Construction Methods and Impacts Report

for the East San Fernando Valley Transit Corridor

July 2016

Metro®

Prepared by the
U.S. Department of Transportation
Federal Transit Administration

and the Los Angeles County
Metropolitan Transportation Agency

Memorandum

Date: June 26, 2020

Subject: Addendum to the Construction Methods and Impacts Report for East San Fernando Valley Transit Corridor

Project Description:

The Federal Transit Administration (FTA) and Los Angeles County Metropolitan Transportation Authority (Metro) have initiated a Final Environmental Impact Statement (FEIS)/Final Environmental Impact Report (FEIR) for the East San Fernando Valley Transit Corridor Project (Project). The FEIS/FEIR is being prepared with the FTA as the Lead Agency under the National Environmental Policy Act (NEPA) and Metro as the Lead Agency under the California Environmental Quality Act (CEQA).

In response to comments received on the Draft EIS/EIR (DEIS/DEIR), on June 28, 2018 the Metro Board of Directors formally identified a modified version of Alternative 4 (identified as "Alternative 4 Modified: At-Grade LRT" in the FEIS/FEIR) as the Locally Preferred Alternative (LPA). Factors that were considered by Metro in identifying Alternative 4 Modified: At-Grade LRT as the LPA include: the greater capacity of LRT compared to the BRT alternatives, the LPA could be constructed in less time and at reduced cost compared to the DEIS/DEIR Alternative 4, fewer construction impacts compared to DEIS/DEIR Alternative 4, and strong community support for a rail alternative. Additionally, Metro determined the LPA best fulfilled the project's purpose and need.

The LPA consists of a 9.2-mile, at- grade LRT with 14 stations. Under the LPA, the LRT would be powered by electrified overhead lines and would travel 2.5 miles along the Metro-owned right-of-way used by the Antelope Valley Metrolink line and Union Pacific Railroad from the Sylmar/San Fernando Metrolink Station south to Van Nuys Boulevard. As the LPA approaches Van Nuys Boulevard it would transition to and operate the median of Van Nuys Boulevard for approximately 6.7 miles south to the Van Nuys Metro Orange Line Station. The 9.2-mile route of the LPA is illustrated in Figure 2-1 of the FEIS/FEIR. Additional details regarding the LPA's characteristics, components, and facilities are discussed within Section 2.2 of the FEIS/FEIR.

Methodology:

A review of the above-referenced project has been conducted in order to identify any additional potential impacts to construction methods in the project study area as a result of the LPA. The project review was done according to CEQA/NEPA guidelines, as well as the most current FTA and Metro guidelines and policies.

Result:

ICF has evaluated the impacts of the LPA and has determined they are consistent with the findings in the Construction Methods and Impacts Report prepared for the DEIS/EIR. Please refer to Chapter 4 of the of the FEIS/FEIR for an updated discussion of existing conditions and LPA impacts as well as mitigation measures.

Contents

Page

Tables and Figures

Table **Page**

Figure **Page**

Acronyms and Abbreviations

2008 RCP	2008 Regional Comprehensive Plan
2012 RTP	2012–2035 Regional Transportation Plan/Sustainable Communities Strategy
AA	Alternatives Analysis
ADA	Americans with Disabilities Act
BRT	bus rapid transit
Cal/OSHA	California Occupational Safety and Health Administration
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CPA	Community Plan Area
CPUC	California Public Utilities Commission
DEIR	Draft Environmental Impact Report
DEIS	Draft Environmental Impact Statement
DHS	Department of Homeland Security
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
Growth Vision	2004 Compass Blueprint Growth Vision
HOV	high-occupancy vehicle
I	Interstate
LADOT	Los Angeles Department of Transportation
LAPD	Los Angeles Police Department
LASD	Los Angeles County Sheriff's Department
LRT	light rail transit
LRTP	Long-Range Transportation Plan
MAP-21	Moving Ahead for Progress in the 21st Century
Metro	Los Angeles County Metropolitan Transportation Authority
MPO	Metropolitan Planning Organization
MSF	maintenance and storage facility
NEPA	National Environmental Policy Act
OCS	overhead contact system
OSHA	Occupational Safety and Health Administration
Project	East San Fernando Valley Transit Corridor Project
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SCAG	Southern California Association of Governments
SR	State Route
SSO	State Safety Oversight
TPSS	traction power substation
TRACS	Transit Rail Advisory Committee for Safety

TSA	Transportation Security Administration
TSM	Transportation System Management
UBC	Uniform Building Code
UFC	Uniform Fire Code
U.S.C.	United States Code

Chapter 1
Introduction

1.1 Study Background

What Is the East San Fernando Valley Transit Corridor?

The Federal Transit Administration (FTA) and Los Angeles County Metropolitan Transportation Authority (Metro) have initiated a Draft Environmental Impact Statement (DEIS)/Environmental Impact Report (DEIR) for the East San Fernando Valley Transit Corridor Project (proposed project). The DEIS/DEIR is being prepared with the FTA as the Lead Agency under the National Environmental Policy Act (NEPA) and Metro as the Lead Agency under the California Environmental Quality Act (CEQA).

The DEIS/DEIR and related engineering are being undertaken by Metro, pursuant to Measure R, in close coordination with the Cities of Los Angeles and San Fernando. The DEIS/DEIR will be a combined document complying with the most recent state and federal environmental laws. The proposed project's public/community outreach component is being undertaken as an integrated parallel effort to the DEIS/DEIR.

Prior to the initiation of the DEIS/DEIR, an Alternatives Analysis (AA) was received by the Metro Board in January 2013 to study the East San Fernando Valley Transit Corridor in order to define, screen, and recommend alternatives for future study.

This study enabled Metro, the City of Los Angeles, and the City of San Fernando to evaluate a range of new public transit service alternatives that can accommodate future population growth and transit demand, while being compatible with existing land uses and future development opportunities. The study considered the Sepulveda Pass Corridor Project, which is another Measure R project, and the proposed California High Speed Rail Project. Both of these projects may be directly served by a future transit project in the project study area. The Sepulveda Pass Corridor Project could eventually link the West Los Angeles area to the eastern San Fernando Valley and the California High Speed Rail Project via the project corridor. As part of the January 2013 Alternatives Analysis, most of Sepulveda Boulevard, as well as the alignment extending to Lakeview Terrace, were eliminated as alignment options. As a result of the Alternatives Analysis, the modal recommendations for the proposed project were Bus Rapid Transit (BRT) and Light Rail transit (LRT).

As a result of the alternatives screening process and feedback received during the public scoping period, a curb-running BRT, median-running BRT, median-running low-floor/tram, and a median-running LRT, were identified as the four build alternatives. In addition to these build alternatives, both a Transportation Systems Management (TSM) Alternative and a No-Build Alternative were also selected to be carried forward for analysis in this DEIS/DEIR.

1.1.1 Study Area

Where Is the Study Area Located?

The East San Fernando Valley Transit Corridor Project study area is located in the San Fernando Valley in the County of Los Angeles. Generally, the project study area extends from the City of San Fernando and the Sylmar/San Fernando Metrolink Station (San Fernando Road and Sayre Street) in the north to the Van Nuys Metro Orange Line Station (north of Oxnard Street) within the City of Los Angeles in the south.

The eastern San Fernando Valley includes the two major north-south arterial roadways of Sepulveda and Van Nuys Boulevards, spanning approximately 10 to 12 miles and the major north/west arterial roadway of San Fernando Road.

Several freeways traverse or border the eastern San Fernando Valley. These include the Ventura Freeway (U.S. 101), the San Diego Freeway (Interstate [I]-405), the Golden State Freeway (I-5), the Ronald Reagan Freeway (State Route [SR] 118), and the Foothill Freeway (I-210). The Hollywood Freeway SR 170 is located east of the project area. In addition to Metro local and Metro Rapid bus service, the Metro Orange Line Bus Rapid Transit service, the Metrolink Ventura Line commuter rail service, Amtrak inter-city rail service, and the Metrolink Antelope Valley Line commuter rail service are the major transit corridors that provide interregional trips in the area.

Land uses in the project study area include neighborhood and regional commercial land uses, as well as government and residential land uses. Government services are located at the Van Nuys Civic Center, retail shopping uses are located along the project corridor, and medium- to high-density residential uses are present throughout the project study area. Notable land uses and major employment centers in the eastern San Fernando Valley include: The Village at Sherman Oaks, Panorama Mall, Whiteman Airport, Van Nuys Airport, Mission Community Hospital, Kaiser Permanente Hospital, and Van Nuys Auto Row. Several schools, youth centers, and recreational centers are also located in the project study area.

1.1.2 Alternatives Considered

What Alternatives Are under Consideration?

The following six alternatives, including four build alternatives, a TSM Alternative, and the No-Build Alternative, are being evaluated as part of this study:

- No-Build Alternative
- Transportation Systems Management (TSM) Alternative
- Build Alternative 1 – Curb-Running Bus Rapid Transit (BRT) Alternative
- Build Alternative 2 – Median-Running BRT Alternative
- Build Alternative 3 – Low-Floor LRT/Tram Alternative
- Build Alternative 4 – Light Rail Transit (LRT) Alternative

All build alternatives would operate over a distance of 9.2 miles, either in a dedicated bus lane or guideway (6.7 miles) and/or in mixed-flow traffic lanes (2.5 miles), from the Sylmar/San Fernando Metrolink station in the north to the Van Nuys Metro Orange Line station in the south. One exception is Build Alternative 4, which includes a 2.5-mile segment within Metro-owned railroad right-of-way adjacent to San Fernando Road and Truman Street and a 2.5-mile underground segment beneath portions of Panorama City and Van Nuys.

1.1.2.1 No-Build Alternative

The No-Build Alternative represents projected conditions in 2040 without implementation of the proposed project. No new transportation infrastructure would be built within the project study area, aside from projects that are currently under construction or funded for construction and operation by 2040. These projects include highway and transit projects funded by Measure R and specified in the current constrained element of the Metro 2009 Long-Range Transportation Plan (LRTP) and the 2012 Southern California Association of Governments (SCAG) Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Existing infrastructure and future planned and funded projects assumed under the No-Build Alternative include:

- Existing Freeways – Interstate 5, and Interstate 105, State Route 118, and U.S. 101;
- Existing Transitway – Metro Orange Line;
- Existing Bus Service – Metro Rapid and Metro Local Shuttle;
- Los Angeles Department of Transportation Commuter Express, and DASH;
- Existing and Planned Bicycle Projects – Bicycle facilities on Van Nuys Boulevard and connecting east/west facilities; and
- Other Planned Projects – Various freeway and arterial roadway upgrades, expansions to the Metro Rapid Bus system, upgrades to the Metrolink system and the proposed California High Speed Rail project.

The No-Build Alternative allows decision makers to compare the impacts of approving the project with the impacts of not approving the proposed project.

1.1.2.2 TSM Alternative

The TSM Alternative emphasizes transportation systems upgrades, including relatively low-cost, efficient, and feasible transit service improvements such as increased bus frequencies, minor modifications to the roadway network, traffic signalization improvements, bus stop amenities/improvements, and bus schedule restructuring (Figure 1-1).

Specifically, the TSM Alternative could include enhanced bus operating hours and increased bus frequencies for Metro Rapid Line 761 and Local Line 233. Under this alternative, the Metro Rapid Line 761 and Metro Local Line 233 bus routes would retain existing stop locations. This alternative would provide 20 additional buses to the existing Metro Local 233 and Metro Rapid 761 bus routes. These buses would be similar to existing Metro 60-foot articulated buses, and each bus would have the capacity to serve up to 75 passengers (57 seats x 1.30 passenger loading standard). Buses would be equipped with transit signal priority equipment to allow for improved operations and on-time performance.

The existing Metro Division 15 maintenance and storage facility (MSF) located in Sun Valley would be able to accommodate the 20 additional buses with the implementation of the TSM Alternative. Operational changes would include reduced headway (elapsed time between buses) times for Metro Rapid Line 761 and Metro Local Line 233, as follows:

- Metro Rapid Line 761 would operate with headways reduced from 10 minutes to 8 minutes during peak hours (7 a.m. to 9 a.m. and 4 p.m. to 7 p.m. on weekdays) and from 17.5 minutes to 12 minutes during off-peak hours.
- Metro Local Line 233 would operate with headways reduced from 12 minutes to 8 minutes during peak hours and from 20 minutes to 16 minutes during off-peak hours.

Figure 1-1: TSM Alternative

Source: STV, Inc., 2014.

1.1.2.3 Build Alternative 1 – Curb-Running BRT Alternative

Under the Curb-Running BRT Alternative, the proposed project would incorporate 6.7 miles of existing curb lanes (i.e., lanes closest to the curb) along Van Nuys Boulevard between San Fernando Road and the Metro Orange Line. This alternative would be similar in design and operation to the Metro Wilshire BRT project. The lanes would be curb-running bus lanes for Metro Rapid Line 761 and Metro Local Line 233, and for other transit lines that operate on short segments of Van Nuys Boulevard. In addition, this alternative would incorporate 2.5 miles of mixed-flow lanes, where buses would operate in the curb lane along San Fernando Road and Truman Street between Van Nuys Boulevard and the San Fernando Metrolink Station for Metro Line 761. Metro Line 233 would continue north on Van Nuys Boulevard to Lakeview Terrace. These improvements would result in an improved Metro Rapid Line 761 (hereafter referred to as 761X) and an improved Metro Local Line 233 (hereafter referred to as 233X). The route of the Curb-Running BRT Alternative is illustrated in Figure 1-2.

From the Sylmar/San Fernando Metrolink station:

- Metro Rapid Line 761X would operate within roadway travel lanes on Truman Street and San Fernando Road.
- At Van Nuys Boulevard, Metro Rapid Line 761X would turn southwest and travel south within a curb-running dedicated bus lane along Van Nuys Boulevard.
- The alternative would continue to be curb-running along Van Nuys Boulevard until reaching the Metro Orange Line Van Nuys station where Metro Rapid Line 761X service would be integrated into mixed-flow traffic.
- Metro Line 761X would then continue south to Westwood as under existing conditions, though it should be noted that in December 2014 the Metro Rapid Line 761 will be re-routed to travel from Van Nuys Boulevard to Ventura Boulevard, and then to Reseda Boulevard, while a new Metro Rapid Line 788 would travel from Van Nuys Boulevard through the Sepulveda Pass to Westwood as part of a Metro demonstration project.

Metro Local Line 233X would operate similar to how it currently operates between the intersections of Van Nuys and Glenoaks Boulevards to the north and Van Nuys and Ventura Boulevards to the south. However, Metro Local Line 233X would operate with improvements over existing service because it would utilize the BRT lanes where its route overlaps with the Curb-Running BRT lanes along Van Nuys Boulevard.

Transit service would not be confined to only the dedicated curb lanes. Buses would still have the option to operate within the remaining mixed-flow lanes to bypass right-turning vehicles, a bicyclist, or another bus at a bus stop.

The Curb-Running BRT Alternative would operate in dedicated bus lanes, sharing the lanes with bicycles and right turning vehicles. However, on San Fernando Road and Truman Street, no dedicated bus lanes would be provided. The Curb-Running BRT Alternative would include 18 bus stops, in addition to street construction, striping, signage, relocation of curb, gutter, and sidewalks, trafiic signals, and lighting.

Figure 1-2: Build Alternative 1 – Curb-Running BRT Alternative

Source: Metro and KOA, 2014.

1.1.2.4 Build Alternative 2 – Median-Running BRT Alternative

The Median-Running BRT Alternative consists of approximately 6.7 miles of dedicated median-running bus lanes between San Fernando Road and the Metro Orange Line, and would have operational standards similar to the Metro Orange Line. The remaining 2.5 miles would operate in mixed-flow traffic between the Sylmar/San Fernando Metrolink Station and San Fernando Road/Van Nuys Boulevard. The Median-Running BRT Alternative is illustrated in Figure 1-3.

Similar to the Curb-Running BRT Alternative, the Median-Running BRT (Metro Rapid Line 761X) would operate as follows from the Sylmar/San Fernando Metrolink station:

- Metro Rapid Line 761X would operate within mixed-flow lanes on Truman Street and San Fernando Road.
- At Van Nuys Boulevard, the route would turn southwest and travel south within the median of Van Nuys Boulevard in new dedicated BRT lanes.
- Upon reaching the Van Nuys Metro Orange Line Station, the dedicated BRT lanes would end and the Metro Rapid Line 761X service would then be integrated into mixed-flow traffic.
- The route would then continue south to Westwood, similar to the existing route. Similar to Build Alternative 1, it should be noted that in December 2014 the Metro Rapid Line 761 will be re-routed to travel from Van Nuys Boulevard to Ventura Boulevard, and then to Reseda Boulevard, while a new Metro Rapid Line 788 would travel from Van Nuys Boulevard through the Sepulveda Pass to Westwood as part of a Metro demonstration project.

Metro Local Line 233 would operate similar to existing conditions between the intersections of Van Nuys and Glenoaks Boulevards to the north and Van Nuys and Ventura Boulevards to the south. Metro Rapid bus stops that currently serve Metro lines 794 and 734 on the northern part of the alignment along Truman Street and San Fernando Road would be upgraded and have design enhancements that would be Americans with Disabilities Act (ADA) compliant. These stops would also serve the redirected Metro Rapid 761X line:

1. Sylmar/San Fernando Metrolink Station
2. Hubbard Station
3. Maclay Station
4. Paxton Station
5. Van Nuys/San Fernando Station

Along the Van Nuys Boulevard segment, bus stop platforms would be constructed in the median. Seventeen new median bus stops would be included. Bus stop improvements may include removal and reconstruction of pavement sections, curbs and sidewalks, lighting improvements, bus shelters and seating.

Figure 1-3: Build Alternative 2 – Median-Running BRT Alternative

Source: Metro and KOA, 2014.

1.1.2.5 Build Alternative 3 – Low-Floor LRT/Tram Alternative

The Low-Floor LRT/Tram Alternative would be powered by overhead electrical wires and operate along a 9.2-mile route from the Sylmar/San Fernando Metrolink station in the north, to the Van Nuys Metro Orange Line station in the south. The Low-Floor LRT/Tram Alternative would operate in a dedicated median guideway for approximately 6.7 miles along Van Nuys Boulevard between San Fernando Road and the Van Nuys Metro Orange Line station. The Low-Floor LRT/Tram Alternative would operate in mixed-flow traffic lanes on San Fernando Road between the intersection of San Fernando Road/Van Nuys Boulevard and just north of Wolfskill Street. Between Wolfskill Street and the Sylmar/San Fernando Metrolink station, the Low-Floor LRT/Tram Alternative would operate in a dedicated median guideway. It would include 28 stations. The route of the Low-Floor LRT/Tram Alternative is illustrated in Figure 1-4.

The Low-Floor LRT/Tram Alternative would operate along the following route:

- From the Sylmar/San Fernando Metrolink station, the Low-Floor LRT/Tram would operate within a dedicated median guideway on San Fernando Road.
- At Wolfskill Street, the Low-Floor LRT/Tram would operate within mixed-flow travel lanes on San Fernando Road to Van Nuys Boulevard.
- At Van Nuys Boulevard, the Low-Floor LRT/Tram would turn southwest and travel south within the median of Van Nuys Boulevard in a new dedicated guideway.
- The Low-Floor LRT/Tram would continue to operate in the median along Van Nuys Boulevard until reaching its terminus at the Van Nuys Metro Orange Line Station.

Based on Metro's *Operations Plan for the East San Fernando Valley Transit Corridor Project,* the Low-Floor LRT/Tram Alternative would assume a similar travel speed as the Median-Running BRT Alternative, with speed improvements of 18 percent during peak hours/peak direction and 15 percent during off-peak hours.

The Low-Floor LRT/Tram Alternative would operate using low-floor articulated vehicles that would be electrically powered by overhead wires. This alternative would include supporting facilities, such as an overhead contact system (OCS), traction power substations (TPSS), signaling, and a maintenance storage facility (MSF). Installation of the OCS system would require foundations for poles and a duct bank along the alignment to carry power. Stations would include a communications system with message signage for way finding and public address.

Because the Low-Floor LRT/Tram Alternative would fulfill the current functions of the existing Metro Rapid Line 761 and Metro Local Line 233, these bus routes would be modified to maintain service only to areas outside of the project corridor.

Stations for the Low-Floor LRT/Tram Alternative would be constructed at various intervals along the entire route. There are portions of the route where stations are closer together and other portions where they are located further apart. Twenty-eight stations are proposed with the Low-Floor LRT/Tram Alternative. The 28 proposed tram stations would be ADA compliant.

Figure 1-4: Build Alternative 3 – Low-Floor LRT/Tram Alternative

Source: Metro and KOA, 2014.

1.1.2.6 Build Alternative 4 – LRT Alternative

Similar to the Low-Floor LRT/Tram Alternative, the LRT would be powered by overhead electrical wires (Figure 1-5). Under Build Alternative 4, the LRT would travel in a dedicated guideway from the Sylmar/San Fernando Metrolink station along San Fernando Road south to Van Nuys Boulevard, from San Fernando Road to the Van Nuys Metro Orange Line Station, over a distance of approximately 9.2 miles. The LRT Alternative includes a segment in exclusive right-of-way through the Antelope Valley Metrolink railroad corridor, a segment with semi-exclusive right-of-way in the middle of Van Nuys Boulevard, and an underground segment beneath Van Nuys Boulevard from just north of Parthenia Street to Hart Street.

The LRT Alternative would be similar to other street-running LRT lines that currently operate in the Los Angeles area, such as the Metro Blue, Gold, and Exposition Lines. The LRT would travel along the median for most of the route, with a subway section of approximately 2.5 miles in length between Vanowen Street and Nordhoff Street. On the surface-running segment, the LRT Alternative would operate at prevailing traffic speeds and would be controlled by standard traffic signals.

Stations would be constructed at approximately 1-mile intervals along the entire route. There would be 14 stations, three of which would be underground near Sherman Way, the Van Nuys Metrolink station, and Roscoe Boulevard. Entry to the three underground stations would be provided from an entry plaza and portal. The entry portals would provide access to stairs, escalators, and elevators leading to an underground LRT station mezzanine level, which, in turn, would connect to additional stairs, escalators, and elevators to the underground LRT station platforms.

Similar to the Low-Floor LRT/Tram Alternative, the LRT Alternative would require a number of additional elements to support vehicle operations, including an OCS, TPSS, communications and signaling buildings, and an MSF.

Figure 1-5: Build Alternative 4 – LRT Alternative

Source: Metro and KOA, 2014.

Chapter 2
Summary of Construction Methods, Techniques, and Equipment

2.1 Introduction

This section summarizes construction methods, techniques and equipment expected to be used for the East San Fernando Valley Transit Corridor Project. As described in previous sections, the build alternatives would include BRT, Low-Floor LRT/Tram, and LRT alternatives. In general, conventional construction techniques and equipment would be used under all build alternatives, as typically performed in the southern California region. However, based on components of each build alternative, some alternatives would require a greater amount of construction than other alternatives. The following discusses the major construction methods and techniques that are considered likely to be used to construct the build alternatives. Actual construction methods and equipment will be determined based upon a competitive bidding process and therefore the information shown below should be regarded as illustrative of typical construction methods.

This description of construction is based on information currently known about construction of the proposed project. Details of the construction process may well differ from this description; for example, different construction staging areas may be used or different construction sequencing may be followed. Major project elements for the build alternatives would include stations, maintenance and storage facilities, track work, ventilation equipment, fire-life safety features, power, lighting architecture, aesthetics, turnarounds for stations, landscaping and for the LRT Alternative, a tunnel. Street work refers to work related to curbs, gutters, striping, traffic signals, and sidewalks. Signaling equipment, traction power and communication equipment would also be used under the alternatives.

2.2 Construction Process

Construction activities would likely begin simultaneously at several locations along the project corridor, to accommodate areas of work requiring lengthy construction times and to bring the different segments of the project to completion in order to meet the project completion schedule. Many contractors specializing in various methods of construction would be working on the project during the construction period. Construction of the project would follow all applicable local, state, and federal laws for building and safety. Working hours would vary to meet special circumstances and restrictions and efforts would be made to ensure working hours are appropriate for the community. Efforts will be made communicating c to keep residents and businesses informed. Standard construction methods would be used for traffic, noise, vibration, and dust control, consistent with all applicable laws, and as described in the following sections.

The subsequent sections of this report discuss proposed construction under the build alternatives, as the No-Build and TSM would not include construction activities under the proposed project. Specifically, components of the BRT alternatives (Alternatives 1 and 2), the Low-Floor LRT/Tram (Alternative 3), and the LRT Alternative (Alternative 4) are described. The expected construction schedules are summarized at the end of each of these sections. Generally, construction would be divided into a series of activities, which would often overlap to minimize the duration of construction and the associated impacts.

The two BRT alternatives would require less extensive infrastructure improvements; therefore, construction activities would be shorter in duration compared to the Low-Floor LRT/Tram and LRT Alternatives. The two LRT alternatives would require more extensive infrastructure improvements, including OCS, TPSSs, and MSF, and larger station platforms than the BRT alternatives, thereby requiring a longer construction period. The LRT Alternative would require tunneling to construct underground portions of the alignment, as well as underground stations, and would require the most extensive construction of the four build alternatives.

The build alternatives being evaluated as part of this DEIS/DEIR have preliminary capital costs estimates that range between $294 million for bus rapid transit (BRT) to $2.7 billion for light rail transit (LRT) Year of Expenditure 2018 dollars. The East San Fernando Valley Transit Corridor Project only has approximately $170.1 million reserved as part of Metro's 2009 Long Range Transportation Plan. Any costs in excess of this amount will need to be funded by other sources

Table 2-1 shows construction scenario similarities and differences between the build alternatives.

Table 2-1: Summary of Construction Scenarios for Project Alternatives

	No-Build	TSM	Curb Running Alternative (Alternative 1)	Median-Running Alternative (Alternative 2)	Low-Floor LRT/Tram (Alternative 3)	LRT Alternative (Alternative 4)
Construction Duration*	None	None	18 months	24 months	48 months	60 months
Utility Relocations	None	None	No	No	Yes	Yes
Tunnel Excavation	None	None	No	No	No	Yes
Road and Street Work	None	None	Yes	Yes	Yes	Yes
Power and Communicatio ns Upgrades	None	None	No	No	Yes	Yes

*This refers to overall construction duration. Construction would occur in phases and would be divided into a series of activities, which would often overlap to minimize the duration of overall construction. Constructing in segments would also minimize the length of time construction activities occur in front of a particular block of properties, so properties are not affected during the entire duration of construction, but mainly when activities are occurring on that particular block.

Source: ICF International, 2015.

2.3 Alternative 1 – Curb-Running Bus Rapid Transit (BRT) Alternative

Under the Curb-Running BRT Alternative, the BRT lanes would be constructed along 6.7 miles of existing curb lanes along Van Nuys Boulevard between San Fernando Road and the Metro Orange Line. This alternative would also include a 2.5-mile segment where buses would operate in mixed-flow curb lanes along San Fernando Road and Truman Street between Van Nuys Boulevard and the Sylmar/San Fernando Metrolink Station.

2.3.1 Construction Scenario

Proposed construction activities would generally occur in phases, over a period of approximately 18 months. For the purposes of this report, the phases have been simplified and have been identified as follows:

- Preconstruction and Site Preparation
- Construction of Transit Structures and Infrastructure
- Construction of Support Systems and Finish Work.

All construction activities conducted during these phases would conform to industry specifications and standards and construction activities would be generally confined to public rights-of-way. Project construction would employ conventional construction techniques and equipment typically used in the Southern California region. Installation of bus shelters and street work, including curb, gutter, sidewalk, striping, signal, and lighting may be required. Landscaping may also be included.

2.3.1.1 Preconstruction and Site Preparation

The construction process would begin with the preconstruction and site preparation phase. During this phase, plans and programs (described below) would be developed to manage the construction process and minimize disruption to the community and adverse effects on the environment. Included among these plans would be a community outreach program, which would be developed prior to any physical construction. The purpose of the outreach plan would be to inform the public about the construction process and notify residents, businesses, and emergency response service of the proposed construction schedule including dates and duration of anticipated road closures. Public awareness strategies would include various methods to reach out to and educate and inform the public, businesses, and the community about the construction process and activities. The outreach program may also include surveys of individual businesses to identify business usage, delivery and shipping patterns, and critical times of the day or year for business activities. This information would be used by Metro to develop construction requirements and worksite traffic control plans and to identify alternative access routes and requirements to maintain critical business activities.

Additional site investigations may also be required during this phase and prior to construction to confirm the presence or absence of sensitive resources (e.g., buried archaeological or paleontological resources) and hazardous materials.

Site preparation would include developing safety plans, preparation of the work site, accepting construction crews and equipment, and could include street/sidewalk closures, detours, redirection for parking, and clearing (existing street furniture, street trees, or vegetation), grubbing, grading, and the relocation of utilities (see relocation discussion below) during site preparation. Some curb lane closures would also be necessary and bus stops would need to be temporarily relocated outside of the work areas.). During site preparation, some curb lane closures and work related to pot holes and utilities would be necessary and bus stops would need to be temporarily relocated outside of the work areas. In some instances, existing stops may need to be closed for some time and the nearest bus stops would serve patrons of the temporarily closed stop(s). This information would be disseminated prior to beginning construction activities. A minimum of one-week advance notice would be provided to individual owners (businesses and residences), owner's agents, and tenants of buildings adjacent to work sites before altering access to those locations and adjacent public sidewalks or before prohibiting stopping and/or parking of vehicles. Additionally, special temporary signs would be used to inform customers that merchants and other businesses are open, and to provide special access directions, if warranted.

Traffic Management Plan

Several aspects of the preconstruction and site preparation phase would be addressed by the Traffic Management Plan (TMP), which would be prepared and implemented by the construction contractor to mitigate construction traffic impacts. The TMP will require review and approval by Metro and the Cities of Los Angeles and San Fernando. The TMP would address the mobility and safety needs of the motoring public, construction workers, businesses, bicyclists, and the community, as well as facilitate the flow of automobile and pedestrian traffic during construction. The TMP would consist of a temporary traffic control plan that addresses both transportation operations and public information components. Measures may include traffic control devices and possibly flagmen and/or traffic officers, frequent street sweeping, and the implementation of diversions/detours to facilitate traffic flow throughout the construction zones. The specific measures that will be implemented will vary during the course of construction in response to site specific requirements and as necessary to safely and efficiently manage traffic flow. Metro has utilized full lane closures to expedite construction in past projects, and this option could be utilized to expedite construction on this project. However, to the extent practical, at this time it is anticpated that at least one traffic lane would be maintained in both directions, particularly during the morning and afternoon peak hours, and access to adjacent businesses via existing or temporary driveways would be maintained throughout the construction period. Additionally, a minimum 3-foot wide route for pedestrians would be provided along sidewalks; however, it's possible that some temporary sidewalk closures may be required, particularly during the early stages of construction. The construction contractor would also be responsible for developing detour plans and worksite traffic control plans and identifying haul routes in consultation with the City of Los Angeles (Department of Transportation) and City of San Fernando.

Coordination with School Districts, Cities of Los Angeles and San Fernando, and Emergency Responders

Temporary road closures may be required and access may be temporarily disrupted during construction activities. Coordination with local school districts would be conducted to disclose potential road closures and suggest detour routes for carpooling and access to schools. Additionally, coordination with fire and police departments of both the City of Los Angeles and City of San Fernando would also occur at this time. The Cities of Los Angeles and San Fernando would be given 30-45 day notices of upcoming roadway and sidewalk modifications to coordinate with relevant city personnel and to help coordinate public information regarding said roadway/sidewalk modifications. The intent of such coordination would be to identify and ensure adequate access routes are maintained and emergency services response times are maximized.

Haul Routes

The construction contractor would coordinate with the local jurisdictions to designate and identify haul routes for trucks and to establish hours of operation. The selected routes would be chosen in order to facilitate construction vehicles leaving the immediate area as expeditiously as practicable and thereby minimize noise, vibration, and other effects associated with construction hauling. Street sweeping would be implemented to keep haul routes clean and clear of debris.

Construction Phasing and Staging Plan

The preconstruction and site preparation phase would include the development and implementation of the Construction Phasing and Staging Plan by the construction contractor. This Plan would be required to control the impacts of construction in any segment by limiting the areas that may be constructed at a particular time. The goal of the Construction Phasing and Staging Plan would be to

maximize the work area under construction while minimizing the inconvenience to businesses and the motoring public. Staging areas identified by the contractor, will be included in the Plan or in a supplemental document, as required by Metro. Typically, staging areas would be located on parking lots, vacant private properties, or within public rights-of-way (including the curb lane), and may require temporary easements and city encroachment permits be obtained by the construction contractor.

Utility Relocations

Construction of the Curb-Running BRT Alternative may require utility relocations, including power pole relocations, along the alignment. During preconstruction, existing utilities may be more closely inspected and evaluated including the depth, condition, and exact location. An operation called potholing is typically done to physically locate certain utilities so that they can be appropriately marked and protected. Any utilities in conflict with construction activities would need to be relocated, modified, or protected in place. Protecting in place is the method of choice, as this is less disruptive to streets and less costly. In some instances, utility relocation may also be required to ensure access is provided for utility service providers to inspect and maintain their utility infrastructure.

2.3.1.2 Construction of Transit Structures and Infrastructure

This phase would involve construction of the dedicated BRT lanes and mixed-flow BRT lanes, sidewalk reconstruction, and relocation of bus stops (which would require approval of City of Los Angeles for stops within the city) including installation of new bus stop infrastructure such as shelters and seating.

The Curb-Running BRT Alternative would require pavement breaking, excavation and removal of the existing roadway pavement, the removal of curbs and gutters, grading of the roadbed to prepare it for paving, paving (an asphalt concrete overlay would be provided in place of the existing pavement for the dedicated BRT lanes and mixed-flow BRT lanes), installation of surface and subsurface drainage systems, reconstruction of sidewalks, and concrete finish work. With commencement of construction, public access to parking spaces, bus stops, curb lanes, and bicycle lanes within each work area would be prohibited. As described below, the duration of construction within each work zone is anticipated to be less than two weeks. At the start of construction within each work area, on-street parking areas would be removed for project-related construction activities. Temporary lane and street closures may be necessary under this alternative. The extent and duration of the closures would depend on a number of factors, including the construction contract limits and individual contractor's choices, and would be coordinated with the Cities of Los Angeles and San Fernando, as necessary. Restrictions on the extent and duration of the closures can be incorporated in the project construction specifications. In some cases, short-term full closures might be substituted for extended partial closures to reduce overall impacts.

Under this alternative, the construction contractor would develop detour routes, if required, to facilitate traffic movement through construction zones without significantly increasing cut-through traffic in adjacent residential areas. Additionally, where feasible, Metro would temporarily restripe roadways including restriping turn lanes, through lanes, and parking lanes at the affected intersections to maximize the vehicular capacity at those locations affected by construction closures. A majority of construction-related travel (i.e., deliveries, hauling, and worker trips) would be scheduled during the off-peak hours.

The construction of BRT guideways typically requires a range of equipment though prolonged use of heavy construction equipment is not anticipated. The types of equipment could range from hand-held pneumatic tools to jack-hammers, rock drills, and equipment to break the sidewalk and roadway surface, to compactors, graders, scrapers, pavers, front end loaders, dump trucks, mobile cranes, sweepers, concrete pumps, generators, and compressors used in roadway reconstruction. The photographs in Figures 2-1 through 2-3 depict construction activities and some of the equipment that would be required to construct the Curb-Running BRT Alternative.

