, SBCM 5.1.8, is located 1.6 miles south-southeast of the proposed Project site and produced remains of Columbian mammoth (*Mammuthus columbi*) at a depth of 6 feet below the surface. The remaining eight localities, SBCM 5.1.14-5.1.21, are located in a flood control basin 2.8-3.3 miles southeast of the proposed Project site and were found at depths ranging from the surface to 21 feet below the surface. These sites yielded invertebrate remains of gastropods and bivalves, as well as mammal remains including rabbit (*Sylvilagus*), gopher (*Thomomys*), packrat (*Neotoma*), vole (*Microtus californicus*), mastodon (*Mammut americanum*), bison (*Bison*), camel (*Camelops hesternus*), and horse (*Equus*).

A review of fossil locality searches conducted for previous paleontological resource assessments for nearby projects identified one additional fossil locality from the SBCM near the proposed Project site. SBCM 5.1.11, located in the city of Jurupa Valley near the other aforementioned SBCM localities from within unnamed sediments of Pleistocene age, yielded remains of saber-tooth cat (*Smilodon*) at a depth of 5 feet below the surface.

5.2 RESULTS OF THE LITERATURE REVIEW

The proposed Project site is in the northern end of the Peninsular Ranges Geomorphic Province, a 900-mile-long northwest-southeast trending structural block with similarly trending faults that extends

from the Transverse Ranges in the north to the tip of Baja California in the south and includes the Los Angeles Basin (California Geological Survey, 2002; Norris and Webb, 1976). The total width of this province is 225 miles, extending from the Colorado Desert in the east, across the continental shelf, to the southern Channel Islands (Santa Barbara, San Nicolas, Santa Catalina, and San Clemente) in the west (Sharp, 1976). This province is characterized by a series of mountain ranges and valleys that trend in a northwest-southeast direction roughly parallel to the San Andreas Fault Zone (Norris and Webb, 1976; Sharp, 1976). It contains extensive pre-Cenozoic (more than 66 million years ago [Ma]) igneous and metamorphic rocks covered by Cenozoic (less than 66 Ma) sedimentary deposits (Norris and Webb, 1976).

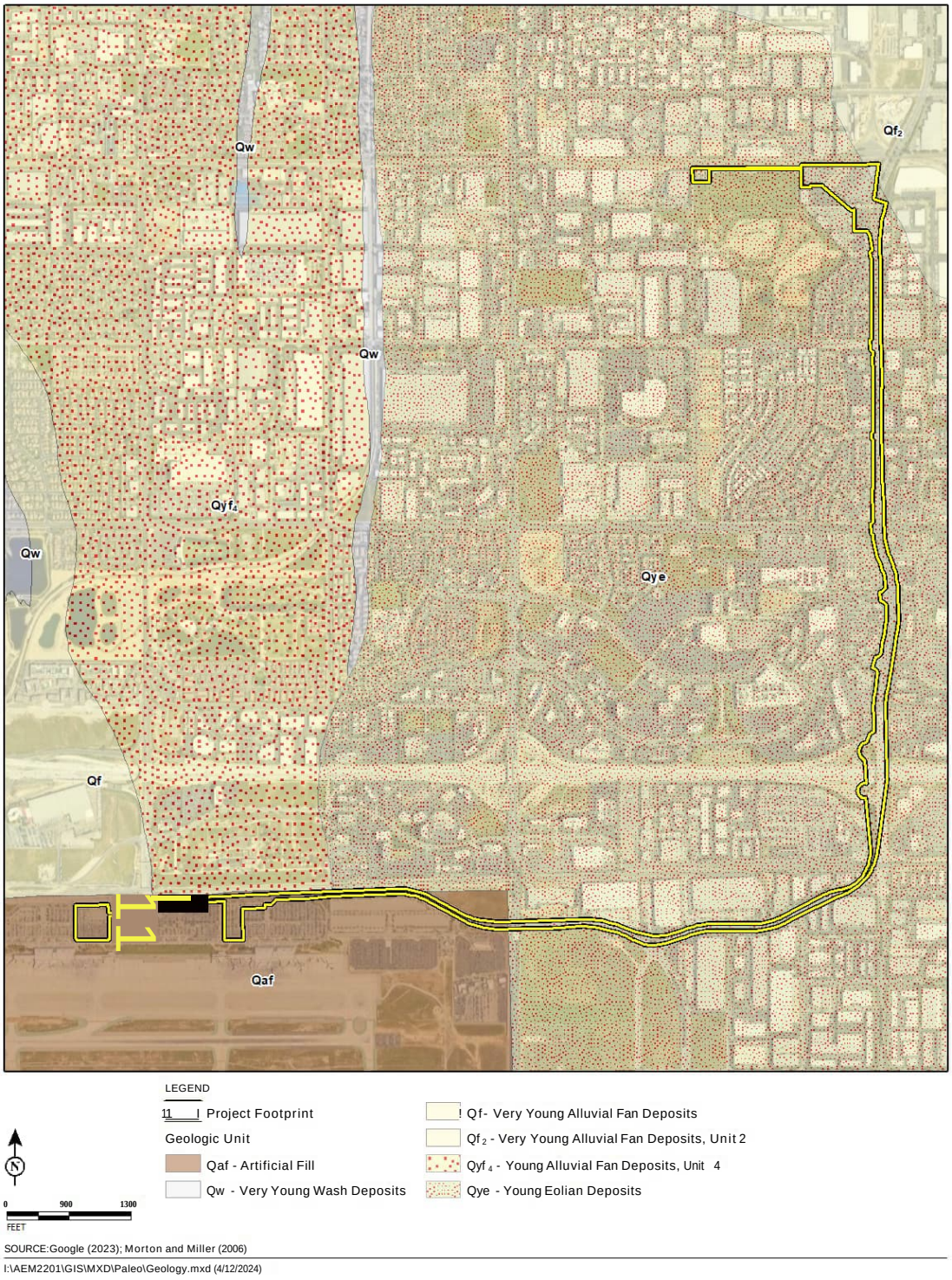
Geologic mapping by Morton and Miller (2006) shows the proposed Project site contains Artificial Fill; Young Alluvial Fan Deposits, Unit 4; and Young Eolian Deposits (Figure 5-1). The draft working copy of the geotechnical report for this proposed Project noted Artificial Fill and Young Eolian Deposits in the proposed Project site, as well as Young Alluvial Fan Deposits, Undivided, beneath the Young Eolian Deposits (Leighton Consulting, Inc., 2022). These geologic units and their paleontological sensitivities are described in more detail in this section. Dates for the geologic time intervals referenced in this report are derived from the International Chronostratigraphic Chart published by the International Commission on Stratigraphy (Cohen et al., 2022).

