Los Angeles County
Metropolitan Transportation Authority

West Santa Ana Branch Transit Corridor

Draft Environmental Impact Statement/Environmental Impact Report



Metro®

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DRAFT ENVIRONMENTAL IMPACT STATEMENT/ ENVIRONMENTAL IMPACT REPORT

for the

WEST SANTA ANA BRANCH TRANSIT CORRIDOR PROJECT

prepared by the

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL TRANSIT ADMINISTRATION

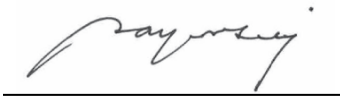
and the

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Pursuant to:

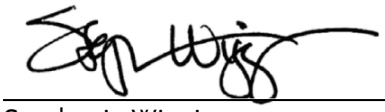
National Environmental Policy Act of 1969, § 102 (42 United States Code [USC] § 4332); Federal Transit Law (49 USC Chapter 53); 49 USC § 303 (formerly Department of Transportation Act of 1966 § 4[f]); National Historic Preservation Act of 1966, § 106 (16 USC § 470f); Clean Air Act (42 USC § 7401 et seq.); Clean Water Act, Section 404 (33 USC § 1344); Endangered Species Act (7 USC § 136; 16 USC § 1531 et seq.); 49 Code of Federal Regulations (CFR) § 622.101; 23 CFR Parts 771 and 774; 40 CFR Parts 1500-1508; Executive Order 11990 (Protection of Wetlands); Executive Order 11988 (Floodplain Management); Executive Order 12898 (Environmental Justice); California Environmental Quality Act (CEQA), Public Resources Code § 21000 et seq.; and the State of California's CEQA Guidelines, California Administrative Code, § 15000 et seq.

FTA may issue a single Final Environmental Impact Statement and Record of Decision document pursuant to Pub. L. 114-94 and 23 U.S.C 139(n)(2) unless FTA determines statutory criteria or practicability considerations preclude issuance of the combined document pursuant to Section 139.



Date: July 20, 2021

Ray Tellis
Region IX Regional Administrator
Federal Transit Administration



Date: 07/19/2021

Stephanie Wiggins
Chief Executive Officer
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DRAFT ENVIRONMENTAL IMPACT STATEMENT/ENVIRONMENTAL IMPACT REPORT

ABSTRACT

LEAD AGENCIES: Federal Transit Administration, U.S. Department of Transportation, and Los Angeles County Metropolitan Transportation Authority

STATE CLEARINGHOUSE NO. 2017061007

TITLE OF PROPOSED ACTION: West Santa Ana Branch Transit Corridor Project

ABSTRACT: The Los Angeles County Metropolitan Transportation Authority (Metro) proposes to implement a light rail transit project that would extend from four possible northern termini in downtown Los Angeles through southeast Los Angeles County to a southern terminus in the City of Artesia. The greater 98-square-mile Study Area extends from the downtown Los Angeles area to the Gateway Cities subregion of Los Angeles County. The Study Area includes 20 cities—Los Angeles, Vernon, Maywood, Huntington Park, Commerce, Bell, Cudahy, Bell Gardens, South Gate, Lynwood, Compton, Downey, Paramount, Bellflower, Long Beach, Lakewood, Norwalk, Artesia, Cerritos, and Hawaiian Gardens—as well as portions of unincorporated LA County. Alternatives studied include a No Build Alternative and four Build Alternatives, as follows:

- Alternative 1: Los Angeles Union Station to Pioneer Station
- Alternative 2: 7th Street/Metro Center to Pioneer Station
- Alternative 3: Slauson A (Blue) Line to Pioneer Station (Staff Preferred Alternative)
- Alternative 4: I-105/C (Green) Line to Pioneer Station

Alternative 1 also has two design options under consideration: Design Option 1: Los Angeles Union Station – Metropolitan Water District (MWD) and Design Option 2: Add Little Tokyo Station. Two maintenance and storage facility (MSF) site options are also under consideration, although only one would be selected: Paramount MSF site option and Bellflower MSF site option.

This report is a combined Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR), satisfying the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). This Draft EIS/EIR defines the alternatives studied and describes each alternative's associated potential transportation and environmental impacts, capital costs, and potential funding sources. Potential areas of impact include transit, traffic, active transportation, parking, land use/neighborhoods, land acquisition, displacement and relocation, equity and environmental justice considerations, visual quality, air quality, climate change, noise and vibration, geology, soils and seismicity, exposure to hazardous substances, water resources, biological resources, energy resources, safety and security, historic resources, archaeological resources, paleontological resources, tribal cultural resources, economic and fiscal impacts, electromagnetic fields, Section 4(f), community facilities and parklands, construction impacts, and other CEQA determinations. Mitigation measures for each alternative are also identified, as applicable. The information contained in this document will be used by the Metro Board of Directors to decide whether to implement the project and to select, from among the alternatives and alignment options under consideration, a locally preferred alternative in conjunction with the Federal Transit Administration for implementation. The Notice of Availability of the Draft EIS/EIR is expected to be published in the Federal Register on July 30, 2021. The public comment period will be 45 days from the issuance of the Notice of Availability and is expected to end on September 13, 2021.

Additional written comments and/or questions concerning this document should be directed to:

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APPENDIX B: FINAL ADVANCED CONCEPTUAL ALIGNMENT DESIGN

APPENDIX C: SYSTEM COMPONENTS AND ANCILLARY FACILITIES

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APPENDIX E: WEST SANTA ANA BRANCH TRANSIT CORRIDOR PROJECT FINAL LAND USE IMPACT ANALYSIS REPORT (METRO 2021A) (AKA LAND USE IMPACT ANALYSIS REPORT)

APPENDIX F: WEST SANTA ANA BRANCH TRANSIT CORRIDOR PROJECT FINAL SAFETY AND SECURITY IMPACT ANALYSIS REPORT (METRO 2021C) (AKA SAFETY AND SECURITY IMPACT ANALYSIS REPORT)

APPENDIX G: WEST SANTA ANA BRANCH TRANSIT CORRIDOR PROJECT FINAL COMMUNITIES AND NEIGHBORHOODS IMPACT ANALYSIS REPORT (METRO 2021N) (AKA COMMUNITIES AND NEIGHBORHOODS IMPACT ANALYSIS REPORT)

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APPENDIX J: WEST SANTA ANA BRANCH TRANSIT CORRIDOR PROJECT FINAL AIR QUALITY IMPACT ANALYSIS REPORT (METRO 2021I) (AKA AIR QUALITY IMPACT ANALYSIS REPORT)

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APPENDIX P: WEST SANTA ANA BRANCH TRANSIT CORRIDOR PROJECT FINAL ADVANCED CONCEPTUAL ENGINEERING CAPITAL COST REPORT (METRO 2021X) (AKA ADVANCED CONCEPTUAL ENGINEERING CAPITAL COST REPORT)

APPENDIX Q: WEST SANTA ANA BRANCH TRANSIT CORRIDOR PROJECT FINAL OPERATING AND MAINTENANCE COSTS REPORT (METRO 2021W) (AKA OPERATING AND MAINTENANCE COSTS REPORT)

APPENDIX R: FUNDING AND FINANCING FOR THE WEST SANTA ANA BRANCH PROJECT

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APPENDIX V: WEST SANTA ANA BRANCH TRANSIT CORRIDOR PROJECT FINAL ELECTROMAGNETIC FIELD IMPACT POTENTIAL MEMORANDUM (METRO 2021V) (AKA ELECTROMAGNETIC FIELD IMPACT POTENTIAL MEMORANDUM)

APPENDIX W: WEST SANTA ANA BRANCH TRANSIT CORRIDOR PROJECT FINAL CULTURAL RESOURCES SURVEY REPORT–REV 1 (METRO 2020D) (AKA CULTURAL RESOURCES SURVEY REPORT)

APPENDIX X: WEST SANTA ANA BRANCH TRANSIT CORRIDOR PROJECT REVISED PRELIMINARY CULTURAL RESOURCES EFFECTS REPORT (METRO 2021U) (AKA REVISED PRELIMINARY CULTURAL RESOURCES EFFECTS REPORT)

APPENDIX Y: WEST SANTA ANA BRANCH TRANSIT CORRIDOR PROJECT FINAL PALEONTOLOGICAL RESOURCES IMPACTS ANALYSIS REPORT (METRO 2021Y) (AKA PALEONTOLOGICAL RESOURCES IMPACTS ANALYSIS REPORT)

APPENDIX Z: WEST SANTA ANA BRANCH TRANSIT CORRIDOR PROJECT FINAL TRADITIONAL CULTURAL PROPERTIES AND TRIBAL CULTURAL RESOURCES IMPACT ANALYSIS REPORT (METRO 2021B) (AKA TRADITIONAL CULTURAL PROPERTIES AND TRIBAL CULTURAL RESOURCES IMPACT ANALYSIS REPORT)

APPENDIX AA: WEST SANTA ANA BRANCH TRANSIT CORRIDOR PROJECT FINAL PARKLANDS AND COMMUNITY FACILITIES IMPACT ANALYSIS REPORT (METRO 2021K) (AKA PARKLANDS AND COMMUNITY FACILITIES IMPACT ANALYSIS REPORT)

APPENDIX BB: WEST SANTA ANA BRANCH TRANSIT CORRIDOR PROJECT DRAFT SECTION 4(F) AND SECTION 6(F) EVALUATION (METRO 2021L) (AKA SECTION 4(F) AND SECTION 6(F) EVALUATION)

APPENDIX CC: WEST SANTA ANA BRANCH TRANSIT CORRIDOR PROJECT FINAL ECONOMIC AND FISCAL IMPACT ANALYSIS REPORT (METRO 2021R) (AKA ECONOMIC AND FISCAL IMPACT ANALYSIS REPORT)

APPENDIX DD: WEST SANTA ANA BRANCH TRANSIT CORRIDOR PROJECT FINAL GROWTH-INDUCING IMPACT ANALYSIS REPORT (METRO 2021T) (AKA GROWTH-INDUCING IMPACT ANALYSIS REPORT)

APPENDIX EE: WEST SANTA ANA BRANCH TRANSIT CORRIDOR PROJECT FINAL CUMULATIVE IMPACT ANALYSIS REPORT (METRO 2021AA) (AKA CUMULATIVE IMPACT ANALYSIS REPORT)

APPENDIX FF: WEST SANTA ANA BRANCH TRANSIT CORRIDOR PROJECT FINAL ENVIRONMENTAL JUSTICE IMPACT ANALYSIS REPORT (METRO 2021Z) (AKA ENVIRONMENTAL JUSTICE IMPACT ANALYSIS REPORT)

APPENDIX GG: WEST SANTA ANA BRANCH TRANSIT CORRIDOR PROJECT DRAFT PUBLIC SCOPING REPORT (METRO 2017K)

APPENDIX HH: WEST SANTA ANA BRANCH TRANSIT CORRIDOR PROJECT DRAFT UPDATED PUBLIC SCOPING REPORT (METRO 2018G)

APPENDIX II: WEST SANTA ANA BRANCH TRANSIT CORRIDOR PROJECT FINAL TRAVEL DEMAND METHODOLOGY AND FORECASTING RESULTS REPORT (METRO 2021BB)

ACRONYMS AND ABBREVIATIONS

Acronym	Definition
µm	micrometer
AA	Alternatives Analysis
AAQS	Ambient Air Quality Standards
AB	Assembly Bill
ACGIH	American Conference of Governmental Industrial Hygienists
ACM	asbestos-containing materials
ACS	American Community Survey
ADA	Americans with Disabilities Act
ADL	aerial-deposited lead
APE	Area of Potential Effects
AQMP	Air Quality Management Plan
AREMA	American Railway Engineering and Maintenance-of-Way Association
ATSDR	Agency for Toxic Substances and Disease Registry
Basin	South Coast Air Basin
Bgs	below ground surface
BMP	best management practice
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
Cal/OSHA	California Occupational Safety and Health Administration
CalEEMod	California Emissions Estimator Model
CALGreen	California Green Building Standards Code
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CASQA	California Stormwater Quality Association
CBC	California Building Code
CCAA	California Clean Air Act
CCR	California Code of Regulations
CCTV	closed circuit television
CDC	Centers for Disease Control and Prevention
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act

Acronym	Definition
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CGP	General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities
CGS	California Geological Survey
CH_4	methane
CIDH	cast-in-drilled-hole
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CPTED	Crime Prevention Through Environmental Design
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CRMMP	Cultural Resources Mitigation and Monitoring Program
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
DASH	Downtown Area Short Hop
dB	decibel
dBA	A-weighted decibel
DC	direct current
DF	direct fixation
DHSS	Delaware Health and Social Services
DIR	California Department of Industrial Relations
DOGGR	California Division of Oil, Gas, and Geothermal Resources, now known as California Geologic Energy Management Division (CalGEM)
DTSC	Department of Toxic Substances Control
DWR	California Department of Water Resources
ECMP	Energy Conservation and Management Plan
EIR	environmental impact report
EIS	environmental impact statement
EJ	environmental justice
EMF	electromagnetic field
EMI	electromagnetic interference
EO	Executive Order
EPBT	Elysian Park Blind Thrust Fault

Acronym	Definition
EPP	Emergency Preparedness Plan
ESA	environmental site assessment
FAST Act	Fixing America's Surface Transportation Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FLM	First/Last Mile
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
FTIP	Federal Transportation Improvement Program
g	acceleration due to gravity
g/mi	grams per mile
GBN	ground-borne noise
GBV	ground-borne vibration
GHG	greenhouse gas
GIS	geographic information system
GO	General Order
GSA	Groundwater Sustainability Agency
GWP	global warming potential
H_2S	hydrogen sulfide gas
HBW	home-based work
HHS	U.S. Department of Health and Human Services
HRT	heavy rail transit
HUD	Department of Housing and Urban Development
Hz	hertz
I-	Interstate
IEEE	Institute of Electrical and Electronics Engineers
IGP	Industrial General Permit
in/sec	inches per second
IVT	in-vehicle travel time
kV	kilovolt
LA	Los Angeles
LA County	Los Angeles County
LACDPW	Los Angeles County Department of Public Works

Acronym	Definition
LACFCD	Los Angeles County Flood Control District
LACSD	Los Angeles County Sheriff's Department
LADBS	Los Angeles Department of Building and Safety
LADWP	Los Angeles Department of Water and Power
LAFD	Los Angeles Fire Department
LA-NMS	Los Angeles – North Main Street
LAPD	Los Angeles Police Department
LARWQCB	Los Angeles Regional Water Quality Control Board
LAUS	Los Angeles Union Station
LAUSHS	Los Angeles Union Station Historical Society
LB-H	Long Beach – Hudson
LBN	Long Beach North
LB-NR	Long Beach – Near Road
LBP	lead-based paint
LBPD	Long Beach Police Department
lbs/day	pounds per day
L_{dn}	day-night noise level
LEED	Leadership in Energy and Environmental Design
LEL	lower explosive limit
L_{eq}	equivalent noise level
LID	low impact development
Link US	Link Union Station
L_{max}	maximum sound level
LOS	level-of-service
LOSSAN	Los Angeles – San Diego – San Luis Obispo Rail Corridor
LRT	light rail transit
LRTP	long range transportation plan
LRV	light rail vehicle
MAP-21	Moving Ahead for Progress in the 21st Century Act
MDE	maximum design earthquake
Metro	Los Angeles County Metropolitan Transportation Authority
Metro Board	Metro Board of Directors
mG	milligauss

Acronym	Definition
$MMTCO_2e$	million metric tons of CO_2e
MOS	minimum operable segment
MPE	maximum permissible exposure
mph	miles per hour
MRDC	Metro Rail Design Criteria
MRI	magnetic resonance imaging
MRN	Map Reference Number
MS4	municipal separate storm sewer system
MSAT	Mobile Source Air Toxic
MSF	maintenance and storage facility
msl	mean sea level
$MTCO_2e$	metric tons of CO_2e
MUTCD	Manual of Uniform Traffic Control Devices
MWD	Metropolitan Water District
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHMLAC	Natural History Museum of Los Angeles County
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NOI	Notice of Intent
NOP	Notice of Preparation
NO_x	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NTS	Norwalk Transit System
O&M	operation and maintenance
O_3	ozone
OCS	overhead catenary system

Acronym	Definition
ODE	operating design earthquake
OEHHA	California Office of Environmental Health Hazard Assessment
OPR	Governor's Office of Planning and Research
OSHA	U.S. Occupational Safety and Health Administration
OVT	out-of-vehicle travel time
P	Primary Number
P.L.	Public Law
PAH	polycyclic aromatic hydrocarbons
Pb	lead
PCB	polychlorinated biphenyls
pCi/l	picocuries per liter of air pCi/l
PE	Preliminary Engineering
PEL	permissible exposure limit
PEROW	Pacific Electric Right-of-Way
PGA	peak ground acceleration
PHA	Preliminary Hazard Analysis
PHBT	Puente Hills Blind Thrust Fault
PM	particulate matter
PM_{10}	respirable particulate matter of diameter less than 10 microns
$PM_{2.5}$	fine particulate matter of diameter less than 2.5 microns
ppm	parts per million
PPV	peak particle velocity
PRC	Public Resources Code
PRMMP	Paleontological Resources Mitigation and Monitoring Program
Project	West Santa Ana Branch Transit Corridor Project
PSR/PR	Project Study Reports/Project Reports
RCRA	Resource Conservation and Recovery Act
RMS	root mean square
ROD	Record of Decision
ROW	right-of-way
RTIP	Regional Transportation Improvement Plan
RTP	Regional Transportation Plan
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy

Acronym	Definition
RWQCB	Regional Water Quality Control Board
SAFETA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SARA	Superfund Amendments and Reauthorization Act
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCCIC	South Central Coastal Information Center
SCH	State Clearinghouse
SCS	Sustainable Communities Strategy
SEL	sound exposure level
SGMA	Sustainable Groundwater Management Act
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SLF	Sacred Lands File
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO_2	sulfur dioxide
SR	State Route
SRA	Source Receptor Areas
STEL	short-term exposure limit
SWG	Stakeholder Working Group
SWIS	Solid Waste Information System
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Toxic Air Contaminants
TAP	Tunnel Advisory Panel
TAZ	Transportation Analysis Zone
TBM	tunnel boring machine
TC&C	train control and communications
TCE	temporary construction easement
TCP	Traditional Cultural Property
TCR	Tribal Cultural Resource
TLV	threshold limit value

Acronym	Definition
TMDL	total maximum daily load
TMP	Transportation Management Plan
TOD	transit-oriented development
TOD-SIP	Transit-Oriented Development Strategic Implementation Plan
TPSS	traction power substation
TRB	Transportation Research Board
TRS	Technical Refinement Study
TSB	LACSD Transit Services Bureau
TVA	Threat and Vulnerability Assessment
TWA	time weighted average
U.S.C.	United States Code
UBC	Uniform Building Code
UEL	upper explosive limit
UPRR	Union Pacific Railroad
US-101	U.S. Highway 101
USACE	United States Army Corps of Engineers
USDHHS	United States Department of Health and Human Services
USDOT	U.S. Department of Transportation
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
UST	underground storage tanks
VdB	decibel notation
VMT	vehicle miles traveled
VOC	volatile organic compounds
WDR	waste discharge requirement
WRD	Water Replenishment District of Southern California
WSAB	West Santa Ana Branch

S EXECUTIVE SUMMARY

The Federal Transit Administration (FTA) and the Los Angeles County Metropolitan Transportation Authority (Metro) are sponsoring a transit project along the historic West Santa Ana Branch (WSAB) corridor within Los Angeles County, known as the WSAB Transit Corridor Project (Project).

S.1 Project Purpose and Need

S.1.1 Purpose of the Project

The Project's overall purpose is to provide high-quality reliable transit service to meet the future mobility needs of residents, employees, and visitors who travel within and through the corridor. This new transit service will increase mobility and connectivity for historically underserved and transit-dependent communities, improve travel times on local and regional transportation networks relative to not making this investment, and accommodate substantial future employment and population growth.

S.1.2 Need for the Project

Located in southeastern Los Angeles County, the Study Area is approximately 98 square miles and incorporates 20 individual cities (Figure S-1). The Study Area is currently home to 1.4 million residents and 618,500 jobs, which are projected to increase to 1.6 million residents and 746,000 jobs by 2042. Most of the Study Area is served by buses that operate primarily along a heavily congested freeway and arterial network. As the population and employment within the Study Area are predicted to grow substantially over the next 20 years, the congestion of the roadway network is expected to worsen, resulting in the further decreased reliability of transit service.

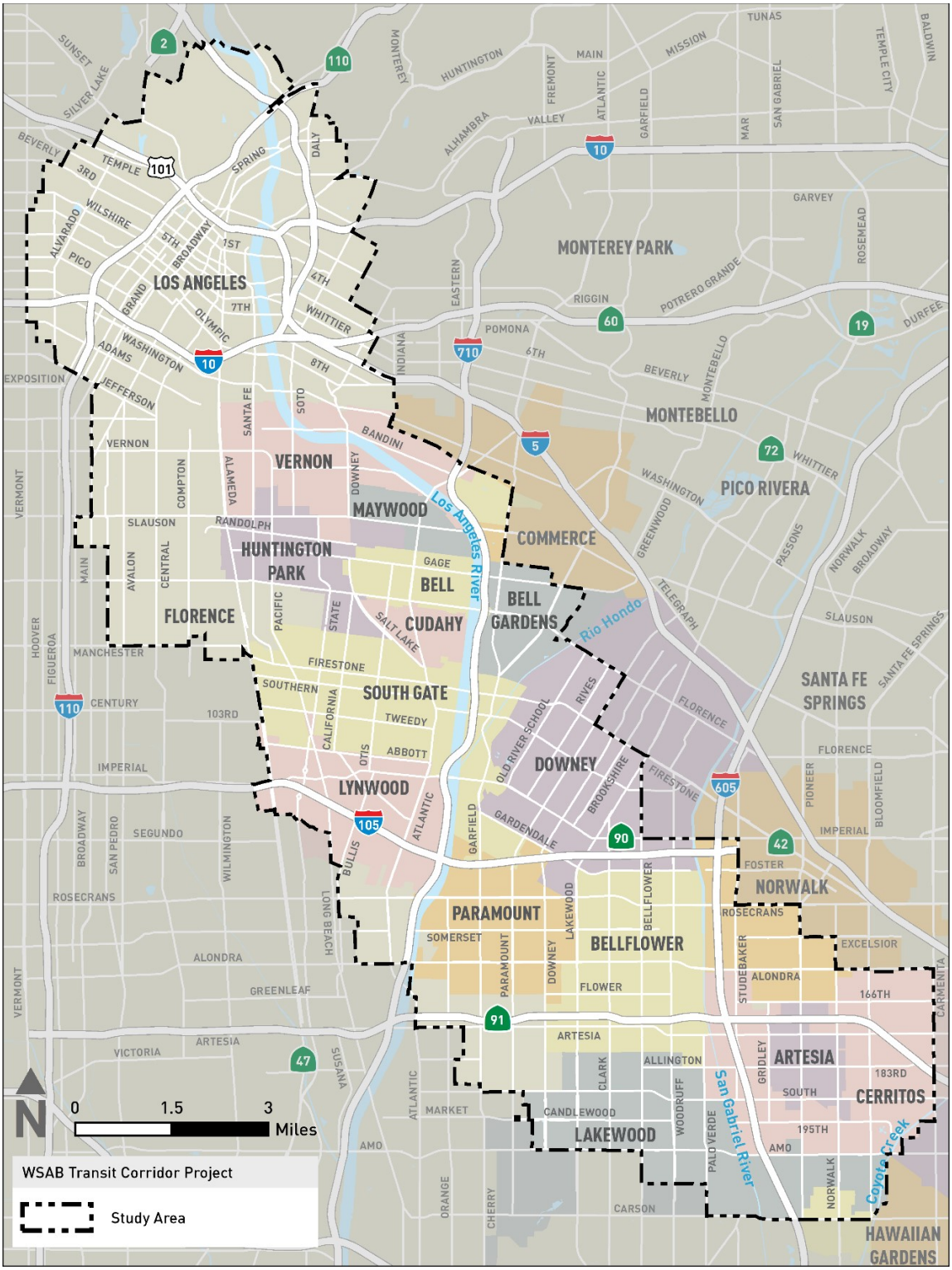
S.2 Alternatives Considered/Project Description

Metro has identified four Build Alternatives as well as a No Build Alternative that are considered and included in this Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR). Based on the findings for the Build Alternatives as evaluated in this Draft EIS/EIR, and in consideration of funding availability, Metro has identified Alternative 3 as the Staff Preferred Alternative.

S.2.1 No Build Alternative

The No Build Alternative provides the background transportation network, against which the Build Alternatives' impacts are identified and evaluated pursuant to the National Environmental Policy Act (NEPA). The No Build Alternative does not include the Project.

Figure S-1. WSAB Transit Corridor Study Area



Source: Prepared on behalf of Metro in 2020

S.2.2 Build Alternatives

Four Build Alternatives, two design options, and two site options for a maintenance and storage facility (MSF) are evaluated in this Draft EIS/EIR:

- Alternative 1: Los Angeles Union Station to Pioneer Station
  - Design Option 1: Los Angeles Union Station – Metropolitan Water District (MWD)
  - Design Option 2: Addition of Little Tokyo Station
- Alternative 2: 7th Street/Metro Center to Pioneer Station
- Alternative 3: Slauson/A Line (Blue) to Pioneer Station (Staff Preferred Alternative)
- Alternative 4: I-105/C Line (Green) to Pioneer Station
- Paramount MSF site option
- Bellflower MSF site option

Table S.1 summarizes the components for each Build Alternative, and Figure S-2 shows the alignments and station locations for the Build Alternatives.

Table S.1. Summary of Build Alternative Project Components

Project Components Alternatives	Build Alternatives			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Alignment length	19.3 miles	19.3 miles	14.8 miles	6.6 miles
Stations configurations	11 3 aerial; 6 at-grade; 2 underground[1]	12 3 aerial; 6 at-grade; 3 underground	9 3 aerial; 6 at-grade	4 1 aerial; 3 at-grade
Parking facilities	5 (up to approximately 2,795 spaces)	5 (up to approximately 2,795 spaces)	5 (up to approximately 2,795 spaces)	4 (up to approximately 2,180 spaces)
Length of underground, at-grade, and aerial	2.3 miles underground; 12.3 miles at-grade; 4.7 miles aerial[2]	2.3 miles underground; 12.3 miles at-grade; 4.7 miles aerial[2]	12.2 miles at-grade; 2.6 miles aerial[2]	5.6 miles at-grade; 1.0 mile aerial[2]
At-grade crossings	31	31	31	11
Elevated street crossings	25	25	15	7
Freight crossings	10	10	9	2
Freeway crossings	6 (3 freeway undercrossings[3] at I-710; I-605, SR-91)	6 (3 freeway undercrossings[3] at I-710; I-605, SR-91)	4 (3 freeway undercrossings[3] at I-710; I-605, SR-91)	3 (2 freeway undercrossings[3] at I-605, SR-91)

Project Components Alternatives	Build Alternatives			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4
River crossings	3	3	3	1
Radio towers	2	2	0	0
TPSS facilities	22[1]	23	17	7
MSF site options[4]	2	2	2	2
Capital cost (2020$) with MSF[5]	$8.5 billion – $8.8 billion	$9.2 billion – $9.5 billion	$4.9 billion – $5.1 billion	$2.3 billion – $2.6 billion

Source: Prepared on behalf of Metro in 2021
Notes: [1] Under Design Option 2 – Add Little Tokyo Station, an additional underground station and TPSS site would be added under Alternative 1.
[2] Alignment configuration measurements count retained fill embankments as at-grade.
[3] The light rail tracks crossing beneath freeway structures.
[4] Only one maintenance and storage facility would be constructed.
[5] Costs range from the low end (with the Bellflower MSF site option) to the high end (with the Paramount MSF site option). The cost ranges include the cost of Design Option 1. Costs for Design Option 2 are not included and may differ from Design Option 1.
MSF = maintenance and storage facility; TPSS = traction power substation

The Build Alternatives would operate approximately 22 hours daily, seven days per week, from about 4:00 a.m. to 2:00 a.m.

Construction activities are anticipated to occur over the course of approximately six years, commencing in 2022 and ending in 2028. Revenue service is expected to begin in 2028.

S.3 Transportation

Chapter 3 of this Draft EIS/EIR discusses existing transportation conditions, effects, project measures, and mitigation measures (as applicable), and impacts after mitigation for operation and construction of the Project. Project measures are incorporated as part of the Project and consist of design features, best management practices, or other measures required by law and/or permit approvals that avoid or minimize potential effects. Mitigation measures are additional actions, not otherwise part of the Project, that are designed to avoid, minimize, or compensate for adverse or significant impacts.

A summary of impacts to the transportation system is provided in Table S.2. The analysis includes impacts to streets and intersections, freight tracks, transit, bicycle and pedestrian facilities, and parking. Table S.2 also identifies mitigation to address adverse and/or significant impacts.

Figure S-2. WSAB Transit Corridor Build Alternatives



Source: Prepared on behalf of Metro in 2020

Table S.2. Potential Transportation Impacts and Mitigation Measures

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
Traffic Operations	Intersections where operations deteriorate because (1) tracks are through/adjacent to existing intersections and queues from mid-block rail crossings build up when gates are down, (2) vehicular traffic associated with proposed park-and-ride facilities, and (3) roadway modifications required to accommodate the Project.	**NEPA**: Alternatives 1, 2, 3, and the design options would result in adverse impacts at 20 intersections during one or both peak periods. Alternative 4 would result in adverse impacts at 7 intersections during one or both peak periods.	Signalization strategies to minimize impacts of queues and intersection modifications as described in Mitigation Measures TRA-1 through TRA-19, which are specific intersection improvements.	**NEPA**: Alternatives 1, 2, 3, and the design options would continue to have adverse impacts at 12 intersections. Alternative 4 would not have adverse impacts after mitigation.
Transit	Each of the Build Alternatives would increase the percentage of trips within Los Angeles County that are taken on transit. This mode shift is reflected in the number of daily new transit trips taken.	**NEPA**: Relative to the No Build Alternative, in 2042 daily new transit trips would increase by: Alternative 1 — 18,375 Alternative 2 — 20,224 Alternative 3 — 9,206 Alternative 4 — 4,749 Design Option 1 (MWD)[1] — 19,289 Design Option 2 (Add Little Tokyo)[1] — 17,007	None required	**NEPA**: None
Active Transportation	The Project would cause impacts to active transportation (pedestrian and bicycle) facilities where it would remove or degrade a bike facility or sidewalk. Beneficial effects would occur where new facilities are added, or existing facilities are upgraded.	**NEPA**: All Build Alternatives would displace sections of the Paramount Bike Trail and Bellflower Bike Trail, which could result in an adverse effect if not realigned. Active transportation enhancements would include physical improvements (e.g., barriers and gates), channelization and signing, illumination, and other design improvements.	Realign bike trails per Mitigation Measure LU-1 (Consistency with Bike Plans).	**NEPA**: With mitigation, these existing active transportation facilities would be realigned to maintain continuity under all Build Alternatives and there would not be adverse effects after mitigation.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
Parking	The Project could affect the supply of on- and off- street parking, and contribute to spillover parking impacts in the vicinity of future stations. Also, parking would be removed in some areas to accommodate the tracks.	**NEPA**: The Build Alternatives would not result in adverse effects related to off-street parking. Alternatives 1 and 2 would result in adverse effects related to on-street parking, as the loss of parking would not accommodate the existing demand. For Alternatives 1 and 2, the combined total of dedicated parking provided and on-street parking availability would not accommodate the projected demand at the Firestone Station, and adverse effects could occur.	Mitigation Measures TRA-21 (Parking Monitoring and Community Outreach) and TRA-22 (Parking Mitigation Program [Permanent]).	**NEPA**: Parking patterns near future stations and in areas where existing parking is removed would change. After mitigation, adverse effects would remain for Build Alternatives 1 and 2.
California Environmental Quality Act Determination —Operation	Would the Project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	**CEQA**: The Build Alternatives would improve transit service, accessibility, and reliability. Active transportation networks would be modified to accommodate the Project. The Build Alternatives could preempt the future development and implementation of planned bicycle paths.	Realign bike trails per Mitigation Measure LU-1 (Consistency with Bike Plans).	**CEQA**: Significant and unavoidable impacts due to conflicts with bicycle master plans for all Build Alternatives after mitigation.
	Would the Project conflict or be inconsistent with *CEQA Guidelines* Section 15064.3, subdivision (b)?	**CEQA**: Relative to the Existing Conditions, VMT would decrease by: Alternative 1 — 216,100 Alternative 2 — 215,000 Alternative 3 — 71,800 Alternative 4 — 36,300 Design Option 1 (MWD)[1] — 236,300 Design Option 2 (Add Little Tokyo)[1] — 218,500	None required	**CEQA**: Beneficial effects and less than significant impact for all Build Alternatives.
	Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	**CEQA**: For all Build Alternatives, at-grade crossings would be designed with safety measures.	Mitigation Measure SAF-1 (Encroachment Detection)	**CEQA**: Less than significant for all Build Alternatives after mitigation.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project result in inadequate emergency access?	**CEQA**: The Build Alternatives would not interfere with adopted emergency response or evacuation plans, emergency service providers, or otherwise increase the demand for emergency response services.	None required	**CEQA**: Less than significant for all Build Alternatives.
Construction Phase	Construction would include track and station construction at-grade through and adjacent to local streets with live traffic, underground track and station construction, overhead/aerial track and station construction, at-grade station parkway construction, and street closure/turning movement restrictions.	**NEPA**: For all Build Alternatives, workers and equipment accessing the construction site would increase traffic and require parking. Transportation system effects associated with aerial (columns) or underground (cut and cover) construction of rail lines could result in lane or roadway closures, which would affect vehicular traffic and transit services. Construction could also result in closure of bicycle and pedestrian facilities. Existing freight tracks would require relocation in some locations.	TRA-20 (Transportation Management Plan(s)) and TRA-23 (Loss of Parking (Construction)).	**NEPA**: Temporary construction-related impacts would be minimized, but adverse effects would still occur for all Build Alternatives after mitigation.
California Environmental Quality Act Determination —Construction	Would the Project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, and bicycle and pedestrian facilities?	**CEQA**: Construction activities would not conflict with plans, policies, or ordinances associated with the transportation system.	TRA-20 (Transportation Management Plan(s))	**CEQA**: Less than significant for all Build Alternatives after mitigation.
	Would the Project conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?	**CEQA**: Construction activity would be localized to the work area and would not significantly change vehicle circulation in the Study Area as a whole.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	**CEQA**: Construction of the Build Alternatives would require temporary modifications that would follow standard construction practices for temporary vehicle, freight, pedestrian, and bicycle handling that would minimize hazards.	TRA-20 (Transportation Management Plan(s))	**CEQA**: Less than significant for all Build Alternatives after mitigation.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project result in inadequate emergency access?	**CEQA**: Construction activity would require temporary modification of existing transportation facilities. Coordination with emergency responders would occur to maintain emergency access and to minimize project-related delays in response times.	TRA-20 (Transportation Management Plan(s)) and COM-1 (Construction Outreach Plan)	**CEQA**: Less than significant for all Build Alternatives after mitigation.

Source: Compiled on behalf of Metro in 2021
Notes: [1] Data totals for Design Options 1 and 2 include the Alternative 1 alignment with the specified Design Option.
CEQA = California Environmental Quality Act; MWD = Metropolitan Water District; NEPA = National Environmental Policy Act; VMT = vehicle miles traveled

S.4 Affected Environment and Environmental Consequences

Chapter 4 of this Draft EIS/EIR discusses the existing conditions, environmental effects, project measures and mitigation measures (as applicable), and environmental impacts after mitigation for operation and construction of the Project. Both a NEPA finding, considering context and intensity of effect, and a California Environmental Quality Act (CEQA) determination are included. The CEQA determination included for each element of the environment identifies the CEQA significance thresholds that are applicable to that topic and provides an evaluation of the Project's effects relative to the thresholds.

Project and/or mitigation measures have been identified to address impacts. Project measures are incorporated as part of the Project and consist of design features, best management practices, or other measures required by law and/or permit approvals that avoid or minimize potential effects. These measures are requirements of the Project. Where relevant, the measures were included in the impact analyses. Mitigation measures are additional actions, not otherwise part of the Project, that are designed to avoid, minimize, or compensate for adverse or significant impacts. These measures are required where significant or adverse impacts have been identified based on the impact analyses.

A summary of operational environmental impacts and required mitigation measures is provided in Table S.3. Construction-phase impacts and mitigation measures are summarized in Table S.4. Growth-inducing, cumulative, and environmental justice impacts and mitigation measures are summarized in Table S.5.

Table S.3. Operational Environmental Impacts and Mitigation Measures

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
Land Use	Project effects could relate to land use compatibility with surrounding land uses.	**NEPA**: The Build Alternatives would not conflict with surrounding uses, change the function of the rail ROWs as rail corridors, impede or change the function of the freight tracks and freight sidings that are used by nearby industrial uses, or physically divide an established community. The Build Alternatives would require the realignment of the Bellflower Bike Trail segment east of Bellflower Boulevard and the relocation of a bus stop to accommodate the Bellflower Station. The bike trail and bus stop would continue to be available for use by the community and access would not be affected.	Mitigation Measure LU-1 (Consistency with Bike Plans)	**NEPA**: With implementation of Mitigation Measure LU-1 (Consistency with Bike Plans), the Project would maintain function of the bike trails and continuity with the Paramount Bike Trail and Bellflower Bike Trail. Therefore, after mitigation no adverse effects would remain for any of the Build Alternatives.
	Project effects could relate to consistency with applicable regional and local land use plans, policies, and regulations.	**NEPA**: The Build Alternatives would be compatible with regional and local land use plans, policies, and regulations. However, all of the Build Alternatives could preempt future development and implementation of planned bike paths identified in local plans. While planned, the bike paths are unfunded and not scheduled for implementation. However, the reclassification of the bike paths is considered an inconsistency with the current bike plans and an adverse effect would occur.	Mitigation Measure LU-1 (Consistency with Bike Plans)	**NEPA**: With implementation of Mitigation Measure LU-1 (Consistency with Bike Plans), all Build Alternatives may still preempt current plans for future development and implementation of bike paths and would result in inconsistencies with local plans. The process to amend bike plans is a local process, including public participation, and the ultimate outcome and resolution of plan elements cannot be predicted. Therefore, after mitigation, adverse effects would remain for all of the Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project physically divide an established community?	**CEQA**: The Build Alternatives would not introduce physical barriers or generate permanent access disruptions to existing land uses on either side of the proposed alignment, and access to the surrounding community would remain available.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	**CEQA**: The Build Alternatives would be consistent with applicable land use plans, goals, objectives, and policies of regional agencies and local jurisdictions. However, Alternatives 1, 2, and 3 could preempt future development and implementation of planned bike paths identified for the Cites of Cudahy, Huntington Park, South Gate, and Bell. Alternative 4 could preempt future development and implementation of the planned bike path identified in the City of South Gate Bike Master Plan. While planned, the bike paths are unfunded and not scheduled for implementation. However, the reclassification of the bike paths is considered an inconsistency with the current bike plans and an adverse effect would occur. There would be inadequate space to accommodate a proposed bicycle path, project tracks, and relocated freight tracks.	Mitigation Measure LU-1 (Consistency with Bike Plans)	**CEQA**: The process to amend bike plans is a local process, including public participation, and the ultimate outcome and resolution of plan elements cannot be predicted. The Build Alternatives would result in significant and unavoidable impacts after mitigation.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
Communities and Neighborhoods	Project effects could relate to access and mobility, community character and cohesion, and community stability.	**NEPA**: The Build Alternatives would improve and not adversely affect access and mobility; community character and cohesion would be maintained; and increased connections among communities would support community stability. The Build Alternatives would result in changes to access and mobility patterns, but surrounding access to the community and community resources would remain. Changes to the existing noise, traffic, visual character, land use, and expected population growth would occur but would not affect community character and cohesion.	Mitigation Measures TRA-1 through TRA-19, which are specific intersection improvements, VA-1 (Screening at Somerset Boulevard) and VA-2 (Relocation of "Belle"), and NOI-1 through NOI-7, which include soundwalls, low-impact frogs, wheel squeal noise monitoring, crossing signal bells, gate-down-bell stop variance, and TPSS noise reduction.	**NEPA**: With mitigation, the Build Alternatives would not result in adverse effects.
	Would the Project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	**CEQA**: The Build Alternatives would not directly result in population growth within surrounding communities. Opportunities for TOD around stations is consistent with SCAG growth projections and local community plans.	None required	**CEQA**: Less than significant for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
Acquisitions and Displacements	Acquisitions would be required to accommodate the structures and columns for the aerial segments of the alignment, TPSS sites, parking facilities, permanent underground easements to accommodate tunneling for underground alignments and underground TPSS sites, and station entrances, grade crossings and separations, freight track relocation, and other ancillary facilities.	**NEPA**: The Build Alternatives would require full and partial acquisition of a varying number of parcels: Alternative 1 220 Alternative 2 283 Alternative 3 172 Alternative 4 59 Design Option 1 (MWD) 12 Design Option 2 (Add Little Tokyo) 4 Paramount MSF site option 43 Bellflower MSF site option 2 With compliance with the Uniform Act, California Relocation Act, and other applicable regulations, no adverse effect would occur.	None required	**NEPA**: No adverse effect for all Build Alternatives.
	Acquired properties would result in business displacements.	**NEPA**: The Build Alternatives would displace a varying number of businesses: Alternative 1 89 Alternative 2 108 Alternative 3 65 Alternative 4 18 Design Option 1 (MWD) 0 Design Option 2 (Add Little Tokyo) 1 Paramount MSF site option 5 Bellflower MSF site option 2 Metro would provide relocation assistance and compensation for all displaced businesses as required under the Uniform Act and California Relocation Act.	None required	**NEPA**: No adverse effect for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Acquired properties would result in residential displacements.	**NEPA**: The Build Alternatives would displace a varying number of residential units: Alternative 1 21 Alternative 2 21 Alternative 3 21 Alternative 4 8 Design Option 1 (MWD) 0 Design Option 2 (Add Little Tokyo) 0 Paramount MSF site option 7 Bellflower MSF site option 0 Metro would provide relocation assistance and compensation for all displaced residences as required under the Uniform Act and California Relocation Act.	None required	**NEPA**: No adverse effect for all Build Alternatives.
	Would the Project displace substantial numbers of existing people, housing, or business, necessitating the construction of replacement housing or replacement business elsewhere?	**CEQA**: Displacements would occur as shown in prior rows. This would not necessitate the construction of replacement housing or business. Metro would provide relocation assistance and compensation for all displaced businesses as required under the Uniform Act and California Relocation Act.	None required	**CEQA**: Less than significant for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
Visual and Aesthetics	The Project could affect visual character and quality, scenic vistas, light, and glare.	**NEPA**: The Build Alternatives would introduce new visual elements to the surrounding area. The Build Alternatives would not change the natural topography of the Affected Area, and most changes would be neutral and compatible with the surrounding visual compatibility, viewer sensitivity, visual quality, and visual character. The Build Alternatives would result in adverse visual effects with the removal of the "Belle" public art cow statue and the decorative wall and landscaping at Somerset Boulevard.	Mitigation Measures VA-1 (Screening at Somerset Boulevard) and VA-2 (Relocation of "Belle")	**NEPA**: No adverse effect for all Build Alternatives after mitigation.
	Would the Project have a substantial adverse effect on a scenic vista?	**CEQA**: No scenic vistas are present in the Affected Area. Therefore, no scenic vistas would be affected.	None required	**CEQA**: No impact for all Build Alternatives.
	Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	**CEQA**: No state scenic highways are located within the Affected Area. Therefore, no scenic resources within a state scenic highway would be affected.	None required	**CEQA**: No impact for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	In nonurbanized areas, would the Project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?	**CEQA**: The Affected Area is urbanized. The Build Alternatives would remove the existing decorative wall and landscaping on the south side of the World Energy storage tracks (east of the proposed LRT tracks) in the City of Paramount and the "Belle" public art cow statue in the City of Bellflower. These effects would conflict with the City of Paramount Municipal Code requirement to conceal views of open storage areas and the City of Bellflower's public arts program.	Mitigation Measures VA-1 (Screening at Somerset Boulevard) and VA-2 (Relocation of "Belle")	**CEQA**: Less than significant for all Build Alternatives after mitigation.
	Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	**CEQA**: The Build Alternatives would not result in substantial change to existing lighting and glare.	None required	**CEQA**: Less than significant for all Build Alternatives.
Air Quality	The Project could affect daily air pollutant emissions in the Affected Area.	**NEPA**: The Build Alternatives would reduce regional air pollutant emissions through changes in regional transportation patterns due to mode shift and increased transit ridership. The Build Alternatives would not result in adverse effects related to MSAT emissions.	None required	**NEPA**: No adverse effect for all Build Alternatives.
	Would the Project conflict with or obstruct implementation of the applicable air quality plan?	**CEQA**: The Build Alternatives would reduce daily VMT within the Affected Area resulting in reduced emissions from vehicle exhaust and road dust.	None required	**CEQA**: Less than significant for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	**CEQA**: The Project is listed in the region's currently conforming 2020-2045 RTP/SCS. The Build Alternatives would not result in an incremental increase in daily emissions that would exceed any applicable SCAQMD threshold.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project expose sensitive receptors to substantial pollutant concentrations?	**CEQA**: The Build Alternatives would not introduce a new land use development that would constitute a substantial direct source of air pollutant emissions to the Affected Area during operation.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	**CEQA**: The Build Alternatives would not generate a substantial source of operational odors.	None required	**CEQA**: Less than significant for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
Greenhouse Gas Emissions	The Project would reduce annual GHG emissions during operation.	**NEPA**: The Build Alternatives would reduce GHG emissions relative to the No Build Alternative. GHG emission reductions relative to the No Build Alternative for 2042, including amortized construction emissions ($MTCO_2e$/year). Reduction compared to No Build Alternative: Alternative 1 -34,824 (-0.061%) Alternative 2 -27,234 (-0.048%) Alternative 3 -1,681 (-0.003%) Alternative 4 -4,916 (-0.008%) Design Option 1 (MWD)[1] -38,783 (-0.068%) Design Option 2 (Add Little Tokyo)[1] -35,992 (-0.063%)	None required	**NEPA**: No adverse effect for all Build Alternatives.
	Would the Project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?	**CEQA**: The Build Alternatives would generate direct GHG emissions through operations at the MSF, and indirect GHG emissions would be generated through energy use; however, they would result in a net reduction in GHG over time.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHG?	**CEQA**: The Build Alternatives are consistent with the 2016-2040 RTP/SCS and relevant GHG reduction and conservation plans.	None required	**CEQA**: Less than significant for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
Noise and Vibration	The Project could cause noise impacts at sensitive land uses.	**NEPA**: Moderate and severe noise impacts from LRT pass-by, ancillary facilities, and relocated freight operation would occur at a varying number of sensitive land uses: Alternative 1 327 Alternative 2 328 Alternative 3 288 Alternative 4 164	Mitigation Measures NOI-1 through NOI-7, which include soundwalls, low-impact frogs, wheel squeal noise monitoring, crossing signal bells, gate-down-bell stop variance, and TPSS noise reduction	**NEPA**: Mitigation would reduce the number of sensitive land uses experiencing noise impacts to: Alternative 1 225 Alternative 2 225 Alternative 3 211 Alternative 4 120 Effects would remain adverse at those locations.
	The Project could cause vibration impacts at sensitive land uses.	**NEPA**: Project operation could create groundborne vibration that would exceed FTA impact criteria at a varying number of sensitive land uses: Alternative 1 102 Alternative 2 101 Alternative 3 96 Alternative 4 62	Mitigation Measures VIB-1 (Ballast Mat or Resilient Rail Fasteners) and VIB-2 (Low-Impact Frogs)	**NEPA**: Mitigation would reduce the number of sensitive land uses experiencing vibration impacts to: Alternative 1 14 Alternative 2 14 Alternative 3 13 Alternative 4 11 Effects would remain adverse at those locations.
	Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established by FTA or in the local general plans or noise ordinances?	**CEQA**: Noise impacts would occur as identified in prior rows.	Mitigation Measures NOI-1 through NOI-7, which include soundwalls, low-impact frogs, wheel squeal noise monitoring, crossing signal bells, gate-down-bell stop variance, and TPSS noise reduction	**CEQA**: Significant and unavoidable after mitigation for the number of receptors identified in prior rows.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project result in generation of excessive groundborne vibration or groundborne noise levels?	**CEQA**: Vibration impacts would occur as identified in prior rows.	Mitigation Measures VIB-1 (Ballast Mat or Resilient Rail Fasteners) and VIB-2 (Low-Impact Frogs)	**CEQA**: Significant and unavoidable after mitigation for the number of receptors identified in prior rows.
	For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the Project expose people residing or working in the project area to excessive noise levels?	**CEQA**: No public airports or private airstrips are located within 2 miles of the project area.	None required	**CEQA**: No impact for all Build Alternatives.
Ecosystems/ Biological Resources	The Study Area supports urban landscaping and ruderal/ ornamental vegetation. Wildlife resources are limited to those species adapted to highly urbanized environments.	**NEPA**: The Build Alternatives would not adversely affect any candidate, sensitive, or special status plant species or protected trees. The Build Alternatives are unlikely to affect wildlife species if present. The Build Alternatives would not impact jurisdictional water resources.	None required	**NEPA**: No adverse effect for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or United States Fish and Wildlife Service?	**CEQA**: Operation of the Project would be unlikely to affect wildlife species and, therefore, impacts would be less than significant.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or United States Fish and Wildlife Service?	**CEQA**: The Build Alternatives would not result in impacts to riparian habitat or other sensitive natural communities.	None required	**CEQA**: No impact for all Build Alternatives.
	Would the Project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, and coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	**CEQA:** The Build Alternatives would not result in impacts to state or federally protected wetlands.	None required	**CEQA**: No impact for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	**CEQA**: The Build Alternatives would not interfere with the movement of native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. CDFW does not identify any mapped California Essential Habitat Connectivity areas within the Affected Area, nor does it contain any Missing Linkages, as identified by the South Coast Wildlands Network.	None required	**CEQA**: No impact for all Build Alternatives.
	Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	**CEQA**: The Build Alternatives would not conflict with any local policies or ordinances protecting biological resources.	None required	**CEQA**: No impact for all Build Alternatives.
	Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	**CEQA**: The Build Alternatives would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state Habitat Conservation Plan.	None required	**CEQA**: No impact for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
Geotechnical, Subsurface, and Seismic	The Affected Area could be subject to seismic shaking and fault-induced ground rupture, liquefaction and seismically induced settlement, seismically induced inundation, expansive soils, ground settlement and collapsible soils, and naturally occurring oil and gas.	**NEPA**: No known active faults capable of ground rupture are mapped within the Affected Area. The Build Alternatives could subject people and structures to moderate to strong seismic ground shaking. In accordance with state and local seismic design criteria, structures would be designed and constructed to withstand the estimated seismic ground shaking and resulting ground loads and deformations.	None required	**NEPA**: No adverse effect for all Build Alternatives.
		NEPA: The Build Alternatives could subject people and structures to the effects of liquefaction or seismically induced settlement. Adverse effects would be avoided with implementation of mandatory design requirements.	None required	**NEPA**: No adverse effect for all Build Alternatives.
		NEPA: For Alternatives 1 and 2, the proposed portal and underground station locations are outside of the dam inundation areas. For the at-grade elements of Alternatives 1, 2, 3, and 4, if seismically induced inundation occurred, the inundation would be short-lived and accommodated by drainage systems.	None required	**NEPA**: No adverse effect for all Build Alternatives.
		NEPA: The Build Alternatives could subject people and structures to the effects of expansive soils, which could result in damage to structures. Adverse effects would be avoided with implementation of mandatory design requirements.	None required	**NEPA**: No adverse effect for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
		NEPA: The Build Alternatives could subject people and structures to the effects of ground settlement, which could result in damage to structures. Adverse effects would be avoided with implementation of mandatory design requirements.	None required	**NEPA**: No adverse effect for all Build Alternatives.
		NEPA: Naturally occurring methane vapor and hydrogen sulfide gases could impact the operation of tunnels and stations within Alternative 1 (including Design Options 1 and 2) and Alternative 2. Naturally occurring oil and gas hazards are not anticipated to be a concern during operation of Alternatives 3 and 4.	Mitigation Measures GEO-1 (Hazardous Gas [Operation]), GEO-2 (Structural Design), GEO-3 (Gas Monitoring [Operation]), and GEO-4 (Tunnel Advisory Panel)	**NEPA**: No adverse effect for Alternatives 1 and 2 after mitigation. No impact for Alternatives 3 and 4.
	Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	**CEQA**: Alternatives 1 and 2 could experience impacts associated with a known earthquake fault. Alternatives 3 and 4 are not underlain by a known active fault capable of ground rupture and are not located within an Earthquake Fault Zone established by the State of California Alquist-Priolo Earthquake Fault Zoning Act. Impacts related to rupture along a known earthquake fault and co-seismic deformation would be less than significant with design and construction performed per applicable design criteria.	None required	**CEQA**: Less than significant for Alternatives 1 and 2. No impact for Alternatives 3 and 4.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?	**CEQA**: The Build Alternatives could be exposed to strong seismic ground shaking. Impacts related to seismic shaking would be less than significant with design and construction performed per applicable design criteria.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?	**CEQA**: The Build Alternatives could be exposed to seismic-related ground failure, including liquefaction, lateral spreading, and seismically induced settlement. Impacts would be less than significant with design and construction performed per applicable design criteria.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?	**CEQA**: Natural landslides are not a hazard to the Build Alternatives.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project result in substantial soil erosion or the loss of topsoil?	**CEQA**: The Build Alternatives are located in an urban setting, and the topsoil layer in most of the Affected Area has been disturbed or concealed by previous human activities.	None required	**CEQA**: Less than significant for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	**CEQA**: The Build Alternatives are in an area that may be prone to collapse or settlement. Impacts related to settlement or collapsible soil would be less than significant with design and construction performed per applicable design criteria.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	**CEQA**: Clay-rich soils may exist locally within alluvial soils present in the Affected Area. The Build Alternatives could potentially subject people and structures to the effects of expansive soils, which could result in damage to structures. Impacts related to expansive soil would be less than significant with design and construction performed per applicable design criteria.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	**CEQA**: The Build Alternatives would not expose people or structures to significant impacts involving the adequacy of soils to support septic tanks or alternative waste disposal systems.	None required	**CEQA**: No impact for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
Hazards and Hazardous Materials	The Affected Area contains sites of environmental concern.	**NEPA**: The Build Alternatives would be near a varying number of sites with environmental concerns: Alternative 1 619 Alternative 2 634 Alternative 3 298 Alternative 4 79 Design Option 1 (MWD)[1] 23 Design Option 2 (Add Little Tokyo)[1] 1 Paramount MSF site option 9 Bellflower MSF site option 3	If subsurface methane or other gases are present, installation of a passive or active venting system as described in Mitigation Measure GEO-1 (Hazardous Gas [Operations]).	**NEPA**: With mitigation, no adverse effects would occur for all Build Alternatives.
	Operation of the Project could use or encounter hazardous materials.	**NEPA**: The Build Alternatives, independent of activities at the MSF, would not include the use of hazardous materials or wastes for maintenance and operational purposes. Operation of the MSF would not emit hazardous air emissions. Extremely hazardous substances would not be used in quantities that exceed thresholds.	None required	**NEPA**: No adverse effect for all Build Alternatives.
	The Project could encounter oil and gas wells, oil fields, and hazardous subsurface gases.	**NEPA**: Alternatives 1 and 2 would traverse an abandoned oil field. Abandoned oil wells are in the areas of Alternatives 1, 2, and 3. Unidentified abandoned oil wells may be present. The design options would have the same effect as Alternative 1. Alternatives 3 and 4 do not pass through abandoned oil fields and methane zones.	Mitigation Measures GEO-1 (Hazardous Gas [Operation]), GEO-2 (Structural Design), GEO-3 (Gas Monitoring [Operation]), and GEO-4 (Tunnel Advisory Panel)	**NEPA**: No adverse effect for all Build Alternatives after mitigation.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	**CEQA**: The Build Alternatives would not result in the routine transport, use, or disposal of hazardous materials or wastes. Long-term groundwater monitoring or future maintenance could encounter contaminated soil or groundwater. Operation of the MSF could involve storage of hazardous materials and wastes for maintaining and repairing rail equipment. Impacts would be less than significant with the appropriate management of hazardous materials, affected groundwater, and contaminated soil during operation.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	**CEQA**: The Build Alternatives would not involve the transport, storage, use, or disposal of hazardous materials in quantities greater than needed to support standard operations, and impacts would not occur. Operation of the MSF could involve storage of hazardous materials and wastes for maintaining and repairing rail equipment.	Mitigation Measures GEO-1 (Hazardous Gas [Operation]), GEO-2 (Structural Design), GEO-3 (Gas Monitoring [Operation]), and GEO-4 (Tunnel Advisory Panel)	**CEQA**: Less than significant for all Build Alternatives after mitigation.
	Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	**CEQA**: Operation of the Build Alternatives would not emit hazardous materials or handle hazardous or acutely hazardous materials, substances, or waste during project operation. Operation of the MSF may use cleaners and greasers that could contain small amounts of hazardous or acutely hazardous materials, substances, or wastes during operation. Impacts would be less than significant with the appropriate management of hazardous materials.	None required	**CEQA**: Less than significant for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	**CEQA**: The Build Alternatives would operate near or on regulatory-listed sites with hazardous material contamination. Operation of the Project would not disturb the soil, soil vapor, or groundwater.	None required	**CEQA**: Less than significant for all Build Alternatives.
	For a Project located within an airport land use plan, or where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project area?	**CEQA**: No airports are located within 2 miles of the Build Alternatives.	None required	**CEQA**: No impact for all Build Alternatives.
	Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	**CEQA**: The Build Alternatives would not impair or interfere with adopted emergency response plans or evacuation plans because evacuation plans would typically avoid crossing active rail corridors (U.S. Department of Health and Human Services 2003) and the at-grade portions are located within active rail corridors.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	**CEQA**: No wildlands are located in the vicinity of the Build Alternatives.	None required	**CEQA**: No impact for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
Water Resources	The Project would introduce new or modified features that could have direct and indirect impacts to existing rivers, including new structures over rivers and additional impervious area.	**NEPA**: The Build Alternatives would increase impervious area by (acres): Alternative 1 14.7 Alternative 2 14.9 Alternative 3 8.3 Alternative 4 3.4 Paramount MSF site option 1.3 Bellflower MSF site option 12.7	None required	**NEPA**: No adverse effect for all Build Alternatives.
	The Project would cross FEMA-established floodplains.	**NEPA**: Tracks and structures associated with the Build Alternatives would be built above the existing river channel walls or levees. They would not encroach along the length of the river or result in incompatible development within the floodplain.	None required	**NEPA**: No adverse effect for all Build Alternatives.
	The Project could affect groundwater.	**NEPA**: The Build Alternatives would be in a highly urbanized area; therefore, the net new impervious area would represent a negligible overall increase in total impervious area with respect to the watersheds and the corresponding groundwater recharge areas.	None required	**NEPA**: No adverse effect for all Build Alternatives.
	Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	**CEQA**: The Build Alternatives would be subject to the LA County MS4 NPDES permit and IGP. The MS4 NPDES permit requires implementation of site design, source control, and treatment control BMPs to the maximum extent practical.	None required	**CEQA**: Less than significant for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?	**CEQA**: The Build Alternatives and MSF site options would result in new impervious area, as quantified in prior rows. The increase in impervious surfaces within the Affected Area would be a negligible fraction of the 177,000-acre basin area.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project substantially alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on-site or off-site?	**CEQA**: The Build Alternatives would not substantially increase the rate or amount of runoff from the project site that could cause flooding on- or off-site.	None required	**CEQA**: Less than significant for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	**CEQA**: The Build Alternatives would not adversely affect stormwater runoff.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through addition of impervious surfaces, in a manner which would impede or redirect flood flows?	**CEQA**: The Build Alternatives would not impede or redirect flood flows.	None required	**CEQA**: Less than significant for all Build Alternatives.
	In flood hazard, tsunami, or seiche zones, would the Project risk release of pollutants due to project inundation?	**CEQA**: The Build Alternatives would not result in significant impacts related to pollutant releases due to inundation. The Affected Area is not subject to seiche or tsunami risk.	None required	**CEQA**: Less than significant for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	**CEQA**: The Build Alternatives would not obstruct implementation of a water quality control plan or sustainable groundwater management plan.	None required	**CEQA**: Less than significant for all Build Alternatives.
Energy	Operation of the Project would require energy.	**NEPA**: Operational energy consumption reduction from the No Build Alternative (MMBTU/year) in 2042: Alternative 1 -626,621 (-0.08%) Alternative 2 -515,569 (-0.06%) Alternative 3 -123,011 (-0.02%) Alternative 4 -116,630 (-0.01%) Design Option 1 (MWD)[1] -661,123 (-0.08%) Design Option 2 (Add Little Tokyo)[1] -618,243 (-0.08%)	None required	**NEPA**: No adverse effect for all Build Alternatives.
	Would the Project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?	**CEQA**: The Build Alternatives would not result in wasteful, inefficient, or unnecessary consumption of energy resources during operation. The change in operational transportation energy consumption compared to if the Project had been operating in 2017 (MMBTU/year): Alternative 1 156,597 (0.02%) Alternative 2 -478,042 (-0.05%) Alternative 3 -147,833 (-0.02%) Alternative 4 -98,425 (0.01%) Design Option 1 (MWD)[1] -682,705 (0.08%) Design Option 2 (Add Little Tokyo)[1] -400,696 (0.044%)	None required	**CEQA**: Less than significant for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	**CEQA**: The Build Alternatives would be consistent with the applicable regional and local conservation plans.	None required	**CEQA**: Less than significant for all Build Alternatives.
Electromagnetic Fields	Project operation will generate electromagnetic fields.	**NEPA/CEQA**: EMF levels produced by LRT vehicles would be below health safety criteria. There are no facilities with EMF-sensitive equipment in the Affected Area.	None required	**NEPA/CEQA**: No adverse effect/No impact for all Build Alternatives.
Historic, Archaeological, and Paleontological Resources	The Project could affect historic architectural (built environment) properties.	**NEPA**: Operation of Alternatives 1 and 2 would require the physical alteration of historic properties; however, adverse effects would be avoided. Additionally, all Build Alternatives would alter the Century Freeway-Transitway Historic District in a manner that is not adverse. Operation of the Build Alternatives would not change the use or alter the historic characteristics of any of the extant built environment historic properties in a manner that would diminish their integrity of location, design, setting, materials, workmanship, feeling, or association.	CR-6 (Historic Design Review)	**NEPA**: No adverse effect for all Build Alternatives after mitigation.
	The Project could affect archaeological resources.	**NEPA**: Operation of the Build Alternatives would not affect archaeological historic properties.	None required	**NEPA**: No effect for all Build Alternatives.
	The Project could affect paleontological resources.	NEPA: Operation of the Build Alternatives would involve minimal, if any, ground disturbance, and there would be no adverse effect to paleontological resources during operation of the Project.	None required	**NEPA**: No adverse effect for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	**CEQA**: Operation of Alternatives 1 and 2 would require the physical alteration of historical resources, which has the potential to result in significant impacts to built environment historical resources. Additionally, all Build Alternatives would alter the Century Freeway-Transitway Historic District in a manner that is less than significant.	CR-6 (Historic Design Review)	**CEQA**: Less than significant for all Build Alternatives after mitigation.
	Would the Project cause a substantial adverse change in the significance of an archaeological resource as defined in Section 15064.5?	**CEQA**: Operation of the Build Alternatives would result in no effect to archaeological historic properties.	None required	**CEQA**: No impact for all Build Alternatives.
	Would the Project disturb any human remains, including those interred outside of dedicated cemeteries?	**CEQA**: Operation of the Build Alternatives would have no impact to human remains.	None required	**CEQA**: No impact for all Build Alternatives.
	Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	**CEQA**: Operation of the Build Alternatives would have no impact to paleontological resources.	None required	**CEQA**: No impact for all Build Alternatives.
Tribal Cultural Resources	Native American tribes were consulted in compliance with Section 106.	**NEPA**: No traditional cultural properties were identified within the Area of Potential Effect.	None required	**NEPA**: No adverse effect for all Build Alternatives.
	Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural	**CEQA**: One presumed tribal cultural resource has been identified in the Affected Area for Alternative 1 and Design Option 1. Operation of Alternative 1 or Design Option 1 would have no direct or indirect impacts to the resource. No other resources have been identified.	None required	**CEQA**: No impact for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: a) Listed or eligible for listing in the California Register of Historical Resources, or a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subsection (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.			