Figure 2-1: Roadway Bed Grading and Paving

Source: Metro, 2015.

Figure 2-2: Concrete Pour for Bus Lane Surface

Source: Metro, 2015.

Figure 2-3: Concrete Finishing for Bus Lane Surface

Source: Metro, 2015.

This alternative also proposes the construction of 18 new bus stops, which would include new bus shelters and associated infrastructure such as seating and lighting. Proposed bus shelters and associated infrastructure would be similar to bus shelters Metro typically uses. Construction associated with the bus stops would include installation of benches and canopies and the construction of BRT platforms on the curbside. Construction of BRT platforms would include the construction of adjacent bus pads (which would require pavement breaking and excavation), establishment of subgrade and footings for canopies, installation of canopy supports and canopies, concrete paving, and installation of bus stop signage. In some cases, bicycle parking and landscaping at the stations would be provided Storage space for buses may also be included at some of the stops.

Construction under this phase is likely to occur simultaneously at several locations along the alignment and construction of the various project elements would overlap.

2.3.1.3 Construction of Support Systems and Finish Work

This phase would include installation of electrical, mechanical, communications, and traffic control systems and signals; street lighting (street lighting would be upgraded to provide consistent illumination along the alignment); landscaping; and signage. Additionally, the BRT lanes would be striped, any detours would be closed, cleanup of work areas would occur, and systems would be tested.

2.3.2 Construction Schedule

Construction of the Curb-Running BRT Alternative is expected to occur over an approximately 18-month period. However, the duration of construction within each work zone along the project corridor would likely be less than two weeks.

The approximate time frames for each of the general construction phases described above are presented below. It should be noted that these are rough estimates that will vary depending on conditions in the field and will be determined by the contractor. Also, the phases are likely to overlap to some degree and the sequence of construction activities may also vary to some extent from what was described above.

- Preconstruction and Site Preparation — 3 to 4 months
- Construction of Transit Structures and Infrastructure — 12 to 18 months
- Construction of Support Systems and Finish Work. — 12 to 18 months

Project construction would typically take place between the hours of 7 a.m. and 9 p.m. within the City of Los Angeles, in accordance with the Los Angeles Municipal Code Section 41.40(a) and between 7 a.m. and 6 p.m. within the City of San Fernando, in accordance with San Fernando City Code Section 34-28(10). Construction activities would be minimized during weekday AM and PM peak traffic periods (typically 7 to 9 a.m. and 4 to 6 p.m.).

2.4 Alternative 2 – Median Running BRT Alternative

The Median-Running BRT Alternative would consist of approximately 6.7 miles of dedicated median-running bus lanes along Van Nuys Boulevard between San Fernando Road and the Metro Orange Line and 2.5 miles along San Fernando Road and Truman Street between Van Nuys Boulevard and Sylmar/San Fernando Metrolink Station where the buses would operate in mixed-flow median lanes.

2.4.1 Construction Scenario

Similar to the Curb-Running BRT Alternative, construction of the Median-Running BRT Alternative would occur in phases. Construction activities would also be similar to those described above for the Curb-Running BRT Alternative. However, this alternative would not require the relocation of existing bus stops in the curb lanes as would occur under the Curb-Running BRT Alternative. Additionally, construction of the BRT lanes and associated bus stops and platforms in the median of Van Nuys Boulevard would result in more extensive construction over a longer period of time.

2.4.2 Construction Schedule

The duration of construction activities is anticipated to be greater under this alternative than the Curb-Running BRT Alternative, and would last approximately 24 months. The approximate time frames for each of the general construction phases are presented below. As discussed above for the Curb-Running BRT Alternative, these are rough estimates and are likely to vary based on conditions in the field. The phases are likely to overlap to some degree and the sequence of construction activities may also vary.

- Preconstruction and Site Preparation 4 to 6 months
- Construction of Transit Structures and Infrastructure 18 to 24 months
- Construction of Support Systems and Finish Work. 18 o 24 months

Similar to the Curb-Running BRT Alternative, construction of the Median-Running BRT Alternative would typically take place between the hours of 7 a.m. and 9 p.m. within the City of Los Angeles, in accordance with the Los Angeles Municipal Code Section 41.40(a) and between 7 a.m. and 6 p.m. within the City of San Fernando, in accordance with San Fernando City Code Section 34-28(10). Construction activities would be minimized during weekday AM and PM peak traffic periods (typically 7 to 9 a.m. and 4 to 6 p.m.).

2.5 Alternative 3 – Low-Floor LRT/Tram Alternative

The Low-Floor LRT/Tram Alternative would operate along a 9.2-mile route from the Sylmar/San Fernando Metrolink station in the north to the Van Nuys Metro Orange Line station to the south, The Low-Floor LRT/Tram Alternative would operate in a median dedicated guideway for approximately 6.7 miles along Van Nuys Boulevard between San Fernando Road and the Van Nuys Metro Orange Line station. The Low-Floor LRT/Tram Alternative would operate in mixed-flow traffic lanes on San Fernando Road from the intersection of San Fernando Road/Van Nuys Boulevard to just north of Wolfskill Street. Between Wolfskill Street and the Sylmar/San Fernando Metrolink station, the Low-Floor LRT/Tram Alternative would operate in a dedicated median guideway.

2.5.1 Construction Scenario

Construction of the Low-Floor LRT/Tram Alternative would proceed in three general phases similar to those identified above for the BRT alternatives. Differences between activities in each of the phases under this alternative and what is described above for the BRT alternatives are highlighted in the discussions below.

2.5.1.1 Preconstruction and Site Preparation

Similar to BRT Alternatives 1 and 2, the construction process under this alternative would begin with the site preparation and the pre-construction phase. The general activities under this phase would be similar to the activities described above for the BRT alternatives; however, unlike those alternatives, a number of properties would need to be acquired for the right-of-way required for project facilities. These facilities would include the MSF, which would occupy a site approximately 25 to 30 acres in size, and the TPSS, which would be spaced approximately 1.0 to 1.5 miles apart along the alignment. The MSF would be located at one of the three industrial sites near the intersections identified below:

- MSF Option A – Van Nuys Boulevard/Metro Orange Line
- MSF Option B – Van Nuys Boulevard/Keswick Street
- MSF Option C – Van Nuys Boulevard/Arminta Street

The MSF site ultimately selected could also serve as a staging area for construction equipment and materials. The acquisitions for Alternative 3, including MSF options, are summarized below in Table 2-2.

Table 2-2: Summary of Acquisitions for Alternative 3 MSF Options

Alternative and MSF Options		Affected Parcels			
		FT	PT	PUE	Total
Alternative 3	MSF Option A	87	3	0	90
	MSF Option B	62	3	0	65
	MSF Option C	66	4	0	70

Note: FT = Full Take, PT = Partial Take, PUE = Permanent Underground Easement
Source: KOA Corporation.

Construction Phasing and Staging Plan

The preconstruction and site preparation phase would include the development and implementation of the Construction Phasing and Staging Plan by the construction contractor. This Plan would be required to control the impacts of construction in any segment by limiting the areas that may be constructed at a particular time. The goal of the Construction Phasing and Staging Plan would be to maximize the work area under construction while minimizing the inconvenience to businesses and the motoring public. Staging areas identified by the contractor, will be included in the Plan or in a supplemental document, as required by Metro. Typically, staging areas would be located on parking lots, vacant private properties, or within public rights-of-way (including the curb lane), and may require temporary easements and city encroachment permits be obtained by the construction contractor.

Utility Relocations

Utility relocations similar to what was described above for the BRT alternatives (see Curb-Running BRT Alternative) will be required. However, for the rail alternatives (Low-Floor LRT/Tram Alternative and LRT Alternative), additional restrictions will apply to existing and new utilities in the vicinity of the track to protect both the utility and the guideway. The guideway being defined as that portion of the rail line that supports the track and its appurtenant structures. The restricted area is referred to as

the Restricted Utility Area (RUA). Existing longitudinal oriented utilities would not be generally permitted with the RUA but will be addressed on a case-by-case basis. Existing utilities that cross the guideway may remain if the vertical distance from the top of the rail to the top of the utility (or encasement) is not less than 4 feet; the material type, condition, and load capacity meet LRT requirements; and the distance from the centerline of an OCS support pipe foundation to the face of the utility or encasement is not less than 4 feet. Existing utilities crossing the track within the RUA would be relocated (lowered) to provide a minimum vertical distance from the top of rail to the top of encasement of 5.5 feet extending to the outside of the RUA. Access to longitudinal or crossing utilities would be made from outside the guideway.

2.5.1.2 Construction of the Transit Structures and Infrastructure

Because the Low-Floor LRT/Tram vehicles would operate on rail tracks and would be powered by overhead electrical wires, power duct bank, additional transit structures and associated infrastructure would be required to operate this alternative that would differ from those described above for the BRT alternatives. These additional structures and infrastructure would include the rail track guideway, overhead contact system, power duct bank, TPSS, Low-Floor LRT/Tram signaling systems, and MSF.

Temporary Street and Lane Closures, Detour Routes

At the start of construction within each work area, on-street parking areas would be removed for project-related construction activities. Temporary street and lane closures may be necessary under this alternative. Figure 2-4 shows an example of a temporary lane closure along a major street, similar to what could be expected to occur along Van Nuys Boulevard. The extent and duration of the closures would depend on a number of factors, including the construction contract limits and individual contractor's choices, and would be coordinated with the Cities of Los Angeles and San Fernando, as necessary. Restrictions on the extent and duration of the closures can be incorporated in the project construction specifications. In some cases, short-term full closures might be substituted for extended partial closures to reduce overall impacts. Community outreach to keep the public and businesses advised as to closures would be provided. Signage and access to businesses would also be provided.

Under this alternative, the construction contractor would develop detour routes to facilitate traffic movement through construction zones without significantly increasing cut-through traffic in adjacent residential areas. Additionally, where feasible, Metro would temporarily restripe roadways including restriping turn lanes, through lanes, and parking lanes at the affected intersections to maximize the vehicular capacity at those locations affected by construction closures. A majority of construction-related travel (i.e., deliveries, hauling, and worker trips) would be scheduled during the off-peak hours.

On-street parking may be removed to maximize vehicular capacity at those locations affected by construction closures. Additionally, traffic control officers may be placed at major intersections during peak hours to minimize delays related to construction activities.

Figure 2-4: Example of Temporary Traffic Control at Intersections During Construction

Source: Metro, 2015.

Construction of the Tram Guideway

The construction of the Low-Floor LRT/Tram guideway would require the use of earth-moving equipment, pneumatic tools, generators, concrete pumps, and similar equipment. Demolition, clearing, and earthwork would be required under this alternative. This would include excavation and demolition associated with the roadway, pile driving for structures, removal of curbs and gutters, and removal of sidewalks. Additionally, a pedestrian bridge would be constructed at the Sylmar station from the proposed platform to the Metrolink platform.

Construction of the Proposed Stations and Associated Infrastructure

Stations

Under this alternative, 28 stations would be constructed at approximately 1-mile intervals along the entire route. The Low-Floor LRT/Tram stations would be ADA compliant. The typical Low-Floor LRT/Tram station platform would be 8 feet wide for a side platform station to 16 feet wide for a center platform station, 180 feet long, and rise from the street and sidewalk level via ADA compliant accessible ramps to a 14-inch height. Access to the Low-Floor LRT/Tram station platforms would be from crosswalks. Canopies at the Low-Floor LRT/Tram stations would be approximately 13 feet high and would incorporate Low-Floor LRT/Tram station stop lighting to enhance safety.

The proposed stations would be constructed using standard construction techniques used by Metro. Common elements that would be installed during construction would include signage, maps, fixtures, furnishings, lighting, and communications equipment. Low-Floor LRT/Tram station platforms may include one or two entry ways; for stations with only one public access point, an emergency exit and stair would provide an exit. Low-Floor LRT/Tram stations would provide bench seating and contain ticket vending machines, video message signs, route maps, and stand-alone validators, as well as include the name and location of the Low-Floor LRT/Tram station.

Construction of the at-grade stations would involve cast-in place concrete or pre-cast panels to construct a platform. Station furnishings, including canopy, railings, lighting, seating, signage and fare vending equipment, would then be installed. The stations would be constructed of standard building materials such as concrete, steel, and other materials per Metro design criteria. Steel-wheeled or rubber-tired compactors, graders, and small bulldozers would be required for subgrade preparation below the platform. Construction of the stations would also require trucks for the removal of excavated soil; transit mix concrete trucks and concrete pumps; trucks to deliver forms, reinforcing steel, and other materials; and water trucks for dust control.

Stations would also include bike lockers at underground stations. In addition, signage and safety and security equipment, such as closed-circuit televisions, public announcement systems, passenger assistance telephones, and variable message signs (providing real-time information), would be installed.

Overhead Contact System

The Overhead Contact System (OCS) would consist of a set of two copper wires-a contact wire and a messenger wire-supported by steel poles mounted on reinforced concrete foundations. The Low-Floor LRT/Tram vehicles would include a telescoping pantograph or "arm" on the roof of the vehicles that would slide along the underside of the contact wire and deliver electric power to the vehicles. The OCS poles would be approximately 30 feet tall and typically located every 90 to 170 feet between two Low-Floor LRT/Tram tracks. Where the available public right-of-way width is extremely limited, the OCS poles would be placed on the sidewalk.

Construction of the OCS would initially involve constructing the foundations for the OCS poles. This would be accompanied by construction of duct banks and conduit for the underground electrical feeder lines from the TPSSs, followed by the installation of the OCS poles. The final stage would involve the installation of the TPSS feeder cables and overhead catenary lines, which would occur after guideway construction. Construction of the foundations and ducts, and installation of the poles and feeder cables, would require augers, cranes, back hoes, and concrete and material trucks. The overhead wires would be installed from the guideway using special vehicles, such as high-rail.

Traction Power Substations

TPSSs would be typically placed every 1.0 to 1.5 miles. The Low-Floor LRT/Tram vehicles would be powered by approximately nine TPSS units, which would be spaced relatively evenly along the alignment to provide direct current to the Low-Floor LRT/Tram vehicles. TPSSs would be located at points along the alignment where maximum power draw is expected (such as at stations and on inclines).

The size of each TPSS unit would be approximately 20 feet by 50 feet and about 12 to 14 feet high. The unit would require access to the local road network for equipment installation and maintenance. Construction and installation would require power to be fed to the OCS through underground feeders in duct banks and up a pole to a connection with the contact wire.

The TPSS units may be located within the public right-of-way, in parking lots, or in acquired parcels. For the purposes of analysis in this DEIS/DEIR, potential or typical TPSS locations were evaluated. However, other more suitable locations could be selected if they become available and are comparable to the potential locations analyzed herein.

Each TPSS site would be cleared and graded, and a concrete slab would be constructed with the appropriate underground utility connections. A grounding mat would be installed around the perimeter of the site. The TPSS is a prefabricated structure. It would be delivered, mounted on the slab, and connected to the utilities. Fencing or another type of barrier would be installed around the perimeter of the site, and architectural and landscaping treatments would be applied as feasible and in accordance with Metro design criteria. Graders, bobcats, forklifts, cranes, and concrete and materials/equipment trucks would be required to construct the TPSS facilities.

Maintenance and Storage Facilities

This alternative would include construction of a new MSF. The construction of the MSF would include standard methods associated with construction of track work and buildings, such as leveling of land, and construction of new sheds/maintenance buildings, as well as track work for storage of the rail vehicles. The MSF site would be approximately 25 to 30 acres in size. Described below are the rail connections that would need to be constructed for the rail vehicles to access the MSF site.

- For MSF Option A, right-of-way would be required for vehicles to travel between Van Nuys Boulevard and the MSF site, in an alignment between the Metro Orange Line and Bessemer Street.
- For MSF Option B, a turnoff south of the Van Nuys Metrolink Station is proposed where the LRT vehicles would travel to an MSF site located within the industrial areas just south of Raymer Street.
- For MSF Option C, a turnoff north of the Van Nuys Metrolink Station would lead west to the MSF site located north and south of Arminta Street.

In addition, parcel acquisitions would be required for the placement of traction power substations (TPSS) approximately 1.0 to 1.5 miles apart along the alignment.

Communications and Signaling

Coordination with traffic signal timing and Low-floor LRT/Trams equipped with transit signal priority equipment will allow for safe and improved operations and on-time performance.. The Low-Floor LRT/Tram would receive a green light only when conflicting traffic has a red light. Low-floor LRT/Trams would be equipped with transit signal priority equipment to allow for improved operations and on-time performance.

2.5.1.3 Construction of Support Systems and Finish Work

Construction activities associated with this phase would be similar to those described for the BRT alternatives above and would include installation of other system elements (mechanical, signals, gates, ticket vending, etc.) This could also include installation of communication systems, traffic signals, traffic control system installation, street lighting, landscaping, signing, and striping, closure of detours, cleanup activities, and testing and final commissioning of the system. With regards to traffic signals, the Low-Floor LRT/Trams would be controlled by the traffic signals that govern vehicular traffic on Van Nuys Boulevard. Every traffic signal on Van Nuys Boulevard would be modified to provide for Low-Floor LRT/Tram signals.

2.5.2 Construction Schedule

Under this alternative, construction is estimated to occur over a period of approximately 4 years. The construction period would be longer than for the BRT alternatives because of the additional structures, infrastructure, and support facilities required under this alternative.

The approximate time frames under this alternative for each of the general construction phases are presented below. As discussed above for the Curb-Running BRT Alternative, these are rough estimates and are likely to vary based on conditions in the field. The phases are likely to overlap to some degree and the sequence of construction activities may also vary.

- Preconstruction and Site Preparation 6 to 12 months
- Construction of Transit Structures and Infrastructure 40 to 48 months
- Construction of Support Systems and Finish Work. 40 to 48 months

Also, similar to the BRT alternatives, project construction would typically take place between the hours of 7 a.m. and 9 p.m. within the City of Los Angeles, in accordance with the Los Angeles Municipal Code Section 41.40(a) and 7 a.m. and 6 p.m. within the City of San Fernando, in accordance with San Fernando City Code Section 34-28(10). Construction activities would be minimized during weekday AM and PM peak hours (typically 7 to 9 a.m. and 4 to 6 p.m.).

As stated previously, the project corridor would most likely be divided into work zones for the purposes of construction. Therefore, each work zone may undergo a different level of construction at any given time.

2.6 Alternative 4 – LRT Alternative

Under Build Alternative 4, an LRT line would be constructed in a dedicated 9.2-mile guideway that would travel south from the Sylmar/San Fernando Metrolink station along San Fernando Road to Van Nuys Boulevard, and along Van Nuys Boulevard from San Fernando Road south to the Van Nuys Metro Orange Line Station. The LRT Alternative would include a segment in exclusive right-of-way within the Antelope Valley Metrolink railroad corridor, a segment within semi-exclusive right-of-way in the middle of Van Nuys Boulevard, and an underground 2.5-mile segment beneath Van Nuys Boulevard from just north of Parthenia Street to Hart Street. The acquisitions for Alternative 4, including MSF options, are summarized below in Table 2-3.

Table 2-3: Summary of Acquisitions for Alternative 4

Alternative and MSF Options		Affected Parcels			
		FT	PT	PUE	Total
Alternative 4	MSF Option A	109	11	0	120
	MSF Option B	93	11	6	110
	MSF Option C	97	12	8	117

Note: FT = Full Take, PT = Partial Take, PUE = Permanent Underground Easement
Source: KOA Corporation.

Under Alternative 4, the existing Metrolink tracks would need to be moved to the northern portion of the rail ROW. Figures 2-5 through 2-7 show MSF Options Acquisitions.

Figure 2-5: MSF Option A Acquisitions

Figure 4-3 - Index Map
MSF Option A with Alternative 4 Connection Acquisitions
Van Nuys Corridor Rapidway

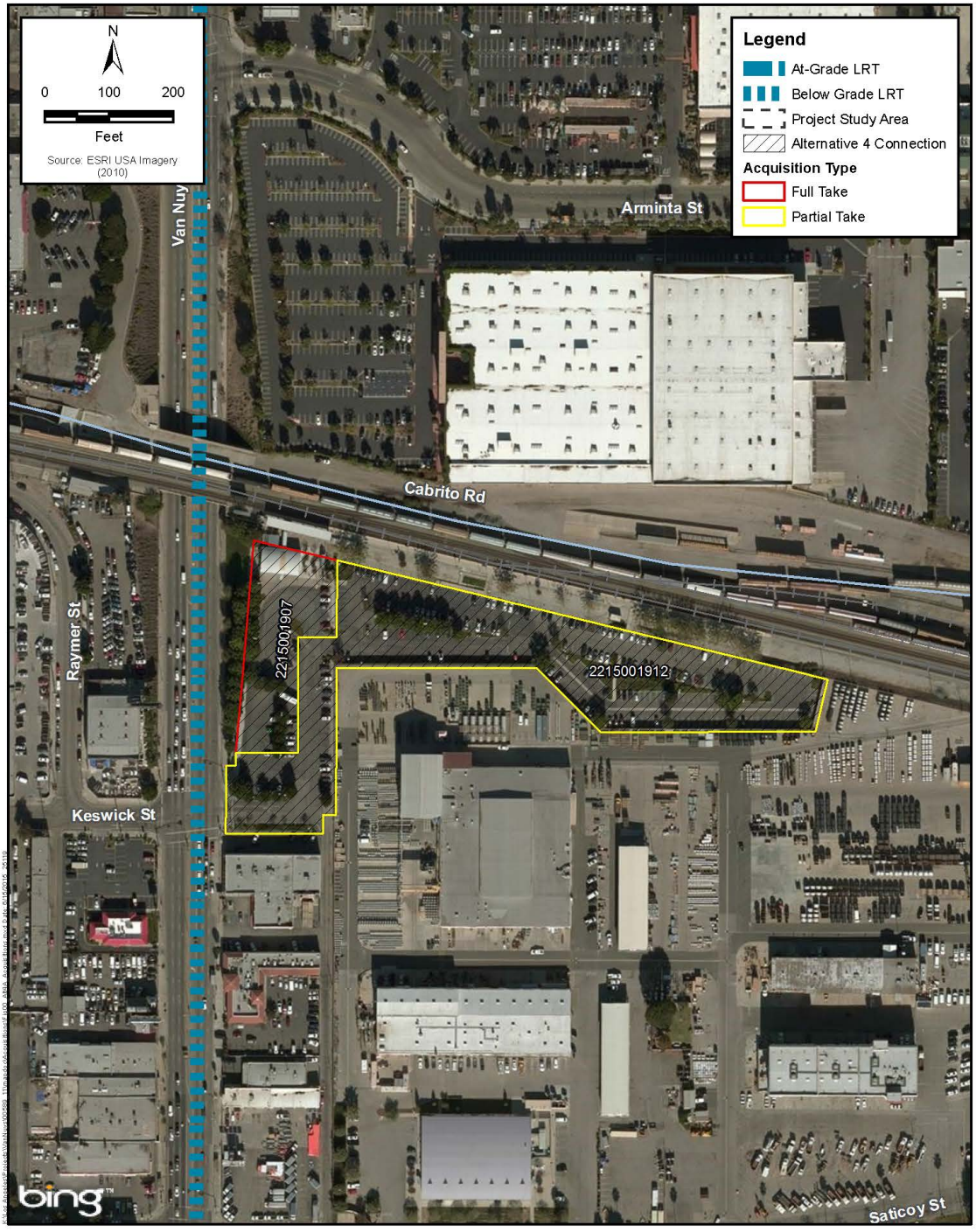


Figure 4-3 - Sheet 1
MSF Option A with Alternative 4 Connection Acquisitions
Van Nuys Corridor Rapidway

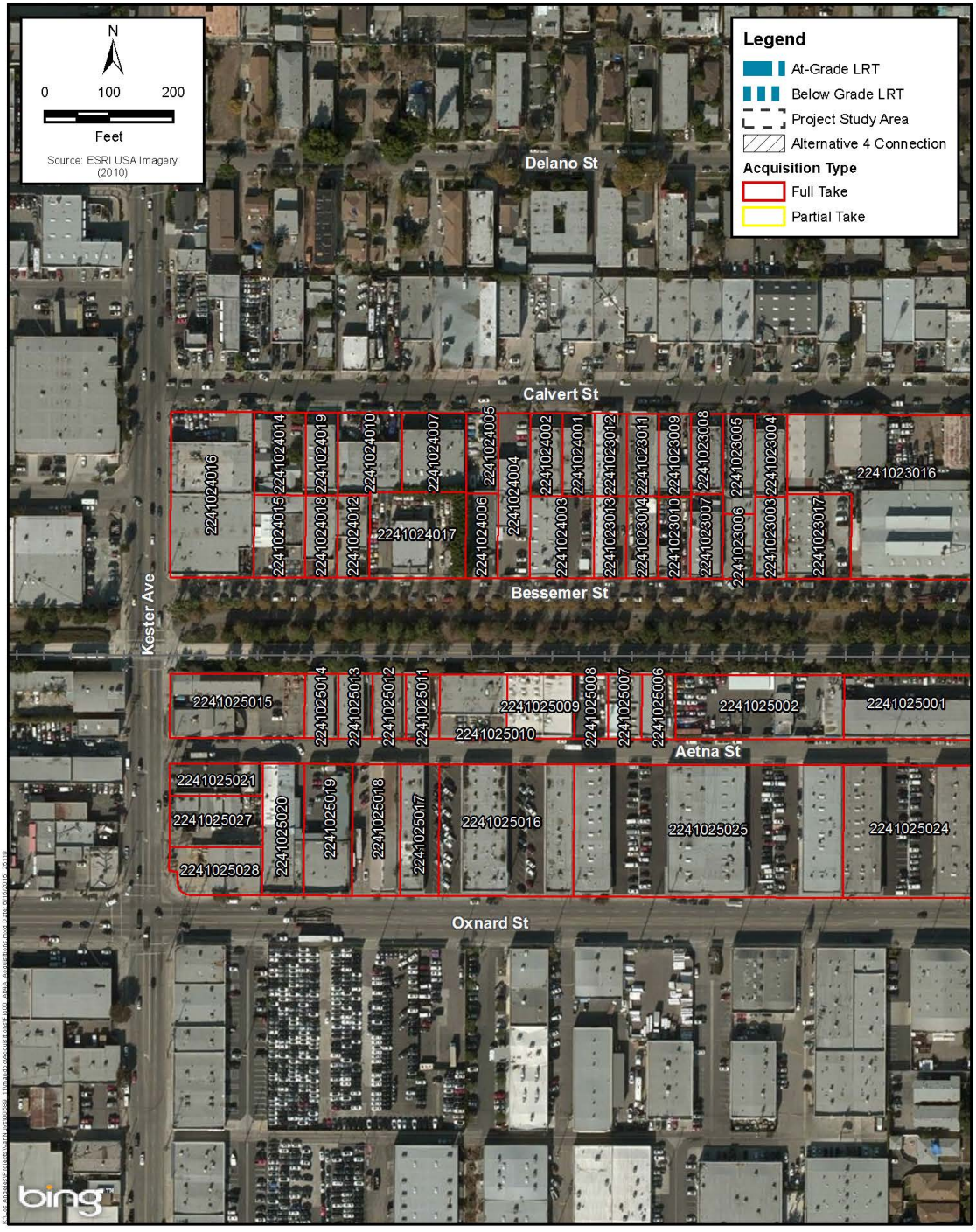


Figure 4-3 - Sheet 2
MSF Option A with Alternative 4 Connection Acquisitions
Van Nuys Corridor Rapidway

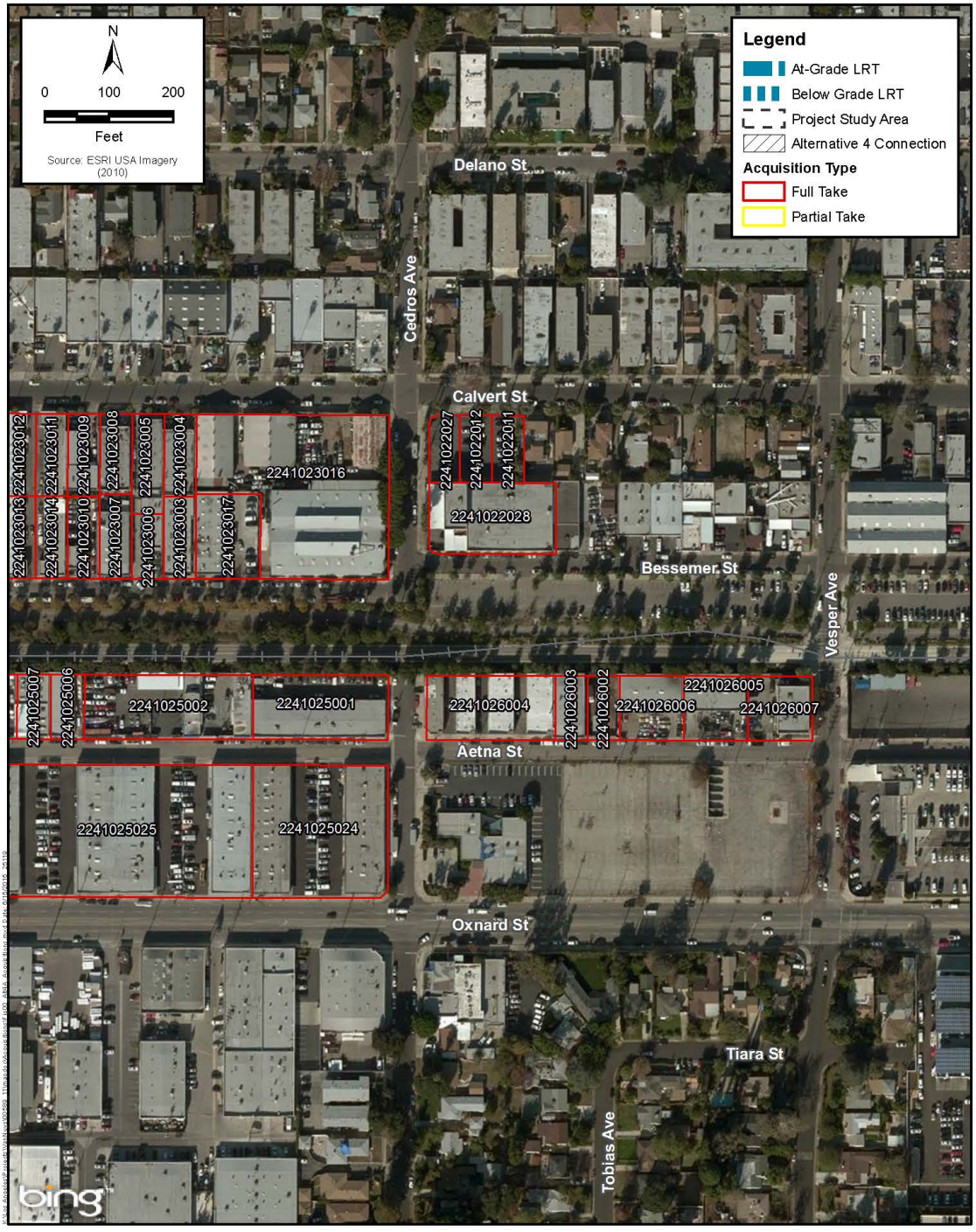


Figure 4-3 - Sheet 3
MSF Option A with Alternative 4 Connection Acquisitions
Van Nuys Corridor Rapidway

Figure 4-3 - Sheet 4
MSF Option A with Alternative 4 Connection Acquisitions
Van Nuys Corridor Rapidway

Figure 2-6: MSF Option B Acquisitions

Figure 4-4 - Index Map
MSF Option B with Alternative 4 Connection Acquisitions
Van Nuys Corridor Rapidway

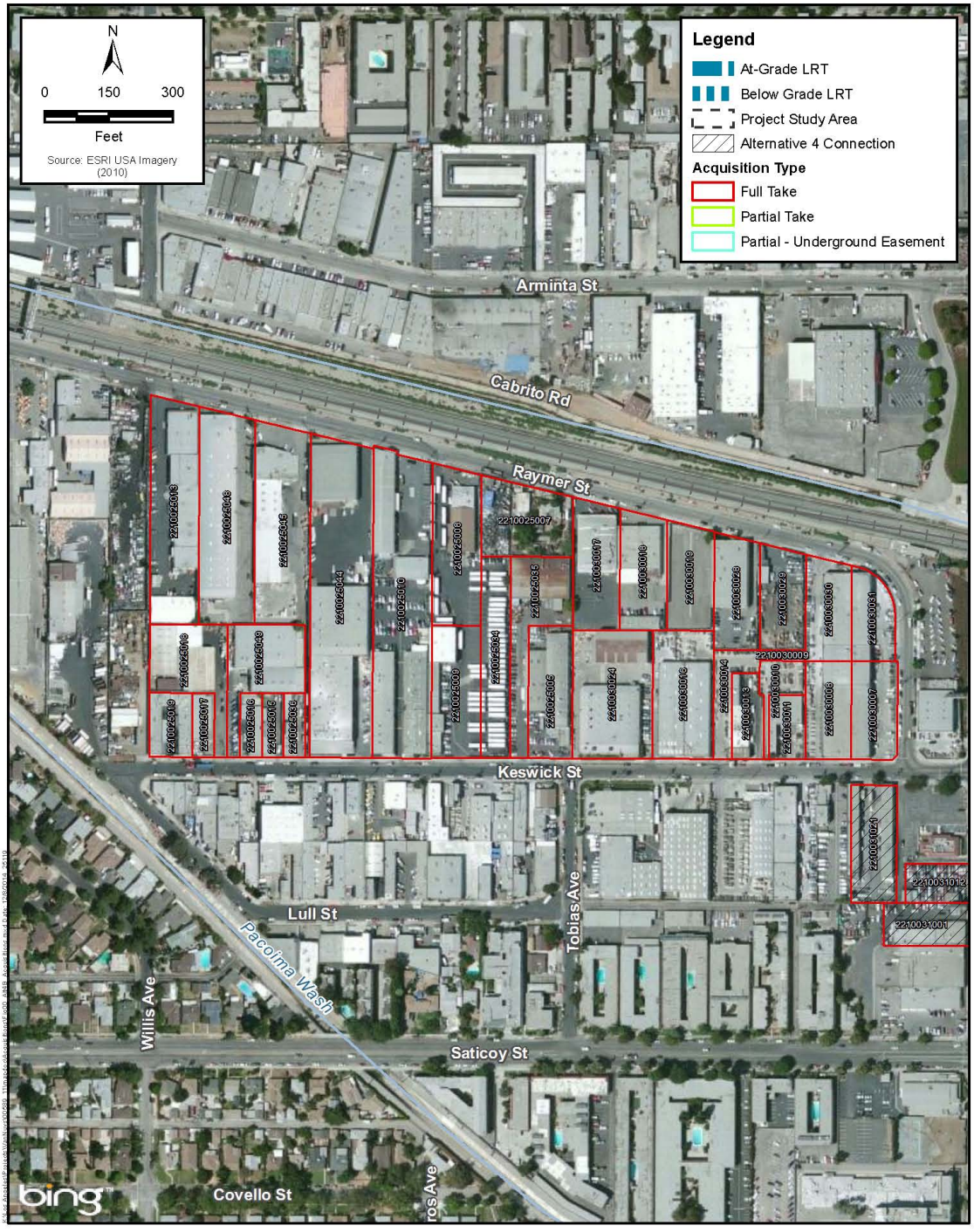


Figure 4-4 - Sheet 1
MSF Option B with Alternative 4 Connection Acquisitions
Van Nuys Corridor Rapidway