5.2.1 Artificial Fill

Artificial Fill consists of sediments that have been removed from one location and transported to another location by human activity rather than by natural means. The transportation distance can vary from a few feet to many miles, and composition is dependent on the source and purpose. Artificial Fill will sometimes contain modern debris such as asphalt, wood, bricks, concrete, metal, glass, plastic, and even plant material. Morton and Miller (2006) mapped Artificial Fill within the proposed Project site under ONT south of East Airport Drive and west of South Haven Avenue. Borings conducted for the draft working copy of the geotechnical report for this proposed Project also noted Artificial Fill in four other locations across the proposed Project site from the surface to depths of 3 to 6.5 feet (Leighton Consulting, Inc., 2022). However, it likely also occurs elsewhere within the proposed Project site along the existing railroad tracks, highways, streets, and bridges where it was used during construction to provide suitable foundation or drainage or to adjust for changes in topography and for overcrossings and interchanges.

While Artificial Fill may contain fossils, these fossils have been removed from their original location and are thus out of stratigraphic context. Therefore, they are not considered important for scientific study. As such, Artificial Fill has no paleontological sensitivity.

Figure 5-1: Geologic Map



5.2.2 Very Young Alluvial Fan Deposits, Unit 2

Unit 2 of the Very Young Alluvial Fan Deposits is late Holocene in age (less than 4,200 years ago) and, consists of sand, gravel, and boulders that form active and recently active parts of alluvial fans (Morton and Miller, 2006). The deposits in Unit 2 are distinguished by their location, position, and level of dissection by gullies relative to deposits in Unit 1 (Morton and Miller, 2006).

Although Holocene (less than 11,700 years ago) deposits can contain remains of plants and animals, only those from the middle to early Holocene (4,200 to 11,700 years ago) are considered scientifically important (SVP, 2010). However, below these late Holocene deposits, scientifically important fossils have been encountered in Pleistocene sediments present at depths as shallow as 5 feet (see results of fossil locality searches noted in Section 5.1). Therefore, these deposits are assigned a low paleontological sensitivity from the surface to a depth of 5 feet and a high sensitivity below that mark.

5.2.3 Young Alluvial Fan Deposits, Unit 4

The Young Alluvial Fan Deposits, Unit 4, are late Holocene in age (less than 4,200 years ago) and consist of unconsolidated silt, sand, and gravel (Morton and Miller, 2006). Cobble- and boulder-size clasts are also present and become more abundant closer to the hills and mountains (Morton and Miller, 2006). These sediments were eroded from higher elevations, carried by flooding streams and debris flows, and deposited in a fan or lobe shape at the base of the hills. They show slight to moderate dissection by erosional gullies, with the different units distinguished by their position and level of dissection and soil development relative to each other (Morton and Miller, 2006). The Young Alluvial Fan Deposits, Unit 4 are mapped in a thin area at the western end of the proposed Project site along the northern edge of East Airport Drive. In this area, borings conducted for the draft working copy of the geotechnical report prepared for this proposed Project noted Young Alluvial Fan Deposits, Undivided, beneath the Artificial Fill at a depth of approximately 6.5 feet below the surface (Leighton Consulting, Inc., 2022).