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
Parklands and Community Facilities	Parklands and community facilities are located within the Affected Area of the Project.	**NEPA**: The Build Alternatives would require a partial property acquisition of a LADWP utility right-of-way located along the northern boundary of Paramount Park and a termination of the lease for the Metro-leased parking area within Paramount Park. Off-site parking located in the San Pedro Subdivision ROW and used by Salt Lake Park would be removed/relocated. The Build Alternatives would require the realignment of the Bellflower Bike Trail and Paramount Bike Trail.	Mitigation Measure LU-1 (Consistency with Bike Plans)	**NEPA**: With implementation of Mitigation Measure LU-1 (Consistency with Bike Plans), all Build Alternatives would maintain function of the bike trails and continuity with the Paramount Bike Trail and Bellflower Bike Trail. No adverse effect for all Build Alternatives after mitigation.
	Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable standards for any park or recreational facility?	**CEQA**: The Build Alternatives could preempt or obstruct future development and implementation of planned bike paths and limit access to bicycle facilities identified in adopted local plans.	Mitigation Measure LU-1 (Consistency with Bike Plans)	**CEQA**: Significant and unavoidable for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	**CEQA**: The Build Alternatives could provide greater accessibility to parks and bike facilities with nearby transit stations, which could result in increased use by the local and surrounding communities; however, the increased use is not expected to severely impact the infrastructure of the bike facilities.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	**CEQA**: The existing Paramount Bike Trail and Bellflower Bike Trail would be reconfigured to accommodate the Project, and access and connectivity would be maintained. The Build Alternatives could preempt or obstruct future development and implementation of the planned Class I bicycle path along Salt Lake Avenue (Alternatives 1, 2, and 3) and the planned Class I bicycle path north of Rayo Avenue and south of the Los Angeles River (Alternatives 1, 2, 3, and 4). While planned, the bike paths are unfunded and not scheduled for implementation. In addition, the reclassification of the bike paths is considered an inconsistency with the current bike plans and an adverse effect would occur.	Mitigation Measure LU-1 (Consistency with Bike Plans)	**CEQA**: Significant and unavoidable for all Build Alternatives after mitigation.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
Economic and Fiscal Impacts	The Project could affect employment, property values, connectivity, and local tax bases.	**NEPA**: The Build Alternatives could directly generate $3.0 to $7.6 million in additional wages and salaries by creating 113 to 282 new jobs. Overall effects on property values are anticipated to have a net benefit to the regional economy. Effects on local businesses would include lost parking and increased access by transit. Private property converted to right-of-way would decrease the local tax base; however, increasing property values and new construction would increase tax revenue. The Build Alternatives would displace businesses as identified under the heading Acquisitions and Displacements above and associated jobs, which would likely be relocated.	Mitigation Measure TRA-22 (Parking Mitigation Program [Permanent]).	**NEPA**: No adverse effect for all Build Alternatives after mitigation.
	Would the Project result in substantial impacts to regional mobility and connectivity?	**CEQA**: The Build Alternatives would have beneficial economic and fiscal impacts by improving transit accessibility and mobility, enhancing regional connectivity, and reducing travel time and costs in the region.	None required	**CEQA**: Less than significant for all Build Alternatives.
Safety and Security	Transit system safety focuses on identifying, eliminating, and/or controlling safety hazards.	**NEPA**: The Build Alternatives would be designed to provide for the safety and security of passengers and employees. Portions of the right-of-way would be shared with freight operations, and an adverse effect could occur due to the potential for derailment and collision.	Mitigation Measure SAF-1 (Encroachment Detection) to detect potential derailments that may occur on Metro right-of-way.	**NEPA**: No adverse effect for all Build Alternatives.
	At-grade crossings would introduce the potential for collisions and potential hazards to motorist, pedestrian, and bicyclist safety.	**NEPA**: The Build Alternatives would comply with all applicable regulations. Traffic-control improvements and way-finding features would be implemented to provide safe passage and reduce potential conflicts between vehicles and pedestrians/bicyclists traveling between the parking facility and station entrances.	None required	**NEPA**: No adverse effect for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	The Project could interfere with local jurisdictions' emergency response plans or delay emergency service providers.	**NEPA**: Metro would coordinate with the applicable fire and police departments in addressing fire/life safety and security for the facilities within their respective jurisdictions. Metro, in coordination with local jurisdictions, would develop traffic management plans to reduce delays in response times for emergency service providers.	None required	**NEPA**: No adverse effect for all Build Alternatives.
	Security relates to protection of people from intentional acts that could result in injury or harm, and protection of property from deliberate acts.	**NEPA**: The Build Alternatives would be designed to include security features such as lighting, surveillance, CCTV, access control, and emergency call boxes to reduce the potential for crime and terrorist activity.	None required	**NEPA**: No adverse effect for all Build Alternatives.
	Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	**CEQA**: The Build Alternatives would not impair or interfere with adopted emergency response plans or evacuation plans because evacuation plans would typically avoid crossing active rail corridors (U.S. Department of Health and Human Services 2003) and the at-grade portions are located within active rail corridors.	None required	**CEQA**: Less than significant for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project result in substantial adverse physical impacts associated with the provisions of new or physically altered government facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain response times or other performance objectives for fire and police protection services?	**CEQA**: The Build Alternatives would not introduce the need for new or expanded facilities relative to emergency service providers.	None required	**CEQA**: No impact for all Build Alternatives.
	Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	**CEQA**: The Build Alternatives would introduce new grade crossings. The LRT operations would share ROW with freight operations and impacts would be considered significant.	Mitigation Measure SAF-1 (Encroachment Detection) to detect potential derailments that may occur on Metro right-of-way.	**CEQA**: Less than significant for all Build Alternatives.

Source: Compiled on behalf of Metro in 2021

Notes: [1] Data totals for Design Options 1 and 2 include the Alternative 1 alignment with the specified Design Option.

BMP = best management practices; CCTV= closed-circuit television; CDFW = California Department of Fish and Wildlife; CEQA = California Environmental Quality Act; EMF = electromagnetic fields; FEMA = Federal Emergency Management Agency; FTA = Federal Transit Administration; GHG = greenhouse gas; IGP = Industrial General Permit; LADWP = Los Angeles Department of Water and Power; LRT = light rail transit; MS4 = municipal separate storm sewer system; MMBTU = million British thermal units; MSAT = Mobile Source Air Toxics; MSF = maintenance and storage facility; MTCO2e = metric tons of carbon dioxide equivalent; MWD = Metropolitan Water District; NEPA = National Environmental Policy Act; NPDES = National Pollutant Discharge Elimination System; ROW = right-of-way; RTP/SCS = Regional Transportation Plan/Sustainable Communities Strategy; SCAG = Southern California Association of Governments; SCAQMD = South Coast Air Quality Management District; TOD = transit-oriented development; TPSS = traction power substation; VMT = vehicle miles traveled.

Table S.4. Construction Environmental Impacts and Mitigation Measures

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
Land Use	Temporary construction impacts on land uses in the Affected Area could include barriers and fencing, parking, lane and active transportation detours, and air quality and noise.	**NEPA**: The temporary construction activities associated with the Build Alternatives would be located within the public right-of-way and/or rail ROW or on sites acquired for construction. Temporary barriers and fencing along the perimeter of construction areas and additional temporary parking for construction personnel at construction staging areas would be provided. Sensitive land uses could also experience adverse effects related to air quality and intermittent construction noise. The Build Alternatives would comply with applicable regulations to minimize these effects.	Mitigation Measures COM-1 (Construction Outreach Plan), AQ-1 (Vehicle Emissions), NOI-8 (Noise Control Plan), and VIB-3 through VIB-7, which include a vibration control plan, minimizing the use of impact devices, drilling for building foundations, construction vibration limits, and construction monitoring	**NEPA**: No adverse effect for all Build Alternatives after mitigation.
	Would the Project physically divide an established community?	**CEQA**: Temporary construction impacts on land uses in the Affected Area could include barriers and fencing, parking, and lane and active transportation detours.	Mitigation Measure COM-1 (Construction Outreach Plan)	**CEQA**: Less than significant for all Build Alternatives after mitigation.
	Would the Project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	**CEQA**: Construction activities would be temporary and would not directly conflict with applicable regional and local land use plans, policies, and regulations.	None required	**CEQA**: Less than significant for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
Communities and Neighborhoods	Construction effects on community and neighborhoods could include temporary impacts to access and mobility, community character and cohesion, and community stability.	**NEPA**: Construction activities for the Build Alternatives would be temporary and include barriers around construction activities and staging areas that would be removed upon completion of construction. Temporary street, lane, and bike path detours and closures would be returned to preconstruction conditions. However, based on the timing of temporary closures and the implementation of detour routes, adverse effects would occur. Construction activities would not permanently isolate or alter the physical layout and character of the communities, and are not expected to cause residents to move out of their communities.	Mitigation Measure COM-1 (Construction Outreach Plan)	**NEPA**: No adverse effect for all Build Alternatives after mitigation.
	Would the Project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	**CEQA**: Construction would be temporary and would not directly or indirectly induce unplanned population growth in the area.	None required	**CEQA**: Less than significant for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
Acquisitions and Displacements	Construction effects would include properties that are acquired for or affected by construction activities, and the affected businesses and residents.	**NEPA**: Construction would require acquisition of or temporary easement from a varying number of parcels in addition to those required for operation: Alternative 1 238 Alternative 2 235 Alternative 3 191 Alternative 4 87 Design Option 1 (MWD) 5 Design Option 2 (Add Little Tokyo) 3 Paramount MSF site option 2 Bellflower MSF site option 0 With compliance with the Uniform Act, California Relocation Act, and other applicable regulations, no adverse effect would occur.	None required	**NEPA**: No adverse effect for all Build Alternatives.
	Would the Project displace substantial numbers of existing people, housing or business, necessitating the construction of replacement housing or replacement business elsewhere?	**CEQA**: Acquisitions and easements would occur as identified in the prior row. These acquisitions to support construction would not result in displacements that would necessitate the construction of replacement housing or business.	None required	**CEQA**: Less than significant for all Build Alternatives.
Visual and Aesthetics	Temporary construction activities and staging areas would be visible and could temporarily alter visual quality.	**NEPA**: Construction activities in these areas could result in adverse effects related to visual quality. Construction would not affect any scenic views, but construction activities would be temporarily visible to sensitive viewers. If nighttime construction activities occur, sensitive viewers would also be highly sensitive to spillover lighting and glare that originate from construction areas.	Mitigation Measures VA-3 (Landscaping at LAUS), VA-4 (Construction Screening), VA-5 (Construction Lighting), and NOI-8 (Noise Control Plan)	**NEPA**: No adverse effects for all Build Alternatives after mitigation.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project have a substantial adverse effect on a scenic vista?	**CEQA**: No scenic vistas are within the Affected Area.	None required	**CEQA**: No impact for all Build Alternatives.
	Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	**CEQA**: No state scenic highways are located within the Affected Area.	None required	**CEQA**: No impact for all Build Alternatives.
	In nonurbanized areas, would the Project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?	**CEQA**: Construction has the potential to temporarily alter the visual character and quality of the Affected Area.	Mitigation Measures VA-3 (Landscaping at LAUS), VA-4 (Construction Screening), and NOI-8 (Noise Control Plan)	**CEQA**: Less than significant for all Build Alternatives after mitigation.
	Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	**CEQA**: Nighttime construction work could increase nighttime light or glare in the Affected Area and temporarily affect visibility.	Mitigation Measure VA-5 (Construction Lighting)	**CEQA**: Less than significant for all Build Alternatives after mitigation.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
Air Quality	Construction effects would relate to criteria pollutant and ozone precursor emissions, and a nuisance of odor and dust.	**NEPA**: Construction would generate air pollution emissions, including earth moving, equipment and vehicle exhaust, and asphalt paving. Haul truck emissions for Alternatives 1 and 2 would exceed SCAQMD thresholds for daily NO_X emissions.	Mitigation Measure AQ-1 (Vehicle Emissions) for low-emission construction vehicles	**NEPA**: Construction activities could result in a temporary adverse effect related to emissions of criteria pollutants and ozone precursors for Alternatives 1 and 2 after mitigation.
	Would the Project conflict with or obstruct implementation of the applicable air quality plan?	**CEQA**: Haul truck emissions for Alternatives 1 and 2 would exceed SCAQMD thresholds for daily NO_X emissions.	Mitigation Measure AQ-1 (Vehicle Emissions) for low-emission construction vehicles	**CEQA**: Significant and unavoidable for Alternatives 1 and 2 after mitigation.
	Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard?	**CEQA**: Construction of Alternatives 1 and 2 would result in a significant and unavoidable air quality impacts related to regional emissions of NO_X.	Mitigation Measure AQ-1 (Vehicle Emissions) for low-emission construction vehicles	**CEQA**: Significant and unavoidable for Alternatives 1 and 2 after mitigation.
	Would the Project expose sensitive receptors to substantial pollutant concentrations?	**CEQA**: Neither regional nor localized emissions would expose sensitive receptors to substantial pollutant concentrations.	Mitigation Measure AQ-1 (Vehicle Emissions) for low-emission construction vehicles	**CEQA**: Less than significant for all Build Alternatives after mitigation.
	Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	**CEQA**: Construction activities would not generate a substantial source of construction odors or visible dust plumes.	None required	**CEQA**: Less than significant for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
Greenhouse Gas Emissions	Construction effects would relate to the generation of GHG emissions from construction activities, including equipment, worker travel, and construction methods.	**NEPA**: Temporary GHG emissions would be generated to construct an energy-efficient mass transit system that would reduce long-term regional GHG emissions through transportation mode shift.	None required	**NEPA**: No adverse effect for all Build Alternatives.
	Would the Project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?	**CEQA**: Temporary GHG emissions would be generated to construct an energy-efficient mass transit system that would reduce long-term regional GHG emissions.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG?	**CEQA**: Construction would not interfere with GHG reduction plans, policies, or regulations.	None required	**CEQA**: Less than significant for all Build Alternatives.
Noise and Vibration	Temporary construction impacts could include measurable annoyance and stress due to construction noise, as well as vibration damage and annoyance.	**NEPA**: Construction noise levels could exceed impact criteria. Construction noise could increase community annoyance and potentially stress and the potential for stress-related diseases at affected sensitive uses. Construction vibration could cause less than significant short-term annoyance. Vibration is unlikely to result in building damage.	Mitigation Measures NOI-8 (Noise Control Plan) and VIB-3 through VIB-7, which includes a vibration control plan, minimizing the use of impact devices, drilling for building foundations, construction vibration limits, and construction monitoring	**NEPA**: Adverse noise effect for all Build Alternatives after mitigation.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established by FTA or in the local general plans or noise ordinances?	**CEQA**: Construction would result in temporary and periodic increases in ambient noise levels that would exceed FTA criteria, and, where applicable, the standards established by the local noise ordinances	Mitigation Measure NOI-8 (Noise Control Plan)	**CEQA**: Significant and unavoidable for all Build Alternatives after mitigation.
	Would the Project result in generation of excessive ground-borne vibration or groundborne noise levels?	**CEQA**: Vibration is unlikely to result in building damage.	Mitigation Measures VIB-3 through VIB-7, which includes a vibration control plan, minimizing the use of impact devices, drilling for building foundations, construction vibration limits, and construction monitoring	**CEQA**: Less than significant for all Build Alternatives after mitigation.
	For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the Project expose people residing or working in the project area to excessive noise levels?	**CEQA**: No public airports or private airstrips are located within 2 miles of the project area.	None required	**CEQA**: No impact for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
Ecosystems/ Biological Resources	Construction could affect bats, nesting birds, jurisdictional waters, and protected trees.	**NEPA**: The Build Alternatives could adversely impact maternal roosting bats and their young and nesting birds. Alternatives 1, 2, and 3 would cross three jurisdictional resources, whereas Alternative 4 would only cross the San Gabriel River. The piers and debris walls related to construction would be permanent fill impacts to jurisdictional water resources. An estimated 110 trees could be affected by Alternatives 1 and 2; 85 trees could be affected by Alternative 3; and 75 trees could be affected by Alternative 4.	Mitigation Measures BIO-1 (Special-Status Bats), BIO-2 (Nesting Birds), BIO-3 (Jurisdictional Resources), and BIO-4 (Protected Trees)	**NEPA**: No adverse effect for all Build Alternatives after mitigation.
	Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or United States Fish and Wildlife Service?	**CEQA**: Impacts to roosting western mastiff bats and nesting birds may occur during project construction.	Mitigation Measures BIO-1 (Special-Status Bats) and BIO-2 (Nesting Birds)	**CEQA**: Less than significant for all Build Alternatives after mitigation.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or United States Fish and Wildlife Service?	**CEQA**: The Project is located in a highly developed/urban area, and no quality habitat that would support native riparian plant or wildlife species is present. Impacts to sensitive natural communities would not occur.	None required	**CEQA**: No impact for all Build Alternatives.
	Would the Project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, and coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	**CEQA**: Construction would include crossings of jurisdictional waters and would require filling the following areas of jurisdictional waters (acres): Alternative 1 0.12 Alternative 2 0.12 Alternative 3 0.12 Alternative 4 0.02 The design and MSF options would not change these values.	Mitigation Measure BIO-3 (Jurisdictional Resources)	**CEQA**: Less than significant for all Build Alternatives after mitigation.
	Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	**CEQA**: The Build Alternatives would not interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.	None required	**CEQA**: No impact for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	**CEQA**: Protected street trees in the Cities of Los Angeles, Huntington Park, Bell, South Gate, Downey, Bellflower, and Cerritos are present within the Affected Area. Construction could require pruning or removal of street trees.	Mitigation Measure BIO-4 (Protected Trees)	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	**CEQA**: The Project is not located in an area with an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved Habitat Conservation Plan.	None required	**CEQA**: No impact for all Build Alternatives.
Geotechnical, Subsurface, and Seismic	Construction could affect naturally occurring gas and unconsolidated/saturated alluvial soils.	**NEPA**: Hazardous subsurface gases are present in the Affected Area of Alternatives 1 and 2. There is moderate-to-high potential to encounter naturally occurring oil and/or gas during tunneling or deep excavation for Alternatives 1 and 2. Construction of the Build Alternatives could result in an adverse effect related to unconsolidated/ saturated alluvial soils, if construction would cause settlement resulting in distress to existing adjacent improvements. Construction of Alternatives 1 and 2 would include tunnel boring in alluvial soils, which may result in running or flowing ground, resulting in ground loss.	Mitigation Measure GEO-5 (Gas Monitoring [Construction])	**NEPA**: No adverse effect for all Build Alternatives after mitigation.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	**CEQA**: Construction would not have a significant impact on the faults in the Affected Area.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?	**CEQA**: Construction would not have a significant impact on the seismic potential in the Affected Area.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?	**CEQA**: Construction would not have a significant impact on the geologic environment in the Affected Area.	None required	**CEQA**: less than significant for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?	**CEQA**: Construction would not have a significant impact on the unconsolidated/saturated alluvial soils in the Affected Area.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project result in substantial soil erosion or the loss of topsoil?	**CEQA**: Construction would occur in an urban setting and the topsoil layer in most of the Affected Area has been disturbed or concealed by previous human activities.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	**CEQA**: Construction would not exacerbate existing geologic conditions related to potential on- or off-site lateral spreading, subsidence, liquefaction or collapse, or seismic-related ground failure, including liquefaction.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	**CEQA**: Construction would not have a significant impact on the expansive potential of soils in the Affected Area.	None required	**CEQA**: Less than significant for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	**CEQA**: Construction would occur within highly urbanized areas served by existing municipal sewage systems.	None required	**CEQA**: No impact for all Build Alternatives.
Hazards and Hazardous Materials	Construction could affect known, potential, and historical concern sites; landfills; groundwater contamination; hazardous materials; oil and gas wells; and oil and gas fields.	**NEPA**: There are 619 known, potential, or historical environmental concern sites in the Affected Area of Alternative 1, 634 in Alternative 2, 298 in Alternative 3, and 79 in Alternative 4. LBP, asbestos/ACM, and PCBs would likely be encountered during demolition. The Build Alternatives may affect soil and/or groundwater by common railroad corridor contaminants and the relocation or disturbance of hazardous material pipelines. The disturbance of historical agricultural locations may also result in adverse effects related to pesticides, arsenic, and lead. Three abandoned oil and gas wells are known to be located within 200 feet of Alternatives 1 and 2, and one within 200 feet of Alternative 3. Oil and gas wells, fields, and hazardous subsurface gases may be present in the vicinity of Alternatives 1 and 2 underground tunnels and stations, and adverse effects could occur.	Mitigation Measures HAZ-1 (Oil and Gas Wells in Tunnel Areas), GEO-2 (Structural Design), and GEO-5 (Gas Monitoring [Construction])	**NEPA**: No adverse effect for all Build Alternatives after mitigation.
	Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	**CEQA**: Hazardous materials would be managed appropriately. Ventilation of subsurface gases would require additional controls. Construction of Alternatives 1 and 2 could expose the public and the environment to subsurface gas.	Mitigation Measures HAZ-1 (Oil and Gas Wells in Tunnel Areas), GEO-2 (Structural Design), and GEO-5 (Gas Monitoring [Construction])	**CEQA**: Less than significant for all Build Alternatives after mitigation.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	**CEQA**: Construction teams may use hazardous materials such as fuels, paints and coatings, solvents, and welding materials during construction. For Alternatives 1 and 2, an accidental release of hazardous subsurface gases could occur from within the tunnel areas.	Mitigation Measures HAZ-1 (Oil and Gas Wells in Tunnel Areas), GEO-2 (Structural Design), and GEO-5 (Gas Monitoring [Construction])	**CEQA**: Less than significant for all Build Alternatives after mitigation.
	Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	**CEQA**: Construction would not require emitting hazardous materials or handling of hazardous or acutely hazardous materials, substances, or wastes at greater than regulated quantities within 0.25 mile of an existing or proposed school.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	**CEQA**: Potential impacts from construction with regard to environmental concern sites include the potential exposure of construction workers or members of the public to chemical compounds in soils, soil gases, and groundwater. Impacts would be less than significant with the appropriate management of hazardous materials, affected groundwater, and contaminated soil during construction.	None required	**CEQA**: Less than significant for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	For a Project located within an airport land use plan, or where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project area?	**CEQA**: No airports are located within 2 miles of the Build Alternatives.	None required	**CEQA**: No Impact for all Build Alternatives.
	Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	**CEQA**: Construction-related impacts on emergency response plans or emergency evacuation plans could be caused by temporary construction activities.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	**CEQA**: No wildlands are located in the vicinity of the Build Alternatives.	None required	**CEQA**: No Impact for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
Water Resources	Construction activities could adversely affect hydrology and surface water quality, floodplains, and groundwater.	**NEPA**: Construction activities could degrade water quality by increasing the risk of discharge of contaminants to surface water, and could adversely affect groundwater by dewatering or exposure to contamination. Alternatives 1, 2, and 3 would cross three floodplains, whereas Alternative 4 would only cross the San Gabriel River. Construction within the rivers could result in potential impacts. Implementation of the project design features and best practices would minimize potential impacts, and no adverse effect would occur.	None required	**NEPA**: No adverse effect for all Build Alternatives.
	Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	**CEQA**: Construction would involve ground disturbance that would expose bare soils to stormwater and could lead to erosion and sedimentation. Construction activities could result in temporary impacts to water quality. Compliance with permits would be mandatory.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?	**CEQA**: Dewatering of the construction site, if needed, would be subject to the requirements of the Construction Dewatering Permit and other applicable permits.	None required	**CEQA**: Less than significant for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project substantially alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on-site or off-site?	**CEQA**: Construction may temporarily increase the impervious area within the Affected Area.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	**CEQA**: Construction may temporarily increase the impervious area within the Affected Area. Construction would implement a SWPPP that complies with the CGP.	None required	**CEQA**: Less than significant for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	**CEQA**: Construction may temporarily increase the impervious area within the Affected Area. Construction would implement a SWPPP that complies with the CGP.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through addition of impervious surfaces, in a manner which would impede or redirect flood flows?	**CEQA**: Construction may temporarily increase the impervious area within the Affected Area. Construction would implement a SWPPP that complies with the CGP.	None required	**CEQA**: Less than significant for all Build Alternatives.
	In flood hazard, tsunami, or seiche zones, would the Project risk release of pollutants due to project inundation?	**CEQA**: Construction activities would not release pollutants due to project inundation. Construction would be located more than 20 miles from the ocean and, therefore, would not be within areas potentially affected by seiches or tsunamis.	None required	**CEQA**: Less than significant for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	**CEQA**: Construction may temporarily increase the impervious area around the Project. Construction would implement a SWPPP that complies with the CGP.	None required	**CEQA**: Less than significant for all Build Alternatives.
Energy	Construction effects relate to energy consumption associated with construction activities.	**NEPA**: Construction would consume energy varying by alternative (MMBTU/year): Alternative 1 1,472,110 Alternative 2 1,501,546 Alternative 3 1,045,014 Alternative 4 862,469 Design Option 1 (MWD)[1] 1,503,815 Design Option 2 (Add Little Tokyo)[1] 1,508,077	None required	**NEPA**: No adverse effect for all Build Alternatives.
	Would the Project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?	**CEQA**: Construction would not require new or expanded sources of energy or infrastructure to meet energy demands and would not result in the wasteful or inefficient use of energy.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	**CEQA**: Construction would comply with state and local plans for energy efficiency in construction activities.	None required	**CEQA**: Less than significant for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project require or result in the relocation or construction of new or expanded electric power, natural gas, or telecommunication facilities, the construction or relocation of which could cause significant environmental effects?	**CEQA**: Construction would not require new or relocated distribution infrastructure such as transmission lines from power facilities and transformers.	None required	**CEQA**: Less than significant for all Build Alternatives.
Electromagnetic Fields	Construction effects would relate to electromagnetic field levels generated by construction activities.	**NEPA/CEQA**: Construction activities would generate EMF levels similar to household appliances and would not cause adverse/significant levels of EMF.	None required	**NEPA/CEQA**: No adverse effect/Less than significant for all Build Alternatives.
Historic, Archaeological, and Paleontological Resources	Construction effects would relate to impacts to built environment historic properties.	**NEPA**: Construction would not significantly alter historic properties in the existing urban environment. The introduction of temporary construction-related visual elements to historic properties or their vicinity would not alter any of the characteristics of historic properties in the APE.	None required	**NEPA**: No adverse effect for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Construction effects would relate to impacts to archaeological historic properties.	**NEPA:** Construction would involve ground disturbance with the potential to alter buried archaeological deposits associated with known and unknown archaeological historic properties in the APE. Unanticipated archaeological historic properties may be encountered during ground-disturbing activities associated with construction of the Project. Direct alteration of known or unanticipated archaeological historic properties would represent an adverse effect.	Mitigation Measures CR-1 (Development of Cultural Mitigation and Monitoring Program), CR-2 (Treatment of Known Significant Archaeological Resources), CR-3 (Archaeological Worker Environmental Awareness Program), CR-4 (Archaeological Monitoring), and CR-5 (Treatment of Unanticipated Discoveries)	**NEPA**: No adverse effect for all Build Alternatives after mitigation.
	Construction effects would relate to impacts to paleontological resources.	**NEPA:** Construction would involve ground disturbance with the potential to discover paleontological resources. An adverse effect could occur if construction of the Build Alternatives results in the disturbance or destruction of paleontological resources.	Mitigation Measure PR-1, which includes a paleontological resources mitigation and monitoring program, a worker environmental awareness program, construction monitoring, and the preparation and curation of recovered fossils, would effectively reduce the Project's adverse effects to these resources.	**NEPA**: No adverse effect for all Build Alternatives after mitigation.
	Would the Project cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	**CEQA**: The construction of the Build Alternatives would not physically permanently alter any of the built environment historical resources in the APE.	None required	**CEQA**: No impact for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project cause a substantial adverse change in the significance of an archaeological resource as defined in Section 15064.5?	**CEQA**: Construction of the Build Alternatives would involve substantial ground disturbance with the potential to physically impact known and unknown archaeological resources within the direct APE. Five archaeological resources are documented in the direct APE for Alternative 1 and one resource for Alternatives 2 and 3.	Mitigation Measures CR-1 through CR-5, which includes the development of a cultural resource mitigation and monitoring program, treatment of known significant archaeological resources, a worker environmental awareness program, archaeological monitoring, and treatment of unanticipated discoveries.	**CEQA**: Less than significant for all Build Alternatives after mitigation.
	Would the Project disturb any human remains, including those interred outside of dedicated cemeteries?	**CEQA**: Construction activities have the potential to physically alter, remove, or destroy buried human remains that may extend into the direct APE. One known prehistoric Native American cemetery was documented in the direct APE of Alternative 1. The Build Alternatives would adhere to existing state regulations concerning the discovery of human remains.	None required	**CEQA**: Less than significant for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	**CEQA**: Construction impacts to paleontological resources would be greatest for activities such as grading, excavation, trenching, and wide-diameter auguring that require displacement.	Mitigation Measure PR-1, which includes a paleontological resources mitigation and monitoring program, a worker environmental awareness program, construction monitoring, and the preparation and curation of recovered fossils, would effectively reduce the Project's significant impacts to these resources.	**CEQA**: Less than significant for all Build Alternatives after mitigation.
Tribal Cultural Resources	Effects would relate to impacts to known traditional cultural properties during construction.	**NEPA**: No traditional cultural properties have been identified in the Affected Area for traditional cultural properties for the Project. Therefore, construction would not result in effects to known traditional cultural properties.	Mitigation Measures TCR-1 (Native American Monitoring), TCR-2 (Unanticipated Discovery of Tribal Cultural Resources), CR-1 (Development of a Cultural Resource Mitigation and Monitoring Program), and CR-2 (Treatment of Known Significant Archaeological Resources)	**NEPA**: No adverse effect for all Build Alternatives after mitigation.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, or cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: a) Listed or eligible for listing in the California Register of Historical Resources, or a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or	**CEQA**: One presumed tribal cultural resource has been identified in the Affected Area for tribal cultural resources for Alternative 1 and Design Option 1. Construction of Alternative 1 or Design Option 1 could impact this resource. No other resources have been identified. No tribal cultural resource has been identified in the Affected Area for tribal cultural resources for Alternatives 2, 3, or 4, Design Option 2, or the Paramount or Bellflower MSF site options. Construction of these alternatives, design options, and MSF site options would not result in significant impacts to known tribal cultural resources.	Mitigation Measures TCR-1 (Native American Monitoring), TCR-2 (Unanticipated Discovery of Tribal Cultural Resources), CR-1 (Development of Cultural Resource Mitigation and Monitoring Program), and CR-2 (Treatment of Known Significant Archaeological Resources)	**CEQA**: Less than significant for all Build Alternatives after mitigation.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subsection (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.			
Parklands and Community Facilities	Construction activities would result in impacts to access and parking for parks and community facilities.	**NEPA**: Construction activities of the Build Alternatives would not permanently affect existing buildings or permanently disrupt parklands, recreation facilities, bike facilities, and community facilities, and no adverse effect would occur. Construction activities would not cause indirect air quality, noise, or vibration impacts to parklands or recreation facilities. Construction-related traffic, detours, lane closures, sidewalk detours, and bike facility detours could affect access and parking for parklands, recreational facilities, and community facilities, and could result in adverse effects.	Mitigation Measure COM-1 (Construction Outreach Plan)	**NEPA**: No adverse effect for all Build Alternatives after mitigation.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable standards for any park or recreational facility?	**CEQA**: Pedestrian and bicycle access routes in the construction area would be temporarily disrupted during construction. In addition, off-street parking that may be used by parkland, recreational facility, bike facility, and community facility visitors may be temporarily removed for the duration of construction.	Mitigation Measure COM-1 (Construction Outreach Plan)	**CEQA**: Less than significant for all Build Alternatives after mitigation.
	Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	**CEQA**: Construction would not generate permanent residences that would increase the use of existing neighborhood and regional parks or other recreational facilities resulting in accelerated physical deterioration of the facilities.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	**CEQA**: Construction would be temporary and would not include the construction of recreational facilities or require the expansion of existing recreational facilities.	None required	**CEQA**: No impact for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
Economic and Fiscal Impacts	Construction effects would relate to regional economic construction impacts and localized project impacts.	**NEPA**: Construction would represent a substantial capital investment in the regional economy that would increase employment, earnings, and economic output during the construction period. Construction activities would likely result in access modifications, and potential transportation delays that would result in temporary impacts to the surrounding communities.	Mitigation Measures COM-1 (Construction Outreach Plan) and TRA-23 (Loss of Parking [Construction])	**NEPA**: No adverse effect for all Build Alternatives after mitigation.
	Would the Project result in substantial impacts to regional mobility and connectivity?	**CEQA**: Construction activities would likely result in access modifications and potential transportation delays that would result in temporary impacts to the surrounding communities.	Mitigation Measures COM-1 (Construction Outreach Plan) and TRA-23 (Loss of Parking [Construction])	**CEQA**: Less than significant for all Build Alternatives after mitigation.
	Would the Project result in substantial construction-related impacts to businesses and residences that would result in physical deterioration of the existing environment?	**CEQA**: While the construction spending effects would be a positive for the overall regional economy, construction of the Build Alternatives would have potential impacts on businesses and residences near active construction areas. Construction would require additional right-of-way for project alignments, construction staging areas, tunnel portals, and parking areas, resulting in displacements of businesses and residences.	Mitigation Measures COM-1 (Construction Outreach Plan) and TRA-23 (Loss of Parking [Construction])	**CEQA**: Less than significant for all Build Alternatives after mitigation.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
Safety and Security	Construction effects would relate to construction-related activities and conditions that could impact pedestrian, bicyclist, and motorist safety, emergency response services, and security and prevention of crime.	**NEPA**: The Build Alternatives would implement advance notices, signage, barriers, and fencing to direct pedestrian, bicyclist, and motorist travel, and reduce the potential for temporary safety impacts. However, these methods may interfere with or potentially block Safe Routes to School, and an adverse effect could occur. The Build Alternatives would not have adverse impacts to emergency response services. Construction sites would include security features such as CCTV, on-site guards and security teams, and perimeter fencing to reduce potential impacts related to security and crime	Mitigation Measures COM-1 (Construction Outreach Plan), SAF-2 (School District Coordination), and SAF-3 (Construction Site Measures)	**NEPA**: No adverse effect for all Build Alternatives after mitigation.
	Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	**CEQA**: Construction-related impacts on emergency response plans or emergency evacuation plans could be caused by temporary construction activities.	None required	**CEQA**: Less than significant for all Build Alternatives.
	Would the Project result in substantial adverse physical impacts associated with the provisions of new or physically altered government facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain response times or other performance objectives for fire and police protection services?	**CEQA**: There would be no construction-related activities associated with new or physically altered government facilities to maintain response times or other performance objectives for fire and police protection services.	None required	**CEQA**: No impact for all Build Alternatives.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
	Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	**CEQA**: Temporary construction-related activities and conditions that could impact pedestrian, bicyclist, and motorist safety.	Mitigation Measures COM-1 (Construction Outreach Plan), SAF-2 (School District Coordination), and SAF-3 (Construction Site Measures)	**CEQA**: Less than significant for all Build Alternatives after mitigation.

Source: Compiled on behalf of Metro in 2021
Notes: [1] Data totals for Design Options 1 and 2 include the Alternative 1 alignment with the specified Design Option.
ACM = asbestos-containing materials; APE = Area of Potential Effect; CCTV= closed-circuit television; CEQA = California Environmental Quality Act; CGP = Construction General Permit; EMF = electromagnetic fields; FTA = Federal Transit Administration; GHG = greenhouse gas; LBP = lead-based paint; MMBTU = million British thermal units; MSF = maintenance and storage facility; MWD = Metropolitan Water District; NEPA = National Environmental Policy Act; NOx = nitrogen oxides; PCB = polychlorinated biphenyls; ROW = right-of-way; SCAQMD = South Coast Air Quality Management District; SWPPP = Stormwater Pollution Prevention Plan

Table S.5. Growth-Inducing, Cumulative, and Environmental Justice Impacts and Mitigation Measures

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
Growth-Inducing	Could the Project foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment.	**NEPA/CEQA**: Population, housing, and employment growth is anticipated along the project alignment with population and housing growth being closely related. The Build Alternatives are a transit infrastructure project proposed to serve forecasted population, housing, and employment growth. They would not result in growth-inducing impacts or unplanned growth beyond growth already anticipated.	None required	**NEPA/CEQA**: No adverse effect for all Build Alternatives after mitigation.
Cumulative Impacts	In combination with identified past, present, and reasonably foreseeable future projects would the Project have significant impacts?	**NEPA/CEQA**: The Build Alternatives could have cumulative effects to land use; communities and neighborhoods; acquisitions and displacements; visual quality and aesthetics; air quality; GHG; noise and vibration; ecosystems and biological resources; geotechnical, subsurface, and seismic hazards; hazards and hazardous materials; water resources; energy; historic, archaeological, and paleontological resources; tribal cultural resources; parklands and community facilities; safety and security; economic and fiscal; and environmental justice.	Mitigation Measures LU-1 (Consistency with Bike Plans), VA-3 (Landscaping at LAUS), VA-4 (Construction Screening), VA-5 (Construction Lighting); NOI-1 through NOI-7, which include soundwalls, low-impact frogs, wheel squeal noise monitoring, crossing signal bells, gate-down-bell stop variance, and TPSS noise reduction; GEO-1 through GEO-5, which include hazardous gas detection, structural design, gas monitoring, and a tunnel advisory panel; HAZ-1 (Oil and Gas Wells in Tunnel Areas), SAF-1 (Encroachment Detection), SAF-2 (School District Coordination), SAF-3 (Construction Site Measures), AQ-1 (Vehicle Emissions); VIB-3	**NEPA/CEQA**: During operation. transportation, land use, noise, vibration, parklands, and community facilities would result in significant cumulative impacts that would be cumulatively considerable. During construction, transportation, air quality (NO_X emissions for Alternatives 1 and 2 only), noise, and economic and fiscal (a beneficial cumulative effect) would result in significant cumulative construction impacts that would be cumulatively considerable.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
			through VIB-7, which includes a vibration control plan, minimizing the use of impact devices, drilling for building foundations, construction vibration limits, and construction monitoring; BIO-1 through BIO-4, which include special status bats, nesting birds, jurisdictional resources, and protected trees; PR-1, which includes a paleontological resources mitigation and monitoring program, a worker environmental awareness program, construction monitoring, and the preparation and curation of recovered fossils; CR-1 through CR-6, which include the development of a cultural resource mitigation and monitoring program, treatment of known significant archaeological resources, a worker environmental awareness program, archaeological monitoring, treatment of unanticipated discoveries, and historic design review; TCR-1 (Native American Monitoring) and TCR-2 (Unanticipated Discovery of Tribal Cultural Resources), COM-1 (Construction Outreach Plan), and TRA-23 (Loss of Parking [Construction])	

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
Environmental Justice	What is the potential for disproportionately high and adverse effects on environmental justice communities?	**NEPA**: During operation, environmental justice communities would experience adverse effects with regard to traffic operations and parking; land use consistency; parklands and communities; displacement and acquisition; visual quality; and noise and vibration levels. During construction, environmental justice communities would experience adverse effects with regard to air quality (Alternatives 1 and 2), transportation, land use, displacement and acquisition, communities and neighborhoods, noise and vibration, ecosystems and biological resources, parkland and community facilities, communities and neighborhoods, and safety and security. Adverse effects with regard to intersection improvements and traffic operations on the environmental justice community of Huntington Park would be appreciably more severe or greater in magnitude than the other affected communities along the project corridor based on the concentration on affected intersections. This would result in a disproportionately high and adverse effect to the environmental justice community of Huntington Park.	Mitigation Measures TRA-1 through TRA-19, which are specific intersection improvements, TRA-20 (Transportation Management Plan(s), TRA-21 (Parking Monitoring and Community Outreach), TRA-22 (Parking Mitigation Program [Permanent]), and TRA-23 (Loss of Parking [Construction]), LU-1 (Consistency with Bike Plans); VA-1 (Screening at Somerset Boulevard) and VA-2 (Relocation of "Belle"); NOI-1 through NOI-8, which include soundwalls, low-impact frogs, wheel squeal noise monitoring, crossing signal bells, gate-down-bell stop variance, TPSS noise reduction, and a noise control plan; VIB-1 through VIB-7, which include a ballast mat or resilient rail fasteners, low-impact frogs, a vibration control plan, minimizing the use of impact devices, drilling for building foundations, construction vibration limits, and construction monitoring; AQ-1 (Vehicle Emissions), COM-1 (Construction Outreach Plan)	**NEPA**: A disproportionately high and adverse effect would occur in the environmental justice community of Huntington Park with regard to intersection improvements and traffic operations after the implementation of Mitigation Measures TRA-1 through TRA-20 for Alternatives 1, 2, 3, Design Options 1, and 2. Mitigation Measures TRA-1 through TRA-20 would be implemented and sufficient to reduce adverse effects to the extent feasible. Nonetheless, adverse effects would remain. A disproportionately high and adverse effect would not occur to the other environmental justice communities under all Build Alternatives after mitigation.

	Description of Identified Impacts	Impact Before Mitigation	Mitigation Measures	Impact Remaining After Mitigation
		Adverse effects on the other environmental justice communities would not be appreciably more severe or greater in magnitude than other affected communities along the project corridor, all of which are environmental justice communities. The Project would not cause a disproportionately high and adverse effect on the other environmental justice communities. Where adverse effects would occur, mitigation measures would be provided and implemented equally throughout all of the environmental justice communities in the Affected Area.		

Source: Compiled on behalf of Metro in 2021
Notes: CEQA = California Environmental Quality Act; GHG = greenhouse gas; NEPA = National Environmental Policy Act

S.5 Section 4(f) Evaluation

Section 4(f) of the U.S. Department of Transportation Act of 1966 provides special protection of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of a historic site of national, state, or local significance (as determined by the official(s) with jurisdiction over the park, area, refuge, or site) (49 United States Code Section 303). The FTA may not approve the non-*de minimis* use of Section 4(f) property unless the FTA determines that (1) there is no prudent or feasible alternative, and (2) the project includes all possible planning to minimize harm to these resources resulting from such use (23 Code of Federal Regulations (CFR) 774.3).

Prior to making Section 4(f) approvals under Section 774.3(a), the Section 4(f) evaluation shall be provided for coordination and comment to the official(s) with jurisdiction over the Section 4(f) resource and to the Department of the Interior, and as appropriate to the Department of Agriculture and the Department of Housing and Urban Development (23 CFR Section 774.5).

Pending completion of consultation and concurrence of the officials with jurisdiction, the FTA has made a preliminary determination that the Project would have a *de minimis* impact on four historic sites under Alternative 1, five historic sites under Alternative 2, three historic sites under Alternative 3, and one historic site under Alternative 4 that qualify for protection under Section 4(f). All Build Alternatives would have a *de minimis* impact on one park that qualifies for protection under Section 4(f). The FTA also has made a preliminary determination that the temporary occupancy exception to Section 4(f) use would apply to 11 historic sites under Alternative 1, 21 historic sites under Alternative 2, and 1 historic site under Alternative 3. The temporary occupancy exception would also apply to 3 recreational trails under Alternatives 1, 2, and 3. Under Alternative 4, the temporary occupancy exception would not apply to any historic sites, but would apply to one recreational trail. This determination for the Project is pending concurrence from the agencies with jurisdiction that the conditions for application of the temporary occupancy exception are met.

The Project would have no use of other Section 4(f) properties. There would be no constructive use of any Section 4(f) properties (Metro 2021l). FTA has preliminarily determined that the Project would satisfy the requirements of Section 4(f) because the only impacts to Section 4(f) properties would be *de minimis* or meet the requirements of the temporary occupancy exception.

S.6 Evaluation of Alternatives

Both NEPA and CEQA recommend identifying the preferred alternative in the Draft EIS/EIR. In addition to considering the effectiveness in meeting the Purpose and Need, goals and objectives, and environmental impacts and benefits, the financial capacity to construct, operate, and maintain the Project as well as strategies to fund the Project were primary considerations in determining the Staff Preferred Alternative. Alternative 3 is the Staff Preferred Alternative.

All of the Build Alternatives would achieve the four major elements of the Project's Purpose by establishing reliable transit service, accommodating future travel demand, improving access, and addressing mobility and access constraints faced by transit-dependent communities in the corridor (Table S.6). Total capital costs for Alternatives 1 and 2 are significantly higher ($8.1 and $8.8 billion, respectively) than Alternatives 3 and 4 ($4.4 and $1.9 billion, respectively) due to the length of the alignment and the resulting number of stations.

Table S.6. Alternatives Benefit Evaluation

Environmental and Social Benefits	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Vehicle miles traveled reduction (existing plus project compared to existing conditions)	216,100 (-0.05%)	215,000 (-0.05%)	71,800 (-0.02%)	36,300 (-0.01%)
Average weekday daily boardings (2042)	60,839	82,826	30,964	11,119
Emissions and greenhouse gas reduction	Greatest reduction	Greatest reduction	Moderate reduction	Lower reduction
Community benefits (number of cities and the number of communities in the City of Los Angeles served within one-quarter mile of stations[1])	12 cities (3 communities in City of Los Angeles)	12 cities (3 communities in City of Los Angeles)	12 cities (1 community in City of Los Angeles)	5 cities (0 communities in City of Los Angeles)
Daily new transit trips (average number of trips per mile)	952	1,048	622	720
User benefit hours[2]	15,400	19,700	8,400	4,000
Economic benefits[3] (jobs gained in the region)	81,700 – 89,800 construction jobs 245 permanent jobs	88,100 – 89,800 construction jobs 282 permanent jobs	44,000 – 45,700 construction jobs 189 permanent jobs	22,400 – 24,000 construction jobs 113 permanent jobs
Economic benefits (2020$) (generated/earned in economic activity per year in the region)	$6.6 million	$7.6 million	$5.1 million	$3.0 million
Regional mobility and connectivity[4]	High	High	Medium	Low
Approximate residential population within one-half mile of stations[5]	236,000	260,000	203,000	90,400
Population growth (percent change from 2017 to 2042 within one-quarter mile of alignment)	60%	75%	59%	62%
Employment growth (percent change from 2017 to 2042 within one-quarter mile of alignment)	32%	25%	22%	20%

Source: Prepared for Metro in 2021

Notes: [1] For purposes of this analysis, the City of Los Angeles is split into Central City, Central City North, and Southeast Los Angeles Community Plan Areas. These are considered established communities within the Affected Area. As such, the number of communities in the City of Los Angeles is described in the table.

[2] User benefit hours presented in total daily hours. This value is based on travel time savings and cost savings that new riders and existing riders would experience.

[3] The number presented is person-year jobs (one job for one person for one year).

[4] Based on number of proposed stations that would improve local and regional access, mobility, and connectivity to transit.

[5] The residential populations identified are located within one-half mile of the station areas for each Build Alternative.

While each of the Build Alternatives would result in varying levels of impacts and benefits, Alternative 3 would have an overall environmental advantage compared to the other Build Alternatives. Alternative 3 would have fewer permanent acquisitions, business displacements, noise and vibration impacts, and be in proximity to fewer hazardous materials sites compared to Alternatives 1 and 2. Construction of Alternative 3 would affect access to fewer community facilities, require fewer construction laydown areas, and would not result in exceedances in daily regional emissions compared to Alternatives 1 and 2. Due to the lack of connectivity and limited benefits achieved with four stations, Alternative 4 would provide a lower level of environmental benefits to the region when compared to the other Build Alternatives. Overall, the Bellflower MSF site would require fewer acquisitions, displace fewer businesses, and have lower capital cost compared to the Paramount MSF site.

Alternative 3 is designated as the Staff Preferred Alternative. Alternative 3 is identified as the environmentally superior alternative pursuant to CEQA requirements.

S.7 Public Outreach, Agency Consultation, and Coordination

Metro initiated a comprehensive outreach program for the Project beginning in 2017. Metro has continued to keep elected officials, agency staff, community stakeholders, and the general public informed on the status of the Project as well as progress of the environmental review process.

The FTA published the Notice of Intent pursuant to NEPA in the *Federal Register* on July 26, 2017. Metro issued a Notice of Preparation pursuant to CEQA on May 25, 2017, with supplemental publications June 14, 2017 and July 11, 2018. Metro used the scoping process to seek agency and public feedback on the scope of the Draft EIS/EIR. Metro hosted one agency scoping meeting and eight public scoping meetings with the option to join a live webcast or access the video recording on the Project's website.

Metro has communicated project information and provided opportunities for public and agency input during preparation of the Draft EIS/EIR. Meetings have been held with participating agencies and interested federal, state, regional, and local agencies in support of the Draft EIS/EIR. Metro conducted an Assembly Bill 52 compliant consultation with California tribes with traditional lands or cultural places in Los Angeles County. The FTA invited the Native American groups to participate in the Section 106 consultation process and included information on the identification of prehistoric sites, and sacred and/or traditional cultural properties in the Area of Potential Effect). Metro sent consultation letters to local government, local historic preservation advocacy and history advocacy groups, and historical societies and organizations. The Final Cultural Resources Survey Report—Rev 1 (Metro 2020d) was submitted to the State Historic Preservation Office (SHPO) on March 30, 2020, requesting concurrence on the eligibility determinations. No comments or objections were received from SHPO.

Following the release of this Draft EIS/EIR, a 45-day public comment period will be held to promote review of the Draft EIS/EIR and gather public comments. Metro will also host public hearings throughout the project area to present findings of the Draft EIS/EIR and solicit public comments on the document.

S.8 Areas of Controversy and Issues to Be Resolved

S.8.1 Areas of Controversy

The following areas of controversy or concerns were identified based on public comments submitted during the scoping period and through ongoing stakeholder coordination:

- Construction impacts within the Little Tokyo community
- Alignment configuration (at-grade, aerial, or underground) at intersections
- Alignment configuration within the City of Cerritos
- Elimination of an alignment with a northern terminus at Pershing Square
- Partial acquisition of residential properties
- Safety and security on the alignment and at stations
- Noise and vibration impacts

S.8.2 Issues to be Resolved

The following issues will be resolved as the Project proceeds through the environmental process as well as through ongoing stakeholder coordination:

- Selection of the Locally Preferred Alternative – The Metro Board of Directors will select the Locally Preferred Alternative (LPA) after circulation of the Draft EIS/EIR. Public and agency comments received on the Draft EIS/EIR will be considered as part of the selection process. Currently Alternative 3 is identified as the Staff Preferred Alternative. As part of the Metro Board action, a decision may be made to phase implementation of the LPA. Any such decision would be made in consideration of public comments and funding availability.
- Selection of design options – If Alternative 1 is selected as the LPA, the Metro Board of Directors will also determine whether Design Option 1 (MWD) and/or Design Option 2 (Add Little Tokyo) are included as part of the Project. Public comments received on the Draft EIS/EIR will be considered as part of the selection process.
- Selection of MSF site – Concurrent with selection of the LPA, the Metro Board of Directors will also determine which MSF site option will advance into the Final EIS/EIR. Public comments received on the Draft EIS/EIR will be considered as part of the selection process. Currently, the Bellflower MSF site option is the staff preferred site option.
- Design of at-grade crossings – Metro has begun coordination with the California Public Utilities Commission (CPUC) to determine design requirements where the alignment passes through intersections at grade. Coordination will continue through the environmental clearance and design phases of the Project. Approvals from CPUC will be required.
- Design and construction of the alignment within Union Pacific (UP) right-of-way – Metro has begun coordination with UP for the portion of the Project that would be within UP right-of-way. Coordination has and will continue to focus on design of the light rail transit (LRT) alignment and clearances, relocation of freight tracks, design of the new freight bridge over I-105, track separation between the WSAB LRT tracks and the existing freight tracks, and construction methods and phasing. Approval and/or a permanent easement will be required from UP.
- Mitigation measures – several mitigation measures identified to avoid or minimize adverse and/or significant impacts would be outside Metro's jurisdiction to

implement. These mitigation measures include modifications to travel lanes at intersections for traffic impacts (subject to the jurisdiction in which the intersection is located), modifications to proposed bicycle facilities that conflict with the Project (subject to the jurisdiction where the facility is proposed), relocation of the "Belle" public art statue (subject to the City of Bellflower), and modification to crossing signal bells and gate-down-bell-stop signal variance (subject to CPUC). Coordination has begun with several entities regarding these measures and will continue prior to issuance of the Record of Decision and Notice of Determination for the Project. If the applicable jurisdiction does not approve the measure, then adverse and/or significant impacts would occur as no other mitigation has been identified for these impacts.

1 PURPOSE AND NEED

1.1 Introduction

The Federal Transit Administration and the Los Angeles County Metropolitan Transportation Authority (Metro) are sponsoring a transit project along the historic West Santa Ana Branch (WSAB) corridor within Los Angeles County, known as the WSAB Transit Corridor Project (Project).

This chapter presents the Project's Purpose and Need, provides a brief project history, a description of the Study Area, performance of the regional transportation system, assessment of travel demand and travel markets, transit usage, congestion, and mobility. The Project has been developed to achieve the Purpose, Need, and related goals described in this section, which are discussed below.

1.2 Project Purpose and Need

1.2.1 Purpose of the Project

The Project's overall Purpose is to provide high-quality reliable transit service to meet the future mobility needs of residents, employees, and visitors who travel within and through the corridor. This new transit service will increase mobility and connectivity for historically underserved and transit-dependent communities, improve travel times on local and regional transportation networks, and accommodate substantial future employment and population growth.