Figure 4-4 - Sheet 2
MSF Option B with Alternative 4 Connection Acquisitions
Van Nuys Corridor Rapidway

Figure 4-4 - Sheet 3
MSF Option B with Alternative 4 Connection Acquisitions
Van Nuys Corridor Rapidway

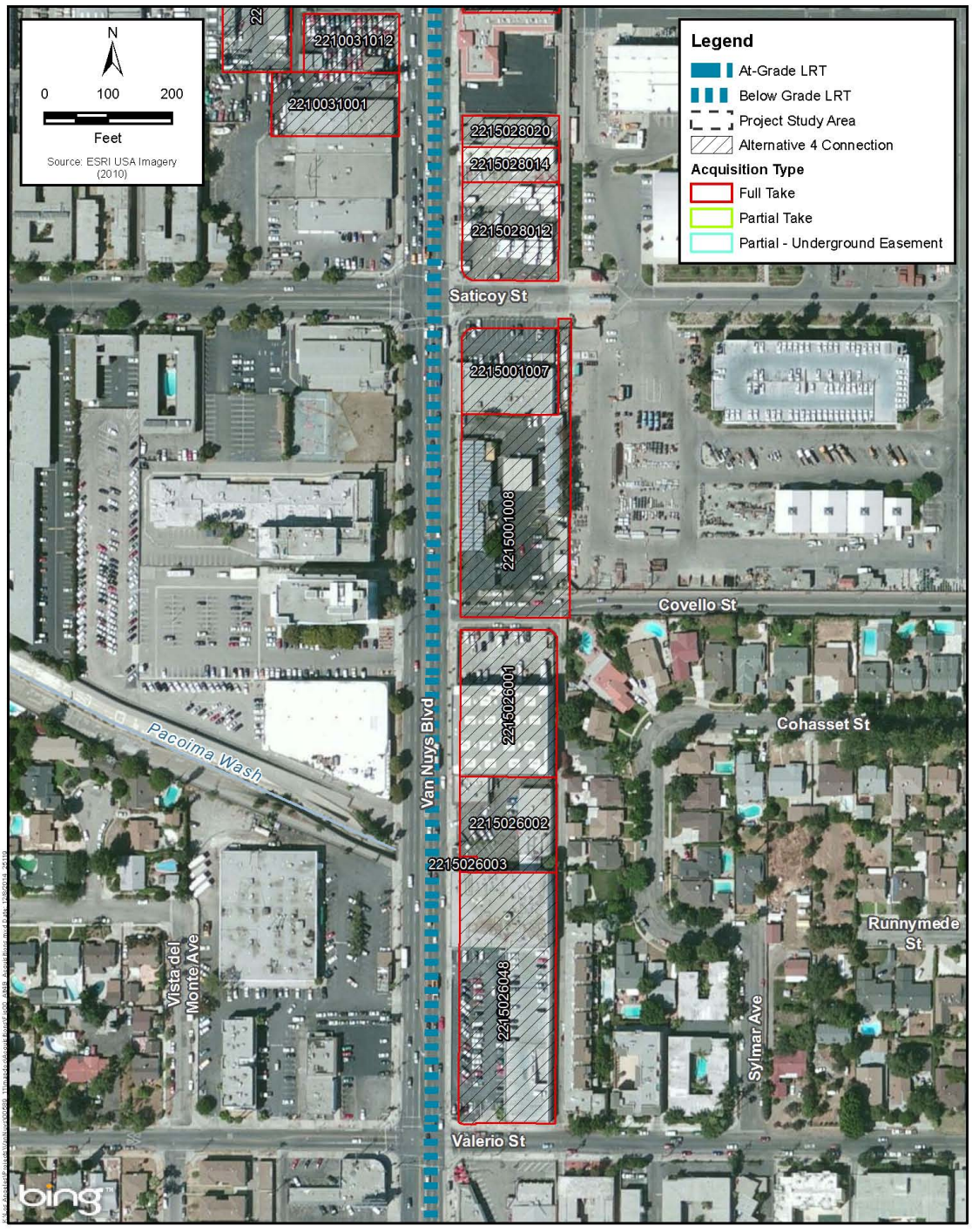


Figure 4-4 - Sheet 4
MSF Option B with Alternative 4 Connection Acquisitions
Van Nuys Corridor Rapidway

Figure 2-7: MSF Option C Acquisitions

Figure 4-5 - Index Map
MSF Option C with Alternative 4 Connection Acquisitions
Van Nuys Corridor Rapidway

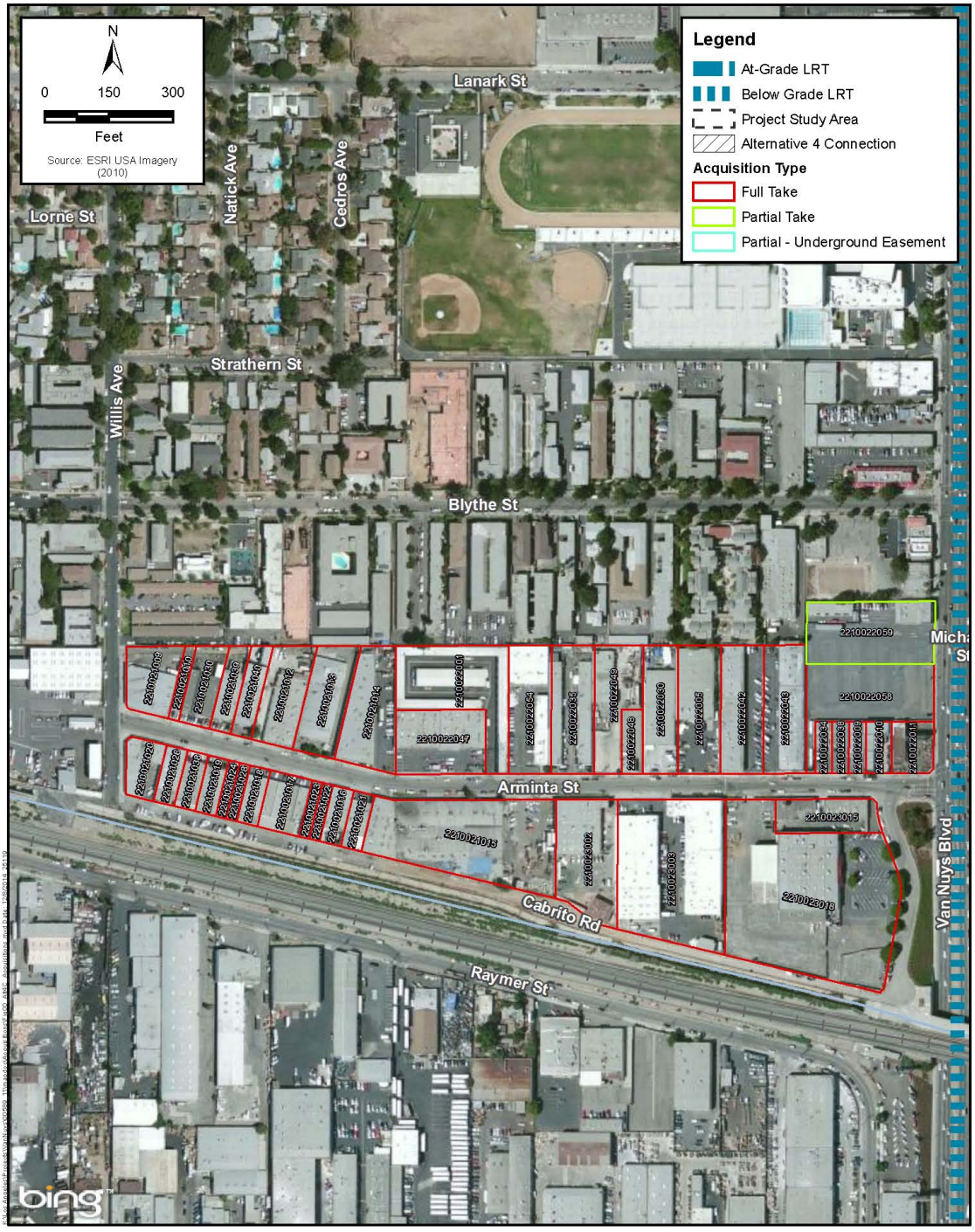


Figure 4-5 - Sheet 1
MSF Option C with Alternative 4 Connection Acquisitions
Van Nuys Corridor Rapidway

Figure 4-5 - Sheet 2
MSF Option C with Alternative 4 Connection Acquisitions
Van Nuys Corridor Rapidway

Figure 4-5 - Sheet 3
MSF Option C with Alternative 4 Connection Acquisitions
Van Nuys Corridor Rapidway

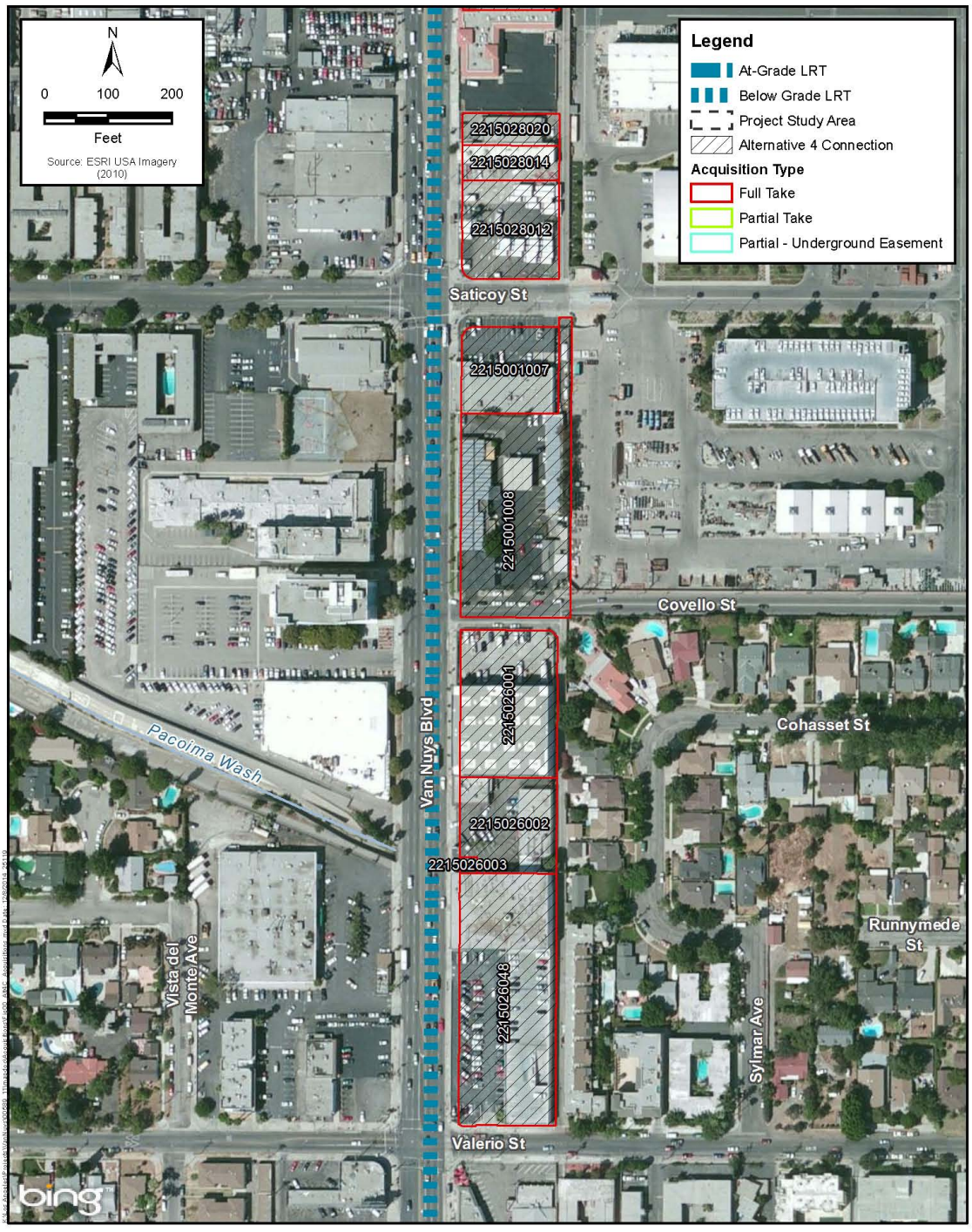


Figure 4-5 - Sheet 4
MSF Option C with Alternative 4 Connection Acquisitions
Van Nuys Corridor Rapidway

2.6.2 Construction Scenario

Similar to the other build alternatives, proposed construction activities would generally occur in phases, identified below, over a period of approximately 5 years.

- Preconstruction and Site Preparation
- Construction of Transit Structures and Infrastructure
- Construction of Support Systems and Finish Work.

The text that follows focuses on the construction features or methods unique to this alternative.

2.6.2.1 Preconstruction and Site Preparation

The activities under this phase would be similar to those described above for the Low-Floor LRT/Tram Alternative. However, a slightly larger number of properties would need to be acquired, primarily as a result of the right-of-way way required in the subway portal areas.

Additional investigations will also be required for this alternative to determine subsurface geotechnical conditions and to assess the conditions of existing buildings and other structures in proximity to the stations, tunnels, and other underground structures and to determine whether additional measures would be necessary to protect adjacent structures during excavation activities.

Construction Phasing and Staging Plan

The preconstruction and site preparation phase would include the development and implementation of the Construction Phasing and Staging Plan by the construction contractor. This Plan would be required to control the impacts of construction in any segment by limiting the areas that may be constructed at a particular time. The goal of the Construction Phasing and Staging Plan would be to maximize the work area under construction while minimizing the inconvenience to businesses and the motoring public. Staging areas identified by the contractor, will be included in the Plan or in a supplemental document, as required by Metro. Typically, staging areas would be located on parking lots, vacant private properties, or within public rights-of-way (including the curb lane), and may require temporary easements and city encroachment permits be obtained by the construction contractor.

2.6.2.2 Construction of Transit Structures and Infrastructure

Construction of the Proposed Stations and Associated Infrastructure

Under this alternative 14 stations would be constructed at approximately one-mile intervals along the entire route. Three stations would be underground near Sherman Way, the Van Nuys Metrolink station, and Roscoe Boulevard. Construction activities for the at-grade stations would be similar those described under Alternative 3, above.

Figure 2-8 is a photograph providing an example of construction of an LRT station in the street median.

Entry to the three underground stations would require the construction of an entry plaza and portal. Figures 2-9 through 2-11 show examples of construction activities required for the construction of the underground station portals. Figure 2-12 shows a typical below-grade LRT Station.

The entry plaza would be approximately 150 feet long and 90 feet deep and contain centrally placed and approximately 100 feet long by 60 feet wide entry structures rising to a height of approximately 15 feet. Each plaza would also contain landscape planting, and bicycle racks and/or storage. The entry portals would be covered with canopies, and the entry areas would contain ticket vending machines, video message signs, and route maps. The entry portals would provide access to stairs, escalators, and elevators leading to an underground LRT station mezzanine level, which, in turn, would be connected via additional stairs, escalators, and elevators to the underground LRT station platforms that would be 28 feet wide.

Figure 2-8: Example of Street Median LRT Station Construction

Source: Metro, 2015.

Figure 2-9: Example of In-Street Excavation

Source: Metro, 2015.

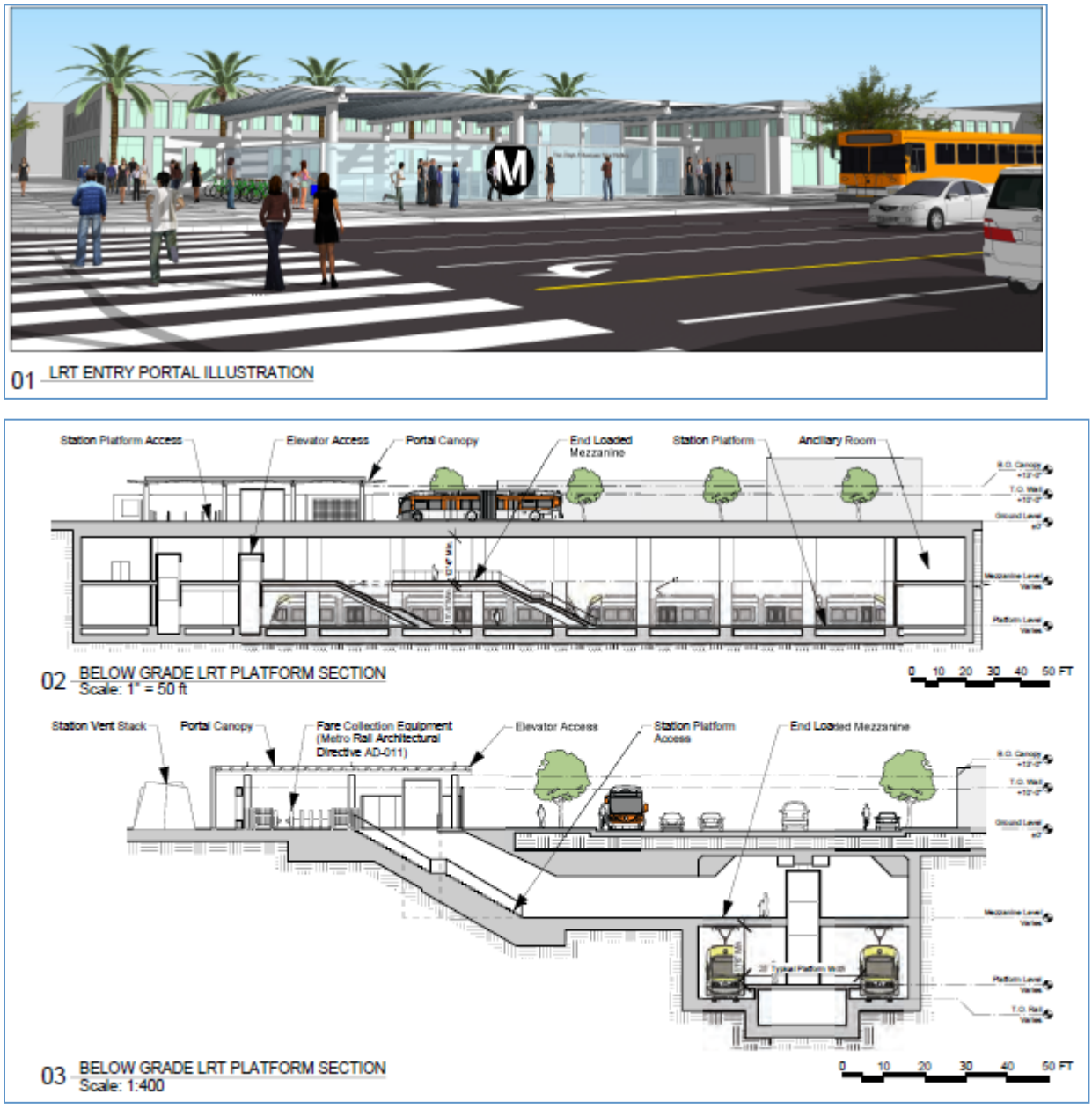
Figure 2-10: Example of Tunnel Portal Beam Installation

Source: Metro, 2015.

Figure 2-11: Example of Tunnel Portal Decking

Source: Metro, 2015.

Figure 2-12: Alternative 4 (Typical Below-Grade LRT Station)



Source: Metro, John Kaliski Architects, 2014.

Subway Construction

The subway portion of the alignment would be constructed using cut-and-cover techniques or a tunnel boring machine, or a combination of both. The method will be determined by the construction contractor, who will take into consideration a number of factors in determining which method would be the most appropriate for the subway portion of the LRT alignment. Each method is described in greater detail below. The descriptions below are based on information presented in the *Construction Methods Report* (March 2012) prepared for the Final EIS/EIR for the Westside Extension Project.

Cut-and-Cover

Cut-and-cover construction generally begins with the installation a system of temporary shoring to support the excavation in which the permanent structure would be constructed with temporary decking above the excavation. The temporary shoring, which would also be designed to support loads from adjacent building foundations, would be constructed in stages, first one side of the excavation and then the other. Soldier piles and timber lagging is a shoring method that has been used successfully on previous Metro projects. Soldier piles are steel beams that are concreted into pre-drilled holes, which carry the loads from the timer lagging placed against the excavated earth surface. Large steel struts would support the soldier piles. Once the temporary shoring has been constructed, excavation commences inside the area supported by the shoring. Utilities are supported from the steel beams as the soil is excavated around them. At subway station areas, the station box structure would be built within the excavated space, backfilled up to the surface or street level, and surface restored.

The excavated soils or soils would be moved to an off-street work site or closed parking/traffic lane and loaded into haul trucks. The estimated volume of to be excavated would total approximately 1,539,722 cubic yards. Assuming the use of 15-cubic-yard haul trucks, and 10-cubic-yard haul trucks at restricted locations, the total number of haul truck loads would range from approximately 102,648 to 153,972 or an estimated 112 to 169 trucks per day on average.

Contaminated soils would be separated as soon as they are identified during excavation, and would also be separated into temporary stockpiles. The soils would be handled, transported, and disposed of in accordance with all applicable regulations.

Excavated materials may be hauled at night, where possible, due to the congested freeways and surface streets around or near the excavation sites during daytime hours. The contractor would develop an excavation plan that defines haul routes, dust control, sweeping, and disposal sites.

Tunnel Boring

Under this scenario, excavation of the tunnel would be conducted using a tunnel boring machine (TBM). A TBM is a large machine that bores a circular tunnel by excavating rock and soil and installing precast concrete segments to support the ground around the tunnel opening. There are two classes of TBMs, hard rock and soft ground. Soft-ground TBMs are further divided into pressurized – face machines and no-pressurized face machines. Pressurized-face machines provide much better control of ground settlement and the ingress of ground water and gas into the tunnel. The appropriate TBM will be determined based on the results of further geotechnical investigations of subsurface conditions. Under this alternative, two circular tunnels approximately 20 to 21 feet in diameter would be constructed.

One of the three subway stations would be excavated first so it's ready to receive the TBM(s). A slurry processing plant and other TBM support facilities would be constructed on a laydown and storage site at the station so that they are ready to support delivery of the TBMs. Excavation of a TBM retrieval shaft would follow excavation at the station site that would receive the TBM. Use of the TBM(s) may require that they be removed through the retrieval shaft, and returned by road to station excavation site, where they would be reassembled and used to excavate the remaining portion of the tunnel.

As the TBM bores the tunnel, excavated materials (spoils) would be moved to the rear of the TBM by a screw conveyor and deposited on a conveyor belt that would then drop the spoils into hoppers-type mine cars that are then taken back to the launching area by a locomotive operating on temporary rail tracks fastened to the bottom of the tunnel. At the shaft, the mine cars are lifted out by crane or hoist,

and the material is loaded into trucks or temporarily stockpiled for off-site disposal. Alternatively, belt conveyor or pipe systems could be used to transport spoils through the tunnel and from the shaft to the surface. Depending on the type of TBM, the spoils may need to undergo partial treatment before being loaded onto trucks for disposal.

For a typical tunnel excavation, boring two tunnels at approximately 20 feet per 10-hour shift, the rate of spoil removal would be approximately 75 loose CY per hour, or approximately 5 trucks per hour, or 1 truck every 10 to 12 minutes. With temporary stockpiling of spoils on the site, the hauling could be partially deferred to nights and weekends.

Once a tunnel is clear of tunneling equipment, excavation and construction of tunnel cross-passages, tunnel invert, and walkways would commence.

Construction of the subway station structures would commence as soon as the tunnel work is completed, or when access to the tunnels through a particular station location is no longer required. Once the subway station structure is fully enclosed, the excavation above the station would be backfilled, station appendages would be constructed, and the street decking would be removed. Track work and support facilities (OCS) could then be installed.

2.6.2.3 Construction of Support Systems and Finish Work

Construction activities associated with this phase would be similar to those described for the BRT alternatives above and would include installation of other system elements (mechanical, signals etc.) This could also include installation of communication systems, traffic signals, traffic control system installation, street lighting, landscaping, signing, and striping, closure of detours, cleanup activities, and testing of systems. With regards to traffic signals, the Low-Floor LRT/Trams would be controlled by the traffic signals that govern vehicular traffic on Van Nuys Boulevard. Every traffic signal on Van Nuys Boulevard would be modified to provide for Low-Floor LRT/Tram signals.

2.6.2.4 Construction Schedule

Under this alternative, the duration of construction is estimated to be approximately 5 years. The construction period would be longer than for the Low-Floor LRT/Tram Alternative because of the subway segment of the alternative.

The approximate time frames under this alternative for each of the general construction phases are presented below. As discussed above for the other alternatives, these are rough estimates and are likely to vary based on conditions in the field. The phases are likely to overlap to some degree and the sequence of construction activities may also vary.

- Preconstruction and Site Preparation 0 to 6 months
- Construction of Transit Structures and Infrastructure 48-60 months
- Construction of Support Systems and Finish Work. 48-60 months

Also, similar to the other alternatives, project construction would typically take place between the hours of 7 a.m. and 9 p.m. within the City of Los Angeles, in accordance with the Los Angeles Municipal Code Section 41.40(a) and 7 a.m. and 6 p.m. within the City of San Fernando, in accordance with San Fernando City Code Section 34-28(10). Construction activities would be minimized during weekday AM and PM peak hours (typically 7 to 9 a.m. and 4 to 6 p.m.). Nighttime construction for tunnel excavation may be required and truck hauling of spoils may be required at night to avoid congested surface streets and highways.

Chapter 3
Summary of Construction Impacts

3.1 Land Use

No-Build Alternative

The No-Build Alternative would not involve new transportation or infrastructure improvements aside from projects currently under construction or funded for future construction. Therefore, under NEPA and CEQA, the No-Build Alternative would have no impacts on land use during construction.

TSM Alternative

Construction under the TSM Alternative would be minimal, involving the installation of new bus stops and signage. Typical construction methods for the minor work needed for bus stop installation would be used. Bus stops would be within the existing right-of-way; therefore, extended street closures would be unnecessary, and mobility would not be substantially limited during construction. Therefore, construction of the project would result in effects that are minor and adverse under NEPA and impacts that are less than significant under CEQA.

Build Alternative 1 - Curb-Running Bus Rapid Transit Alternative

Division of an Established Community

Construction of the Curb-Running BRT stations would require temporary traffic detours and truck routes, as well as sidewalk and street closures. Street closures could reduce pedestrian and vehicle mobility between communities throughout the study area during construction. However, with the implementation of the Traffic Management Plan, access would be retained around the project corridor during construction.

Conflicts with Local Land Use Plans

Construction activities would be conducted in compliance with local land use plans and codes. Construction in the City of Los Angeles would typically take place between the hours of 7 a.m. and 9 p.m., in accordance with Los Angeles Municipal Code Section 41.40(a); construction in the City of San Fernando would typically take place between the hours of 7 a.m. and 6 p.m. on weekdays, and 8 a.m. and 6 p.m. on Saturdays, in accordance with San Fernando Municipal Code Section 34-28(10).

Incompatibility with Adjacent and Surrounding Land Uses

The required construction easements (i.e., the areas needed temporarily during construction in addition to the actual project footprint) would vary along the alignment, depending on the type of construction and the adjacent land use.

The construction storage areas would be established near the project alignment and used for equipment and material storage. The storage areas would be located within the right-of-way, parking lots, or on vacant land and would not require land from adjacent properties.

During construction, the Curb-Running BRT Alternative would result in potential land use effects and impacts related to a short-term reduction in mobility. With the implementation of a Traffic Management Plan, these effects would be minor and adverse under NEPA, and impacts would be less than significant under CEQA.

Build Alternative 2 - Median-Running BRT Alternative

Division of an Established Community

Construction impacts would be similar to those described for Build Alternative 1

Conflicts with Local Land Use Plans

Construction impacts would be similar to those described for Build Alternative 1.

Incompatibility with Adjacent and Surrounding Land Uses

Construction impacts would be similar to those described for Build Alternative 1. With the implementation of a Traffic Management Plan, land use effects would be minor and adverse under NEPA, and impacts would be less than significant under CEQA.

Build Alternative 3 – Low-Floor LRT/Tram Alternative

Division of an Established Community

Construction of the Low-Floor LRT/Tram stations would require temporary traffic detours and truck routes, as well as sidewalk and street closures. Street closures for the Low-Floor LRT/Tram could be greater in number than the BRT Alternatives, as these alternatives would require the construction of additional infrastructure (e.g., OCS, dedicated guideway).

Street closures could reduce pedestrian and vehicle mobility between communities throughout the study area during construction. However, with the implementation of the Traffic Management Plan, access would be retained around the project corridor during construction.

Conflicts with Local Land Use Plans

Construction impacts would be similar to those described for Build Alternatives 1 and 2.

Incompatibility with Adjacent and Surrounding Land Uses

The required construction easements (i.e., the areas needed temporarily during construction in addition to the actual project footprint) would vary along the alignment, depending on the type of construction and the adjacent land use. The areas needed for construction storage and access would be established near the project alignment and would be located within the right-of-way, parking lots, on vacant land, or within the properties to be acquired for the proposed MSF. If additional land is required for construction, either as temporary construction easements or permanent acquisitions, affected properties would be minimized to the extent feasible and would be limited to commercial or industrial areas along the alignment. Therefore, incompatibility with adjacent and surrounding land uses is not anticipated.

During construction, the Low-Floor LRT/Tram Alternative would result in potential land use effects and impacts related to a short-term reduction in mobility. With the implementation of a Traffic Management Plan, these effects would be minor and adverse under NEPA, and impacts would be less than significant under CEQA.

Build Alternative 4 - Light Rail Transit Alternative

Division of an Established Community

Construction impacts would be similar to those described for Build Alternative 1.

Conflicts with Local Land Use Plans

Construction impacts would be similar to those described for Build Alternatives 1 and 2.

Incompatibility with Adjacent and Surrounding Land Uses

Construction impacts would be similar to those described for Build Alternative 3. With the implementation of a Traffic Management Plan, these effects would be minor and adverse under NEPA, and impacts would be less than significant under CEQA.

Mitigation Measures

No mitigation measures are required.

Impacts remaining after Mitigation

Impacts would be less than significant under CEQA and minor adverse under NEPA.

3.2 Economic and Fiscal Impacts

No-Build Alternative

For the No-Build Alternative, no construction costs impacts are estimated because no increased construction costs are associated with this alternative.

TSM Alternative

The construction costs for the TSM Alternative are estimated to be about $8.6 million. The TSM Alternative would generate an estimated 111 jobs. Of these jobs, 66 would be generated directly by construction and 19 would be generated indirectly. About 37 percent of these indirectly generated jobs in the Professional, Scientific and Technical Services Industry, while 16 percent would be in Management of Companies. The remaining 47 percent of indirect employment would be spread relatively evenly among 8 other industries. An additional 26 jobs would be induced through increased household spending by direct and indirect employees, with 22 percent of these induced jobs coming from the Health Care and Social Assistance Industry, 18 percent coming from Retail, and the remainder being spread relatively evenly among 10 other industries.

Total labor income for the TSM Alternative would be about $6.8 million, with $4 million of this being the result of direct construction impacts. Total Output for this alternative would be just over $16 million, $8.6 million of which would be generated directly by construction.

The TSM Alternative generates about $8.5 million in value added, with about $4.1 million coming from direct impacts of construction. Indirect impacts generate just about $2.1 million in value added, with Professional, Scientific and Technical Services contributing nearly 39 percent. Induced value added amounts to about $2.4 million with Real Estate contributing about 22 percent.

Build Alternative 1 – Curb-Running BRT Alternative

The construction costs for Alternative 1 are estimated to be about $260.0 million. Alternative 1 would generate an estimated 3,368 jobs. Of these jobs, 2,000 would be generated directly by construction and 577 would be generated indirectly. About 38 percent of these indirectly generated jobs in the Professional, Scientific and Technical Services industry, while 16 percent would be in Management of Companies. The remaining 46 percent of indirect employment would be spread among 15 other industries. An additional 790 jobs would be induced through increased household spending by direct and indirect employees, with 22 percent of these induced jobs coming from the Health Care and Social Assistance Industry, 18 percent coming from Retail, and the remainder being spread among 19 other industries.

Total labor income for Alternative 1 would be about $206.6 million, with $120.8 million of this being the result of direct construction impacts. Total Output for this alternative would be about $486.8 million, $259.8 million of which would be generated directly by construction. Alternative 1 generates about $257.7 million in value added, with about $123.4 million coming from direct impacts of construction. Indirect impacts generate just about $62.2 million in value added, with Professional, Scientific and Technical Services contributing nearly 39 percent. Induced value added amounts to about $72.1 million with Real Estate contributing 22 percent.

Build Alternative 2 – Median-Running BRT Alternative

The construction costs for Alternative 2 are estimated to be about $362 million. Alternative 2 would generate an estimated 4,693 jobs. Of these jobs, 2,788 would be generated directly by construction and 804 would be generated indirectly with about 37 percent of these indirectly generated jobs in the Professional, Scientific and Technical Services industry, while 16 percent would be in Management of Companies. The remaining 47 percent of indirect employment would be spread among 15 other industries. An additional 1,101 jobs would be induced through increased household spending by direct and indirect employees, with 22 percent of these jobs coming from the Health Care and Social Assistance Industry, 18 percent coming from Retail, and the remainder being spread among 16 other industries.

Total labor income for Alternative 2 would be about $287.9 million, with $168.4 million of this being the result of direct construction impacts. Labor income for jobs created via indirect impacts would be about $60.5 million. Labor income for induced jobs would be about $59.1 million, of which about 26 percent would be earned by employees in the Health Care and Social Services industry and 14 percent of which would be earned by employees in Retail. Total Output for this alternative would be about $678.4 million, $362.0 million of which would be generated directly by construction. Output generated by indirect impacts amounts to about $157.1 million. Alternative 2 generates about $359.2 million in value added, with about $172.0 million coming from direct impacts of construction. Indirect impacts generate about $86.7 million in value added, with Professional, Scientific and Technical Services contributing nearly 39 percent. Induced value added amounts to about $100.5 million with Real Estate contributing 22 percent.

Build Alternative 3 – Low-Floor LRT/Tram Alternative

Alternative 3 Option A. The construction costs for Alternative 3 Option A are estimated to be over $1.0 billion. Alternative 3 Option A would generate an estimated 13,134 jobs. Of these jobs, 7,802 would be generated directly by construction and 2,250 would be generated indirectly. About 37 percent of these are indirectly generated jobs in the Professional, Scientific and Technical Services industry, while 16 percent would be in Management of Companies. The remaining 47 percent of indirect employment would be spread among 17 other industries. An additional 3,082 jobs would be

induced through increased household spending by direct and indirect employees, with 22 percent of these jobs coming from the Health Care and Social Assistance Industry, 18 percent coming from Retail, and the remainder being spread among 16 other industries.

Total labor income for Alternative 3 Option A would be about $805.9 million, with $471.3 million of this being the result of direct construction impacts. Total Output for this alternative would be about $1.9 billion, $1.0 billion of which would be generated directly by construction. Output generated by indirect impacts amounts to about $439.7 million, of which 32 percent comes from the Professional, Scientific and Technical Services Industry and 24 percent being generated by manufacturing. Induced impacts of construction generate nearly $445.7 million of output, with the highest proportions coming from Real Estate at 19 percent and Health Care and Social Services at 17 percent.