Like Unit 2 of the Very Young Alluvial Fan Deposits, these deposits are too young to produce scientifically significant paleontological resources. However, they overlie older Holocene and Pleistocene deposits at undetermined depths, and the older deposits may contain scientifically important fossils. Therefore, these deposits are assigned a low paleontological sensitivity from the surface to a depth of 5 feet and a high sensitivity below that mark.

5.2.4 Young Eolian Deposits

The Young Eolian Deposits are Holocene to late Pleistocene in age (less than 129,000 years ago) and consist of silt and medium- to fine-grained sand (Morton and Miller, 2006). These deposits represent deposition of wind-driven sediments, often as dunes. These deposits are mapped throughout the majority of the proposed Project site: under most of the Cucamonga Metrolink Station, along Milliken Avenue from the UPRR tracks to East Airport Drive, and along East Airport Drive from Milliken Avenue to South Haven

Avenue. Borings conducted for the draft working copy of the geotechnical report for this proposed Project noted Young Eolian Deposits in four locations across the proposed Project site at depths of 3 to 5 feet beneath the Artificial Fill at the surface (Leighton Consulting, Inc., 2022).

As previously noted, although Holocene (less than 11,700 years ago) deposits can contain remains of plants and animals, only those from the middle to early Holocene (4,200 to 11,700 years ago) are considered scientifically important (SVP, 2010), and fossils from this time interval are not very common. However, the older, Pleistocene sediments in this unit have produced scientifically important fossils elsewhere in the region (Jefferson, 1991a, 1991b; Miller, 1971; Reynolds and Reynolds, 1991; Springer et al., 2009). Additionally, the SBCM identified fossil remains in their collection near the proposed Project site from Pleistocene sediments similar to those in this unit at depths as shallow as 5 feet (see results of fossil locality searches noted in Section 5.1). These older, Pleistocene deposits span the end of the Rancholabrean North American Land Mammal Age (NALMA), which dates from 11,000 to 240,000 years ago (Sanders et al., 2009) and was named for the Rancho La Brea fossil site in central Los Angeles. The presence of *Bison* defines the beginning of the Rancholabrean NALMA (Bell et al., 2004), but fossils from this time also include other large and small mammals, reptiles, fish, invertebrates, and plants (Jefferson, 1991a, 1991b; Miller, 1971; Reynolds and Reynolds, 1991; Springer et al., 2009). There is a potential to find these types of fossils in the older sediments of this geologic unit, which have been encountered nearby at depths as shallow as 5 feet. Therefore, these deposits are assigned a low paleontological sensitivity above a depth of 5 feet and a high sensitivity below that mark.

5.2.5 Young Alluvial Fan Deposits, Undivided

The Young Alluvial Fan Deposits, Undivided, are Holocene to late Pleistocene in age (less than 129,000 years ago) and consist of unconsolidated silt, sand, and gravel (Morton and Miller, 2006). Cobble- and boulder-size clasts are also present and become more abundant closer to the hills and mountains (Morton and Miller, 2006). These sediments were eroded from higher elevations, carried by flooding streams and debris flows, and deposited in a fan or lobe shape at the base of the hills. They show slight to moderate dissection by erosional gullies, with the different units distinguished by their position and level of dissection and soil development relative to each other (Morton and Miller, 2006). Borings conducted for the draft working copy of the geotechnical report prepared for this proposed Project noted Young Alluvial Fan Deposits, Undivided, beneath the mapped Artificial Fill and Young Eolian Deposits in four locations across the proposed Project site at depths of 6.5 to 40 feet below the surface (Leighton Consulting, Inc., 2022).

Like the Young Eolian Deposits, the Holocene sediments of the Young Alluvial Fan Deposits, Undivided, are unlikely to contain any scientifically important fossils. However, the older, Pleistocene deposits in this geologic unit have produced scientifically important Rancholabrean fossils elsewhere in the region (Jefferson, 1991a, 1991b; Lander, 2003; Miller, 1971; Reynolds and Reynolds, 1991; Springer et al., 2009) and nearby at depths as shallow as 5 feet (see results of fossil locality searches noted in Section 5.1).

Therefore, these deposits are assigned a low paleontological sensitivity from the surface to a depth of 5 feet and a high sensitivity below that mark.