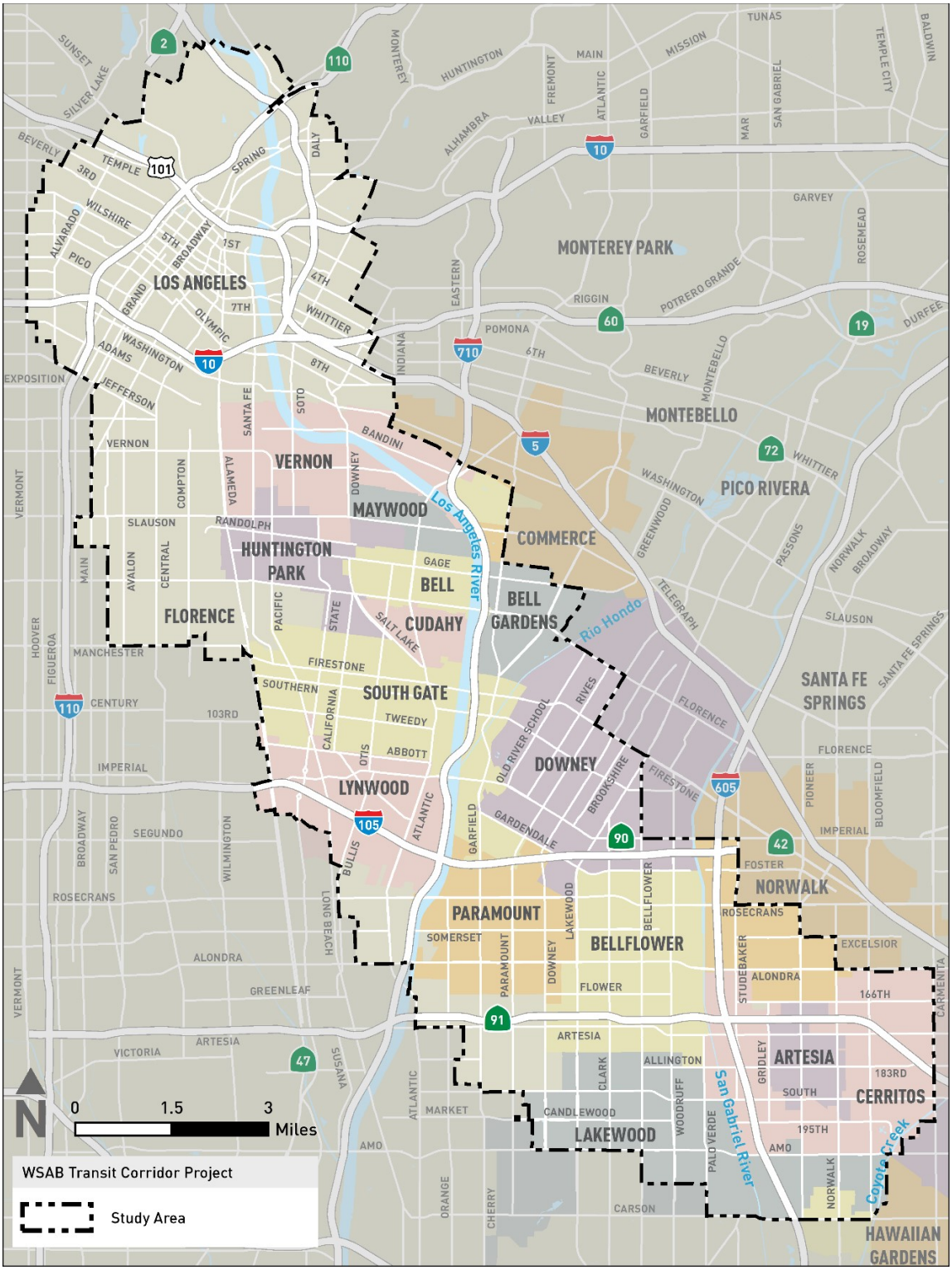
More specifically, the Project's Purpose is as follows:

- Establish a reliable transit service that will enhance the connectivity of the existing transit network and reduce transit travel times to local and regional destinations
- Accommodate future travel demand, including the high number of transit trips made by Study Area residents
- Improve access for the densely populated neighborhoods, major employment centers, and other key regional destinations where future growth is forecasted to occur within the Study Area
- Address mobility and access constraints faced by transit-dependent communities and environmental justice communities

1.2.2 Need for the Project

Located in southeastern Los Angeles County, the Study Area is approximately 98 square miles and incorporates 20 individual cities – the Cities of Los Angeles, Vernon, Maywood, Huntington Park, Commerce, Bell, Cudahy, Bell Gardens, South Gate, Lynwood, Compton, Downey, Paramount, Bellflower, Long Beach, Lakewood, Norwalk, Artesia, Cerritos, and Hawaiian Gardens – as well as portions of unincorporated Los Angeles (LA) County (Figure 1-1).

Figure 1-1. West Santa Ana Branch Transit Corridor Study Area



Source: Prepared for Metro in 2020

The following information is based on the *West Santa Ana Branch Transit Corridor Mobility Problem Definition Report & Purpose and Need Statement* (Metro 2019g).

Currently home to 1.4 million residents and 618,500 jobs, projections show the Study Area resident population increasing to 1.6 million and jobs increasing to 746,000 by 2042. Most of the Study Area is served by buses that operate primarily along a heavily congested freeway and arterial network. As the population and employment within the Study Area are predicted to grow substantially over the next 20 years, the congestion of the roadway network is expected to worsen, resulting in the further decreased reliability of transit service.

The major issues and constraints within the Study Area, which demonstrate the need for the Project, are as follows:

High Population and Employment Densities – In 2042, projected population densities within the Study Area will average 15,000 people per square mile, with portions of the Cities of Maywood and Huntington Park exceeding 25,000 residents per square mile. In 2042, the Study Area will also remain a major employment destination, with average densities of 6,800 jobs per square mile.

High Number of Transit-Dependent Populations – Characterized by zero-vehicle households, low-income households, minors, and seniors, in 2017, approximately 90,000 (around 18 percent) of the Study Area's households do not have access to their own car (zero-vehicle households), which represents around 29 percent of all zero-vehicle households in LA County (9 percent of all LA County households are considered zero-vehicle households). Furthermore, 32 percent of the Study Area residents are minors and 12 percent are seniors.

Environmental Justice Communities[1] – In 2017, minority residents comprise 65 percent of the total Study Area population, with Hispanic/Latino groups alone accounting for 51 percent of the total population. In addition, 44 percent of Study Area residents live below the poverty level, which is higher than the county average of 33 percent. These communities have been historically underserved by transit investments.

Goods Movement – Goods movement activities (freight rail and trucks) provide economic benefits within the Study Area. The WSAB Transit Corridor includes a network of intermodal rail yards, truck depots, warehouses, and distribution centers, in addition to the Alameda Corridor that links the ports of Long Beach and Los Angeles to the transcontinental rail network near downtown Los Angeles. Improvement of mobility options for Study Area residents and employees must also recognize the regional economic benefits that goods movement provides, and not hinder goods movement through increased roadway congestion or reduced freight capacity.

Increasing Travel Demand – By 2042, total daily travel within the Study Area is projected to increase by 14 percent, an increase of 870,000 daily person trips. There is significant transit demand given the high proportion of transit-dependent populations. Overall, around 14 percent of the home-based work trips are currently made by transit.

[1] Per the FTA Circular 4703.1 definition of Environmental Justice Communities.

Constrained Freeway and Arterial System – Even with planned highway and transit improvements, the projected increase in daily travel will impact the transportation system's capacity. By 2042, volumes will remain heavy on all Study Area freeways, with volumes increasing to over 100,000 vehicles per day on portions of the Interstate (I-) 105, I-605, and I-710 freeways. The worsening congestion will also impact reliability of bus service within the Study Area.

Limited Travel Options – Currently, residents within the Study Area have two primary travel options for regional trips: private automobile and public transit. Both modes operate on an increasingly congested highway and roadway system and constrained capacity passenger rail network. Effective transit options are primarily concentrated only at the northernmost portion of the Study Area (Metro A [Blue] Line, B [Red] Line, D [Purple] Line, E [Expo] Line, and L [Gold] Line).

Limited Connections to the Metro and Regional Rail System – While the urban rail system in LA County is expanding, the Study Area has limited direct connections to these new or extended lines. Currently, the rail connections are concentrated on the northwest corner of the Study Area with connections to the Metro A (Blue) Line, Metro B (Red), D (Purple), and L (Gold) Lines, and Metrolink commuter rail system; and connections to the Metro C (Green) Line in the south. There are also two points of access to the regional Metrolink commuter rail system (Norwalk and Commerce) on the eastern edge of the Study Area.

Limited Transit Investment – While a significant level of regional and local investments has been identified for the Study Area's freeway and arterial system, a high-capacity, reliable transit investment is also needed. Without this transit investment, mobility and travel choices within the WSAB Transit Corridor will be restricted, contributing to the Study Area's continued dependence on auto travel.

1.2.3 Goals of the Project

Building on extensive stakeholder and agency outreach, the goals and objectives of the WSAB Transit Corridor were established through the development of the *Pacific Electric Right-of-Way/WSAB Corridor Alternatives Analysis Report* in 2013 (Southern California Association of Governments [SCAG] 2013), through a 24-month period of public meetings and work sessions with elected officials, stakeholders, advisory committee members, and communities. These goals were further developed in the *WSAB Transit Corridor Technical Refinement Study* (Metro 2015a) through technical meetings with key stakeholders, including Eco-Rapid Transit, Study Area cities, and the California Department of Transportation; and were further discussed in 2017 as part of the WSAB Transit Corridor Scoping Meetings and in community update meetings in March 2018. Based on the planning and community involvement activities, the following five goals were established for the Project:

- Goal 1: Provide Mobility Improvements
- Goal 2: Support Local and Regional Land Use Plans and Policies
- Goal 3: Minimize Environmental Impacts
- Goal 4: Improve Cost Effectiveness and Financial Feasibility
- Goal 5: Promote Equity

1.3 Description of the West Santa Ana Branch Corridor Study Area

The 98-square mile WSAB Transit Corridor Study Area extends over 20 miles from downtown Los Angeles to the City of Artesia traversing densely populated, low-income, and heavily transit-dependent communities. Stretching from Elysian Park on the north to the Los Angeles/Orange County line on the south, the Study Area encompasses downtown Los Angeles, Southeast Los Angeles, and much of the Gateway Cities subregion.

The Study Area is served by a network of seven major freeways and a grid of north-south and east-west major arterials. Most transit service within the Study Area are local and limited/express buses operating on the congested network, including Metro Local, Metro Rapid, Los Angeles Department of Transportation, and Orange County Transportation Authority bus. Several fixed transit (rail and bus rapid transit) services also operate on the periphery of or through the Study Area, including Metro Bus Rapid Transit J (Silver) Line, six Metro Rail Lines (A [Blue] Line, B [Red] Line, C [Green] Line, D [Purple] Line, L [Gold] Line, and E [Expo] Line), and the Metrolink and Amtrak passenger rail systems.

Land uses in the Study Area generally include high-density commercial in the north (downtown Los Angeles), multi-family neighborhoods and communities surrounding industrial centers near the center of the Study Area, and a diversity of lower-density neighborhoods and communities in the south (within the Gateway cities).

1.3.1 Study Area Population and Employment

According to Metro's Travel Demand Model 2017-2042 (Metro 2018f), the Study Area serves a significant share of Los Angeles County's housing and economic base, accounting for 13 percent of the county's residents and almost 14 percent of the county's jobs. These densities are attributed to the residential towers within downtown Los Angeles and the multi-family neighborhoods in the Cities of Maywood, Huntington Park, Cudahy, Bell Gardens, and South Gate. Portions of these cities have densities of over 25,000 persons per square mile (Figure 1-2).

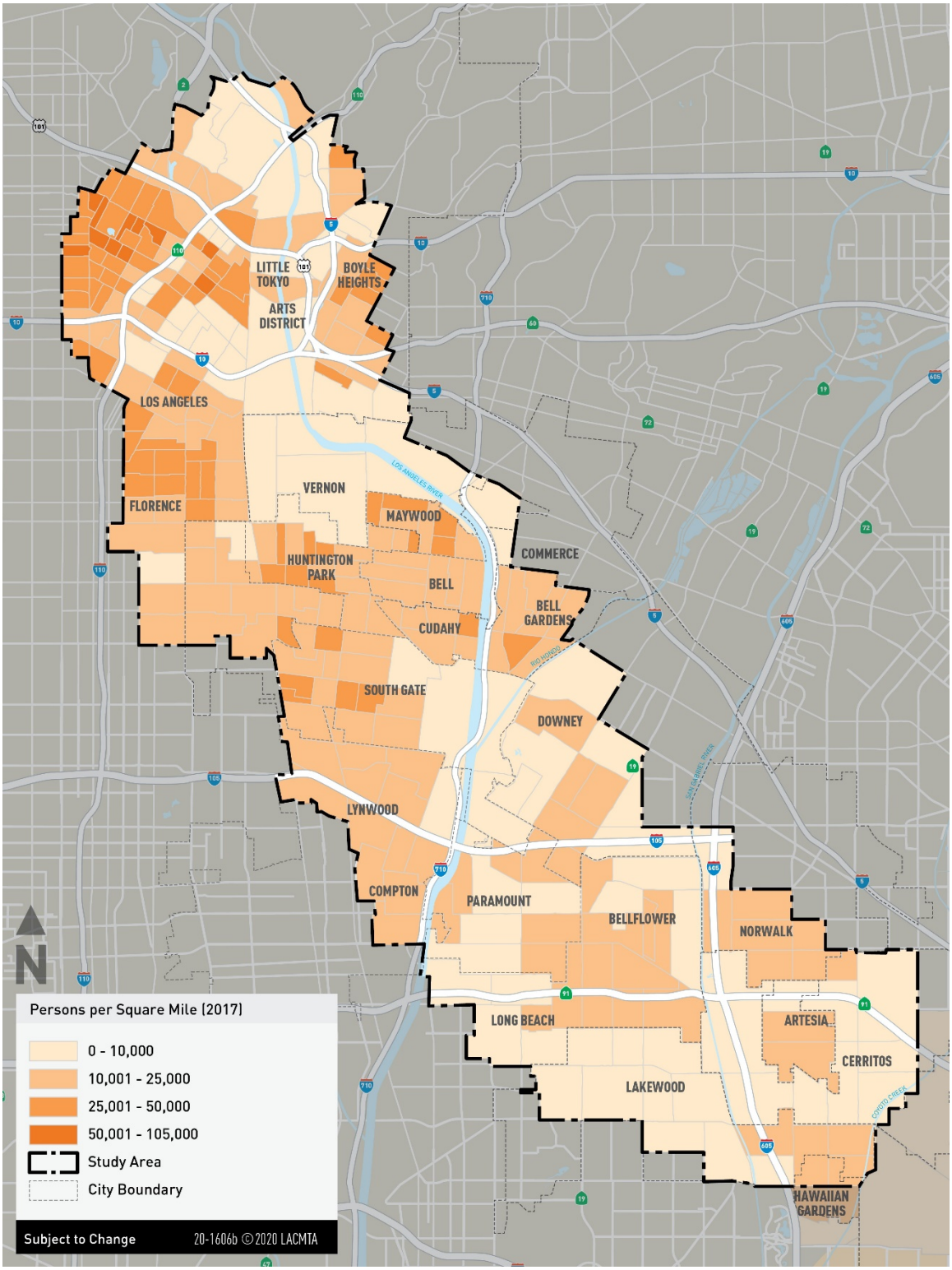
Table 1.1. Existing Population and Employment Characteristics

	Study Area	Los Angeles County
Population (number of persons)	1.4 million	10.6 million
Population Density (persons/square mile)	12,900	2,600
Employment (number of jobs)	618,500	4.5 million
Employment Density (jobs/square mile)	5,700	1,100

Source: Metro Travel Demand Model 2017 – 2042

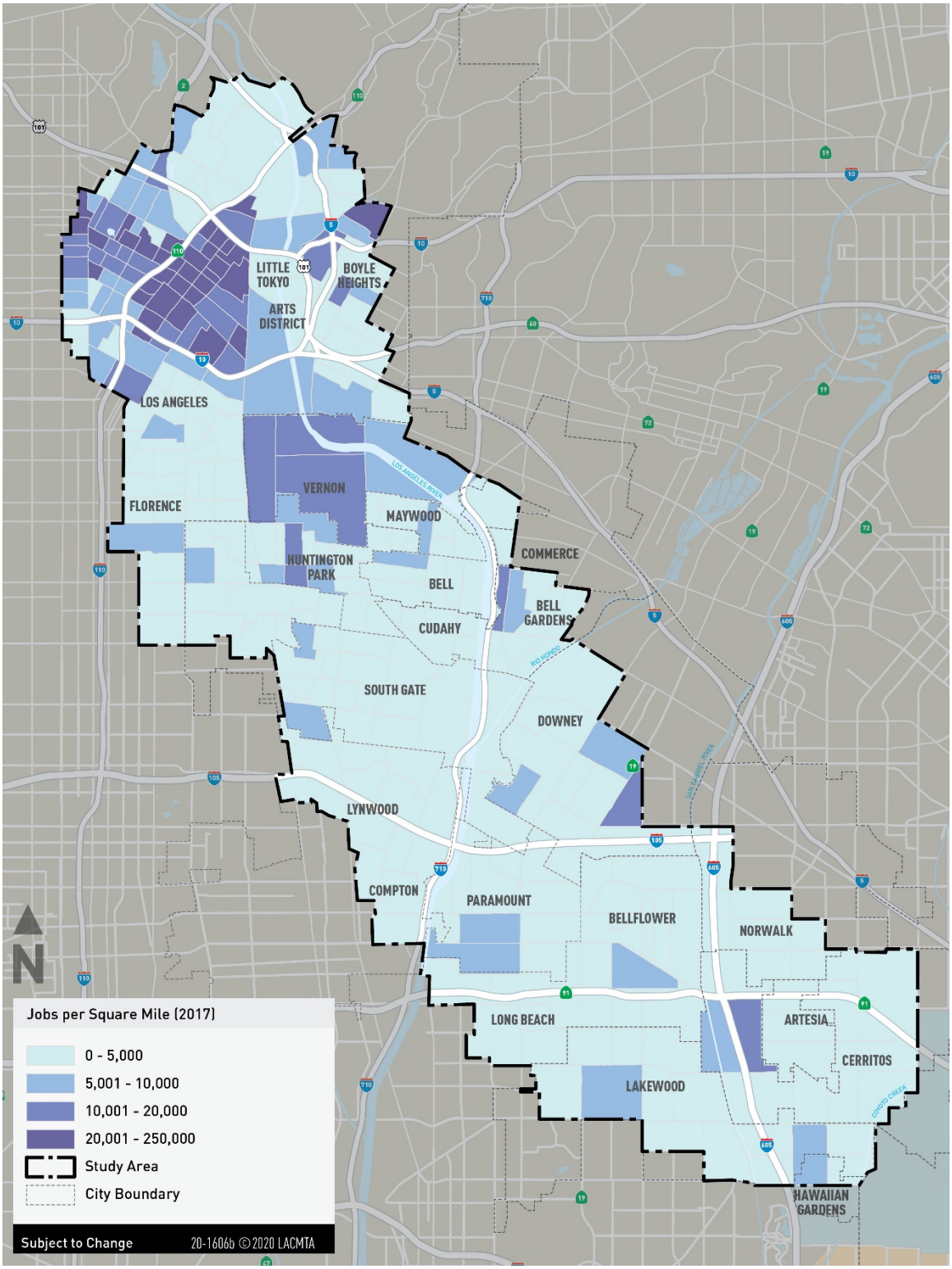
Jobs are mostly concentrated in the northern portion of the Study Area (between 10,000 and 250,000 jobs per square mile), primarily in downtown Los Angeles and in the industrial areas in the Cities of Vernon and Huntington Park. To the south, there are also substantial employment concentrations within the City of Artesia and the commercial areas of Cerritos and Lakewood (Figure 1-3).

Figure 1-2. Existing Study Area Population Density (2017)



Source: Metro Travel Demand Model 2017 – 2042

Figure 1-3. Existing Study Area Employment Density (2017)



Source: Prepared for Metro in 2020

1.3.2 Major Activity Centers and Destinations

Activity centers are key generators of trips, including those made by private and commercial vehicles, bicycles, and public transit. The Study Area includes an abundance of high-use activity sites, including civic and governmental facilities, cultural centers, educational institutions, event venues, industrial and medical facilities, recreational centers, major commercial areas, and sports venues. Figure 1-4 shows some of the major activity centers within the Study Area.

1.4 Regional Transportation System

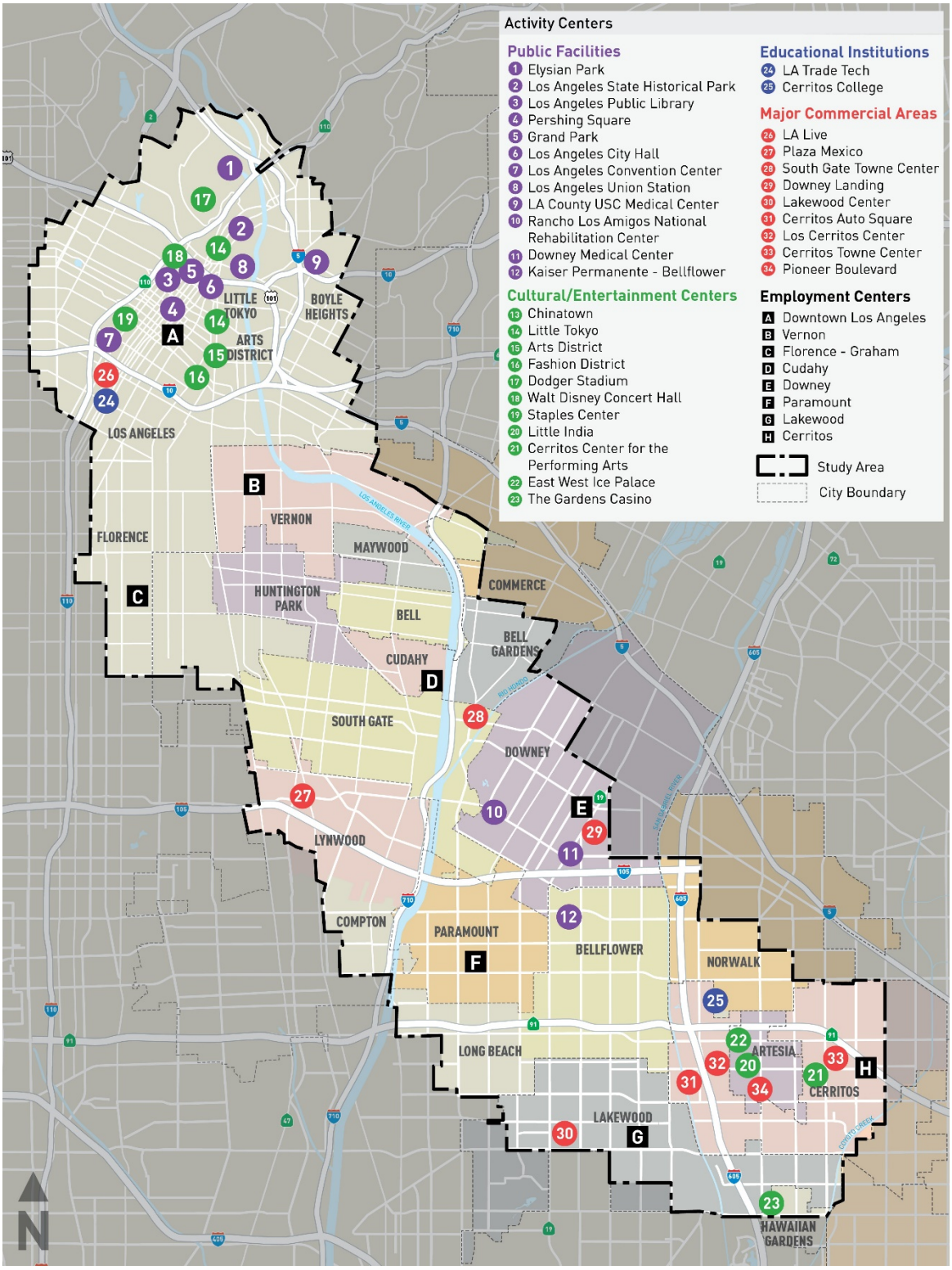
The Study Area includes an extensive freeway system and a grid of major north-south and east-west major arterials. Despite some of the vehicular capacity improvements made to the freeway and major arterials in the Study Area, traffic conditions are typically congested for several hours each day. As a result of slower travel speeds, drivers and buses encounter longer travel times to their destinations. For example, I-5 from the East Los Angeles interchange to the I-605 interchange has average travel speeds at less than 25 miles per hour during peak commute hours, as exhibited in Table 1.2. In addition, I-710 and I-105 have significant variability in travel times, as the upper limit of travel is generally twice as long as the lower limit. These examples clearly demonstrate a need for more reliable and predictive transportation options in the Study Area. Table 1.2 shows peak-hour travel times and speeds for some of the highest congested freeways in the Study Area (refer to Chapter 3, Transportation Impacts, of this Draft Environmental Impact Statement/Environmental Impact Report for a description of existing transportation conditions in the Study Area).

Table 1.2. Freeway Peak-Hour Travel Times and Average Travel Speeds (2017)

Description	Distance (miles)	Peak AM Travel Time (travel speed)	Peak PM Travel Time (travel speed)
I-105 from I-110 to I-605	10.3	18 to 60 minutes (12 to 34 mph)	22 to 55 minutes (11 to 28 mph)
I-710 from SR-60 to SR-91	11.6	20 to 45 minutes (15 to 35 mph)	26 to 60 minutes (12 to 27 mph)
I-5 from East Los Angeles interchange (I-60/I-101/I-5) to I-605 interchange	9.5	24 to 50 minutes (11 to 24 mph)	40 to 75 minutes (8 to 14 mph)

Source: Google Maps 2017
Notes: Peak hours are 6 to 9 a.m. and 3 to 7 p.m. mph = miles per hour

Figure 1-4. Activity Centers



Source: Prepared for Metro in 2020

Peak conditions on major arterials in the Study Area are also severely congested as many are used as alternatives to the freeway system. Table 1.3 is a summary of some of the highest peak-hour travel times along three major arterials that are representative of the high-volume north-south and east-west streets in the Study Area. Similar to the freeway network, high levels of variability in travel times are made worse by low speeds, with the longest travel times typically two to three times the shortest travel times.

Table 1.3. High-Volume Arterial Peak-Hour Travel Times and Average Travel Speeds (2017)

Description	Distance (miles)	Peak AM Travel Time (travel speed)	Peak PM Travel Time (travel speed)
Florence Avenue from I-110 to Lakewood Boulevard	9.8	30 to 70 minutes (8 to 20 mph)	35 to 85 minutes (7 to 17 mph)
Alameda Street from 1st Street to El Segundo Boulevard	9.2	27 to 70 minutes (8 to 20 mph)	28 to 85 minutes (6 to 20 mph)
Atlantic Avenue from I-5 to Orange County Line	11.2	29 to 70 minutes (9 to 23 mph)	30 to 75 minutes (9 to 22 mph)

Source: Google Maps 2017
Note: Peak hours are 6 to 9 a.m. and 3 to 7 p.m. mph = miles per hour.

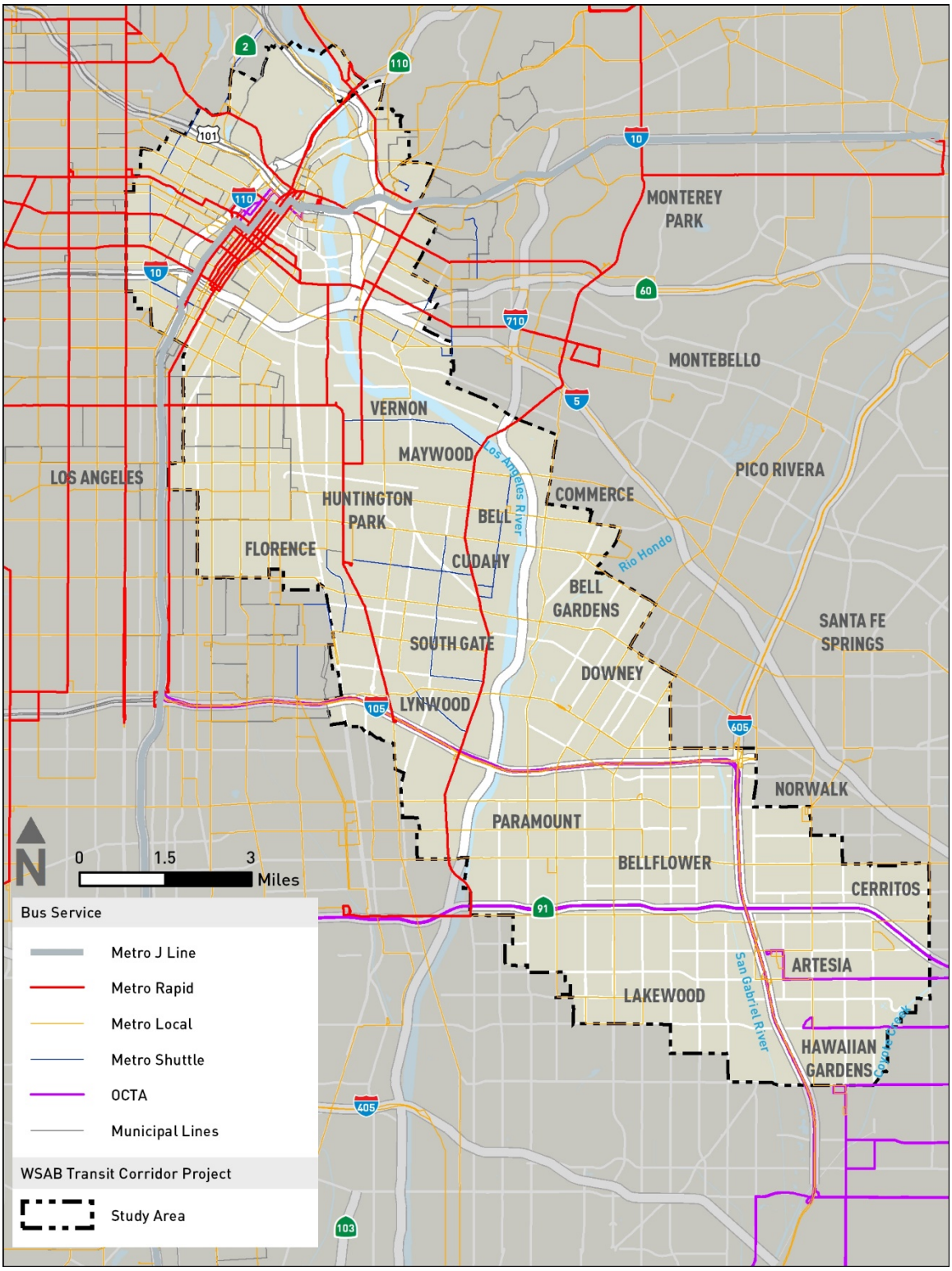
In addition, an overall increase of 21 percent in jobs is projected from 2017 to 2042, resulting in a projected 7.26 million daily trips within the Study Area by 2042. These economic trends, along with limited planned system improvements, suggest that freeways and roadways will be further constrained in the future.

1.4.1 Regional Transit Context

Most of the transit service in the Study Area are local and limited/express buses operating on the congested roadway network. Metro's regional Travel Demand Model indicates 2042 transit travel times for trips that utilize bus service or require users to travel long distances to access transit, will increase, as the roadway congestion continues to worsen and both vehicles and buses will travel at slower speeds. While there are many transit routes serving the Study Area, most do not serve the predominant north-south direction in the Study Area. In addition, traversing through the length of the WSAB Transit Corridor requires several transfers through local and regional transit services (Figure 1-5).

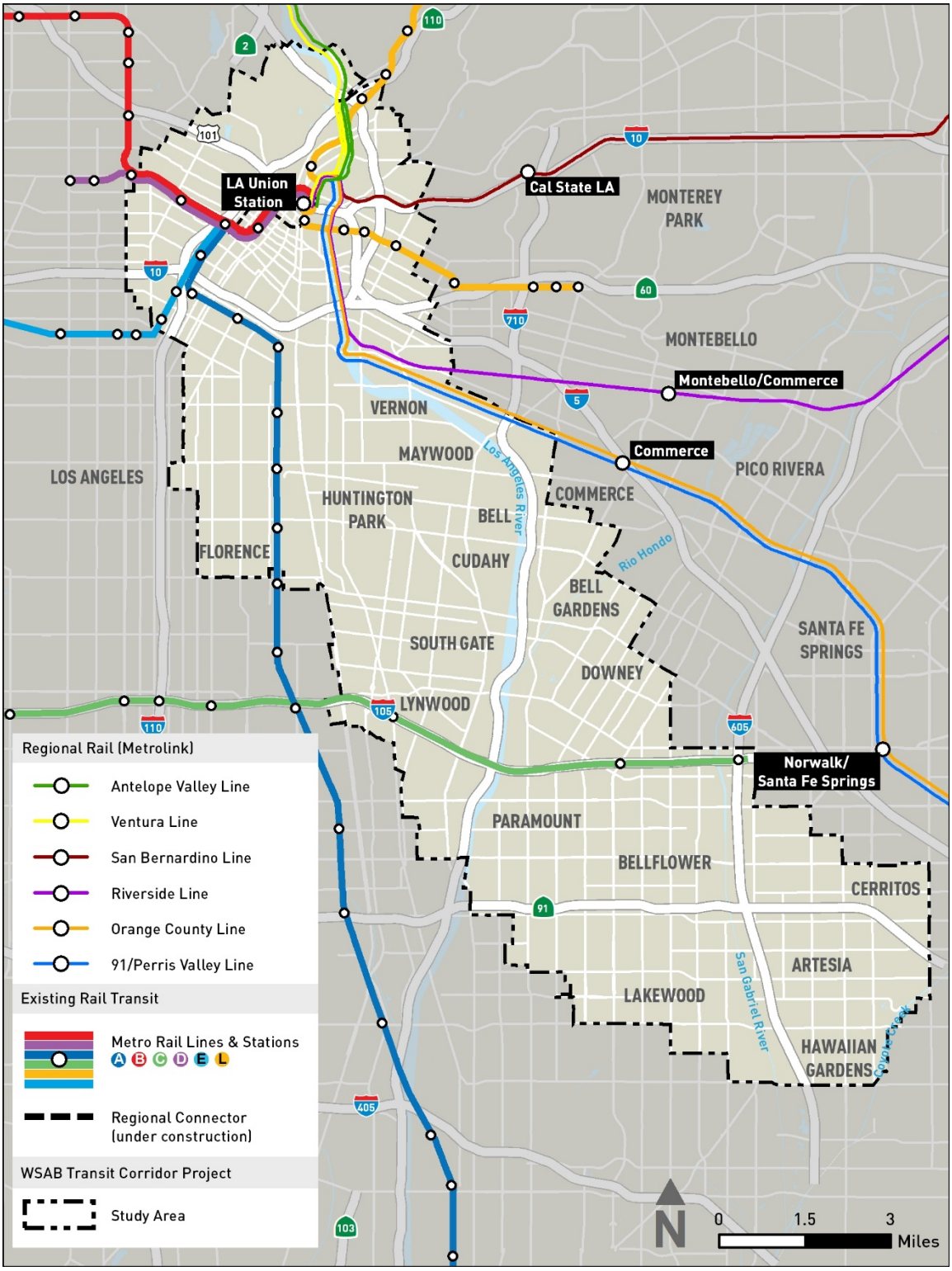
Current regional rail services are largely peripheral to the Study Area serving only partial areas within the corridor. Metro Rail Lines (A (Blue) Line, B (Red) Line, D (Purple) Line, E (Expo) Line, and L (Gold) Line) and Metrolink/Amtrak stations all have primary connections in downtown Los Angeles. The C (Green) Line service runs east-west (along the I-105 freeway) and the A (Blue) Line runs north-south through the western edge of the Study Area. Figure 1-6 shows the current Metro and Metrolink rail lines within the Study Area.

Figure 1-5. Study Area Bus Service



Source: Prepared for Metro in 2020

Figure 1-6. Study Area Rail Service



Source: Prepared for Metro in 2020

1.5 Transportation System Performance

Even with implementation of the planned roadway and transit improvements within the Study Area, the projected increase in daily travel will adversely impact the future highway and arterial network. While extensive capacity is currently provided, traffic volume demands will be even higher, as congestion is prevalent throughout most of the day. In the future year 2042, volumes will remain heavy on all Study Area freeways and service levels indicate the freeway network will continue to be at or beyond capacity. As a result of these reoccurring congestion levels, drivers encounter an increase in travel times associated with the low travel speeds. Exacerbating the issue is the low degree of travel time reliability, as travel speeds and travel times have significant daily variation. Arterial congestion is projected to increase to 90 to 100 percent of capacity on key routes. With buses operating on this roadway network, the worsening congestion will severely impact the overall reliability of services.

Overall, future transit travel in the Study Area will continue to experience mobility issues with transit travel times taking over 1.5 hours from Paramount and Artesia to regional destinations such as downtown Los Angeles, El Segundo, Long Beach, and Santa Ana. Without direct access to a high-quality fixed transit service, cities within the Study Area will not have viable or reliable transit options to regional destinations.

1.6 Travel Demand and Identification of Potential Transit Markets

1.6.1 Travel Markets

Study Area trips currently account for 9 percent of the total daily person trips within LA County. In total, currently around 6.4 million daily person trips travel within, to, and from the Study Area. By the year 2042, these daily person trips are projected to increase by 14 percent to approximately 7.26 million.

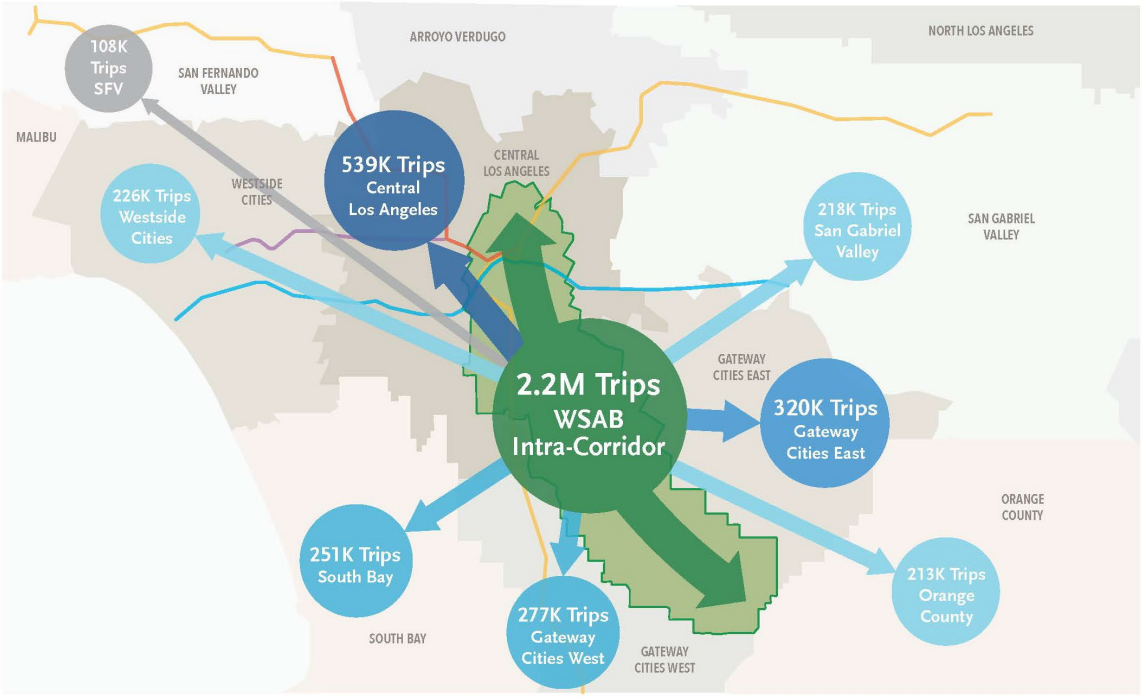
As shown in Figure 1-7 and Figure 1-8, the largest share of the 2.62 million trips leaving and 2.36 million trips entering the Study Area are to/from the west (Central LA, Gateway Cities West, South Bay, Westside Cities). Note that there is a significant number of intra-corridor daily trips (2.27 million) whose origin and destination are both within the Study Area.

In addition, a substantial number of daily person trips are anticipated to pass through the Study Area. For example, approximately 120,000 daily person trips occur between Orange County and the Westside and the San Fernando Valley, suggesting there are likely high levels of pass-through trips through the Study Area that will affect the transportation network.

1.6.2 Transit Usage

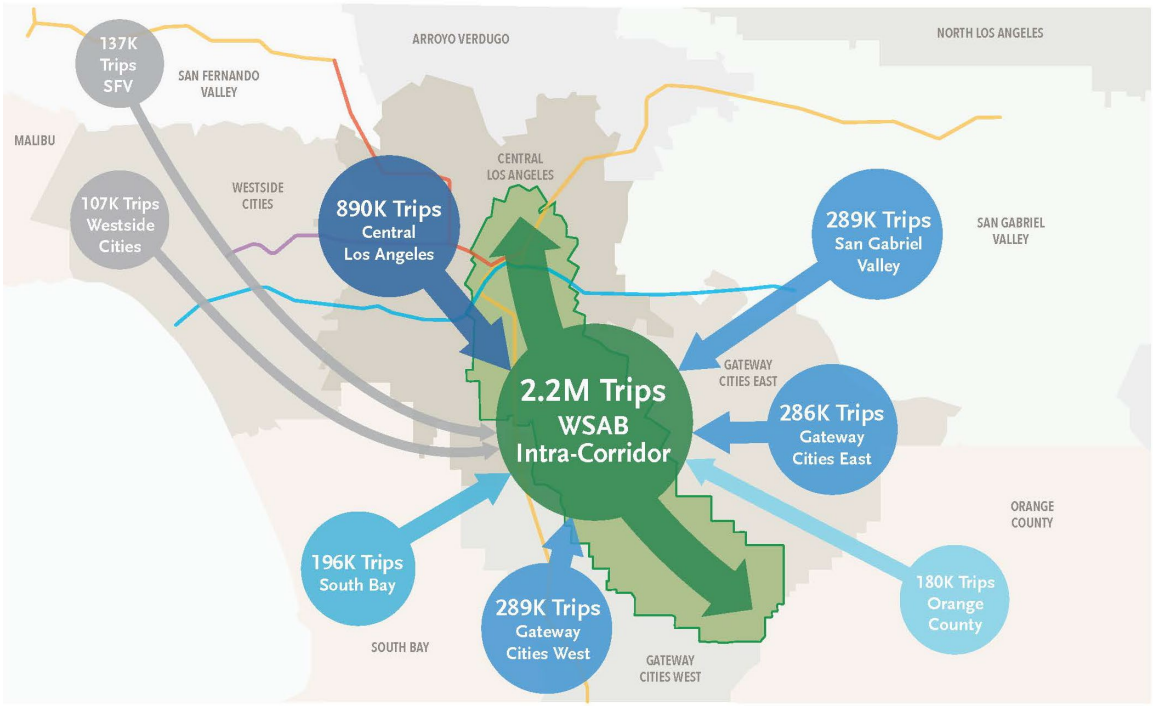
The mode share of home-based work (HBW) trips indicates whether residents are traveling to work by vehicle, transit, or other alternative modes of transportation. HBW trip data can also be used to identify trends associated with the future demand for transit.

Figure 1-7. 2042 Daily Person Trip Productions from the Study Area to Major Travel Markets



Source: Metro Travel Demand Model 2017-2042 (adapted from the SCAG Regional Travel Demand Model)

Figure 1-8. 2042 Daily Person Trip Attractions into the Study Area from Major Travel Markets



Source: Metro Travel Demand Model 2017-2042 (adapted from the SCAG Regional Travel Demand Model)

Consistent with the high transit-dependent populations within the Study Area, HBW transit trips are correspondingly high (Table 1.4). Based on the information, the percentage of residents who use transit are about three times higher (14.3 percent) than the overall Los Angeles County's transit mode share (5.4 percent). This transit demand is projected to increase to 16.1 percent for Study Area HBW trips under 2042 conditions, whereas LA County's transit mode share is anticipated to stay fairly consistent (an increase from 5.4 percent to 6.3 percent). Given the substantial transit demands within the Study Area, it will be important to provide reliable and efficient options to address existing and future transit needs.

Table 1.4. Existing (2017) and Future (2042) Home-Based Work Trip Mode Shares

	HBW (person trips)	HBW (transit trips)	HBW (auto/other trips)	Transit (%)	Auto (%)	Other (%)
WSAB Residents (2017)	744,600	106,600	638,000	14.3%	76.7%	9.0%
WSAB Residents (2042)	888,600	143,500	745,100	16.1%	74.9%	9.0%
LA County (2017)	11,811,000	635,500	11,175,500	5.4%	85.6%	9.0%
LA County (2042)	14,492,100	911,400	13,580,700	6.3%	84.7%	9.0%

Source: Corridors Base Model (CBM)18
Note: The CBM18 HBW non-motorized trips (Other) account for about 9 percent of daily HBW trips.
HBW = home-based work; LA = Los Angeles; WSAB = West Santa Ana Branch

In terms of ridership demand, boardings on the Metro A (Blue) and C (Green) Lines are forecasted to increase 189 percent by 2042; however, the significant increase in boardings on these routes is mostly due to the change in the urban rail system in the future. In particular, with the inclusion of the Regional Connector project, the Metro A (Blue) Line will directly connect with the Metro L (Gold) Line. Also, the alignment and service frequency of the Metro C (Green) Line will be changed in the future. These expansions and changes will support significant ridership increases in the future.

The Study Area bus demand is anticipated to increase from 262,000 trips to 321,000 trips in 2042 (approximately 23 percent). Current ridership for routes with the highest weekday boardings (all of which exceed 15,000 boardings per weekday) within the Study Area are shown in Table 1.5. Among these routes, the highest boardings are on Metro Rapid 720 (around 33,826 average weekday boardings) which travels east-west through the Study Area connecting to Santa Monica and Commerce. The next highest route is Metro Local 51 (Compton to Downtown LA to Koreatown), which travels north-south with over 25,439 boardings weekdays.

Ridership is projected to increase with total transit boardings projected to increase by 71 percent in the Study Area between 2017 and 2042.

Table 1.5. Bus Routes with Highest Ridership in the Study Area

Bus Route	Weekday Boardings
720 (Metro Rapid)	33,826
51 (Metro Local)	25,439
16 (Metro Local)	22,337
18 (Metro Local)	18,566
14 (Metro Local)	18,208
111 (Metro Local)	16,403
108 (Metro Local)	16,362
45 (Metro Local)	15,576
81 (Metro Local)	15,489
4 (Metro Local)	15,443
60 (Metro Local)	15,277
2 (Metro Local)	15,252
115 (Metro Local)	15,005

Source: Metro 2021s

1.6.3 Congestion and Mobility

Between 2017 and 2042, vehicle miles traveled in the Study Area are forecasted to increase substantially by 31 percent (Table 1.6). Vehicle hours traveled is anticipated to increase by an even higher amount (63 percent) in the region. As a result, the regional daily travel speed will decrease by 21 percent by 2042 with the AM peak period having the largest speed reductions.

Table 1.6. Regional Vehicle Miles Traveled and Vehicle Hours Traveled Summary by Year

Time of Day	Existing Year 2017			Future Year 2042		
	Vehicle Miles Traveled	Vehicle Hours Traveled	Average Speed (miles per hour)	Vehicle Miles Traveled	Vehicle Hours Traveled	Average Speed (miles per hour)
AM Peak	101,321,500	4,704,500	21.5	133,428,000	8,493,600	15.7
Mid-Day	133,050,900	3,987,300	33.4	172,860,700	6,157,800	28.1
PM Peak	123,874,800	5,055,200	24.5	161,577,500	8,712,500	18.5
Night	104,998,600	2,103,300	49.9	137,892,400	2,910,600	47.4
Daily Total	**463,245,800**	**15,850,300**	**29.2**	**605,758,600**	**26,274,600**	**23.1**

Source: U.S. Census OnTheMap Application and LEHD Origin-Destination Employment Statistics (2005-2015)

To understand transit constraints currently experienced by residents within the WSAB Transit Corridor, a review was conducted of total transit travel times. Total transit travel time is defined as the door-to-door travel time based on the origin and destination of a trip. Mobility issues can be identified based on the portion of the trip that is "in-vehicle travel time" (IVT) versus "out-of-vehicle travel time" (OVT). If a significant portion of time is spent

traveling OVT (access to and from the stations/stops or waiting for the bus), this demonstrates major mobility constraints, particularly for those who are transit-dependent.

Table 1.7 presents total travel time between key nodes within the Study Area to major regional destinations, and the percentage of the travel time which is IVT versus OVT under Existing 2017 conditions.

Table 1.7. Total Transit Travel Time (Existing 2017 AM Peak Period)

	Downtown Los Angeles (7th/ Metro Station)	North Hollywood (B [Red] Line Station)	Pasadena (Del Mar L [Gold] Line Station)	El Segundo (Sepulveda/El Segundo)	Long Beach (Downtown Long Beach A [Blue] Line Station)	Santa Ana (1st Street/Main Street)
Downtown Los Angeles (7th/Metro Station)	N/A	66 minutes (62% OVT + 38% IVT)	65 minutes (62% OVT + 38% IVT)	82 minutes (46% OVT + 54% IVT)	80 minutes (35% OVT + 65% IVT)	193 minutes (38% OVT + 62% IVT)
Huntington Park (Pacific/ Randolph)	57 minutes (57% OVT + 43% IVT)	110 minutes (57% OVT + 43% IVT)	95 minutes (39% OVT + 61% IVT)	77 minutes (50% OVT + 50% IVT)	82 minutes (53% OVT + 47% IVT)	205 minutes (49% OVT + 51% IVT)
Paramount (Paramount/ Rosecrans)	100 minutes (52% OVT + 48% IVT)	146 minutes (51% OVT + 49% IVT)	145 minutes (51% OVT + 49% IVT)	97 minutes (71% OVT + 29% IVT)	95 minutes (56% OVT + 44% IVT)	183 minutes (50% OVT + 50% IVT)
Artesia (Pioneer/ South Street)	113 minutes (58% OVT + 42% IVT)	164 minutes (52% OVT + 48% IVT)	163 minutes (51% OVT + 49% IVT)	108 minutes (57% OVT + 43% IVT)	97 minutes (50% OVT + 50% IVT)	161 minutes (56% OVT + 44% IVT)

Source: Corridors Base Model (CBM)18
Notes: OVT = Out-of-Vehicle Travel Time (includes access, wait, transfer, and egress time); IVT = In-Vehicle Travel Time (includes time spent on regional rail or bus system); N/A = not applicable

Given that the majority of the Study Area has limited direct access to regional rail systems, these trips require several transfers to get to their destination, as can be seen by the lengthy travel times (some well over two hours). The longest total transit times are from Paramount and Artesia to regional destinations, as shown in Table 1.7 (e.g., North Hollywood and Pasadena), with door-to-door transit travel times from 1.5 hours to almost 3.0 hours.

As shown in Table 1.7, a significant portion of total travel time is spent accessing transit (OVT are generally over 50 percent of the total travel time). This first/last mile connection is a major barrier to efficiently using transit as a means of travel. Based on the travel time information, Paramount and Artesia have the greatest challenge in transit access and transfers, as OVTs from Paramount and Artesia to these regional destinations range from 50 to 71 percent of total trip time.

Under 2042 conditions, transit travel times for trips that utilize bus service, or require users to travel long distances to access transit, will increase, as the roadway congestion will continue to worsen and both vehicles and buses will travel at slower speeds. For Metro rail routes, the IVT is not anticipated to increase, as congested roadway conditions do not affect fixed-route transit systems operating predominantly within exclusive rights-of-way.

It is anticipated that overall regional transit travel time will improve in the future given the planned major transit investments in Los Angeles County, including improvements to bus services. Although bus services may be improved by 2042, the potential to have more delays due to congestion will be greater. However, with the addition of fixed-route transit with more frequent service, transit travel times may be faster within the Study Area.[2]

[2] Based on the CBM18 Model, total transit travel times may improve up to 39 percent under 2042 conditions from the Study Area to regional destinations.

2 ALTERNATIVES CONSIDERED/PROJECT DESCRIPTION

This chapter describes the West Santa Ana Branch Transit (WSAB) Corridor Project (Project), including alternatives, studied in this Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR). The Federal Transit Administration (FTA) is the Lead Agency under the National Environmental Policy Act (NEPA) and the Los Angeles County Metropolitan Transportation Authority (Metro) is the Lead Agency under the California Environmental Quality Act (CEQA). The purpose of this Draft EIS/EIR is to analyze and disclose the Project's potential effects on the natural and human environment and identify mitigation measures and alternatives to avoid significant effects. The analysis presented in this Draft EIS/EIR is in compliance with NEPA and FTA's environmental impact-related procedures (23 Code of Federal Regulations, Part 771) and CEQA and the *CEQA Guidelines* (14 Cal. Code. Regs., § 15000 et seq.).

2.1 Introduction

The Project is a proposed light rail transit (LRT) line that would extend from four possible northern termini through southeast Los Angeles (LA) County to a shared southern terminus in the City of Artesia, traversing densely populated and heavily transit-dependent communities.

Metro has identified four Build Alternatives based on a criteria selection process, potential issues for each alternative, and input from interested parties, stakeholders, and communities (see Section 2.4.2 of this Draft EIS/EIR and Appendix A, *West Santa Ana Branch Transit Corridor Project Alternatives Considered*). A reasonable range of possible alternatives that meets the Project's purpose and need were evaluated and determined through the screening and project refinement process (see Section 2.4.2 and Section 2.4.3). These selected alternatives are considered and included in this Draft EIS/EIR. Both NEPA and CEQA recommend identifying the preferred alternative in the Draft EIS/EIR. Based on the findings for the Build Alternatives as evaluated in this Draft EIS/EIR, and in consideration of funding availability, Metro has identified Alternative 3 as the preferred alternative (referred to within this document as the staff preferred alternative) for the Project. This alternative is the favored course of action by Metro in the Draft EIS/EIR considering the benefits, costs, environmental impacts, and financial capacity of the No Build/No Project Alternative and the four Build Alternatives. Additional information on identification of the staff preferred alternative is provided in Section 6.2 of Chapter 6, Evaluation of Alternatives, of this Draft EIS/EIR. The formal adoption of the Locally Preferred Alternative (LPA) by the Metro Board of Directors will occur after the Draft EIS/EIR circulation and the review of public and agency comments. The LPA will be evaluated in the Final EIS/EIR. As part of the Metro Board action, a decision may be made to phase implementation of the LPA. Any such decision would be made in consideration of public comments and funding availability. An environmental reevaluation could be required depending on the phasing selected.

2.2 Goals and Objectives

The Project's overall goals are to provide mobility improvements, support local and regional land use plans and policies, minimize environmental impacts, improve cost effectiveness and financial feasibility, and improve equity.

The Project's overall objective is to provide high-quality reliable transit service to meet the future mobility needs of residents, employees, and visitors who travel within and through the corridor. This new transit service would increase mobility and connectivity for historically underserved and transit-dependent communities, improve travel times on local and regional transportation networks relative to not making this investment, and accommodate substantial future employment and population growth. More specifically, the Project's objectives are as follows:

- Establish a reliable transit service that will enhance the connectivity of the existing transit network and reduce transit travel times to local and regional destinations
- Accommodate future travel demand, including the high number of transit trips made by Study Area residents
- Improve access for the densely populated neighborhoods, major employment centers, and other key regional destinations where future growth is forecasted to occur within the Study Area
- Address mobility and access constraints faced by transit-dependent communities, thereby improving transit equity

Refer to Chapter 1, Purpose and Need, of this Draft EIS/EIR for a full discussion of the purpose and need for the Project.

2.3 Study Area

The Study Area extends from the downtown Los Angeles area to the Gateway Cities subregion of LA County and encompasses an approximately 2-mile buffer from the Project's alignments in order to capture the adjacent cities and ridership area where effects could result from the Project. The greater 98-square-mile Study Area for the Project extends from Elysian Park in the north to the LA County/Orange County line to the south, encompassing downtown Los Angeles, Southeast Los Angeles, and much of the Gateway Cities subregion. The Study Area includes 20 cities—Los Angeles, Vernon, Maywood, Huntington Park, Commerce, Bell, Cudahy, Bell Gardens, South Gate, Lynwood, Compton, Downey, Paramount, Bellflower, Long Beach, Lakewood, Norwalk, Artesia, Cerritos, and Hawaiian Gardens—as well as portions of unincorporated LA County, as shown in Figure 1-1 in Chapter 1, Purpose and Need. Of the 20 cities within the Study Area, the Project would traverse through or be directly adjacent to the Cities of Los Angeles, Vernon, Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, Cerritos, and Artesia, as well as the unincorporated community of Florence-Firestone of LA County.

2.4 Development of Build Alternatives and Screening Process

2.4.1 Screening Methodology

The screening and selection process for the Build Alternatives presented in this Draft EIS/EIR is based on extensive outreach and workshops with key stakeholders, elected officials, advisory committee members, and communities in which the Project is projected to serve. Beginning in 2010, a number of technical studies and assessments were prepared to support the development of routes, alignments, and station locations. These studies analyzed transit mode (i.e., bus rapid transit, street car transit, LRT, and low speed magnetic levitation [maglev] transit), station locations, alignments, maintenance and storage facility (MSF) site options, and other ancillary facilities (e.g., radio towers and substations). The vision of

transportation improvements in the Study Area was guided by the following goals and objectives:

- Goal 1: Provide Mobility Improvements
- Goal 2: Support Local and Regional Land Use Plans and Policies
- Goal 3: Minimize Environmental Impacts
- Goal 4: Improve Cost Effectiveness and Financial Feasibility
- Goal 5: Improve Equity

2.4.2 Screening Reports and Refinement Studies

Several screening reports and refinement studies were prepared as part of the development of the Project and are summarized in Figure 2-1. Refer to Appendix A for a detailed discussion of each report and the development process for the Project, including the consideration and elimination of alternatives, alignments, and station locations.

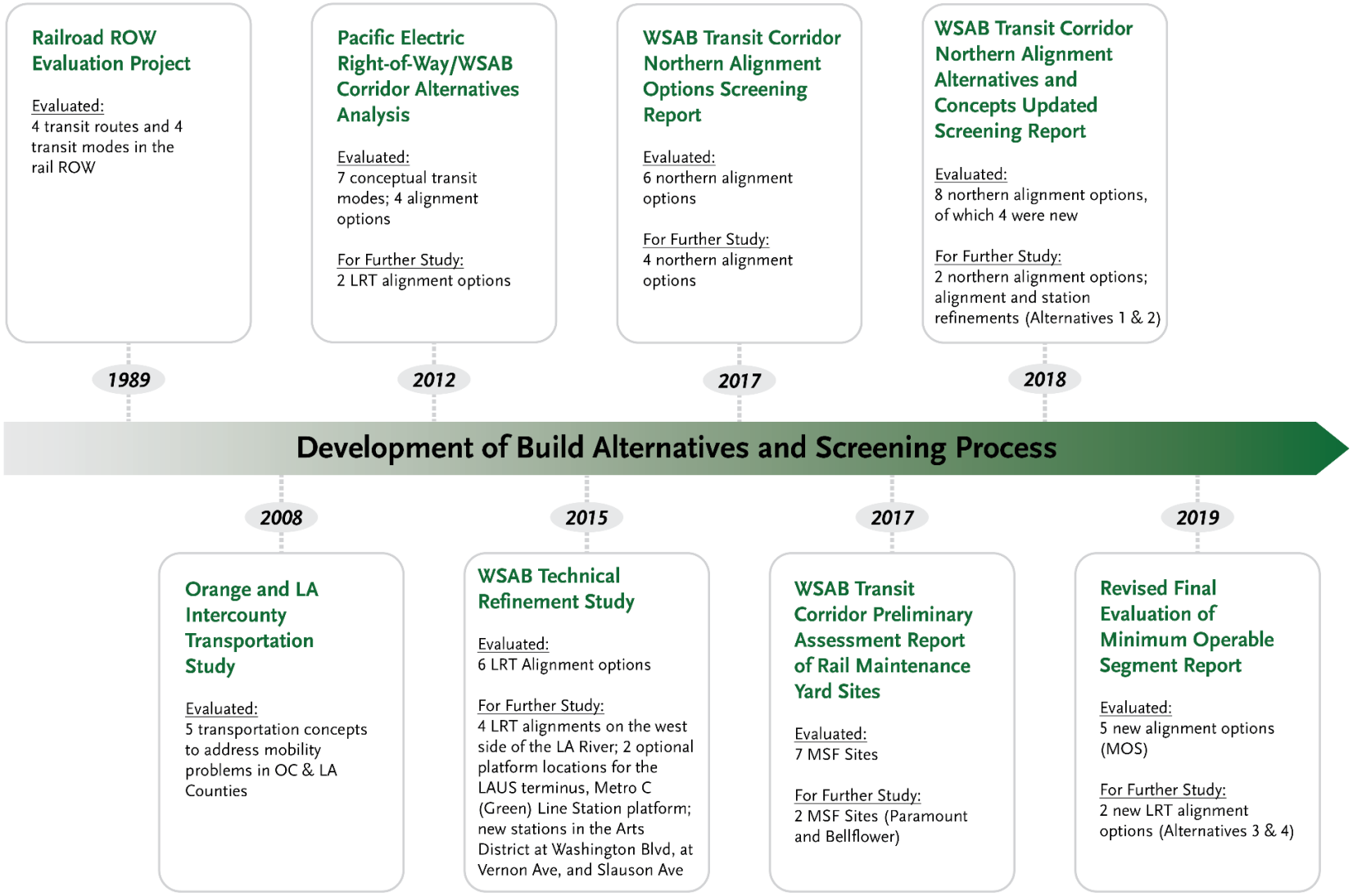
2.4.2.1 Pacific Electric Right-of-Way (PEROW)/West Santa Ana Branch (WSAB) Corridor Alternatives Analysis

Finalized in 2012, the Southern California Association of Governments (SCAG) developed the *Pacific Electric Right-of-Way/West Santa Ana Branch Corridor Alternatives Analysis* (AA Report), a collection of screening studies addressing the feasibility of implementing various modes and exploring opportunities for connecting LA County and Orange County. The AA Report recommended the No Build, Transportation System Management, and two LRT alignments (one on the west side of the Los Angeles River and one on the east side of the river) for further study.