Alternative 3 Option A generates about $1.0 billion in value added, with about $481.2 million coming from direct impacts of construction. Indirect impacts generate about $242.7 million in value added, with Professional, Scientific and Technical Services contributing nearly 39 percent. Induced value added amounts to about $281.2 million with Real Estate contributing 22 percent.

Alternative 3 Option B. The construction costs for Alternative 3 Option B are estimated to be about $1.0 billion. Alternative 3 Option B would generate an estimated 13,419 total jobs. Of these jobs, 7,971 would be generated directly by construction and 2,299 would be generated indirectly. About 37 percent of these indirectly generated jobs in the Professional, Scientific and Technical Services industry, while 16 percent would be in Management of Companies. The remaining 47 percent of indirect employment would be spread among 17 other industries. An additional 3,149 jobs would be induced through increased household spending by direct and indirect employees, with 22 percent of these jobs coming from the Health Care and Social Assistance Industry, 18 percent coming from Retail, and the remainder being spread among 18 other industries.

Total labor income for Alternative 3 Option B would be about $823.3 million, with $481.5 million of this being the result of direct construction impacts. Labor income for jobs created via indirect impact would be about $173.0 million, 49 percent of which would be earned by employees in the Professional, Scientific and Technical Services Industry. Labor income for induced jobs would be about $168.9 million, of which about 26 percent would be earned by employees in the Health Care and Social Services Industry and 14 percent of which would be earned by employees in Retail Trade.

Total Output for this alternative would be just over $1.9 billion, about $1.0 billion of which would be generated directly by construction. Output generated by indirect impacts amounts to about $449.2 million. Induced impacts of construction generate over $455.3 million of output.

Alternative 3 Option B generates about $1.0 billion in value added, with about $491.7 million coming from direct impacts of construction. Indirect impacts generate about $248.0 million in value added, with Professional, Scientific and Technical Services contributing nearly 39 percent. Induced value added amounts to about $287.3 million with Real Estate contributing 22 percent.

Alternative 3 Option C. The construction costs for Alternative 3 Option C are estimated to be about $1.0 billion. Alternative 3 Option C would generate an estimated 13,165 jobs. Of these jobs, 7,820 would be generated directly by construction and 2,255 would be generated indirectly. About 37 percent of these indirectly generated jobs in the Professional, Scientific and Technical Services industry, while 16 percent would be in Management of Companies. The remaining 47 percent of indirect employment would be spread among 17 other industries. An additional 3,090 jobs would be induced through increased household spending by direct and indirect employees, with 22 percent of these jobs coming from the Health Care and Social Assistance Industry, 18 percent coming from Retail, and the remainder being spread among 18 other industries.

Total labor income for Alternative 3 Option C would be about $807.7 million, with $472.4 million of this being the result of direct construction impacts. Labor income for jobs created via indirect impact would be about $169.7 million. Labor income for induced jobs would be about $165.7 million.

Total Output for this alternative would be about $1.9 billion, $1.0 billion of which would be generated directly by construction. Output generated by indirect impacts amounts to about $440.7 million. Induced impacts of construction generate $446.7 million of output.

Alternative 3 Option C generates about $1.0 billion in value added, with about $482.4 million coming from direct impacts of construction. Indirect impacts generate just about $243.3 million in value added, with Professional, Scientific and Technical Services contributing nearly 39 percent. Induced value added amounts to about $281.9 million.

Build Alternative 4 – LRT Alternative

Alternative 4 Option A. The construction costs for Alternative 4 Option A are estimated to be about $2.5 billion. Alternative 4 Option A would generate an estimated 33,157 jobs. Of these jobs, 19,798 would be generated directly by construction and 5,637 would be generated indirectly. About 37 percent of these indirectly generated jobs in the Professional, Scientific and Technical Services industry, while 16 percent would be in Management of Companies. The remaining 47 percent of indirect employment would be spread among 17 other industries. An additional 7,722 jobs would be induced through increased household spending by direct and indirect employees, with 22 percent of these jobs coming from the Health Care and Social Assistance Industry, 18 percent coming from Retail, and the remainder being spread among 18 other industries.

Total labor income for Alternative 4 Option A would be about $2.0 billion. Labor income for jobs created via indirect impact would be about $424.1 million, 49 percent of which would be earned by employees in the Professional, Scientific and Technical Services Industry. Labor income for induced jobs would be about $414.1 million, of which about 26 percent would be earned by employees in the Health Care and Social Services Industry and 14 percent of which would be earned by employees in Retail Trade.

Total Output for this alternative would be about $4.8 billion, about $2.5 billion of which would be generated directly by construction. Output generated by indirect impacts amounts to about $1.1 billion. Induced impacts of construction also generate about $1.1 billion of output.

Alternative 4 Option A generates about $2.5 billion in value added, with about $1.2 billion coming from direct impacts of construction. Indirect impacts generate about $608.1 million in value added. Induced value added amounts to about $704.6 million.

Alternative 4 Option B. The construction costs for Alternative 4 Option B are estimated to be about $2.7 billion. Alternative 4 Option B would generate an estimated 35,518 jobs. Of these jobs, 21,098 would be generated directly by construction and 6,085 would be generated indirectly. About 37 percent of these indirectly generated jobs in the Professional, Scientific and Technical Services industry, while 16 percent would be in Management of Companies. The remaining 47 percent of indirect employment would be spread among 17 other industries. An additional 8,336 jobs would be induced through increased household spending by direct and indirect employees, with 22 percent of these jobs coming from the Health Care and Social Assistance Industry, 18 percent coming from Retail, and the remainder being spread among 18 other industries.

Total labor income for Alternative 4 Option B would be about $2.2 billion. Labor income for jobs created via indirect impact would be about $457.8 million, 49 percent of which would be earned by employees in the Professional, Scientific and Technical Services Industry. Labor income for induced

jobs would be about $446.9 million, of which about 26 percent would be earned by employees in the Health Care and Social Services Industry and 14 percent of which would be earned by employees in Retail Trade. Total Output for this alternative would be about $5.1 billion, about $2.7 billion of which would be generated directly by construction. Output generated by indirect impacts amounts to about $1.2 billion, of which 32 percent comes from the Professional, Scientific and Technical Services Industry and 24 percent is generated by manufacturing. Induced impacts of construction also generate about $1.2 billion of output, with the highest proportions coming from Real Estate at 19 percent and Health Care and Social Services at 17 percent.

Alternative 4 Option B generates about $2.7 billion in value added, with about $1.3 billion coming from direct impacts of construction. Indirect impacts generate about $656.4 million in value added. Induced value added amounts to about $760.6 million.

Alternative 4 Option C. The construction costs for Alternative 4 Option C are estimated to be just under $2.7 billion. Alternative 4 Option C would generate an estimated 34,372 jobs. Of these jobs, 20,417 would be generated directly by construction and 5,888 would be generated indirectly. About 37 percent of these indirectly generated jobs in the Professional, Scientific and Technical Services industry, while 16 percent would be in Management of Companies. The remaining 47 percent of indirect employment would be spread among 17 other industries. An additional 8,067 jobs would be induced through increased household spending by direct and indirect employees, with 22 percent of these jobs coming from the Health Care and Social Assistance Industry, 18 percent coming from Retail, and the remainder being spread among 18 other industries.

Total labor income for Alternative 4 Option C would be about $2.1 billion. Labor income for jobs created via indirect impact would be about $443.0 million. Labor income for induced jobs would be about $432.5 million.

Total Output for this alternative would be just under $5.0 billion, about $2.7 billion of which would be generated directly by construction. Output generated by indirect impacts amounts to about $1.2 billion. Induced impacts of construction also generate about $1.2 billion of output.

Alternative 4 Option C generates about $2.6 billion in value added, with just under $1.3 billion coming from direct impacts of construction. Indirect impacts generate about $635.3 million in value added, with Professional, Scientific and Technical Services contributing nearly 39 percent. Induced value added amounts to about $736.0 million.

Mitigation Measures

TSM Alternative

Construction would have temporary impacts on commercial and industrial businesses, particularly those near or adjacent to construction sites. Sidewalk space might be taken temporarily for alignment construction, thereby reducing business access. Business impacts could include reduced visibility of commercial signs and businesses. These construction impacts for the TSM Alternative should be monitored during the construction period so they would be more limited than the build alternatives and generally would be short in duration. However, they could in turn produce minor economic impacts to commercial establishments.

There are a number of mitigation measures that could be undertaken to temper these impacts.

Examples include the following.

- Notify property owners, businesses, and residences of major construction activities (e.g., utility relocation/disruption and milestones; re-routing of delivery trucks).

- Whenever possible, develop detours for any road or sidewalks to be closed during construction. Post signs (in appropriate languages) alerting pedestrians, bicyclists, and motorists of road and sidewalk closures and detours. Ensure pedestrian detours are accessible to seniors and disabled persons. Develop Worksite Traffic Control Plans in conjunction with the County and municipal departments of transportation to accommodate automobile, bicycle, and pedestrian traffic.
- Provide crossing guards as needed in the vicinity of construction sites, haul routes, and other relevant sites as proposed in the California Department of Transportation (DOT) Traffic Manual, Chapter 10-07.3, Warrants for Adult Crossing Guards.
- Erect barriers as needed during construction to minimize trespassing and vandalism.
- Forewarn the public of any anticipated road closures or detours due to construction activity.

Build Alternatives 1–4

Construction would have temporary impacts on commercial and industrial businesses, particularly those near or adjacent to construction sites. Sidewalk space might be taken temporarily for alignment construction, thereby reducing business access. Business impacts could include reduced visibility of commercial signs and businesses. These construction impacts could in turn produce minor economic impacts to commercial establishments.

There are a number of mitigation measures that could be undertaken to temper these impacts, including the following:

- Metro Public Affairs staff and construction personnel would contact and interview individual businesses to identify business usage, delivery, and shipping patterns, as well as critical times of the day or year for business activities to aid in developing Worksite Traffic Control Plans and to ensure that critical business activities are not disrupted.
- During construction, develop, fund, and maintain a telephone hotline and one or more Metro Field Offices with staff to address community issues and concerns as they arise. Office could be open from 9 a.m.–5 p.m. weekdays and any weekends when work occurs. Schedule would be developed prior to construction. The office would provide a physical location where information pertaining to construction can be exchanged. Ensure that all potentially affected persons and businesses know the name and telephone number(s) of public affairs staff that they can contact if needed. The contractor staffing plan is subject to Metro review.
- Participate in local events to promote awareness of the project.
- Notify property owners, businesses, and residences of major construction activities (e.g., utility relocation/disruption and milestones; re-routing of delivery trucks).
- Provide literature to public and news media, schedule promotional displays, participate in community committees, and make presentations, as needed, about the project.
- Coordinate business outreach programs, and implement promotions for businesses most affected by the construction.
- Whenever possible, develop detours for any road or sidewalks to be closed during construction. Post signs (in appropriate languages) alerting pedestrians, bicyclists, and motorists of road and sidewalk closures and detours. Ensure pedestrian detours are accessible to seniors and disabled persons. Develop Worksite Traffic Control Plans in conjunction with the County and municipal departments of transportation to accommodate automobile, bicycle, and pedestrian traffic.
- Maintain access to community facilities affected by construction activities

- Develop a community outreach plan to notify local communities of construction schedules, road and sidewalk closures, and detours. Coordinate with local communities during preparation of traffic management plans to minimize potential construction impacts to community resources and special events. Consider limiting construction activities during special events.
- During construction, provide temporary replacement or shared parking as needed to absorb the loss of parking due to acquisitions. Temporary parking could be added by constructing surface lots on nearby vacant parcels or restriping nearby streets to allow diagonal on-street parking.
- Provide crossing guards as needed in the vicinity of construction sites, haul routes, and other relevant sites as proposed in the California Department of Transportation (DOT) Traffic Manual, Chapter 10-07.3, Warrants for Adult Crossing Guards.
- Erect barriers as needed during construction to minimize trespassing and vandalism.
- Forewarn the public of any anticipated road closures or detours due to construction activity.

Impacts remaining after Mitigation

Impacts would be less than significant under CEQA and minor adverse under NEPA.

3.3 Community and Neighborhood Impacts

No-Build Alternative

The No-Build Alternative would not involve new transportation or infrastructure improvements aside from projects currently under construction or funded for future construction. Therefore, under NEPA and CEQA, the No-Build Alternative would have no construction impacts on communities and neighborhoods.

TSM Alternative

Construction under the TSM Alternative would be minimal, involving the installation of new bus stops and signage. Typical construction methods for the minor work needed for bus stop installation would be used. Bus stops would be within the existing right-of-way; therefore, extended street closures would be unnecessary, and mobility would not be substantially limited during construction. During construction, this alternative would result in minimal impacts on the social, economic, and physical conditions of the communities and neighborhoods in the project study area. Therefore, under NEPA, construction of this alternative would result in minor adverse impacts, and under CEQA, impacts would be less than significant.

Build Alternatives 1 through 4

Construction impacts would vary for the build alternatives, with less severe impacts resulting from the Curb-Running and Median-Running BRT Alternatives, moderately severe impacts resulting from the Low-Floor LRT/Tram Alternative, and the most severe impacts resulting from the LRT Alternative.

Under NEPA, the construction of the build alternatives could result in potentially adverse effects related to mobility and access, and emergency response resulting from temporary sidewalk, lane, and road closures, and temporary removal of parking; business viability through a temporary decrease in access to businesses; economic conditions, and social and community interactions, from business displacements, and potential job losses resulting from construction easements required for the Low-Floor LRT/Tram and LRT Alternatives; noise, air quality, and visual intrusions from construction

activities and equipment; motorist, pedestrian, and bicycle safety from proximity to construction activities; and the potential for increased crime at construction sites.

Many of the construction effects would be short-term and temporary, and would be reduced through construction management and abatement measures and mitigation measures. With the implementation of mitigation measures, potential construction effects would be minor and adverse for mobility and access, noise, air quality, and visual intrusions, motorist, pedestrian, and bicycle safety, and crime. Economic and social effects from business displacement, and potential job losses, would remain substantial and adverse after implementation of mitigation measures.

Under CEQA, construction impacts from the build alternatives would be potentially significant because of the potential for construction activities to decrease bicycle and pedestrian safety, substantially degrade visual character and quality, interfere with emergency access and evacuation plans, substantially increase noise levels, and expose sensitive receptors (e.g., residential and recreational areas) to substantial dust and odor emissions. Construction impacts would be short-term and temporary, and would be reduced through construction management and abatement measures. In addition, mitigation measures are included to reduce or minimize potentially significant impacts. With the implementation of mitigation measures, impacts would be less than significant.

Mitigation Measures

Safety and Security

Safety MM-16 (All Build Alternatives): Alternate walkways for pedestrians shall be provided around construction staging sites in accordance with American with Disability Act (ADA) requirements.

Safety MM-17 (All Build Alternatives): All pedestrian and bike detour locations around staging sites shall be signed and marked in accordance with the Manual on Uniform Traffic Control Devices "work zone" guidance, and other applicable local and state requirements.

Safety MM-18 (All Build Alternatives): Work plans and traffic control measures shall be coordinated with emergency responders to prevent effects to emergency response times.

Community Mobility and Access

Metro would coordinate with local transit agencies in advance to communicate closures, communicate information on any changes to bus service that would result from the Project build alternatives, and develop detours as appropriate. Bus stops within work areas would need to be relocated, with warning signs posted in advance of the closure, and warnings and alternate stop notifications posted during the extent of the closure.

Metro, the construction contractor and LADOT would coordinate on the preparation of a traffic management plan to facilitate the flow of traffic in and around the construction zones. This mitigation measure would also apply to transit service. Although more measures may be added, typical measures included in a traffic management plan are:

- Schedule a majority of construction-related travel (i.e., deliveries, hauling, and worker trips) during the off-peak hours;
- Construction activities would be minimized during weekday AM and PM peak hours (typically 7:00 to 9:00 AM and 4:00 to 6:00 PM);
- Develop detour routes to facilitate traffic movement through construction zones without significantly increasing cut-through traffic in adjacent residential areas;

- Temporarily restripe roadway such as restriping turning lanes, through lanes, and parking lanes at the affected intersections to maximize the vehicular capacity at those locations affected by construction closures;
- Temporarily remove on-street parking to maximize the vehicular capacity at those locations affected by construction closures;
- Place station traffic control officers at major intersections during peak hours to minimize delays related to construction activities;
- Develop and implement an outreach program to inform the general public about the construction process and planned roadway closures; and
- Develop and implement a program with business owners to minimize effects to businesses during construction activity, including but not limited to signage programs.
- Metro would also coordinate with the local jurisdictions and Caltrans to designate and identify haul routes for trucks and to establish hours of operation. The selected routes should minimize noise, vibration, and other effects.
- To the extent practical, traffic lanes will be maintained in both directions, particularly during the morning and afternoon peak hours, and access to adjacent businesses via existing or temporary driveways would be maintained throughout the construction period.
- Metro would coordinate with local school districts to disclose potential road closures and suggest detour routes for carpooling and accessing schools.

Existing and planned pedestrian and bicycle facilities would be affected during construction activities for the implementation of this alternative. Closure of these facilities, and establishment of detours to parallel routes, would be implemented as part of TMPs to be approved by LADOT.

Mitigation measures for potential impacts to pedestrian and bicycle impacts during the construction period are as follows:

- Provision of bicycle detour signs, as appropriate, to route bicyclists away from detour areas with minimal-width travel lanes and onto parallel roadways.
- Provision of sidewalk closure and pedestrian route detour signs, as appropriate, to safely provide alternate routes around work areas where sidewalks would be closed for safety reasons or for specific construction work within the sidewalk area.

Impacts remaining after Mitigation

Under NEPA, all of the build alternatives would result in potentially substantial adverse effects related to access and safety from the potential for temporary delays in emergency vehicle response, and bicycle and vehicle collisions. Mitigation measures are included above in Section 5.2 (Operational Mitigation Measures). However, after implementation of the proposed mitigation measures, potentially substantial adverse effects and cumulatively considerable effects would remain.

The Low-Floor Tram/LRT and LRT Alternatives would also result in potentially substantial adverse effects related to job losses, and disruptions in social and community interactions, from business displacements required for right-of-way acquisitions and/or temporary construction easements. In addition, these alternatives would result in potentially substantial adverse effects on aesthetic character from the construction of vertical elements (e.g., median fences, an OCS) that could substantially change the existing visual character and quality in residential and recreational areas of the project corridor where there are sensitive viewer groups.

Mitigation measures are included above in Section 5.2 (Operational Mitigation Measures) and Section 5.3 (Construction Mitigation Measures) and in the Visual and Aesthetics Impacts Report prepared for the project to reduce or minimize these potentially substantial adverse effects, where feasible. However, after implementation of the proposed mitigation measures, potentially substantial adverse effects and cumulatively considerable effects would remain.

Under CEQA, all of the build alternatives would result in potentially significant impacts related to access and safety from the potential for temporary delays in emergency vehicle response, and bicycle and vehicle collisions. Mitigation measures are included above in Section 5.2 (Operational Mitigation Measures). However, after implementation of the proposed mitigation measures, potentially significant and unavoidable impacts, and cumulatively considerable and unavoidable impacts, would remain.

The Low-Floor LRT/Tram and LRT Alternatives would result in potentially significant impacts on aesthetic character from the construction of vertical elements (e.g., median fences, an OCS) that could substantially change the existing visual character and quality in residential and recreational areas of the project corridor where there are sensitive viewer groups. Mitigation measures are included in the Visual and Aesthetics Impacts Report prepared for the project to reduce or minimize these potentially significant impacts, where feasible. However, after implementation of the proposed mitigation measures, potentially significant and unavoidable impacts, and cumulatively considerable and unavoidable impacts, would remain.

3.4 Visual Impacts

No-Build Alternative

The No-Build Alternative would not involve new transportation or infrastructure improvements aside from projects currently under construction or funded for future construction. Therefore, under NEPA and CEQA, the No-Build Alternative would have no visual or aesthetics construction impacts.

TSM Alternative

Construction under the TSM Alternative would be minimal, involving the installation of new bus stops and signage. Typical construction methods for the minor work needed for bus stop installation would be used. Bus stops would be within the existing right-of-way; therefore, extended street closures would be unnecessary, and mobility would not be substantially limited during construction. During construction, this alternative would result in minimal impacts on views and the existing visual setting in the project study area. Therefore, under NEPA, construction of this alternative would result in minor adverse impacts, and under CEQA, impacts would be less than significant.

Build Alternatives 1 through 4

Under NEPA, construction of Build Alternatives 1 through 4 could result in potentially adverse effects on visual and aesthetic resources, including construction equipment use and storage, vegetation removal, and staging areas. Construction impacts would be temporary, and many would be of short duration. In addition, impacts would be minimized or mitigated through minimization and mitigation measures. With the implementation of minimization and mitigation measures, potential construction effects would be minor and adverse.

Under CEQA, construction impacts resulting from Build Alternatives 1 through 4 would be potentially significant because of the potential for construction activities to temporarily degrade visual and aesthetic resources. However, construction impacts would be temporary and/or short-term, and would be minimized or mitigated through minimization and mitigation measures. With the implementation of minimization and mitigation measures, impacts would be less than significant.

Mitigation Measures

The following construction mitigation measures apply to the build alternatives:

Visual MM-1 (Alternatives 1-4): Construction staging would be located away from residential and recreational areas to the extent feasible, and would be screened to minimize visual intrusion into the surrounding landscape. The screening shall be a height and type of material that is appropriate for the context of the surrounding land uses. There shall be Metro branded art and community-relevant messaging on the perimeter of the construction staging walls.

Lighting within construction areas shall be faced downward and designed to minimize spillover lighting into adjacent properties.

Impacts remaining after Mitigation

Under NEPA, the Low-Floor LRT/Tram Alternative and LRT Alternative would result in potentially substantial adverse effects related to scenic views, scenic resources, and visual character in several areas within the project corridor. Construction effects would minor adverse after the implementation of mitigation measure Visual MM-1. However, following implementation of the proposed mitigation measures, potentially substantial adverse effects and cumulatively considerable effects (operation) would remain.

Under CEQA, the Low Floor LRT/Tram Alternative and LRT Alternative would result in significant impacts related to scenic views, scenic resources, and visual character in several areas within the project corridor. Construction impacts would be less than significant after implementation of of Mitigation Measure Visual MM I. Following implementation of the proposed mitigation measures, potentially significant and unavoidable impacts, and cumulatively considerable and unavoidable impacts (operation), would remain.

3.5 Air Quality

No-Build Alternative

While the No-Build Alternative does not preclude future 1) construction of other transportation system improvements, 2) general maintenance to improve local transportation system operation, or 3) incorporation of safety enhancements, no such improvements have been proposed or identified at this time. Any emissions estimates would be speculative. Furthermore, since the No-Build Alternative is not considered to be a “project” under CEQA or NEPA, no evaluation of No-Build Alternative impacts is required.

TSM Alternative

Bus service enhancements anticipated to occur under the TSM Alternative would not require construction of a new, or expansion of an existing, bus maintenance facility and no substantial physical improvements would be constructed. Consequently, no or very minor amounts of criteria pollutant emissions or toxic air contaminant emissions would be generated. No significant or adverse construction-related impacts under CEQA or NEPA would occur as result of the TSM Alternative.

Build Alternative 1 – Curb-Running BRT Alternative

For the purpose of this impact analysis, Build Alternative 1 construction assumes an 18-month construction-period.

Criteria Pollutant Emissions

Regional emissions are not expected to exceed SCAQMD regional emissions thresholds. Impacts would be less than significant under CEQA and not adverse under NEPA. No mitigation measures are necessary.

With respect to local impacts, SCAQMD has developed a set of local mass emission thresholds to evaluate localized impacts. According to SCAQMD, only those emissions that occur on site are to be considered in the localized significance threshold (LST) analysis. Consistent with SCAQMD LST evaluation guidelines, emissions related to haul truck and employee commuting activity during construction are not considered in the evaluation of localized impacts. Localized PM10 and PM2.5 emissions during construction would exceed local thresholds. As such, short-term local mass emissions would be significant under CEQA and adverse under NEPA without implementation of mitigation measures.

Toxic Air Contaminant Emissions

With respect to construction-period impacts, the greatest potential for TAC emissions would be related to DPM emissions associated with heavy equipment operations during project construction. Construction activities associated with the project would be sporadic, transitory, and short term in nature. The assessment of cancer risk is typically based on a 70-year exposure period; however, Build Alternative 1 construction is anticipated to have a duration of approximately 18 months. Because exposure to diesel exhaust would be well below the 70-year exposure period, project construction is not anticipated to result in an elevated cancer risk to exposed persons due to the short-term nature of construction. As such, project-related toxic emission impacts during construction would be less than significant under CEQA and not adverse under NEPA. No mitigation measures are necessary.

Build Alternative 2 – Median-Running BRT Alternative

For the purpose of this impact analysis, Build Alternative 2 construction assumes a 24-month construction-period duration.

Criteria Pollutant Emissions

Regional emissions are not expected to exceed the SCAQMD regional emissions thresholds. Impacts would be less than significant under CEQA and not adverse under NEPA. No mitigation measures are necessary.

With respect to local impacts, SCAQMD has developed a set of local mass emission thresholds to evaluate localized impacts. According to SCAQMD, only those emissions that occur on site are to be considered in the LST analysis. Consistent with SCAQMD LST evaluation guidelines, emissions related to haul truck and employee commuting activity during construction are not considered in the evaluation of localized impacts. Localized PM10 and PM2.5 emissions during construction would exceed local thresholds. As such, short-term local mass emissions would be significant under CEQA and adverse under NEPA without implementation of mitigation measures.

Toxic Air Contaminant Emissions

With respect to construction-period impacts, the greatest potential for TAC emissions would be related to DPM emissions associated with heavy equipment operations during project construction. Construction activities associated with the project would be sporadic, transitory, and short term in nature. The assessment of cancer risk is typically based on a 70-year exposure period; however, Build Alternative 2 construction is anticipated to have a duration of approximately two years. Because exposure to diesel exhaust would be well below the 70-year exposure period, project construction is not anticipated to result in an elevated cancer risk to exposed persons due to the short-term nature of construction. As such, project-related toxic emission impacts during construction would be less than significant under CEQA and not adverse under NEPA. No mitigation measures are necessary.

Build Alternative 3 – Low-Floor LRT/Tram Alternative

For the purpose of this impact analysis, Build Alternative 3 construction assumes a 24-month construction-period duration.

Criteria Pollutant Emissions

Regional emissions for ROG and NOx are expected to exceed the SCAQMD regional emissions thresholds. Impacts would be significant under CEQA and adverse under NEPA without implementation of mitigation measures.

With respect to local impacts, SCAQMD has developed a set of local mass emission thresholds to evaluate localized impacts. According to SCAQMD, only those emissions that occur on site are to be considered in the LST analysis. Consistent with SCAQMD LST evaluation guidelines, emissions related to haul truck and employee commuting activity during construction are not considered in the evaluation of localized impacts. Localized PM10 and PM2.5 emissions during construction would exceed local thresholds. As such, short-term local mass emissions would be significant under CEQA and adverse under NEPA without implementation of mitigation measures.

Toxic Air Contaminant Emissions

With respect to construction-period impacts, the greatest potential for TAC emissions would be related to DPM emissions associated with heavy equipment operations during project construction. Construction activities associated with the project would be sporadic, transitory, and short term in nature. The assessment of cancer risk is typically based on a 70-year exposure period; however, Build Alternative 3 construction is anticipated to have duration of approximately two years. Because exposure to diesel exhaust would be well below the 70-year exposure period, project construction is not anticipated to result in an elevated cancer risk to exposed persons due to the short-term nature of construction. As such, project-related toxic emission impacts during construction would be less than significant under CEQA and not adverse under NEPA. No mitigation measures are necessary.

Build Alternative 4 – Light Rail Transit Alternative

Build Alternative proposes two subway-segment construction options: cut-and-cover and tunnel boring. Both options are covered in this analysis. For the purpose of this impact analysis, Build Alternative 4 construction assumes a 30-month construction-period duration. Work would generally proceed in a linear sequence so that only portions of the 30-month construction period would occur at a given location. However, extensive work would occur at underground station locations. Combustion exhaust and fugitive dust (PM10 and PM2.5) mass emissions were estimated using the SCAQMD-recommended CalEEMod, version 2013.2.2. Detailed construction equipment use assumptions (quantity and use hours), among other assumptions, are documented in the CalEEMod modeling

output sheets provided in the appendix to this Air Quality Report. Fugitive PM10 and PM2.5 emissions estimates take into account compliance with SCAQMD Rule 403. Construction-period emissions anticipated to occur under Build Alternative 4 are discussed below.

Criteria Pollutant Emissions

Regional emissions for ROG and NOx are expected to exceed the SCAQMD regional emissions thresholds under the cut-and-cover and tunnel boring options. Impacts would be significant under CEQA and adverse under NEPA without implementation of mitigation measures. With respect to local impacts, SCAQMD has developed a set of local mass emission thresholds to evaluate localized impacts. According to SCAQMD, only those emissions that occur on site are to be considered in the localized significance threshold (LST) analysis. Consistent with SCAQMD LST evaluation guidelines, emissions related to haul truck and employee commuting activity during construction are not considered in the evaluation of localized impacts. Localized NOx, PM10 and PM2.5 emissions during construction would exceed local thresholds. As such, short-term local mass emissions would be significant under CEQA and adverse under NEPA without implementation of mitigation measures.

Toxic Air Contaminant Emissions

With respect to construction-period impacts, the greatest potential for TAC emissions would be related to DPM emissions associated with heavy equipment operations during project construction. Construction activities associated with the project would be sporadic, transitory, and short term in nature. The assessment of cancer risk is typically based on a 70-year exposure period; however, Build Alternative 4 construction is anticipated to have duration of approximately 30 months. Because exposure to diesel exhaust would be well below the 70-year exposure period, project construction is not anticipated to result in an elevated cancer risk to exposed persons due to the short-term nature of construction. As such, project-related toxic emission impacts during construction would be less than significant under CEQA and not adverse under NEPA. No mitigation measures are necessary.

Mitigation Measures

The following measures are prescribed to reduce short-term construction emissions that exceed SCAQMD significance thresholds:

1. Reduce use, trips, and unnecessary idling from heavy equipment.
2. Solar powered, instead of diesel powered, changeable message signs will be used.
3. Electricity from power poles, rather than from generators, will be used where feasible.
4. Maintain and tune engines per manufacturer's specifications to perform at EPA certification levels and to perform at verified standards applicable to retrofit technologies. Employ periodic, unscheduled inspections to limit unnecessary idling and to ensure that construction equipment is properly maintained, tuned, and modified consistent with established specifications.
5. Prohibit any tampering with engines and require continuing adherence to manufacturer's recommendations.
6. Use new, clean (diesel or retrofitted diesel) equipment meeting the most stringent applicable federal or state standards and commit to the best available emissions control technology. Use Tier 4 engines for all construction equipment. If non-road construction equipment that meets Tier 4 engine standards is not available, the Construction Contractor will be required to use the best available emissions control technologies on all equipment.

Utilize EPA-registered particulate traps and other appropriate controls where suitable to reduce emissions of diesel particulate matter (PM) and other pollutants at the construction site

Impacts remaining after Mitigation

Build Alternatives 1 and 2

With the implementation of the mitigation measures, construction emissions under Alternative 1 would be reduced, but would exceed the LSTs for PM10 and PM2.5. Based on the reduction of emissions, effects under NEPA would not be adverse. However, based on the emissions of PM10 and PM2.5 exceeding LST, impacts would remain significant under CEQA after the implementation of mitigation measures.

Build Alternative 3 – Low-Floor LRT/Tram Alternative

Without the implementation of mitigation measure, construction-period emissions for ROG and NOx were forecasted to exceed the SCAQMD regional emissions thresholds under Alternative 3. With the implementation of the measures, NOx emissions would be reduced to below regional thresholds. ROG emissions, however, would exceed regional emissions thresholds. Although emissions would be reduced, effects under NEPA would be adverse after mitigation due to the exceedance of the NOx regional threshold. Impacts would remain significant under CEQA after the implementation of mitigation measures.

With the implementation of the mitigation measures, construction emissions under Alternative 3 would be reduced, but would exceed the LSTs for ROG, PM10 and PM2.5. Based on the reduction of emissions, effects under NEPA would not be adverse. However, based on the emissions of ROG, PM10, and PM2.5 exceeding LST, impacts would remain significant under CEQA after the implementation of mitigation measures.

Build Alternative 4 – Light Rail Transit Alternative

Without the implementation of mitigation measure, construction-period emissions for ROG and NOx were forecasted to exceed the SCAQMD regional emissions thresholds under Alternative 4. With the implementation of mitigation measures, ROG and NOx emissions would continue to exceed regional emissions thresholds. Although emissions would be reduced with mitigation, effects under NEPA would be adverse due to the exceedances of the ROG and NOx regional thresholds. Impacts would remain significant under CEQA after the implementation of mitigation measures.

With the implementation of the mitigation measures, construction emissions under Alternative 4 would be reduced, but would exceed LST for ROG, PM10 and PM2.5. Based on the reduction of emissions, effects under NEPA would not be adverse. However, based on the emissions of PM10 and PM2.5 exceeding LST, impacts would remain significant under CEQA after the implementation of mitigation measures.

3.6 Climate Change

No-Build Alternative

No construction activities would be undertaken under the No-Build Alternative, and no construction-related GHG emissions would be generated.

The No-Build Alternative would not involve construction activities and would not affect capacity on roadways in the project vicinity. It would not conflict with Metro Climate Action and Adaptation Plan, GreenLA, ClimateLA, Sustainable City pLAn, SB 375, or AB 32 Scoping Plan measures, nor would it be inconsistent in with the goals of reducing local and statewide GHG emissions.

TSM Alternative

The TSM Alternative may include minor physical improvements to bus stops and roadways; consequently, there would be no or very minor construction-related GHG emissions.

The TSM Alternative would increase bus frequencies and enhance transit capacity, which would support the SCS goal of improved access and capacity in its implementation of SB 375. Therefore, the TSM Alternative would not conflict with the goals of SB 375 and the SCAG SCS.

Build Alternative 1 – Curb-Running BRT Alternative

Construction activities under Alternative 1 would involve roadway and sidewalk modifications as well as the installation of canopies at stops. These activities would result in the emission of approximately 1,280 metric tons of CO_2e over the course of the construction period. Consistent with SCAQMD-recommended methodology, construction-period emissions were amortized over a 30-year period, resulting in an annual equivalent of approximately 43 metric tons of CO_2e.

Alternative 1 would introduce a BRT service capable of increasing transit capacity, which would support the SCS goal of improved access and capacity in its implementation of SB 375. Therefore, Alternative 1 would not conflict with the goals of SB 375 and the SCAG SCS. Given that increased ridership would be achieved with an increase of 10 Metro buses operating along the alignment compared with the future (2040) baseline, Alternative 1 would contribute to a decrease in GHG emissions per boarding and would not conflict with the 5% GHG emissions reduction per boarding goal. In addition, construction activities would comply with the Metro Green Construction Policy. Because mode-shift from cars to more efficient public transit vehicles would occur, Alternative 1 would not conflict with the pLAn GHG reduction goals.