5.3 RESULTS OF THE FIELD SURVEY

The paleontological survey followed the proposed Project alignment from north to south, beginning at the Southern California Edison (SCE) electrical easement on the south side of the UPRR railroad tracks from the substation to Milliken Avenue. The survey then continued south along Milliken Avenue for approximately 2 miles and then curved to the west, weaving between industrial buildings until the proposed Project alignment reached the northern border of ONT. The entire proposed Project site has been previously developed, and areas with open ground were rare and of limited extent. Visibility within the proposed Project site was extremely poor, at approximately 5%, due to existing development and cover by pavement, vegetation, and mulch.

Some sediments were visible in the northern portion of the proposed Project site along the SCE easement, in planters at the north end of Milliken Avenue, and at the intersection of Milliken Avenue and I-10. However, the area surrounding the water towers at the southeast corner of Milliken Avenue and I-10 was not accessible to due to fencing. Sediments along the SCE easement south of the UPRR tracks consisted of yellowish- to greyish-brown silt to coarse-grained sand with igneous-derived cobbles and gravel, indicative of a combination of the Young Eolian Deposits mapped by Morton and Miller (2006) and Artificial Fill introduced from the gravel road beneath the power lines and the adjacent private property. In the planters along the northern portions of Milliken Avenue, sediments consisted of dark tan to blackish silt intermixed with soil and sparse pebbles, indicative of Artificial Fill. At the on- and off-ramps from Milliken Avenue to I-10, which are built up above the surrounding land, sediments consisted of light to medium-brown silty sand with some gravel, cobbles, and concrete rubble, indicative of Artificial Fill. The entire portion of the proposed Project site at ONT has been mapped as Artificial Fill, and given the developed nature of that portion, a survey on the airport property was not deemed necessary.

No paleontological resources were collected or observed within the proposed Project site.

6 IMPACT EVALUATION

The impact evaluation is conducted based on the geologic units within the proposed Project site; the potential for each of those geologic units to produce scientifically significant paleontological resources; the scientific importance of those resources; and the type, degree, and extent of proposed Project development activities.

6.1 DIRECT OR INDIRECT EFFECTS TO PALEONTOLOGICAL RESOURCES

6.1.1 No Project Alternative

6.1.1.1 Construction Impacts

Under the No Project Alternative, there would be no action, and the improvements associated with the proposed Project would not be constructed. The No Project Alternative includes planned expansion, improvement projects, and routine maintenance activities for the existing roadway system and transit facilities. The No Project Alternative would be required to include project site-specific measures to mitigate impacts related to paleontological resources.

6.1.1.2 Operational Impacts

Under the No Project Alternative, there would be no action, and the improvements associated with the proposed Project would not be constructed. The No Project Alternative includes planned expansion, improvement projects, and routine maintenance activities for the existing roadway system and transit facilities. The No Project Alternative would be required to include project site-specific measures to mitigate impacts related to paleontological resources.

6.1.2 Proposed Project

6.1.2.1 Construction Impacts

The proposed Project would require ground disturbance activities during construction as discussed in detail in this section.

Boring for the 24-foot-inner-diameter tunnel would take place at a minimum of 30 feet and up to 70 feet below ground surface through the use of a TBM. This boring would occur at depths that may potentially affect the paleontologically sensitive Young Alluvial Fan Deposits, Unit 4, below a depth of 5 feet; Young Alluvial Fan Deposits, Undivided, below a depth of 5 feet; and Young Eolian Deposits below a depth of 5 feet. As such, boring for the main tunnel would have the potential to affect scientifically significant paleontological resources.

The portals at the Metrolink and ONT station ends of the bored tunnel will be constructed as cut-and-cover tunnels. These cut-and-cover tunnels will be excavated from the surface to the ends of the bored

tunnel, approximately 30 feet below the surface, using traditional excavation equipment (e.g., scrapers, trackhoes, bulldozers). Cut-and-cover for the Cucamonga Metrolink Station portal would occur at depths that may potentially affect the Young Eolian Deposits below a depth of 5 feet. Cut-and-cover for the ONT stations would occur at depths that may potentially affect the Young Alluvial Fan Deposits, Undivided, below a depth of 5 feet. Therefore, there is a potential for these activities to affect scientifically significant paleontological resources.

The vent shaft design option 2 and vent shaft design option 4 would reach to the depth of approximately 50 feet below the surface and would affect the paleontologically sensitive Young Alluvial Fan Deposits, Undivided, below a depth of 5 feet, and Young Eolian Deposits below a depth of 5 feet. Therefore, there is a potential for this activity to affect scientifically significant paleontological resources.

Excavation for the MSF, three stations, including the at-grade station plazas, would extend to depths of less than 5 feet. None of the excavation activities for the stations are expected to extend deep enough to reach paleontologically sensitive geologic units and, therefore, would not affect scientifically significant paleontological resources.

Overhead SCE lines would be relocated underground to accommodate the Cucamonga Metrolink Station MSF requiring excavation to a depth of less than 5 feet. A number of other utility lines would also be relocated to accommodate the vent shaft, requiring excavation to a depth of less than 5 feet. Excavation required for relocation of the utility lines is not expected to reach paleontologically sensitive geologic units and, therefore, would not affect scientifically significant paleontological resources.