2.4.2.2 West Santa Ana Branch Technical Refinement Study

In 2015, Metro authorized the preparation of the *West Santa Ana Branch Technical Refinement Study* (TRS) (Metro 2015a), which further refined key technical concerns on the alternatives identified in the AA Report. The WSAB TRS also considered the feasibility of additional alignments connecting the PEROW to downtown Los Angeles given constraints and opportunities within the northern segment. The TRS recommended elimination of the rail alignment on the east side of the LA River and further study of four light rail alignments on the west side of the LA River (see Appendix A). In addition, the TRS recommended further study of two optional platform locations for the Los Angeles Union Station (LAUS) terminus, new stations in the Arts District, and further study of the Metro C (Green) Line Station and the Pioneer Station.

Figure 2-1. Development of Build Alternatives and Screening Process



Source: Prepared on behalf of Metro in 2021

2.4.2.3 West Santa Ana Branch Transit Corridor Northern Alignment Options Screening Report

In 2017, the *West Santa Ana Branch Transit Corridor Northern Alignment Options Screening Report* (Northern Alignment Options Screening Report) (Metro 2017a) evaluated four potential rail alignments serving the LAUS terminus of the Project. The evaluation considered opportunities and constraints and included a greater level of engineering detail than prior studies. The Northern Alignment Options Screening Report recommended four light rail alignments to be carried forward into the environmental scoping process.

2.4.2.4 West Santa Ana Branch Transit Corridor Northern Alignment Alternatives and Concepts Updated Screening Report

In response to the issues raised during the public scoping period conducted in 2017, the northern alignments options were revisited in the *West Santa Ana Branch Transit Corridor Northern Alignment Alternatives and Concepts Updated Screening Report* (Metro 2018b). The updated effort included additional connection options in downtown LA and a rail alignment to serve the Arts District. Six alternatives were eliminated for a variety of technical feasibility and operational issues. In May 2018, the Metro Board authorized Alternative E and Alternative G to be carried forward into the Draft EIS/EIR. Alternatives E and G are referred to as Build Alternatives 1 and 2, respectively, in this Draft EIS/EIR.

2.4.2.5 Revised Final Evaluation of Minimum Operable Segment Report

A minimum operable segment (MOS) is a segment of the project alignment that can function as a stand-alone project and not be dependent on other segments or phases to be constructed. The purpose of developing and evaluating MOS options is to identify a segment of Build Alternatives 1 or 2 that can provide a cost-effective solution with the greatest benefits for the Project. The *Revised Final Evaluation of Minimum Operable Segment Report* (MOS Report) (Metro 2019f) identified and evaluated five potential options to determine cost-effective solutions with the greatest benefits for the Project. Referred to as initial operating segments in the September 2019 Metro Board Report, the MOS Report recommended MOS 1: I-105/C Line Station to Pioneer Station (now Alternative 4) and MOS 3: Slauson/A Line Station to Pioneer Station (now Alternative 3) to move forward for study into the Draft EIS/EIR.

2.4.2.6 West Santa Ana Branch Transit Corridor Preliminary Assessment Report of Rail Maintenance Yard Sites

To determine MSF site options for the Project, the *West Santa Ana Branch Transit Corridor Preliminary Assessment Report of Rail Maintenance Yard Sites* (Metro 2017j) was completed in 2017. Initially 21 proposed sites were evaluated and screened, with two MSF site options selected to move forward for study into the Draft EIS/EIR based on their provision of mobility improvements, minimization of environmental impacts, financial feasibility, equity, and preliminary engineering design. The MSF site options are referred to as the Paramount MSF site option and the Bellflower MSF site option in this Draft EIS/EIR.

2.4.3 Public Outreach

FTA published the Notice of Intent (NOI) in the *Federal Register* on June 26, 2017, to initiate the EIS process for the Project. The NOI provided scoping meeting information, contact information,

and project information.[1] Prior to *Federal Register* publication, Metro also issued a Notice of Preparation (NOP) pursuant to CEQA on May 25, 2017, informing the public of the intent to prepare a combined Draft EIS/EIR for the Project and notifying interested agencies and parties of public scoping meetings. A revised NOP was issued on June 14, 2017, to inform the public of the extension of the comment period from July 7, 2017, to August 4, 2017. A second revised NOP was issued on July 11, 2018, informing the public of the Metro Board decision to eliminate some of the northern alignment alternatives considered in the May 25, 2017 NOP and to carry forward two modified northern alignments, one to the Downtown Transit Core and the other to LAUS, into the Draft EIS/EIR process (see Appendix A for details).

A series of public scoping meetings and agency, stakeholder, and community outreach meetings have been conducted since the May 24, 2017 filing of the NOP. The scope of the Draft EIS/EIR, including the goals and objectives, project area, project description, and the environmental impacts to be evaluated, were presented at the public scoping meetings. All meetings were held in Americans with Disabilities Act (ADA)-compliant facilities and language translation services (Spanish and Japanese) were provided. Chapter 7, Public Outreach, Agency Consultation, and Coordination, of this Draft EIS/EIR provides additional information regarding the outreach efforts.

2.4.4 Project Refinements

Project refinements were made following comments received during the scoping period and outreach events and coordination efforts with key stakeholders and affected cities. The Metro Board accepted these project refinements and adopted the updated project definition at its November 2018 meeting. Table 2.1 summarizes the recommended project refinements per the November 2018 Metro Board meeting.

After scoping, Metro also considered three other refinements. The first, reducing the width of the platform for the I-105/C Line infill station, was considered to minimize effects to a historic district. The second refinement was underground alignment concepts based on comments received during scoping. The third considered alignment options that would avoid the Union Pacific railroad right-of-way. These refinements and the reasons they were eliminated, are described as follows.

2.4.4.1 Reduced Width of Platform for I-105/C Line Infill Station

The proposed alignment for each Build Alternative uses a portion of the San Pedro Subdivision freight rail right-of-way (ROW) from approximately Randolph Street in the north (City of Huntington Park) to Rosecrans Boulevard in the south (City of Paramount). The existing freight rail tracks cross the I-105 freeway in a bridge structure along this route. Residences and light industrial business are directly adjacent to the railroad ROW in the areas north and south of the I-105 freeway crossing. To reduce the displacement of existing residents and businesses adjacent to the railroad ROW, the existing freight rail bridge would be demolished and reconstructed to allow room for the construction of a dedicated LRT bridge structure within the existing railroad ROW and corresponding aerial easement over the I-105 freeway. In addition to a new dedicated LRT bridge structure, the Project would also construct a Metro C (Green) Line infill station in the median of the I-105 freeway to facilitate transfers between the WSAB and Metro C (Green) Lines.

[1] *Federal Register*. Vol. 82, No. 121, June 26, 2017.

Table 2.1. Summary of Project Refinements from the November 2018 Metro Board Meeting

Project Refinement	Reason for Refinement
Elimination of Washington Station and Vernon Station	▪ Low projected ridership at these stations, and duplicative service into downtown LA from the Metro A (Blue) Line ▪ Eliminating the stations would improve travel time along the WSAB alignment
Elimination of 183rd/Gridley Station	▪ Lack of community support, limited ridership potential, and proximity to the Pioneer Station in the City of Artesia
Elimination of Optional Bloomfield Station Extension	▪ Lack of support from stakeholders for a future extension into Orange County
Elimination of Pershing Square Terminus Station Design Option	▪ Provided less connectivity to the regional transit network; produced worse ridership and smaller reductions in vehicle miles traveled; impacted more historic properties; less light rail transit level-of-service compared to 7th St/Metro Center Station; and fewer passenger transfers from the Metro A (Blue) Line to the WSAB Line compared to the 7th St/Metro Center Station
Additional Grade Separations ▪ Firestone Blvd ▪ Imperial Highway/Garfield Ave ▪ Downey Ave ▪ Woodruff Ave/Flower St ▪ 183rd St/Gridley Rd	▪ Additional grade separations, based on Metro's Grade Crossing Safety Policy for Light Rail Transit (Metro 2010a), were included. The key factors included traffic volumes, train frequency, safety considerations, and a variety of special circumstances (e.g., vertical engineering alignment considerations, effects on traffic operations, pedestrian activity, and adjacent land uses)
At-grade profile under the I-10 freeway changed to aerial grade-separated over I-10 freeway	▪ Potential to result in traffic impacts to 15th St and 16th St

Source: Metro Board Report, November 14, 2018; File #2018-0404, Agenda Number:15, Attachment A.

Construction of the I-105/C Line Station platform in the freeway median of I-105 as well the construction of two new bridges (for freight rail and LRT) over the freeway in this location directly interfaces with the proposed I-105 Express Lanes project (refer to LRT Alignment Plan Set in Appendix B). The proposed I-105/C Line Station platform would require that the travel lanes on the freeway be reconfigured to use more of the existing freeway ROW. To maintain the existing freeway lane and shoulder design standards, in addition to Metro's platform width standards, this reconfiguration of lanes would increase the span length of the freight and light rail bridges. In addition, this would require the demolition and reconstruction of two adjacent bridge structures (Façade Avenue Overcrossing and Arthur Avenue Pedestrian Overcrossing) that would currently obstruct relocated travel lanes.

While these changes are deemed feasible from an engineering perspective, the situation is complicated by the recent designation of the I-105 freeway as a National Register of Historic Places historic property, and its existing bridge structures are considered contributing elements to the historic district. Thus, the demolition and reconstruction of three existing

bridges and the construction of one new WSAB LRT bridge would have implications related to the historic resource.

Metro explored options to minimize effects to the historic district. Demolition of the Façade Avenue and Arthur Avenue bridges could be avoided through a combination of a narrower platform width for the I-105/C Line infill station and narrower shoulders on I-105. However, the narrower shoulders would require a design exception and associated evaluations from the California Department of Transportation, which would consider safety implications of a narrower shoulder. Additionally, the narrower platform raised operational and safety concerns associated with the volume of passengers and potential crowding as the station would serve as a transfer point. Specifically, crowding could increase train dwell times and result in delays because it would take longer for passengers to board and exit vehicles. A narrower platform could require modifications to the platform at a later date in order to accommodate future growth in ridership. However, modifications, if feasible, would be highly constrained by the bridge columns. Therefore, the narrower platform was eliminated from further consideration.

2.4.4.2 Underground Alignment Scenarios Not Further Considered

During scoping, some comments were received regarding potential project effects to residences located adjacent to at-grade and aerial light rail operations, particularly in the southern section of the project corridor. Such comments generally raised concerns about potential effects related to noise, vibration, safety, and visual, as well as decreased property values. In response to these comments, several underground alignment scenarios were identified and considered for engineering, cost, and environmental implications: place the entire alignment of the Project underground; underground the alignment in segments south of the I-10 freeway adjacent to residential locations with active freight rail operations and/or where public roads separate light rail from residences; or limit the underground alignment to the Metro-owned PEROW (between Somerset Boulevard and Pioneer Boulevard).

Full Underground Alignment Scenario. The cost of tunnel and underground station construction can vary greatly depending on site conditions, construction methods, and if there is a need to maintain operation of adjacent roads and rail lines. Per Appendix A to the *West Santa Ana Branch Transit Corridor Final Advanced Conceptual Engineering Capital Cost Report* (Metro 2021X) (Appendix P), each mile of track constructed in a tunnel costs approximately 10 times as much as a mile of track constructed at grade. The cost differential for stations is even greater, with each underground station costing more than 30 times as much to construct as an at-grade station. It is anticipated that placing the entire 19-mile length of either Alternative 1 or 2 underground would more than double the total construction cost of those alternatives compared to the cost as currently designed.

Additionally, constructing the entire project alignment underground would introduce additional community and environmental impacts and construction risks, as well as delay project completion for the following reasons:

- Nine additional stations would be placed underground, requiring ADA, fire/life safety, and ventilation requirements.

- Underground construction adjacent to active freight rail could require shoo-flys[2] and additional temporary construction easements, temporary acquisitions outside of the rail ROW with the potential for business and/or residential displacements, and coordination with freight line owners and operators.
- The design and clearances for tunnels and underground stations would have to meet requirements to allow for the continued operation of the adjacent freight rail and could require permanent land acquisitions.
- Areas with a high water table would be affected, requiring dewatering strategies during construction and operation.
- Additional ROW would be required for systems rooms, access structures, and ventilation structures necessitated by the tunnel.
- Hazardous materials and contaminated soils could be encountered, resulting in the potential for additional acquisitions of non-residential properties adjacent to the construction area for waste and debris stockpiling and storage.
- Construction duration would increase.

Construction duration is dependent on a variety of factors related to construction means and methods. The construction approach information presented in Chapter 4, Section 4.19 of this Draft EIS/EIR is based on expectations on how contractors, once they are selected, will complete the work, with assumptions based on Metro practices on other LRT projects. Calculating the duration of construction for a 19-mile underground alignment would depend on a number of assumptions, including the number of tunnel boring machines (TBM) in operation at one time and extent of concurrent work occurring along the alignment. Generally, a TBM could travel 50 feet per day, although this is dependent on ground conditions and site and work area constraints. Alternatively, multiple TBMs could be launched along multiple points of the alignment, but this would increase construction cost and require additional, large staging areas to launch and extract the TBM and remove spoils. Therefore, the construction duration has not been calculated for a full underground alignment.

The high cost and additional impacts outweighed the benefit considering the anticipated ridership levels. Because of both the increase in project risks and additional construction costs, this full underground alignment scenario is not considered fiscally responsible. Therefore, this scenario was dropped from further consideration.

Short Underground Segment Scenario. Shorter underground segments would have a lower construction cost than a full underground alignment scenario but would still increase construction cost compared to the current design of the Build Alternatives. Under this scenario, shorter underground segments south of the I-10 Freeway were considered that specifically focused on locations where there could be proximity effects between residential uses and at-grade or aerial LRT operations. These areas could include portions of Long Beach Avenue, Randolph Street, Salt Lake Avenue (from Gage Avenue to Santa Ana Street and from McCallum Avenue to Wood Avenue), along the San Pedro Subdivision (I-105 Freeway to west of Rosecrans Avenue), and the entire Metro-owned PEROW portion of the corridor (from west of Rosecrans Avenue to Pioneer Boulevard). These above-mentioned areas would all be located in the environmental justice (EJ) communities of Los Angeles, unincorporated Florence-Firestone, Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, Artesia, and Cerritos. This scenario would result in approximately 9 miles of

[2] Shoo-flys refer to temporary track detours to allow continuation of active freight or transit rail operation during construction.

additional underground LRT alignment compared to Alternatives 1 and 2. Alternative 3 would result in approximately 8 miles of underground LRT alignment (out of a total length of 14.8 miles), and Alternative 4 would result in approximately 6 miles of underground LRT alignment (out of a total length of 6.6 miles).

Despite the reduced lengths of underground alignment, this scenario would delay project completion and introduce additional environmental impacts. These impacts are similar to those described for the full underground alignment scenario but would be reduced due to the shorter length of alignment being constructed underground. Specifically:

- Up to four stations would be placed underground, requiring ADA, fire/life safety, and ventilation requirements, depending on the alternative chosen. Under Alternatives 1, 2, and 3 the Pacific/Randolph, Florence/Salt Lake, Bellflower, and Pioneer Stations would be underground. Under Alternative 4 the Bellflower and Pioneer Stations would be underground.
- Underground construction adjacent to active freight rail could require shoo-flys and additional temporary construction easements, temporary acquisitions outside of the rail ROW with the potential for business and/or residential displacements, and coordination with freight line owners and operators.
- The design and clearances for tunnels and underground stations would have to meet requirements to allow for the continued operation of the freight rail and could require permanent land acquisitions.
- Cut-and-cover tunnel construction, if required, would extend the length of disruption to arterial roadways crossing the tunnel alignment.
- Areas with a high water table would be affected, requiring dewatering strategies during construction and operation.
- LRT transitions from underground to at-grade alignments could require additional construction laydown areas resulting in more acquisitions and business and/or residential displacements.
- Additional ROW would be required for systems rooms, access structures, and ventilation structures necessitated by the tunnel.
- A river channel crossing, if the approaching tunnel is constructed with a cut-and-cover method, requires specialty construction methods that would increase complexity and cost.
- Hazardous materials and contaminated soils could be encountered, resulting in the potential for additional acquisitions of non-residential properties adjacent to the construction area for waste and debris stockpiling and storage.
- Construction duration would increase.

A variation of this scenario would be to underground the alignment for only the Metro-owned PEROW, which would create the shortest underground alignment scenario (approximately 6 miles under all alternatives). This variation would be located in the EJ communities of Paramount, Bellflower, Artesia, and Cerritos. This underground scenario would include areas with residences that have been adjacent to substantially vacant land without disruptive freight rail activity. Under this scenario, the impacts would be similar to those described above for the short underground alignment scenario but would be reduced due to the shorter length of alignment being constructed underground. The impacts would be limited to the PEROW, and therefore the Pacific/Randolph and Florence/Salt Lake Stations would be unaffected compared to current design.

As stated previously, the incremental increase in cost for each mile of underground alignment or station compared to at-grade is substantial, with costs 10 and 30 times greater, respectively. The actual cost in any specific location would depend on a variety of factors, including presence of hazardous materials and extent of remediation required, soil types and conditions, design and clearance requirements related to the adjacent freight rail, additional ROW required, construction method, whether the segment includes a station, and extent of utility relocations required. This estimated cost increase does not account for the additional environmental and construction risks and delays typically associated with underground construction as well as the potential for more costly engineering solutions in vertical transition areas (where the alignment transitions from underground to at-grade or aerial).

As noted in Appendix R, all Build Alternatives would require additional funding as the budget that was established and approved by Los Angeles County voters in Measure M (a 2016 sales tax initiative to improve transportation and ease traffic congestion) would be exceeded for each of the alternatives under consideration. With the inclusion of additional underground segments, the funding shortfall would be further increased. Even these shorter underground segments would continue to require additional funding beyond the adopted Measure M authorization because of the substantial cost differential between constructing LRT underground versus the at-grade or elevated configurations that have been proposed in these areas. As a result, an underground LRT alignment of any length in the southern section of the project corridor would introduce additional substantial project costs and risks making it neither fiscally feasible nor prudent under the Measure M funding constraints; therefore, this alignment is not considered further in the Draft EIS/EIR.

2.4.4.3 Alignments Outside of Union Pacific Railroad (UPRR) ROW Not Further Considered

Initial studies regarding the WSAB in the 1980s and the most recent studies conducted in 2010 by SCAG and the Gateway Cities Council of Governments have considered alignment alternatives as part of the objective of improving mobility within Southeast Los Angeles County, particularly the connection to downtown Los Angeles. As part of these foundation studies carried out by these agencies, substantive consideration was given to the use of public rights-of-way and shared transit use within existing rail corridors.

One of the centerpieces of creating connections to/from Southeast Los Angeles County has been the use of the PEROW, now vacant and owned by Metro since the early 1990s. This right-of-way is approximately 8.1 miles in length from the I-105 and I-710 interchange to the Orange County line. However, the PEROW no longer exists west of the Los Angeles River requiring an evaluation of northwest transit routes to reach downtown Los Angeles as no alterative Metro-owned ROW route exists. The anticipated shared use of railroad freight corridors that intersect with the PEROW, particularly the San Pedro Subdivision, has been considered, beginning with the SCAG AA studies in 2010, as a viable connection opportunity. In five studies conducted between 2010 and 2018 that included alignment alternatives to downtown Los Angeles, the San Pedro Subdivision rail corridor, between the junctions with PEROW and Randolph Street, was consistently identified as the preferred project alignment.

Alternatives to the potential shared use of the San Pedro Subdivision offer substantial challenges, particularly impacts related to the adjacent densely populated minority and low-income neighborhoods, including Huntington Park, Cudahy, South Gate, Downey, and Paramount (designated as EJ communities). Use of public street rights-of-way in these areas

would generate a variety of adverse effects and raise EJ and equity issues, including but not limited to, the following:

- Loss of travel lanes and impairments to community access and circulation on already congested local streets
- Loss of on-street parking, which is highly utilized in these densely populated, multifamily areas
- Proximity noise impacts to sensitive receptors from light rail operations located along streets where mitigation and abatement opportunities are severely limited due to the constrained public right of way
- Private property acquisitions, including residential, resulting from geometric changes along streets, at intersections, or to create additional space needed for station platforms and ancillary facilities

For these reasons, alignment alternatives outside of the San Pedro Subdivision were not considered viable or in keeping with EJ and equity issues and were not considered further. Metro commits to continued coordination with UPRR to address safety, operations, and engineering needs in this segment.

2.5 Alternatives Evaluated in this Draft EIS/EIR

The following sections summarize the alternatives evaluated in this Draft EIS/EIR.

2.5.1 No Build Alternative

The No Build Alternative provides the background transportation network, against which the Build Alternatives' impacts are identified and evaluated under NEPA. The No Build Alternative does not include the Project. Specifically, the No Build Alternative reflects the reasonably foreseeable transportation network in 2042 and includes the existing transportation network and planned transportation improvements that have been committed to and identified in the constrained *Metro 2009 Long Range Transportation Plan* (Metro 2009a) and SCAG *2016-2040 Regional Transportation Plan/Sustainable Communities Strategy* (SCAG 2016a), as well as additional projects funded by Measure M, a sales tax initiative approved by voters in November 2016. The No Build Alternative transportation network is shown in Table 2.2. Figure 1-5 and Figure 1-6 in Chapter 1, Purpose and Need, show the existing bus, rail, and highway networks within the Study Area. Figure 2-2 shows the planned rail and highway improvements in or near the Study Area.

Table 2.2. No Build Alternative (2042) – Existing Transportation Network and Planned Improvements

	Project	To / From	Location Relative to Study Area
Rail (Existing)	Metro Rail System (LRT and Heavy Rail Transit)	Various locations	Within Study Area
	Metrolink System (Southern California Regional Rail Authority)	Various locations	Within Study Area
Rail (Under Construction/ Planned)[1, 5]	Metro Westside D (Purple) Line Extension Project	Wilshire/Western to Westwood/VA Hospital	Outside Study Area
	Metro C (Green) Line Extension Project[2]	96th St Station to Torrance	Outside Study Area
	Metro C (Green) Line (aka Metro Crenshaw/LAX Transit Project)	Norwalk to Expo/Crenshaw[3]	Outside Study Area
	Metro East-West Line/Regional Connector/Eastside Phase 2 (aka Metro Eastside Transit Corridor Phase 2)	Santa Monica to Lambert Santa Monica to Peck Rd	Within Study Area
	Metro North-South Line/Regional Connector/Foothill Extension to Claremont Phase 2B (aka Gold Line Foothill Extension 2B)	Long Beach to Claremont	Within Study Area
	Metro Sepulveda Transit Corridor Project	Metro G (Orange) Line to Metro E (Expo) Line	Outside Study Area
	Metro East San Fernando Valley Light Rail Transit Project	Sylmar to Metro G (Orange) Line	Outside Study Area
	Los Angeles World Airport Automated People Mover	96th St Station to LAX Terminals	Outside Study Area
	Metrolink Capital Improvement Projects	Various projects, including: • Simi Valley Double Track • Burbank Junction Speed Improvements • Chatsworth Station Improvements • Marengo Siding Extension Project	Within Study Area
	California High-Speed Rail	Burbank to LA LA to Anaheim	Within Study Area
	Link Union Station (Link US) Project	LAUS	Within Study Area

	Project	To / From	Location Relative to Study Area
Bus (Existing)	Metro Bus System (including BRT, Express, and local)	Various locations	Within Study Area
	Municipality Bus System[4]	Various locations	Within Study Area
Bus Rapid Transit (Under Construction/ Planned)[5]	Metro G (Orange) Line Bus Rapid Transit Improvement Project	Del Mar (Pasadena) to Chatsworth Del Mar (Pasadena) to Canoga Canoga to Chatsworth	Outside Study Area
	Metro Vermont Transit Corridor	120th St to Hollywood Boulevard	Outside Study Area
	Metro North San Fernando Valley Bus Rapid Transit Corridor Project (North San Fernando Valley BRT)	Chatsworth to North Hollywood	Outside Study Area
	Metro North Hollywood to Pasadena Bus Rapid Transit Corridor Project (NoHo to Pasadena BRT)	North Hollywood to Pasadena	Outside Study Area
Highway (Existing)	Highway System	Various locations	Within Study Area
Highway (Under Construction/ Planned)[5]	High Desert Corridor Project	SR-14 to SR-18	Outside Study Area
	I-5 North Capacity Enhancements	SR-14 to Lake Hughes Rd	Outside Study Area
	SR-71 Gap Closure	I-10 to Rio Rancho Rd	Outside Study Area
	I-405 (Sepulveda Pass) Express Lanes Project	I-10 to US-101	Outside Study Area
	SR-57/SR-60 Interchange Improvements	SR-70/SR-60	Outside Study Area
	I-710 South Corridor Project Phase 1 and 2)	Ports of Long Beach and LA to SR-60	Within Study Area
	I-105 Express Lane	I-405 to I-605	Within Study Area
	I-5 Corridor Improvements	I-605 to I-710	Outside Study Area

Source: Prepared on behalf of Metro in 2021

Notes: [1] Where extensions are proposed for existing Metro rail lines, the origin/destination is defined for the operating scheme of the entire rail line following completion of the proposed extensions and not just the extension itself.

[2] The Metro C (Green) Line extension to Torrance includes new construction from Redondo Beach to Torrance; however, the line will operate from Torrance to 96th Street.

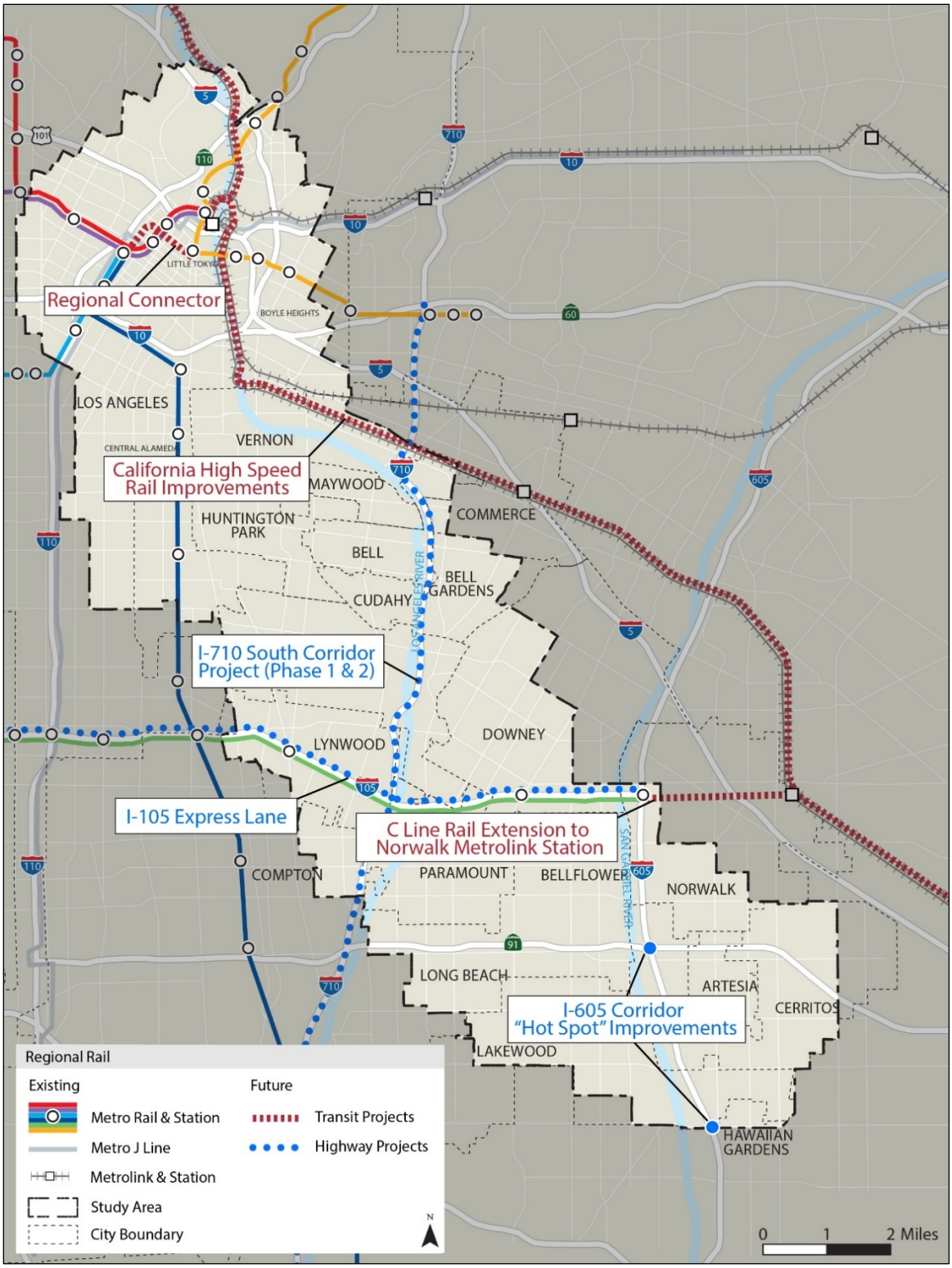
[3] The currently under construction Metro Crenshaw/LAX Line will operate as the Metro C (Green) Line.

[4] The municipality bus network system is based on service patterns for Bellflower Bus, Cerritos on Wheels, Cudahy Area Rapid Transit, Get Around Town Express, Huntington Park Express, La Campana, Long Beach Transit, Los Angeles Department of Transportation, Norwalk Transit System, and Orange County Transportation Authority.

[5] Planned projects may be subject to change.

BRT = bus rapid transit; LA = Los Angeles; LAUS = Los Angeles Union Station; LAX = Los Angeles International Airport; LRT = light rail transit; VA = Veterans Affairs

Figure 2-2. Planned Rail and Highway Improvements in Study Area



Source: Prepared on behalf of Metro in 2021

2.5.2 Build Alternatives

2.5.2.1 Summary of the Build Alternatives

Four Build Alternatives, two design options, and two MSF site options are evaluated in this Draft EIS/EIR.

Build Alternatives and Design Options

- Alternative 1: Los Angeles Union Station to Pioneer Station
  - Design Option 1: Los Angeles Union Station – Metropolitan Water District (MWD)
  - Design Option 2: Addition of Little Tokyo Station
- Alternative 2: 7th St/Metro Center to Pioneer Station
- Alternative 3: Slauson/A Line (Blue) to Pioneer Station (Staff Preferred Alternative)
- Alternative 4: I-105/C Line (Green) to Pioneer Station

Maintenance and Storage Facility

To support the Build Alternatives, a single MSF for rail cars is required. Two optional sites are under consideration:

- Paramount MSF site option
- Bellflower MSF site option

Table 2.3 summarizes the components for each Build Alternative.

Table 2.3. Summary of Build Alternative Project Components

Project Components Alternatives	Build Alternatives			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4s
Alignment length	19.3 miles	19.3 miles	14.8 miles	6.6 miles
Length of underground, at-grade, and aerial	2.3 miles underground; 12.3 miles at-grade; 4.7 miles aerial[1]	2.3 miles underground; 12.3 miles at-grade; 4.7 miles aerial[1]	12.2 miles at-grade; 2.6 miles aerial[1]	5.6 miles at-grade; 1.0 mile aerial[1]
Stations configurations	11 2 underground; 6 at-grade; 3 aerial[3]	12 3 underground; 6 at-grade; 3 aerial	9 6 at-grade; 3 aerial	4 3 at-grade; 1 aerial
Parking facilities	5 (up to approximately 2,795 spaces)	5 (up to approximately 2,795 spaces)	5 (up to approximately 2,795 spaces)	4 (up to approximately 2,180 spaces)
At-grade crossings	31	31	31	11
Elevated street crossings	25	25	15	7
Freight crossings	10	10	9	2

Project Components Alternatives	Build Alternatives			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4s
Freeway crossings	6 (3 freeway undercrossings[2] at I-710; I-605, SR-91)	6 (3 freeway undercrossings[2] at I-710; I-605, SR-91)	4 (3 freeway undercrossings[2] at I-710; I-605, SR-91)	3 (2 freeway undercrossings[2] at I-605, SR-91)
River crossings	3	3	3	1
Radio towers	2	2	0	0
TPSS facilities	22[3]	23	17	7
MSF site options	2	2	2	2
Capital cost (2020$) with MSF[4, 5, 6]	$8.5 billion – $8.8 billion	$9.2 billion – $9.5 billion	$4.9 billion – $5.1 billion	$2.3 billion – $2.6 billion
Annual O&M cost[4] (2020$)	$87 million	$101 million	$67 million	$41 million

Source: Prepared on behalf of Metro in 2021
Notes: [1] Alignment configuration measurements count retained fill embankments as at-grade.
[2] The light rail tracks crossing beneath freeway structures.
[3] Under Design Option 2 – Add Little Tokyo Station, an additional underground station and TPSS site would be added under Alternative 1.
[4] 2020$ refers to dollar values assumed in Fiscal Year 2020.
[5] Costs range from the low end (with the Bellflower MSF site option) to the high end (with the Paramount MSF site option).
[6] The capital cost estimates will be further refined as the project advances through the project development process and more detailed engineering is undertaken.
MSF = maintenance and storage facility; O&M = operation and maintenance; TPSS = traction power substation

Table 2.4 summarizes the station locations for each Build Alternative. Additional detail for each Build Alternative alignment is further discussed in Sections 2.5.2.2 through 2.5.2.5. Figure 2-3 and Figure 2-4 detail the underground, at-grade, and aboveground alignments for the Build Alternatives as it traverses through affected and adjacent cities.

Table 2.4. Summary of Build Alternatives Stations

Build Alternatives	Station Name and Location	Jurisdiction	Type of Station	Max No. of Parking Spaces
1	**LAUS (Forecourt)** LAUS Forecourt	Los Angeles	Underground	—
1	**LAUS MWD (Design Option 1)** East of LAUS and the MWD building, below the baggage area parking facility	Los Angeles	Underground	—
1	**Little Tokyo (Design Option 2)** Alameda St between 1st St/2nd St	Los Angeles	Underground	—

Build Alternatives	Station Name and Location	Jurisdiction	Type of Station	Max No. of Parking Spaces
2	**7th St/Metro Center** 8th St between Figueroa St and Flower St; underground pedestrian connection to existing 7th St/Metro Center Station	Los Angeles	Underground	—
2	**South Park/Fashion District** 8th St between Main St/Santee St	Los Angeles	Underground	—
1, 2	**Arts/Industrial District** Alameda St between 6th St/Industrial St (Alternative 1) Alameda St between 7th St/Center St (Alternative 2)	Los Angeles	Underground	—
1, 2, 3	**Slauson/A Line** Long Beach Ave between Slauson Ave/57th St	Los Angeles; Unincorporated LA County	Aerial	—
1, 2, 3	**Pacific/Randolph** Randolph St between Pacific Ave/Seville Ave	Huntington Park	At-grade	—
1, 2, 3	**Florence/Salt Lake** Salt Lake Ave between Florence Ave/California St	Huntington Park; Cudahy	At-grade	—
1, 2, 3	**Firestone (P)** Between Atlantic Ave and Firestone Ave	South Gate	Aerial	600
1, 2, 3	**Gardendale** Gardendale St/Dakota Av	Downey	At-grade	—
1, 2, 3, 4	**I-105/C Line (P)** Between Century Blvd and Main St; I-105 Freeway/C (Green) Line (platforms on WSAB and Metro C (Green) Line)	South Gate; Paramount	At-grade	326
1, 2, 3, 4	**Paramount/Rosecrans (P)** Paramount Blvd/Rosecrans Ave	Paramount	Aerial	490
1, 2, 3, 4	**Bellflower (P)** Bellflower Blvd/Pacific Ave	Bellflower	At-grade	263
1, 2, 3, 4	**Pioneer (P)** Pioneer Blvd/187th St	Artesia	At-grade	1,100

Source: Prepared on behalf of Metro in 2021
Notes: (P) = station has parking facility
LA = Los Angeles; LAUS = Los Angeles Union Station; MWD = Metropolitan Water District; WSAB = West Santa Ana Branch

Figure 2-3. WSAB Transit Corridor Build Alternatives



Source: Prepared on behalf of Metro in 2021

Figure 2-4. Project Alignment by Alignment Type



Source: Prepared on behalf of Metro in 2021

2.5.2.2 Alternative 1: Los Angeles Union Station to Pioneer Station

Alternative 1 would be a 19.3-mile alignment with a northern terminus located underground at LAUS Forecourt in the City of Los Angeles and a southern terminus located at the Pioneer Station in the City of Artesia. Two design options (Design Option 1: Los Angeles Union Station – MWD, and Design Option 2: Addition of Little Tokyo Station) are proposed for Alternative 1. Details of the ancillary facilities and project components for Alternative 1 are detailed in Table 2.3 and Table 2.4. Figure 2-5 illustrates the Alternative 1 alignment.

Alignment

LAUS Forecourt Station to Arts/Industrial District Station

The Alternative 1 alignment would begin underground in the City of Los Angeles with the tail tracks[3] near the California Endowment Building, followed by an underground northern terminus in the LAUS Forecourt area between two double crossovers at the northern and southern end of the LAUS Forecourt Station. The tail tracks would extend north approximately 1,200 feet of the proposed station box beneath the existing Metro B/D (Red/Purple) Line, Mozaic apartments, Cesar Chavez Avenue, and US Post Office Building. From the southern crossover, the alignment would continue south crossing beneath the El Monte Busway and US-101 freeway, in between two large-diameter foundations of the Metro L (Gold) Line aerial structure, then would swing west to travel beneath Alameda Street. Continuing south beneath Alameda Street, the alignment would cross beneath the Metro Regional Connector wye structure[4] at the intersection of E. 1st Street and N. Alameda Street and would continue underground beneath Alameda Street to the Arts/Industrial District Station on S. Alameda Street between 6th Street and Industrial Street, followed by a double crossover on the south.

Arts/Industrial District Station to Slauson/A Line Station

From the underground Arts/Industrial District Station in the City of Los Angeles, the underground Alternative 1 alignment would continue south under Alameda Street to 8th Street, where the alignment would curve to the west beneath McGarry Street to a tunnel portal located just south of E. Olympic Boulevard. The alignment would begin to transition to an aerial alignment between Olympic Boulevard and just north of the 14th Street/Long Beach Avenue, avoiding the intersection, then crossing over the I-10 freeway in an aerial viaduct structure and continuing south in parallel with the Metro A (Blue) Line track alignment. The existing on/off-ramps for the I-10 freeway would not be changed as part of this Project. The alignment would continue in an aerial configuration along the eastern half of Long Beach Avenue partially within the UPRR-owned Wilmington Branch ROW, east of the existing Metro A (Blue) Line and continue to the aerial Slauson/A Line Station in the City of Los Angeles/unincorporated Florence-Firestone of LA County. The aerial alignment would cross over the existing E. 53rd Street pedestrian bridge (approximately 17 feet above the bridge), which would remain unchanged, and is above the existing freight tracks. A double crossover track to allow the trains to switch from either track to the other in both directions would be located just south of 53rd Street and the existing pedestrian bridge.

[3] Tail tracks are additional track that extend beyond the end of the mainline tracks and can be used for temporarily parking, storing, or reversing the direction of trains.

[4] Wye structure refers to a triangular junction joining three rail lines with a switch to allow an incoming train to travel in either direction, or allow trains to pass from one line to another line.

Figure 2-5. Alternative 1: Los Angeles Union Station to Pioneer Station



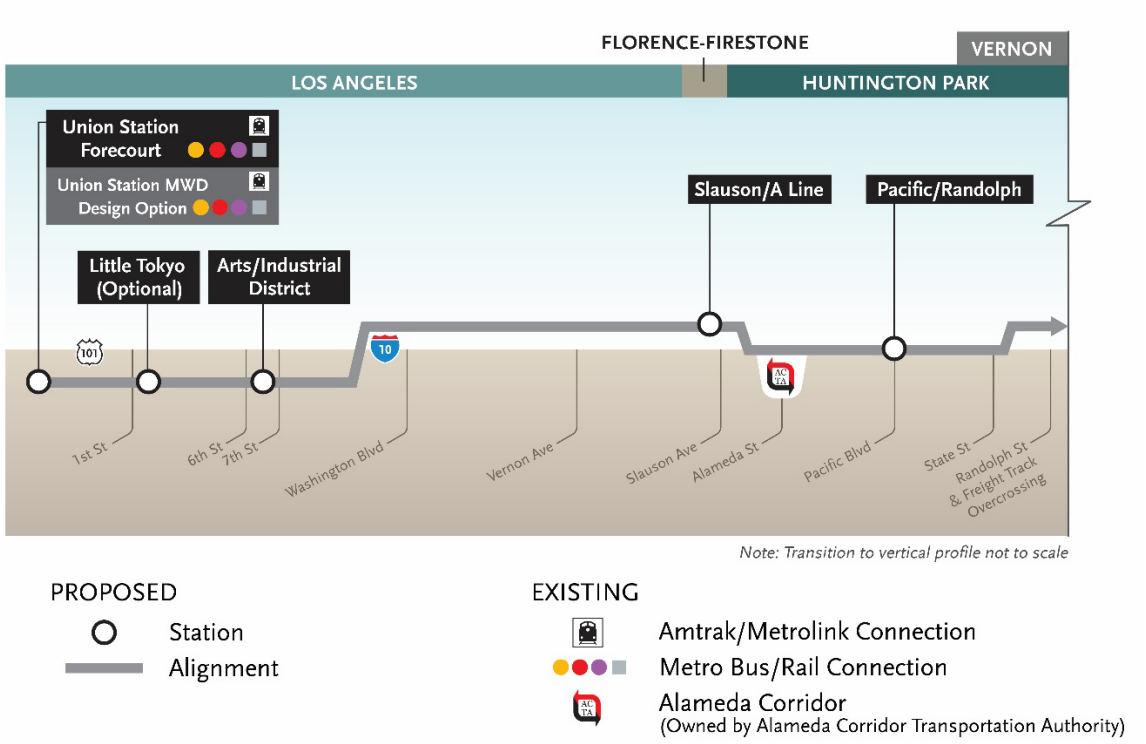
Source: Prepared on behalf of Metro in 2021

The alignment would continue south parallel to the existing aerial Metro A (Blue) Line as it approaches the Slauson/A Line Station and the existing Metro A (Blue) Line Slauson Station. The Slauson/A Line Station would serve as a transfer point to the Metro A (Blue) Line via a pedestrian bridge between the two station platforms. Stairs, escalators, and elevators would connect with the street level on the north and south sides of the station. The Slauson/A Line Station would serve as the northern terminus for Alternative 3 (Section 2.5.2.4).

Slauson/A Line Station to Florence/Salt Lake Station

From the aerial Slauson/A Line Station, the aerial alignment would continue east into the City of Huntington Park and descend to an at-grade configuration as it approaches the intersection of Alameda Street and Randolph Street. Along Randolph Street, the intersections of Wilmington Avenue, Regent Street, Albany Street, Rugby Avenue, and Rita Avenue would be modified to eliminate crossing the tracks. The intersection design of these streets would be altered to a right-in, right-out configuration. The at-grade alignment would continue along Randolph Street to the at-grade Pacific/Randolph Station located east of Pacific Boulevard in the City of Huntington Park. The alignment would be located on the north side of the existing UPRR-owned La Habra Branch ROW in the median of Randolph Street and would require the relocation of existing freight track to the southern portion of the rail ROW with a minimum 20-foot clearance from the freight tracks. Overall, the railroad ROW would be widened by about 15 feet into the street/public ROW to accommodate the two LRT tracks and the relocated freight track. Figure 2-6 illustrates the alignment profile extending from LAUS to the Pacific/Randolph Station.

Figure 2-6. Alignment Profile from Los Angeles Union Station to Pacific/Randolph Station



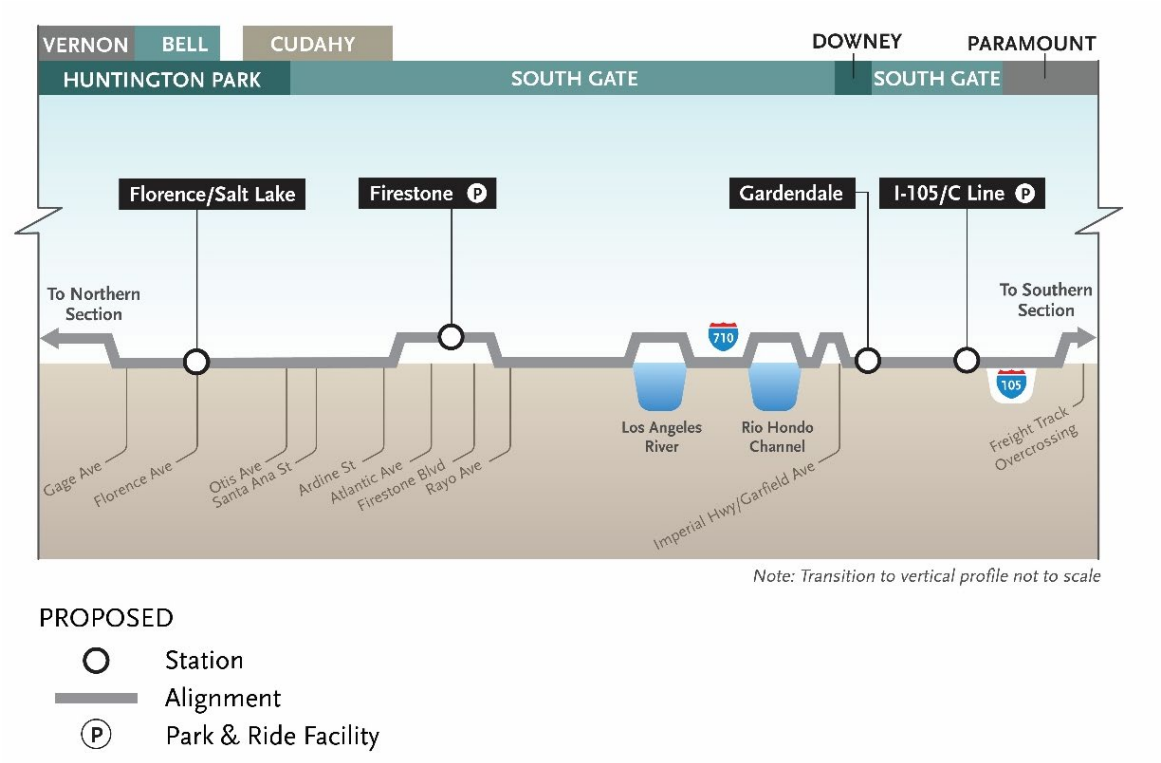
Source: Prepared by Cityworks Design and WSP in 2021

From the Pacific/Randolph Station, the alignment would continue east at-grade within the La Habra Branch ROW. As the alignment approaches the San Pedro Subdivision ROW, the alignment would transition to an aerial configuration and turn south to cross over Randolph Street and the freight track, and then descend back to an at-grade configuration north of Gage Avenue. The at-grade alignment would be located on the east side of the existing San Pedro Subdivision ROW freight track, and the existing track would be relocated to the west side of the ROW. The alignment would continue at-grade within the San Pedro Subdivision ROW to the at-grade Florence/Salt Lake Station located south of the Salt Lake Avenue/Florence Avenue intersection in Huntington Park.

Florence/Salt Lake Station to the I-105/C Line Station

From the at-grade Florence/Salt Lake Station in the City of Huntington Park, the alignment would continue southeast at-grade within the San Pedro Subdivision ROW, crossing Otis Avenue, Santa Ana Street, and Ardine Street. The alignment would be located on the east side of the existing San Pedro Subdivision ROW freight tracks, and the existing freight tracks would be relocated to the west side of the ROW, with a minimum 20-foot clearance from the freight tracks. South of Ardine Street, the alignment would transition to an aerial structure to cross over the existing UPRR tracks and Atlantic Avenue to the aerial Firestone Station located on an aerial structure between Atlantic Avenue and Firestone Boulevard in the City of South Gate, as illustrated in Figure 2-7.

Figure 2-7. Alignment Profile from Florence/Salt Lake Station to I-105/C Line Station



Source: Prepared by Cityworks Design and WSP in 2021

From the aerial Firestone Station, the aerial alignment would transition to an at-grade configuration prior to crossing Rayo Avenue at-grade. The alignment would continue south along the San Pedro Subdivision ROW, crossing at-grade and continuing at-grade until transitioning to an aerial configuration to cross over the LA River. A new LRT bridge would be constructed east of the existing LA River truss bridge to cross the LA River, and the truss bridge would remain unaltered. South of the LA River, the alignment would transition to an at-grade configuration crossing Frontage Road, transecting the I-710 freeway through a new box tunnel structure and then crossing Miller Way. The alignment would then transition to an aerial structure to cross the Rio Hondo Channel. A new LRT bridge would be constructed east of the existing freight bridge that would remain unaltered. South of the Rio Hondo Channel, the alignment would briefly transition to an at-grade configuration before returning to an aerial structure to cross over Imperial Highway and Garfield Avenue. South of Garfield Avenue, the alignment would transition from aerial to an at-grade configuration and continue to the Gardendale Station at the border of the Cities of Downey and South Gate.

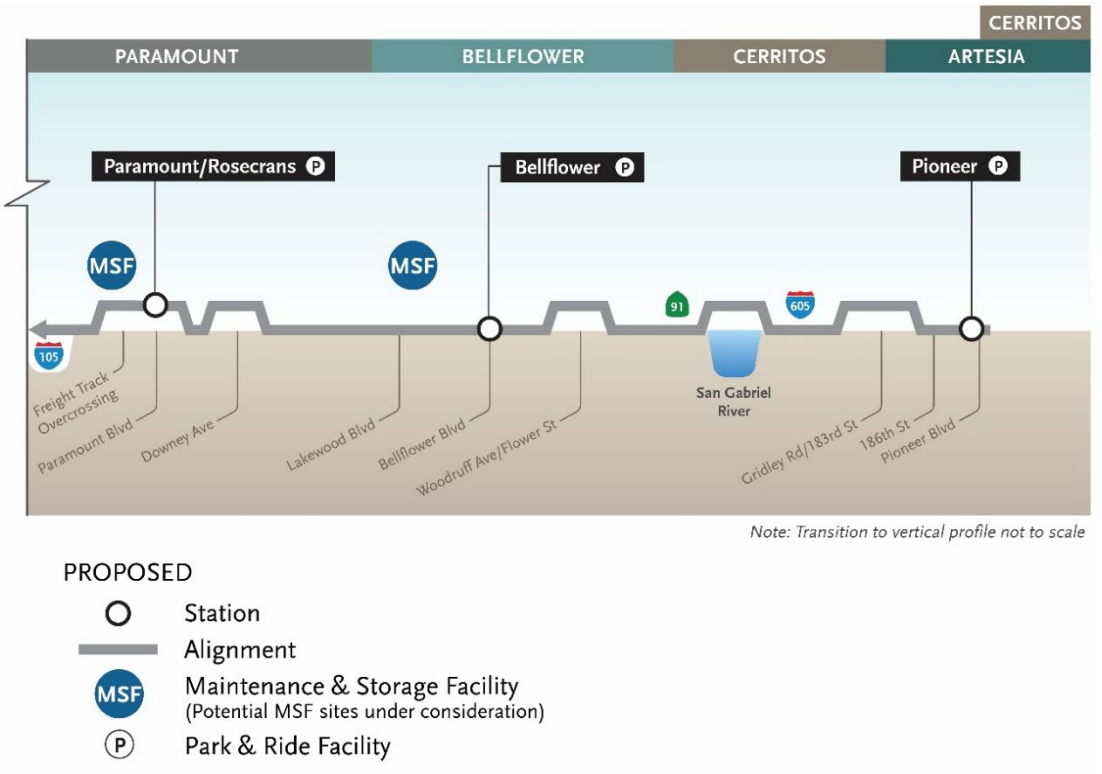
From the Gardendale Station, the alignment would continue south at-grade within the San Pedro Subdivision ROW, crossing Gardendale Street and Main Street to the at-grade I-105/C Line Station located north of Century Boulevard in the City of South Gate. The I-105/C Line Station would serve as the northern terminus for Alternative 4 (Section 2.5.2.5).

I-105/C Line Station to Pioneer Station

From the at-grade I-105/C Line Station platform located north of Century Boulevard, the alignment would cross Century Boulevard and then over the I-105 freeway in an aerial configuration. As described in Section 2.4.4.1, the existing freight bridge, Façade Avenue Overcrossing, and Arthur Avenue Pedestrian Overcrossing would be demolished and reconstructed as part of the Project. The reconstructed freight bridge would have a width of 20 feet, consistent with the current bridge; however, the bridge may be widened up to 35 feet to accommodate a maintenance area for Union Pacific pending further coordination. A new platform along the existing Metro C (Green) Line would be located within the median of the I-105 freeway. To accommodate the construction of the new station platforms, the existing Metro C (Green) Line tracks would be realigned for approximately one-half mile from the existing Garfield Avenue to Paramount Boulevard bridge overpasses. As part of the Metro I-105 Express Lanes Project, the I-105 freeway lanes would be reconfigured. This station would be accessed via stairs and/or escalators and elevators from a pedestrian walkway incorporated into the new LRT bridge on the east end and via stairs and elevators from Façade Avenue on the western end.

South of the I-105 freeway, the alignment would continue at-grade within the San Pedro Subdivision ROW and transition to an aerial configuration as it turns southeast and enters the PEROW to maintain freight operations. The existing freight track would cross beneath the aerial alignment and align on the north side of the PEROW east of the San Pedro Subdivision ROW. As illustrated in Figure 2-8, the alignment would continue in an aerial configuration to the aerial Paramount/Rosecrans Station located west of Paramount Boulevard and north of Rosecrans Avenue in the City of Paramount. The existing freight track would be relocated to the east side of the alignment beneath the station aerial viaduct.

Figure 2-8. Alignment Profile from Paramount Station to Pioneer Station



Source: Prepared by Cityworks Design and WSP in 2021

From the Paramount/Rosecrans Station, the alignment would continue southeast in an aerial configuration over the Paramount Boulevard/Rosecrans Avenue intersection, descend to an at-grade configuration, and transition back to an aerial configuration just east of Paramount Park to cross over Downey Avenue. A pedestrian tunnel to connect Paramount High School and an athletics field at Paramount High School – West Campus is proposed in this ROW. After crossing Downey Avenue, the alignment would descend to an at-grade configuration north of Somerset Boulevard. A freight storage track currently located at the World Energy facility in this portion of the ROW would be displaced to accommodate the new LRT tracks. The freight storage tracks would be reconfigured to provide the same amount of rail vehicle storage capacity as currently exists. There are no active freight tracks south of the World Energy facility. The alignment would cross at-grade from Somerset Boulevard and parallel the existing Bellflower Bike Trail currently aligned on the south side of the PEROW. The alignment would continue at-grade within the PEROW, crossing Lakewood Boulevard, Clark Avenue, and Alondra Boulevard. The Bellflower Bike Trail between Somerset Boulevard and Lakewood Boulevard would move from the south side to the north side of the PEROW.

The at-grade Bellflower Station would be located west of Bellflower Boulevard in the City of Bellflower. East of Bellflower Boulevard, the Bellflower Bike Trail would be realigned to the south side of the PEROW to eliminate an at-grade crossing of the LRT tracks. The bike trail would bypass an existing building located near the southeast corner of Bellflower Boulevard and the PEROW and rejoin the existing bike trail on the south side of PEROW east of the historic train building. The at-grade LRT alignment would continue southeast within the PEROW and transition to an aerial configuration at Cornuta Avenue, crossing over Flower Street and Woodruff Avenue. The aerial alignment would transition to an at-grade

configuration at Walnut Street and continue southeast under the SR-91 freeway in an existing underpass. The alignment would then transition to an aerial configuration to cross over the San Gabriel River via a new bridge replacing the existing abandoned freight bridge. South of the San Gabriel River, the alignment would transition back to an at-grade configuration before crossing Artesia Boulevard at-grade.

The at-grade alignment would continue southeast from Artesia Boulevard and cross under the I-605 freeway in an existing underpass toward Studebaker Road. North of Gridley Avenue, the alignment would transition to an aerial configuration to cross over 183rd Street and Gridley Road. The alignment would then descend to an at-grade configuration at 185th Street, crossing 186th Street and 187th Street at-grade. The at-grade alignment would then pass through the southern terminus of Pioneer Station, located on the west side of Pioneer Boulevard in the City of Artesia. Tail tracks accommodating layover storage for a three-car train would extend approximately 1,000 feet south from the station, crossing Pioneer Boulevard and terminating west of South Street.