Build Alternative 2 – Median-Running BRT Alternative

Construction activities under Alternative 2 would involve roadway and sidewalk modifications to allow for a median-running BRT service. These activities would result in the emission of approximately 2,170 metric tons of CO_2e. Consistent with SCAQMD-recommended methodology, construction-period emissions were amortized over a 30-year period, resulting in an annual equivalent of approximately 72 MT of CO_2e.

Given that increased ridership would be achieved with an increase of 10 Metro buses operating along the alignment compared with the future (2040) baseline condition, Alternative 2 would contribute to a decrease in GHG emissions per boarding and would not conflict with the 5% GHG emissions reduction per boarding goal. In addition, construction activities would comply with the Metro Green Construction Policy. Because mode-shift from cars to more efficient public transit vehicles would occur, Alternative 2 would not conflict with the pLAn GHG reduction goals. Overall, Alternative 2 does not conflict with the AB 32, SB 375, and Metro and the City's goals to reduce GHG emissions by providing the transportation infrastructure necessary to enable more sustainable communities. Project impacts on climate change would be less than significant under CEQA and minor adverse under NEPA.

Build Alternative 3 – Low-Floor LRT/Tram Alternative

Construction activities under Alternative 3 would involve roadway and sidewalk modifications to allow for median-running Low-Floor LRT/Tram service. In addition, Alternative 3 would involve construction of the MSF, a pedestrian bridge to the Sylmar/San Fernando Metrolink station, and the installation of TPSS units. In total, these activities would result in the emission of approximately 4,025 metric tons of CO_2e. Consistent with SCAQMD-recommended methodology, construction-period emissions were amortized over a 30-year period, resulting in an annual equivalent of approximately 134 metric tons of CO_2e.

Given that increased ridership would be achieved without substantially increasing GHG emissions relative to the future (2040) baseline, Alternative 3 would contribute to a decrease in GHG emissions per boarding and would not conflict with the 5% GHG emissions reduction per boarding. In addition, construction activities would comply with the Metro Green Construction Policy. Overall, Alternative 3 does not conflict with the AB 32, SB 375, and Metro and the City's goals to reduce GHG emissions by providing the transportation infrastructure necessary to enable more sustainable communities. Project impacts on climate change would be less than significant under CEQA and minor adverse under NEPA.

Build Alternative 4 – LRT Alternative

Alternative 4 would involve construction activities and changes to roadways and sidewalks to accommodate LRT service. This would include the construction of a tunnel and three subterranean stations. In addition, Alternative 4 would involve construction of the MSF, a pedestrian bridge to the Sylmar/San Fernando Metrolink station, the LRT and heavy rail bridges over the Pacoima Wash, and the installation of TPSS units. MSF Site 2 and the cut-and-cover method of tunnel construction were assumed because these would result in the greatest impacts with respect to GHG emissions. In total, these activities would result in the emission of approximately 19,900 metric tons of CO_2e. Consistent with SCAQMD-recommended methodology, construction-period emissions were amortized over a 30-year period, resulting in an annual equivalent of approximately 663 metric tons of CO_2e.

Alternative 4 would contribute to a decrease in GHG emissions per boarding and would not conflict with the 5% GHG emissions reduction per boarding. In addition, construction activities would comply with the Metro Green Construction Policy. Overall, Alternative 4 would not conflict with the AB 32, SB 375, and Metro and the City's goals to reduce GHG emissions by providing the transportation infrastructure necessary to enable more sustainable communities. Project impacts on climate change would be beneficial under CEQA and NEPA.

Mitigation Measures

No mitigation measures are necessary.

Impacts remaining after Mitigation

No-Build Alternative

No impacts would occur as a result of construction and operation of the No-Build Alternative.

Transportation System Management Alternative, BRT Alternatives 1-3

Impacts due to construction and operation would be less than significant under CEQA and minor adverse under NEPA.

Build Alternative 4 – LRT Alternative

Impacts due to construction and operation of Alternative 4 would be beneficial under CEQA and NEPA.

3.7 Noise

No-Build Alternative

Under the No Build Alternative, no new infrastructure would be built in the study area as part of the project. There are no construction noise or vibration impacts associated with the No Build Alternative.

TSM Alternative

The TSM Alternative would include relatively low-cost transit service improvements such as increased bus frequencies or minor modifications to the roadway network. Additional TSM Alternative transit improvements that may be considered include, but are not limited to, traffic signalization improvements, bus stop amenities/improvements, and bus schedule restructuring. These improvements would require only light construction equipment, and any construction would be of very short duration. There are no construction noise or vibration impacts associated with the TSM Alternative.

Build Alternative 1 – Curb-Running BRT Alternative

Project construction would typically take place between the hours of 7 a.m. and 9 p.m. within the City of Los Angeles, in accordance with the Los Angeles Municipal Code Section 41.40(a) and 7 a.m. and 6 p.m. within the City of San Fernando, in accordance with San Fernando City Code Section 34-28(10).

The predicted construction noise level exceeds the existing ambient level by more than 15 dBA. The predicted construction noise levels also exceed the City of San Fernando limit of 70 dB. Therefore, there would be significant impact on noise levels from construction for Build Alternative 1.

An adverse effect from construction noise using the federal significance threshold is predicted for Build Alternative 1. Actual construction noise levels would depend on means and methods decided upon by the contractor, which are not available at this time. The predicted construction noise levels are based on a hypothetical scenario for the purposes of modeling.

Some construction activities, such as pavement breaking and the use of tracked vehicles (e.g., bulldozers), could result in perceptible levels of groundborne vibration. However, these activities would be limited in duration and vibration levels are likely to be well below thresholds for minor cosmetic building damage.

The FTA maintains damage risk vibration limits for different building types. The predicted level for the vibratory roller does exceed the impact threshold for sensitive receivers located within 25 feet of the construction activity.

The FTA damage risk vibration limits area adopted as both the federal and local significance thresholds. Vibration generated from the vibratory roller could result in an adverse effect and a significant impact for Build Alternative 1. In the event that other vibration generating equipment needs to be used for a sustained period of time closer than 25 feet to sensitive receivers the Construction Management Plan should also include measures to minimize those potential vibration impacts during construction.

Build Alternative 2 – Median-Running BRT Alternative

The construction of BRT guideways requires the use of heavy earthmoving equipment, pneumatic tools, generators, concrete pumps, and similar equipment. The predicted construction noise level exceeds the existing ambient level more than 15 dBA. The predicted construction noise levels also exceed the City of San Fernando limit of 70 dB. Therefore, there would be significant impact on noise levels from construction for Build Alternative 2.

An adverse effect from construction noise using the federal significance threshold is predicted for Build Alternative 2.

The FTA maintains damage risk vibration limits for different building types. The recommended limit for non-engineered timber and masonry buildings is 0.2 in/sec PPV (peak particle velocity).

The FTA damage risk vibration limits area adopted as both the federal and local significance thresholds. Vibration generated from the vibratory roller could result in an adverse effect and a significant impact for Build Alternative 2. In the event that other vibration generating equipment needs to be used for a sustained period of time closer than 25 feet to sensitive receivers the Construction Management Plan should also include measures to minimize those potential vibration impacts during construction.

Build Alternative 3 – Low-Floor LRT/Tram Alternative

Construction of the rail guideway requires the use of heavy earth-moving equipment, pneumatic tools, generators, concrete pumps, and similar equipment. Generally, the two proposed rail alternatives (Build Alternatives 3 and 4) require more construction than the two BRT alternatives; this is reflected in the higher estimated usage factor for the two proposed rail alternatives compared to the BRT alternatives.

The predicted construction noise level exceeds the existing ambient level by more than 15 dBA. The predicted construction noise levels also exceed the City of San Fernando limit of 70 dB. Therefore, there would be significant impact on noise levels from construction for Build Alternative 3.

An adverse effect from construction noise using the federal significance threshold is predicted for Build Alternative 3.

Actual construction noise levels would depend on means and methods decided upon by the contractor, which are not available at this time. The predicted construction noise levels are based on a hypothetical scenario for the purposes of modeling. The Construction Management Plan should include a noise analysis to identify specific impacts and to determine the most appropriate noise mitigation measures. Construction noise mitigation measures are discussed in Chapter 7.

The FTA maintains damage risk vibration limits for different building types. The recommended limit for non-engineered timber and masonry buildings is 0.2 in/sec PPV (peak particle velocity). The predicted level for the vibratory roller does exceed the damage risk vibration limits for sensitive receivers located within 25 feet of the construction activity.

The FTA damage risk vibration limits area adopted as both the federal and local significance thresholds. Vibration generated from the vibratory roller could result in an adverse effect and a significant impact for Build Alternative 3. In the event that other vibration generating equipment needs to be used for a sustained period of time closer than 25 feet to sensitive receivers the Construction Management Plan should also include measures to minimize those potential vibration impacts during construction.

Build Alternative 4 – LRT Alternative

Generally, the two proposed rail alternatives (Build Alternatives 3 and 4) require more construction than the two BRT alternatives; this is reflected in the higher estimated usage factor for the two proposed rail alternatives compared to the BRT alternatives.

The predicted construction noise level exceeds the existing ambient level more than 15 dBA. The predicted construction noise levels also exceed the City of San Fernando limit of 70 dB. Therefore, there would be significant impact on noise levels from construction for Build Alternative 4.

An adverse effect from construction noise using the federal significance threshold is predicted for Build Alternative 4.

Pile drivers may also be used for construction of the underground stations. Impact pile drivers could generate noise levels up to 100 dBA. Although pile driving is not a continuous noise source that would last over a day or more, pile driving can generate noise levels much greater than the ambient over shorter durations, and noise mitigation measures should be incorporated when pile driving is performed close to noise sensitive receivers.

Vibration generated from pile driving or using the vibratory roller could result in an adverse effect and a significant impact. In the event that other equipment needs to be used for a sustained period of time closer than 25 feet to sensitive receivers, the Construction Management Plan should also include measures to minimize vibration impacts during construction.

Mitigation Measures

The following best-practice noise mitigation measures should be implemented to minimize annoyance from construction noise:

- The contractor should be required to develop a Noise Control Plan that demonstrates how he will achieve the appropriate noise limits. The Plan should include measurements of existing noise, a list of major pieces of construction equipment that will be used, and prediction of noise levels at the closest sensitive receivers (including residences, hotels, schools, churches, and similar facilities).
- Adequately notify the public of construction operations and schedules.
- Whenever possible, conduct all construction activities during the daytime and during weekdays.
- Where feasible, use alternative mitigation measures that would result in lower sound levels. Use the best available control technologies to limit excessive noise when working near residences.
- Where practical, erect temporary noise barriers between noisy activities and noise-sensitive receivers. Use moveable noise barriers at the site of the construction activity, if possible.
- Implement noise-deadening measures for truck loading and operations. Use lined or covered storage bins, conveyors, and chutes with noise-deadening material.
- Avoid impact pile driving where possible. Where geological conditions permit, use quieter alternatives such as drilled piles or a vibratory pile driver.

In the event that equipment producing high levels of vibration such as pile driving may approach those limits, the Construction Noise Control Plan should also include measures to minimize vibration impact during constriction. Also, representatives from the project should be available to discuss vibration related complaints and take appropriate action to minimize the intrusion. Appropriate vibration mitigation measures include:

- minimizing the use of tracked vehicles,
- avoiding vibratory compaction,
- where feasible, using less vibration intensive construction equipment or techniques near sensitive receivers such as using cast-in-place drilled hole caissons or drilled piers rather than impact driven piles,
- and vibration monitoring near sensitive receivers to ensure thresholds are not exceeded during activities that generate high vibration levels.

Impacts Remaining After Mitigation

For all alternatives, where impacts are predicted mitigation measures are recommended that would reduce predicted noise and vibration levels to below the federal and state/local significance thresholds. There are no predicted significant impacts remaining after mitigation.

3.8 Geology and Soils

No-Build Alternative

The No-Build Alternative would not result in any project-related construction activities along the project alignment. Therefore, there would be no geological construction impacts as a result of the No-Build Alternative.

Transportation Systems Management Alternative

Given the very limited amount of construction that could occur under this alternative, geological and flooding hazards in the project area are not likely to affect or be affected by construction activities. Therefore, no or very minor impacts/effects would occur during construction.

Build Alternative 1 – Curb-Running BRT Alternative

The construction of the improvements and potential impacts would be similar to a typical construction project and would include avoiding damage to existing utilities and taking measures to prevent undermining of existing structures and reducing hazards to construction workers. Compliance with best construction practices and adherence to regulatory requirements would reduce potential risks to existing structures, the public, and construction workers. Therefore, the construction impacts/effects under this alternative would be less than significant under CEQA and minor adverse under NEPA.

Build Alternative 2 – Median-Running BRT Alternative

The Median-Running BRT Alternative would result in similar impacts as the Curb-Running BRT Alternative.

Build Alternative 3 – Low-Floor LRT/Tram Alternative

The Low-Floor LRT/Tram alternative would result in similar geological construction impacts as the BRT alternatives.

Build Alternative 4 – LRT Alternative

The LRT Alternative would result in construction impacts similar to the Low-Floor LRT/ Tram Alternative and the BRT alternatives. However, under this alternative, the tunneling and deep excavations during construction could cause vertical and lateral movement of the existing soils adjacent to the improvements. Therefore, construction of the LRT Alternative could result in the following potentially significant adverse impacts/effects due to tunneling: ground settlement and differential settlement immediately above the alignment and on adjacent buildings and structures.

The LRT Alternative could also be affected by groundwater hazards during construction. Groundwater levels are shallow at the southern end of the LRT Alternative alignment near the Los Angeles River and become deeper at the northern end of the project area. The southern end of the proposed tunnel structure would potentially be located below historical high groundwater levels, and groundwater may be encountered during construction of the tunnel, a potentially significant hazard.

The LRT Alternative would be designed and constructed in compliance with current building codes and regulatory requirements, which would reduce the potential risks posed by the hazards above. Additionally, the potential for settlement during construction of the LRT tunnel, which could be a significant hazard, would be further reduced as a result of implementation of design measures.

Mitigation Measures

No construction mitigation measures are required.

Impacts remaining after Mitigation

Construction impacts would be less than significant under CEQA and minor adverse under NEPA.

3.9 Hazards and Hazardous Materials

No-Build Alternative

The No-Build Alternative would not result in any project-related construction along the project alignment. Therefore, there would be no construction impacts related to hazardous materials under this alternative.

TSM Alternative

The amount of construction that could occur under this alternative would be very minor and would be generally limited to minor roadway modifications and bus stop amenities/improvements. Consequently, it's unlikely that significant amounts of contaminated soil or groundwater would be encountered during construction. Therefore, potential construction impacts would be less than significant under CEQA and minor adverse under NEPA.

Build Alternative 1 – Curb-Running BRT Alternative

Construction of proposed improvements may encounter hazardous materials during grading and excavation within the ROW. The construction work associated with this alternative would generally be limited to within the upper 5 feet of soil. The ESA indicated that in or adjacent to the project ROW, there are potential instances of LUSTs and hazardous substances from industrial activities. In addition, it is likely that lead and arsenic may have been deposited within the soil along the project alignment and may occur at hazardous levels. The risk of encountering hazardous materials is a potentially significant impact under CEQA and an adverse effect under NEPA. However, these impacts/effects would be eliminated or reduced to less than significant or minor adverse as a result of compliance with the requirements and design features and implementation of mitigation measures.

In addition, dust created from construction activities may contain hazardous contaminants, a potentially significant impact under CEQA and adverse effect under NEPA.

Construction equipment contains fuel, hydraulic oil, lubricants, and other hazardous materials, which could be released accidentally during operation of the equipment, a potentially significant impact under CEQA and an adverse effect under NEPA. Compliance with federal, state, and local regulations, however, would reduce the impact to less than significant under CEQA and minor adverse under NEPA.

Build Alternative 2 – Median-Running BRT Alternative

The Median-Running BRT Alternative would result in similar construction impacts to the Curb-Running BRT Alternative.

Build Alternative 3 – Low-Floor LRT/Tram Alternative

The Low-Floor LRT/Tram Alternative would result in impacts similar to those anticipated to occur under the Curb-Running BRT Alternative. Additional impacts that could occur include the potential for encountering groundwater contaminated by VOCs due to the deeper construction excavations for the retrofit or replacement of structures crossing the Pacoima Wash or the foundations for the new pedestrian crossing at the San Fernando Metrolink Station. The potential for encountering hazardous materials during construction under this alternative is a potentially significant impact under CEQA and an adverse effect under NEPA. These potential impacts/effects, however, can be reduced to a less-than-significant impact or minor adverse effect by complying with the requirements and design features and implementation of mitigation measures.

The Low-Floor LRT/Tram Alternative would also include MSF and TPSS facilities, unlike the BRT alternatives described above. The ESA indicated historical land usage as auto repair facilities, waste transfer facilities, manufacturing, and other industrial purposes at the potential properties to be acquired for the proposed MSF and TPSS sites. During demolition of the existing structures, LBP and ACM may be encountered in waste building materials. The construction work for the proposed MSF and TPSS sites would generally include excavations in the upper 5 to 10 feet of soil and may encounter subsurface hazardous waste residue from spills or releases from the former facilities, a potentially significant impact under CEQA and an adverse effect under NEPA. Construction of the MSF and TPSS facilities would include removal of existing hazardous materials within the construction footprint. The removal, handling, and disposal of hazardous materials would be conducted in accordance with all applicable federal, state, and local regulations, and would comply with the design features and mitigation measures which would reduce the potential impacts to less than significant under CEQA and minor adverse under NEPA.

Build Alternative 4 – LRT Alternative

The LRT Alternative would result in similar construction impacts to the Low-Floor LRT/Tram Alternative for the at-grade portions of the project. The cut and cover/tunneling portion of this alternative could consist of excavations as deep as 80 feet with piles extending deeper. The ESA indicated that adjacent to the project ROW, there are instances of LUSTs from former auto stations, and some of these facilities may extend into the project ROW because Van Nuys Boulevard may have been widened over time. Additionally, the proposed tunnel would cross beneath a portion of the former General Motors Plant and other manufacturing and industrial sites, which may contain soils containing hydrocarbons, VOCs, and other hazardous waste constituents. The possibility of encountering hazardous materials is a potentially significant impact under CEQA and an adverse effect under NEPA. However, these impacts would be reduced to less than significant with compliance with the requirements and design features and implementation of mitigation measures.

In addition, on the southern end of the proposed tunnel, the structure would potentially be located below historically high groundwater levels, which may be contaminated with hazardous materials, a potentially significant impact under CEQA and adverse effect under NEPA. If groundwater is encountered during construction, any wastewater generated would require laboratory testing to determine appropriate disposal. Compliance with regulatory requirements and mitigation measures would reduce potential effects to less than significant or minor adverse.

Mitigation Measures

MM-HAZ-2. An environmental investigation shall be performed for the preferred alternative during design for above-grade or below-grade transit structures, stations, and the maintenance yard. The environmental investigation shall collect soil, groundwater, and/or soil gas samples to delineate potential areas of contamination that may be encountered during construction or operations.

MM-HAZ-3. Dust control measures shall be performed during construction.

MM-HAZ-4. Groundwater removed during construction shall be tested for potential presence of contamination and disposed of in accordance with state requirements.

MM-HAZ-5. The contractor shall implement a Worker Health and Safety Plan.

MM-HAZ-6. The contractor shall implement a Contaminated Soil/Groundwater Management Plan during construction.

MM-HAZ-7. The contractor shall properly maintain equipment and properly store and manage related hazardous materials, so as to prevent motor oil, or other potentially hazardous substances used during construction, from spilling onto the soil. If contaminated soil is found, it shall be removed, transported to an approved disposal location, and remediated according to State law.

Additional measures to address the potential presence of hazardous materials along the project alignment will be confirmed as the project progresses into advanced design. Some of these design measures may be applicable to each build alternative. The measures to reduce impacts that are specific to each of the potential build alternative are provided below.

BRT and Low-Floor LRT/Tram Options

MM-HAZ-8. The environmental investigation for the BRT and Low-Floor LRT/Tram options shall include the following:

Properties potentially to be acquired are listed on multiple databases and shall be evaluated further for contaminants that were manufactured, stored, or released from the facility. If contaminated soil is found, it shall be removed, transported to an approved disposal location, and remediated according to State law.

Phase II subsurface investigations for potential impacts from adjoining current or former UST sites and nearby LUST sites may be recommended pending the selection of the preferred corridor alternative, potential ROW acquisitions, the depth of excavation, and the result of a review of archives on file with the City of Los Angeles Fire Department (LAFD) and RWQCB.

A Phase II subsurface investigation to evaluate potential presence of PCE shall be performed along the portions of the project alignment that are adjacent to former and current dry cleaners. If contaminated soil is found, it shall be removed, transported to an approved disposal location, and remediated according to State law.

If construction encroaches into the two former plugged and abandoned dry-hole oil exploration wells mapped adjacent to the proposed project ROW, the project team shall consult with DOGGR regarding the exact locations of the abandoned holes and the potential impact of the wells on proposed construction.

The locations of proposed improvements involving excavations adjacent to (within 50 feet of) the electrical substation shall be screened prior to construction by testing soils within 5 feet of the existing ground surface for PCBs. If contaminated soil is found, it shall be removed, transported to an approved disposal location, and remediated according to State law.

Buildings that will be demolished shall have a comprehensive ACM inspection prior to demolition. In addition, ACM may be present in the existing bridge crossings at the Pacoima Diversion Channels. If improvements associated with the corridor alternative selected for final design will disturb the existing bridge crossings, then these structures shall be evaluated for suspect ACM. If ACM is found, it shall be removed, and transported to an approved disposal location according to State law.

Areas along the project alignment where soil may be disturbed during construction shall be tested for ADL according to Caltrans ADL testing guidelines. If contaminated soil is found, it shall be removed, transported to an approved disposal location, and remediated according to State law.

Lead and other heavy metals, such as chromium, may be present within yellow thermoplastic paint markings on the pavement. These surfacing materials shall be tested for LBP prior to removal. If contaminated soil is found, it shall be removed, transported to an approved disposal location, and remediated according to State law.

Former railroad ROWs that crossed or were adjacent to the project ROW may contain hazardous materials from the use of weed control, including herbicides and arsenic, and may also contain TWW. Soil sampling for potentially hazardous weed control substances shall be conducted for health and safety concerns in the event that construction earthwork involves soil removal from the former railroad ROWs. If encountered during construction, railroad ties designated for reuse or disposal (including previously salvaged railroad ties in the project ROW) shall be managed or disposed of as TWW.

LRT Option

MM-HAZ-9. The environmental investigation for the LRT Option shall include the studies identified for the BRT and Low-Floor LRT/Tram Options. In addition, the environmental investigation for the LRT Option shall include the following:

If reconstruction of the Pacoima Wash bridge on San Fernando Road is proposed, the construction spoils (e.g., excavated soils, cuttings generated during installation of CIDH piles), including those in contact with the groundwater, shall be contained and tested for total chromium, 1,4-dioxane, trichloroethylene (TCE), and PCE to determine appropriate disposal.

Phase II subsurface investigation shall be performed along the below-grade segment of the corridor to evaluate the need for environmental remediation measures during construction. The Phase II site investigation shall include the installation of groundwater monitoring wells for the tunneling portion of the alternative.

An existing underground injection control well is located adjacent to the proposed tunnel along Van Nuys Boulevard for the LRT corridor alternative. The design team shall consult with California Department of Conservation to evaluate the potential impact of the well on the proposed improvements that could encounter groundwater and are located within ⅛ mile of the well.

To evaluate for the presence of deeper soil contamination and VOCs in groundwater at cut and cover/tunnel excavation locations, soil borings shall be performed and groundwater monitoring wells shall be installed. Soil sampling shall include environmental screening for contamination by visual observations and field screening for VOCs with a photoionization detector (PID). Based on field screening, soil samples shall be analyzed for the suspected chemicals by a certified laboratory. Groundwater samples shall be analyzed for VOCs.

A Contaminated Soil/Groundwater Management Plan shall be prepared during final design that describes appropriate methods and measures to manage contamination encountered during construction.

Impacts Remaining After Mitigation

Impacts would be less than less than significant under CEQA and minor adverse under NEPA.

3.10 Energy

No-Build Alternative

The No-Build Alternative would not include construction of any project related facilities or infrastructure; therefore, no impacts or effects under CEQA and NEPA would occur.

TSM Alternative

Construction activities that would occur under the TSM Alternative would be limited to minor roadway modifications and bus stop enhancements and would comply with the Metro Green Construction Policy. No buildings subject to energy standards required by Title 24 of the California Code of Regulations would be constructed under the TSM Alternative. Construction impacts on energy would be less than significant under CEQA and minor adverse under NEPA.

Build Alternative 1 – Curb-Running BRT Alternative

Approximately 18,000 MMBTU would be consumed during the construction of Alternative 1, most of which would be in the form of diesel fuel used by construction equipment and vehicles. Although an estimated 127,000 gallons of fuel would be consumed by construction vehicles and equipment, the fuel consumption would be temporary in nature and would represent a negligible increase in regional demand, and an insignificant amount relative to the more than 18 billion gallons of on-road fuels used in the state in 2013 (California Energy Commission 2014b). Given the extensive network of fueling stations throughout the project vicinity and the fact that construction would be short-term, no new or expanded sources of energy or infrastructure would be required to meet the energy demands due to Alternative 1 construction activities. Additionally, construction activities would comply with the Metro Green Construction Policy and all construction equipment would be maintained in accordance with manufacturers' specifications so equipment performance would not be compromised. Therefore, Alternative 1 would not result in the wasteful or inefficient use of energy. Impacts related to regional energy supply, demand, and conservation during the construction period would be less than significant under CEQA and minor adverse under NEPA.

Build Alternative 2 – Median-Running BRT Alternative

Approximately 30,000 MMBTU would be consumed during the construction of Alternative 2, most of which would be in the form of diesel fuel used by construction equipment and vehicles. Although an estimated 215,000 gallons of fuel would be consumed by construction vehicles and equipment, the fuel consumption would be temporary in nature and would represent a negligible increase in regional demand, and an insignificant amount relative to the more than 18 billion gallons of on-road fuels used in the state in 2013 (California Energy Commission 2014b). Given the extensive network of fueling stations throughout the project vicinity and the fact that construction would be short-term, no new or expanded sources of energy or infrastructure would be required to meet the energy demands due to Alternative 1 construction activities. Additionally, construction activities would comply with the Metro Green Construction Policy and all construction equipment would be maintained in accordance with manufacturers' specifications so equipment performance would not be compromised. Therefore, Alternative 2 would not result in the wasteful or inefficient use of energy. Impacts related to regional energy supply, demand, and conservation during the construction period would be less than significant under CEQA and minor adverse under NEPA.

Build Alternative 3 – Low-Floor LRT/Tram Alternative

In total, the four-year construction period would result in the consumption of approximately 55,000 MMBTU Although an estimated 400,000 gallons of fuel would be consumed, the fuel consumption

would be temporary in nature and would represent a negligible increase in regional demand, and an insignificant amount relative to the more than 18 billion gallons of on-road fuels used in the state in 2013 (California Energy Commission 2014b). Given the extensive network of fueling stations throughout the project vicinity and the fact that construction would be short-term, no new or expanded sources of energy or infrastructure would be required to meet the energy demands due to Alternative 3 construction activities. Additionally, construction activities would comply with the Metro Green Construction Policy and all construction equipment would be maintained in accordance with manufacturers' specifications so equipment performance would not be compromised. Therefore, Alternative 3 would not result in the wasteful or inefficient use of energy. Impacts related to regional energy supply, demand, and conservation during the construction period would be less than significant under CEQA and minor adverse under NEPA.

Build Alternative 4 – LRT Alternative

In total, the five-year construction period would result in the consumption of approximately 274,000 MMBTU. Although fuel would be consumed by construction vehicles and equipment, the estimated consumption would be limited to the construction period. Although an estimated 1.975 million gallons of fuel would be consumed, the fuel consumption would be temporary in nature and would represent a negligible increase in regional demand, and an insignificant amount relative to the more than 18 billion gallons of on-road fuels used in the state in 2013 (California Energy Commission 2014b). Given the extensive network of fueling stations throughout the project vicinity and the fact that construction would be short-term, no new or expanded sources of energy or infrastructure would be required to meet the energy demands due to Alternative 4 construction activities. Additionally, construction activities would comply with the Metro Green Construction Policy and all construction equipment would be maintained in accordance with manufacturers' specifications so equipment performance would not be compromised. Therefore, Alternative 4 would not result in the wasteful or inefficient use of energy. Impacts related to regional energy supply, demand, and conservation during the construction period would be less than significant under CEQA and minor adverse under NEPA.

Mitigation Measures

No mitigation measures would be required.

Impacts remaining after Mitigation

Impacts would be less than significant under CEQA and minor adverse under NEPA.

3.11 Ecosystems/Biological Resources

No-Build Alternative

The No-Build Alternative represents projected conditions without implementation of the project. Since no construction is proposed under this alternative, it would not result in changes to the environment and; therefore, no impacts under CEQA and no effects under NEPA to biological resources would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative proposes transportation systems upgrades, which may include relatively low-cost transit service improvements. No or minimal construction is anticipated under this alternative. Therefore, no construction impacts under CEQA and no effects under NEPA on biological resources would occur.

Build Alternative 1 – Curb-Running BRT Alternative

Special-status Plants and Animals

No special-status plant species are expected to occur within the biological resources study area. Therefore, construction of the Curb-Running BRT Alternative would have no impact and no effect on special-status plants.

There is a potential for pallid bat (*Antrozous pallidus*), western yellow bat (*Lasiurus xanthinus*), and big free-tailed bat (*Nyctinomops macrotis*) to occur in the biological resources study area. No bats or signs of bats (i.e., urine staining and guano droppings) were visually observed at the time of the site visits; however, it should be noted that specific focused surveys for bats were not conducted. The existing bridges over the Pacoima Wash, the Pacoima Diversion Canal, the East Canyon Creek, and the existing overpasses for the I-5 freeway, State Route 118, and Union Pacific Railroad (on Van Nuys Boulevard), and adjacent vegetation (in particular, palm trees and trees with cavities, crevices, exfoliating bark, and bark fissures), may support special-status bat species roosting habitat. Construction activities that could affect these structures and adjacent vegetation could disturb or destroy bat roost sites, a potentially significant impact under CEQA and adverse effect under NEPA.

Implementation of Mitigation Measure 5.0.1 would reduce the impact or effect on bats due to removal of trees occupied by roost sites or removal of other roosting habitat to a less-than-significant level under CEQA and minor adverse under NEPA.

Migratory Bird Treaty Act/California Department of Fish and Wildlife: Fish and Game Code

The ornamental landscaping could provide a source of prey for a variety of common and special-status birds (including passerines and both local and wintering raptors) and large mammal species.

The biological resources study area supports nesting birds throughout the urban landscapeIf proposed improvements under this alternative require removal of vegetation where there are nesting birds present, a violation of the Migratory Bird Treaty Act and/or Fish and Game Code, which protect nesting birds, could occur. To ensure compliance with the Migratory Bird Treaty Act and Fish and Game Code, Mitigation Measure 5.0.2 is proposed. The biological impact/effect of lost nests for common urban bird species would be less than significant under CEQA and minor adverse under NEPA.

Riparian Habitat or Sensitive Natural Community

No riparian habitat or sensitive natural communities occur within the biological resources study area. Therefore, implementation of the proposed Curb-Running BRT Alternative would not have an impact/effect on riparian habitat or sensitive natural communities under CEQA or NEPA.

Jurisdictional Waters

Three jurisdictional drainages, the Pacoima Wash, the Pacoima Diversion Canal, and East Canyon Creek all occur within the proposed alignment for the Curb-Running BRT Alternative. Under this alternative, only street level modifications would be made along the existing roads. No work, including reinforcement of structures, would be needed at the bridges. Therefore, implementation of this alternative would not directly affect a federal or state jurisdictional drainage under CEQA or NEPA. However, please see Mitigation Measure 5.0.3 for best management practices that are proposed when working near jurisdictional drainages to avoid or minimize potential indirect effects.

Wildlife Corridors

The Pacoima Wash, Pacoima Diversion Canal, and East Canyon Creek are concrete channel waterways, which are typically considered to be potential wildlife movement corridors. No construction activities are proposed in the channels that would block movement through the area; therefore, no impact/affect to wildlife movement would occur under CEQA or NEPA.

Conflict with Local Policies

Two tree species that occur in the biological resources study area are protected under the City of Los Angeles Tree Ordinance 177404: coast live oak and western sycamore. The City of San Fernando Comprehensive Tree Management Program Ordinance (Ordinance No. 1539) does not specify "protected" trees as does the City of Los Angeles. However, Ordinance No. 1539 does require prior consultation with the public works director regarding removal or trimming of "City-owned trees," which are any trees on public property.

Construction of new canopies could potentially require the removal of trees protected by the City of Los Angeles and/or City of San Fernando tree ordinances. Removal of protected trees would conflict with the city ordinances, which would be a significant impact under CEQA and adverse effect under NEPA. If protected trees are to be removed, implementation of Mitigation Measure 5.0.4 would be required to ensure compliance with city ordinances. The biological consequence of removing or trimming urban trees would be less than significant under CEQA and a minor adverse effect under NEPA with implementation of Mitigation Measure 5.0.4.

Conflict with Conservation Plans

The biological resources study area does not overlap with any adopted habitat conservation plan, natural community conservation plan, or any other approved local, regional, or state habitat conservation plan. Therefore, implementation of the proposed Curb-Running BRT Alternative would not affect any adopted plan and no impact/effect would occur under CEQA or NEPA.

Build Alternative 2 –Median-Running BRT Alternative

Special-status Species and Plants

Impacts from the Median-Running BRT Alternative would be similar in nature as those under the Curb-Running BRT Alternative above. The Median-Running BRT Alternative would construct BRT lanes along a dedicated median alignment, which would require removal of existing median islands, road widening in other areas, and construction of new bus stop canopies, some of which have trees potentially used by nesting birds and/or bat species. Construction activities would also result in increases in noise, movement, and vibration at the bridges over the Pacoima Wash, the Pacoima Diversion Canal, the East Canyon Creek, and the existing overpasses for the I-5 freeway, State Route 118, and Union Pacific Railroad (on Van Nuys Boulevard). Similar to the Curb-Running BRT Alternative, this alternative could result in potentially significant impacts under CEQA and adverse effects under NEPA to nesting birds or roosting bats due to construction activities that would remove vegetation or affect structures used by special-status bat species. However, Mitigation Measures 5.01 and 5.02 would reduce potential impacts to less than significant under CEQA and minor adverse under NEPA.

Riparian Habitat or Sensitive Natural Community

Similar to the Curb-Running BRT Alternative, this alternative would not have an impact/effect on riparian habitat or sensitive natural communities under CEQA and NEPA.

Jurisdictional Waters

Impacts would be similar to those described for the Curb-Running BRT Alternative.

Wildlife Corridors

Impacts would be similar to those described for the Curb-Running BRT Alternative.

Conflict with Local Policies

Removal of any protected trees would conflict with city ordinances, which would be a potentially significant impact under CEQA and an adverse effect under NEPA. If protected trees are removed, implementation of Mitigation Measure 5.0.4 would be required to ensure compliance with city ordinances. The biological consequence of removing or trimming urban trees would be less than significant under CEQA and a minor adverse effect under NEPA with implementation of Mitigation Measure 5.0.4.