6.1.2.2 Operational Impacts

Operational activities associated with the three passenger stations, tunnel, one of the vent shaft options (vent shaft design option 2 or vent shaft design option 4), MSF, and utilities proposed as part of the proposed Project would not involve ground disturbance in geologic units sensitive to paleontological resources and would not affect scientifically significant paleontological resources.

7 MITIGATION MEASURES AND IMPACTS AFTER MITIGATION

7.1 MITIGATION MEASURES FOR PALEONTOLOGICAL RESOURCES

7.1.1 No Project Alternative

The mitigation strategies for the No Project Alternative would be dependent on the individual projects planned in the cities of Ontario and Rancho Cucamonga.

7.1.2 Proposed Project

7.1.2.1 Construction

As discussed in Section 6.1.2, the proposed Project has the potential to affect scientifically significant paleontological resources during construction. Therefore, the following mitigation measures (MM) are proposed.

MM-PAL-1 to engage a qualified paleontological resources specialist

MM-PAL-1: Prior to construction (any ground-disturbing activities), the contractor shall designate a qualified Paleontological Resources Specialist for the proposed Project (approved by San Bernardino County Transportation Authority). The Paleontological Resources Specialist will be responsible for developing a detailed Paleontological Resources Impact Mitigation Plan as well as implementing the Paleontological Resources Impact Mitigation Plan, including development and delivery of Worker Environmental Awareness Program training, evaluation and treatment of finds, if any, and preparation of a final paleontological mitigation report, per the Paleontological Resources Impact Mitigation Plan. Paleontological Resources Monitors will be selected by the Paleontological Resources Specialist based on their qualifications, and the scope and nature of their monitoring will be determined and directed by the Paleontological Resources Specialist based on the Paleontological Resources Impact Mitigation Plan. The Paleontological Resources Specialist will document, evaluate, and assess any discoveries, as needed.

MM-PAL-2 to prepare and implement a Paleontological Resources Impact Mitigation Plan (PRIMP)

MM-PAL-2: The Paleontological Resources Impact Mitigation Plan would be consistent with the Society of Vertebrate Paleontology Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources, the Society of Vertebrate Paleontology Conditions of Receivership for Paleontologic Salvage Collections, and relevant guidance from Chapter 8 of the current California Department of Transportation (Caltrans) Standard Environmental Reference. As such, the Paleontological Resources Impact Mitigation Plan would provide for at least the following:

- Implementation of the Paleontological Resources Impact Mitigation Plan by qualified personnel, including the following positions:
    - Paleontological Resources Specialist – The Paleontological Resources Specialist will be required to meet or exceed Principal Paleontologist qualifications per Chapter 8 of the current Caltrans Standard Environmental Reference.
    - Paleontological Resources Monitors – The Paleontological Resources Monitors would be required to meet or exceed Paleontological Monitor qualifications per Chapter 8 of the current Caltrans Standard Environmental Reference.
- Requirements for paleontological monitoring by qualified Paleontological Resources Monitors of all ground-disturbing activities known to affect, or potentially affect, paleontologically sensitive geologic units. Based on more detailed information on the methods, equipment, and procedures involved in ground disturbance, including the Tunnel Boring Machine, available at the time of preparation, the Paleontological Resources Impact Mitigation Plan would provide details of the corresponding levels of paleontological monitoring. The Paleontological Resources Impact Mitigation Plan would allow for monitoring frequency in any given location to be increased or decreased as appropriate based on the Paleontological Resources Specialist's professional judgment in consideration of actual site conditions, geologic units encountered, and fossil discoveries made.
- Provisions for the content development and delivery of paleontological resources Worker Environmental Awareness Program training.
- Provisions for in-progress documentation of monitoring (and, if applicable, salvage/recovery operations) via "daily logs" or a similar approved means.
- Provisions for a "stop work, evaluate, and treat appropriately" response in the event of a known or potential paleontological discovery, including finds in highly sensitive geologic units as well as finds, if any, in geologic units identified as less sensitive, or non-sensitive, for paleontological resources.

- Provisions for sampling and recovery of unearthed fossils consistent with Society of Vertebrate Paleontology Standard Procedures and the Society of Vertebrate Paleontology Conditions of Receivership. Recovery procedures would provide for recovery of both macrofossils and microfossils.
- Provisions for acquiring a repository agreement from an approved regional repository for curation, care, and storage of recovered materials, consistent with the Society of Vertebrate Paleontology Conditions of Receivership. If more than one repository institution is designated, separate repository agreements must be provided.
- Provisions for preparation of a final monitoring and mitigation report that meets the requirements of the Caltrans Standard Environmental Reference Chapter 8 provisions for the Paleontological Monitoring Report and Paleontological Stewardship Summary.
- Provisions for the preparation, identification, analysis, and curation of fossil specimens and data recovered, consistent with the Society of Vertebrate Paleontology Conditions of Receivership and any specific requirements of the designated repository institution(s).