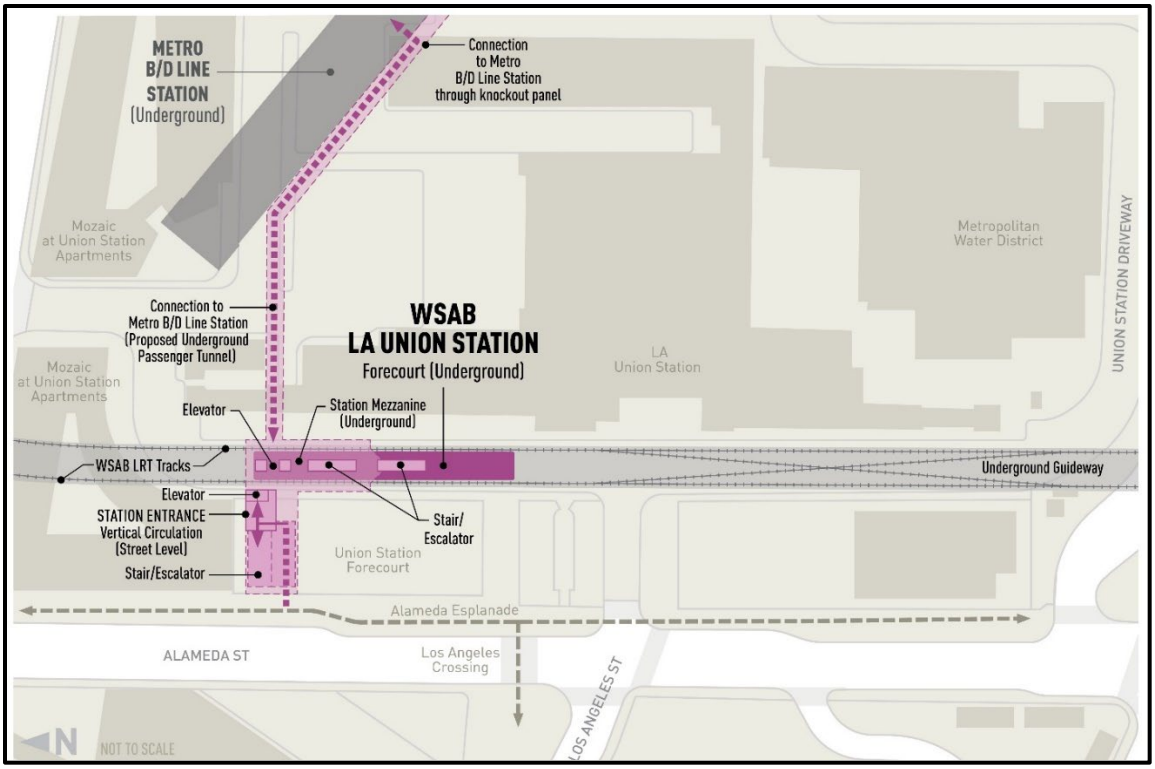
Stations and Park-and-Ride Facilities

Alternative 1 would include 11 station locations, of which 5 would have parking facilities with up to 2,780 parking spaces combined, as summarized in Table 2.4 and described in detail below. Proposed stations would be designed to be consistent with Metro's Systemwide Station Design Standards, or equivalent design criteria[5], and Metro Art Program Policy for design guidance.

Los Angeles Union Station (Forecourt). The LAUS Forecourt Station would serve as the northern terminus for Alternative 1 and would allow for transfers to Metrolink regional commuter rail lines; Amtrak national rail service; Metro's A, B, D, J, and L (Blue, Red, Purple, Silver, and Gold) Lines; and other local and regional bus lines. As shown in Figure 2-9, the underground station box would be located west of LAUS, under the Forecourt driveway. The station would be accessed through an entrance with stairs and escalators from Alameda Street, and elevators would be located within the LAUS Forecourt. A second entrance would be provided through an approximately 500-foot-long pedestrian tunnel from the LAUS Forecourt Station to the existing Metro B/D (Red/Purple) Line station. The pedestrian tunnel would be 15 feet wide and 12 feet high and would cross beneath the existing LAUS Railway Express Agency building and run parallel and adjacent to the existing Metro B/D (Red/Purple) Line station structure. The pedestrian tunnel would be connected to the Metro B/D (Red/Purple) Line station through a knock-out panel, allowing pedestrians to transfer between the WSAB Line and the existing Metro B/D lines. LAUS currently has a parking facility with approximately 2,000 spaces. No additional parking spaces at LAUS are proposed as part of the Project.

[5] Flexibility for the development of other performance criteria, perhaps in support of a Public-Private Partnership procurement, is provided. The ultimate criteria used will achieve the same performance standards as those established in the Metro guidance.

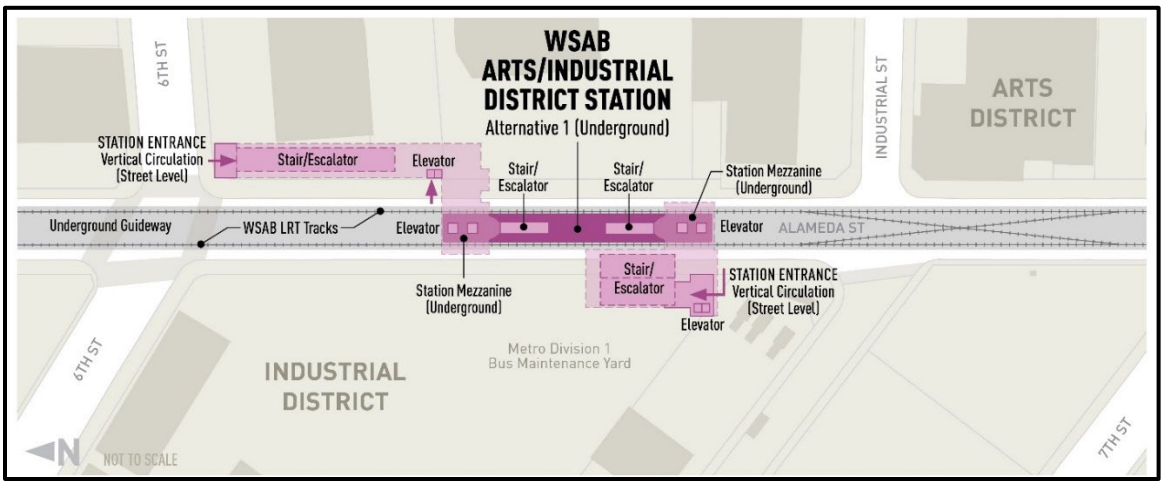
Figure 2-9. Los Angeles Union Station Forecourt Station



Source: Prepared by Cityworks Design and WSP in 2021

Arts/Industrial District Station. The underground Arts/Industrial District Station would be located under Alameda Street between 6th Street and Industrial Street (Figure 2-10). A station entrance would be located on the west side of Alameda Street, north of Industrial Street. A second entrance would be located on the east side of Alameda Street, south of 6th Street. Each entrance would consist of a set of stairs, escalators, and elevators. No parking facility is proposed at this station.

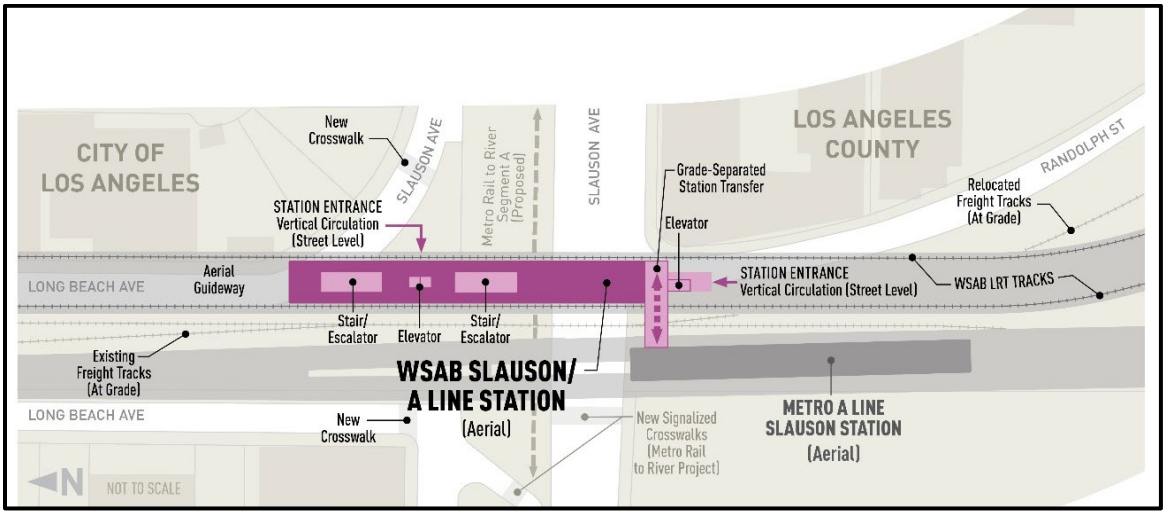
Figure 2-10. Arts/Industrial District Station



Source: Prepared by Cityworks Design and WSP in 2021

Slauson/A Line Station. The Slauson/A Line Station would be a major transfer point to the Metro A (Blue) Line. The Slauson/A Line Station would operate on a single platform and would be located parallel and east of the Metro A (Blue) Line Slauson Station platform and above the Wilmington Branch ROW, as shown in Figure 2-11. Access to the station from the street would be via an entrance on the northeast and southeast corner of Long Beach Avenue and Slauson Avenue. The two entrances would consist of a set of stairs, an escalator, and an elevator. A pedestrian bridge would be located on the southern end of the platform that connects to a mezzanine level and would provide a connection between the two station platforms. No parking facility is proposed at this station.

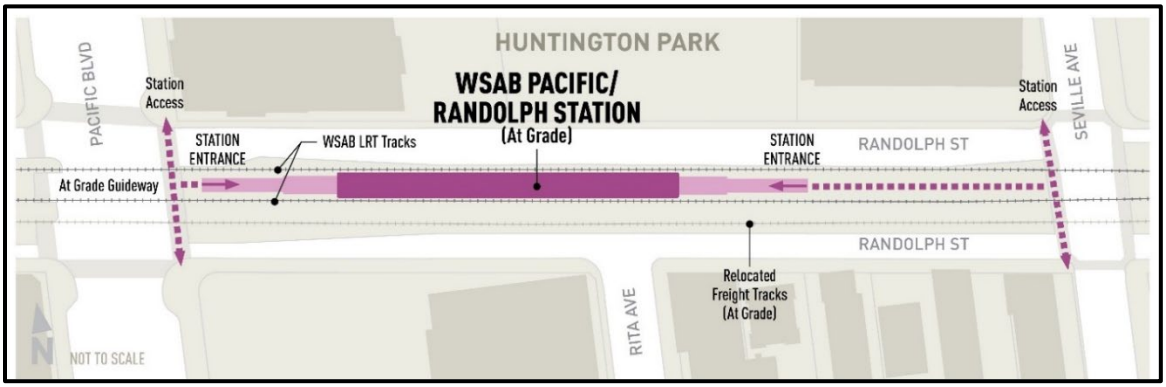
Figure 2-11. Slauson/A Line Station



Source: Prepared by Cityworks Design and WSP in 2021

Pacific/Randolph Station. The Pacific/Randolph Station would be located at-grade within the La Habra Branch ROW along the Randolph Street median between Pacific Boulevard and Seville Avenue (Figure 2-12). Access to the station would be via pedestrian crossings from the north and south side of Randolph Street east of Pacific Boulevard and the north and south side of Randolph Street west of Seville Avenue. No parking facility is proposed at this station.

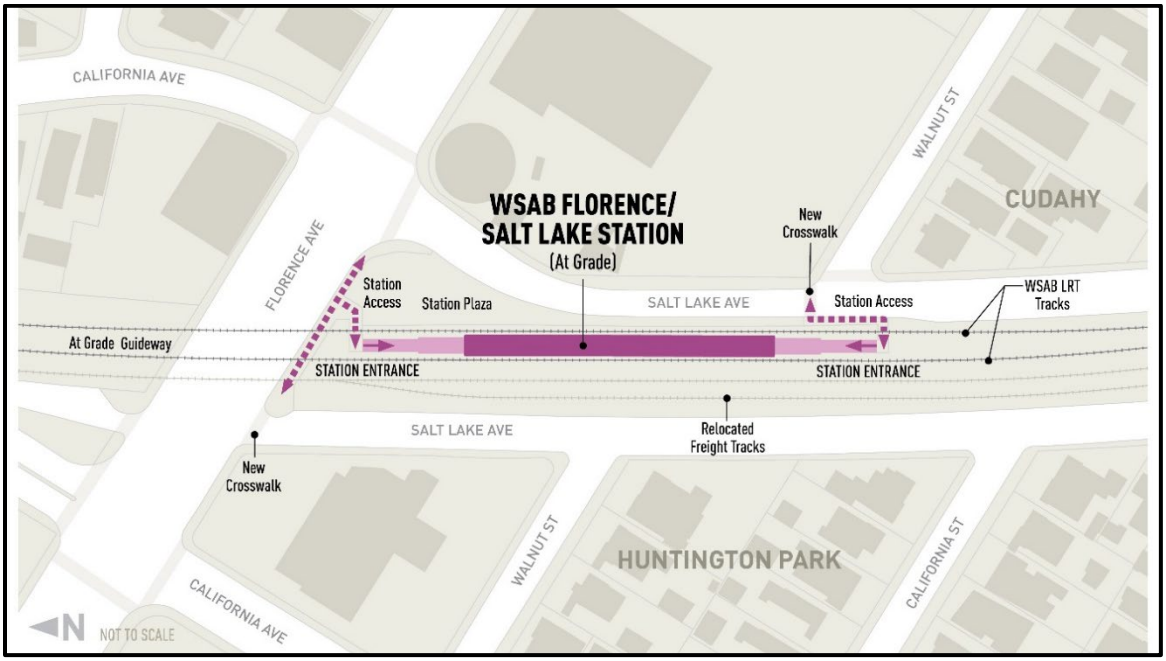
Figure 2-12. Pacific/Randolph Station



Source: Prepared by Cityworks Design and WSP in 2021

Florence/Salt Lake Station. The Florence/Salt Lake Station would be located at-grade within the San Pedro Subdivision ROW between Florence Avenue and California Avenue (Figure 2-13). Access to the station would be via a pedestrian walkway north and south of the station platform. The pedestrian walkway on the north side of the station platform would connect to a reconfigured sidewalk on the south side of the Florence Avenue and Salt Lake Avenue intersection. To maintain existing sidewalks and roadway lane configurations, the existing water well east of Salt Lake Avenue would need to be relocated. Existing freight tracks within the San Pedro Subdivision ROW would be relocated to the west to accommodate the proposed station platform and tracks. No parking facility is proposed at this station.

Figure 2-13. Florence/Salt Lake Station

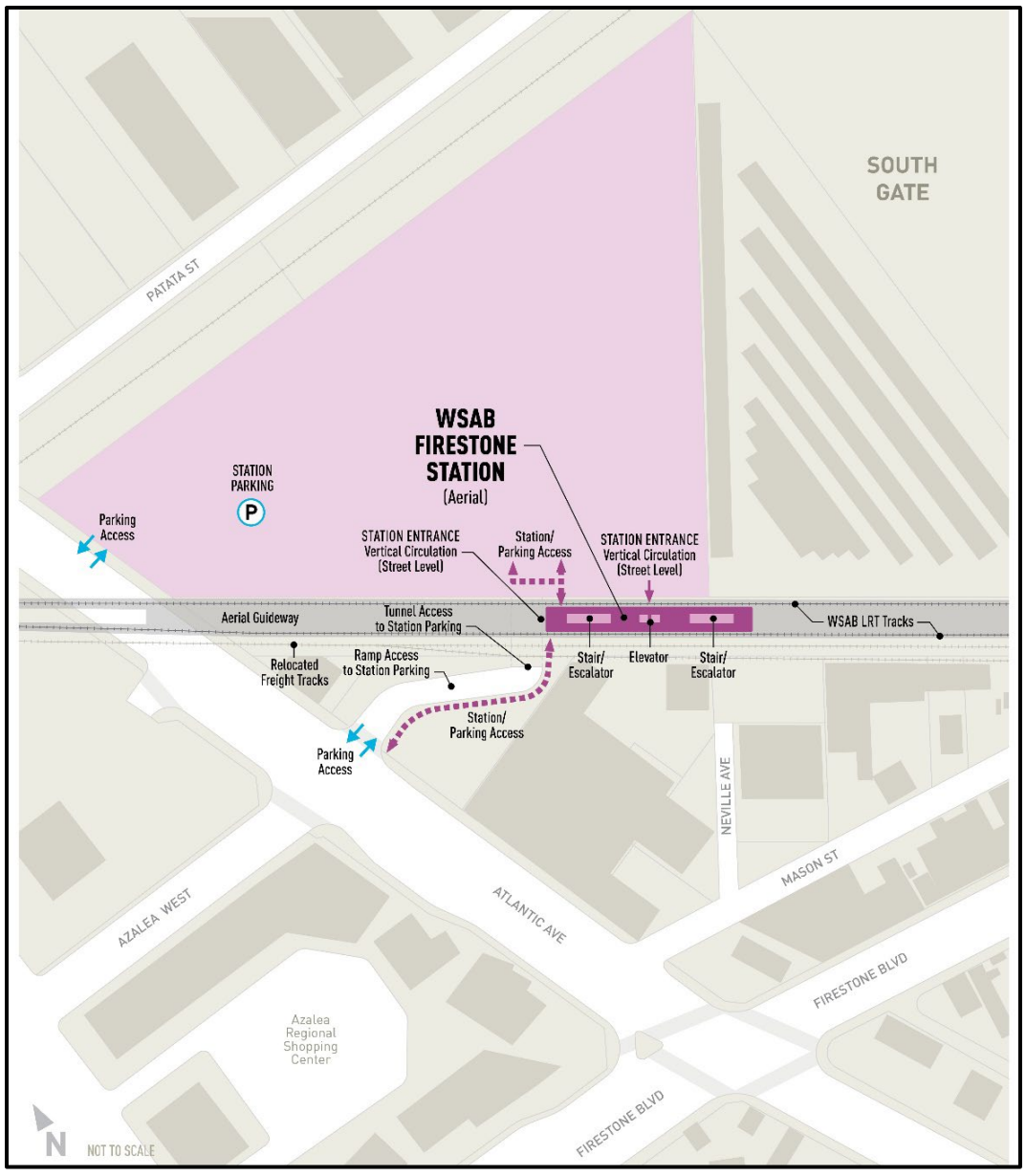


Source: Prepared by Cityworks Design and WSP in 2021

Firestone Station. The aerial Firestone Station would be located on an elevated structure within the existing San Pedro Subdivision ROW between Atlantic Avenue and Firestone Boulevard (Figure 2-14). Access to the station would be from the proposed park-and-ride lot and via a new pedestrian walkway from Atlantic Avenue to a pedestrian crossing across the at-grade freight tracks.

A 9.1-acre parking facility with up to 600 parking spaces is proposed at this station. Access to the parking facility would be via two driveways from Atlantic Avenue; the southernmost driveway would be accessed from Atlantic Avenue and would pass under the Firestone Station to the parking facility. Pedestrian access between the station platforms and the parking facility would be via a new pedestrian walkway extending from Atlantic Avenue to a pedestrian crossing across the at-grade freight tracks, north of the Firestone Station platform. The platform would be accessed via two elevators, two sets of stairs, and escalators. Existing freight tracks within the San Pedro Subdivision ROW would be relocated to the west to accommodate the proposed station platform and tracks.

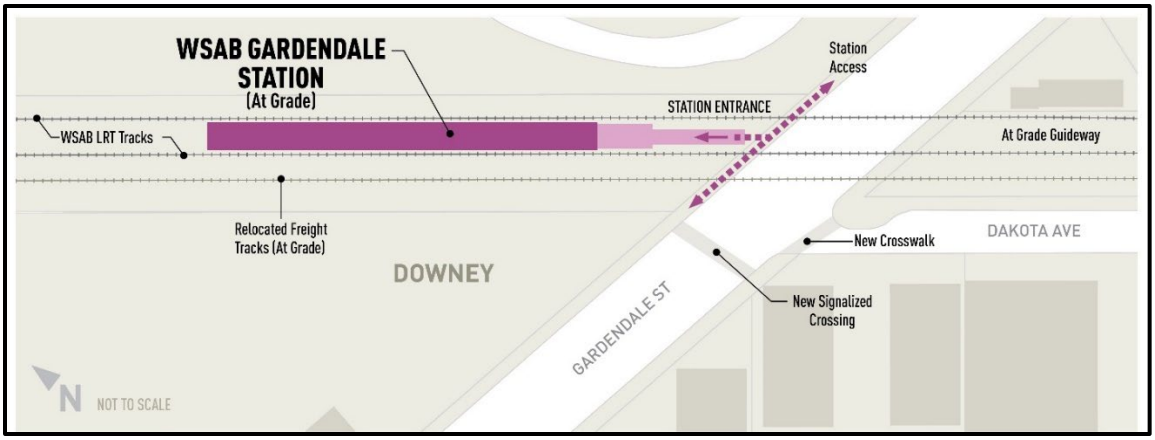
Figure 2-14. Firestone Station



Source: Prepared by Cityworks Design and WSP in 2021

Gardendale Station. The at-grade Gardendale Station (Figure 2-15) would be located within the San Pedro Subdivision ROW, just north of Gardendale Street. Access to the station would be via a new pedestrian walkway on the south end of the platform that would connect to the sidewalk on the north side of Gardendale Street. Emergency egress would be provided on the north end of the platform. Within the San Pedro Subdivision ROW, existing freight tracks would be relocated to the west to accommodate the station platform and tracks. No parking facility is proposed at this station.

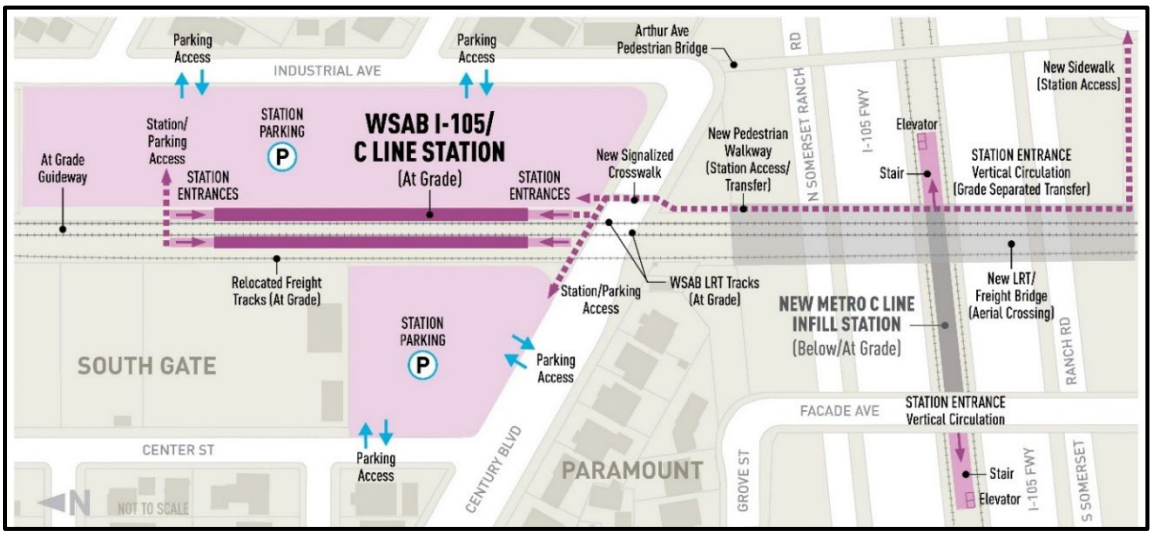
Figure 2-15. Gardendale Station



Source: Prepared by Cityworks Design and WSP in 2021

I-105/C Line Station. The I-105/C Line Station would provide a connection with the Metro C (Green) Line via a new station platform in the Metro C (Green) Line alignment within the I-105 freeway median. The I-105/C Line Station would be located at-grade within the rail ROW, north of Century Boulevard within the City of South Gate, as shown in Figure 2-16. This station would consist of two side platforms with access at the north and south ends of the station platform. A pedestrian crossing would be located at the northern end of the station platforms with access to the two proposed parking facilities. Access from the southern end of the platform would be provided via a pedestrian walkway to Century Boulevard. To accommodate the station platforms, the existing freight track would be relocated to the west, which requires demolition of the existing freight bridge and construction of a new freight bridge.

Figure 2-16. I-105/C Line Station



Source: Prepared by Cityworks Design and WSP in 2021

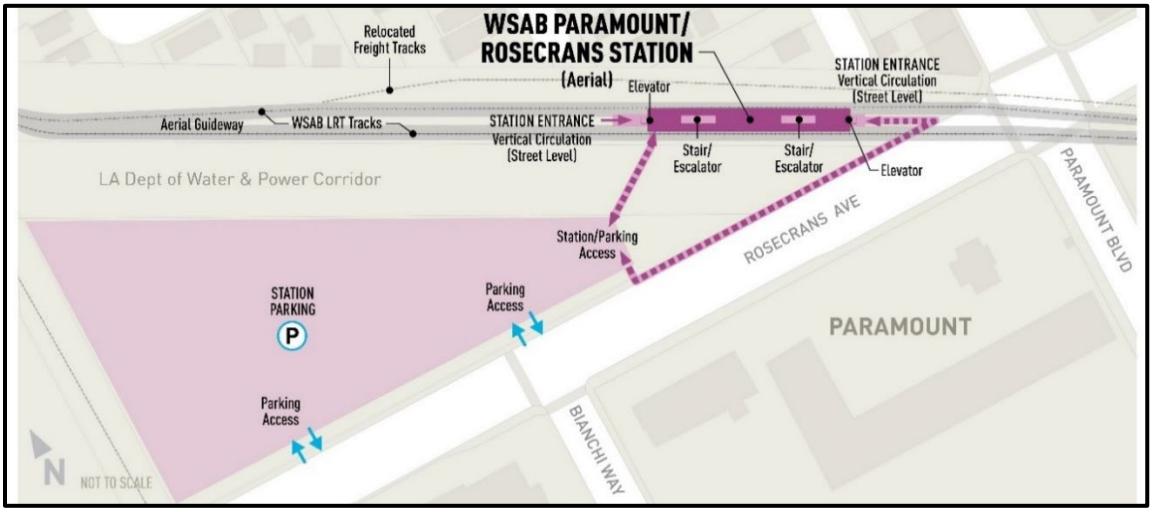
A new station along the existing Metro C (Green) Line would be located within the median of the I-105 freeway within the City of Paramount. The Metro C (Green) Line would be realigned to provide space for the new center platform. This station would be accessed via stairs and/or escalators and elevators from a pedestrian walkway incorporated into the new LRT bridge on the east end and via stairs and elevators from Façade Avenue on the west end.

The pedestrian bridge would be connected on the north side of the freeway to the walkway at Century Boulevard. On the south side of the freeway, the pedestrian bridge would connect to a pedestrian walkway between the San Pedro Subdivision ROW and Arthur Avenue to the east. The existing Façade Avenue overpass bridge and the Arthur Avenue pedestrian bridge would also be reconstructed as two-span structures to accommodate both the WSAB and Metro I-105 Express Lanes projects.

Two parking facility sites totaling approximately 3.7 acres and accommodating up to 326 parking spaces would be located on the west and east sides of the I-105/C Line Station platforms along the project alignment north of Century Boulevard. The western parking facility is approximately 1.2 acres with vehicle access via Century Boulevard and Center Street. The eastern parking facility is approximately 2.5 acres with vehicle access via two driveways from Industrial Avenue. Pedestrian pathways between the parking facilities and the station platform would be provided from Century Boulevard and from the north end of the platform to the eastern parking facility.

Paramount/Rosecrans Station. The aerial Paramount/Rosecrans Station would be within the PEROW northwest of the intersection of Paramount Boulevard and Rosecrans Avenue, as shown in Figure 2-17. Street-level access would be provided via a pedestrian walkway along the north side of Rosecrans Avenue to an at-grade plaza where two sets of stairs, two sets of escalators, and two sets of elevators would provide access to the boarding platform.

Figure 2-17. Paramount/Rosecrans Station

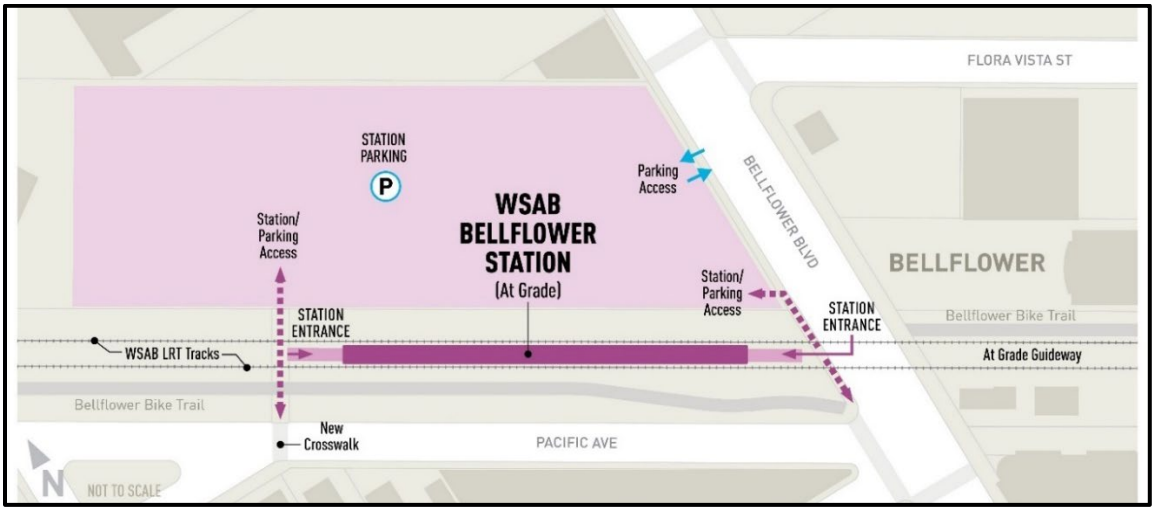


Source: Prepared by Cityworks Design and WSP in 2021

A 3.8-acre parking facility with up to 490 parking spaces would be located southwest of the Paramount/Rosecrans Station adjacent to a utility property. Access to the parking facility would be via two separate driveways on Rosecrans Avenue. Pedestrian access between the parking facility and station platform would be via a pedestrian pathway connecting the northern end of the station platform to the eastern corner of the parking facility and the sidewalk along Rosecrans Avenue. The existing at-grade freight tracks would be realigned to the north within the PEROW to accommodate the station platform and provide access to the World Energy industrial facility.

Bellflower Station. The at-grade Bellflower Station would be within the PEROW, west of Bellflower Boulevard, as shown in Figure 2-18. Access to the station would be via a pedestrian walkway on the southeast end of the platform, connecting to the sidewalk on Bellflower Boulevard. Pedestrian access would be provided from both ends of the station platform. On the northwest end of the station platform, pedestrian access would be provided by a crossing to Pacific Avenue or directly to the proposed parking facility north of the station. On the southeast end of the station platform, pedestrian access would be provided to Bellflower Boulevard. A bus stop and the Bellflower Bike Trail would be realigned within the PEROW to accommodate the station platform and tracks.

Figure 2-18. Bellflower Station



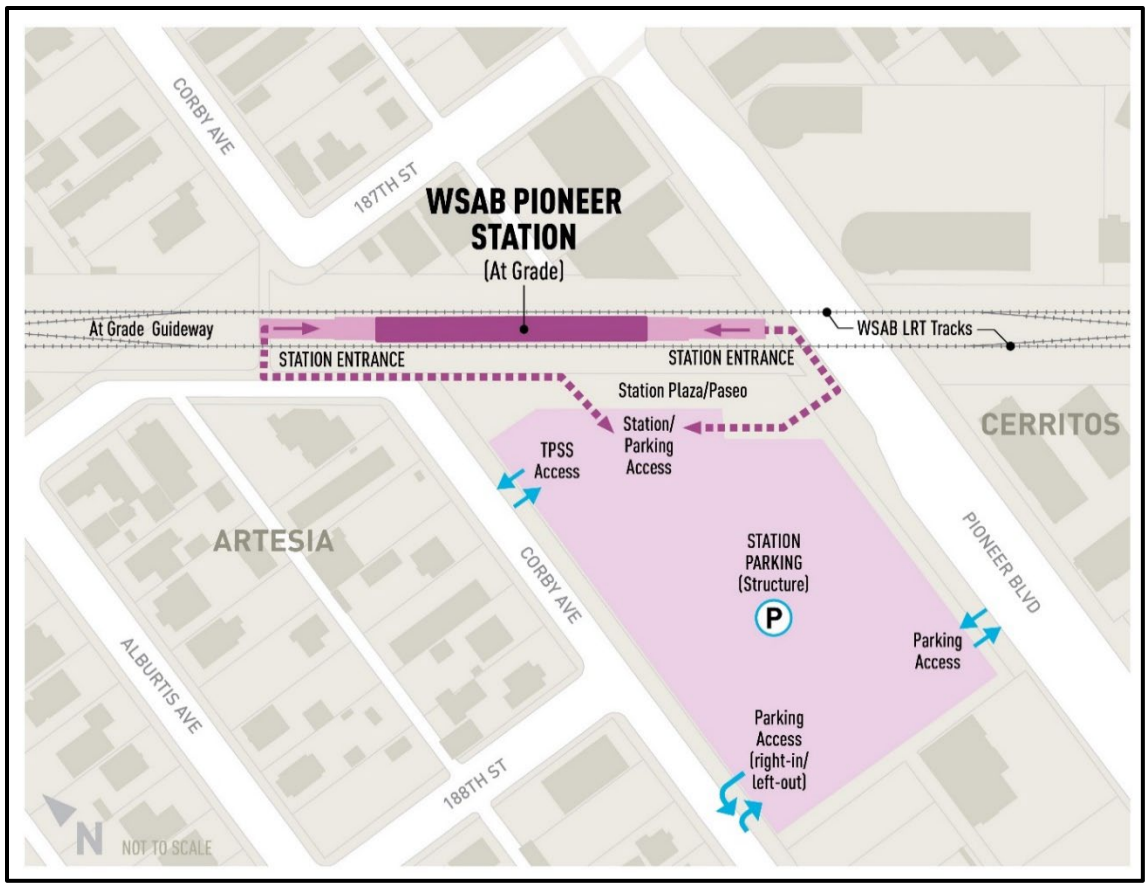
Source: Prepared by Cityworks Design and WSP in 2021

A 2.5-acre parking facility with up to 263 parking spaces would be located on the north side of the Bellflower Station. The parking facility would be accessed via a driveway from Bellflower Boulevard. Pedestrian access from the parking facility to the station would be provided via a pedestrian pathway from Bellflower Boulevard.

Pioneer Station. The at-grade Pioneer Station would be the southern terminus for each Build Alternative. Located near the southern boundary of Artesia, the Pioneer Station would be located west of Pioneer Boulevard and south of 187th Street, as shown in Figure 2-19. Access to the station would be via pedestrian walkways on both the northwest and southeast ends of the platform. The pedestrian walkway on the northwest would connect directly to 187th Street, and the walkway on the southeast would connect directly to Pioneer Boulevard. Bus bays along Pioneer Boulevard would be provided to accommodate future bus connections.

A 3.3-acre, 4-story parking structure with up to 1,100 parking spaces would be located south of the Pioneer Station. Access to the parking facility and station platform would be via Pioneer Boulevard and Corby Avenue. Pedestrian access from Pioneer Boulevard to the parking facility would be via Pioneer Boulevard from the southeast end of the station platform.

Figure 2-19. Pioneer Station



Source: Prepared by Cityworks Design and WSP in 2021

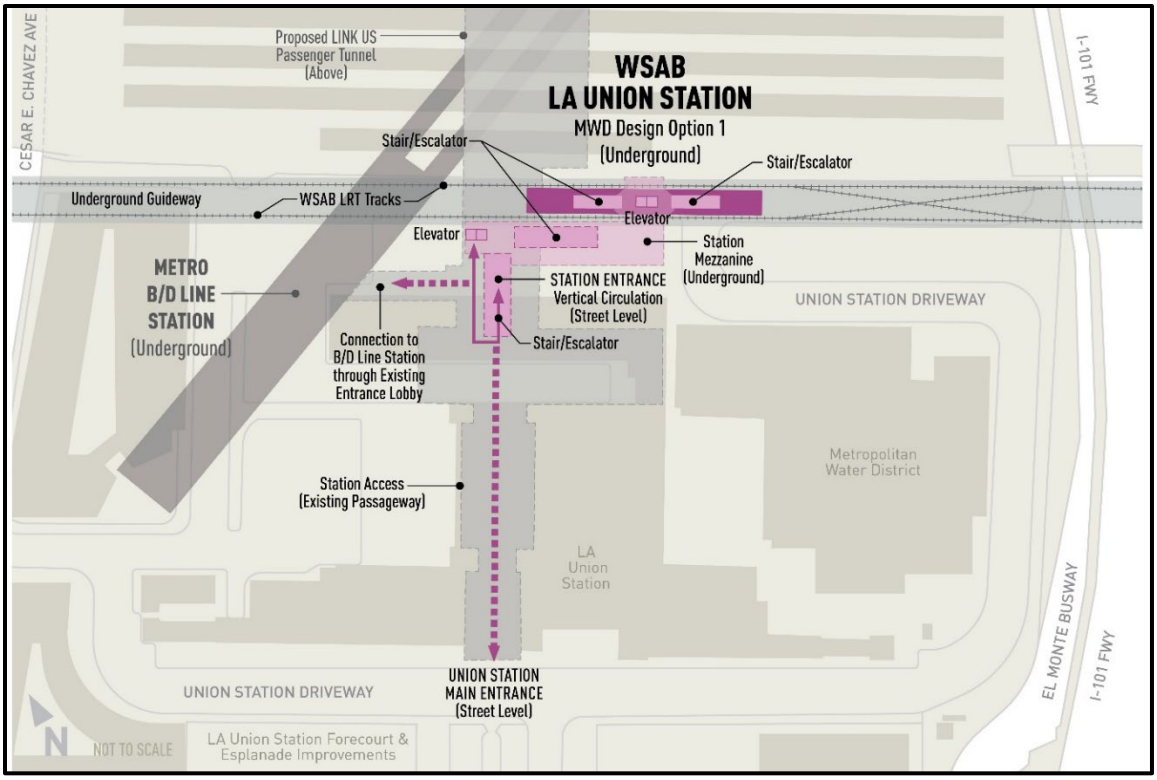
Design Options

Two design options are proposed for Alternative 1. No design options are proposed for Alternatives 2, 3, and 4.

Design Option 1: Los Angeles Union Station – MWD

Design Option 1 (MWD) would be a design option for the LAUS Forecourt Station and its alignment configuration. Design Option 1 (MWD) would commence with the tail tracks near the California Endowment Building, followed by an underground crossover with the underground station located east of the existing MWD building and below the LAUS passenger concourse, as shown in Figure 2-20. South of the station platform would be another underground crossover with the alignment continuing south crossing under the US-101 freeway and the Metro L (Gold) Line. Design Option 1 (MWD) converges with Alternative 1 on S. Alameda Street south of E. 1st Street. The station would be accessed through a single entrance within the existing LAUS building via stairs, a set of escalators, and elevators. A second set of stairs, escalators, and elevators would connect the mezzanine to the platform level. The station platform would be about 105 feet deep with a minimum of 10 feet from the Metro B/D (Red/Purple) Line station. No parking facility is proposed at this station.

Figure 2-20. LAUS MWD Station

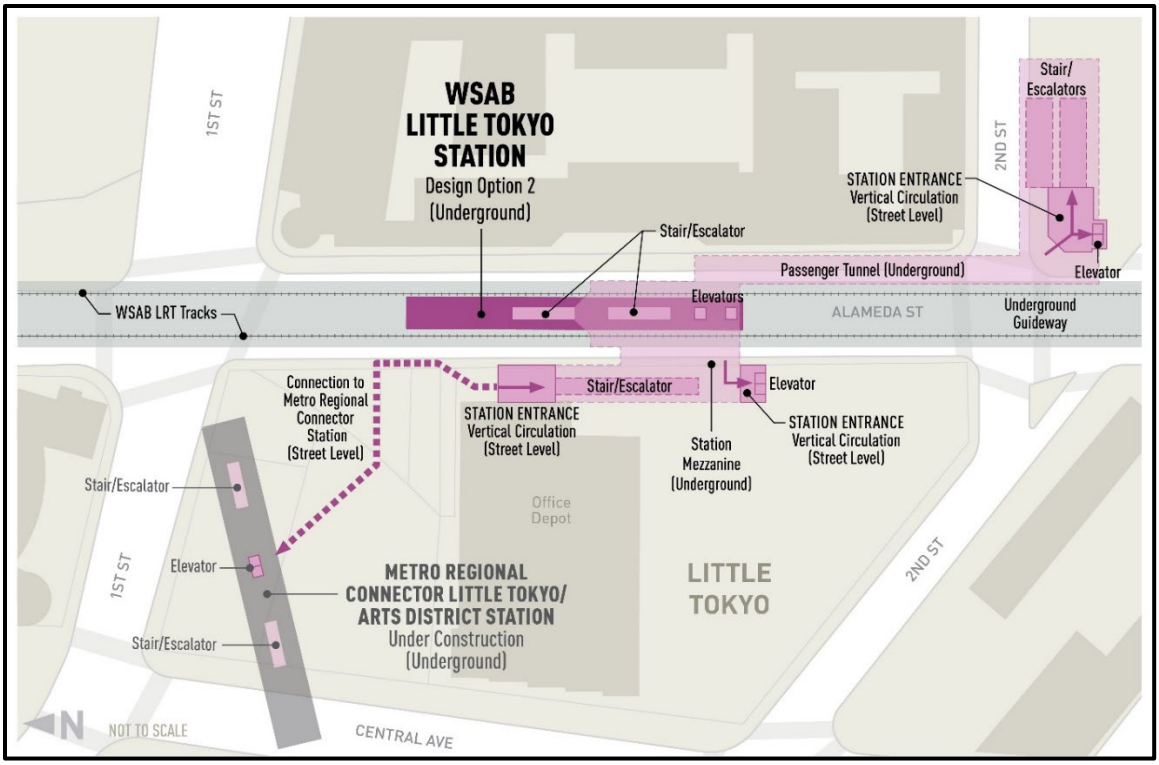


Source: Prepared by Cityworks Design and WSP in 2021

Design Option 2: Addition of Little Tokyo Station

Design Option 2 would construct the underground Little Tokyo Station for Alternative 1 between the LAUS and Arts/Industrial District Stations in the Little Tokyo community of Los Angeles. The underground Little Tokyo Station would be located beneath Alameda Street between 1st Street and 2nd Street, as shown in Figure 2-21. It would allow transfers to the Regional Connector Little Tokyo/Arts District Station and the Metro rail lines it serves. Two station entrances are proposed: the northern entrance would be between the western side of Alameda Street and an existing retail store; the southern entrance would be at the southeastern corner of E. 2nd Street and Alameda Street. The northern entrance would include a set of stairs, one escalator, and elevators. The southern entrance would include a set of stairs, escalators, and two elevators. No parking facility is proposed at this station.

Figure 2-21. Little Tokyo Station



Source: Prepared by Cityworks Design and WSP in 2021

2.5.2.3 Alternative 2: 7th St/Metro Center to Pioneer Station

Alternative 2 would be a 19.3-mile alignment with a northern terminus at a new 7th St/Metro Center Station, located underground at 8th Street between Figueroa Street and Flower Street near the existing 7th St/Metro Center Station, and a southern terminus located at the Pioneer Station in the City of Artesia. Alternative 2 consists of 12 stations and 5 parking facilities (Firestone, I-105/C Line, Paramount/Rosecrans, Bellflower, and Pioneer) totaling approximately 2,780 parking spaces.

Details of the ancillary facilities and project components for Alternative 2 are provided in Table 2.3 and Table 2.4. Figure 2-22 illustrates the Alternative 2 alignment.

Figure 2-22. Alternative 2: 7th St/Metro Center to Pioneer Station



Source: Prepared on behalf of Metro in 2021

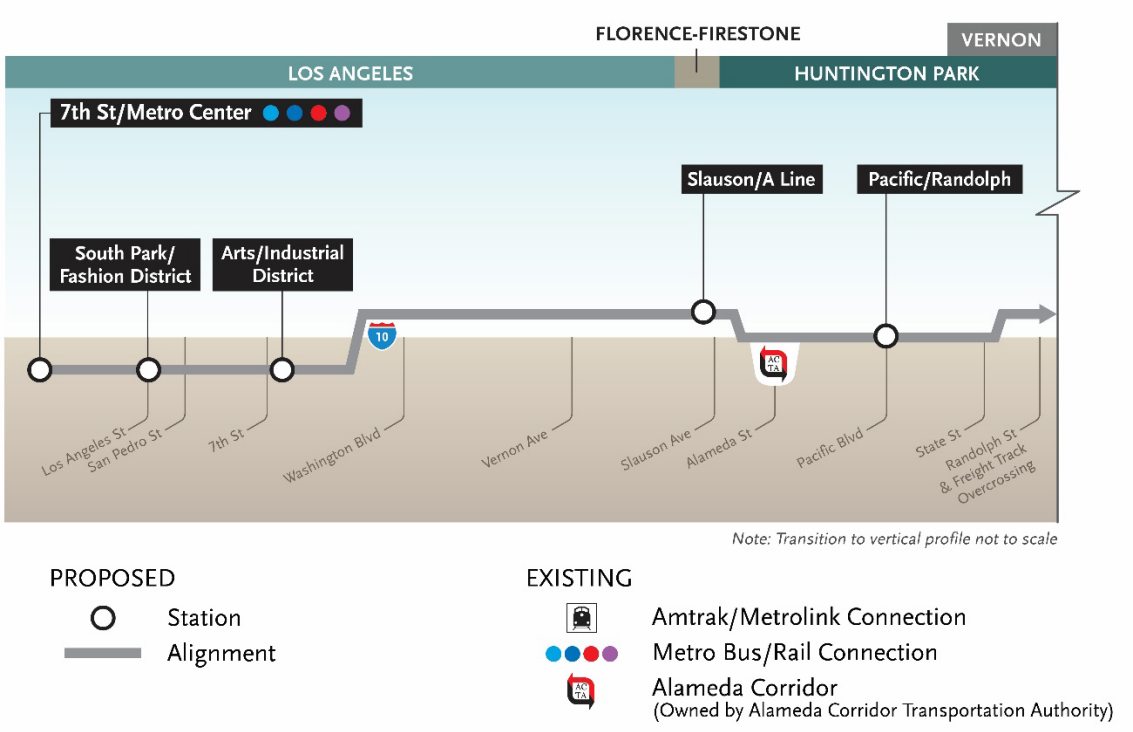
Alignment

7th St/Metro Center Station to Arts/Industrial District Station

The Alternative 2 alignment would begin underground at a northern terminus at the WSAB 7th St/Metro Center Station to be located underground beneath 8th Street between Figueroa Street and Flower Street. A pedestrian tunnel beneath Figueroa Street would provide a connection to the existing 7th St/Metro Center Station. Tail tracks, including a double crossover, would extend underground approximately 90 feet under the I-110 freeway. From the 7th St/Metro Center Station, the underground alignment would continue southeast beneath 8th Street to the underground South Park/Fashion District Station, located southwest of Main Street beneath 8th Street.

From the underground South Park/Fashion District Station, the underground alignment would continue under 8th Street to San Pedro Street, where the alignment would turn east toward 7th Street and cross under privately owned properties. The alignment would curve north, crossing under E. 7th Street and then curving south beneath S. Alameda Street. The alignment would continue beneath S. Alameda Street, entering the Arts/Industrial District Station between E. 7th Street and Center Street. A double crossover is proposed at the southern end of the proposed Arts/Industrial District Station. Figure 2-23 illustrates the alignment profile extending from 7th St/Metro Center to Pacific/Randolph Station.

Figure 2-23. Alignment Profile from 7th St/Metro Center to Pacific/Randolph Station



Source: Prepared by Cityworks Design and WSP in 2021

Alternative 2 reaches the Arts District area at a location south of the proposed Arts/Industrial District Station for Alternative 1. South of the Arts/Industrial District Station for Alternative 2, Alternatives 1 and 2 converge and continue south on S. Alameda Street, eventually curving west beneath McGarry Street to a tunnel portal located just south of E. Olympic Boulevard.

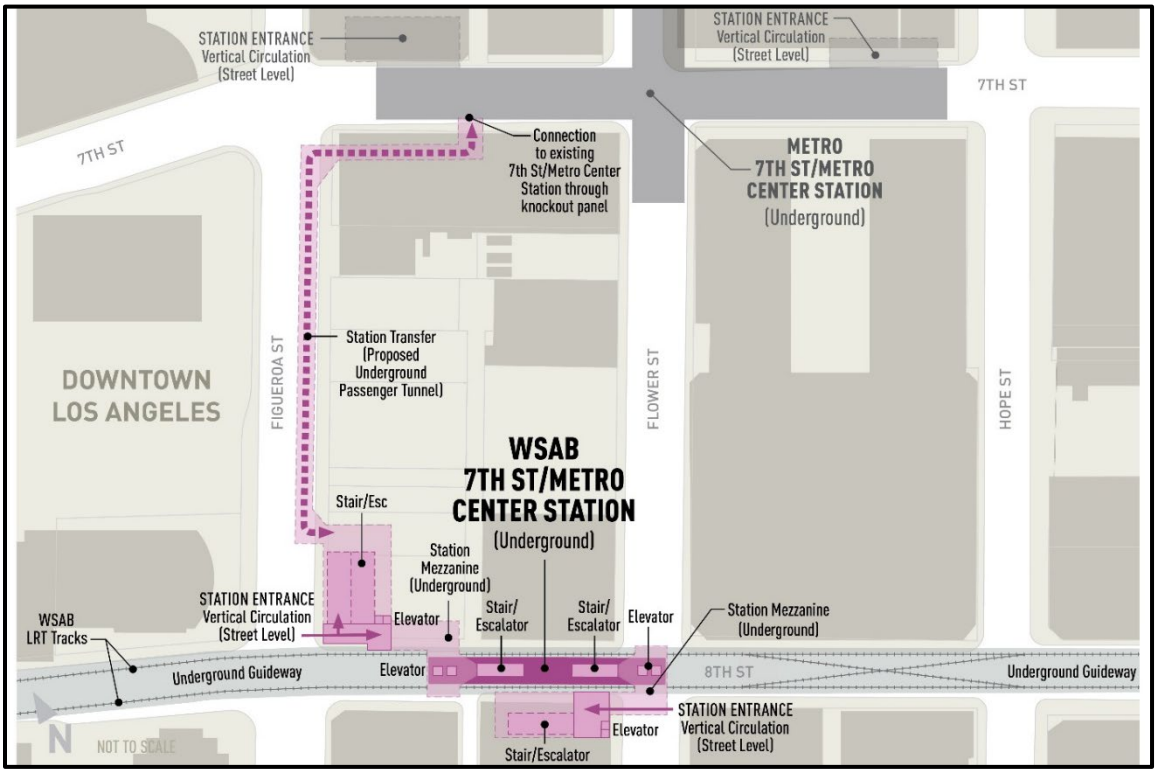
The alignment south of the Arts/Industrial District Station to Pioneer Station would be the same as described under Alternative 1 (see Section 2.5.2.2).

Stations and Park-and-Ride Facilities

Alternative 2 includes 12 station locations. The 7th St/Metro Center Station, South Park/Fashion District Station, and Arts/Industrial Station are specific to Alternative 2.

7th St/Metro Center Station. The WSAB 7th St/Metro Center Station would serve as the northern terminus for Alternative 2 and would provide riders with a connection to the Metro A, B, D, and E (Blue, Red, Purple, and Expo) Lines. The WSAB 7th St/Metro Center Station would be located underground near the 8th Street and Flower Street intersection in the City of Los Angeles with a proposed underground pedestrian tunnel connection to the existing 7th St/Metro Center Station, as shown in Figure 2-24. The 90-foot-deep station box would be located beneath 8th Street southeast of Figueroa Street, crossing under Flower Street with access via an entrance on the northeast corner of 8th Street and Figueroa Street and an entrance on the southwest corner of 8th Street and Flower Street. Each entrance would consist of a set of stairs, escalators, and two elevators. A proposed pedestrian tunnel beneath Figueroa Street would provide a connection from the proposed WSAB 7th St/Metro Center Station to the existing 7th St/Metro Center Station. No parking facility is proposed at this station.

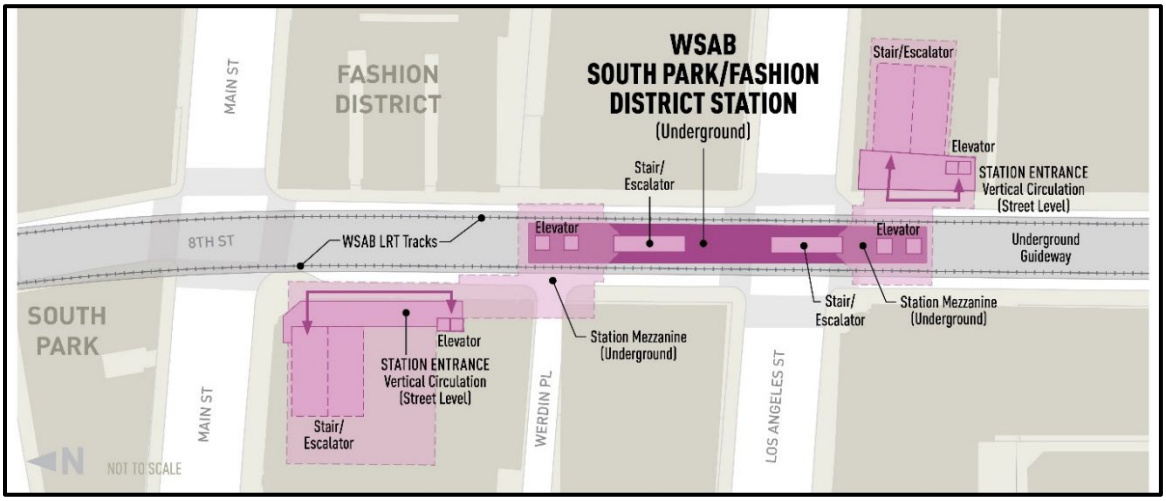
Figure 2-24. 7th St/Metro Center Station



Source: Prepared by Cityworks Design and WSP in 2021

South Park/Fashion District Station. The underground South Park/Fashion District Station would be located beneath 8th Street as it intersects Los Angeles Street in the City of Los Angeles, as shown in Figure 2-25. The station access would be via an entrance at the southeast corner of Main Street and 8th Street and an entrance on the northeast corner of Los Angeles Street and 8th Street. Each station entrance would consist of a set of escalators, a set of stairs, and two elevators. No parking facility is proposed at this station.

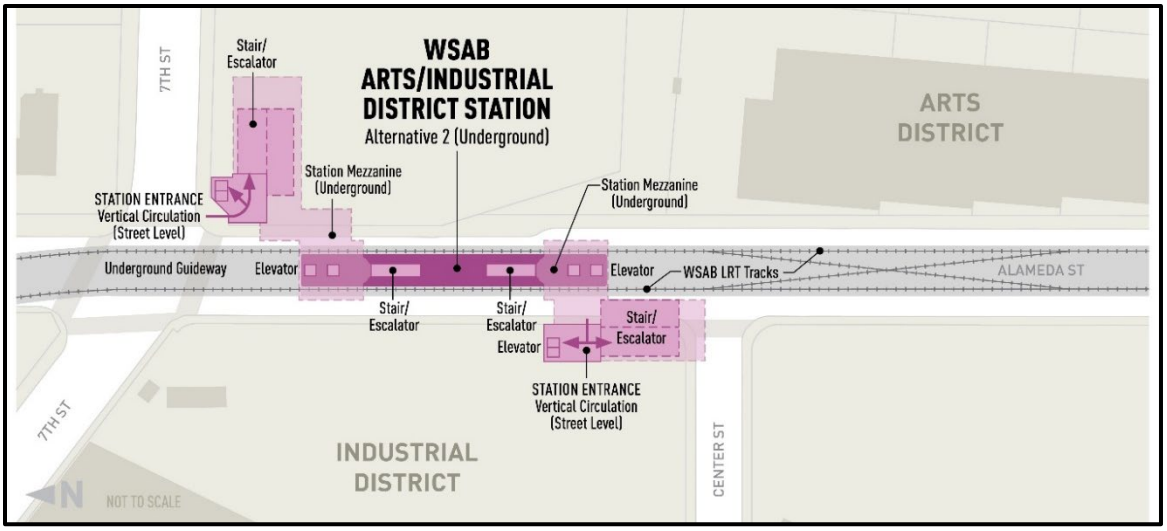
Figure 2-25. South Park/Fashion District Station



Source: Prepared by Cityworks Design and WSP in 2021

Arts/Industrial District Station. The underground Arts/Industrial District Station would be located under Alameda Street between 7th Street and Center Street in the City of Los Angeles, as shown in Figure 2-26. This is approximately 1,000 feet south of the location proposed for this station under Alternative 1. Access to the station would be via an entrance at the northwest corner of Alameda Street and Center Street and an entrance on the southeast corner of Alameda Street and 7th Street. Each entrance would consist of a set of stairs, a set of escalators, and two elevators. A double crossover would be located south of the station box. No parking facility is proposed at this station. Descriptions for the remaining stations are the same as described under Alternative 1 (see Section 2.5.2.2).

Figure 2-26. Arts/Industrial District Station



Source: Prepared by Cityworks Design and WSP in 2021

2.5.2.4 Alternative 3: Slauson/A Line to Pioneer Station

Alternative 3 would be a 14.8-mile alignment with a northern terminus at the Slauson/A Line Station in the City of Los Angeles/Florence-Firestone community of LA County and a southern terminus at the Pioneer Station in the City of Artesia. Alternative 3 consists of 9 stations (Slauson/A Line, Pacific/Randolph, Florence/Salt Lake, Firestone, Gardendale, I-105/C Line, Paramount/Rosecrans, Bellflower, and Pioneer Station) and 5 parking facilities (Firestone, I-105/C Line, Paramount/Rosecrans, Bellflower, and Pioneer) totaling approximately 2,780 parking spaces. Based on funding and other fiscal constraint considerations, Alternative 3 has been identified as the Staff Preferred Alternative. Figure 2-27 illustrates the Alternative 3 alignment. Descriptions for the alignment and the stations are the same as described under Alternative 1 (see Section 2.5.2.2). Alternative 3 ancillary facilities and project components are detailed in Table 2.3 and Table 2.4.

2.5.2.5 Alternative 4: I-105/C Line to Pioneer Station

Alternative 4 would be a 6.6-mile alignment with a northern terminus at the I-105/C Line Station in South Gate and a southern terminus at the Pioneer Station in the City of Artesia. Alternative 4 consists of 4 stations (I-105/C Line, Paramount/Rosecrans, Bellflower, and Pioneer) each with parking facilities for a total of approximately 2,180 parking spaces. Figure 2-28 illustrates the Alternative 4 alignment. Descriptions for the alignment and the stations are the same as described under Alternative 1 (see Section 2.5.2.2). Details of the ancillary facilities and project components for Alternative 4 are provided in Table 2.3 and Table 2.4.

Figure 2-27. Alternative 3: Slauson/A Line to Pioneer Station



Source: Prepared on behalf of Metro in 2021

Figure 2-28. Alternative 4: I-105/C Line Station to Pioneer Station



Source: Prepared on behalf of Metro in 2021

2.5.3 Maintenance and Storage Facility

To support the Build Alternatives, a single MSF for rail cars with accommodations for maintenance and operation work staff and their equipment is required. Two sites are under consideration for this MSF: the Paramount MSF site option and the Bellflower MSF site option. Figure 2-29 identifies the location of proposed MSF site options.