Conflict with Conservation Plans

Similar to the Curb-Running Alternative, implementation of this alternative would not affect any adopted plan and no impact/effect would occur under CEQA or NEPA.

Build Alternative 3 – Low-floor LRT/Tram Alternative

Special-status Species

Impacts from the Low-Floor LRT/Tram Alternative would be similar in nature to those under the Curb-Running and Median-Running BRT Alternatives. Bridge construction activities could potentially affect nesting birds and/or bat species using the bridge for nesting and roosting. Similar to the BRT alternatives, this alternative could result in potentially significant impacts under CEQA and adverse effects under NEPA to nesting birds or roosting bats if construction activities remove vegetation used by nesting birds or affect structures or vegetation used by special-status bat species. However, Mitigation Measures 5.01 and 5.02 would reduce potential impacts to less than significant under CEQA and minor adverse under NEPA.

Riparian Habitat or Sensitive Natural Community

Similar to the Curb-Running BRT Alternative, this alternative would not have an impact/effect on riparian habitat or sensitive natural communities under CEQA and NEPA.

Jurisdictional Waters

Implementation of this alternative would not directly affect a federal or state jurisdictional drainage under CEQA or NEPA. However, please see Mitigation Measure 5.0.3 for best management practices that are proposed when working near jurisdictional drainages to avoid or minimize potential indirect effects.

Wildlife Corridors

Impacts would be similar to those described for Build Alternative 1.

Conflict with Local Policies

Tree removal impacts would be similar to those described for the Median-Running BRT Alternative.

Conflict with Conservation Plans

Impacts would be similar to those described for the Median-Running BRT Alternative.

Build Alternative 4 – LRT Alternative

Special-status Species

Impacts from the LRT alternative would be similar to those under the Median-Running BRT and Low-Floor LRT/Tram Alternatives. No impacts to biological resources are anticipated for the underground segment of this alternative.

Similar to the BRT alternatives and the Low-Floor LRT/Tram Alternative, this alternative could result in potentially significant impacts under CEQA and adverse effects under NEPA to nesting birds or roosting bats if construction activities remove vegetation used by nesting birds or affect structures or vegetation used by special-status bat species. However, Mitigation Measures 5.01 and 5.02 would reduce potential impacts to less than significant under CEQA and minor adverse under NEPA.

Riparian Habitat or Sensitive Natural Community

Similar to the Curb-Running BRT Alternative, this alternative would not have an impact/effect on riparian habitat or sensitive natural communities under CEQA and NEPA.

Jurisdictional Waters

Two bridge upgrades are proposed under the LRT Alternative; both cross over the Pacoima Diversion Canal and are located at Van Nuys Boulevard and San Fernando Road. As a consequence, this alternative could potentially affect WoUS, WoS, and CDFW-jurisdictional streambeds. Project-related impacts on WoUS would require permitting under Section 404 of the Clean Water Act (CWA), likely in the form of a Nationwide Permit 14 if project-related impacts to WoUS are less than 0.5 acre. Impacts to WoUS/WoS would also trigger the need for a Section 401 Certification, issued by the RWQCB. Acquisition of these permits would ensure compliance with CWA (Section 401and 404). A streambed Alteration Agreement, as regulated by Section 1602 of the California Fish and Game Code, would be required for project-related impacts to CDFW-jurisdictional streambed.

If permanent impacts to WoUS/WoS and CDFW unvegetated streambeds are unavoidable, compensatory mitigation may be required under section 401 and 404 of the CWA and Section 1602 of the California Fish and Game Code. This is expected to be required at a minimum 1:1 ratio. Final compensatory mitigation will be determined during the aquatic permitting process. In addition, temporary impacts would be required to be restored to pre-project conditions at the location of these impacts. Impacts to WoUS/WoS and CDFW streambeds would be less than significant under CEQA and minor adverse under NEPA after compliance with regulatory permit requirements.

Wildlife Corridors

The LRT Alternative, similar to the Low-Floor LRT/Tram and Median-Running BRT Alternatives, would not substantially interfere with the movement of resident or migratory fish or wildlife species, or with established resident or migratory wildlife corridors, or impede use as a wildlife nursery site. Potential impacts would be less than significant under CEQA and minor adverse under NEPA.

Conflict with Local Policies

The LRT Alternative, similar to the Median-Running BRT Alternative and Low-Floor LRT/Tram Alternative, would require the removal of trees. Therefore, tree removal impacts would be similar to those described for the Median-Running BRT Alternative.

Conflict with Conservation Plans

Impacts would be similar to those described for the Median-Running BRT Alternative.

Mitigation Measures

MM-5.0.1: Avoid and Minimize Project Related Impact to Special-Status Bat species. In the maternity season (April 15 through August 31) prior to the commencement of construction activities, a field survey shall be conducted by a qualified biologist to determine the potential presence of colonial bat roosts (including palm trees) on or within 100 feet of the project boundaries. Should a potential roost be identified that will be affected by proposed construction activities, a visual inspection and/or one-night emergence survey shall be used to determine if it is being used as a maternity-roost.

To avoid any impacts on roosting bats resulting from construction activities, the following measure shall be implemented:

Bridges and Overpasses

- Should potential bat roosts be identified that will require removal, humane exclusionary devices shall be used. Instillation would occur outside of the maternity season and hibernation period (February 16-April 14 and August 16-October 30, or as determined by a qualified biologist) unless it has been confirmed as absent of bats. If the roost has been determined to have been used by bats, the creation of alternate roost habitat shall be required, with CDFW consultation. The roost shall not be removed until it has been confirmed by a qualified biologist that all bats have been successfully excluded.
- Should an active maternity roost be identified, a determination (in consultation with the California Department of Fish and Wildlife or a qualified bat expert) shall be made whether indirect effects of construction-related activities (i.e., noise and vibration) could substantially disturb roosting bats. This determination shall be based on baseline noise/vibrations levels, anticipated noise-levels associated with construction of the proposed project, and the sensitivity to noise-disturbances of the bat species present. If it is determined that noise could result in the temporary abandonment of a day-roost, construction-related activities shall be scheduled to avoid the maternity season (April 15 through August 31), or as determined by the biologist.

Trees

All trees to be removed as part of the project should be evaluated for their potential to support bat roosts. The following measures would apply to trees to be removed that are determined to provide potential bat roost habitat by a qualified biologist.

- If trees with colonial bat roost potential require removal during the maternity season (April 15 through August 31), a qualified bat biologist shall conduct a one-night emergence survey during acceptable weather conditions (no rain or high winds, night temperatures above 52˚F) or if conditions permit, physically examine the roost for presence or absence of bats (such as with lift equipment) before the start of construction/removal. If the roost is determined to be occupied during this time, the tree shall be avoided until after the maternity season when young are self-sufficiently volant.

- If trees with potential colonial bat roost potential require removal during the winter months when bats are in torpor, a state in which the bats have significantly lowered their physiological state, such as body temperature and metabolic rate, due to lowered food availability. (October 31 through February 15, but is dependent on specific weather conditions), a qualified bat biologist shall physically examine the roost if conditions permit for presence or absence of bats (such as with lift equipment) before the start of construction. If the roost is determined to be occupied during this time, the tree shall be avoided until after the winter season when bats are once again active.
- Trees with potential colonial bat habitat can be removed outside of the maternity season and winter season (February 16 through April 14 and August 16 through October 30, or as determined by a qualified biologist) using a two-step tree trimming process that occurs over 2 consecutive days. On Day 1, under the supervision of a qualified bat biologist, Step 1 shall include branches and limbs with no cavities removed by hand (e.g., using chainsaws). This will create a disturbance (noise and vibration) and physically alter the tree. Bats roosting in the tree will either abandon the roost immediately (rarely) or, after emergence, will avoid returning to the roost. On Day 2, Step 2 of the tree removal may occur, which would be removal of the remainder of the tree. Trees that are only to be trimmed and not removed would be processed in the same manner; if a branch with a potential roost must be removed, all surrounding branches would be trimmed on Day 1 under supervision of a qualified bat biologist and then the limb with the potential roost would be removed on Day 2.
- Trees with foliage (and without colonial bat roost potential), such as sycamores, that can support lasiurine bats, shall have the two-step tree trimming process occur over one day under the supervision of a qualified bat biologist. Step 1 would be to remove adjacent, smaller, or non-habitat trees to create noise and vibration disturbance that would cause abandonment. Step 2 would be to remove the remainder of tree on that same day. For palm trees that can support western yellow bat (the only special-status lasiurine species with the potential to occur in the project area), shall use the two-step tree process over two days. Western yellow bats may move deeper within the dead fronds during disturbance. The two-day process will allow the bats to vacate the tree before removal.

MM-5.0.2. Avoid Impacts to Nesting Birds (including raptors). To avoid any impacts on migratory birds, resulting from construction activities that may occur during the nesting season, March 1 through August 31, the following measure shall be implemented:

- A qualified biologist shall conduct a preconstruction survey of the proposed construction alignment with a 150-foot buffer for passerines and 500-feet for raptors around the site. This preconstruction survey shall commence no more than 3 days prior to the onset of construction, such as clearing and grubbing and initial ground disturbance.
- If a nest is observed, an appropriate buffer shall be established, as determined by a qualified biologist, based on the sensitivity of the species. For nesting raptors, the minimum buffer shall be 150 feet. The contractor shall be notified of active nests and directed to avoid any activities within the buffer zone until the nests are no longer considered to be active by the biologist.

MM-5.0.3. Jurisdictional Waters. Any work resulting in materials that could potentially be discharged into jurisdictional features shall adhere to strict Best Management Practices (BMP) to prevent potential pollutants from entering any jurisdictional feature. Applicable BMPs to be applied shall be included in the Stormwater Pollution Prevention Plan and/or Water Quality Management Plan.

MM-5.0.4: A Project Tree Report Shall Be Approved by the City of Los Angeles and City of San Fernando. Prior to construction, the contractor shall review the approved alternative alignment to determine whether any trees protected by the City of Los Angeles Tree Ordinance 177404 and City of San Fernando Comprehensive Tree Management Program Ordinance (Ordinance No. 1539) will be removed or trimmed. A tree report must be prepared, by a qualified arborist, for the project and approved by each city. Trees removal (or replacement) shall be done in accordance to the specifications outlined in the city ordinances.

Impacts remaining after Mitigation

Impacts would be less than significant under CEQA and minor adverse under NEPA.

3.12 Hydrology

No-Build Alternative

The No-Build Alternative would result in no project-related improvements and as a consequence it would not result in any construction impacts to water resources and water quality.

TSM Alternative

Any construction activities required under the TSM Alternative would be minimal (e.g., construction of bus stop amenities, signage); therefore, no or very minor construction impacts/effects would occur.

Build Alternative 1 – Curb-Running BRT Alternative

Water Quality

The Curb-Running BRT Alternative could result in an increase in surface water pollutants such as sediment, oil and grease, and miscellaneous wastes from these construction activities. Water quality would be temporarily affected if disturbed sediments were discharged via existing stormwater collection systems. Increased turbidity and other pollutants resulting from construction-related discharges can ultimately introduce compounds toxic to aquatic organisms, increase water temperature, and stimulate the growth of algae.

The delivery, handling, and storage of construction materials and wastes, along with use of construction equipment, could also introduce the risk of stormwater contamination. Without implementation and maintenance of BMPs, construction impacts on water quality are potentially significant under CEQA and adverse under NEPA and could lead to exceedance of water quality objectives or criteria.

Since construction activities would disturb more than 1 acre, the preparation and implementation of an SWPPP would be required, in accordance with the General Construction Permit. The SWPPP would specify BMPs to ensure that water quality standards or waste discharge requirements are not violated. BMPs selected would be designed to comply with the requirements of the RWQCB and may be subject to review and approval by the Cities of Los Angeles and San Fernando. Implementation of the SWPPP during construction would ensure water quality objectives, standards, and wastewater discharge thresholds would not be violated. The SWPPP would be prepared by the project applicant (i.e., Metro) and approved by the Cities of Los Angeles and San Fernando prior to commencement of construction activities (i.e., approval of grading plans).

Other impacts to water quality that can occur during construction projects include the discharge of dredged or fill material into waters of the United States. These impacts could affect beneficial uses of the wetlands, such as estuarine and wildlife habitat. None of the alternatives, including the Curb-Running BRT Alternative, would require in-water work or work that would affect wetlands.

With compliance with the Construction General Permit, grading permits, and other relevant regulations, impacts/effects from construction on water quality would be less than significant under CEQA and minor adverse under NEPA.

Groundwater Supplies and Recharge

Existing utilities that would interfere with construction of the corridor improvements would be removed and relocated for continuing service. A geotechnical survey found that groundwater depths in the vicinity of the project alignment varied from 15 to more than 100 feet below the ground surface during the dry season, with depth to groundwater generally increasing from west to east. Excavation for utility improvements may result in contact with groundwater depending on the season and location within the corridor. Should dewatering be necessary, a General Dewatering Permit would be obtained from the Los Angeles RWQCB. Residual contaminated groundwater could be encountered during dewater activities. Groundwater extracted during dewatering activities would either be treated prior to discharge or disposed of at a wastewater treatment facility.

Local groundwater is one of several sources of water supplies to the City of Los Angeles. If groundwater is used during construction for dust control, concrete pouring, etc., the amount would be minimal and temporary, and therefore would not result in substantial depletion of groundwater supplies.

Adherence to dewatering requirements of the Los Angeles RWQCB, and minimal water use during construction would ensure that impacts on groundwater would be less than significant under CEQA and the effects would be minor adverse under NEPA.

Stormwater and Drainage

Construction activities, such as grading and excavation, could result in increased erosion. In addition, minor modifications to City street storm drains would be required. However, these modifications would not include culvert widening or conversion of open channels to closed conduits and drainage patters would remain approximately the same as currently exists. Additionally, construction of the proposed project would not alter the course of any streams or rivers.

Additionally, temporary drainage facilities could be required to redirect runoff from work areas during utility relocations. The temporary drainage facilities would be sized according to City standards to avoid any exceedance to the capacity of existing or planned stormwater drainage systems. Storm drain relocation may require the need for groundwater dewatering at locations with a high water table. Residual contaminated groundwater may be encountered during dewatering activities. As described above, if dewatering is necessary, the project contractor would be required to comply with Los Angeles RWQCB's General Dewatering Permit. Groundwater extracted during dewatering activity would either be treated prior to discharge or disposed of at a wastewater treatment facility. In addition, compliance with the Construction General Permit, and SWPPP BMPs would be implemented during construction to prevent or minimize the potential for erosion sedimentation on- or off-site, and for discharge of polluted runoff into storm drains. Because the proposed project would be in compliance with the conditions of the Construction General Permit and other relevant regulations, impacts/effects related to erosion and siltation and impacts on stormwater runoff would be less than significant under CEQA and minor adverse under NEPA.

Flooding and Flood Hazards

A few small areas within the project study area were identified as being within the FEMA 100-year flood zone (Zone A). However, these areas are fully contained within County flood channels and drainage facilities. Therefore, the project study area is not highly prone to flooding during a 100-year storm event. Additionally, no construction would occur within the areas designated as 100-year floodplains, and construction activities would not place structures that would impede or redirect flood flows as mapped on any flood hazard delineation map.

There are no levees located within the project study area, and therefore no associated flood impacts with levee failure would occur. The proposed Curb-Running BRT Alternative, however, would be located in an inundation zone area, which would be caused by a dam failure. Portions of the Sepulveda and Hansen Flood Control Basins (and the associated dams) are located in the project study area, and therefore there is risk of dam failure. However, project construction activities would not increase the present risk of dam failure, which is considered low, and would not place construction workers, equipment, or temporary structures in an area where there is a significant risk and high probability of flooding.

As noted above, temporary drainage facilities could be required to redirect runoff from work areas. The temporary drainage facilities would be sized according to City standards to avoid any exceedance to the capacity of existing or planned stormwater drainage systems. As a consequence, overall drainage patterns would remain the same, and therefore, construction activities are not expected to have a substantial effect on flood capacities due to temporary changes in drainage patterns or facilities. Therefore, the impacts/effects during construction related to flooding and flood hazards would be less than significant under CEQA and minor adverse under NEPA.

Seiche, Tsunami, and Mudflow Hazards

As noted above, the project study area is outside of tsunami potential inundation areas and, due to the relatively flat terrain, is not prone to mudflows. Construction impacts/effects due to the Curb-Running BRT Alternative would be less than significant under CEQA and minor adverse under NEPA.

Surface Water Use and Flows

Construction of the BRT alternatives, including the Curb-Running BRT Alternative, would not require the use of substantial volumes of surface water. Additionally, construction activities would not substantially change the overall impervious area, nor would construction substantially change stormwater flows that could affect either the volume or movement of water in surface water bodies. Impacts and effects would be less than significant under CEQA and minor adverse under NEPA.

Build Alternative 2 – Median-Running BRT Alternative

Impacts would be similar to those described above for the Curb-Running BRT Alternative.

Build Alternative 3 – Low-Floor LRT/Tram Alternative

Water Quality

Construction of the Low-Floor LRT/Tram Alternatives would include pavement removal; utilities relocation; excavation; construction of at-grade trackwork and stations, including station platforms and reconstruction of sidewalks; construction of pedestrian access ways; installation of specialty system work, such as overhead contact electrification systems and communications and signaling systems; construction of TPSS facilities; reconstruction of sidewalks paving and striping; and subgrade preparation and placement of rail ballast. Similar to the BRT alternatives, construction of the Low-Floor

LRT/Tram Alternative could result in an increase in surface water pollutants such as sediment, oil and grease, and miscellaneous wastes from construction activities. Because the Low-Floor LRT/Tram Alternative also includes the construction of a new MSF and the relative area of soil disturbance would be greater to install the tracks and construct the stations, the potential for water quality degradation is greater than for the BRT alternatives. However, the General Construction Permit would still apply and a SWPPP would be developed. The SWPPP would specify BMPs to ensure that water quality standards or waste discharge requirements are not violated even for a larger area of disturbance.

As discussed above for the Curb-Running BRT Alternative, SWPPPs and the associated BMPs are routinely developed for construction sites and are proven to be effective in reducing pollutant discharges from construction activities. Implementation of the SWPPP during construction would ensure water quality objectives, standards, and wastewater discharge thresholds would not be violated. The SWPPP would be prepared by the project applicant (i.e., Metro) and approved by the City of Los Angeles and City of San Fernando prior to commencement of construction activities. As selection of the appropriate BMPs is a standard process of the engineering review and grading plan approval, impacts/effects from construction on water quality would be less than significant under CEQA and minor adverse under NEPA.

None of the alternatives, including the Low-Floor LRT/Tram Alternative, would require in-water work or work that would affect wetlands.

Groundwater Supplies and Recharge

The Low-Floor LRT/Tram Alternative may require excavation to greater depths than what is required for the BRT alternatives in order to relocate utilities or construct LRT facilities including the MSF. Excavation may result in contact with groundwater depending on the season and location within the corridor. Should dewatering be necessary, a General Dewatering Permit would be obtained from the Los Angeles RWQCB. Residual contaminated groundwater could be encountered during dewater activities. Groundwater extracted during dewatering activities would either be treated prior to discharge or disposed of at a wastewater treatment facility.

Local groundwater is one of several sources of water supplies to the City of Los Angeles. If groundwater is used during construction for dust control, concrete pouring, etc., the amount would be greater than required for the BRT alternatives but still relatively minimal and temporary, and therefore would not result in substantial depletion of groundwater supplies.

Adherence to dewatering requirements of the Los Angeles RWQCB, and minimal water use during construction would ensure that impacts on groundwater would be less than significant under CEQA and the effects would be minor adverse under NEPA.

Stormwater and Drainage

As discussed above for the Curb-Running BRT Alternative, construction activities, such as grading and excavation, could result in increased erosion that could adversely affect the water quality of stormwater runoff from the construction sites. There would be relatively more grading and excavation for the Low-Floor LRT/Tram Alternative than for the BRT alternatives. However, the proposed project would be in compliance with the Construction General Permit, and a SWPPP that contains temporary construction site BMPs would be prepared and implemented. These BMPs would be implemented during construction to prevent, or minimize the potential for erosion sedimentation onsite or offsite, impacts to the water quality of stormwater runoff, and the potential for flooding on- or off-site. Because the proposed project would be required to comply with the conditions of the Construction General Permit, impacts/effects would be less than significant under CEQA and minor adverse under NEPA.

Temporary drainage facilities could be required to redirect runoff from work areas during utility relocations. The temporary drainage facilities would be sized according to City standards to avoid any exceedance to the capacity of existing or planned stormwater drainage systems. Storm drain relocation may require the need for groundwater dewatering at locations with a high water table. Residual contaminated groundwater may be encountered during dewatering activities. As described above for the Curb-Running BRT Alternative, if dewatering is necessary, the project contractor would be required to comply with Los Angeles RWQCB's General Dewatering Permit.

Flooding and Flood Hazards

Similar to the BRT Alternatives, the 100-year flood zone areas within the project study area are fully contained within County flood channels and drainage facilities. No construction is proposed in these 100-year flood zones; therefore, construction of the Low-Floor LRT/Tram Alternative would not place structures that would impede or redirect flood flows as mapped on any flood hazard delineation map.

There are no levees located within the project study area, and therefore no flood impacts associated with levee failure would occur that could affect construction activities, workers, or equipment. The proposed Low-Floor LRT/Tram Alternative, however, would be located in an inundation zone area, as shown on Figure 2-5, which would be caused by a dam failure. Portions of the Sepulveda and Hansen Flood Control Basins (and the associated dams) are located in the project study area, and therefore there is risk of dam failure. However, project construction activities would not increase the present risk of dam failure, which is considered low, and would not place construction workers, equipment, or temporary structures in an area where there is a significant risk and high probability of flooding.

As noted above for the Curb-Running BRT Alternative, temporary drainage facilities could be required to redirect runoff from work areas. The temporary drainage facilities would be sized according to City standards to avoid any exceedance to the capacity of existing or planned stormwater drainage systems. As a consequence, overall drainage patterns would remain the same, and therefore, construction activities are not expected to have a substantial effect on flood capacities due to temporary changes in drainage patterns or facilities. Therefore, the construction impacts/effects during construction related to flooding and flood hazards would be less than significant under CEQA and minor adverse under NEPA.

Seiche, Tsunami, and Mudflow Hazards

Construction impacts/effects due to the Low-Floor LRT/Tram Alternative would be less than significant under CEQA and minor adverse under NEPA.

Surface Water Use and Flows

Construction of the Low-Floor LRT/Tram Alternative could require use of more water than the BRT alternatives because of the more extensive facilities (e.g., the MSF); however, the amounts are not expected to be substantial and they would be temporary. As a consequence, construction activities are not expected to substantially reduce the amount of surface water in water bodies. Additionally, construction activities would not substantially change the overall impervious area, nor would construction substantially change stormwater flows that could affect either the volume or movement of water in surface water bodies. Impacts and effects would be less than significant under CEQA and minor adverse under NEPA.

Build Alternative 4 – LRT Alternative

Construction of the LRT Alternative would result in impacts similar to those described above for the Low-Floor LRT/Tram Alternative with the exceptions noted below.

Groundwater Supplies and Recharge

The LRT Alternative, includes underground stations, which would require excavation, and a tunnel under the Pacoima Wash. High groundwater elevations at this location range from approximately 120 feet below ground surface at the northern portal of the tunnel to approximately 60 feet below ground surface near Sherman Way at the southern portal of the tunnel.

Dewatering will likely be required for the underground stations and could potentially be required for utility relocation or replacement depending on local groundwater levels. As discussed previously, residual contaminated groundwater could be encountered during dewater activities. The project contractor would be required to comply with Los Angeles RWQCB General Dewatering General Permit. Groundwater extracted during dewatering activity would either be treated prior to discharge or disposed of at a wastewater treatment facility. Adherence to dewatering requirements of the Los Angeles RWQCB, and minimal water use during construction would ensure that impacts on groundwater would be less than significant under CEQA and the effects would be minor adverse under NEPA.

Mitigation Measures

No mitigation measures are required.

Impacts remaining after Mitigation

Impacts would be less than significant under CEQA and minor adverse under NEPA.

3.13 Safety and Security

No-Build Alternative

The No-Build Alternative represents projected conditions in 2040 without implementation of the project. No new transportation infrastructure would be constructed under this alternative. Therefore, no adverse construction effects or impacts related to public safety and security would occur.

TSM Alternative

All construction sites and equipment would be secured to prevent tampering and vandalism and would follow all applicable Metro guidelines pertaining to construction sites. As required by the City Bureau of Engineering Master Specifications, the contractor would be required to keep all equipment, field offices, storage facilities, and other facilities free of graffiti. Any graffiti would be painted over, masked, or cleaned off within 24 hours after notification by the inspector. Construction would result in minor adverse effects.

Build Alternative 1 – Curb-Running BRT Alternative

Construction activities within public rights-of-way are not typically considered to be adverse due to their short-term nature, particularly with implementation of construction management and abatement measures. All work would conform to industry standards and specifications. During construction, lane closures, traffic detours, and designated truck routes may be required, which could adversely affect emergency vehicle response times. Maintaining an adequate level of signage, construction barriers, and supervision of trained safety personnel as part of the construction team would ensure that pedestrian and motorist safety is maintained during construction. Effects or impacts would be minor adverse under NEPA and less-than-significant under CEQA with implementation of Mitigation Measures MM-16 through MM-18.

Build Alternative 2 – Median-Running BRT Alternative

Construction effects would be similar to those anticipated to occur under the Curb-Running BRT Alternative. Effects or impacts would be minor adverse under NEPA and less-than-significant under CEQA with implementation of Mitigation Measures MM-16 through MM-18.

Build Alternative 3 – Low-Floor LRT/Tram Alternative

Construction of this alternative may have temporary adverse effects on public safety and security within the study area. During construction, motorists, pedestrians, and bicyclists would experience additional safety hazards. This would result from the number and proximity of vehicles and people adjacent to Low-Floor LRT/Tram vehicle construction. Construction could also result in lane closures, traffic detours, and designated truck routes, which could adversely affect emergency vehicle response time. The potential for significant safety and security impacts would be minimized by compliance with Occupational Safety and Health Administration (OSHA), California Occupational Safety and Health Administration (Cal/OSHA), and Metro safety and security programs, which are designed to reduce potential adverse effects during construction.

Incidents of crime adjacent to the project alignment would not likely increase during construction of this alternative. Incidents of property crime could occur at construction sites (e.g., theft of construction machinery and materials), but they would be minimized through implementation of standard site security practices by contractors. Effects or impacts would be minor adverse under NEPA and less-than-significant under CEQA with implementation of Mitigation Measures MM-16 through MM-18.

Build Alternative 4 – LRT Alternative

Similar to the Low-Floor LRT/Tram Alternative, construction of this alternative may have temporary adverse effects on public safety and security in the study area. During construction motorists, pedestrians, and bicyclists would experience additional safety hazards. This would result from the number and proximity of vehicles and people adjacent to LRT construction. Construction activities, which would include an approximately 2.5-mile long hole and cut and cover construction, could also result in lane closures, traffic detours, and designated truck routes, which could adversely affect emergency vehicle response time.

The potential for significant safety and security impacts would be minimized by compliance with OSHA, Cal/OSHA, and Metro safety and security programs, which are designed to reduce potential adverse effects during construction.

Effects would be minor adverse under NEPA and less-than-significant under CEQA with implementation of Mitigation Measures MM-16 through MM-18.

Mitigation Measures

Safety-16 (All Build Alternatives). Alternate walkways for pedestrians shall be provided around construction staging sites in accordance with American with Disability Act (ADA) requirements.

Safety-17 (All Build Alternatives). All pedestrian detour locations around staging sites shall be signed and marked in accordance with the Manual on Uniform Traffic Control Devices “work zone” guidance, and other applicable local and state requirements.

Safety-18 (All Build Alternatives). Work plans and traffic control measures shall be coordinated with emergency responders to prevent effects to emergency response times

Impacts remaining after Mitigation

Under NEPA and CEQA, increased conflicts between bicyclists and motor vehicles and increased delay for emergency responders during project operation are potentially adverse effects and unavoidable significant impacts that would remain after implementation of proposed mitigation measures.

3.14 Parklands and Community Facilities

No-Build Alternative

The No-Build Alternative would not involve new transportation or infrastructure improvements aside from projects currently under construction or funded for future construction. Therefore, under NEPA and CEQA, the No-Build Alternative would have no construction impacts on parklands and community facilities.

TSM Alternative

The TSM Alternative would not require any construction, and would therefore have no construction impacts on parklands and community facilities.

Build Alternatives 1 through 4

The two BRT alternatives would require less infrastructure, and therefore, construction activities would be shorter in duration and the least disruptive to parklands and community facilities in the project study area. The Low-Floor LRT/Tram and LRT Alternatives would require more infrastructure, including an OCS, TPSSs, an MSF, and larger station platforms than the BRT alternatives, requiring a longer construction period. The LRT Alternative would require tunneling to construct underground portions of the alignment, as well as underground stations, which would result in the most severe construction impacts among the build alternatives.

Under NEPA, construction of the build alternatives would not substantially induce population growth or result in access changes that would increase the use of parklands and community facilities; therefore, effects would be minor and adverse. The construction of the build alternatives could result in potentially substantial adverse effects related to noise, air quality, traffic, and visual impacts from construction activities and equipment; and reduced access and delayed emergency response resulting from temporary sidewalk, lane, and road closures, and temporary removal of parking. Construction effects would be short-term and temporary, and would be reduced through construction management and abatement measures. In addition, mitigation measures are included to reduce or minimize these potentially substantial adverse effects. With the implementation of mitigation measures, effects would be minor and adverse.

Under CEQA, construction of the build alternatives would not substantially induce population growth or result in access changes that would increase the use of parklands and community facilities; therefore, impacts would be less than significant. In addition, construction of the build alternatives would not affect existing recreational facilities or require the construction or expansion of recreational facilities, or result in impacts associated with the provision or need for physically altered government facilities. During construction, the build alternatives would result in potentially significant impacts related to delayed emergency response resulting from temporary sidewalk, lane, and road closures, and temporary removal of parking. These impacts would be short-term and temporary, and would be reduced through construction management and abatement measures. In addition, mitigation measures are included to reduce or minimize these potentially significant impacts. With the implementation of mitigation measures, impacts would be less than significant.

Mitigation Measures

Safety and Security

Safety-16 (All Build Alternatives). Alternate walkways for pedestrians shall be provided around construction staging sites in accordance with American with Disability Act (ADA) requirements.

Safety-17 (All Build Alternatives). All pedestrian detour locations around staging sites shall be signed and marked in accordance with the Manual on Uniform Traffic Control Devices "work zone" guidance, and other applicable local and state requirements.

Safety-18 (All Build Alternatives). Work plans and traffic control measures shall be coordinated with emergency responders to prevent effects to emergency response times.

Community Mobility and Access

Community-5 (All Build Alternatives). To the maximum extent feasible, temporary detours will be developed for any road or sidewalk closures during construction to ensure pedestrian detours are accessible to seniors and disabled persons. Signage will be posted (in appropriate languages) to alert pedestrians and vehicles of any road or sidewalk closures or detours. Sidewalks that are ADA accessible would be required on both sides of the street during construction. However, subject to Metro approval, sidewalks may be closed for short durations.

Community-6 (All Build Alternatives). Signage to indicate accessibility to businesses will be used in the vicinity of construction activities.

Community-7 (All Build Alternatives). Coordination with local communities and emergency service providers will be conducted during preparation of the traffic management plans to minimize potential construction impacts to community resources and emergency response times. The traffic management plans will also include considerations for limiting construction activities during special events.

Impacts remaining after Mitigation

Under NEPA, all of the build alternatives would result in potentially substantial adverse effects related to access from the potential for temporary delays in emergency vehicle response. Mitigation measures are included above in Section 5.2 (Operational Mitigation Measures). However, after implementation of the proposed mitigation measures, potentially substantial adverse effects and cumulatively considerable effects would remain.

The Low-Floor Tram/LRT and LRT Alternatives would also result in potentially substantial adverse effects on aesthetic character from the construction of vertical elements (e.g., median fences, an OCS, and a pedestrian bridge at the Sylmar/San Fernando Metrolink Station) that could substantially change the existing visual character and quality at parklands and community facilities where there are sensitive viewer groups. Mitigation measures are included above in Section 5.2 (Operational Mitigation Measures) to reduce or minimize these potentially substantial adverse effects, where feasible. However, after implementation of the proposed mitigation measures, potentially substantial adverse effects and cumulatively considerable effects would remain.

Impacts Remaining Under CEQA

Under CEQA, all of the build alternatives would result in potentially significant impacts related to access from the potential for temporary delays in emergency vehicle response. Mitigation measures are included above in Section 5.2 (Operational Mitigation Measures). However, after implementation of the proposed mitigation measures, potentially significant and unavoidable impacts, and cumulatively considerable and unavoidable impacts, would remain

3.15 Historic, Archaeological, and Paleontological Resources

No-Build Alternative

Historic Resources

Under the No-Build Alternative, no new infrastructure would be built within the study area as part of the project. There would be no construction or vibration effects on historic properties associated under the No-Build Alternative.

Archaeological and Paleontological Resources

The No Build Alternative would result in no excavation activities. There would be no construction impacts to archaeological or paleontological resources associated with the No Build Alternative.

TSM Alternative

Historic Resources

The TSM Alternative would include relatively low-cost transit service improvements, such as increased bus frequencies, and possibly minor physical improvements including bus stop amenities/improvements and minor modifications to the roadway network (traffic signalization improvements). These improvements would require only light construction equipment, and any construction would be of very short duration. Therefore, no construction or vibration effects on historic properties are anticipated as a result of the TSM Alternative.

Archaeological Resources

The TSM Alternative would result in no or very minimal excavation activities. As a consequence, no construction impacts to archaeological resources are anticipated under the TSM Alternative.

Paleontological Resources

Only shallow grading activities for bus stops amenities and signalization improvements may be required under the TSM Alternative. Typically these sorts of excavations are less than five feet deep and in California, Holocene valley deposits are typically more than eight feet deep. Assuming construction impacts are less than eight feet deep, there would be no construction impacts to paleontological resources associated with the TSM Alternative.

Build Alternative 1 – Curb-Running BRT Alternative

Historic Resources

Under Alternative 1, all of the historic properties listed below that have a potential to be affected by the construction of proposed bus stations are located far enough (more than 25 feet) away from the proposed construction areas, such that any equipment used would not exceed the FTA damage risk vibration limits.

1. 1601 San Fernando Road – Approximately 180 feet from proposed Hubbard Station
2. 6353 Van Nuys Boulevard – Approximately 100 feet from proposed Victory Station
3. 8201 Van Nuys Boulevard – Over 200 feet from proposed Roscoe Station
4. 8324 Van Nuys Boulevard – Approximately 40 feet from proposed Roscoe Station
5. 9110 Van Nuys Boulevard – Approximately 50 feet from proposed Nordhoff Station

While the use of a vibratory roller could generate vibration of up to .21 in/sec PPV, none of the historic properties are 25 feet or less from the proposed stops. Therefore, this alternative would not result in adverse effects on any historic properties during construction.