MM-PAL-3 to provide Worker Environmental Awareness Program (WEAP) Training for Paleontological Resources

MM-PAL-3: Prior to groundbreaking within the proposed Project, the contractor would provide paleontological resources Worker Environmental Awareness Program training delivered by the Paleontological Resources Specialist. All management and supervisory personnel and construction workers involved with ground-disturbing activities would be required to take this training before beginning work on the proposed Project. Refresher training would also be made available to management and supervisory personnel and workers as needed, based on the judgment of the Paleontological Resources Specialist.

At a minimum, paleontological resources Worker Environmental Awareness Program training would include information on:

- The coordination between construction staff and paleontological staff;
- The construction and paleontological staff roles and responsibilities in implementing the Paleontological Resources Impact Mitigation Plan;
- The possibility of encountering fossils during construction;

- The types of fossils that may be seen and how to recognize them; and
- The proper procedures in the event fossils are encountered, including the requirement to halt work in the vicinity of the find and procedures for notifying responsible parties in the event of a find.

Training materials and formats may include, but are not necessarily limited to, in-person training, prerecorded videos, posters, and informational brochures that provide contacts and summarize procedures in the event paleontological resources are encountered. Worker Environmental Awareness Program training contents would be subject to review and approval by San Bernardino County Transportation Authority. Paleontological resources Worker Environmental Awareness Program training may be provided concurrently with cultural resources Worker Environmental Awareness Program training.

Upon completion of any Worker Environmental Awareness Program training, the contractor would require workers to sign a form stating that they attended the training and understand and would comply with the information presented. Verification of paleontological resources Worker Environmental Awareness Program training will be provided to San Bernardino County Transportation Authority by the contractor.

MM-PAL-4 requires to halt construction, evaluate, and treat if Paleontological Resources are found

MM-PAL-4: Consistent with the Paleontological Resources Impact Mitigation Plan, if fossil materials are discovered during construction, regardless of the individual making the discovery, all activity within 50 feet of the discovery would halt and the find would be protected from further disturbance. If the discovery is made by someone other than the Paleontological Resources Specialist or Paleontological Resources Monitors, the person who made the discovery would immediately notify construction supervisory personnel, who would in turn notify the Paleontological Resources Specialist. Notification to the Paleontological Resources Specialist would take place promptly (prior to the close of work the same day as the find), and the Paleontological Resources Specialist would evaluate the find and prescribe appropriate treatment as soon as feasible. Work may continue on other portions of the proposed Project while evaluation (and, if needed, treatment) takes place, as long as the find can be adequately protected in the judgment of the Paleontological Resources Specialist.

If the Paleontological Resources Specialist determines that treatment (i.e., recovery and documentation of unearthed fossil[s]) is warranted, such treatment, and any required reporting, would proceed consistent with the Paleontological Resources Impact Mitigation Plan. The contractor would be responsible for ensuring prompt and accurate

implementation, subject to verification by San Bernardino County Transportation Authority.

The stop work requirement does not apply to drilling or boring since these operations typically cannot be suspended in mid-course. However, if finds are made during drilling or boring, the same notification and other follow-up requirements would apply. The Paleontological Resources Specialist would coordinate with construction supervisory and drilling/boring staff regarding the handling of recovered fossils.

The requirements of this mitigation measure would be detailed in the Paleontological Resources Impact Mitigation Plan and presented as part of the paleontological resources Worker Environmental Awareness Program training.

7.1.2.2 Operational

Because there are no potential effects to scientifically significant paleontological resources during operation of the proposed Project, no mitigation measures would be required.

7.2 CEQA SIGNIFICANCE CONCLUSIONS

7.2.1 No Project Alternative

Although the No Project Alternative includes construction of some minor improvements near ONT and construction of projects planned in the cities of Ontario and Rancho Cucamonga, each of these projects would include their own measures to avoid, minimize, and/or mitigate impacts related to paleontological resources. Therefore, impacts associated with the No Project Alternative would be reduced to less than significant.

7.2.2 Proposed Project

7.2.2.1 Construction Impacts

Even with the implementation of the mitigation measures, impacts associated with construction of the proposed Project would remain significant and unavoidable.