Figure 2-29. Maintenance and Storage Facility Options



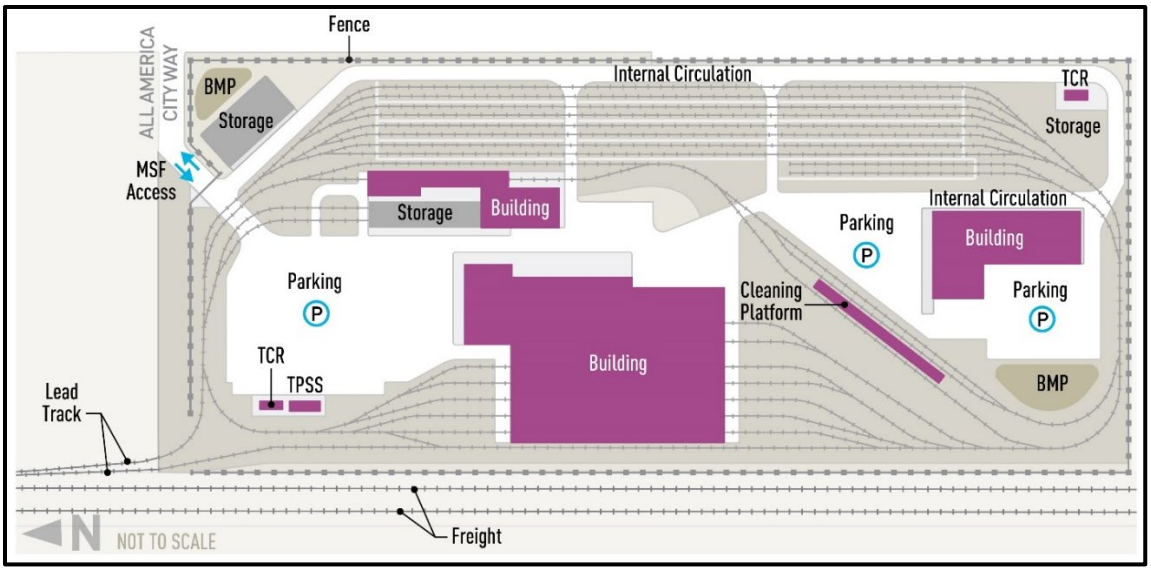
Source: Prepared by WSP on behalf of Metro in 2021

MSFs accommodate daily servicing and cleaning, inspection and repairs, and storage of light rail vehicles (LRVs). Activities may occur in the MSF throughout the day and night depending upon train schedules, workload, and the maintenance requirements. The MSF would have storage tracks, each with sufficient length to store three-car train sets (referred to as a consist) and maintenance-of-way vehicle storage. The facility would include a main shop building with administrative offices, a cleaning platform, a traction power substation (TPSS), employee parking, a vehicle wash facility, a paint and body shop, and other facilities as needed. The yard lead track (i.e., the tracks leading from the mainline to the facility) would have sufficient length for a three-car consist[6].

2.5.3.1 Paramount MSF Site Option

The Paramount MSF site option is a 22-acre rectangular site located in the City of Paramount. The MSF site currently consist of the Paramount Swap Meet, Paramount Drive-in Theatre and its associated parking, and industrial properties. Vehicular access to the proposed site is currently provided from All American City Way. At full capacity, the MSF would be designed to store up to 80 LRVs and provide over 200 parking spaces for MSF staff. Lead tracks[7] to the MSF site option would enter the site along its western edge approximately 0.3 mile south of the Project's mainline track. Figure 2-30 shows the layout.

Figure 2-30. Paramount MSF Site Layout



Source: Prepared by Cityworks Design and WSP in 2021
Notes: BMP = Best Management Practice; MSF = Maintenance and Storage Facility; TCR = Train Control Room; TPSS = Traction Power Substation

2.5.3.2 Bellflower MSF Site Option

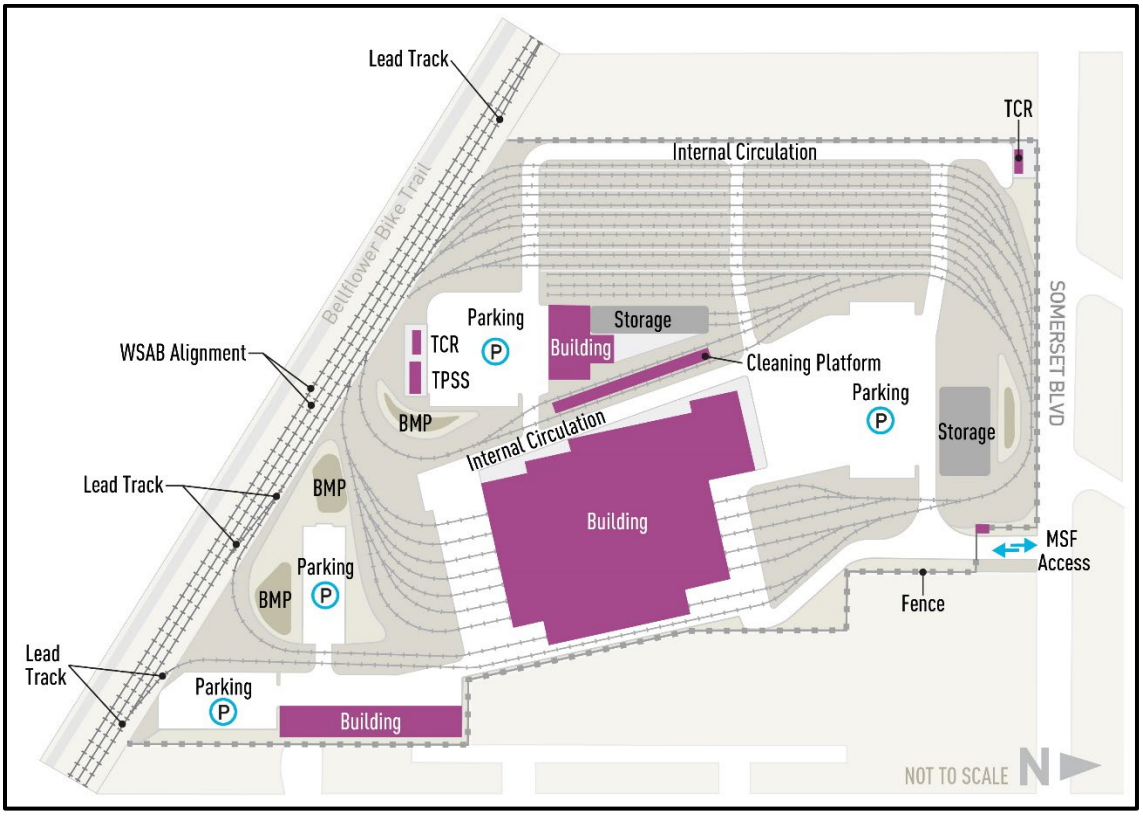
The Bellflower MSF site option is a 21-acre site located in the City of Bellflower. The city-owned site is currently developed with a recreational commercial business (the Hollywood Sports Paintball and Airsoft Park and Bellflower BMX). Vehicular access to the proposed site

[6] Consist refers to multiple train units of cars that are coupled into sets. Passengers can typically move between the consist of train cars.

[7] A lead track is a track that connects an MSF rail yard to the portion of the alignment that provides service to passengers. This track allows an LRV to transition between the alignment for passenger service and the MSF facility for maintenance and/or storage.

is currently provided from Somerset Boulevard. At full capacity, the MSF site option would be designed to store up to 80 LRVs and provide over 200 parking spaces. The MSF site is adjacent to the project alignment, and lead tracks would be constructed within the Metro-owned PEROW. Figure 2-31 shows the layout of the Bellflower MSF site.

Figure 2-31. Bellflower MSF Site Layout



Source: Prepared by Cityworks Design and WSP in 2021
Notes: BMP = Best Management Practice; MSF = Maintenance and Storage Facility; TCR = Train Control Room; TPSS = Traction Power Substation

2.5.4 System Components and Ancillary Facilities

The LRT system components would adhere to the Metro Rail Design Criteria (Metro 2020h), or equivalent design criteria, and would use a similar design as existing Metro LRT lines, such as the Metro E (Expo) Line. The following summarizes the system components and ancillary facilities required for the Project (see Appendix B, *Final Advanced Conceptual Alignment Design* and Appendix C, *West Santa Ana Branch Transit Corridor Project System Components and Ancillary Facilities*, for more detail).

LRT Guideways (at-grade, aerial, underground). The distance between the at-grade LRT track centerlines would be a minimum of 14 feet, and the distance between the nearest realigned freight track centerline and LRT track centerline would be a minimum of 20 feet.

Aerial LRT guideways would be supported by retained fill embankments, columns, or straddle bents. Typical aerial structures would be approximately 35 feet wide with aerial structure columns placed along the edge of the street ROW in approximately 120-foot intervals and in varying intervals due to infrastructure constraints. The aerial guideway spanning over the UPRR ROW would have a minimum vertical clearance of 24 feet over

freight and a minimum of 15 feet over roadways as measured between the bottom of the bridge and the top of the rail.

Underground guideway segments would consist of tracks in two side-by-side parallel tunnels that are approximately 20 feet in diameter with minimum depth of approximately 50 feet and a maximum depth of approximately 100 feet from ground elevation to the top of the tunnel.

Overhead Catenary System (OCS). The OCS electrically powers the LRT through a contact wire suspended above the track, approximately 20 feet above the track, that is supported by poles spaced at an average interval of 150 feet. The catenary poles would be generally located in the center of the project alignment or located on both sides of the tracks in some locations.

Tail Tracks. Tail tracks allow for train storage, reversing direction, and short-lining of service if a pocket track is provided along the alignment.

Crossovers. A track crossover allows a train to reverse direction and use an adjacent track to continue operation.

Cross Passages. Cross passages are short tunnel segments that connects two parallel tunnels. These passages allow emergency access from one tunnel to another. Cross passages for the Project would be approximately 15 feet high and 10 feet wide and would be located approximately every 800 feet along tunnel alignments.

Ventilation Structures. Ventilation structures allow for climate control and emergency ventilation of tunnels and underground stations. These structures would be included within the underground stations and would have ventilation gratings on sidewalks (or other public areas) typically on both sides of all underground stations.

Traction Power Substations. The TPSSs provide power to the OCS and are typically metal prefabricated buildings approximately 15 feet wide by 40 feet long by 15 feet high. Each TPSS site would require an area approximately 80 feet by 45 feet or equivalent in different configurations. Of the 42 TPSS site options, up to 23 TPSS facilities are proposed for the Build Alternatives. See Appendix C, *West Santa Ana Branch Transit Corridor Project System Components and Ancillary Facilities* for a summary of TPSS locations.

Train Control House and Electric Power Switches. The train control house contains signal equipment and electric power switches (contained in metal box-like enclosures) that would transmit electric power from the Los Angeles Department of Water and Power electric grid to the underground traction power and other rail systems.

Radio Towers. Radio towers would be installed along the alignment to support communications between the transmitter and receiver. The primary site radio tower would be 35 to 60 feet in height from ground level, or two 35-foot-tall poles could be substituted. Radio towers located adjacent to an at-grade alignment or in an aerial viaduct alignment would require a 35-foot by 15-foot radio house. For radio towers located adjacent to an underground station, the transmission equipment would be located below ground in an ancillary room. Seven potential radio tower sites are proposed, in which only two would be constructed. See Appendix C, *West Santa Ana Branch Transit Corridor Project System Components and Ancillary Facilities* for a summary of the radio tower locations.

Grade Crossings. A grade crossing can be either at-grade or a physical separation between the railroad tracks and a roadway and consists of roadway crossings, freeway crossings, railroad crossings, and waterway crossings. Typical at-grade crossings would include the following

features, as applicable: roadway crossing gates, pedestrian crossing gates, new sidewalks, ADA-compliant ramps, sidewalks, bulb-outs, raised medians, and/or other intersection amenities. Grade separations for the Project are summarized in Table 2.3. See Appendix C, *West Santa Ana Branch Transit Corridor Project System Components and Ancillary Facilities* for a summary of the grade crossing locations.

The alignment would cross the following existing concrete-lined flood channels adjacent to existing railroad bridge crossings:

- **LA River Channel.** New LRT bridge to be constructed east of the existing LA River truss bridge to cross the LA River; existing truss bridge would remain unaltered.
- **Rio Hondo Channel.** New LRT bridge to be constructed next to the existing bridge; existing bridge would remain operational.
- **San Gabriel Channel.** New LRT bridge would be reconstructed in the same location as the existing abandoned freight bridge; existing abandoned freight bridge would be demolished.

Freight Track Realignment. The Build Alternatives would be located parallel to active freight track(s) in portions of the UPRR-owned Wilmington Branch ROW (between approximately Martin Luther King, Jr. Boulevard along Long Beach Avenue to Slauson Avenue), UPRR-owned La Habra Branch ROW (between Slauson Avenue along Randolph Street to Salt Lake Avenue), Ports of Los Angeles and Long Beach-owned San Pedro Subdivision ROW (between Randolph Street to approximately Paramount Boulevard), and the Metro-owned PEROW (between its intersection with the San Pedro Subdivision ROW from approximately Paramount Boulevard to Somerset Street). Along the Wilmington Branch ROW, the LRT would be in an aerial viaduct that would overhang the ROW, thereby requiring an aerial easement. The Build Alternatives would require the following realignments of freight track(s) to accommodate the alignment and maintain existing freight operations:

- Relocation to the south of the project alignment within the La Habra Branch ROW
- Relocation to the west of the project alignment within the San Pedro Subdivision ROW
- Relocation to the north of the project alignment within Metro-owned PEROW

The Project would provide a minimum 20-foot clearance between the track centerlines of the closest LRT and freight track. Table 2.5 details the length of freight relocation by Build Alternative. Figure 2-32 identifies where the freight relocations would occur.

Table 2.5. Freight Track Realignment

Rail ROW	Shared ROW with Freight (miles)	Freight Relocation by Build Alternatives (miles)			
		Alternative 1	Alternative 2	Alternative 3	Alternative 4
Wilmington Branch	1.8	0.1	0.1	0.1	—
La Habra Branch	2.3	2.0	2.0	2.0	—
San Pedro Subdivision	6.1	5.4	5.4	5.4	0.7
Metro-owned PEROW	1.2	0.6	0.6	0.6	0.6
Total	**11.4**	**8.1**	**8.1**	8.1	1.3

Source: Prepared by WSP on behalf of Metro in 2021
Notes: PEROW = Pacific Electric Right-of-Way; ROW = right-of-way

Figure 2-32 Existing Rail Right-of-Way Ownership



Source: Prepared on behalf of Metro in 2021

Pedestrian Facilities. Pedestrian facilities include tunnels, bridges, and undercrossings.

- Pedestrian Tunnels
  - Alternative 1 (LAUS Forecourt Station) to connect with Metro B (Red) and D (Purple) Lines
  - Alternative 1 Design Option 1 (MWD) to connect with Metro B (Red) and D (Purple) Lines
  - Design Option 2 to connect WSAB station with the Regional Connector in Little Tokyo
  - Alternative 2 to connect the WSAB 7th St/Metro Center Station and the existing 7th St/Metro Center Station
- Pedestrian Bridges
  - At Slauson/A Line Station (Alternatives 1, 2, and 3) to connect between the WSAB station and the Metro A (Blue) Line platform
  - At I-105/C Line Station (Alternatives 1, 2, 3, and 4), reconstruct the Arthur Avenue pedestrian bridge crossing I-105 to accommodate an infill Metro C (Green) Line Station
- Pedestrian Access
  - Access between the WSAB I-105/C Line Station and the proposed infill I-105/C Line Station would be provided via a pedestrian walkway on the WSAB LRT bridge over the freeway to vertical circulation elements connecting to the proposed infill station
  - For I-105/C Line Station (Alternatives 1, 2, 3, and 4), reconstruct the Façade Avenue bridge over the I-105 freeway to accommodate construction of the new infill Metro C (Green) Line Station
  - Construct pedestrian undercrossing at Paramount High School to connect the existing athletic fields at Paramount Park to Paramount High School

Bicycle Facilities. A portion of the Bellflower Bike Trail, a Class I bike path along the PEROW between Paramount Park and Somerset Boulevard in the City of Paramount, would be altered to accommodate the Build Alternatives. The bike trail between Somerset Boulevard and Lakewood Boulevard would be relocated from the south side to the north side of the ROW to accommodate the LRT alignment.

Bike hubs are proposed at station locations near bikeways for access to and from local destinations based on the demand. The bike hubs may include bicycle racks, lockers, and secure bike parking in addition to on-call mechanics and access to on-site Metro staff.

Metro Public Art. The Project would include the integration of public art at stations and related transit facilities. Metro would collaborate with the surrounding neighborhoods to create an aesthetic design and incorporate public art to promote a sense of place in the surrounding neighborhoods.

2.5.5 Rail Operating Characteristics

The operating hours and schedule assumptions for the Project were developed based on typical Metro LRT operating characteristics. The Build Alternatives would operate approximately 22 hours daily, seven days per week, from about 4:00 a.m. to 2:00 a.m.

Table 2.6 summarizes the proposed headways for the Build Alternatives. The Build Alternatives would operate with weekday peak headways of 5 minutes and would have 10-minute headways during the off-peak hours. Headways specified for other periods and weekends are modeled after the Metro A (Blue) Line schedule because it is the nearest and somewhat parallel LRT line to the WSAB. Therefore, weekday early evening headways of 10 minutes are set at the same headway as the base period, tapering to 20 minutes during the late evening, night, and early morning time periods. For weekends, the Build Alternatives would operate with 10-minute headways during most of the day, tapering to 20 minutes for the late evening, night, and early morning periods.

Table 2.6. Proposed Build Alternatives Headways by Time Period

Day of Week	Headway (in minutes)						
	Early	AM Peak[1]	Base	PM Peak[1]	Early Eve	Late Eve	Night
Mon – Fri	15	2.5 – 5	10	2.5 – 5	10	20	20
Sat/Sun	20	10	10	10	10	20	20

Source: Prepared on behalf of Metro in 2021
Note: [1] 2.5-minute headways are proposed for Alternative 2 during one hour of weekday peak periods for the section between the 7th St/Metro Center Station and the Slauson/A Line Station.

To accommodate ridership projections, only Alternative 2 would require additional service between the proposed 7th St/Metro Center Station and the Slauson/A Line Station, operating at 2.5-minute headways, during one hour of the weekday peak periods. Because these trains would be scheduled in between the regular 5-minute peak-period headways, this would result in selected 2.5-minute peak-hour headways for this segment only. The Draft EIS/EIR evaluates this operation.

Table 2.7 shows proposed train consists (cars per train) for the Build Alternatives. Three-car train consists are assumed for weekdays and one-car trains are assumed during late evening and night service. Two-car train consists are assumed for weekends and holidays, with one-car trains operating during late evening and night service.

Table 2.7. Proposed Build Alternatives Train Consist by Time Period

Day of Week	Train Consist[1] (Cars per Train)						
	Early	AM Peak	Base	PM Peak	Early Eve	Late Eve	Night
Mon – Fri	3	3	3	3	3	2	2
Sat/Sun	2	2	2	2	2	2	2

Source: Prepared on behalf of Metro in 2021
Note: [1] Consist refers to multiple train units of cars that are coupled into sets. Passengers can typically move between the consist of train cars.

2.5.6 Construction Activities

Major construction activities of the Project would involve the following:

- Preparation and demolition of structures on construction support sites
- Support of excavation
- Excavation for tunneling
- Tunnel construction
- Subterranean station excavation
- Freight relocation
- Utility relocation
- At-grade and aerial guideway system construction, including rail systems components
- Subterranean, at-grade, and aerial station construction
- Street-modifications
- Demolition of existing rail, road, and/or pedestrian bridges and reconstruction of replacement bridges
- Construction of parking facilities
- Construction of an MSF

All construction activities would typically be located within the public and/or rail ROW, or on private property that would be acquired for project components such as parking facilities, the MSF, underground station entrances, or TPSS sites. Proposed construction staging and laydown areas would also be located either within the public and/or rail ROW or on private property acquisitions.

It is anticipated that several construction activities identified would occur simultaneously along the project alignment, accommodating activities requiring lengthy construction times such as utility relocation, tunnels, below ground stations, and aerial segments. Simultaneous construction may also reduce the overall construction duration. Working hours of construction would vary to meet the type of work being performed and to meet local ordinance restrictions. Nighttime and weekend construction may be required to mitigate potential impacts to the commute period and traffic congestion, and to accommodate construction scheduling for specific work activities. Such nighttime and weekend construction activities may include, but are not limited to, construction within freeway ROW, tunneling operations, trackwork construction, grade separation construction, catenary wire installation, and construction of other cut-and-cover sections.

Construction activities are anticipated to occur over the course of approximately six years, commencing in 2022 and ending in 2028. Revenue service is expected to begin in 2028. Further information on construction means and methods and the locations of construction staging areas is provided in Chapter 4, Section 4.19 Construction Impacts of this Draft EIS/EIR.

2.5.7 Anticipated Permits, Discretionary Actions, and Agency Approvals

The Build Alternatives would require various environmental permits and/or approvals as summarized in Table 2.8 for each Build Alternative.

Table 2.8 Permits and Approvals

	Build Alternatives	Agency/Jurisdiction	Permit/Approval Required	Anticipated Phase
Federal Agencies	1, 2, 3, 4	Federal Transit Administration	Approval of EIS as Lead Agency under NEPA	End of Environmental Phase
	1, 2, 3, 4	United States Army Corps of Engineers	Section 404	Construction Phase; Final Design
	1, 2, 3, 4		Section 408[1]	Construction Phase; Final Design
	1, 2, 3, 4		Section 10 Bridge Permit (if required)	Construction Phase; Final Design
State Agencies	1, 2, 3, 4	State Historic Preservation Officer	Section 106 consultation and concurrence	Environmental Phase; prior to Construction Phase
	1, 2, 3, 4	California Department of Fish and Wildlife	1602 Streambed Alteration Agreement	Construction Phase; Final Design
		California Department of Transportation	Permits approvals for encroachment on several freeways: I-101 (Alt.1); I-10 (Alt. 2); I-710, I-105, SR-91, I-605 (Alt. 1, 2, 3, 4)	Construction Phase; Final Design
	1, 2, 3, 4	State Department of Toxic Substance Control	Hazardous materials cleanup	Construction Phase
	1, 2, 3, 4	State Water Resources Control Board	NPDES Dewatering Permit	Construction Phase; Final Design
	1, 2, 3, 4		LA County MS4 NPDES Package	Construction Phase; Final Design
	1, 2, 3, 4		Industrial General Permit	Construction Phase; Final Design
	1, 2, 3, 4		Construction General Permit and SWPPP	Construction Phase; Final Design
	1, 2, 3, 4	California Public Utilities Commission	Grade Separations, Crossings, State Safety Oversight	Construction Phase; Final Design; End of Construction, Testing and Start Up

	Build Alternatives	Agency/Jurisdiction	Permit/Approval Required	Anticipated Phase
Regional Jurisdiction	1, 2, 3, 4	Los Angeles County Metropolitan Transportation Authority Board of Directors	Certification of the EIR, adoption of Findings and Statement of Overriding Considerations, adoption of the Mitigation Monitoring and Reporting Program as Lead Agency under CEQA	End of Environmental Phase
	1, 2, 3, 4	Regional Water Quality Control Boards	Section 401	Construction Phase; Final Design
	1, 2, 3, 4	South Coast Air Quality Management District	Consultation to identify best practices for construction emissions. Clean Air Act Title V permit (if required)	Construction Phase
	1, 2, 3, 4	Ports of Long Beach and Los Angeles – San Pedro Subdivision	Real estate transaction; Approval of track relocations	Construction Phase; Final Design
	1, 2, 3, 4	BNSF Railroad	Approval of track relocations	Construction Phase; Final Design
	1, 2, 3, 4	Union Pacific Railroad	Approval of track relocations; Real estate transaction	Construction Phase; Final Design
	1, 2, 3, 4	Southern California Edison	Permits and real estate transaction	Construction Phase; Final Design
	1, 2, 3, 4	Los Angeles County Flood Control District	Permits and real estate transaction	Construction Phase; Final Design
	1, 2, 3, 4	Los Angeles County Department of Public Works	Permits	Construction Phase; Final Design

	Build Alternatives	Agency/Jurisdiction	Permit/Approval Required	Anticipated Phase
Local Jurisdictions	1, 2, 3, 4	Los Angeles Department of Transportation	Permits and/or discretionary actions required	Environmental Phase; prior to Construction Phase
	1, 2, 3, 4	Los Angeles Department of Water and Power	Permits and real estate transaction	Construction Phase; Final Design
	1, 2, 3, 4	Los Angeles Fire Department	Discretionary actions required	Environmental Phase; prior to Construction Phase
	1, 2, 3	City of Los Angeles County of Los Angeles City of Huntington Park City of Bell City of Cudahy City of Vernon	Permits and/or discretionary actions required	Environmental Phase; prior to Construction Phase
	1, 2, 3, 4	City of South Gate City of Downey City of Paramount City of Bellflower City of Artesia City of Cerritos	Permits and/or discretionary actions required	Environmental Phase; prior to Construction Phase

Source: Prepared on behalf of Metro by WSP in 2021
Notes: [1] Maintained by Los Angeles County Flood Control District
CEQA = California Environmental Quality Act; EIR = environmental impact report; EIS = environmental impact statement; MS4 = municipal separate storm sewer system; NEPA = National Environmental Policy Act; NPDES = National Pollutant Discharge Elimination System; SWPPP = Stormwater Pollution Prevention Plan

3 TRANSPORTATION

This chapter presents the existing transportation conditions in the Study Area and potential impacts of the Build Alternatives on the multimodal transportation system. Specifically, the following components of the transportation system are included: traffic on the freeway system, local roads, and intersections; transit; pedestrian and bicycle facilities (referred to as active transportation); and parking. The Study Area for this analysis includes the transportation facilities near the proposed light rail transit (LRT) tracks and stations.

Detailed information regarding the technical analyses is provided in the *West Santa Ana Branch Transit Corridor Project Final Transportation Impact Analysis Report* (Los Angeles Metropolitan Transportation Authority [Metro] 2021s), included as Appendix D of this Draft Environmental Impact Statement/Environmental Impact Report).

Based on the current impacts of the recent social response to the COVID-19 virus and the resulting decline in travel demand, at this time, it is not possible to predict future changes to the project Purpose and Need, schedule, and traffic operation impacts that may result from a COVID-19 response of an unpredictable nature and length. Should significant changes in the planning assumptions, project schedule, project scope, or surrounding project environment result because of a prolonged COVID-19 response, the Federal Transit Administration (FTA) and Metro will consider additional environmental evaluation and public input consistent with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

3.1 Regulatory Setting

This section summarizes federal, state, and regional/local regulations applicable to the transportation system assessment for the West Santa Ana Branch (WSAB) Transit Corridor Project.

3.1.1 Federal

In July 1999, the U.S. Department of Transportation (USDOT) issued an Accessibility Policy Statement pledging a fully accessible multimodal transportation system. Accessibility in federally assisted programs is governed by the USDOT regulations (49 Code of Federal Regulations Part 27) implementing Section 504 of the Rehabilitation Act (29 United States Code 794). The Federal Highway Administration has enacted regulations for the implementation of the Americans with Disabilities Act (ADA), including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the ADA requirements to federal-aid projects, including transportation enhancement activities. NEPA does not include specific guidance or direction with respect to the evaluation of alternatives and their relative effects on traffic and the transportation system. Guidance information was reviewed from FTA publications on transportation impact assessments on transit operation, traffic circulation, and parking. In addition, the Federal Highway Administration guidance regarding safe accommodation of pedestrians and bicyclists during the development of federal-aid highway projects (see 23 Code of Federal Regulations 652) was considered. This guidance further directs that the special needs of the elderly and persons with disabilities must be considered in all federal-aid projects that include pedestrian facilities.

3.1.2 State

The CEQA of 1969, as amended, established environmental guidelines for the analysis and the threshold-based determinations regarding potentially significant impacts. CEQA provides general guidance regarding transportation impacts, including assessing vehicle miles traveled (VMT). The applicable significance criteria are developed using guidance provided in Appendix G of the *CEQA Guidelines* (California Code of Regulations Title 14 §15000 et seq.) and relevant local policies are discussed in Section 3.1.3 of this chapter.

Assembly Bill 1358, the Complete Streets Act, requires cities and counties to include Complete Streets policies as part of their general plans so that roadways are designed to safely accommodate all users, including bicyclists, pedestrians, transit riders, children, older people, and people with disabilities, as well as motorists. Any substantive revision of the circulation element in the general plan of a California local government will include Complete Streets provisions.

Senate Bill 743, which was codified in Public Resources Code Section 21099, required the California Office of Planning and Research (OPR) to establish new *CEQA Guidelines* "for determining the significance of transportation impacts of projects within transit priority areas. Those criteria shall promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." The new criteria were required to move away from vehicle delay and level-of-service (LOS) and move toward more multimodal concepts "that may include, but are not limited to, vehicle miles traveled, vehicle miles traveled per capita, automobile trip generation rates, or automobile trips generated."

In 2018, Section 15064.3 was added to the *CEQA Guidelines* to reflect the provisions of Senate Bill 743. The section addresses both land use and transportation projects, and broadly describes the methodology, including the potential for qualitative analysis, used to assess VMT. The overall guidance for transportation projects is that they are presumed to have a less-than-significant project impact if they reduce VMT (*CEQA Guidelines*, §15064.3(b)(2)). Agencies are given "broad discretion" to select the methodology for analysis, or even apply a qualitative approach. As described in Section 1.5.6 of the Transportation Impact Analysis Report (Appendix D), the analysis and impact determinations have used a VMT-based approach.

The OPR prepared a 2018 *Technical Advisory on Evaluating Transportation Impacts in CEQA*. The guidance addresses a variety of projects, with the recognition that the approach for evaluating impacts is necessarily project-specific. For transit projects, the guidance document notes that "transit and active transportation projects generally reduce VMT and therefore are presumed to cause a less-than-significant impact on transportation" (OPR 2018). However, it also notes Code Section 21099, which dictates that the implementation of VMT analysis "does not relieve a public agency of the requirement to analyze… any other [potentially significant] impact associated with transportation impacts." OPR's guidance has been implemented in this Draft EIS/EIR by conducting CEQA analysis consistent with the December CEQA guidelines and focusing on a VMT-based assessment of potential impacts.

The California Department of Transportation (Caltrans) has jurisdiction over the construction and maintenance of state highways and freeways in the Study Area. These state highways and freeways include Interstate (I-) 5, I-10, I-105, I-605, I-710, State Route (SR)-91, and U.S. (US-) Highway 101. Caltrans also coordinates several statewide transportation programs that directly impact the circulation system in the region. These include the State

Transportation Improvement Program, the Congestion and Mitigation and Air Quality Program, and the Traffic Congestion Relief Program.

3.1.3 Regional/Local

Relevant planning documents include regional transportation plans prepared by the Southern California Association of Governments (SCAG) and Metro, as well as general plans and specific plans for each affected jurisdiction in the Study Area. The general plans, circulation elements, and corresponding specific plans for Los Angeles (LA) County and the cities in the Study Area provide the local regulatory framework and policies related to transportation and traffic issues.

The *Regional Transportation Improvement Plan* (RTIP) is a capital listing of all transportation projects proposed over a six-year period for the SCAG region. The SCAG region encompasses six counties (i.e., Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura) and 191 cities. The projects include highway improvements; transit, rail, and bus facilities; high-occupancy vehicle lanes; signal synchronization; intersection improvements; and freeway ramps. In the SCAG region, an RTIP update is produced every other year on an even-year cycle. The RTIP is prepared to implement projects and programs listed in the *Regional Transportation Plan* (RTP) and developed to comply with state and federal requirements. Projects that are anticipated to receive federal funding or are subject to a federally required action are added to the Federal Transportation Improvement Program. This includes regionally significant transportation projects where approvals from federal funding agencies are required, regardless of funding sources. County transportation commissions propose county projects from city and local submittals using the current RTP policies, programs, and projects as a guide. Locally prioritized project lists are forwarded to SCAG for review. From this list, SCAG develops the RTIP based on consistency with the current RTP, inter-county connectivity, financial constraints, and air quality conformity satisfaction. Identified RTIP/SCAG roadway improvements were assumed in the analysis and modeling of future scenarios.

Each jurisdiction has different approaches for identifying transportation (circulation) deficiencies. Discussion of the coordinated and consistent approach for analysis across these jurisdictions is included in Section 3.2.

3.2 Methodology

This section provides the methodology, impact criteria, and thresholds used to determine impacts to the transportation system resulting from the Build Alternatives, including the design options and maintenance and storage facility (MSF) site options. To provide for a comprehensive assessment of potential traffic, transportation, and mobility effects, and impacts under NEPA and CEQA, the methodology described in Section 3.1 was established. Section 3.2.6 describes the focused analysis that was applied to the CEQA evaluation. A more detailed discussion on the methodology is provided in Section 1.5 of the Transportation Impact Analysis Report (Appendix D).

Table 3.1 describes the types of potential impacts and the proposed approach for assessing these impacts. More details on the approach for assessing impacts for each element are provided in Sections 3.2.1 through 3.2.7.

Table 3.1. Transportation Analysis Approach

Transportation Element	Potential Impact	Analysis Approach
At-grade crossings (see Section 3.2.1 for more details)	Operational impacts due to new at-grade crossings: affects intersection operations where tracks are through/adjacent to existing intersections and where queues from mid-block rail crossings build up when gates are down.	Assess intersection operations with gate down time, new signal timing, and changes in geometry. Estimate queues from mid-block crossings and their effect on nearby intersections.
Road network changes (see Section 3.2.1 for more details)	Street/lane closures or roadway realignments due to new crossings or grade separation.	Assess intersection operations due to potentially rerouted traffic; qualitative assessment of impacts associated with changes in access.
Regional travel (see Section 3.2.5 for more details)	Changes to VMT or VHT.	Evaluate VMT/VHT changes at the regional, county, and Study Area levels using the regional travel demand model.
Transit station and MSF travel demand (see Section 3.2.2 for more details)	Additional traffic demand and congestion on local roads near new stations and MSF.	Assess intersection operations using projected future traffic volumes for the No Build and Build Alternatives.
Bus-rail interface (see Section 3.2.2 for more details)	Changes to bus access at rail stations, including impacts to existing routes.	Assess changes to local service and utilization.
Bike and pedestrian (see Section 3.2.3 for more details)	Access and operations for bike/pedestrian facilities.	Qualitative.
Parking (see Section 3.2.4 for more details)	On-street parking impacts due to physical changes to existing on- and off-street parking to accommodate the proposed LRT alignment, stations, and other project elements (e.g., TPSSs). Spillover parking resulting from unmet transit parking demand at proposed stations where transit parking would be provided. Indirect effects, including traffic circulation/delay and vehicle emissions.	Comparison of remaining parking supply against surveyed parking utilization or parking demand.

Transportation Element	Potential Impact	Analysis Approach
Construction traffic/transit/ active transportation/parking and underground or overhead rail lines (see Section 3.2.7 for more details)	Workers and equipment accessing the construction site would increase traffic and require parking. Transportation system effects associated with aerial (columns) or underground (cut and cover) construction of rail lines could result in lane or roadway closures, which would affect vehicular traffic, and transit services. Construction could also result in closure of bicycle and pedestrian facilities.	Qualitative, with high-level descriptions of number of workers relative to total traffic volume, and descriptions of Study Area and affected cross-sections. Discuss temporary changes to traffic circulation, haul truck routes, parking, and transit detours during construction.
Freight track realignment (see Section 3.2.7)	Realignment of freight tracks due to the new LRT tracks.	Qualitative, with high-level descriptions of the freight tracks realignment.

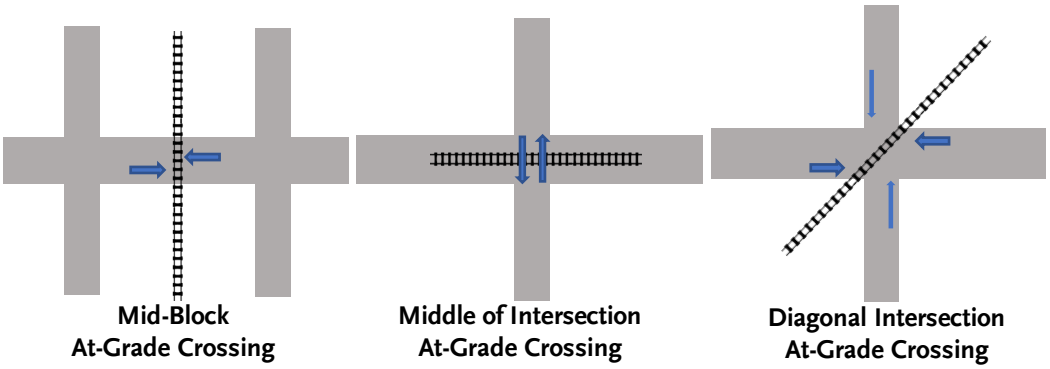
Source: Metro 2021s
Notes: LRT = light rail transit; MSF = maintenance and storage facility; TPSS = traction power substation; VHT = vehicle hours traveled; VMT = vehicle miles traveled

The following subsections provide details on the methodology for each element of the transportation system.

3.2.1 Analysis Approach: Traffic Operations

At-grade rail crossings (where a street crosses railroad tracks at the same level) have the potential for affecting traffic operations on arterials and local streets. New crossings would be located near or at existing intersections. When the train crossing gates are down, vehicles wanting to cross the tracks would be forced to stop, increasing delay for vehicles and the potential for queues to form, affecting adjacent and nearby intersections. Freight trains currently operate through some existing at-grade crossings; however, these trains were not incorporated into the traffic analysis due to their infrequent occurrence. Figure 3-1 illustrates three common configurations of at-grade crossings and the effects on intersections.

Figure 3-1. At-Grade Crossing Configurations at or near Intersections



Source: Metro 2021s

The proposed horizon year (2042)[1] operating plans for the Build Alternatives assume 12 train crossings per direction in the peak hour, equating to 24 total train crossings per hour for both directions. With this schedule, a train from each direction would cross at each at-grade crossing every 5 minutes, so there would be a train crossing from either direction every 2.5 minutes. Alternative 2 is the only alternative to have 2.5-minute headways proposed during 1 hour of weekday peak periods for the section between the 7th St/Metro Center Station and the Slauson/A Line Station. However, the section is either aerial or underground. Per Metro's grade crossing safety policy, gate down times are determined based on the train crossing configuration. Specifically, for mid-block train crossings, gates would be down 45 seconds. For middle or diagonal intersection train crossings, gates would be down 30 seconds.

There are hundreds of signalized intersections, and even more unsignalized intersections, within the Study Area. The focus of this impact analysis is on those intersections that could be affected by the Project, referred to as the Affected Area for traffic operations. A preliminary screening was conducted to determine the key intersections where impacts could occur.

The screening process assessed the intersections in the Study Area in terms of potential effects based on location (proximity to a rail crossing and/or station) and traffic volume to identify the intersections within the Affected Area for traffic operations. Assessments were based on field reviews, preliminary engineering plans, and professional judgment. The assessments included:

- The potential effects at each rail crossing, which would be used to determine the potential impact to the surrounding intersections. The trains would result in vehicle queues and the potential to disrupt traffic operations at nearby intersections.
- The potential effects from stations, where high demand would result in higher traffic volumes from station trips.
- Proximity to a rail crossing and/or station.
- Overall traffic volumes (intersections with higher volumes are more likely to have an impact).

The specific steps for the traffic analysis of at-grade crossings are described below; these steps also apply to the traffic analysis conducted for intersections that were in proximity to roadway changes and transit stations (described later in this section and in Section 3.2.2, respectively):

- **Assess existing operations:** The evaluation of existing operations starts by considering geometry, traffic volumes, and signal timing. The Synchro software is used to evaluate traffic operations using two performance measures (Synchro is a macroscopic traffic operations analysis and optimization software application used to measure intersection performance):
  - LOS based on average delay per vehicle in the peak hours (further information on LOS is discussed later in this section).
  - Vehicle queue lengths vary with each signal cycle. 95th percentile queues are among the longest—the queues that are expected in only 1 out of 20 cycles. Evaluations were conducted for the AM and PM peak hour on typical weekdays, consistent with the traffic volumes collected in the field.

[1] 2042 is the horizon year based on FTA standard practice for a 25-year planning horizon.

- **Develop Future No Build traffic volumes:** Future year 2042 traffic volumes were derived by applying growth rates obtained from the Metro Travel Demand Model (adapted from SCAG 2016a) to traffic volumes collected in late 2016 and throughout 2017 for the Project. Traffic signal timing from existing conditions were retained, with updated times for the green signal for each intersection turning movement. The times were developed using the traffic signal timing optimization function from Synchro, which is consistent with how traffic signals operate in the field.
- **Evaluate No Build traffic operations at each intersection:** Performance measures include LOS and 95th percentile queues.
- **Project Future Build traffic volumes:** The new LRT could increase or decrease station area traffic volumes for the following reasons:
  - Traffic volumes could decrease because of a shift from automobile to transit. Because mode shifts occur at a regional level, to be conservative, no changes were made to traffic volumes due to increased transit use for local intersection analysis.
  - Traffic volumes could increase or decrease because of changes to the local road network to accommodate new train service (e.g., where tracks would conflict with existing streets, converting a two-way street to a one-way street). More details on the types of road network changes are provided later in this section.
  - Traffic volumes could increase because of new park-and-ride or kiss-and-ride (i.e., passenger drop-off) facilities at proposed stations. See Section 3.2.2 for more details.
- **Evaluate Build traffic operations at each intersection:** The evaluation considers changes to traffic volumes (as described in the bullet above), roadway geometry, and performance measures, which include LOS and 95th percentile queues.
- **Assess impacts:** Section 3.1.1 discusses impact criteria when a degradation in LOS associated with operation of the Build Alternative is deemed an impact. Section 3.3.3 includes a discussion of both LOS/delay and queue impacts.

Roadway network changes would be needed to accommodate the Project. These changes include closures of entire street segments, reductions in the number of lanes, closures of nonsignalized railroad crossings, and/or prohibition of left turns for trucks at select intersections where such movements are currently permitted. Closures or reconfigurations may be due to new at-grade crossings or columns that support the aerial alignment and stations. These are described in Table 3.51. A quantitative impact assessment was conducted using LOS analysis, as described in the next paragraph and Table 3.2. In addition, qualitative assessments of impacts associated with changes in access are also provided (e.g., assessment of the effects on traffic circulation and lane configuration changes).

LOS is the most common measure used to evaluate roadway performance, but other measures can be used to assess the wide range of roadway types, time periods, and modes that use each facility. The Transportation Impact Analysis Report (Appendix D) includes a detailed assessment of the potential ways to evaluate performance on the roadway network. Intersection LOS was determined to be the most appropriate methodology.

LOS is a standard means of evaluating operations at intersections and other roadway elements. LOS analysis is based on delay at the intersections and requires evaluation of traffic volumes, geometry, and traffic control (e.g., stop signs or traffic signals). Intersection LOS is

determined using the analysis methodologies described in the *Highway Capacity Manual* (Transportation Research Board [TRB] 2010). It is based on six defined levels (A through F), which describe conditions ranging from "ideal" to "worst." Table 3.2 summarizes the *Highway Capacity Manual* intersection LOS criteria.

The Study Area is comprised of multiple jurisdictions. Therefore, methodologies were obtained from cities' general plans or transportation/traffic study guidelines in an effort to determine a threshold for adverse effects. The results of this review, including the evaluation measures and impact criteria, are included in Table 1.3 in the Transportation Impact Analysis Report (Appendix D) (Metro 2021s). A review of traffic studies was completed for jurisdictions within the Study Area was undertaken to determine what LOS thresholds have been used for multimodal projects. In general, the specific thresholds and criteria used varied. The review determined that there is not one consistent methodology, impact determination, and LOS threshold in all the jurisdictions. Therefore, to provide a consistent approach in determining impacts throughout the Affected Area for traffic operations, Los Angeles Department of Transportation's (LADOT) 2016 *Transportation Impact Study Guidelines* (LADOT 2016) were used for the traffic analyses for all Build Alternatives and the MSF site options. An adverse impact was identified at an intersection if the following occurred with implementation of a Build Alternative:

- The intersection has a LOS of C and the Build Alternative would increase average delay by 6.0 or more seconds over the No Build Alternative.
- The intersection has a LOS of D and the Build Alternative would increase average delay by 4.0 or more seconds over the No Build Alternative.
- The intersection has a LOS of E or F and the Build Alternative would increase average delay by 2.5 or more seconds over the No Build Alternative.

Table 3.2. Intersection Level-of-Service Criteria for Signalized, All-Way Stop, and Two-Way Stop Intersections

Level-of-Service	Description of Operation	Signalized Intersection Delay (seconds/vehicle)	All-Way Stop or Two-Way Stop Intersection Delay (seconds/vehicle)
A	Describes primarily free-flow conditions at average travel speeds. Vehicles are seldom impeded in their ability to maneuver in the traffic stream. Delays at intersections are minimal.	⩽ 10	0-10
B	Represents reasonably unimpeded operations at average travel speeds. The ability to maneuver in the traffic stream is slightly restricted and delays are not bothersome.	> 10-20	> 10-15
C	Represents stable operations; however, ability to change lanes and maneuver may be more restricted than LOS B and longer queues are experienced at intersections.	> 20-35	> 15-25
D	Congestion occurs and a small change in volumes increases delays substantially.	> 35-55	> 25-35

Level-of-Service	Description of Operation	Signalized Intersection Delay (seconds/vehicle)	All-Way Stop or Two-Way Stop Intersection Delay (seconds/vehicle)
E	Severe congestion occurs with extensive delays and low travel speeds.	> 55-80	> 35-50
F	Characterizes arterial flow at extremely low speeds and severe intersection congestion, with long delays and extensive queuing.	> 80	> 50

Source: TRB 2010
Notes: > = greater than; ≤ = less than or equal to; LOS = level-of-service

There may also be potential impacts related to queuing, particularly at intersections near new at-grade crossings, as described in Section 3.2.1. There are no formal criteria for evaluating queuing, especially because queues would be highly variable depending on how frequently trains cross an at-grade crossing. Therefore, the assessment of queuing impacts identified locations where the projected 95th percentile queue would affect intersection operations, typically resulting when a queue at a crossing extends back to an adjacent intersection.

The evaluation for MSF site options focused on the number of vehicle trips the facility generated. Due the uniqueness of these facilities, the trip rate from an existing Metro LRT maintenance facility was used to determine the trips the maintenance facilities would generate. The number of trips was used to determine whether an intersection performance analysis (with and without the MSF) needed to be conducted. The LADOT 2016 *Transportation Impact Study Guidelines* (LADOT 2016), which are the guidelines referenced for the purposes of NEPA traffic analysis as further discussed on the Transportation Impact Analysis Report (Appendix D), set the threshold for new developments at 43 vehicle trips during the AM/PM peak hours. The Project crosses multiple jurisdictions, and even though each has their own guidelines, not all guidelines cite specific impact thresholds for assessment of impacts at intersections. Therefore, the methodology was applied to maintain a consistent approach for the Study Area. The qualitative assessment of the surrounding area was conducted to consider the nearby local street network, vehicle traffic activity, and truck routes to the facility.

3.2.2 Analysis Approach: Transit

Increases in local traffic would be expected to occur around proposed transit stations. The Metro Travel Demand Model (adapted from SCAG 2016a) provided projections of the number of new vehicle trips associated with these stations. The broader Study Area was analyzed, because transit changes affect transit service to a greater area than the Affected Area (typically defined as the immediately adjacent area along the alignment). Particularly at the south end of the Study Area, there would be an increase in trips associated with park-and-ride and kiss-and-ride (passenger pick-up/drop-off) activities because 5 of the 12 proposed transit stations would have available onsite parking. These trips were distributed to the local roadway network based on knowledge of local traffic patterns and professional judgment.

The analysis of the bus-rail interface focused on the interaction between bus services provided by Metro and other transit service operators and the new LRT stations. As described in Section 3.3.5, the Study Area currently includes a wide range of transit services. Ridership

would likely change on Study Area bus routes, particularly those reconfigured to provide feeder services to the proposed stations.

The evaluation included quantitative information regarding transit service, as available from the Metro Travel Demand Model (adapted from SCAG 2016a):

- Number of trips by feeder buses
- Passenger load on other transit routes in the Study Area
- Total passenger miles on buses in the Study Area

Other potential impacts were determined qualitatively.

3.2.3 Analysis Approach: Active Transportation

The evaluation for nonmotorized (active – bicycle and pedestrian) transportation focused on station and overall access for bicyclists and pedestrians. The broader Study Area was analyzed to best capture how any adjustments made by Build Alternatives to active transportation facilities affect the existing and planned active transportation facility networks. Specific project feature improvements for nonmotorized transportation facilities (e.g., sidewalks) associated with the Build Alternatives were identified and described. Most of these improvements would be beneficial for bicyclists and pedestrians. Potential adverse impacts may include the following:

- An increase in traffic on roadways with existing bike facilities
- Elimination of bicycle lanes or routes, or sidewalks

3.2.4 Analysis Approach: Parking

Potential parking impacts include consequences of, or impacts from, changes in the supply of on- and off- street parking, and changes in parking demand from transit users. Indirect traffic and air quality impacts can also occur as a result of insufficient parking resulting in vehicles circling while looking for parking.

Effects to parking were assessed by considering how operation of the Project would affect the on- and off-street parking supplies (including free and paid public and privately owned lots). For instance, on-street parking spaces may be permanently removed in order to accommodate the LRT tracks, and off-street parking spaces may be permanently removed to accommodate other project features, such as traction power substations (TPSSs). The parking analysis also considered whether the demand from transit parking would exceed the available parking supply, resulting in spillover parking.

3.2.4.1 On- and Off-street Parking Analysis

The loss of on-street parking itself is not an adverse effect under NEPA, but it can be a local concern. A visual survey was conducted for the parking Affected Area (approximately 0.25 mile around each station, along streets immediately adjacent to the proposed alignment and other project features, and off-street parking lots where permanent easements or acquisitions are required for the Project) to determine supply and utilization of on-street parking. On-street parking effects were assessed by comparing the observed parking utilization with the number of parking spaces available after the removal of spaces resulting from the Project. If the on-street parking supply would decrease below the observed utilization, adverse effects would occur.

The on-street parking analysis also considered whether the loss of on-street parking would result in increases in traffic circulation and traffic delay, as well as a corresponding increase in emissions as drivers seek to find available on-street parking.

Effects to off-street parking on private properties were assessed to determine whether the loss of these parking spaces would result in the supply to fall below the requirements as per the applicable city parking code. If supply would fall below requirements, an adverse effect would occur. Metro would enter into an agreement with the applicable jurisdiction for the loss of off-street parking spaces associated with governmental institutions (e.g., city offices). In these instances, it is assumed that an agreement would be reached and no adverse effects would occur. The off-street parking analysis also considered whether excess parking demand at each station would result in increases in traffic circulation, traffic delay, and a corresponding increase in emissions as drivers seek to find available on-street parking.

3.2.4.2 Spillover Parking Analysis

The spillover parking analysis considered whether operation of the Project could result in the demand for transit parking to exceed the parking supply being provided by the Project at the corresponding proposed station. Estimates of forecasted parking demand were extracted from the Metro regional travel demand model at each station where transit parking would be provided. At stations where transit parking demand is projected to exceed the number of parking spaces provided, the unutilized supply of on-street parking was also considered to determine if transit parking demand could be accommodated via available on-street parking. Adverse spillover parking impacts would occur if the demand is higher than the combined on- and off-street parking capacity at each station.

For stations without dedicated transit parking, the travel demand model did not include any parking supply and therefore, parking demand was not projected. For these stations, it is assumed that no transit parking would materialize during operation of the Project as there would not be a dedicated parking supply. However, an analysis of available on-street parking was conducted around these stations to determine if some parking demand could be accommodated if passengers do attempt to drive to these stations.

The regional travel demand model uses unconstrained demand at stations with dedicated transit parking as a conservative estimate of total parking demand. If drivers find that parking is not available at their intended station (either dedicated transit parking or on street), it is anticipated that over time some trips would shift to other modes (e.g., kiss-and-ride, bicycle, or transit) to access the station or would drive to their ultimate destination. As such, in the long term, parking demand could be lower than that projected by the regional travel demand model if drivers cannot be accommodated. However, the analysis assumes a worst-case scenario because there may be periods when the demand is higher than available parking at the stations, particularly after the start of service.

3.2.5 Analysis Approach: Vehicle Miles Traveled

As described in Section 3.1.2, California Senate Bill 743 guides the state to focus on VMT and related measures as an alternative to traditional LOS analysis. An analysis focused on VMT for this study was conducted for CEQA purposes, and specifically item (b) of the evaluation methodology described in Section 3.2.6.

By definition, VMT analysis is a regional assessment. Therefore, the SCAG region was used as the basis for the geographic evaluation. VMT was assessed for the Existing, No Build, and Build Alternatives.

3.2.6 Analysis Approach: CEQA Evaluation

CEQA refers to significant impacts on the environment and requires the evaluation of potential effects of proposed government actions in order to disclose to decision makers and the public the significant environmental effects of the proposed activities. To satisfy CEQA requirements, potential transportation impacts were analyzed in accordance with Appendix G of the *CEQA Guidelines* identified in Section 3.6 of this chapter. The CEQA analysis was completed consistent with the December 2018 revisions to the *CEQA Guidelines*.

3.2.7 Analysis Approach: Construction

Impacts to the transportation system (i.e., roadway, freight tracks and operations, transit [rail and bus], bicycle, pedestrian, and parking) could result during construction of the Build Alternatives. Construction could affect roads by requiring peak, off-peak, and/or nighttime closures of lanes, roads, or intersections. Tracks used by transit and freight may require temporary bypass ("shoo-fly") tracks or single-track operation, either short-term (one or two days) or long-term (over the course of several days, weeks, or months). These closures could affect travel lanes for vehicles, bus routes or stops, bicycle facilities, sidewalks, schedules for transit and freight trains, and on- or off-street parking. Detours for vehicular, transit, or nonmotorized traffic could be required. Additionally, construction workers would add traffic to local streets and may use on- or off-street parking for their personal vehicles.

The analysis of potential impacts focused on the types of construction activities associated with elements of the Build Alternatives, including aerial and underground construction and intersection and street improvements to accommodate at-grade rail and station construction. Potential impacts due to delays or detours to transit routes along those roadways were considered. The evaluation considered the locations, the number of lanes, and the duration of closures for traffic and the temporary removal of on- and off-street parking during construction. These are described in Table 3.51. Construction activities affecting existing transit and freight tracks could require shoo-fly tracks or single-track operation. The evaluation also considered haul routes and construction worker parking.

3.3 Affected Environment/Existing Conditions

This section provides an assessment of the existing conditions in the Study Area. The subsections include an overview of the travel demand; details on the roadway network (freeway, arterials and local roads, and intersections); details on the transit service (rail and bus); and discussions of active transportation (bicycle and pedestrian travel) and parking.

The Notice of Preparation for the Project was issued on May 25, 2017, as such, the year 2017 was selected to represent Existing Conditions. The Existing Conditions assessment was based on best available data available from either 2016 or 2017, depending on availability. Traffic data were collected in late 2016 and early 2017, and transit data were gathered in 2017; however, the regional travel demand model (described in Section 3.3.1) uses a base year of 2016.

3.3.1 Travel Demand in the Corridor

To determine major travel patterns within the Study Area, data from Metro's Travel Demand Model: Corridors Base Model 2018 (CBM18) were extracted. The model was calibrated to 2012 and validated to 2017 conditions using the substantial amount of available data and information on the current travel behavior and travel patterns of Southern California transit riders.

The model has been applied to provide forecast demands on other corridors in the region. Travel characteristics for this model were derived from Metro trip tables, which are based on the 2016 trip tables in the *2016-2040 Regional Transportation Plan/Sustainable Communities Strategy* (RTP/SCS) (SCAG 2016a). The model coding is documented in the Travel Demand Methodology and Forecasting Results Report (Metro 2021bb).

According to these Existing Conditions trip tables, there were approximately 6.4 million daily person-trips in the Study Area. Of the 6.4 million daily trips:

- Approximately 2.1 million (33 percent) of the travel trips are round trips from origins inside the Study Area to destinations outside the area (i.e., the trip leaves the Study Area).
- Approximately 2.0 million (31 percent) of the travel trips are round trips from origins within the Study Area to destinations within the area (i.e., the trip is internal to the Study Area).
- Approximately 2.3 million (36 percent) of the travel trips are round trips from origins outside the Study Area to destinations inside the area (i.e., the trip enters the Study Area).

As shown, the percentage of trips entering the Study Area (36 percent) is slightly greater than the percentage of trips departing the Study Area (33 percent). This is because the employment density in the Study Area, which includes downtown Los Angeles, is approximately five times that of LA County.

The Study Area is an important transit corridor, accounting for nearly 28 percent (approximately 494,000 transit trips) of the SCAG region's transit trips. Of these transit trips:

- 148,000 (30 percent) trips originate in the Study Area and are destined for locations outside the Study Area (i.e., the transit trips leaving the Study Area).
- 138,000 (28 percent) trips stay within the Study Area (i.e., the transit trips internal to the Study Area).
- 208,000 (42 percent) trips are attracted to the Study Area from points outside the Study Area (i.e., the transit trips entering the Study Area).

These percentages illustrate the diverse needs to provide high-quality transit service throughout the Study Area and to/from regional connections and population/employment centers.

3.3.2 General Corridor-Wide Roadway Network Conditions

The roadway network includes a wide range of facilities: freeways, arterials, local roads, and intersections.

3.3.3 Freeways, Arterials, and Local Roads

The Study Area is served by an extensive freeway system that provides access to areas throughout LA County and the Southern California region. The following eight freeways are located within the Study Area; the freeways are shown on Figure 3-2:

- **I-5/Santa Ana Freeway:** This freeway runs through the Study Area at a northwest-southeast diagonal for approximately 6 miles. This freeway forms most of the eastern Study Area boundary. I-5 connects LA County internally, north to the Central Valley and Sacramento, and south to Orange County and San Diego.
- **I-710/Long Beach Freeway:** This north-south freeway runs through the middle of the Study Area for approximately 8.5 miles. It connects Long Beach and the Ports of Long Beach and Los Angeles north to its current terminus in the City of Alhambra in the San Gabriel Valley.
- **I-605/San Gabriel Freeway:** This north-south freeway passes through the southern end of the Study Area for approximately 4 miles. It connects to I-210 in the San Gabriel Valley to the north, and to I-405 at the boundary between Los Angeles and Orange Counties to the south.
- **I-110/Harbor Freeway:** This north-south freeway crosses the northwest portion of the Study Area for approximately 6 miles. It connects to I-10 in the north and I-105 and I-405 in the south.
- **I-105/Glenn Anderson or Century Freeway:** This east-west freeway crosses the central portion of the Study Area for approximately 8.5 miles. It connects to I-605 in the east and I-405 in the west, ending west of I-405 in the Los Angeles International Airport area. The Metro C (Green) Line operates through the length of I-105 in the freeway median.
- **SR-91/Artesia Freeway:** This east-west freeway operates through the southern end of the Study Area for approximately 8.5 miles. It connects Los Angeles, Orange, Riverside, and San Bernardino Counties from the I-110/Harbor Freeway in the South Bay east to downtown San Bernardino.
- **I-10/San Bernardino Freeway:** This east-west freeway crosses the northern end of the Study Area for approximately 8 miles. It provides access to I-710, near City Terrace, and I-110 in the northwest portion of the Study Area.
- **US-101/Hollywood Freeway:** This freeway runs through the northern part of the Study Area at a northwest-southeast diagonal for approximately 4 miles. It continues from central LA County, near Downtown LA (East LA interchange area) north to the Central Coast and San Francisco.

Existing traffic volumes (vehicles per day) and truck percentages for each freeway are listed in Table 3.3 and displayed on Figure 3-2. Figure 3-2 also displays the major arterial traffic volumes. As reflected in Table 3.3, freeway segments in the Study Area carry approximately 130,000 to 300,000 vehicles per day (both directions). These volumes were compiled using Caltrans traffic census data (Caltrans 2016a, 2016b). As a reference, the highest-volume freeway in the State of California is I-405 (at Seal Beach Boulevard in Orange County) with a volume of 377,600 vehicles per day in 2016 (Caltrans 2016a, 2016b).