Archaeological Resources

The Curb-Running BRT Alternative would involve excavation during station upgrades and sidewalk widening and removal. Under this alternative, it is anticipated that the existing Division 15 (East Valley) MSF would accommodate the 10 new buses without needing to be expanded. Archaeological sites 19-001124 and 19-002681 are both located in the footprint of this alternative, however, in areas that do not appear to involve construction. If construction were to take place in these site areas, there is a potential for significant impacts/adverse effects to archaeological resources. Implementation of Mitigation Measure MM CR-1 would reduce potential impacts on these archaeological resources to less-than-significant levels.

Previous ground disturbance at station and sidewalk locations has probably destroyed subsurface archaeological resources. This suggests that there is a low potential for ground-disturbing activities associated with this alternative to expose and affect previously unknown significant cultural resources, including archeological resources. However, there is still a possibility that archaeological materials may be exposed during construction. Grading and trenching, as well as other ground-disturbing actions, have the potential to damage or destroy previously unidentified and potentially significant cultural resources within the project area, including archeological resources. Disturbance of any deposits that have the potential to provide significant cultural data would be considered a significant impact or adverse effect. Implementation of Mitigation Measure MM CR-2 would reduce potential impacts on archeological resources to less-than-significant levels.

No human remains have been previously discovered in the APE, and no burials or cemeteries are known to occur within the APE. However, construction would involve earth-disturbing activities, and it is still possible that human remains may be discovered, possibly in association with archaeological sites. Mitigation Measure MM CR -3 has been included in the event that human remains are found during ground-disturbing activities. Impacts would be less than significant with mitigation incorporated.

Paleontological Resources

The Curb-Running BRT Alternative would involve excavation within the Quaternary alluvium during station upgrades and sidewalk widening and removal. All earthmoving activities are anticipated to be restricted to the shallow, surficial sediments, which are too young in age to contain fossils. This alternative would have no impact on paleontological resources.

Build Alternative 2 – Median-Running BRT Alternative

Historic Resources

The construction or upgrading of the stations and BRT guideway would not involve any changes to individual properties such as alteration, demolition, deterioration, sale, or transfer of ownership.

Additionally, under Build Alternative 2, most of the historic properties listed below that have a potential to be affected by the construction of proposed bus stations are located far enough (more than 25 feet) away from the proposed construction areas such that any equipment used would not exceed the FTA damage risk vibration limits.

1. 1601 San Fernando Road – Approximately 180 feet from proposed Hubbard Station
2. 6353 Van Nuys Boulevard – Approximately 40 feet from proposed Victory Station
3. 8324 Van Nuys Boulevard – Approximately 80 feet from proposed Roscoe/Chase Station
4. 9110 Van Nuys Boulevard – Approximately 20 feet from proposed Nordhoff Station

While the vibratory roller could generate vibration of up to 0.21 in/sec PPV at a range of 25 feet, and 9110 Van Nuys Boulevard is less than 25 feet away from the proposed stop, research indicates that the building is made of reinforced concrete construction, and can therefore withstand vibration levels of 0.5 in/sec PPV. Therefore, no adverse effects on 9110 Van Nuys Boulevard, or any other historic properties, would result from this alternative during construction.

Archaeological Resources

The Median-Running BRT Alternative would involve shallow excavation during bus stop platform construction in the median, station upgrades and sidewalk widening. Archaeological sites 19-001124 and 19-002681 are both located in the footprint of this alternative, however, in areas that do not appear to involve construction. If construction were to take place in these areas, there is a potential for significant impacts/adverse effects to archaeological resources. Implementation of Mitigation Measure MM CR-1 would reduce potential impacts on these archaeological resources to less-than-significant levels.

Similar to Alternative 1, Alternative 2 has a low potential to encounter and adversely affect archaeological resources and human remains. However, construction would involve earth-disturbing activities, and it is still possible that archaeological resources or human remains may be discovered, which would be considered a significant impact. Mitigation Measure MM CR-2 would reduce potential impacts on archeological resources, and Mitigation Measure MM CR-3 would reduce potential impacts on human remains. Impacts would be less than significant with mitigation incorporated.

Paleontological Resources

The Median-Running BRT Alternative would involve shallow excavation within the Quaternary alluvium during bus stop platform construction in the median, station upgrades, and sidewalk widening. These shallow earthmoving activities would not affect paleontological resources, since the sediments that would be disturbed by construction are too young in age to contain fossils.

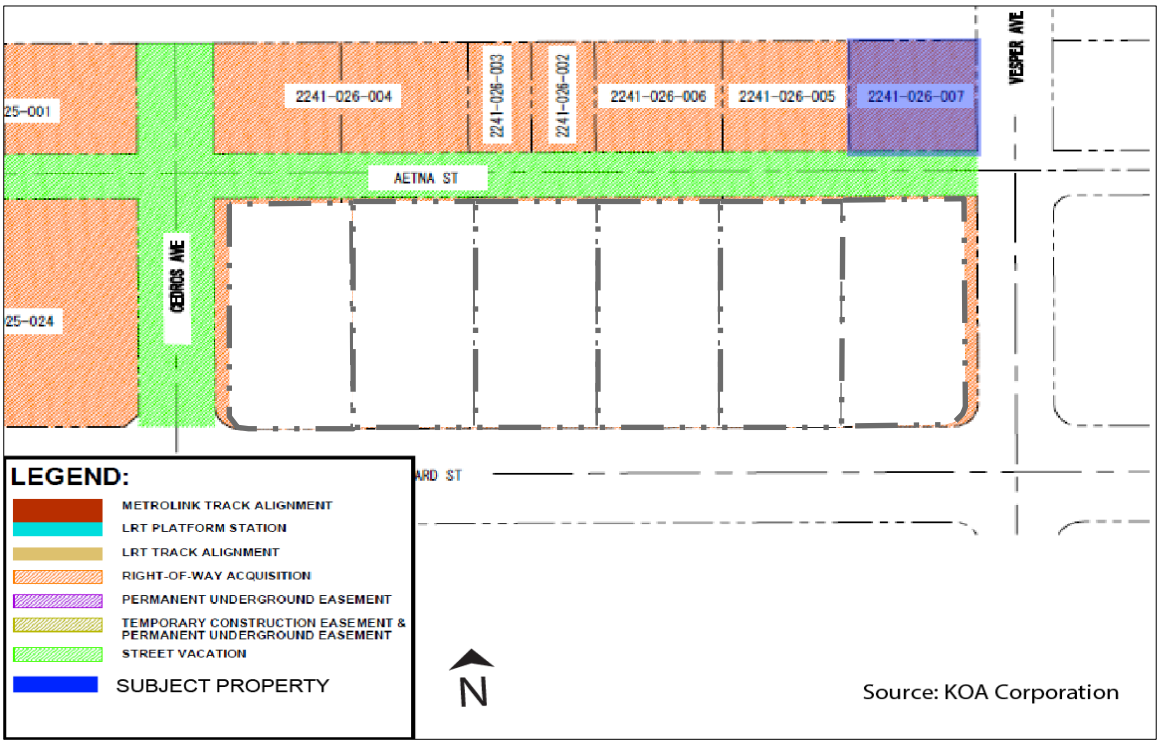
Build Alternative 3 – Low-Floor LRT/Tram Alternative

Historic Resources

The construction of the 28 stations and two of the three possible MSF sites would not involve any changes to individual properties, such as alteration, demolition, deterioration, sale, or transfer of ownership. However, development of one of the MSF sites under this alternative would physically affect one historic property as described below. Therefore, the applicable Criterion for adverse effect is Criterion i: physical destruction of or damage to all or part of the property.

1. 14601-3 Aetna Street

Alternative 3 would require a large MSF at one of three possible locations. MSF Option A includes an MSF near the proposed Metro Orange Line Station. In order to accommodate the necessary administrative and operational facilities for the low-floor LRT/tram, the properties within the possible MSF boundaries would be subject to full right-of-way acquisition and demolition. 14601-3 Aetna is located at the northeast corner (shaded in purple below) of this possible MSF site and would be demolished as part of this alternative; the physical destruction or damage of a historic property meets Criterion (i) for adverse effect. Therefore, construction of Alternative 3 with MSF Option A would have an adverse effect on the historic property at 14601-3 Aetna Street. (Photo: GPA)



Under Alternative 3, most of the historic properties listed below that have a potential to be affected by the construction of proposed tram stations are located far enough (more than 25 feet) away from the proposed construction areas such that any equipment used would not exceed the FTA damage risk vibration limits.

1. 1140 San Fernando Road – Approximately 80 feet from proposed Maclay Station
2. 6353 Van Nuys Boulevard – Approximately 30 feet from proposed Victory Station
3. 6551 Van Nuys Boulevard – Approximately 40 feet from proposed Kittridge Station
4. 8324 Van Nuys Boulevard – Approximately 40 feet from proposed Roscoe Station
5. 9110 Van Nuys Boulevard – Approximately 20 feet from proposed Nordhoff Station

While the vibratory roller could generate vibration of up to 0.21 in/sec PPV at a range of 25 feet, and 9110 Van Nuys Boulevard is less than 25 feet away from the proposed stop, research indicates that the building is made of reinforced concrete construction, and can therefore withstand vibration levels of 0.5 in/sec PPV. Therefore, this alternative would not result in adverse effects on 9110 Van Nuys Boulevard during construction.

In addition to potential indirect vibration effects, one property would be demolished under Alternative 3 with MSF Option A. The physical destruction or damage of a historic property meets Criterion (i) for adverse effect. Therefore, Alternative 3 with MSF Option A would have an adverse effect on the historic property at 14601-3 Aetna Street. Alternative 3 with MSF Options B and C would not result in adverse effects on any historic properties.

Archaeological Resources

The Low-Floor LRT/Tram Alternative would involve shallow excavation during bus stop platform construction in the median, station upgrades, and sidewalk widening. Archaeological site 19-002681 is located in the footprint of this alternative, however, in areas that do not appear to involve construction. If construction were to take place in these site areas, there is a potential for significant impacts/adverse effects to archaeological resources. Implementation of Mitigation Measure MM CR-1 would reduce potential impacts on these archaeological resources to less-than-significant levels.

Alternative 3 has a low potential to encounter and adversely affect archaeological resources and human remains. However, construction would involve earth-disturbing activities, and it is still possible that archaeological resources or human remains may be discovered, which would be considered a significant impact/adverse effect. Implementation of Mitigation Measure MM CR-2 would reduce potential impacts on archeological resources, and Mitigation Measure MM CR-3 would reduce potential impacts on human remains. Impacts would be less than significant with mitigation incorporated.

No archaeological resources are recorded within the three proposed MSF sites - Arminta Street, Keswick Street, and Aetna Street. Previous construction in these MSF sites has probably destroyed most subsurface archaeological resources. For this reason, construction of the MSF facility for this alternative has a low potential for ground-disturbing activities to expose and affect previously unknown significant archeological resources. However, there is still a possibility that archaeological materials may be exposed during construction. Grading and trenching, as well as other ground-disturbing actions, have the potential to damage or destroy previously unidentified and potentially significant cultural resources within the project area, including archeological resources. Disturbance of any deposits that have the potential to provide significant cultural data would be considered a significant impact/adverse effect. Implementation of Mitigation Measure MM CR-2 would reduce potential impacts on cultural resources, including archeological resources, associated with the proposed project to less-than-significant levels.

No human remains have been previously discovered in the MSF site portions of the APE, and no burials or cemeteries are known to occur within the MSF locations. However, construction would involve earth-disturbing activities, and it is still possible that human remains may be discovered, possibly in association with archaeological sites. Mitigation Measure MM CR-3 has been included in the event that human remains are found during ground-disturbing activities. Impacts would be less than significant with mitigation incorporated.

Paleontological Resources

The Low-Floor LRT/Tram Alternative would involve shallow excavation within the Quaternary alluvium during bus stop platform construction in the median, station upgrades, and sidewalk widening. These shallow earthmoving activities would not adversely affect paleontological resources, since the disturbed sediments are too young in age to contain fossils.

No paleontological resources are recorded within the three proposed MSF sites - Arminta Street, Keswick Street, and Aetna Street. Although there has been prior construction in these MSF sites, fossils in valley areas are located subsurficially. New impacts into native sediments for sewer and water lines as well as for underground storage tanks may result in significant impacts/adverse effects to paleontological resources. Implementation of Mitigation Measure CUL-2 would reduce potential impacts on paleontological resources, including archeological resources, associated with the proposed project to less-than-significant levels.

Build Alternative 4 – LRT Alternative

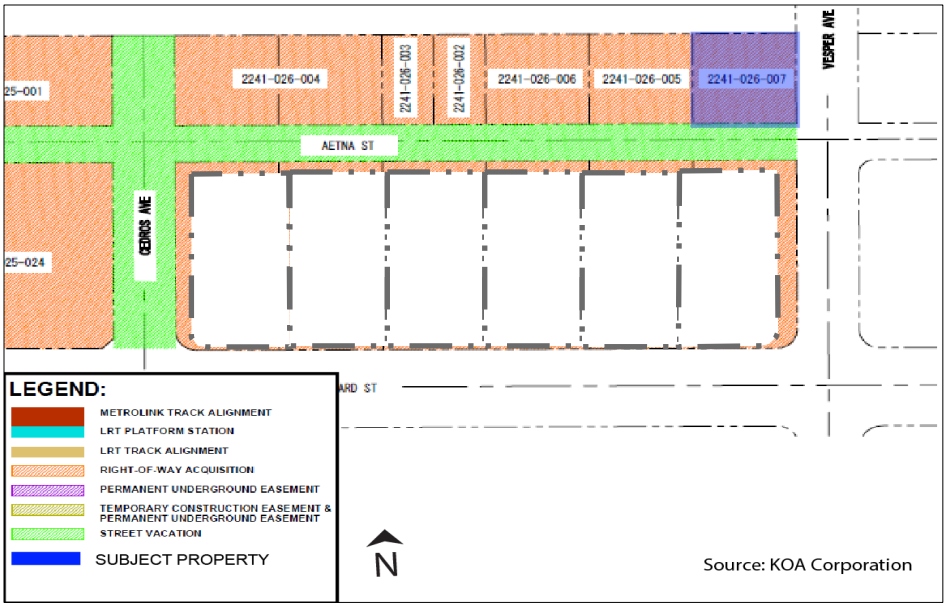
Historic Resources

The construction of the stations and MSF under this alternative could affect two historic properties. Therefore, the applicable Criterion for adverse effect that may result from the LRT Alternative is Criterion i: physical destruction of or damage to all or part of the property.

Two properties would be demolished under Alternative 4 with MSF Option A, and one of those two properties would be demolished under Build Alternative 4 with MSF Options B and C. The physical destruction or damage of a historic property meets Criterion (i) for adverse effect. Therefore, Alternative 4 with MSF Option A would have an adverse effect on the historic properties at 8324 Van Nuys Boulevard and 14601-3 Aetna Street; Alternative 4 with MSF Options B and C would have an adverse effect on the historic property at 8324 Van Nuys Boulevard, as described below.

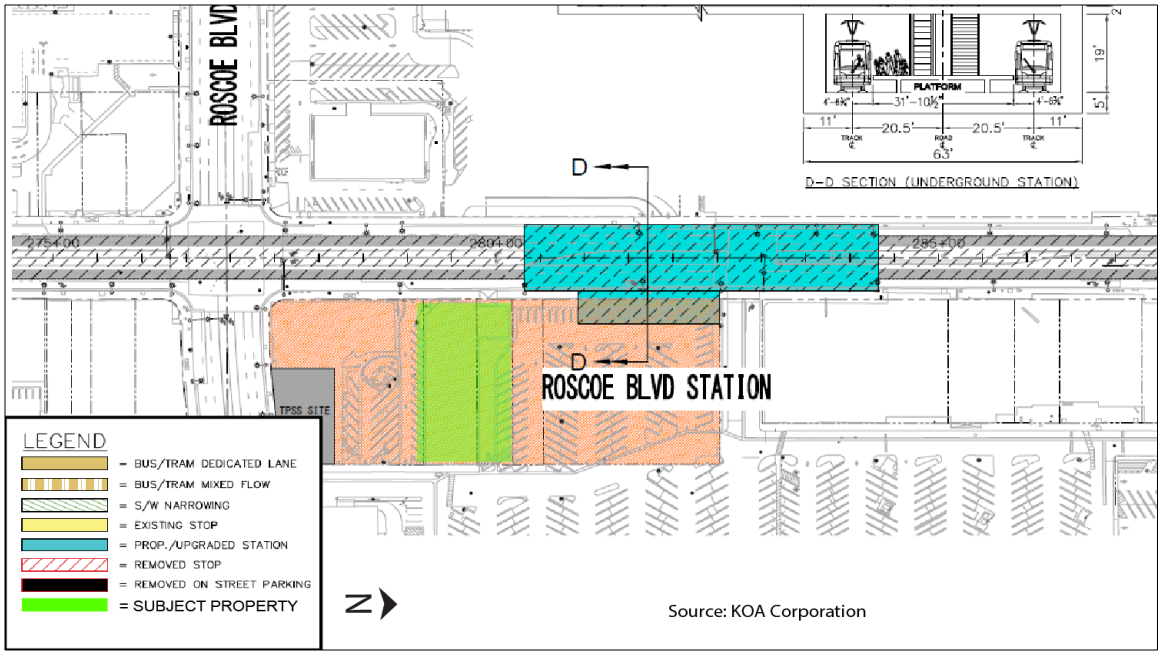
1. 14601-3 Aetna Street

Alternative 4 would require an MSF at one of three possible locations. MSF Option A proposes an MSF near the proposed Metro Orange Line Station. In order to accommodate the necessary administrative and operational facilities for the LRT, the properties within the possible MSF boundaries would be subject to full right-of-way acquisition and demolition. 14601-3 Aetna is located at the northeast corner (shaded in purple below) of this possible MSF site and would be demolished as part of this alternative; the physical destruction or damage of a historic property meets Criterion (i) for adverse effect. Therefore, Alternative 4 with MSF Option A would have an adverse effect on the historic property at 14601-3 Aetna Street. (Photo: GPA)



2. 8324 Van Nuys Boulevard

Under Alternative 4, the proposed underground Roscoe Station would be constructed underneath Van Nuys Boulevard, between its intersections with Roscoe Boulevard and Chase Street (shaded in blue). An entry plaza is proposed at the northeast corner of Roscoe and Van Nuys. In order to accommodate the plaza and a possible TPSS site, three properties within the possible plaza boundaries would be subject to full right-of-way acquisition and demolition (shaded in orange). 8324 Van Nuys (shaded in green), a historic property, is located at the center of this proposed entry plaza site and would be demolished; the physical destruction or damage of a historic property meets Criterion (i) for adverse effect. Therefore, Alternative 4 would have an adverse effect on the historic property at 8324 Van Nuys Boulevard. (Photo: GPA)



Under Alternative 4, all of the historic properties listed below that have a potential to be affected by the construction of proposed above-ground stations are located far enough (more than 25 feet) away from the proposed construction areas such that any equipment used would not exceed the FTA damage risk vibration limits.

1. 130 N. Brand Boulevard– Approximately 600 feet from proposed Maclay Station
2. 6353 Van Nuys Boulevard – Approximately 75 feet from proposed Victory Station
3. 9110 Van Nuys Boulevard – Approximately 40 feet from proposed Nordhoff Station

While the use of a vibratory roller could generate vibration of up to 0.21 in/sec PPV, none of the buildings are 25 feet or less away from the proposed above-ground stops.

Under Alternative 4, pile drivers could be used in the construction of underground stations, which could produce vibration levels shown in Table 3-1; however, the historic property listed below, which has the potential to be affected by the construction of proposed underground stations, is located far enough away that any equipment used would not exceed the FTA damage risk vibration limits.

1. 8201 Van Nuys Boulevard – Approximately 600 feet from proposed Roscoe Station

Table 3-1: Construction Vibration Predictions for Pile Drivers

Equipment	PPV at 25 ft (in/sec)	PPV at 50 ft (in/sec)
Pile Driver (Impact)	1.52	0.54
Pile Driver (Sonic)	0.73	0.26
Source: ATS Consulting, 2014.		

Archaeological Resources

The LRT Alternative would involve shallow excavations for bus stop platform construction in the median, station upgrades and sidewalk widening. There would be 14 stations, three of which would be underground near Sherman Way, the Van Nuys Metrolink station, and Roscoe Boulevard. Entry to the three underground stations would be provided from an entry plaza and portal. Additionally the Low Floor LRT Alternative includes an underground segment beneath Van Nuys Boulevard from just north of Parthenia Street to Hart Street.

Archaeological sites 19-001124 and 19-002681 are both located in the footprint of this alternative, however in areas that do not appear to involve construction. If construction were to take place in these site areas, there is a potential for significant impacts to archaeological resources. Implementation of Mitigation Measure MM CR-1 would reduce potential impacts on these archaeological resources to less-than-significant levels.

This alternative requires extensive excavations, and although previous ground disturbance at tunnel, plaza, station, and sidewalk locations has probably destroyed subsurface archaeological resources. Due to the extent of excavations, this alternative has a moderate potential for ground-disturbing activities to expose and affect previously unknown significant archeological resources. However, there is still a possibility that archaeological materials may be exposed during construction. Grading and trenching, as well as other ground-disturbing actions, have the potential to damage or destroy previously unidentified and potentially significant cultural resources within the project area, including archeological resources. Disturbance of any deposits that have the potential to provide significant cultural data would be considered a significant impact. Implementation of Mitigation Measure MM CR-2 would reduce potential impacts on cultural resources, including archeological resources, associated with the proposed project to less-than-significant levels.

No human remains have been previously discovered in the APE, and no burials or cemeteries are known to occur within the APE. However, construction would involve earth-disturbing activities, and it is still possible that human remains may be discovered, possibly in association with archaeological sites. Mitigation Measure MM CR-3 has been included in the event that human remains are found during ground-disturbing activities. Impacts would be less than significant with mitigation.

No archaeological resources are recorded within the three proposed MSF sites, Arminta Street, Keswick Street, and Aetna Street. Previous construction in these MSF sites has probably destroyed most subsurface archaeological resources. For this reason, construction of the MSF facility for this alternative has a low potential for ground-disturbing activities to expose and affect previously unknown significant archeological resources. However, there is still a possibility that archaeological materials may be exposed during construction. Grading and trenching, as well as other ground-disturbing actions, have the potential to damage or destroy previously unidentified and potentially significant cultural resources within the project area, including archeological resources. Disturbance of any deposits that have the potential to provide significant cultural data would be considered a significant impact. Implementation of Mitigation Measure MM CR-2 would reduce potential impacts on cultural resources, including archeological resources, associated with the proposed project to less-than-significant levels.

No human remains have been previously discovered in the MSF site portions of the APE, and no burials or cemeteries are known to occur within the MSF locations. However, construction would involve earth-disturbing activities, and it is still possible that human remains may be discovered, possibly in association with archaeological sites. Mitigation Measure MM CR-3 has been included in the event that human remains are found during ground-disturbing activities. Impacts would be less than significant with mitigation incorporated.

Paleontological Resources

The LRT Alternative would involve shallow excavations for bus stop platform construction in the median, station upgrades and sidewalk widening. There would be 14 stations, three of which would be underground near Sherman Way, the Van Nuys Metrolink station, and Roscoe Boulevard. Entry to the three underground stations would be provided from an entry plaza and portal. Additionally the Low Floor LRT Alternative includes an underground segment beneath Van Nuys Boulevard from just north of Parthenia Street to Hart Street.

Shallow earthmoving activities will not impact paleontological resources, since the impacted sediments are too young in age to contain fossils. However deeper excavations have the potential to significantly impact the paleontologically sensitive Quaternary older alluvium that underlies the surficial Quaternary alluvium at variable depths across the project area. Pleistocene fossils are known from the Quaternary older alluvium at depths between14 and 100 feet below the surface in the San Fernando Valley.

Two methods are being proposed for tunnel construction; Cut and Cover method and Tunnel Boring Machine (TBM) method, both of which have the potential to negatively impact paleontological resources. Impacts can be mitigated through monitoring efforts if the cut and cover method is adopted.

No paleontological resources are recorded within the three proposed MSF sites, Arminta Street, Keswick Street, and Aetna Street. Although there has been prior construction in these MSF sites, fossils in valley areas are located subsurficially. New impacts into native sediments for sewer and water lines as well as for underground storage tanks may result in significant impacts to paleontological resources. Implementation of Mitigation Measure CUL-2 would reduce potential impacts on paleontological resources, including archeological resources, associated with the proposed project to less-than-significant levels.

Mitigation Measures

Historic Resources

Under Alternative 4 (all MSF options), demolition of one historic property (8324 Van Nuys Boulevard) located within the APE would occur. The following mitigation measure is proposed to avoid demolition of this historic resource.

MM-HR-1. The proposed underground Roscoe Station shall be developed at an alternative site, if feasible, that avoids the demolition of the historic property at 8324 Van Nuys Boulevard. In selecting an alternative location for the station, other historic properties that are not currently adversely affected should also be avoided. A station should not be placed in a location that would cause the physical destruction or damage of a property, whether directly or indirectly, such as through temporary construction vibration.

Under Alternatives 3 and 4, with MSF Option A, demolition of an additional historic property (14601-3 Aetna Street) would occur. The following mitigation measures are proposed to avoid demolition of this historic resource.

MM-HR-2. The MSF shall be developed at optional sites B or C, if feasible, to avoid acquisition and demolition of the historic property at 14601-3 Aetna Street.

MM-HR-3. The MSF, if developed at site A, shall be redesigned to avoid acquisition and demolition of the historic property at 14601-3 Aetna Street.

MM-HR-4. If avoidance of the historic property at 14601-3 Aetna Street is not feasible, the property shall be incorporated into the new MSF, if feasible. Consideration shall be given to incorporating the building at 14601-3 Aetna into the new MSF by adaptively reusing the building to house administrative functions, such as staff offices, break rooms, or dispatcher workstations. Alternatively, the building could be reused as a maintenance and repair shop, which would be in keeping with its original use as a meter repair shop for the DWP.

If MM-HR-4 is implemented, prior to the start of any adaptive reuse work that could adversely affect characteristics that qualify 14601-3 Aetna Street as a historic property, proposed plans shall be reviewed by a professional meeting the Secretary of the Interior's Professional Qualifications Standards in Architecture or Architectural History to ensure that the proposed adaptive reuse plan complies with the Secretary of the Interior's Standards for Rehabilitation.

It is unlikely that vibration from construction activities would exceed the thresholds for minor cosmetic damage to buildings. In the event that equipment producing high levels of vibration, such as pile driving, may approach those limits, the following mitigation measure is proposed.

MM-HR-5. Measures shall be implemented to reduce vibration from pile driving or other construction activities that would produce vibration levels that could damage nearby historic properties. Appropriate vibration mitigation measures could include:

- Minimizing the use of tracked vehicles;
- Avoiding vibratory compaction;
- Where feasible, using less vibration-intensive construction equipment or techniques near historic properties, such as using cast-in-place drilled hole caissons or drilled piers rather than impact driven piles; and
- Conducting vibration monitoring near historic properties to ensure thresholds are not exceeded during activities that generate high vibration levels.

If either Alternative 3 or 4, with MSF Option A, is selected, and the avoidance measures described above are not feasible, and as a consequence, Metro cannot avoid causing an adverse effect on 14601-3 Aetna Street, then a Memorandum of Agreement (MOA) with the SHPO would need to be prepared to resolve the adverse effects in accordance with 36 CFR 800.6. The level and nature of the proposed mitigation measures would be determined by the magnitude and nature of the undertaking, the degree of federal involvement, and the extent of effects on historic properties. However, the following proposed measures would constitute appropriate compensatory mitigation measures to resolve adverse effects on historic properties affected by Alternative 3 or 4, with MSF Option A, only.

MM-HR-6. Historic Documentation. FTA and Metro shall take large-format (4" x 5" or larger negative size) photographs showing 14601-3 Aetna Street in context, as well as details of its historic architectural and design features. Photographs shall be processed for archival permanence in accordance with the Historic American Building Survey (HABS) photographic specifications. Photo views shall include:

- Contextual views showing 14601-3 Aetna in its setting;
- Elevation views (8 cardinal views);
- Detail views of significant architectural and design elements.

FTA and Metro shall complete a Written Historical and Descriptive Data Report for 14601-3 Aetna Street. This report will provide a physical description the building and discuss its significance under applicable NRHP Criteria, and address the historical context for its construction following the format and instructions in the September 1993 National Park Service (NPS) Historic American Engineering Record (HAER) Guidelines for Preparing Written Historical and Descriptive Data.

Upon review and approval of the photography and documentation, FTA and Metro shall submit copies of the documentation and photographs to the Dorothy Peyton Gray Transportation Library. Copies of the photographs and documentation shall also be offered to the Los Angeles Public Library and the Los Angeles Conservancy, and submitted to the South Central Coastal Information Center at California State University, Fullerton.

MM-HR-7. Interpretation. FTA and Metro shall make a reasonable effort to identify an appropriate location for an interpretive display or kiosk along the nearby Orange Line Busway Station Stop or along the bike path near the demolished historic property. The interpretive display shall include information on the building's history and significance, as well as information on the history of DWP. All interpretive material shall be prepared in consultation with the Los Angeles Office of Historic Resources (OHR) and shall be made available for review and approval by the SHPO prior to fabrication and installation.

If Alternative 4 is selected and FTA and Metro cannot avoid causing an adverse effect on 8324 Van Nuys Boulevard, an MOA with the SHPO will need to be prepared to resolve the adverse effects in accordance with 36 CFR 800.6. The level and nature of the proposed mitigation measures will be determined by the magnitude and nature of the undertaking, the degree of federal involvement, and the extent of effects on historic properties. However, the following measures are proposed and shall be implemented prior to construction to compensate for the proposed demolition of 8324 Van Nuys Boulevard.

MM-HR-8. Historic Documentation. FTA and Metro shall take large-format (4" x 5" or larger negative size) photographs showing 8324 Van Nuys Boulevard in context, as details of its historic architectural and design features. Photographs shall be processed for archival permanence in accordance with the Historic American Building Survey (HABS) photographic specifications. Photo views shall include:

- Contextual views showing 8324 Van Nuys Boulevard in its setting;
- Elevation views (8 cardinal views);
- Detail views of significant architectural and design elements.

FTA and Metro shall complete a Written Historical and Descriptive Data report for 8324 Van Nuys Boulevard. This report will provide a physical description the building and discuss its significance under applicable NRHP Criteria, and address the historical context for its construction following the format and instructions in the September 1993 National Park Service (NPS) HAER Guidelines for Preparing Written Historical and Descriptive Data.

Upon review and approval of the photography and documentation, FTA and Metro shall submit copies of the documentation and photographs to the Dorothy Peyton Gray Transportation Library. Copies of the photographs and documentation shall also be offered to the Los Angeles Public Library and the Los Angeles Conservancy and a copy shall be submitted to the South Central Coastal Information Center (SCCIC) at California State University, Fullerton.

MM-HR-9: Interpretation. FTA and Metro shall make a reasonable effort to identify an appropriate location for an interpretive display or kiosk within the proposed underground Roscoe Station and entry plaza. The interpretive display shall include information on the building's history and significance, as well as information on the significant postwar suburban development of Panorama City. All interpretive material shall be prepared in consultation with the Los Angeles Office of Historic Resources (OHR) and shall be made available for review and approval by the SHPO prior to fabrication and installation.

Archaeological Resources

The following measures are proposed to avoid potential impacts that could occur to archaeological resources during construction of Alternatives 3 and 4.

MM-AR-1: Within the site areas and a 500-foot buffer zone, monitoring by a qualified archaeologist and culturally affiliated Native American shall be conducted within the project APE during all initial ground-disturbing activities. If, during cultural resources monitoring, the archaeologist determines that the sediments being excavated have been previously disturbed and are unlikely to contain significant cultural materials, the archaeologist shall request that monitoring be reduced or eliminated. If buried cultural resources such as flaked or ground stone, historic debris, or human remains are inadvertently discovered during ground-disturbing activities, work shall stop in that area and within 100 feet of the find. Treatment measures for items that are not associated with human remains typically include development of avoidance strategies, capping with fill material, or mitigation of impacts through data recovery programs such as excavation or detailed documentation.

MM-AR-2: If prehistoric or historic-era cultural materials are encountered during construction activities, all work in the immediate vicinity of the find shall halt until a qualified archaeologist can evaluate the find and make recommendations. Cultural resource materials may include prehistoric resources such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock as well as historic resources such as glass, metal, wood, brick, or structural remnants. If the qualified archaeologist determines that the discovery represents a potentially significant cultural resource, additional investigations may be required to mitigate adverse impacts from project implementation. These additional studies may include avoidance, testing, and evaluation or data recovery excavation.

MM-AR-3: If human remains are discovered, NAGPRA requires that the person who makes the discovery must immediately notify the responsible federal agency official by phone, presumably the FTA. State Health and Safety Code Section 7050.5 states that further disturbances and activities will cease in any area or nearby area suspected to overlie remains, and the County Coroner be contacted. Pursuant to Public Resources Code Section 5097.98, if the remains are thought to be Native American, the coroner will notify the NAHC, who will then notify the Most Likely Descendent (MLD). Metro and the FTA will contact the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

Paleontological Resources

The following construction mitigation measure is proposed to mitigate potential impacts to paleontological resources, if they occur, under Alternatives 1, 2, and 3.

MM-PR-1: A qualified paleontologist should be available on call to respond to any unanticipated fossil discoveries during earthmoving activities.

The following construction mitigation measure is proposed to mitigate the potentially significant impacts to paleontological resources that could occur under Alternative 4, the LRT Alternative.

MM-PR-2: Prior to the start of construction a qualified Principal Paleontologist shall prepare a Paleontological Mitigation Plan (PMP) that includes the following requirements:

- All project personnel involved in ground-disturbing activities shall receive paleontological resources awareness training before beginning work.
- Excavations, excluding drilling, deeper than 8 feet below the current surface in the Quaternary alluvium shall be periodically spot checked to determine when older sediments conducive to fossil preservation are encountered. Once the paleontologically sensitive older alluvium is reached, a qualified paleontologist shall perform full-time monitoring of construction. Should sediments in a particular area be determined by the paleontologist to be unsuitable for fossil preservation, monitoring shall be suspended in those areas. A paleontologist shall be available to be on call to respond to any unanticipated discoveries and may adjust monitoring based on the construction plans and field visits.
- Sediment samples from the Quaternary older alluvium shall be collected and screened for microfossils.
- Recovered specimens shall be stabilized and prepared to the point of identification. Specimens shall be identified to the lowest taxonomic level possible and transferred to an accredited repository for curation along with all associated field and lab data.
- Upon completion of project excavation, a Paleontological Mitigation Report (PMR) documenting compliance shall be prepared and submitted to the Lead Agency under CEQA.

3.16 Environmental Justice

No-Build Alternative

The No-Build Alternative would not involve new transportation or infrastructure improvements aside from projects currently under construction or funded for future construction. Therefore, the No-Build Alternative would not result in disproportionately high and adverse effects on minority and low-income populations with respect to construction.

TSM Alternative

The TSM Alternative would involve minimal construction activities, including the installation of new bus stops and signage. During construction, this alternative would result in minor effects on the social, economic, and physical conditions of the communities and neighborhoods in the project study area. These minor temporary effects are anticipated to affect all communities within the project study area comparably, regardless of the block groups' socioeconomic or demographic characteristics. Therefore, the TSM Alternative would not result in disproportionately high and adverse effects on minority and low-income populations with respect to construction.