No known fossil localities currently occur within the proposed Project site, and only previously unknown paleontological resources may be discovered. Therefore, avoidance is unlikely to be a viable approach for mitigation of impacts to paleontological resources, as proposed Project designs would need to be revised during construction if and when paleontological resources are discovered. However, implementation of MM-PAL-1, MM-PAL-2, MM-PAL-3, and MM-PAL-4 would reduce the impacts associated with construction of the stations, MSF, the cut-and-cover portions of the tunnel, Vent Shaft Option 2 and Vent Shaft Option 4, and the utility relocations on scientifically significant, nonrenewable paleontological resources to a less than significant level. Implementation of MM-PAL-2, which calls for preparation and

implementation of a PRIMP, and MM-PAL-4, which stipulates a "stop work, evaluate, and treat appropriately" response in the event of a paleontological discovery, would reduce impacts to paleontological resources through monitoring and salvage.

The aforementioned mitigation measures may allow for some recovery of small fossils and some fossil material if safe access to spoils is available; however, the TBM used to excavate the tunnel prevents access to the rock face, produces fragmented material, precludes the recovery of larger fossils, and limits the amount of contextual information that may be collected for scientific purposes. Additionally, because the locations of potential paleontological resources are unknown, movement of the proposed Project to avoid paleontologically sensitive geologic units, and thus avoid impacts on paleontological resources, is not a viable approach for mitigation. Because sufficient mitigation or avoidance is not feasible and the impact must occur for enhancement to take place, impacts to the majority of scientifically significant, nonrenewable paleontological resources from boring of the tunnel would remain significant and unavoidable.

As previously stated, no known fossil localities currently occur within the proposed Project site, and only previously unknown paleontological resources may be discovered. Therefore, avoidance is unlikely to be a viable approach for mitigation of impacts to paleontological resources, as proposed Project designs would need to be revised during construction if and when paleontological resources are discovered. However, implementation of MM-PAL-1, MM-PAL-2, MM-PAL-3, and MM PAL-4 would reduce the impacts associated with the stations, MSF, Vent Shaft Option 2 or Vent Shaft Option 4 on scientifically significant, nonrenewable paleontological resources to a less than significant level with mitigation. Implementation of MM-PAL-2, which calls for preparation and implementation of a PRIMP, and MM-PAL-4, which stipulates a "stop work, evaluate, and treat appropriately" response in the event of a paleontological discovery, would reduce impacts to paleontological resources through monitoring and salvage.

7.2.2.2 Operational Impacts

Operation of the proposed Project would result in no impact to paleontological resources.

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Ontario International Airport Connector Project

ONTCONNECTOR



APPENDIX P: PALEONTOLOGICAL RESOURCES TECHNICAL REPORT (APPENDIX A)

October 2024

sbeta

Prepared for:

San Bernardino County Transportation Authority
1170 West Third Street, Second Floor
San Bernardino, California 92410-1715

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

tel 213.763.DINO
www.nhm.org

Research & Collections

e-mail: paleorecords@nhm.org

June 19, 2022

LSA Associates, Inc.
Attn: Jacob Biewer

re: Paleontological resources for the Emerging Technology Tunnel to Ontario International Airport Project (AEM2201)

Dear Jacob:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for proposed development at the Emerging Technology Tunnel to Ontario International Airport Project area as outlined on the portion of the Guasti USGS topographic quadrangle map that you sent to me via e-mail on June 6, 2022. We do not have any fossil localities that lie directly within the proposed project area, but we do have fossil localities nearby from the same sedimentary deposits that occur in the proposed project area, either at the surface or at depth.

The following table shows the closest known localities in the collection of the Natural History Museum of Los Angeles County (NHMLA).

Locality Number	Location	Formation	Taxa	Depth
LACM VP 4619	Wineville Ave, Eastvale, CA	Unknown Formation (Pleistocene)	Mammoth (*Mammuthus*)	100 feet bgs
LACM VP 7811	W of Orchard Park, Chino Valley	Unknown formation (eolian, tan silt; Pleistocene)	Whip snake (*Masticophis*)	9-11 feet bgs
LACM VP 7268, 7271	Sundance Condominiums, S of Los Serranos Golf Course	Unknown (Pleistocene)	Horse (*Equus*)	Unknown
LACM VP 1207	Hill on east side of sewage disposal plant; 1 mile N-NW of Corona	Unknown formation (Pleistocene)	Bovidae	Unknown
LACM VP 4540	Junction of Jackrabbit Trail & Gilman Springs Road; San Jacinto Valley	Unnamed Formation (Pleistocene, gravel pit)	Horse Family (Equidae)	Unknown

VP, Vertebrate Paleontology; IP, Invertebrate Paleontology; bgs, below ground surface

This records search covers only the records of the NHMLA. It is not intended as a paleontological assessment of the project area for the purposes of CEQA or NEPA. Potentially fossil-bearing units are present in the project area, either at the surface or in the subsurface. As such, NHMLA recommends that a full paleontological assessment of the project area be conducted by a paleontologist meeting Bureau of Land Management or Society of Vertebrate Paleontology standards.