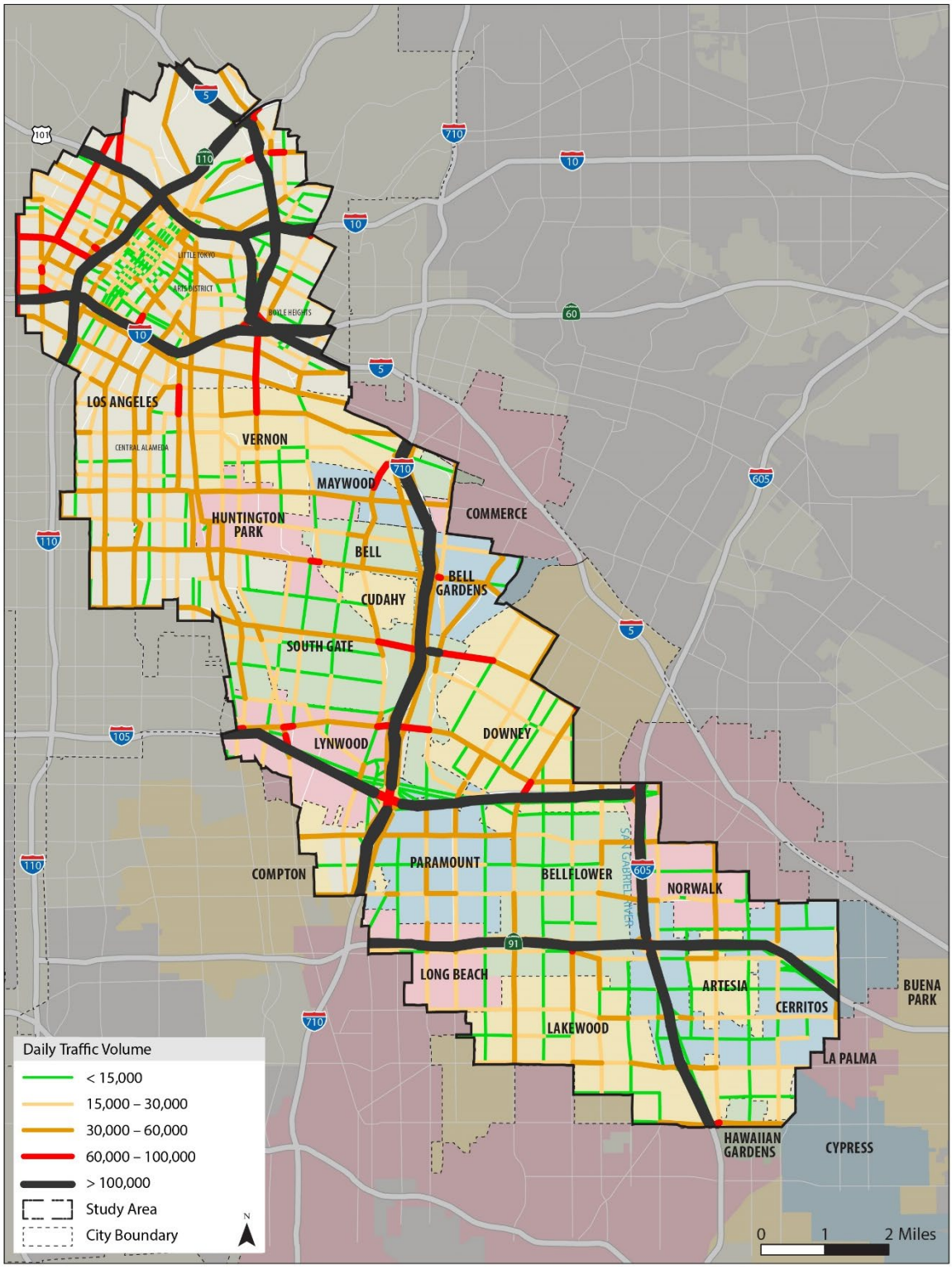
Table 3.3. Existing Average Annual Daily Traffic Volumes and Average Truck Percentages on Freeways

Freeway	From	To	AADT Volumes (min – max)*	Average Truck % (min – max)
I-5	I-710	SR-2	221,000 – 287,000	5 – 8
I-710	SR-91	I-5	204,000 – 241,000	8 – 9
I-605	Carson Road	I-105	186,000 – 298,000	5 – 6
I-110	I-10	I-5	160,000 – 291,000	1 – 3
I-105	I-110	I-605	195,000 – 240,000	5 – 9
SR-91	I-710	I-605	259,000 – 277,000	8
I-10	I-110	I-710	255,000 – 307,000	3 – 6
US-101	I-5	SR-2	136,000 – 266,000	3 – 4

Source: Adapted from Caltrans 2016a and 2016b
Notes: * AADT is the total volume for the year divided by 365 days.
AADT = annual average daily traffic; max = maximum, min = minimum; SR = State Route

Among these freeways, I-5 (between I-710 and SR 2), I-710 (between SR-91 and I-5), I-105 (between I-110 and I-605), and SR-91 (between I-710 and I-605) carry the largest percentage of truck traffic, with percentages ranging from 5 to 9 percent. These freeways provide trucks access to the Ports of Long Beach and Los Angeles south of the Study Area and to warehouses associated with the movement of goods. Truck percentages vary widely and are usually highest on rural freeways, but truck concentrations approaching 10 percent of overall traffic are considered high for urban areas.

Figure 3-2. Existing Daily Traffic Volumes on Freeways and Major Arterials in the Study Area



Source: Metro Travel Demand Model 2017-2042 (adapted from SCAG 2016a)

Table 3.4 summarizes the major roadway facilities (both freeways and arterials) directly and indirectly serving the cities and local communities within the Study Area.

Table 3.4. Major Roadway Facilities Serving the Study Area

City/Community	Major Roadway Facilities
Downtown Los Angeles	I-10, I-110, US-101
Boyle Heights	US-101, I-10, I-5, SR-60, Olympic Boulevard
Central Alameda	Alameda Street
South Park	E. Martin Luther King Jr. Boulevard
Florence-Graham (Florence-Firestone)	Firestone Boulevard, Florence Avenue, Central Avenue, Long Beach Avenue
Vernon	I-710, S. Soto Street, S. Downey Road
Maywood	S. Atlantic Boulevard, I-710
Huntington Park	Alameda Street, Pacific Boulevard
Bell	Atlantic Boulevard, I-710
Bell Gardens	I-710, Florence Avenue
Cudahy	Atlantic Boulevard, I-710
South Gate	I-710, Long Beach Boulevard
Downey	I-605, I-105, I-710, I-5
Lynwood	I-710, I-105, Long Beach Boulevard, Alameda Street, Imperial Highway
Paramount	I-105, I-710, Rosecrans Avenue
Bellflower	SR-91, I-105, I-605, Rosecrans Avenue
Norwalk	SR-91, I-5, I-105, I-605, Rosecrans Avenue
Cerritos	I-605, SR-91, Artesia Boulevard
Lakewood	I-605, Del Amo Boulevard
Artesia	SR-91, I-605, Pioneer Boulevard

Source: Arellano Associates 2016

3.3.4 Intersections

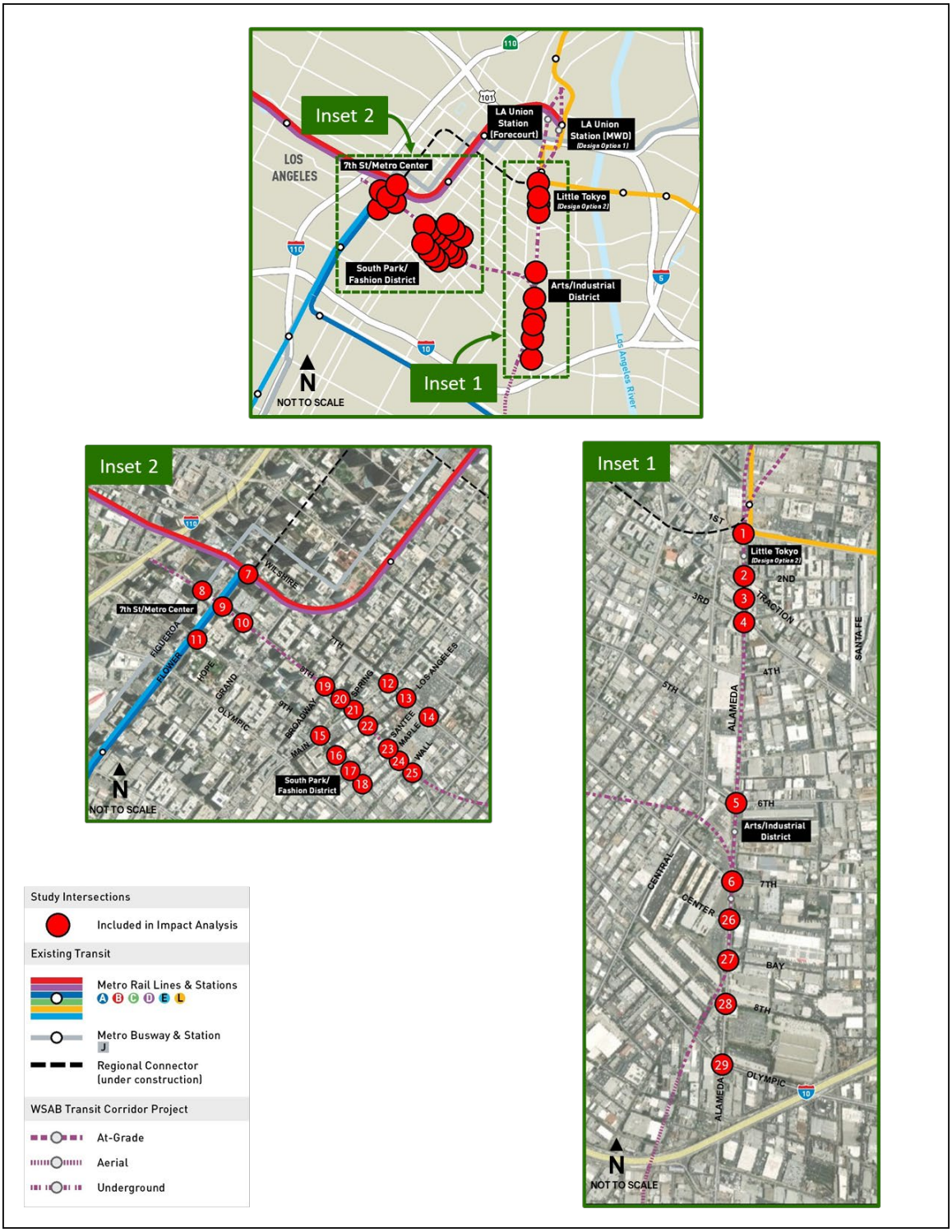
Most intersections within the Affected Area for traffic operations are controlled by a traffic signal or stop signs, with a few intersections being uncontrolled. Many intersections near rail crossings are controlled with crossing gate arms (typically found on arterials) or warning signs (typically found on lower-volume local roads). The signalized intersections near controlled rail crossings with gate arms are connected to the crossing, allowing for adjustments to the traffic signal timing (changing based on traffic conditions) on an as-needed basis, which helps to prevent vehicles from queuing on the tracks when there are oncoming trains. The intersections included in the traffic analysis are described below by location.

The alignment between Los Angeles Union Station (LAUS) or the 7th St/Metro Center Station and the Florence/Salt Lake Station is mainly in an industrial and business center area, except for the residential area at its southern end near the areas of Central-Alameda, Florence-Firestone, and City of Huntington Park. The northern end has a higher density of intersections than the southern end. Because this area of the alignment includes industrial areas, trucks account for a significant portion of its traffic. The alignment between the Florence/Salt Lake Station and the Pioneer Station is mainly residential, with some industrial areas between the Florence/Salt Lake Station and the Firestone Station. There are some major retail areas near the Pioneer Station. Because this area of the alignment is mainly in a residential area, there are relatively low volumes of truck traffic, except at the north end.

Figure 3-3 to Figure 3-6 provide an overview of the 101 key intersections along the alignment. Table 3.5 lists the key intersections, with details on jurisdiction, control type, reason for inclusion in the analysis, and intersection delay/LOS for each. Over half (51 percent) of the intersections (52 intersections) operate at LOS C or worse, and 13 percent (13 intersections) operate at LOS E or worse. Operations are similar in the AM and PM peak periods.

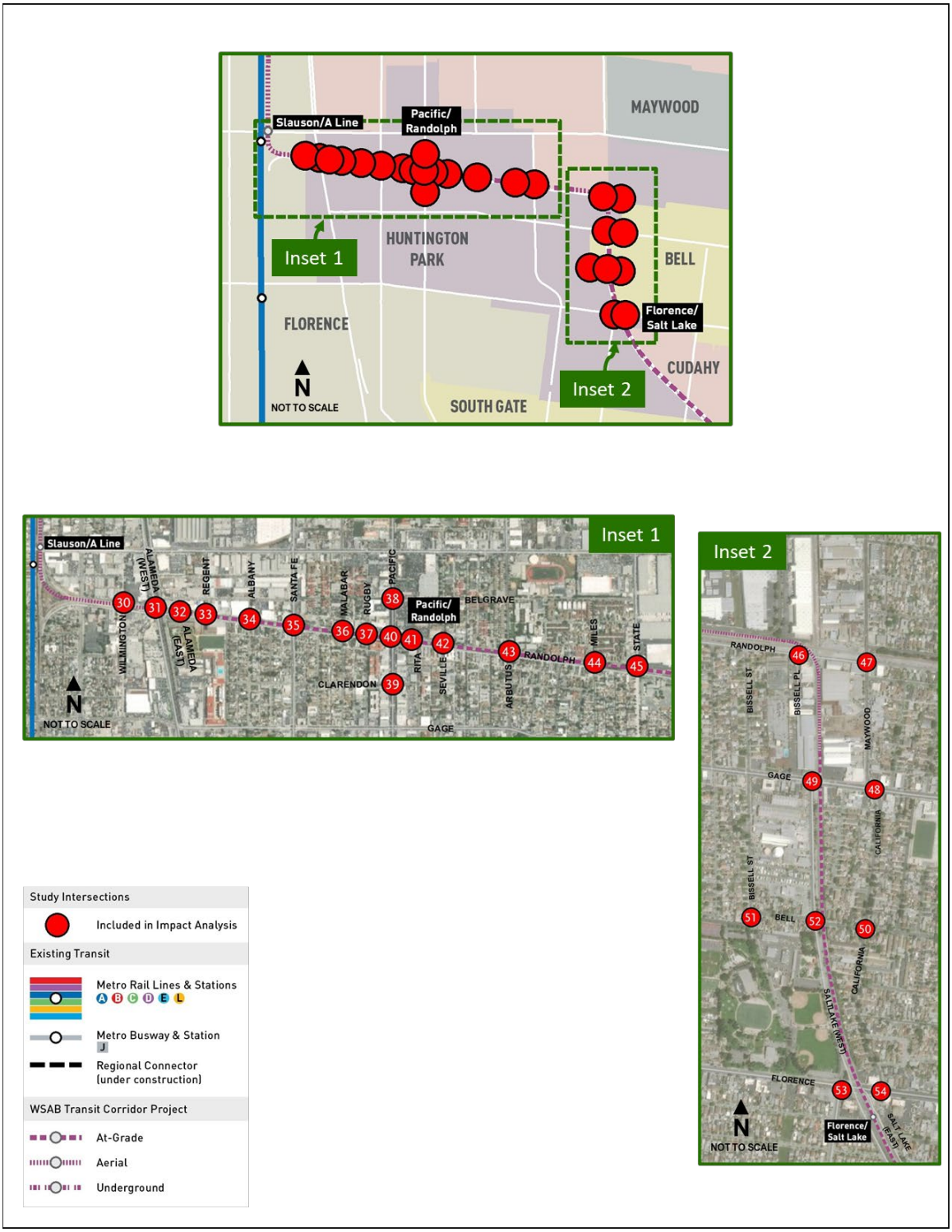
Appendix A – Attachment 2 of the Transportation Impact Analysis Report (Appendix D) contains detailed turning movement traffic volumes for the AM and PM peak for each intersection. Appendix A – Attachment 1 of that report includes a series of detailed maps.

Figure 3-3. Key Intersections (1 of 4)



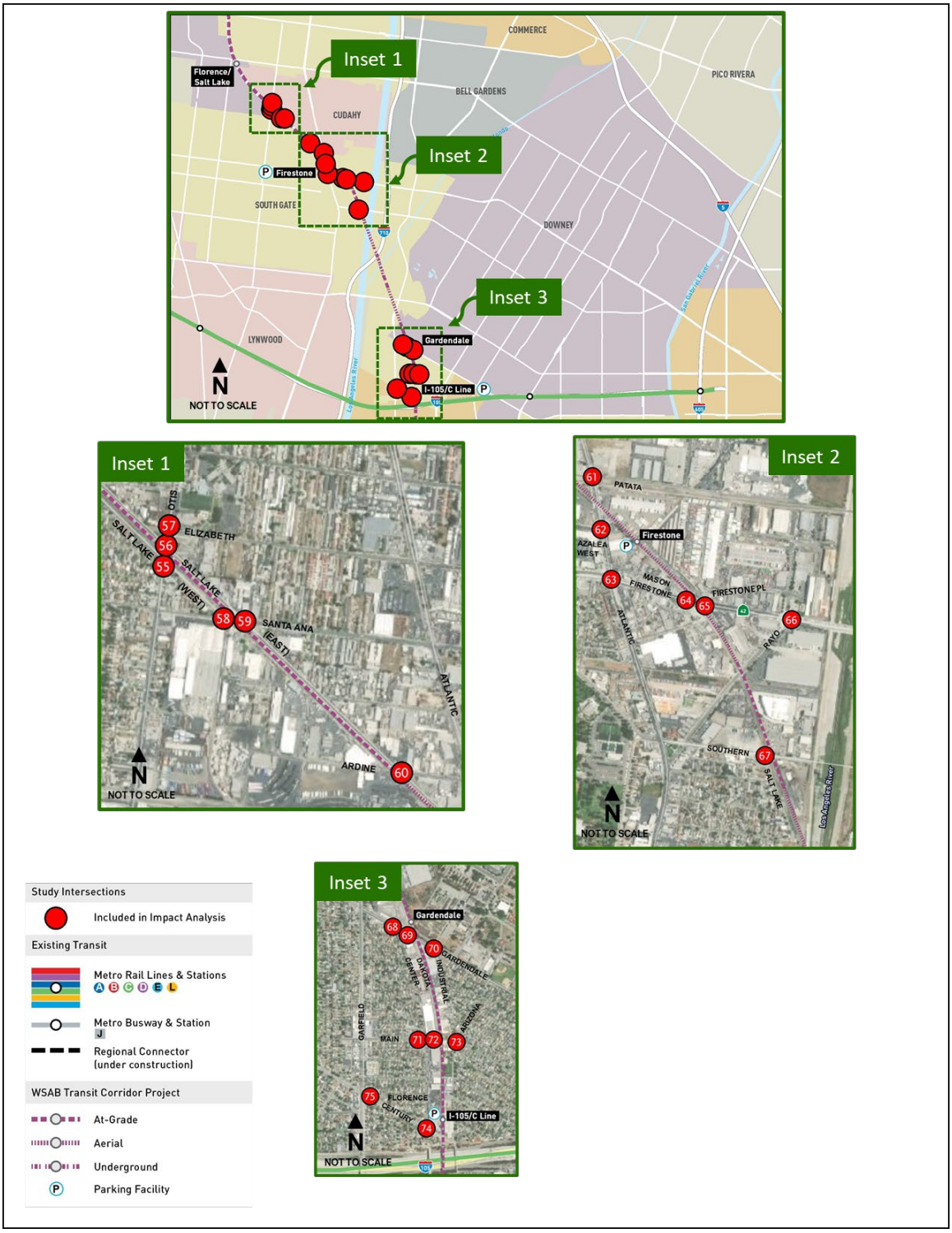
Source: Metro 2021s

Figure 3-4. Key Intersections (2 of 4)



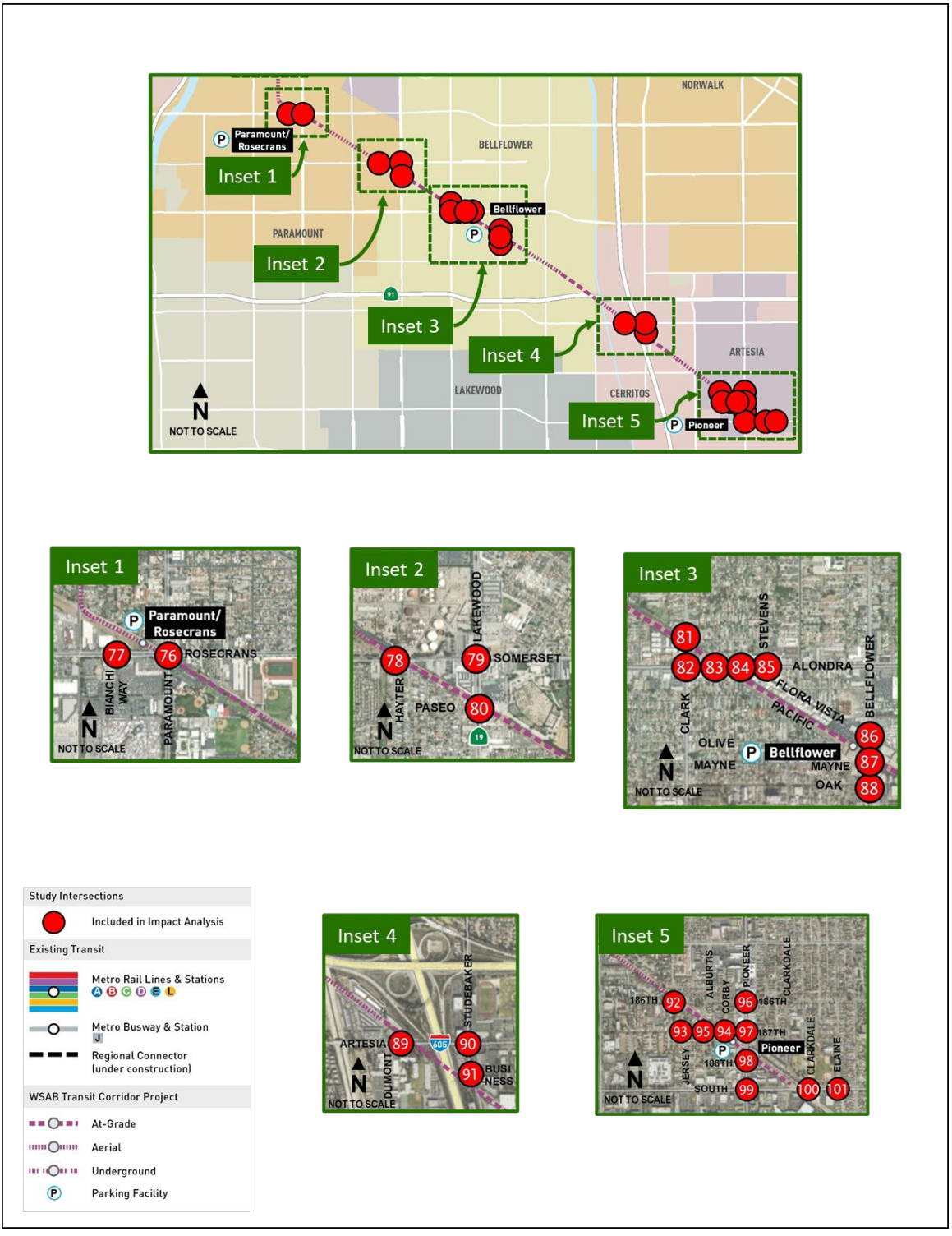
Source: Metro 2021s

Figure 3-5. Key Intersections (3 of 4)



Source: Metro 2021s

Figure 3-6. Key Intersections (4 of 4)



Source: Metro 2021s

Table 3.5. Key Intersections—Existing Operations

No	Intersection Name	Jurisdiction	Control Type	Selection Reason	Delay/LOS/Period*
1	Alameda St/1st St	Los Angeles	Traffic Signal	Near Little Tokyo Station (Alternative 1 – Design Option 2)	10/A-AM 11/B-PM
2	Alameda St/2nd St	Los Angeles	Traffic Signal	Near Little Tokyo Station (Alternative 1 – Design Option 2)	12/B-AM 19/B-PM
3	Alameda St/Traction Ave	Los Angeles	Two-Way Stop	Near Little Tokyo Station (Alternative 1 – Design Option 2)	12/B-AM 12/B-PM
4	Alameda St/3rd St	Los Angeles	Traffic Signal	Near Little Tokyo Station (Alternative 1 – Design Option 2)	20/C-AM 15/B-PM
5	Alameda St/6th St	Los Angeles	Traffic Signal	Near Arts/Industrial District Station (Alternative 1)	11/B-AM 13/B-PM
6	Alameda St/7th St	Los Angeles	Traffic Signal	Near Arts/Industrial District Station (Alternatives 1 and 2)	17/B-AM 14/B-PM
7	7th St/Flower St	Los Angeles	Traffic Signal	Near 7th St/Metro Center Station (Alternative 2)	16/B-AM 22/C-PM
8	8th St/Figueroa St	Los Angeles	Traffic Signal	Near 7th St/Metro Center Station (Alternative 2)	21/C-AM 25/C-PM
9	8th St/Flower St	Los Angeles	Traffic Signal	Near 7th St/Metro Center Station (Alternative 2)	28/C-AM 32/C-PM
10	8th St/Hope St	Los Angeles	Traffic Signal	Near 7th St/Metro Center Station (Alternative 2)	16/B-AM 15/B-PM
11	9th St/Flower St	Los Angeles	Traffic Signal	Near 7th St/Metro Center Station (Alternative 2)	20/B-AM 26/C-PM
12	7th St/Main St	Los Angeles	Traffic Signal	Near South Park/Fashion District Station (Alternative 2)	13/B-AM 16/B-PM
13	7th St/Los Angeles St	Los Angeles	Traffic Signal	Near South Park/Fashion District Station (Alternative 2)	18/B-AM 13/B-PM
14	7th St/Maple Ave	Los Angeles	Traffic Signal	Near South Park/Fashion District Station (Alternative 2)	10/A-AM 8/A-PM
15	9th St/Main St/Spring St	Los Angeles	Traffic Signal	Near South Park/Fashion District Station (Alternative 2)	14/B-AM 16/B-PM
16	9th St/Los Angeles St	Los Angeles	Traffic Signal	Near South Park/Fashion District Station (Alternative 2)	18/B-AM 17/B-PM
17	9th St/Santee St	Los Angeles	Traffic Signal	Near South Park/Fashion District Station (Alternative 2)	5/B-AM 6/A-PM
18	9th St/Maple St	Los Angeles	Traffic Signal	Near South Park/Fashion District Station (Alternative 2)	19/B-AM 20/C-PM
19	8th St/Broadway	Los Angeles	Traffic Signal	Near South Park/Fashion District Station (Alternative 2)	24/C-AM 24/C-PM
20	8th St/Spring St	Los Angeles	Traffic Signal	Near South Park/Fashion District Station (Alternative 2)	23/C-AM 24/C-PM
21	8th St/Main St	Los Angeles	Traffic Signal	Near South Park/Fashion District Station (Alternative 2)	27/C-AM 30/C-PM

No	Intersection Name	Jurisdiction	Control Type	Selection Reason	Delay/LOS/Period*
22	8th St/Los Angeles St	Los Angeles	Traffic Signal	Near South Park/Fashion District Station (Alternative 2)	9/A-AM 12/B-PM
23	8th St/Santee St	Los Angeles	Two-Way Stop	Near South Park/Fashion District Station (Alternative 2)	17/C-AM 21/C-PM
24	8th St/Maple Ave	Los Angeles	Traffic Signal	Near South Park/Fashion District Station (Alternative 2)	5/A-AM 5/A-PM
25	8th St/Wall St	Los Angeles	Traffic Signal	Near South Park/Fashion District Station (Alternative 2)	14/B-AM 14/B-PM
26	Alameda St/Center St	Los Angeles	Traffic Signal	Near Arts/Industrial District Station (Alternative 2)	2/A-AM 5/A-PM
27	Alameda St/Bay St	Los Angeles	Traffic Signal	Near Arts/Industrial District Station (Alternative 2)	13/B-AM 12/B-PM
28	Alameda St/8th St	Los Angeles	Traffic Signal	Near Arts/Industrial District Station (Alternative 2)	1/A-AM 1/A-PM
29	Alameda St/Olympic Blvd	Los Angeles	Traffic Signal	Near Arts/Industrial District Station (Alternative 2)	16/B-AM 19/B-PM
30	Randolph St/Wilmington Ave	Huntington Park	All-Way Stop	Rail in Intersection	21/C-AM 12/B-PM
31	Randolph St/Alameda St (West)	Huntington Park	Traffic Signal	Rail in Intersection	48/D-AM 24/C-PM
32	Randolph St/Alameda St (East)	Huntington Park	Two-Way Stop	Rail in Intersection	9/A-AM 10/A-PM
33	Randolph St/Regent St	Huntington Park	Two-Way Stop	Rail in Intersection	15/C-AM 13/B-PM
34	Randolph St/Albany St	Huntington Park	Two-Way Stop	Rail in Intersection	29/D-AM 24/C-PM
35	Randolph St/Santa Fe Ave	Huntington Park	Traffic Signal	Rail in Intersection	23/C-AM 19/B-PM
36	Randolph St/Malabar St	Huntington Park	Traffic Signal	Rail in Intersection	21/C-AM 20/C-PM
37	Randolph St/Rugby Ave	Huntington Park	Two-Way Stop	Rail in Intersection	62/F-AM 14/B-PM
38	Pacific Blvd/Belgrave Ave	Huntington Park	Traffic Signal	Rail in Intersection	7/A-AM 8/A-PM
39	Pacific Blvd/Clarendon Ave	Huntington Park	Traffic Signal	Crossing Proximity	9/A-AM 7/A-PM
40	Pacific Blvd/Randolph St	Huntington Park	Traffic Signal	Rail in Intersection	30/C-AM 37/D-PM
41	Randolph St/Rita Ave	Huntington Park	Two-Way Stop	Rail in Intersection	25/C-AM 48/E-PM
42	Randolph St/Seville Ave	Huntington Park	Traffic Signal	Rail in Intersection	35/C-AM 30/C-PM
43	Randolph St/Miles Ave	Huntington Park	Traffic Signal	Rail in Intersection	34/C-AM 28/C-PM
44	Randolph St/Arbutus Ave	Huntington Park	All-Way Stop	Rail in Intersection	18/C-AM 10/B-PM
45	Randolph St/State St	Huntington Park	Traffic Signal	Rail in Intersection	21/C-AM 13/B-PM
46	Randolph St/Bissell Pl	Huntington Park	Two-Way Stop	Crossing Proximity	14/B-AM 13/B-PM

No	Intersection Name	Jurisdiction	Control Type	Selection Reason	Delay/LOS/Period*
47	Randolph St/Maywood Ave	Huntington Park	Traffic Signal	Crossing Proximity	13/B-AM 13/B-PM
48	Gage Ave/California Ave	Bell	Traffic Signal	Crossing Proximity	16/B-AM 19/C-PM
49	Gage Ave/Salt Lake Ave (West)	Bell	Traffic Signal	Crossing Proximity	16/B-AM 28/C-PM
50	Bell Ave/California Ave	Huntington Park	All-Way Stop	Crossing Proximity	18/C-AM 14/B-PM
51	Bell Ave/Bissell St	Bell	Traffic Signal	Crossing Proximity	9/A-AM 9/A-PM
52	Bell Ave/Salt Lake Ave	Huntington Park	All-Way Stop	Crossing Proximity	63/F-AM 47/E-PM
53	Florence Ave/California Ave (West)	Huntington Park	Traffic Signal	Near Florence/Salt Lake Station	34/C-AM 38/D-PM
54	Florence Ave/California Ave (East)	Huntington Park	Traffic Signal	Near Florence/Salt Lake Station	53/D-AM 29/C-PM
55	Otis Ave/Salt Lake Ave (West)	Huntington Park	All-Way Stop	Crossing Proximity	37/E-AM 45/E-PM
56	Otis Ave/Salt Lake Ave (East)	Cudahy	All-Way Stop	Crossing Proximity	75/E-AM 64/F-PM
57	Otis Ave/Elizabeth St	Cudahy	Two-Way Stop	Crossing Proximity	35/D-AM 47/E-PM
58	Santa Ana St/Salt Lake Ave (West)	Huntington Park	Two-Way Stop	Crossing Proximity	41/E-AM 36/E-PM
59	Santa Ana St/Salt Lake Ave (East)	Cudahy	All-Way Stop	Crossing Proximity	43/E-AM 48/E-PM
60	Ardine St/Salt Lake Ave	Cudahy	All-Way Stop	Crossing Proximity	30/D-AM 24/C-PM
61	Atlantic Ave/Salt Lake Ave	Cudahy	Traffic Signal	Crossing Proximity	53/D-AM 65/E-PM
62	Atlantic Ave/Azalea West	South Gate	Traffic Signal	Near Firestone Station, with 600 Parking Spaces	4/A-AM 8/A-PM
63	Firestone Blvd/Atlantic Ave	South Gate	Traffic Signal	Near Firestone Station, with 600 Parking Spaces	53/D-AM 46/D-PM
64	Firestone Blvd/Mason St	South Gate	Traffic Signal	Near Firestone Station, with 600 Parking Spaces	7/A-AM 8/A-PM
65	Firestone Blvd/Firestone Pl	South Gate	Traffic Signal	Near Firestone Station, with 600 Parking Spaces	8/A-AM 8/A-PM
66	Firestone Blvd/Rayo Ave	South Gate	Traffic Signal	Near Firestone Station, with 600 Parking Spaces	116/F-AM 95/F-PM
67	Southern Ave/Salt Lake Ave	South Gate	Two-Way Stop	Crossing Proximity	9/A-AM 9/A-PM
68	Gardendale St/Center St	South Gate	Two-Way Stop	Near Gardendale Station	19/C-AM 17/C-PM
69	Gardendale St/Dakota Ave	South Gate	All-Way Stop	Near Gardendale Station	28/D-AM 13/B-PM

No	Intersection Name	Jurisdiction	Control Type	Selection Reason	Delay/LOS/Period*
70	Gardendale St/Industrial Ave	South Gate	Two-Way Stop	Near Gardendale Station	35/D-AM 22/C-PM
71	Main St/Center St	South Gate	Two-Way Stop	Crossing Proximity	15/B-AM 13/B-PM
72	Main St/Dakota Ave	South Gate	Two-Way Stop	Crossing Proximity	10/B-AM 10/B-PM
73	Main St/Arizona Ave/ Industrial Ave	South Gate	Two-Way Stop	Crossing Proximity	18/C-AM 19/C-PM
74	Century Blvd/Center St	South Gate	Two-Way Stop	Near I-105/C Line Station, with 326 Parking Spaces	10/A-AM 9/A-PM
75	Century Blvd/Florence Ave	South Gate	Two-Way Stop	Near I-105/C Line Station, with 326 Parking Spaces	9/A-AM 9/A-PM
76	Rosecrans Ave/Paramount Blvd	Paramount	Traffic Signal	Near Paramount/Rosecrans Station, with 490 Parking Spaces	55/D-AM 48/D-PM
77	Rosecrans Ave/Bianchi Way	Paramount	Traffic Signal	Near Paramount/Rosecrans Station, with 490 Parking Spaces	2/A-AM 13/B-PM
78	Somerset Blvd/Hayter Ave	Paramount	Two-Way Stop	Crossing Proximity	29/D-AM 32/D-PM
79	Somerset Blvd/Lakewood Blvd	Bellflower	Traffic Signal	Crossing Proximity	32/C-AM 30/C-PM
80	Paseo St/Lakewood Blvd	Bellflower	Traffic Signal	Crossing Proximity	4/A-AM 3/A-PM
81	Flora Vista St/Clark Ave	Bellflower	Two-Way Stop	Crossing Proximity	14/B-AM 18/C-PM
82	Alondra Blvd/Clark Ave	Bellflower	Traffic Signal	Crossing Proximity	47/D-AM 48/D-PM
83	Alondra Blvd/Pacific Ave	Bellflower	Traffic Signal	Crossing Proximity	5/A-AM 12/B-PM
84	Alondra Blvd/Flora Vista St	Bellflower	Two-Way Stop	Crossing Proximity	37/E-AM 32/D-PM
85	Alondra Blvd/Stevens Ave	Bellflower	Two-Way Stop	Crossing Proximity	51/F-AM 30/D-PM
86	Bellflower Blvd/Flora Vista St	Bellflower	Traffic Signal	Near Bellflower Station, with 263 Parking Spaces	7/A-AM 14/B-PM
87	Bellflower Blvd/Mayne St	Bellflower	Traffic Signal	Near Bellflower Station, with 263 Parking Spaces	11/B-AM 10/B-PM
88	Bellflower Blvd/Oak St	Bellflower	Traffic Signal	Crossing Proximity	22/C-AM 25/C-PM
89	Artesia Blvd/Dumont Ave	Cerritos	Traffic Signal	Crossing Proximity	18/B-AM 9/A-PM
90	Artesia Blvd/Studebaker Rd	Cerritos	Traffic Signal	Crossing Proximity	85/F-AM 61/E-PM
91	Business Cir/Studebaker Rd	Cerritos	Two-Way Stop	Crossing Proximity	15/B-AM 16/C-PM
92	186th St/Jersey Ave	Artesia	All-Way Stop	Crossing Proximity	9/A-AM 9/A-PM

No	Intersection Name	Jurisdiction	Control Type	Selection Reason	Delay/LOS/Period*
93	187th St/Alburtis Ave	Artesia	Two-Way Stop	Crossing Proximity	10/A-AM 9/A-PM
94	187th St/Corby Ave (West)	Artesia	Two-Way Stop	Crossing Proximity	9/A-AM 10/A-PM
95	187th St/Corby Ave (East)	Artesia	Two-Way Stop	Crossing Proximity	9/A-AM 9/A-PM
96	186th St/Pioneer Blvd	Artesia	Traffic Signal	Crossing Proximity	7/A-AM 5/A-PM
97	187th St/Pioneer Blvd	Artesia	Traffic Signal	Near Pioneer Station, with 1,100 Parking Spaces	7/A-AM 5/A-PM
98	188th St/Pioneer Blvd	Artesia	Two-Way Stop	Near Pioneer Station, with 1,100 Parking Spaces	11/B-AM 13/B-PM
99	South St/Pioneer Blvd	Cerritos	Traffic Signal	Crossing Proximity	34/C-AM 41/D-PM
100	South St/Clarkdale Ave	Artesia	Traffic Signal	Crossing Proximity	18/B-AM 12/B-PM
101	South St/Elaine Ave	Artesia	Traffic Signal	Crossing Proximity	11/B-AM 12/B-PM

Source: Metro 2021s
Notes: * This column shows the peak hour delay in seconds/vehicle followed by the LOS, first for the AM peak hour, then for the PM peak hour. For example, "21/C-AM 13/B-PM" means a 21-second/vehicle delay, which is LOS C, in the AM peak hour and a 13-second/vehicle delay, which is LOS B, in the PM peak hour under the existing conditions.
LOS = level-of-service

3.3.5 Transit

Auto travel is the primary mode of transportation throughout Southern California. One measure of transit performance is the mode share, or percentage of trips that are made by transit. Table 3.6 shows the percentage of trips by mode in LA County.

Table 3.6. Trips by Mode – LA County

County	Auto	Transit	Bicycle	Walk
Los Angeles	69.65%	4.47%	1.86%	23.28%

Source: SCAG 2012c

Rail and bus transit services in the Study Area are provided by Metro, Metrolink, LADOT, the Orange County Transportation Authority, and other local/municipal bus and shuttle providers. The service types include:

- **Heavy rail transit (HRT) and LRT:** Trains operating in dedicated right-of-way (ROW)
- **Local and limited bus:** Traditional bus service
- **Express bus:** Defined routes with limited stops that generally use freeways for a portion of their trips to reduce travel time
- **Shuttles and circulators:** Local service on defined routes with frequent stops to support short-distance trips
- **Metro Rapid:** A system of high-speed bus service on nearly 400 miles of routes, incorporating signal priority and fewer stops to reduce travel time
- **Metrolink commuter rail:** Longer-distance train service on dedicated tracks, with limited stops and higher speeds
- **Downtown Area Short Hop (DASH):** Local routes in Los Angeles, with frequent stops

Within the Study Area, there are 10 Metro Rapid, 2 Metro HRT, 4 Metro LRT, and 6 Metrolink lines (major transit lines/routes). No existing transit lines/routes provide a continuous transit mode connecting the cities in the Study Area. Summaries of the transit service in the corridor are provided in the following subsections. The Transportation Impact Analysis Report (Appendix D) provides more detail on these transit facilities and services.

3.3.5.1 Rail Lines

Metro's urban rapid transit system includes a combination of HRT, LRT, and bus rapid transit (BRT) services. Six Metro HRT and LRT lines traverse portions of the Study Area, as shown on Figure 1-6 in Chapter 1, Purpose and Need.

Metrolink is a regional commuter rail service that operates seven routes. Six routes operate within at least a portion of the Study Area: the Antelope Valley Line, the Ventura Line, the San Bernardino Line, the Riverside Line, the Orange County Line, and the 91/Perris Valley Line. Section 4.3, Transit Conditions, in the Transportation Impact Analysis Report (Appendix D) provides more detailed information on these rail lines. Table 3.7 lists the service frequencies (total number of trains per day) of these Metrolink lines.

Table 3.7. Metrolink Line Service Frequency

Line	Daily Service Frequency (trains/day)	
	Weekday	Weekend
Antelope Valley Line	30	12
Ventura Line	31	N/A
San Bernardino Line	38	20
Riverside Line	7	-
Orange County Line	16	4
91/Perris Valley Line	7	2

Source: Metrolink 2017
Note: N/A = not applicable

3.3.5.2 Bus Service

Metro operates several types of bus services throughout its larger service area (refer to Figure 1-5 in Chapter 1, Purpose and Need). These services can be categorized into rapid, express, local, limited, and shuttle/circulator services based on trip distance, trip frequency, and travel times.

- Metro Rapid is a bus service that operates primarily in mixed-flow traffic on heavily traveled corridors with transit signal priority on signals along the route with limited stops and enhanced bus stations. Major routes in the Study Area include Routes 705, 720, 751, 760, and 762.
- Metro Express serves long-distance trips with fewer stops along the route and more stops at the beginning and end of the routes. The express routes usually operate from stations with park-and-ride lots with stops at major activity centers or transfer points. The routes use freeways, high-occupancy vehicle, high-occupancy toll, or bus lanes. Two express routes, Lines 460 and 577, pass through the Study Area.
- Shuttles and circulators serve short-distance trips and operate in mixed-flow traffic on secondary streets. They connect local communities with high-capacity transit services such as Metro Rail. Two major shuttle bus routes are located in the vicinity of the Build Alternatives within the Study Area: Routes 611 and 612.
- Several Metro local bus routes operate on city streets with several stops along the route within the Study Area. Major local bus routes in the vicinity include Routes 2, 4, 14, 16, 18, 45, 51, 60, 81, 108, 110, 111, 115, 117, 120, 258, 265, and 266.
- Other major transit operators serving the area include the following:
  - **DASH** is operated by the City of Los Angeles. There are 32 lines in DASH, of which 9 are located in the vicinity of the Build Alternatives within the Study Area: Downtown Lines (A, B, D, E, and F), Chesterfield Square, King East, Pueblo del Rio, and Southeast.
  - **Long Beach Transit** is a municipal transit operator of the City of Long Beach and operates fixed and flexible bus transit services in Long Beach and adjoining areas, including Cerritos, Lakewood, Signal Hill, and Belmont Shore. There are 35 routes operated by Long Beach Transit, of which 13 are located in the vicinity of the proposed Build Alternatives within the Study Area: Routes 22, 91, 92, 93, 101, 102, 103, 111, 112, 172, 173, 191, and 192.
  - **Norwalk Transit System (NTS)** is a municipal transit operator of the City of Norwalk and operates fixed-route and paratransit bus transit services in Norwalk

and adjoining areas of Artesia, Bellflower, Cerritos, Industry, La Mirada, and Whittier. NTS operates seven routes, three of which are in the vicinity of the Build Alternatives within the Study Area: Routes 1, 2, and 5.

Local circulator services, demand response services, and paratransit services are also provided by a variety of operators in the area. Local circulator services are provided by many incorporated cities, including Huntington Park, Bell, Bell Gardens, Cudahy, Lynwood, Downey, Paramount, Bellflower, Cerritos, and Artesia. The Transportation Impact Analysis Report (Appendix D) includes additional detail on the above-described suite of transit and other transportation service operators.

3.3.6 Active Transportation

The Study Area has an extensive bicycle and pedestrian system, and within that same area, Metro and SCAG have adopted plans, policies, and projects that support active transportation options as viable transportation modes. Regional, county, and local policy and planning documents seek to increase the number of bicyclists who ride for commuting and other daily purposes.

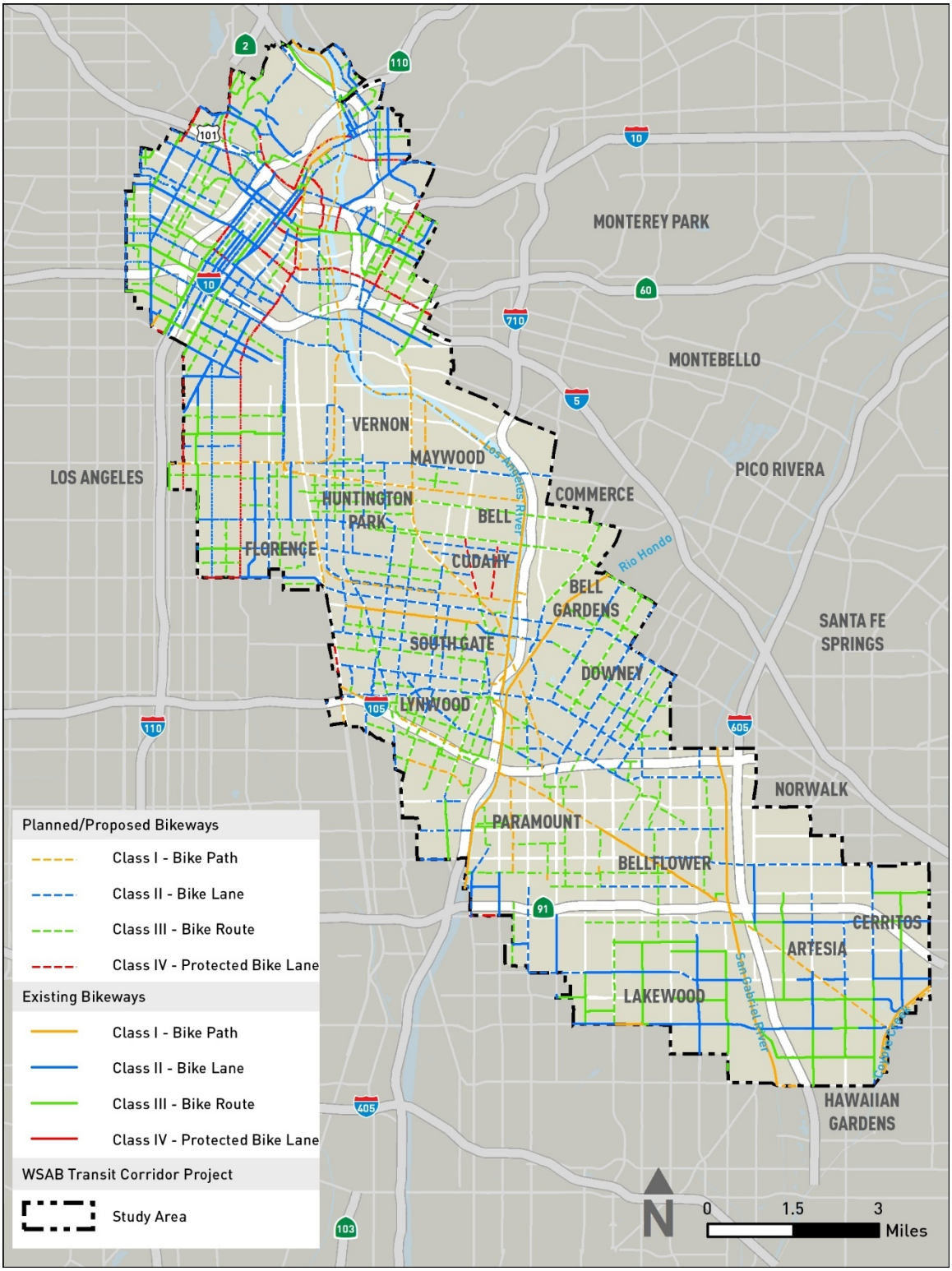
Figure 3-7 presents existing (represented by solid lines) and planned/proposed (represented by dashed lines) bicycle facilities. These facilities are classified using Caltrans' *Highway Design Manual* (2016c) as the following:

- Class I Bikeways are also known as bicycle paths, shared-use paths, or bicycle trails. These facilities are completely separated from motorized traffic.
- Class II Bikeways are also known as bicycle lanes. These facilities are marked along roadways with signs and striping or other pavement markings.
- Class III Bikeways are also known as bicycle routes. These facilities are suggested travel-ways marked by "bike route" signs but have no other signs, striping, or markings separating bicycle traffic from vehicular traffic.
- Class IV Bikeways are protected bike lanes that are physically separated from the vehicle travel lane by more than the white stripe. Separation may be accomplished with grade separation, flexible bollards, or permanent barriers.

Class I Bikeways in the vicinity of the proposed Build Alternatives are as follows:

- The Los Angeles River Bicycle Path runs north-south along the Los Angeles River from Vernon to Long Beach. Within the Study Area, the bike path is parallel to I-710.
- Rio Hondo Bike Path runs parallel to Rio Hondo and joins Los Angeles River bikeway at the confluence of Rio Hondo and the Los Angeles River in South Gate.
- San Gabriel River Trail runs north-south along the San Gabriel River. The trail runs from Seal Beach to Azusa. Within the Study Area, the bikeway is parallel to I-605.
- Southern Avenue Greenway is located in South Gate. This trail runs along Southern Avenue under the overhead power lines. This trail connects with the Los Angeles River bikeway near South Gate via a small Class II segment.
- Paramount Bike Trail is located in the PEROW in the City of Paramount between Somerset Boulevard and Lakewood Boulevard. The trail connects to the Bellflower Bike Trail at Lakewood Boulevard.
- Bellflower Bike Trail runs for more than 2 miles on the ROW of the Pacific Electric transit system across the City of Bellflower. The trail connects to San Gabriel River Trail at the Ruth R. Caruthers Park.

Figure 3-7. Existing and Planned/Proposed Study Area Bikeways



Source: Metro 2021s

- Coyote Creek Trail runs adjacent to the Coyote Creek flood control channel. The path begins in Santa Fe Springs on the north fork of the Coyote Creek and extends south into Long Beach, where it joins the San Gabriel River bicycle path.

Major Class II Bikeways in the vicinity of the proposed Build Alternatives are as follows:

- Del Amo Boulevard between Pioneer Boulevard and Paramount Boulevard
- Woodruff Avenue between Ashworth Street and Willow Street
- Pioneer Boulevard from Artesia Boulevard to Cover Street
- Downtown Spring Street between Main Street and Cesar Chavez Avenue
- Main Street between Venice Boulevard and Cesar Chavez Avenue
- Los Angeles Street between 1st Street and Alameda Street
- Olive Street between Washington Boulevard and 7th Street
- Grand Avenue between 39th Street and 7th Street
- Figueroa Street between Wilshire Boulevard and Sunset Boulevard
- 1st Street between Fremont Avenue and San Pedro Street/Judge John Aiso Street
- 2nd Street between Figueroa Street and Broadway
- 7th Street between Figueroa Street and Main Street

3.3.7 Parking

A wide range of parking types and regulations occurs within the parking Affected Area, including on-street and off-street parking, both free and paid, and public and private. Many of the on-street parking spaces are time-limited or permit-only, especially in the northern areas of the parking Affected Area where utilization and off-street parking charges are higher. Observations of on-street parking utilization were made during field surveys in 2017. Table 3.8 and Table 3.9 provide summaries of on-street parking supply and utilization for the locations where stations are proposed and along the alignment where track infrastructure and other features for the Project could require permanently removing and/or replacing parking. As shown in these tables, utilization ranged from approximately 20 to 90 percent during the peak parking periods. The assessment methodology and results are described in greater detail in the Transportation Impact Analysis Report (Appendix D) (Metro 2021s). Refer to Section 4.5 of Appendix D for a detailed assessment of existing parking supply and utilization. Table 3.10 provides a summary of off-street parking conditions in the area around the proposed stations.

The area from LAUS or 7th St/Metro Center Station to Florence Avenue (near the Florence/Salt Lake Station) generally consists of industrial and business center land uses, except for the residential area at the southern end. The industrial and business center areas have limited on-street parking with a substantial parking demand, while the residential areas have moderate parking availability. The off-street parking in this area is generally paid or private parking (for businesses or residential).

The area from Florence Avenue to the Pioneer Boulevard (Pioneer Station) is mainly residential, with some industrial areas at the north end and some major retail areas at the south end. The residential areas have moderate parking demand while the industrial areas have substantial parking demand. The major retail areas of the south end have sufficient parking availability for both on-street and off-street parking. The off-street parking at the south end of this area is generally for commercial/retail.

Table 3.8. On-Street Parking Conditions: Proposed Station Locations

Station	Parking Survey Area [a] (acres)	Applicable Alternative(s)	Existing On-Street Parking Spaces	Observed Field Utilization
LAUS	59.6	1, Design Option 1	47	90%
Little Tokyo	232.6	1, Design Option 2	1,803	90%
Arts/Industrial District [b]	108.0	1, 2	980	90%
South Park/Fashion District [c]	127.0	2	888	70%
7th St/Metro Center [c]	145.0	2	465	90%
Slauson/A Line	114.0	1, 2, 3	729	80%
Pacific/Randolph	170.0	1, 2, 3	1,624	60%
Florence/Salt Lake	108.0	1, 2, 3	1,106	30%
Firestone	106.0	1, 2, 3	461	50%
Gardendale	116.0	1, 2, 3	688	40%
I-105/C Line	47.4	1, 2, 3, 4	818	40%
Paramount/Rosecrans	88.9	1, 2, 3, 4	350	70%
Bellflower	164.0	1, 2, 3, 4	576	30%
Pioneer	94.5	1, 2, 3, 4	785	20%

Source: Metro 2021s
Notes: LAUS = Los Angeles Union Station
[a] For purposes of the parking impact analysis, the parking Affected Area is 0.25 mile around each station, but in some cases, a smaller or larger area was surveyed to determine parking supply and utilization based on existing characteristics and constraints that could influence the distance an individual may walk from a parking space. The table identifies the area where surveys were completed for each proposed station.
[b] The acreage of the Parking Survey Area is measured from the location of this station under Alternative 1; the location of the station under Alternative 2 is also within the area surveyed.
[C] At this station, the parking resource assessment is an estimate utilizing Google Earth aerial maps captured in December 2017.

Table 3.9. On-Street Parking Conditions: Along the Alignment

Mid-Station Location	Description	Parking Survey Area (acres)	Applicable Alternative(s)	Existing On-Street Parking Spaces	Observed Field Utilization
Long Beach Ave	Between Olympic Boulevard and 14th Street	1.0	1, 2	20	90%
Long Beach Ave	Between Vernon Ave and 24th St	4.0	1, 2	109	70%
Randolph St	Between Holmes Ave and State St	1.5	1, 2, 3	550	20%
Main St	Between Center St and Industrial Ave	0.4	1, 2, 3	12	20%

Source: Metro 2021s

Table 3.10. Off-Street Parking Conditions: Proposed Station Locations

Station	Jurisdiction	Applicable Alternative(s)	Surrounding Off-Street Parking
Los Angeles Union Station	Los Angeles	1, Design Option 1	There are multiple off-street parking structures within the parking study area such as Union Station, Metropolitan Water District and Metro. There are several off-street parking lots in the parking study area such as El Pueblo de Los Angeles and California Endowment. There are paid or private properties that have off-street parking lots.
Little Tokyo	Los Angeles	1, Design Option 2	Throughout Little Tokyo, there is paid, private, and public off-street parking in parking structures and parking lots.
Arts/Industrial District	Los Angeles	1	There are two private off-street multi-level parking structures and two parking lots (4.6 acres) at the right-of-way DTLA shopping center located on southbound Alameda Street south of 7th Street. Along southbound Alameda Street between 6th Street and 7th Street, Metro owns a property and has a facility for bus parking (8 acres).
Slauson/A Line	Los Angeles	2	There is off street public parking (2 acres) at the Augustus F. Hawkins Nature Park, which is located near the northeast corner of the Slauson Avenue and Compton Avenue intersection.
Pacific/Randolph	Huntington Park	2	There is a large shopping center to the northeast of Randolph Avenue and Pacific Boulevard of off-street parking (7.81 acres). There are smaller shopping centers northwest of Randolph Avenue and Pacific Boulevard of off-street parking (1.00 acres). There is a smaller shopping centers northwest of Randolph Avenue and Pacific Boulevard of off-street parking (0.50 acres).
Florence/Salt Lake	Huntington Park	2	Salt Lake Park near the intersection of Florence Avenue and Salt Lake Avenue has several off-street parking lots that are time unlimited. There are also several private off-street parking lots along Florence Avenue that are time unlimited.

Station	Jurisdiction	Applicable Alternative(s)	Surrounding Off-Street Parking
Firestone	South Gate	1, 2, 3	There were no public off street parking lots observed near the proposed station area. There is a large shopping center to the northeast of Atlantic Avenue and Firestone Boulevard of off-street parking (14.5 acres).
Gardendale	Downey	1, 2, 3	There were no public off street parking lots observed near the proposed station area. The County of Los Angeles Department of Public Works operates the Hollydale Yard of off-street parking (6.5 acres) between the proposed corridor and Garfield Avenue. There is also private off-street parking (2.5 acres) adjacent to the east side of the proposed corridor.
I-105/C Line	Paramount	1, 2, 3	There were no public off-street parking lots observed near the proposed station area.
Paramount/Rosecrans	Paramount	1, 2, 3	There were no public off-street parking lots observed near the proposed station area. There are approximately 10 acres of private off-street parking west of Paramount Boulevard between All America City Way and Rosecrans Avenue. There is additional private off-street parking at the schools located to the southeast of Paramount Boulevard and the proposed corridor.
Bellflower	Bellflower	1, 2, 3	There are four public off-street parking lots just east and west of Bellflower Boulevard, off Mayne Street, Oak Street, Belmont Street and Laurel Street, adjacent to Pirate Park. The lots provide free parking for between 2 and 72 hours. Two additional public off-street parking lots, with 2-hour parking limits, are located to the east of Bellflower Boulevard, along Oak Street and Belmont Street.

Station	Jurisdiction	Applicable Alternative(s)	Surrounding Off-Street Parking
Pioneer	Artesia	1, 2, 3, 4	One block north of the proposed station, along 186th Street between Corby Avenue and Pioneer Boulevard, the City of Artesia operates a public parking lot 0.6 acres of public off-street parking. Located directly east of the proposed station, at the Little India Village Food Court, there is a private parking lot with customer only parking. While there is little on street parking along South Street, there is private off-street parking along both sides of the street at various businesses and restaurants.

Source: Metro 2021s

3.4 Environmental Consequences/Environmental Impacts

This section examines the potential adverse effects and impacts of the No Build and Build Alternatives as they relate to the transportation system.

3.4.1 Traffic Operations

Traffic operations are evaluated to assess how vehicular circulation would be affected by the Build Alternatives. The assessment focuses on operations at intersections that would be affected by at-grade crossings, increased vehicular demand associated with stations, and changes in the roadway network.

The traffic operations analysis for the Build Alternatives focuses on analyzing Alternative 2. Alternative 2 would have the highest ridership of the four alternatives under consideration, and therefore would also result in the greatest volume of vehicles accessing stations as kiss-and-ride or park-and-ride trips (Table 3.13). Each Build Alternative would have similar service frequencies (i.e., similar train headways) and, as a result, train crossings at at-grade intersections would be the same. Similarly, the roadway modifications required to accommodate the Project would not vary among alternatives along the portions of the alignment that are the same. Therefore, there would be similar traffic operational changes under each Build Alternative for those intersections and roadways common among the alternatives. The analysis for Alternative 2 is used for Alternatives 1, 3, 4, and the design options because the vehicle trip demand associated with park-and-ride and kiss-and-ride represents a worst-case scenario.