Build Alternatives 1 through 4

Construction impacts would vary for the build alternatives, with less severe impacts resulting from the Curb-Running and Median-Running BRT Alternatives, moderately severe impacts resulting from the Low-Floor LRT/Tram Alternative, and the most severe impacts resulting from the LRT Alternative. The two BRT alternatives would require less infrastructure; therefore, construction

activities would be shorter in duration and the least disruptive to communities and neighborhoods in the project study area. The Low-Floor LRT/Tram and LRT Alternatives would require more infrastructure, including an OCS, TPSSs, an MSF, and larger station platforms than the BRT alternatives, requiring a longer construction period. The LRT Alternative would require tunneling to construct underground portions of the alignment, as well as underground stations, which would result in the most severe construction impacts among the build alternatives.

Mobility and Access Impacts

Effects associated with temporary closures and temporary removal of parking are anticipated to affect all communities within the project study area comparably, regardless of the block groups' socioeconomic or demographic characteristics. Road and sidewalk closures and the addition of construction vehicles and equipment on major City of Los Angeles and City of San Fernando streets could also reduce public access to annual festivals and events in the various communities along the alignment. In addition, construction could disrupt traffic patterns and make public access to businesses and community resources more difficult. Lane closures, traffic detours, and designated truck routes associated with construction could also result in decreased access for emergency vehicles and delayed response times for emergency services. Lane and/or road closures, and any potential for temporary effects associated with emergency vehicle response, would affect all neighborhoods along the alignment, regardless of demographic or socioeconomic character. Therefore, no disproportionate adverse effects on minorities or low-income communities are anticipated.

Social and Economic Impacts

The LRT Alternative would be the most costly and take the longest to construct; therefore, it would generate the greatest number of construction jobs. In addition, because of the temporary nature of construction jobs, the employment opportunities resulting from construction would not be expected to induce substantial population growth in communities and neighborhoods in the project study area.

Construction activities would likely result in a decrease in accessibility to many businesses and could reduce on-street and off-street parking. This could negatively affect business activity levels because the number of customers may temporarily decline. Construction activities would be required throughout the project corridor and temporary decreases in accessibility would affect all businesses comparably, regardless of the block groups' socioeconomic or demographic characteristics.

The Low-Floor LRT and LRT Alternatives would have greater needs for construction easements than the two BRT alternatives. No parcels would be acquired for the BRT alternatives, and no businesses would be displaced for the construction of these alternatives. Some construction easements for the Low-Floor LRT/Tram and LRT Alternatives may require additional permanent right-of-way acquisitions and the permanent displacement of businesses.

Because it is anticipated that most businesses permanently displaced by construction easements for the Low-Floor LRT/Tram and LRT Alternatives would be relocated to nearby properties, construction of these alternatives would not be expected to result in substantial changes to the local economic conditions in the project study area.

Business displacements required for construction easements for the Low-Floor LRT/Tram and LRT Alternatives could result in substantial changes to local neighborhood character, and potentially the social fabric of the local community. The removal of some businesses from their local customer base may lead to the disruption and termination of the businesses, resulting in localized job losses. These effects are anticipated to affect all communities within the project study area comparably, regardless

of the block groups' socioeconomic or demographic characteristics. Therefore, Alternatives 1 through 4 would not result in disproportionately high and adverse effects on minority and low-income populations with respect to construction.

Physical Impacts

Construction of the build alternatives would not likely result in changes to land use patterns or physical division of communities, because construction would be short-term and would not affect land use designations or introduce barriers that would divide communities. However, construction activities would result in several other physical impacts and intrusions, including noise, dust, odors, and traffic delays resulting from haul trucks and construction equipment in public streets and staging areas. Local neighborhoods, businesses, and community facilities may be inconvenienced temporarily, and community activities could be disrupted by these activities.

Construction of the build alternatives may also result in several visual impacts within and surrounding the project corridor. Construction of the build alternatives could also have temporary effects on public safety and security within the project study area. During construction, motorists, pedestrians, and bicyclists would be exposed to additional safety hazards because of proximity to construction activities.

Construction of the LRT Alternative would include tunneling which could encounter hazardous materials from adjacent industrial and commercial land uses. Tunneling for the LRT Alternative would be located along a segment of the corridor that includes less-than-majority minority or low-income populations. The effects from potential hazardous materials would be reduced through construction management and abatement measures, as detailed in the Environmental Site Assessment. In addition, the Phase II Site Assessment would include recommendations to treat or handle any hazardous materials that have the potential to be encountered during construction of the project.

These effects are anticipated to affect all communities within the project study area comparably, regardless of the block groups' socioeconomic or demographic characteristics. Therefore, Alternatives 1 through 4 would not result in disproportionately high and adverse effects on minority and low-income populations with respect to construction.

Mitigation Measures

Community MM-5 (All Build Alternatives): To the maximum extent feasible, temporary detours will be developed for any road or sidewalk closures during construction to ensure pedestrian detours are accessible to seniors and disabled persons. Signage will be posted (in appropriate languages) to alert pedestrians and vehicles of any road or sidewalk closures or detours. Sidewalks that are ADA accessible would be required on both sides of the street during construction. However, subject to Metro approval, sidewalks may be closed for short durations.

Community MM-6 (All Build Alternatives): Signage to indicate accessibility to businesses will be used near construction activities.

Impacts Remaining After Mitigation

Under NEPA, the following alternatives would result in disproportionately high and adverse effects on minority or low-income populations with respect to displacements:

- Low-Floor LRT/Tram Alternative with MSF Option A (minority);
- Low-Floor LRT/Tram Alternative with MSF Option C (low-income); and
- LRT Alternative with MSF Option A (minority).

These alternatives would also result in new transit opportunities that are anticipated to result in improved connectivity and transit equity. Mitigation measures are included below in Chapter 5 to reduce or minimize the adverse effects, where feasible. After implementation of the proposed mitigation measures, adverse effects would not be substantial.

There are no thresholds of significance in CEQA for environmental justice impacts. Therefore, no CEQA determination can be made for environmental justice impacts resulting from the project.

3.17 Growth Inducing Impacts

No-Build Alternative

Under the No-Build Alternative, no new transportation infrastructure would be built within the project study area, aside from projects that are currently under construction or funded for construction and operation by 2040. Because the No-Build does not propose new construction, it would not be growth inducing.

TSM Alternative

The TSM Alternative would consist primarily of low-cost transit service improvements. Physical improvements to the transportation network would be minor. Therefore, construction associated with this alternative would be minimal and no growth inducement impacts would occur as result.

Build Alternatives 1 through 4

The growth inducement potential of construction activities under each build alternative would vary depending on the extent, duration, cost, and number of construction jobs generated by each alternative. The LRT Alternative would be the most costly and take the longest to construct, and consequently it would generate the greatest number of construction jobs. However, it is not expected that the increase in construction jobs under any of the build alternatives would result in substantial increases in project study area populations because of the fact that there is a large pool of skilled and unskilled construction workers in Los Angeles County within commuting distance of the project and because of the temporary nature of construction jobs. Consequently, it is unlikely few if any construction workers employed by the proposed project would relocate to the project study area. Therefore, proposed construction activities would not result in a substantial increase in the project study area population.

Mitigation Measures

No mitigation measures are required.

Impacts remaining after Mitigation

Impacts would be less than significant under CEQA and minor adverse under NEPA.

3.18 Real Estate

No-Build Alternative

Under the No Build Alternative, there would be no displacement or acquisition of properties for transit infrastructure. Therefore, no adverse impacts associated with displacements or relocations are anticipated.

Transportation System Management Alternative

The TSM alternative would improve existing transit infrastructure and would not require any permanent acquisition of property to implement. Therefore, no adverse impacts associated with displacements or relocations are anticipated.

Build Alternative 1 – Curb-Running Bus Rapid Transit Alternative

Alternative 1 would not require the permanent acquisition of any property within the study area as it primarily involves dedication of the curb lane to bus service from the morning through the early evening. No new facilities beyond bus stop improvements would be required. All improvements associated with Alternative 1 would take place within existing transportation ROW. Therefore, no impacts associated with acquisitions of property would occur under Alternative 1.

Build Alternative 2 – Median-Running BRT Alternative

Similar to Alternative 1, Alternative 2 would not require the permanent acquisition of any property along the project corridor as it primarily involves dedication of the median lane to bus service. No new facilities beyond bus stop improvements would be required. All improvements associated with Alternative 1 would take place within existing transportation ROW. Therefore, no impacts associated with acquisitions of property would occur under Alternative 2.

Build Alternative 3 – Low-Floor LRT/Tram Alternative

The Low Floor LRT/Tram Alternative would require the full or partial acquisition of approximately 28 parcels (please note that the property acquisitions required to construct the MSF and the connection to the MSF are discussed separately under Section 4.2.7 below). These acquisitions would consist of 25 full takes and 3 partial takes. Eleven property acquisitions would be dispersed along the alignment to accommodate TPSS facilities, which would be spaced approximately 1 to 1.5 mile apart along the project alignment. In addition, 15 parcels would be fully acquired to accommodate the LRT/Tram guideway at the southwest corner of San Fernando Road and Van Nuys Boulevard to provide the necessary curve to transition the alignment to San Fernando Road. These parcels consist of commercial retail businesses, which would require relocation. Two parcels between Weidner Street and the SR-118 on/off-ramp at San Fernando Road would be acquired to accommodate a station platform.

No residential property would be acquired under Alternative 3 and all acquisitions that would be required consist of commercial properties. The Van Nuys corridor consists primarily of commercially zoned land that could accommodate displaced businesses. Where acquisition and relocation are unavoidable, Metro would follow the provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), as amended, and implemented pursuant to the Uniform Relocation Assistance and Real Property Acquisition Regulations for Federal and Federally Assisted Programs adopted by the U.S. Department of Transportation (USDOT), dated February 3, 2005. Metro would apply acquisition and relocation policies to assure compliance with the Uniform Act and Amendments. Just compensation, which shall not be less than the approved appraisal made to each property owner, would be offered by Metro. Each homeowner, renter, business, or nonprofit organization displaced as a result of the project would be given advance written notice and would be informed of the eligibility requirements for relocation assistance and payments.

Because the study area and surrounding urban area are almost entirely built out and given the number of existing buildings for sale or lease in the immediate area, it is expected that most of the businesses that would be displaced due to Alternative 3 would relocate to existing commercial buildings. Thus, it is not anticipated that construction of a substantial amount of new commercial

development that could result in substantial adverse impacts to the environment would occur. Therefore, substantial adverse indirect effects related to displacement and relocation are not anticipated under Alternative 3.

Build Alternative 4 – Light Rail Transit Alternative

Alternative 4 would require the full or partial acquisition of approximately 56 parcels along the corridor. Of these 56 acquisitions, 45 would be full takes and 11 would be partial takes. Similar to Alternative 3, TPSS facilities would be dispersed along the project alignment and would require 13 property acquisitions of which 12 would be full takes and one would require a part-take of a grocery store parking lot. The remaining 43 property acquisitions would be required to accommodate the project guideway and station platforms. As with Alternative 3, the 16 parcels, consisting of commercial property, would be fully acquired to accommodate the LRT guideway at the southwest corner of San Fernando Road and Van Nuys Boulevard to provide the necessary curve to transition the alignment to San Fernando Road. Two station platforms, the Roscoe Station and the Sherman Way Station, would require the acquisition of several commercial properties.

Three parcels along Hartland Street that would be acquired to accommodate a TPSS facility. They are zoned and designated for residential use, and appear to be vacant lots; therefore, no displacement or relocation of residents would be required under Alternative 4. All other acquisitions associated with Alternative 4 consist of commercial and/or light industrial land uses.

As described above under Alternative 3, it is anticipated that there is an adequate supply of commercial and industrial properties along the corridor and in surrounding areas to accommodate displaced businesses; though larger industrial facilities may have difficulty finding comparable properties near their existing locations. As with Alternative 3, where acquisition and relocation are unavoidable, Metro would follow the provisions of the Uniform Act.

Because the study area and surrounding urban area are almost entirely built out and given the number of existing buildings for sale or lease in the immediate area, it is expected that most of the businesses that would be displaced due to Alternative 4 would relocate to existing buildings. Thus, it is not anticipated that construction of a substantial amount of new commercial or industrial development that could result in substantial adverse impacts to the environment would occur. Therefore, substantial adverse indirect effects related to displacement and relocation are not anticipated under Alternative 4.

Maintenance and Storage Facility

In addition to ROW acquisitions required to construct the track and support facilities associated with Alternatives 3 and 4, a number of parcels would be acquired to accommodate the MSF.

In addition to the ROW required to construct the Alternative 4 guideway and support facilities, additional ROW would be required to connect to one of the three alternative MSF sites. Alternative 3 would also require one additional acquisition to connect to MSF Option A. The ROW required for the MSF connections is discussed following each MSF Option discussion below.

MSF Option A would fully acquire 62 parcels between Calvert Street to the north, Oxnard Street to the south, and Kester Avenue to the west. A majority of the property that would be acquired consists of light manufacturing and commercial property most of which contains businesses oriented toward automobile repair and supplies and other general commercial retail uses. Three would also be fully acquired and though they are zoned for residential use, they are developed with a single parking lot serving an adjacent warehouse business. However, one parcel (2241-025-014) zoned for industrial use appears to include approximately four housing units. Accordingly, residential displacement would result under MSF Option A.

Metro would apply acquisition and relocation policies to assure compliance with the Uniform Act and Amendments. All real property acquired by Metro would be appraised to determine its fair market value. Just compensation, which shall not be less than the approved appraisal made to each property owner, would be offered by Metro. Each homeowner, renter, business, or nonprofit organization displaced as a result of the project would be given advance written notice and would be informed of the eligibility requirements for relocation assistance and payments.

As discussed above, it is expected that most of the businesses that would be displaced due to MSF Option A would relocate to existing buildings. Thus, it's not anticipated that construction of a substantial amount of new development would be required that could result in substantial adverse impacts to the environment would occur. Therefore, substantial adverse indirect effects related to displacement and relocation are not anticipated under MSF Option A.

MSF Option B would require 37 full takes along Keswick Street and Raymer Street. A majority of the property that would be acquired consists of light manufacturing and commercial property, most of which contains businesses oriented toward automobile repair and supplies or raw materials supply and manufacturing.

Similar to MSF Option A, it is expected that most of the businesses that would be displaced under MSF Option B would relocate to existing buildings. Thus, it's not anticipated that a substantial amount of new development would be required that could result in substantial adverse impacts to the environment would occur. Therefore, substantial adverse indirect effects related to displacement and relocation are not anticipated under MSF Option B.

MSF Option C would fully acquire 42 parcels along Arminta Street and Cabrito Road. As with Option B, a majority of the property that would be acquired consists of light manufacturing and commercial property oriented toward automobile repair and raw materials supply and manufacturing.

Similar to MSF Option A, it is expected that most of the businesses that would be displaced under MSF Option C would relocate to existing buildings. Thus, it's not anticipated that a substantial amount of new development would be required that could result in substantial adverse impacts to the environment would occur. Therefore, substantial adverse indirect effects related to displacement and relocation are not anticipated under MSF Option C.

MSF Option C Connection

The MSF Option C connection for Alternative 4 would be similar to that of the MSF Option B connection requiring the full acquisition of the same 11 commercial properties. The primary difference would be 2 additional underground easements as the tunnel portion of the alignment would be extended below these two private properties.

Mitigation Measures

Metro would provide relocation assistance and compensation for all displaced businesses as required by both the Uniform Act and the California Code. The details of these laws regarding relocation assistance and compensation for property acquisitions are described in Sections 3.1 and 3.2. Where acquisitions and relocations are unavoidable, Metro would follow the provisions of both the Uniform Act and the California Code, where applicable. All real property acquired by Metro would be appraised to determine its fair market value. Just compensation, which shall not be less than the approved appraisal would be made to each property owner. Each business and residential unit displaced as a result of the project would be given advance written notice and would be informed of their eligibility for relocation assistance and payments. It is anticipated that where

relocation would be required, it would result in the relocation of most of the jobs that would be potentially displaced. Therefore, there would be no net loss of jobs overall. This would result in no adverse impacts related to job loss. No additional measures beyond what is required by law are proposed

Impacts remaining after Mitigation

Upon implementation of relocation assistance and compensation under the Uniform Act, no adverse effects would result under Alternatives 3 and 4.

3.19 Traffic and Transportation

Future Baseline Conditions/ No Build Alternative

As there would be no construction activity planned under this alternative, no impacts to transit would occur. As there would be no construction activity planned under this alternative, no impacts to traffic would occur. There would be no physical change to the existing environment and therefore there would be no impacts to traffic. The No Build Alternative would not generate operational or construction parking impacts to on-street, as project-related construction or major physical improvements within the roadway right-of-way along the project corridor would not occur.

The No Build Alternative would not generate operational or construction parking impacts to pedestrian and bicycle facilities, as project-related construction or major physical improvements within the roadway right-of-way along the project corridor would not occur.

Transportation Systems Management (TSM) Alternative

Implementation of improved transit service under the TSM Alternative would result in an increase of 466 daily transit boardings on Van Nuys Boulevard between the MOL and the Sylmar/San Fernando Metrolink station, as compared to future no-build/baseline conditions. There would not be any operational impacts to existing bus service under the TSM Alternative.

As there would be no construction activity planned under this alternative, no impacts to traffic would occur. There would be no physical change to the existing environment and therefore there would be no impacts to traffic. There would not be construction activity associated with this alternative. On-street parking within the project corridor would not be affected during construction.

The TSM Alternative would not generate operational or construction parking impacts to pedestrian and bicycle facilities, as project-related construction or major physical improvements within the roadway right-of-way along the project corridor would not occur.

Build Alternative 1 – Curb-Running Bus Rapid Transit (BRT) Alternative

Construction of Build Alternative 1 would not result in temporary adverse effects to transit service under NEPA or significant impacts under CEQA to transit operations, based on the estimated duration and magnitude of construction for roadway striping of the bus lane, modifications to roadway signage, and installation of new bus stop infrastructure such as shelters and seating.

Some curb lane closures within small work areas will be necessary to implement the improvements, bus stops would need to be temporarily closed, and temporary bus stops outside of the work areas would be provided under the traffic management plan, or the nearest bus stops would serve patrons of the temporarily closed stop(s).

The duration of construction within each work zone along the Project corridor would likely be less than two weeks.

Construction of Project Build Alternative 1 would not significantly impact vehicle travel, based on the estimated duration and magnitude of construction for roadway striping of the bus lane, modifications to roadway signage, and installation of new bus stop infrastructure such as shelters and seating.

The duration of construction within each work zone along the Project corridor is estimated to be less than two weeks for roadway striping, paving, and signing/striping of the bus lanes. At the start of construction within each work area, on-street parking areas would be removed for Project-related roadway signing and striping activities, and the installation of bus stop infrastructure including shelters and seating.

Existing and planned pedestrian and bicycle facilities would be affected during construction activities for the implementation of this alternative. Closure of these facilities, and establishment of detours to parallel routes, would be implemented as part of traffic control plans to be approved by the City of Los Angeles. Pedestrian routes would be lengthened where minor intersections would be closed as part of construction. Pedestrian detour routes would be provided, but the increased walk distances would not be reduced.

Build Alternative 2 – Median-Running BRT Alternative

Construction of the Project Build Alternative 2 would result in temporary adverse effects and significant impacts to transit operations, based on the estimated duration and magnitude of construction for roadway striping of the bus lane, modifications to roadway signage, and installation of new bus stop infrastructure such as shelters and seating.

Some curb lane closures within small work areas will be necessary to implement the improvements, and bus stops would need to temporarily closed, and temporary bus stops outside of the work areas would be provided under the traffic management plan, or the nearest bus stops would serve patrons of the temporarily closed stop(s).

The duration of construction within each block of the Project corridor would not likely exceed two weeks, but construction within station areas could take up to three months.

Construction of Build Alternative 2 would significantly impact vehicle travel, based on the estimated duration and magnitude of construction for striping of the bus lane, modifications to roadway signage, and installation of median bus stations and related infrastructure. The duration of construction within each work area along the Project corridor is estimated to be about two weeks per work area for the bus lanes, and up to three months per work area for the station locations.

On-street parking would be removed within work areas for this alternative. Parking prohibitions would be established per traffic control plans to be approved by LADOT.

Existing and planned pedestrian and bicycle facilities would be affected during construction activities for the implementation of this alternative. Closure of these facilities, and establishment of detours to parallel routes, would be implemented as part of traffic control plans to be approved by LADOT.

Build Alternative 3 – (Low-Floor LRT/Tram)

Construction of the Build Alternative 3 would result in temporary adverse effects and significant impacts to transit operations, based on the estimated duration and magnitude of construction for utility relocation, roadway striping of the bus lane, modifications to roadway signage, and installation of new bus stop infrastructure such as shelters and seating.

The duration of construction within each work area along the Project corridor is estimated to be up to 18 months.

Construction of Build Alternative 3 would significantly impact vehicle travel, based on the estimated duration and magnitude of construction for relocation of utilities, removal of the existing roadbed, installation of Low-Floor LRT/Tram system trackage, signals, power infrastructure, and installation of median rail stations and related infrastructure. The duration of construction within each work area along the Project corridor is estimated to be up to 18 months.

On-street parking would be removed within work areas for this alternative. Parking prohibitions would be established per traffic control plans to be approved by LADOT. Existing and planned pedestrian and bicycle facilities would be affected during construction activities for the implementation of this alternative. Closure of these facilities, and establishment of detours to parallel routes, would be implemented as part of traffic control plans to be approved by the City of Los Angeles. Pedestrian routes would be lengthened where minor intersections would be closed as part of construction. Pedestrian detour routes would be provided, but the increased walk distances would not be reduced.

Build Alternative 4 – (LRT)

Construction of Alternative 4 would result in temporary adverse effects and significant impacts to transit operations, based on the estimated duration and magnitude of construction for relocation of utilities, removal of the existing roadbed, installation of high-floor LRT system trackage, signals, power infrastructure, and installation of median rail stations and related infrastructure.

The duration of construction within each work area along the Project corridor is estimated to take up to 18 months for construction of the at-grade portions and up to 24 months for construction of the subterranean sections.

Construction of Alternative 4 would significantly impact vehicle travel, based on the estimated duration and magnitude of construction for relocation of utilities, removal of the existing roadbed, installation of high-floor LRT system trackage, signals, power infrastructure, and installation of median rail stations and related infrastructure. The duration of construction within each work area along the Project corridor is estimated to take up to 18 months for construction of the at-grade portions and up to 24 months for construction of the subterranean sections.

On-street parking would be removed within work areas for this alternative. Parking prohibitions would be established per traffic control plans to be approved by LADOT.

Existing and planned pedestrian and bicycle facilities would be affected during construction activities for the implementation of this alternative. Closure of these facilities, and establishment of detours to parallel routes, would be implemented as part of traffic control plans to be approved by the City of Los Angeles. Pedestrian routes would be lengthened where minor intersections would be closed as part of construction. Pedestrian detour routes would be provided, but the increased walk distances would not be reduced.

Mitigation Measures

Overall Mitigation - Traffic Management Plans

As the proposed Project build alternatives would be constructed almost exclusively within the public right-of-way of existing roadway corridors, the primary reviewer of final construction plans, work area configurations, and temporary traffic controls, signage, and lane stripingwould be LADOT. Metro would be required to create Traffic Management Plans (TMPs) for construction

areas that would define work areas and all other elements of construction. Approval of these TMPs by LAODT and implementation by Metro would reduce construction-period impacts to a level of insignificance.

The measures discussed here would address adverse effects and significant impacts to flow and access for various travel modes during the construction period. The entire Project corridor will not be affected, as work areas will be established within finite areas and in most cases construction operations will move to a separate work area once a major construction phase is completed.

Potential issues associated with various travel modes during the construction period are discussed in the sub-sections below.

Transit Service and Access

Metro would coordinate with local transit agencies in advance to communicate closures, communicate information on any changes to bus service that would result from the Project build alternatives, and develop detours as appropriate. Bus stops within work areas would need to be relocated, with warning signs posted in advance of the closure, and warnings and alternate stop notifications posted during the extent of the closure.

The traffic management plan, once approved by LADOT and implemented by the proposed Project construction contractor(s), would partially mitigate temporary disruptions to transit service.

Combined, the TMPs would partially offset adverse effects and significant impacts to transit operations and access during the construction period. Significant impacts could remain, and additional mitigation measures are not feasible; therefore the impacts would be significant and unavoidable.

Traffic

Metro, the construction contractor and LADOT would coordinate on the preparation of a traffic management plan to facilitate the flow of traffic in and around the construction zones. This mitigation measure would also apply to transit service. Although more measures may be added, typical measures included in a traffic management plan are:

- Schedule a majority of construction-related travel (i.e., deliveries, hauling, and worker trips) during the off-peak hours;
- Construction activities would be minimized during weekday AM and PM peak hours (typically 7:00 to 9:00 AM and 4:00 to 6:00 PM);
- Develop detour routes to facilitate traffic movement through construction zones without significantly increasing cut-through traffic in adjacent residential areas;
- Where feasible, temporarily restripe roadway such as restriping turning lanes, through lanes, and parking lanes at the affected intersections to maximize the vehicular capacity at those locations affected by construction closures;
- Where feasible, temporarily remove on-street parking to maximize the vehicular capacity at those locations affected by construction closures;
- Where feasible, place station traffic control officers at major intersections during peak hours to minimize delays related to construction activities;
- Develop and implement an outreach program to inform the general public about the construction process and planned roadway closures;

- Develop and implement a program with business owners to minimize effects to businesses during construction activity, including but not limited to signage programs;
- Metro would also coordinate with the local jurisdictions and Caltrans to designate and identify haul routes for trucks and to establish hours of operation. The selected routes should minimize noise, vibration, and other effects;
- To the extent practical, traffic lanes will be maintained in both directions, particularly during the morning and afternoon peak hours, and access to adjacent businesses via existing or temporary driveways would be maintained throughout the construction period
- Metro would coordinate with local school districts to disclose potential road closures and suggest detour routes for accessing schools.

Combined, these measures would partially address adverse effects and significant impacts to traffic flow during the construction period. Significant impacts could remain, and additional mitigation measures are not feasible; therefore the impacts would be significant and unavoidable.

Pedestrian and Bicycle Access

Existing and planned pedestrian and bicycle facilities would be affected during construction activities for the implementation of this alternative. Closure of these facilities, and establishment of detours to parallel routes, would be implemented as part of TMPs to be approved by LADOT.

Mitigation measures for potential impacts to pedestrian and bicycle impacts during the construction period are as follows:

- Provision of bicycle detour signs, as appropriate, to route bicyclists away from detour areas with minimal-width travel lanes and onto parallel roadways.
- Provision of sidewalk closure and pedestrian route detour signs, as appropriate, to safely provide alternate routes around work areas where sidewalks would be closed for safety reasons or for specific construction work within the sidewalk area.

These measures would partially address adverse effects and significant impacts to bicycle and pedestrian access during the construction period. Significant impacts could remain, and additional mitigation measures are not feasible; therefore the impacts would be significant and unavoidable.

Parking

On-street parking would be removed within most segments of the corridor during the construction period, under all of the Project build alternatives. Parking impacts were removed from the CEQA checklist. The parking study has shown that supply is available within the focused analysis areas. There would not be adverse effects of the parking removal during construction, under NEPA. Specific mitigation measures are therefore not recommended.

Impacts remaining after Mitigation

Impacts would be less than significant under CEQA and minor adverse under NEPA.

3.20 Section 4(f)

No-Build Alternative

Construction under the No-Build Alternative would not would not require any permanent displacement or acquisition of properties for transit infrastructure. Therefore, there would be no direct use of 4(f) resources.

Under the No-Build Alternative, no new infrastructure would be built within the study area as part of the proposed project. Therefore, there would be no noise, access, ecological intrusion, or aesthetics impacts related to construction activities associated with the No-Build Alternative. Thus, construction of the proposed project would not result in impacts so severe that the protected activities, features, or attributes that qualify the resources for protection under 4(f), are substantially diminished or impaired. As a result, no constructive use of 4(f) resources would occur under this alternative.

Under construction associated with the No-Build Alternative, there would not be any occupancy or change in ownership of properties within 1,000 feet of the proposed project alignment that are protected under Section 4(f). The scope of work would be minor and no permanent adverse physical effects on the protected resources would occur. As a result, no temporary occupancy of 4(f) resources would occur under this alternative.

TSM Alternative

The TSM alternative would improve existing transit infrastructure and would not require any permanent acquisition of property to construct. Therefore, no land that is considered a 4(f) resource would be permanently incorporated into a transportation facility through partial or full acquisition and no direct use of 4(f) resources would occur.

Proposed improvements would only require light construction equipment and, while access may temporarily be more limited at certain 4(f) properties due to new station construction, any construction would be of very short duration. There are no construction-related noise impacts associated with the TSM Alternative, and it is expected to result in minimal impacts to the existing visual setting in the project study area. It would also result in minimal changes to the environment. Thus, construction of the proposed project would not result in impacts so severe that the protected activities, features, or attributes that qualify the resources for protection under 4(f) are substantially diminished or impaired. As a result, no constructive use of 4(f) resources would occur under this alternative.

Any occupancy of a 4(f) designated property as a result of construction under the TSM alternative would be temporary and not involve a change in ownership of the property. The scope of work would be minor and no permanent adverse physical effects on the protected resources would occur.

Build Alternative 1 - Curb-Running Bus Rapid Transit Alternative

Under Alternative 1, construction of the proposed project would not require the permanent acquisition of any property within the study area as it primarily involves dedication of the curb lane to bus service. No new facilities beyond bus stop improvements would be required. All improvements associated with Alternative 1 would take place within existing transportation ROW. Therefore, no land that is considered a 4(f) resource would be permanently incorporated into a transportation facility through partial or full acquisition and no direct use of 4(f) resources would occur.

Construction of the build alternatives could result in temporary visual impacts within and surrounding the project corridor. Mitigation measures are also included to reduce these impacts. Station construction may potentially affect viewsheds from the Sepulveda Basin Recreation Area, the Delano Recreation Center, Tobias Avenue Park, and Recreation Park. The proposed construction under Alternative 1 would not result in any permanent proximity impacts to Section 4(f) resources. Also, because the proposed project is planned within an existing urban setting neighborhood and regional commercial setting, and wildlife species in the area are urban-tolerant, the overhead contact system lines and train operations would not result in significant ecological impacts.

Construction of stations and the alignment would require temporary sidewalk, lane, and road closures, and temporary removal of parking on Van Nuys Boulevard, San Fernando Road, Truman Street, and their cross streets. The proposed project would not result in impacts so severe that the protected activities, features, or attributes that qualify the resources for protection under 4(f) are substantially diminished or impaired. As a result, no constructive use of 4(f) resources would occur under this alternative.

Any occupancy of a 4(f) designated property as a result of construction under Alternative 1 would be temporary and not involve a change in ownership of the property. The scope of work would be minor and no permanent adverse physical effects on the protected resources would occur. As a result, no temporary occupancy of 4(f) resources would occur under this alternative.

Build Alternative 2 - Median-Running BRT Alternative

Under Alternative 2, construction of the proposed project would not require the permanent acquisition of any property within the study area as it primarily involves dedication of the median lane to bus service. No new facilities beyond bus stop improvements would be required. All improvements associated with Alternative 2 would take place within existing transportation ROW. Therefore, no land that is considered a 4(f) resource would be permanently incorporated into a transportation facility through partial or full acquisition and no direct use of 4(f) resources would occur.

While significant impacts from construction noise are predicted, mitigation measures to reduce these impacts are included, and no sensitive receptors affected by potential noise impacts are properties protected under Section 4(f). Also, because the proposed project is planned within an existing urban setting neighborhood and regional commercial setting, and wildlife species in the area are urban-tolerant, the overhead contact system lines and train operations would not result in significant ecological impacts.

Construction of stations and the alignment would require temporary sidewalk, lane, and road closures, and temporary removal of parking on Van Nuys Boulevard, San Fernando Road, Truman Street, and their cross streets. The project would not result in impacts so severe that the protected activities, features, or attributes that qualify the resources for protection under 4(f) are substantially diminished or impaired. As a result, no constructive use of 4(f) resources would occur under this alternative.

Any occupancy of a 4(f) designated property as a result of construction under Alternative 2 would be temporary and not involve a change in ownership of the property. The scope of work would be minor and no permanent adverse physical effects on the protected resources would occur. As a result, no temporary occupancy of 4(f) resources would occur under this alternative.

Build Alternative 3 – Low-Floor LRT/Tram Alternative

Construction of Alternative 3 would require the full or partial acquisition of approximately 28 parcels, which consist of commercial retail businesses. These acquisitions would require the full acquisition of 25 properties and the partial acquisition of an additional 3 properties, where no displacement or

relocation of residents would be required. Since construction of the proposed project under Alternative 3 would not require any permanent displacement or acquisition of properties for transit infrastructure, there would be no direct use of 4(f) resources.

Construction of the build alternatives could result in temporary visual impacts within and surrounding the project corridor. Mitigation measures are also included to reduce these impacts. Station construction may potentially affect viewsheds from the Sepulveda Basin Recreation Area, the Delano Recreation Center, Tobias Avenue Park, and Recreation Park.

The proposed project would not result in impacts so severe that the protected activities, features, or attributes that qualify the resources for protection under 4(f), are substantially diminished or impaired. As a result, no constructive use of 4(f) resources would occur under this alternative.

Any occupancy of a 4(f) designated property as a result of construction under Alternative 3 would be temporary and not involve a change in ownership of the property. The scope of work would be minor and no permanent adverse physical effects on the protected resources would occur. As a result, no temporary occupancy of 4(f) resources would occur under this alternative.

Build Alternative 4 - Light Rail Transit Alternative

Similar to Alternative 3, the LRT would be powered by overhead electrical wires, and would include supporting facilities, such as an OCS, TPSS, communications and signaling buildings, and an MSF. Stations would be constructed at approximately 1-mile intervals along the entire route. There would be 14 stations, three of which would be underground.

Construction of Alternative 4 would require the full or partial acquisition of approximately 56 parcels along the proposed project corridor, which consist of commercial and/or light industrial land uses. Of these 56 acquisitions, 45 would be full takes and 11 would be partial takes, where no displacement or relocation of residents would be required. In addition to ROW acquisitions required to construct the track and support facilities, a number of parcels would be acquired to accommodate the MSF. Since construction of the proposed project under Alternative 4 would not require any permanent displacement or acquisition of properties for transit infrastructure, there would be no direct use of 4(f) resources.

While significant impacts from construction noise are predicted, mitigation measures to reduce these impacts are included, and no sensitive receptors affected by potential noise impacts are properties protected under Section 4(f).

The proposed project would not result in impacts so severe that the protected activities, features, or attributes that qualify the resources for protection under 4(f) are substantially diminished or impaired. As a result, no constructive use of 4(f) resources would occur under this alternative.

Any occupancy of a 4(f) designated property as a result of construction under Alternative 4 would be temporary and not involve a change in ownership of the property. The scope of work would be minor and no permanent adverse physical effects on the protected resources would occur. As a result, no temporary occupancy of 4(f) resources would occur under this alternative.

Mitigation Measures

No mitigation measures are required.

Impacts remaining after Mitigation

Impacts would be less than significant under CEQA and minor adverse under NEPA.