Sincerely,



Alyssa Bell, Ph.D.
Natural History Museum of Los Angeles County

enclosure: invoice

APPENDIX B FOSSIL LOCALITY SEARCH RESULTS FROM THE SAN BERNARDINO COUNTY MUSEUM

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2024 Orange Tree Lane, Redlands, California 92374 | Phone: 909.798.8608
www.SBCounty.gov

SAN BERNARDINO COUNTY

Museum
Division of Earth Science

Scott Kottkamp
Curator of Earth Science

28 June, 2022

LSA Associates, Inc.
Attn: Jacob Biewer
20 Executive Park, Suite 200
Irvine, CA 92614

PALEONTOLOGY RECORDS REVIEW for proposed site of Emerging Technology Tunnel to Ontario International Airport Project, San Bernardino County, California

Dear Mr. Biewer,

The Division of Earth Science of the San Bernardino County Museum (SBCM) has completed a records search for the above-named project in San Bernardino County, California. The proposed project site is in the cities of Ontario and Rancho Cucamonga, California as shown on the United States Geological Survey (USGS) 7.5 minute Guasti, California quadrangle.

Geologic mapping of that region done by Morton et al. (2003) indicates much of the project area is located atop recent alluvial fan deposits of middle to late Holocene age (Qyf). These sediments are comprised of unconsolidated mixed sand, silt, and gravel, often covered by soil. Sediments generally grow finer in average grain size as one moves further away from the mountains. Most of the rest of the project surface consists of young eolian deposits (Qye) of late Pleistocene and Holocene age. These deposits consist of unconsolidated, moderately well sorted, fine-to-medium grain sand. Finally, the region around the airport itself consists of artificial fill extending down to the airport's foundations, deposited in historical times after the building of the airport. All these surface deposits are unlikely to be fossiliferous themselves, but directly overlie ~1.8 million to ~11,000 year old Pleistocene alluvial deposits (Qoa) that are. Qoa is variable in its precise lithology, and often appears similar to units of Holocene age except slightly more consolidated. Such older alluvial deposits have been found to be highly fossiliferous in the

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Col. Paul Cook (Ret.) Jar

local area, yielding the remains of mastodons, mammoths, camels, horses, bison, and ground sloths, as well as microfossils including rodents. Qoa is of variable thickness, and in the local region is often especially thick (in some places more than 1000 feet thick). Records show no surface deposits of older sedimentary rock units within 5 miles. The nearest such units south of the San Andreas Fault are of Pliocene and Miocene age, and are found in the Puente Hills, the Santa Ana Mountains, and some isolated outcrops in Norco near the Santa Ana River channel.

For this review, I conducted a search of the Regional Paleontological Locality Inventory (RPLI) at the SBCM. The results of this search indicate that no paleontological resources have been discovered within the proposed project site, nor within the 1 mile work-buffer-zone around it. The nearest fossil locality, SBCM 5.1.8, 1.6 miles south-southeast of the project site at its nearest point, was discovered in Qoa underlying Oye during the excavation of a borrow pit for the Cal Trans I-15 project. This sediment in this pit has since been partially replaced with artificial fill (Qaf). Premineralized *Mammuthus columbi* bones were collected from the southwest corner of the borrow pit at a depth of approximately six feet, after being uncovered by an equipment operator.

Eight other localities, SBCM 5.1.14 – 5.1.21, are located in a flood control basin spanning 2.8 – 3.3 miles southeast of the project site's southeast corner. Each locality corresponds to a distinct unit of Qoa, which range in grain size from clay to very-fine sand and in color from olive-grey to yellow. All units' sediments are moist to wet. These units begin at the surface alongside the basin, and the deepest corresponds to 21 feet below surface. Taxa found at these sites include: *Gyraulus* sp.; *Stagnicola* sp.; indeterminate Gastropoda; indeterminate Bivalvia; *Sylvilagus* sp.; *Thomomys* sp.; *Neotoma* sp.; *Microtus californicus*; *Mammut americanum*; *Bison* sp.; *Camelops hesternus*; *Equus* sp.; and many indeterminate mammalian bones, bone fragments, and enamel shards. Bones and enamel are preserved via permineralization, while invertebrate shells are either casts or recrystallized. Vertebrate fossils are incomplete to fragmentary, especially for larger animals, and often have taphonomic wear patterns suggesting fluvial transport. By comparison, the mollusk taxa identified are endemic to low energy waters, such as lakes or calm riversides. The fine sediments constituting the fossiliferous units also correlate with a lacustrine or low-energy fluvial depositional environment. Similar fossil assemblages to those present at SBCM 5.1.14 – 5.1.21 have been found in Qoa throughout the San Bernardino Valley.

This records search covers only the paleontological records of the San Bernardino County Museum. 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.

Please do not hesitate to contact us with any further questions that you may have.

Sincerely,



Scott Kottkamp, Curator of Earth Science
Division of Earth Science
San Bernardino County Museum

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