Analysis of the traffic operations impacts for the Build Alternatives is provided in Sections 3.4.1.2 to 3.4.1.5 and is based on the information from the Transportation Impact Analysis Report (Appendix D). Attachment 6 of Appendix A in the Transportation Impact Analysis Report has detailed turning movement traffic volumes for the 2042 Build Alternatives AM and PM peak hours for each intersection.

3.4.1.1 No Build Alternative

The No Build Alternative includes existing transportation facilities along with transportation improvements that have been committed to and identified in constrained plans of the Metro 2009 *Long-Range Transportation Plan* (LRTP) (Metro 2009a) and the SCAG 2016 RTP/SCS (SCAG 2016a). The service features include transit, freeway, and arterial operations within and around the Affected Area for traffic operations. These projects are described in Section 2.5.1 and Table 2.2 in Chapter 2, Project Description. Planned projects would be subject to separate environmental analysis to evaluate transportation impacts. Project Measures TR PM-1 (Pre-signals and Queue-cutter Signals) through TR PM-10 (Pioneer Station Parking Access), described in Section 3.5.1, were considered not to be in place as these are required in support of the WSAB Project.

Table 3.11 provides a summary of the future (2042) No Build traffic operations at the Affected Area for traffic operations intersections. The LOS assessment is compared to existing conditions. In general, operations would be worse in 2042, consistent with traffic growth in a congested corridor.

Table 3.11. Comparison of Existing (2017) and Future (2042) No Build Intersection Operations

Scenario	Intersections	LOS C or Worse	LOS E or Worse
Existing (2017)	101	51%	13%
Future No Build (2042)		53%	23%

Source: Metro 2021s
Notes: LOS = level-of-service

Table 3.12 provides more detailed information on the 101 key intersections, including jurisdiction, control type, and intersection delay/LOS for the No Build Alternative in 2042. LOS is based on operation of the overall intersection, which considers delay for all movements at that intersection.

Under the No Build Alternative (2042), 53 percent of the intersections (52 intersections) operate at LOS C or worse, and 23 percent (24 intersections) are LOS E or worse. Operations are similar in the AM and PM peak periods. Under the No Build Alternative (2042), 11 intersections that operated at LOS A or B under existing (2017) conditions would deteriorate to LOS C or worse. Additionally, nine intersections that operated at LOS C or D under existing (2017) conditions would operate at LOS E or worse under the No Build Alternative (2042). Some intersections are projected to experience improvements in overall intersection delay under the No Build Alternative (2042) compared to existing (2017) conditions, even though traffic volumes are forecasted to increase. It is assumed that traffic signal timing at signalized intersections would be optimized between 2017 and 2042, which could result in changes to traffic flow and overall improvements in delay to the intersection where the signal is optimized as well as to adjacent intersections. Based on this assumption, 12 intersections that would operate at LOS C or worse under existing (2017) conditions are projected to operate at LOS A or B under the No Build Alternative (2042) and 2 intersections that would operate at LOS E or worse under existing (2017) conditions would operate at LOS C or D under the No Build Alternative (2042).

Appendix A – Attachment 5 of the Transportation Impact Analysis Report (Appendix D) contains detailed turning movement traffic volumes for the AM and PM peak hours for each intersection under the 2042 No Build Alternative.

Table 3.12. No Build Alternative Operations (2042)

No	Intersection Name	Jurisdiction	Control Type	Existing (2017) Delay/LOS/Period*	No Build (2042) Delay/LOS/Period*
1	Alameda St/1st St	Los Angeles	Traffic Signal	10/A-AM 11/B-PM	36/D-AM 18/B-PM
2	Alameda St/2nd St	Los Angeles	Traffic Signal	12/B-AM 19/B-PM	121/F-AM 65/E-PM
3	Alameda St/Traction Ave	Los Angeles	Two-Way Stop	12/B-AM 12/B-PM	82/F-AM 79/F-PM
4	Alameda St/3rd St	Los Angeles	Traffic Signal	20/C-AM 15/B-PM	61/E-AM 69/E-PM
5	Alameda St/6th St	Los Angeles	Traffic Signal	11/B-AM 13/B-PM	16/B-AM 19/B-PM
6	Alameda St/7th St	Los Angeles	Traffic Signal	17/B-AM 14/B-PM	69/E-AM 136/F-PM
7	7th St/Flower St	Los Angeles	Traffic Signal	16/B-AM 22/C-PM	17/B-AM 9/B-PM
8	8th St/Figueroa St	Los Angeles	Traffic Signal	21/C-AM 25/C-PM	13/B-AM 17/B-PM
9	8th St/Flower St	Los Angeles	Traffic Signal	28/C-AM 32/C-PM	9/A-AM 14/B-PM
10	8th St/Hope St	Los Angeles	Traffic Signal	16/B-AM 15/B-PM	19/B-AM 21/C-PM
11	9th St/Flower St	Los Angeles	Traffic Signal	20/B-AM 26/C-PM	15/B-AM 17/B-PM
12	7th St/Main St	Los Angeles	Traffic Signal	13/B-AM 16/B-PM	16/B-AM 19/B-PM
13	7th St/Los Angeles St	Los Angeles	Traffic Signal	18/B-AM 13/B-PM	15/B-AM 23/C-PM
14	7th St/Maple Ave	Los Angeles	Traffic Signal	10/A-AM 8/A-PM	10/B-AM 16/B-PM
15	9th St/Main St/Spring St	Los Angeles	Traffic Signal	14/B-AM 16/B-PM	19/B-AM 20/C-PM
16	9th St/Los Angeles St	Los Angeles	Traffic Signal	18/B-AM 17/B-PM	12/B-AM 15/B-PM
17	9th St/Santee St	Los Angeles	Traffic Signal	5/B-AM 6/A-PM	7/A-AM 16/B-PM
18	9th St/Maple St	Los Angeles	Traffic Signal	19/B-AM 20/C-PM	13/B-AM 20/C-PM
19	8th St/Broadway	Los Angeles	Traffic Signal	24/C-AM 24/C-PM	21/C-AM 19/B-PM
20	8th St/Spring St	Los Angeles	Traffic Signal	23/C-AM 24/C-PM	9/A-AM 11/B-PM
21	8th St/Main St	Los Angeles	Traffic Signal	27/C-AM 30/C-PM	10/A-AM 12/B-PM

No	Intersection Name	Jurisdiction	Control Type	Existing (2017) Delay/LOS/Period*	No Build (2042) Delay/LOS/Period*
22	8th St/Los Angeles St	Los Angeles	Traffic Signal	9/A-AM 12/B-PM	13/B-AM 17/B-PM
23	8th St/Santee St	Los Angeles	Two-Way Stop	17/C-AM 21/C-PM	11/B-AM 84/F-PM
24	8th St/Maple Ave	Los Angeles	Traffic Signal	5/A-AM 5/A-PM	11/B-AM 17/B-PM
25	8th St/Wall St	Los Angeles	Traffic Signal	14/B-AM 14/B-PM	12/B-AM 15/B-PM
26	Alameda St/Center St	Los Angeles	Traffic Signal	2/A-AM 5/A-PM	6/A-AM 14/B-PM
27	Alameda St/Bay St	Los Angeles	Traffic Signal	13/B-AM 12/B-PM	10/A-AM 12/B-PM
28	Alameda St/8th St	Los Angeles	Traffic Signal	1/A-AM 1/A-PM	11/B-AM 12/B-PM
29	Alameda St/Olympic Blvd	Los Angeles	Traffic Signal	16/B-AM 19/B-PM	29/C-AM 85/F-PM
30	Randolph St/Wilmington Ave	Huntington Park	All-Way Stop	21/C-AM 12/B-PM	33/D-AM 12/B-PM
31	Randolph St/Alameda St (West)	Huntington Park	Traffic Signal	48/D-AM 24/C-PM	50/D-AM 61/E-PM
32	Randolph St/Alameda St (East)	Huntington Park	Two-Way Stop	9/A-AM 10/A-PM	13/B-AM 14/B-PM
33	Randolph St/Regent St	Huntington Park	Two-Way Stop	15/C-AM 13/B-PM	10/B-AM 12/B-PM
34	Randolph St/Albany St	Huntington Park	Two-Way Stop	29/D-AM 24/C-PM	18/C-AM 17/C-PM
35	Randolph St/Santa Fe Ave	Huntington Park	Traffic Signal	23/C-AM 19/B-PM	30/C-AM 30/C-PM
36	Randolph St/Malabar St	Huntington Park	Traffic Signal	21/C-AM 20/C-PM	23/C-AM 22/C-PM
37	Randolph St/Rugby Ave	Huntington Park	Two-Way Stop	62/F-AM 14/B-PM	7/A-AM 4/A-PM
38	Pacific Blvd/Belgrave Ave	Huntington Park	Traffic Signal	7/A-AM 8/A-PM	13/B-AM 12/B-PM
39	Pacific Blvd/Clarendon Ave	Huntington Park	Traffic Signal	9/A-AM 7/A-PM	11/B-AM 9/A-PM
40	Pacific Blvd/Randolph St	Huntington Park	Traffic Signal	30/C-AM 37/D-PM	26/C-AM 33/C-PM
41	Randolph St/Rita Ave	Huntington Park	Two-Way Stop	25/C-AM 48/E-PM	20/C-AM 48/E-PM
42	Randolph St/Seville Ave	Huntington Park	Traffic Signal	35/C-AM 30/C-PM	38/D-AM 35/C-PM
43	Randolph St/Miles Ave	Huntington Park	Traffic Signal	34/C-AM 28/C-PM	37/D-AM 36/D-PM

No	Intersection Name	Jurisdiction	Control Type	Existing (2017) Delay/LOS/Period*	No Build (2042) Delay/LOS/Period*
44	Randolph St/Arbutus Ave	Huntington Park	All-Way Stop	18/C-AM 10/B-PM	33/D-AM 6/A-PM
45	Randolph St/State St	Huntington Park	Traffic Signal	21/C-AM 13/B-PM	44/D-AM 19/B-PM
46	Randolph St/Bissell Pl	Huntington Park	Two-Way Stop	14/B-AM 13/B-PM	7/A-AM 5/A-PM
47	Randolph St/ Maywood Ave	Huntington Park	Traffic Signal	13/B-AM 13/B-PM	14/B-AM 13/B-PM
48	Gage Ave/California Ave	Bell	Traffic Signal	16/B-AM 19/C-PM	20/B-AM 98/F-PM
49	Gage Ave/Salt Lake Ave (West)	Bell	Traffic Signal	16/B-AM 28/C-PM	16/B-AM 34/C-PM
50	Bell Ave/California Ave	Huntington Park	All-Way Stop	18/C-AM 14/B-PM	12/B-AM 9/A-PM
51	Bell Ave/Bissell St	Bell	Traffic Signal	9/A-AM 9/A-PM	5/A-AM 6/A-PM
52	Bell Ave/Salt Lake Ave	Huntington Park	All-Way Stop	63/F-AM 47/E-PM	89/F-AM 88/F-PM
53	Florence Ave/California Ave (West)	Huntington Park	Traffic Signal	34/C-AM 38/D-PM	37/D-AM 42/D-PM
54	Florence Ave/California Ave (East)	Huntington Park	Traffic Signal	53/D-AM 29/C-PM	65/E-AM 44/D-PM
55	Otis Ave/Salt Lake Ave (West)	Bell	All-Way Stop	37/E-AM 45/E-PM	189/F-AM 165/F-PM
56	Otis Ave/Salt Lake Ave (East)	Cudahy	All-Way Stop	75/E-AM 64/F-PM	83/F-AM 104/F-PM
57	Otis Ave/Elizabeth St	Cudahy	Two-Way Stop	35/D-AM 47/E-PM	1452/F-AM 1473/F-PM
58	Santa Ana St/Salt Lake Ave (West)	Huntington Park	Two-Way Stop	41/E-AM 36/E-PM	1478/F-AM 1574/F-PM
59	Santa Ana St/Salt Lake Ave (East)	Cudahy	All-Way Stop	43/E-AM 48/E-PM	219/F-AM 265/F-PM
60	Ardine St/Salt Lake Ave	Cudahy	All-Way Stop	30/D-AM 24/C-PM	24/C-AM 20/C-PM
61	Atlantic Ave/Salt Lake Ave	Cudahy	Traffic Signal	53/D-AM 65/E-PM	51/D-AM 81/F-PM
62	Atlantic Ave/Azalea West	South Gate	Traffic Signal	4/A-AM 8/A-PM	5/A-AM 9/A-PM
63	Firestone Blvd/Atlantic Ave	South Gate	Traffic Signal	53/D-AM 46/D-PM	139/F-AM 90/F-PM
64	Firestone Blvd/Mason St	South Gate	Traffic Signal	7/A-AM 8/A-PM	19/B-AM 12/B-PM
65	Firestone Blvd/Firestone Pl	South Gate	Traffic Signal	8/A-AM 8/A-PM	59/E-AM 24/C-PM

No	Intersection Name	Jurisdiction	Control Type	Existing (2017) Delay/LOS/Period*	No Build (2042) Delay/LOS/Period*
66	Firestone Blvd/Rayo Ave	South Gate	Traffic Signal	116/F-AM 95/F-PM	49/D-AM 40/D-PM
67	Southern Ave/Salt Lake Ave	South Gate	Two-Way Stop	9/A-AM 9/A-PM	4/A-AM 4/A-PM
68	Gardendale St/Center St	South Gate	Two-Way Stop	19/C-AM 17/C-PM	24/C-AM 17/C-PM
69	Gardendale St/Dakota Ave	South Gate	All-Way Stop	28/D-AM 13/B-PM	29/D-AM 11/B-PM
70	Gardendale St/Industrial Ave	South Gate	Two-Way Stop	35/D-AM 22/C-PM	76/F-AM 29/D-PM
71	Main St/Center St	South Gate	Two-Way Stop	15/B-AM 13/B-PM	8/A-AM 7/A-PM
72	Main St/Dakota Ave	South Gate	Two-Way Stop	10/B-AM 10/B-PM	3/A-AM 5/A-PM
73	Main St/Arizona Ave/ Industrial Ave	South Gate	Two-Way Stop	18/C-AM 19/C-PM	13/B-AM 7/A-PM
74	Century Blvd/Center St	South Gate	Two-Way Stop	10/A-AM 9/A-PM	2/A-AM 1/A-PM
75	Century Blvd/Florence Ave	South Gate	Two-Way Stop	9/A-AM 9/A-PM	2/A-AM 2/A-PM
76	Rosecrans Ave/Paramount Blvd	Paramount	Traffic Signal	55/D-AM 48/D-PM	68/E-AM 23/C-PM
77	Rosecrans Ave/Bianchi Way	Paramount	Traffic Signal	2/A-AM 13/B-PM	6/A-AM 23/C-PM
78	Somerset Blvd/Hayter Ave	Paramount	Two-Way Stop	29/D-AM 32/D-PM	16/C-AM 18/C-PM
79	Somerset Blvd/Lakewood Blvd	Bellflower	Two-Way Stop	32/C-AM 30/C-PM	43/D-AM 47/D-PM
80	Paseo St/Lakewood Blvd	Bellflower	Traffic Signal	4/A-AM 3/A-PM	5/A-AM 5/A-PM
81	Flora Vista St/Clark Ave	Bellflower	Two-Way Stop	14/B-AM 18/C-PM	8/A-AM 22/C-PM
82	Alondra Blvd/Clark Ave	Bellflower	Traffic Signal	47/D-AM 48/D-PM	46/D-AM 69/E-PM
83	Alondra Blvd/Pacific Ave	Bellflower	Traffic Signal	5/A-AM 12/B-PM	6/A-AM 13/B-PM
84	Alondra Blvd/Flora Vista St	Bellflower	Two-Way Stop	37/E-AM 32/D-PM	53/F-AM 41/E-PM
85	Alondra Blvd/Stevens Ave	Bellflower	Two-Way Stop	51/F-AM 30/D-PM	33/D-AM 16/C-PM
86	Bellflower Blvd/Flora Vista St	Bellflower	Traffic Signal	7/A-AM 14/B-PM	7/A-AM 19/B-PM
87	Bellflower Blvd/Mayne St	Bellflower	Traffic Signal	11/B-AM 10/B-PM	2/A-AM 3/A-PM

No	Intersection Name	Jurisdiction	Control Type	Existing (2017) Delay/LOS/Period*	No Build (2042) Delay/LOS/Period*
88	Bellflower Blvd/Oak St	Bellflower	Traffic Signal	22/C-AM 25/C-PM	18/B-AM 20/C-PM
89	Artesia Blvd/Dumont Ave	Cerritos	Traffic Signal	18/B-AM 9/A-PM	15/B-AM 22/C-PM
90	Artesia Blvd/Studebaker Rd	Cerritos	Traffic Signal	85/F-AM 61/E-PM	48/D-AM 100/F-PM
91	Business Cir/Studebaker Rd	Cerritos	Two-Way Stop	15/B-AM 16/C-PM	8/A-AM 8/A-PM
92	186th St/Jersey Ave	Artesia	All-Way Stop	9/A-AM 9/A-PM	3/A-AM 2/A-PM
93	187th St/Alburtis Ave	Artesia	Two-Way Stop	10/A-AM 9/A-PM	4/A-AM 2/A-PM
94	187th St/Corby Ave (West)	Artesia	Two-Way Stop	9/A-AM 10/A-PM	4/A-AM 4/A-PM
95	187th St/Corby Ave (East)	Artesia	Two-Way Stop	9/A-AM 9/A-PM	4/A-AM 4/A-PM
96	186th St/Pioneer Blvd	Artesia	Traffic Signal	7/A-AM 5/A-PM	7/A-AM 6/A-PM
97	187th St/Pioneer Blvd	Artesia	Traffic Signal	7/A-AM 5/A-PM	7/A-AM 8/A-PM
98	188th St/Pioneer Blvd	Artesia	Two-Way Stop	11/B-AM 13/B-PM	5/A-AM 6/A-PM
99	South St/Pioneer Blvd	Cerritos	Traffic Signal	34/C-AM 41/D-PM	25/C-AM 38/D-PM
100	South St/Clarkdale Ave	Artesia	Traffic Signal	18/B-AM 12/B-PM	16/B-AM 18/B-PM
101	South St/Elaine Ave	Artesia	Traffic Signal	11/B-AM 12/B-PM	10/B-AM 9/A-PM

Source: Metro 2021s
Notes: *This column shows the peak hour delay in seconds per vehicle, followed by the LOS for the AM peak hour, and then for the PM peak hour. For example, "21/C-AM 13/B-PM" means a 21-second/vehicle delay, which is LOS C, in the AM peak hour, and a 13-second/vehicle delay, which is LOS B, in the PM peak hour under the No Build condition.
LOS = level-of-service

3.4.1.2 Alternative 1: Los Angeles Union Station to Pioneer Station

Traffic impacts associated with the at-grade crossings and stations within the limits of Alternative 1 would be equal to or less than those at the same facilities for Alternative 2 for those intersections common to both alternatives (Section 3.4.1.3). Because the northern terminus station would be farther from commercial and residential areas in downtown Los Angeles, there would be reduced ridership demand of approximately 20 percent for stations within the shared limits of Alternatives 1 and 2 (Table 3.13). The reduction in total ridership associated with Alternative 1 would also result in a reduced number of park-and-ride and kiss-and-ride trips compared to Alternative 2. The number of kiss-and-ride trips generated under Alternative 1 would be 13 to 38 percent lower than that of Alternative 2 across the stations. Service frequencies would not be reduced (i.e., train headways would remain the same), so the

number of at-grade crossing events, associated impacts, and effect determinations discussed in Section 3.4.1.3 would not change under Alternative 1. Under NEPA, Alternative 1 would result in adverse effects related to traffic operations. Alternative 1 would result in adverse impacts at 20 intersections prior to mitigation. After implementation of the mitigation measures described in Section 3.5.2, adverse impacts would remain at 12 intersections.

Table 3.13. Daily Ridership and Station Vehicular Demand—Build Alternatives (2042)

		Alternative 1	Alternative 2	Alternative 3	Alternative 4
Daily ridership		38,286	47,836	30,715	11,189
Ridership demand change vs. Alternative 2		-20%	N/A	-36%	-37%
Park-and-ride and kiss-and-ride demand change by station	Slauson/A Line*	-38%	N/A	-88%	N/A
	Randolph/Pacific*	-34%	N/A	-71%	N/A
	Florence/Salt Lake*	-22%	N/A	-52%	N/A
	Firestone	-15%	N/A	-42%	N/A
	Gardendale*	-18%	N/A	-55%	N/A
	I-105/C Line	-17%	N/A	-49%	-80%
	Paramount/Rosecrans	-16%	N/A	-45%	-61%
	Bellflower	-13%	N/A	-36%	-54%
	Pioneer	-13%	N/A	-37%	-54%

Source: Metro 2018f
Notes: * Kiss-and-ride only
N/A = analysis is not applicable to that station under that alternative.

3.4.1.3 Alternative 2: 7th St/Metro Center to Pioneer Station

Table 3.14 summarizes the Alternative 2 projected 2042 intersection operations. As shown, Alternative 2 would result in adverse impacts at 20 intersections during one or both peak periods based on increased delay compared to the No Build Alternative. Mitigation measures, described in Section 3.5, are proposed to address these impacts.

As shown in Table 3.14, intersection delay would be reduced at some intersections. This would occur for a variety of reasons, including optimized traffic signal timing, reconfiguration of roadway lanes, and/or changes in traffic flow at at-grade crossings.

The intersections located in downtown Los Angeles would not have adverse impacts because the alignment is either aerial or underground. As such, traffic circulation would not be affected by the Project.

Table 3.14. Alternative 2 Operations (2042)

No	Intersection Name	Jurisdiction	No Build Peak Hour Delay/LOS[a]	Alternative 2 Peak Hour Delay/LOS[b]
1-4	Not applicable to Alternative 2[e]	–	–	–
5	Alameda St/6th St	Los Angeles	16/B-AM 19/B-PM	16/B-AM 24/C-PM
6	Alameda St/7th St	Los Angeles	69/E-AM 136/F-PM	63/E-AM 121/F-PM
7	7th St/Flower St	Los Angeles	17/B-AM 19/B-PM	17/B-AM 18/B-PM
8	8th St/Figueroa St	Los Angeles	13/B-AM 17/B-PM	12/B-AM 17/B-PM
9	8th St/Flower St	Los Angeles	9/A-AM 14/B-PM	9/A-AM 13/B-PM
10	8th St/Hope St	Los Angeles	19/B-AM 21/C-PM	19/B-AM 21/C-PM
11	9th St/Flower St	Los Angeles	15/B-AM 17/B-PM	15/B-AM 17/B-PM
12	7th St/Main St	Los Angeles	16/B-AM 19/B-PM	16/B-AM 18/B-PM
13	7th St/Los Angeles St	Los Angeles	15/B-AM 23/C-PM	14/B-AM 20/C-PM
14	7th St/Maple Ave	Los Angeles	10/B-AM 16/B-PM	10/A-AM 15/B-PM
15	9th St/Main St/Spring St	Los Angeles	19/B-AM 20/C-PM	17/B-AM 22/C-PM
16	9th St/Los Angeles St	Los Angeles	12/B-AM 15/B-PM	12/B-AM 15/B-PM
17	9th St/Santee St	Los Angeles	7/A-AM 16/B-PM	7/A-AM 15/B-PM
18	9th St/Maple St	Los Angeles	13/B-AM 20/C-PM	13/B-AM 18/B-PM
19	8th St/Broadway	Los Angeles	21/C-AM 19/B-PM	21/C-AM 18/B-PM
20	8th St/Spring St	Los Angeles	9/A-AM 11/B-PM	8/A-AM 11/B-PM
21	8th St/Main St	Los Angeles	10/A-AM 12/B-PM	9/A-AM 11/B-PM
22	8th St/Los Angeles St	Los Angeles	13/B-AM 17/B-PM	12/B-AM 16/B-PM
23	8th St/Santee St	Los Angeles	11/B-AM 84/F-PM	11/B-AM 84/F-PM

No	Intersection Name	Jurisdiction	No Build Peak Hour Delay/LOS[a]	Alternative 2 Peak Hour Delay/LOS[b]
24	8th St/Maple Ave	Los Angeles	11/B-AM 17/B-PM	11/B-AM 16/B-PM
25	8th St/Wall St	Los Angeles	12/B-AM 15/B-PM	11/B-AM 14/B-PM
26	Alameda St/Center St	Los Angeles	6/A-AM 14/B-PM	5/A-AM 14/B-PM
27	Alameda St/Bay St	Los Angeles	10/A-AM 12/B-PM	9/A-AM 12/B-PM
28	Alameda St/8th St	Los Angeles	11/B-AM 12/B-PM	11/B-AM 12/B-PM
29	Alameda St/Olympic Blvd	Los Angeles	29/C-AM 85/F-PM	33/C-AM 58/E-PM
30	Randolph St/Wilmington Ave	Huntington Park	33/D-AM 12/B-PM	34/F-AM 13/A-PM
31	Randolph St/Alameda St (West)	Huntington Park	50/D-AM 61/E-PM	**143/F-AM[f]** **140/F-PM**
32	Randolph St/Alameda St (East)	Huntington Park	13/B-AM 14/B-PM	**-[c]-AM[f]** **-[c]-PM**
33	Randolph St/Regent St	Huntington Park	10/B-AM 12/B-PM	5/A-AM 6/A-PM
34	Randolph St/Albany St	Huntington Park	18/C-AM 17/C-PM	8/A-AM 8/A-PM
35	Randolph St/Santa Fe Ave	Huntington Park	30/C-AM 30/C-PM	**115/F-AM[f]** **141/F-PM**
36	Randolph St/Malabar St	Huntington Park	23/C-AM 22/C-PM	**82/F-AM[f]** **52/D-PM**
37	Randolph St/Rugby Ave	Huntington Park	7/A-AM 4/A-PM	4/A-AM 6/A-PM
38	Pacific Blvd/Belgrave Ave	Huntington Park	13/B-AM 12/B-PM	17/B-AM 15/B-PM
39	Pacific Blvd/Clarendon Ave	Huntington Park	11/B-AM 9/A-PM	**51/D-AM[f]** 14/B-PM
40	Pacific Blvd/Randolph St	Huntington Park	26/C-AM 33/C-PM	**90/F-AM[f]** **73/E-PM**
41	Randolph St/Rita Ave	Huntington Park	20/C-AM 48/E-PM	8/A-AM 5/A-PM
42	Randolph St/Seville Ave	Huntington Park	38/D-AM 35/C-PM	**111/F-AM[f]** **129/F-PM**
43	Randolph St/Miles Ave	Huntington Park	37/D-AM 36/D-PM	**92/F-AM[f]** **122/F-PM**
44	Randolph St/Arbutus Ave	Huntington Park	33/D-AM 6/A-PM	35/D-AM 18/B-PM

No	Intersection Name	Jurisdiction	No Build Peak Hour Delay/LOS[a]	Alternative 2 Peak Hour Delay/LOS[b]
45	Randolph St/State St	Huntington Park	44/D-AM 19/B-PM	**144/F-AM[f]** **76/E-PM**
46	Randolph St/Bissell Pl	Huntington Park	7/A-AM 5/A-PM	2/A-AM 5/A-PM
47	Randolph St/Maywood Ave	Huntington Park	14/B-AM 13/B-PM	17/B-AM 11/B-PM
48	Gage Ave/California Ave	Bell	20/B-AM 98/F-PM	**69/E-AM[f]** **120/F-PM**
49	Gage Ave/Salt Lake Ave (West)	Bell	16/B-AM 34/C-PM	**64/E-AM[f]** **114/F-PM**
50	Bell Ave/California Ave	Huntington Park	12/B-AM 9/A-PM	13/B-AM 8/A-PM
51	Bell Ave/Bissell St	Bell	5/A-AM 6/A-PM	13/B-AM **22/C-PM[f]**
52	Bell Ave/Salt Lake Ave	Huntington Park	89/F-AM 88/F-PM	53/D-AM 19/B-PM
53	Florence Ave/California Ave (West)	Huntington Park	37/D-AM 42/D-PM	**103/F-AM[f]** **80/F-PM**
54	Florence Ave/California Ave (East)	Huntington Park	65/E-AM 44/D-PM	**143/F-AM[f]** 31/C-PM
55	Otis Ave/Salt Lake Ave (West)	Huntington Park	189/F-AM 165/F-PM	122/F-AM 135/F-PM
56	Otis Ave/Salt Lake Ave (East)	Cudahy	83/F-AM 104/F-PM	36/E-AM 93/F-PM
57	Otis Ave/Elizabeth St	Cudahy	1452/F-AM 1473/F-PM	342/F-AM 366/F-PM
58	Santa Ana St/Salt Lake Ave (West)	Huntington Park	1478/F-AM 1574/F-PM	823/F-AM 747/F-PM
59	Santa Ana St/Salt Lake Ave (East)	Cudahy	219/F-AM 265/F-PM	146/F-AM 100/F-PM
60	Ardine St/Salt Lake Ave	Cudahy	24/C-AM 20/C-PM	25/D-AM 16/C-PM
61	Atlantic Ave/Salt Lake Ave	Cudahy	51/D-AM 81/F-PM	53/D-AM 81/F-PM
62	Atlantic Ave/Azalea West	South Gate	5/A-AM 9/A-PM	10/B-AM 18/B-PM
63	Firestone Blvd/Atlantic Ave	South Gate	139/F-AM 90/F-PM	140/F-AM 91/F-PM
64	Firestone Blvd/Mason St	South Gate	19/B-AM 12/B-PM	10/B-AM 14/B-PM
65	Firestone Blvd/Firestone Pl	South Gate	59/E-AM 24/C-PM	44/D-AM 27/C-PM

No	Intersection Name	Jurisdiction	No Build Peak Hour Delay/LOS[a]	Alternative 2 Peak Hour Delay/LOS[b]
66	Firestone Blvd/Rayo Ave	South Gate	49/D-AM 40/D-PM	42/D-AM 43/D-PM
67	Southern Ave/Salt Lake Ave	South Gate	4/A-AM 4/A-PM	6/A-AM 4/A-PM
68	Gardendale St/Center St	South Gate	24/C-AM 17/C-PM	**48/E-AM[f]** **41/E-PM**
69	Gardendale St/Dakota Ave	South Gate	29/D-AM 11/B-PM	8/A-AM 9/A-PM
70	Gardendale St/Industrial Ave	South Gate	76/F-AM 29/D-PM	**594/F-AM[f]** **50/F-PM**
71	Main St/Center St	South Gate	8/A-AM 7/A-PM	10/A-AM 7/A-PM
72	Main St/Dakota Ave	South Gate	3/A-AM 5/A-PM	4/A-AM 7/A-PM
73	Main St/Arizona Ave/Industrial Ave	South Gate	13/B-AM 7/A-PM	17/C-AM 11/B-PM
74	Century Blvd/Center St	South Gate	2/A-AM 1/A-PM	2/A-AM 1/A-PM
75	Century Blvd/Florence Ave	South Gate	2/A-AM 2/A-PM	2/A-AM 2/A-PM
76	Paramount Blvd/Rosecrans Ave	Paramount	68/E-AM 23/C-PM	69/E-AM 26/C-PM
77	Rosecrans Ave/Bianchi Way	Paramount	6/A-AM 23/C-PM	9/A-AM 8/A-PM
78	Somerset Blvd/Hayter Ave	Paramount	16/C-AM 18/C-PM	13/B-AM 17/C-PM
79	Somerset Blvd/Lakewood Blvd	Bellflower	43/D-AM 47/D-PM	44/D-AM 38/D-PM
80	Paseo St/Lakewood Blvd	Bellflower	5/A-AM 5/A-PM	12/B-AM 7/A-PM
81	Flora Vista St/Clark Ave	Bellflower	8/A-AM 22/C-PM	**172/F-AM[f]** **389/F-PM**
82	Alondra Blvd/Clark Ave	Bellflower	46/D-AM 69/E-PM	**61/E-AM[f]** **83/F-PM**
83	Alondra Blvd/Pacific Ave	Bellflower	6/A-AM 13/B-PM	9/A-AM 6/A-PM
84	Alondra Blvd/Flora Vista St	Bellflower	53/F-AM 41/E-PM	**420/F-AM[f]** 37/E-PM
85	Alondra Blvd/Stevens Ave	Bellflower	33/D-AM 16/C-PM	36/E-AM 20/C-PM
86	Bellflower Blvd/Flora Vista St	Bellflower	7/A-AM 19/B-PM	18/B-AM 25/C-PM

No	Intersection Name	Jurisdiction	No Build Peak Hour Delay/LOS[a]	Alternative 2 Peak Hour Delay/LOS[b]
87	Bellflower Blvd/Mayne St	Bellflower	2/A-AM 3/A-PM	18/B-AM 24/C-PM
88	Bellflower Blvd/Oak St	Bellflower	18/B-AM 20/C-PM	23/C-AM 34/C-PM
89	Artesia Blvd/Dumont Ave	Cerritos	15/B-AM 22/C-PM	**24/C-AM**[f] **58/E-PM**
90	Artesia Blvd/Studebaker Rd	Cerritos	48/D-AM 100/F-PM	49/D-AM 82/F-PM
91	Business Cir/Studebaker Rd	Cerritos	8/A-AM 8/A-PM	3/A-AM **15/C-PM**[f]
92	186th St/Jersey Ave	Artesia	3/A-AM 2/A-PM	5/A-AM 8/A-PM
93	187th St/Alburtis Ave	Artesia	4/A-AM 2/A-PM	2/A-AM 2/A-PM
94	187th St/Corby Ave (West)	Artesia	4/A-AM 4/A-PM	1/A-AM 3/A-PM
95	187th St/Corby Ave (East)	Artesia	4/A-AM 4/A-PM	1/A-AM 1/A-PM
96	186th St/Pioneer Blvd	Artesia	7/A-AM 6/A-PM	11/B-AM 8/A-PM
97	187th St/Pioneer Blvd	Artesia	7/A-AM 8/A-PM	5/A-AM 4/A-PM
98	188th St/Pioneer Blvd	Artesia	5/A-AM 6/A-PM	-[d]-AM -[d]-PM
99	South St/Pioneer Blvd	Cerritos	25/C-AM 38/D-PM	26/C-AM 40/D-PM
100	South St/Clarkdale Ave	Cerritos	16/B-AM 18/B-PM	9/A-AM 18/B-PM
101	South St/Elaine Ave	Cerritos	10/B-AM 9/A-PM	11/A-AM 9/A-PM

Source: Metro 2021s

Notes: [a] This column shows the peak hour delay in seconds per vehicle, followed by the LOS for the AM peak hour, and then for the PM peak hour. For example, "21/C-AM 13/B-PM" means a 21-second/vehicle delay, which is LOS C, in the AM peak hour, and a 13-second/vehicle delay, which is LOS B, in the PM peak hour under the No Build condition.

[b] This column shows the peak hour delay in seconds per vehicle, followed by the LOS.

[c] The traffic signal installation improvements for the intersection are considered to be tied to the Randolph St/Alameda St (West) traffic signal operations. Therefore, the Randolph St/Alameda St (West) peak hour delay summary considers the operations at Randolph St/Alameda St (West).

[d] 188th Street would be closed between Corby Avenue and Pioneer Boulevard to accommodate Pioneer Station parking structure. Therefore, the intersection is eliminated.

[e] These intersections are located along Alternative 1. Refer to Table 3.18 for the evaluation of Intersections 1-4.

[f] Yellow-shaded and bolded cells are those intersections where adverse impacts are identified.

LOS = level-of-service

Additionally, Alternative 2 could result in changes to the lengths of vehicle queues from nearby intersections back to train crossings. These queues arise when vehicles wait at a red traffic signal and the spacing from an intersection to an upstream train crossing is not sufficient to store all waiting vehicles. The result could be vehicles stopped on the tracks, unless other measures are taken, such as placing signs to indicate that stopping on the tracks is not permitted. The Transportation Impact Analysis Report (Appendix D) contains detailed information on the queuing analysis conducted. While these are not LOS intersection impacts, the effects from vehicle queues would exceed the available vehicle storage from nearby intersections at the following at-grade crossing locations:

- Florence Avenue: At California Avenue (East) and California Avenue (West)
- Gardendale Street: At Center Street
- Lakewood Boulevard: At Somerset Boulevard
- Clark Avenue: At Alondra Boulevard
- Alondra Boulevard: At Clark Avenue
- Bellflower Boulevard: At Flora Vista Street and Oak Street
- Artesia Boulevard: At Studebaker Road

Project Measures TR PM-1 (Pre-signals and Queue-cutter Signals) through TR PM-10 (Pioneer Station Parking Access), described in Section 3.5.1, would be implemented as part of the Project to minimize the potential for vehicles queuing into at-grade crossings; these measures were determined during advanced design and/or in consultation with the CPUC. For instance, TR PM-1 (Pre-signals and Queue-cutter Signals) would include installation of pre-signals and queue-cutter signals to prevent queuing across the tracks with a directional signal before the tracks. They are activated (turned red) when the system detects an approaching queue on the other side of the tracks, or in coordination with the downstream intersection signal. With these project measures, the vehicles in the queue would be prevented from stopping on the tracks, eliminating potential conflicts from queues under Alternative 2. Because these features would be required to obtain certification from the CPUC for operation of the Project, these features are considered part of design and not as separate mitigation measures.

Alternative 2 would cross freeways either aerial or as an undercrossing. The existing number of freeway lanes would not be modified to accommodate Alternative 2. Safety requirements to accommodate the freeway crossing would be established in accordance with Caltrans requirements.

Under NEPA, Alternative 2 would result in adverse effects related to traffic operations. Alternative 2 would result in adverse impacts at 20 intersections prior to mitigation. After implementation of the mitigation measures described in Section 3.5.2, adverse impacts would remain at 12 intersections.

3.4.1.4 Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Traffic impacts associated with the at-grade crossings and stations within the limits of Alternative 3 would be equal to or less than those at the same facilities for Alternative 2. Alternative 3 would not result in adverse impacts at intersections outside the limits of Alternative 3. Because Alternative 3 would not result in new transit service north of the Slauson/A Line Station, there would be a 36 percent reduction in ridership demand for stations within the limits of Alternative 3 compared to Alternative 2, as shown in Table 3.13. The reduction in total ridership associated with Alternative 3 would also result in a reduced number of park-and-ride and kiss-and-ride trips at the Alternative 3 stations (between the Slauson/A Line and Pioneer Stations). The number of kiss-and-ride trips generated by Alternative 3 would be 37 to 88 percent lower than that of Alternative 2 across the stations. As a result, there would be a minor reduction in traffic impacts associated with station vehicle trips. However, Alternative 3 would have the same service frequencies as Alternative 2 and, therefore, the number of at-grade crossing events, associated effects, and effect determinations identified for Alternative 2 in Section 3.4.1.3 would also apply to Alternative 3 for those intersections that are part of the area affected by Alternative 3. Table 3.15 provides a summary of the traffic operations assessment between the Slauson/A Line and Pioneer Stations under Alternative 3. Under NEPA, Alternative 3 would result in adverse effects related to traffic operations. There are 20 intersections where Alternative 3 would have adverse effects associated with the nearby at-grade crossings, which are the same intersections that would have adverse effects under Alternative 2. After implementation of the mitigation measures discussed in Section 3.5.2, Alternative 3 would have adverse effects at 12 intersections.

Table 3.15. Summary of Alternative 3 Intersection Operations Assessment

Intersections with Adverse Effects		Intersections without Adverse Effects	
No. 31: Randolph St/Alameda St (West)	No. 68: Gardendale St/Center St	No. 31: Randolph St/Wilmington Ave	No. 71: Main St/Center St
No. 35: Randolph St/Santa Fe Ave	No. 70: Gardendale St/Industrial Ave	No. 33: Randolph St/Regent St	No. 72: Main St/Dakota Ave
No. 36: Randolph St/Malabar St	No. 81: Flora Vista St/Clark Ave	No. 34: Randolph St/Albany St	No. 73: Main St/Arizona Ave/Industrial Ave
No. 39: Pacific Blvd/Clarendon Ave	No. 82: Alondra Blvd/Clark Ave	No. 37: Randolph St/Rugby Ave	No. 74: Century Blvd/Center St
No. 40: Pacific Blvd/Randolph St	No. 84: Alondra Blvd/Flora Vista St	No. 38: Pacific Blvd/Belgrave Ave	No. 75: Century Blvd/Florence Ave
No. 42: Randolph St/Seville Ave	No. 89: Artesia Blvd/Dumont Ave	No. 41: Randolph St/Rita Ave	No. 76: Paramount Blvd/Rosecrans Ave
No. 43: Randolph St/Miles Ave	No. 91: Business Cir/Studebaker Rd	No. 44: Randolph St/Arbutus Ave	No. 77: Rosecrans Ave/Bianchi Way
No. 45: Randolph St/State St		No. 46: Randolph St/Bissell Pl	No. 78: Somerset Blvd/Hayter Ave
No. 48: Gage Ave/California Ave		No. 47: Randolph St/Maywood Ave	No. 79: Somerset Blvd/Lakewood Blvd
No. 49: Gage Ave/Salt Lake Ave (West)		No. 50: Bell Ave/California Ave	No. 80: Paseo St/Lakewood Blvd
No. 51: Bell Ave/Bissell St		No. 52: Bell Ave/Salt Lake Ave	No. 83: Alondra Blvd/Pacific Ave
No. 53: Florence Ave/California Ave (West)		No. 55: Otis Ave/Salt Lake Ave (West)	No. 85: Alondra Blvd/Stevens Ave
No. 54: Florence Ave/California Ave (East)		No. 56: Otis Ave/Salt Lake Ave (East)	No. 86: Bellflower Blvd/Flora Vista St
		No. 57: Otis Ave/Elizabeth St	No. 87: Bellflower Blvd/Mayne St
		No. 58: Santa Ana St/Salt Lake Ave (West)	No. 88: Bellflower Blvd/Oak St
		No. 59: Santa Ana St/Salt Lake Ave (East)	No. 90: Artesia Blvd/Studebaker Rd
		No. 60: Ardine St/Salt Lake Ave	No. 92: 186th St/Jersey Ave
		No. 61: Atlantic Ave/Salt Lake Ave	No. 93: 187th St/Alburtis Ave
		No. 62: Atlantic Ave/Azalea West	No. 94: 187th St/Corby Ave (West)
		No. 63: Firestone Blvd/Atlantic Ave	No. 95: 187th St/Corby Ave (East)
		No. 64: Firestone Blvd/Mason St	No. 96: 186th St/Pioneer Blvd
		No. 65: Firestone Blvd/Firestone Pl	No. 97: 187th St/Pioneer Blvd
		No. 66: Firestone Blvd/Rayo Ave	No. 98: 188th St/Pioneer Blvd
		No. 67: Southern Ave/Salt Lake Ave	No. 99: South St/Pioneer Blvd
		No. 69: Gardendale St/Dakota Ave	No. 100: South St/Clarkdale Ave
			No. 101: South St/Elaine Ave

Source: Metro 2021s

3.4.1.5 Alternative 4: I-105/C (Green) Line to Pioneer Station

Similar to Alternative 3, traffic impacts associated with the at-grade crossings and stations within the limits of Alternative 4 would be equal to or less than those at the same locations for Alternative 2. Alternative 4 would not result in adverse impacts at intersections outside the limits of Alternative 4. Because Alternative 4 would not result in new transit service north of the I-105/C Line Station, there would be a 37 percent reduction in ridership demand for stations within the limits of Alternative 4 compared to Alternative 2, as shown in Table 3.13. The reduction in total ridership associated with Alternative 4 would also result in a reduced number of park-and-ride and kiss-and-ride trips at the Alternative 4 stations (between the I-105/C Line and Pioneer Stations). The number of park-and-ride and kiss-and-ride trips generated by Alternative 4 would be between 54 and 80 percent lower than that of Alternative 2 across the stations. As a result, there would be a minor reduction in traffic impacts associated with station vehicle trips. However, Alternative 4 would have the same service frequencies as Alternative 2 and, therefore, the number of at-grade crossing events, associated effects, and effect determinations identified for Alternative 2 would apply to Alternative 4 for those intersections that are part of the area affected by Alternative 4.

Table 3.16 provides a summary of the traffic operations assessment between the I-105/C Line and Pioneer Stations under Alternative 4. Under NEPA, Alternative 4 would result in adverse effects related to traffic operations prior to mitigation. There are seven intersections where Alternative 4 would have adverse effects associated with the nearby at-grade crossings. Alternatives 1, 2, and 3 also would result in adverse effects at these intersections. Because Alternative 4 would have a shorter alignment than Alternatives 1, 2, and 3, there would be 15 fewer intersections adversely affected with Alternative 4 compared to these other alternatives. After implementation of the mitigation measures described in Section 3.5.2, Alternative 4 would not result in adverse effects.

Table 3.16. Alternative 4 Intersection Adverse Effect Assessment

Intersections with Adverse Effects	Intersections without Adverse Effects	
No. 81: Flora Vista St/Clark Ave	No. 69: Gardendale St/Dakota Ave	No. 87: Bellflower Blvd/Mayne St
No. 82: Alondra Blvd/Clark Ave	No. 71: Main St/Center St	No. 88: Bellflower Blvd/Oak St
No. 84: Alondra Blvd/Flora Vista St	No. 72: Main St/Dakota Ave	No. 90: Artesia Blvd/Studebaker Rd
No. 89: Artesia Blvd/Dumont Ave	No. 73: Main St/Arizona Ave/ Industrial Ave	No. 92: 186th St/Jersey Ave
No. 91: Business Cir/Studebaker Rd	No. 74: Century Blvd/Center St	No. 93: 187th St/Alburtis Ave
	No. 75: Century Blvd/Florence Ave	No. 94: 187th St/Corby Ave (West)
	No. 76: Paramount Blvd/Rosecrans Ave	No. 95: 187th St/Corby Ave (East)
	No. 77: Rosecrans Ave/Bianchi Way	No. 96: 186th St/Pioneer Blvd
	No. 78: Somerset Blvd/Hayter Ave	No. 97: 187th St/Pioneer Blvd
	No. 79: Somerset Blvd/Lakewood Blvd	No. 98: 188th St/Pioneer Blvd
	No. 80: Paseo St/Lakewood Blvd	No. 99: South St/Pioneer Blvd
	No. 83: Alondra Blvd/Pacific Ave	No. 100: South St/Clarkdale Ave
	No. 85: Alondra Blvd/Stevens Ave	No. 101: South St/Elaine Ave
	No. 86: Bellflower Blvd/Flora Vista St	

Source: Metro 2021s

3.4.1.6 Design Options—Alternative 1

Design Option 1: LAUS at MWD

As summarized in Table 3.17, there would be a reduced ridership demand of approximately 14 percent under Alternative 1 with Design Option 1 (MWD) compared to Alternative 2. Similar to Alternative 1 without the design option, the reduced ridership is because the northern terminus would be farther from commercial and residential areas. The reduction in total ridership associated with Design Option 1 (MWD) would also result in a 11 to 30 percent reduction in the number of park-and-ride and kiss-and-ride trips compared to Alternative 2. Service frequencies under Alternative 1 with Design Option 1 (MWD) would be the same as those for Alternative 2; therefore, the number of at-grade crossing events, associated effects, and effect determinations discussed in Section 3.4.1.3 would not change.

Table 3.17. Daily Ridership and Station Vehicular Demand—Alternative 1 with Design Options 1 and 2 and Alternative 2 (2042)

		Alternative 1 with Design Option 1 (MWD)	Alternative 1 with Design Option 2	Alternative 2
Daily ridership		41,043	41,054	47,836
Ridership demand change vs. Alternative 2		-14%	-14%	—
Park-and-ride and kiss-and-ride demand change by station	Slauson/A Line*	-30%	-29%	—
	Randolph/Pacific*	-29%	-28%	—
	Florence/Salt Lake*	-19%	-17%	—
	Firestone	-13%	-12%	—
	Gardendale*	-15%	-15%	—
	I-105/C Line	-14%	-14%	—
	Paramount/Rosecrans	-13%	-14%	—
	Bellflower	-11%	-11%	—
	Pioneer	-11%	-11%	—

Source: Metro 2018f
Notes: * Kiss-and-ride only
MWD = Metropolitan Water District

Design Option 2: Add Little Tokyo Station

Traffic impacts associated with the at-grade crossings and stations under Alternative 1 with Design Option 2 would be equal to or less than those at the same facilities for Alternative 2. Because the northern terminus station would be farther from the commercial and residential areas, there would be a 14 percent reduction in ridership demand for stations for Alternative 1 with Design Option 2 compared to Alternative 2 (Table 3.17). The reduction in total ridership associated with Design Option 2 would also result in an 11 to 29 percent reduction in the number of park-and-ride and kiss-and-ride trips at stations. Design Option 2 would include additional intersections in the downtown Los Angeles area; however, the intersections located in the downtown Los Angeles area would not have adverse impacts

because the alignment is either aerial or underground and the stations would not accommodate kiss-and-ride or park-and-ride trips. Table 3.18 shows the additional intersections and projected 2042 operations. If Design Option 1 (MWD) is included with Design Option 2, additional key intersections would not be added to the Affected Area for traffic operations and the key intersections analysis results would not change. Service frequencies under Alternative 1 with Design Option 2 would be the same as those for Alternative 2; therefore, the number of at-grade crossing events, associated effects, and effect determinations discussed in Section 3.4.1.3 would not change.

Table 3.18. Alternative 1 with Design Option 2 Operations (Design Option Specific) (2042)

No	Intersection Name	Jurisdiction	No Build Peak Hour Delay/LOS[a]	Alternative 1 with Design Option 2 Peak Hour Delay/LOS[b]
1	1st St/Alameda St	Los Angeles	36/D-AM 18/B-PM	35/D-AM 19/B-PM
2	2nd St/Alameda St	Los Angeles	121/F-AM 65/E-PM	123/F-AM 65/E-PM
3	Traction Ave/Alameda St	Los Angeles	82/F-AM 79/F-PM	82/F-AM 77/F-PM
4	3rd St/Alameda St	Los Angeles	61/E-AM 69/E-PM	57/E-AM 68/E-PM

Source: Metro 2021s
Notes: [a] This column shows the peak-hour delay in seconds per vehicle, followed by the LOS for the AM peak hour, and then for the PM peak hour. For example, "21/C-AM 13/B-PM" means a 21-second/vehicle delay, which is LOS C, in the AM peak hour, and a 13-second/vehicle delay, which is LOS B, in the PM peak hour under the No Build condition. Some intersections have not been assessed for 2042 No Build operations, pending decisions on the alignment.
[b] This column shows the peak hour delay in seconds per vehicle, followed by the LOS. Yellow-shaded and bolded cells are those intersections where adverse effects are identified.
LOS = level-of -service

3.4.1.7 Maintenance and Storage Facility

Two potential site locations for the MSF have been identified and evaluated—one in the City of Bellflower and one in the City of Paramount. Only one MSF would be constructed as part of the Project.

Paramount MSF Site Option

The Paramount MSF site's major street is to the north at Rosecrans Avenue. The streets adjacent to the Paramount MSF site option mainly serve industrial/commercial facilities and the area is heavily traveled to the west by commercial vehicles. Rosecrans Avenue, Garfield Avenue, and Paramount Boulevard (north of Rosecrans Avenue) are designated truck routes near the Paramount MSF site option. Access to major streets is limited through Bianchi Way. East of the site, Paramount Boulevard (south of Rosecrans Avenue) and residential streets restrict commercial vehicle traffic. Access to the nearby I-710 and I-105 freeways are through Rosecrans Avenue, Garfield Avenue, and Paramount Boulevard. Traffic density around the site and on the local roadway network is moderate with the peak periods heavily traveled.

To assess potential impacts, traffic volumes from the Paramount MSF site option were evaluated. A peak hour trip generation rate was determined from driveway traffic counts at the Metro Division 22 LRT maintenance facility serving the Metro C (Green) Line (at 14724 Aviation Boulevard in Lawndale). The projected traffic to and from the Paramount MSF is 23 vehicle trips in the AM peak hour and 26 vehicle trips in the PM hour. These values are below LADOT's 2016 *Transportation Impact Study Guidelines* threshold for new developments (43 vehicle trips during the AM/PM peak hours). Therefore, the effect on traffic would not be adverse.

Trains entering and exiting the MSF would have to use the existing at-grade rail crossing on Rosecrans Avenue (between the signalized intersection at Garfield Avenue and Bianchi Way). The timing and frequency of these crossing events are anticipated to occur during off-peak traffic hours when traffic volumes would be lower. Therefore, these impacts would be not be substantial.

Bellflower MSF Site Option

The main street for access to the Bellflower MSF site is immediately north at Somerset Boulevard. The streets adjacent to the site mainly serve residential areas. The area is lightly traveled by commercial vehicles, and commercial vehicle traffic in the area is restricted to Somerset Boulevard. Somerset Boulevard and Clark Avenue are designated as truck routes near the Bellflower MSF site option. Access to the nearby I-105 freeway is through Somerset Boulevard, Lakewood Boulevard, Downey Avenue, and Clark Avenue. Traffic density around this site and local roadway network is moderate with the peak periods heavily traveled.

As with the Paramount MSF site option, the Bellflower MSF site option was considered to be similar to the Metro Division 22 LRT maintenance facility in purpose and operation. The projected traffic to and from the Bellflower MSF is 23 vehicle trips in the AM peak hour and 26 vehicle trips in the PM peak hour. LADOT's 2016 *Transportation Impact Study Guidelines* provides a threshold for new developments at 43 vehicle trips during the AM/PM peak hours. Because the projected peak hour vehicular trips generated by the proposed MSF are lower than LADOT's thresholds, the effect on traffic would not be adverse. There are no at-grade crossings between the proposed MSF site and the mainline rail. Therefore, no additional at-grade crossing impacts are anticipated.

3.4.2 Transit

This section describes the horizon year 2042 transit operating conditions for the No Build Alternative and each Build Alternative to identify potential impacts of the Project on transit service. Travel demand forecasts for the horizon year 2042 were developed using Metro's Corridors Base Model. Because transit services (e.g., bus routes and rail lines) are not confined to specific locations, the evaluation in this section is conducted for the Study Area as a whole.

In addition to systemwide metrics, the transit analysis considered the change in boardings on each of the connecting rail and bus lines. The analysis also considered the change in transit travel times with and without the Project.

3.4.2.1 No Build Alternative

The No Build Alternative represents transit service in the Study Area in the year 2042 if the Project is not built. The No Build Alternative transit network includes the bus and rail system programmed in Measure M by 2042 without the Project. Transit improvements included in the No Build Alternative are the Metro Eastside Transit Corridor Phase 2, the

Metro Regional Connector, the East San Fernando Valley Transit Corridor, and the Sepulveda Transit Corridor. Assumptions made may not reflect actual alignment and operating scenarios, as planning work advances on future projects. The opening of the Regional Connector would result in a change to Metro Rail operations with the creation of a North-South Line (current Metro A (Blue) and L (Gold) Lines) and an East-West Line (current E (Expo) Line and Metro L (Gold) Line Eastside Extension). Additional detail on the No Build Alternative is provided in Section 5.2.1 of the Transportation Impact Analysis Report (Appendix D).

3.4.2.2 Alternative 1: Los Angeles Union Station to Pioneer Station

Alternative 1 largely assumes the same transit operating conditions as the No Build Alternative but also includes the addition of the Project. Off-street bus bays would be provided at select stations in the event that local transit providers decide to serve these stations in the future. Metro and/or the provider would conduct the necessary public outreach at the time route changes are made. Headways for all rail and bus lines, with the exception of the Project, would be the same under the No Build Alternative and Alternative 1. The alignments and headways for Alternative 1 are summarized in Table 3.19. Because the evaluation of transit conditions is broad, the evaluation in this section is conducted for the Study Area as a whole without specific analyses for the various areas of the Project.

Table 3.19. Proposed Headways for the Build Alternatives by Time Period

Alternative	Alignment	Weekday Headways	
		Peak	Off-Peak
Alternative 1	LAUS (Forecourt) – Pioneer	5	10
Alternative 2	7th St/Metro Center – Pioneer	2.5* - 5	10
Alternative 3	Slauson/A (Blue) Line – Pioneer	5	10
Alternative 4	I-105/C (Green) Line – Pioneer	5	10
Design Option 1 (MWD)	LAUS (MWD) — Pioneer	5	10
Design Option 2	LAUS (Forecourt) – Pioneer	5	10

Source: Prepared for Metro in 2021
Notes: * 2.5-minute headways proposed for Alternative 2 during 1 hour of weekday peak periods for the section between the 7th St/Metro Center Station and the Slauson/A Line Station.
LAUS = Los Angeles Union Station; MWD = Metropolitan Water District

The transit analysis considers the following metrics to assess the impact of Alternative 1 on the regional transit network:

- **Daily linked fixed-guideway trips:** A trip from origin to destination on the Metro Rail or BRT system, or the Metrolink commuter rail system. Even if a person must make several transfers during a journey, the trip is counted as one linked trip.
- **Daily linked bus trips:** A trip from origin to destination on the countywide bus system. Even if a person must make several transfers during a journey, the trip is counted as one linked trip on the countywide bus system.
- **Daily linked transit trips:** A trip from origin to destination on the countywide transit system (includes bus and rail modes). Even if a person must make several transfers

during a journey, the trip is counted as one linked trip on the countywide transit system.

- **Daily linked trips:** A trip from origin to destination utilizing any travel mode. Even if a person uses multiple modes or transfers within (bus to bus) or between modes (car to rail), the trip is counted as one linked trip on the system.
- **Total transit mode share:** The percentage share that transit has in relation to all modes of travel.
- **New transit trips:** The number of daily trips shifted from another mode (e.g., automobile) to transit with the implementation of the Project compared to the No Build Alternative.

Table 3.20 summarizes the projected number of countywide trips for the No Build Alternative and Alternative 1 based on forecasts from Metro's Corridors Base Model for the year 2042. Because the data are presented for the whole of LA County, the opening of the Project has a relatively small impact on overall transit ridership because it only serves a portion of the county.

Table 3.20. Regional Transit Performance Metrics – Los Angeles County for No Build Alternative and Build Alternatives (2042)

	No Build Alternative	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Design Option 1 (MWD)	Design Option 2 (Add Little Tokyo)
Daily linked fixed-guideway trips	781,687	803,831	806,202	793,125	787,517	804,748	801,951
Daily linked bus trips	965,231	961,462	960,940	962,999	964,150	961,459	961,974
Daily linked transit trips	1,746,918	1,765,293	1,767,142	1,756,124	1,751,667	1,766,207	1,763,925
Daily linked trips (Total all modes)	77,653,003	77,653,002	77,653,009	77,652,994	77,653,006	77,653,002	77,653,008
Total transit mode share	2.25%	2.27%	2.28%	2.26%	2.26%	2.27%	2.27%
Daily new transit trips	N/A	18,375	20,224	9,206	4,749	19,289	17,007

Source: Metro 2018f
Note: MWD = Metropolitan Water District; N/A = not applicable

Conditions under the No Build Alternative provide a basis of comparison for transit usage for Alternative 1 because the No Build Alternative includes all planned improvements for the year 2042 except the Project. Under the No Build Alternative, daily transit trips are projected to exceed 1.7 million in the year 2042, which would account for approximately 2.25 percent of the 77.7 million daily trips in the region.

Under Alternative 1, the number of countywide transit trips would increase compared to the No Build Alternative. As shown in Table 3.20, approximately 1.77 million daily transit trips are projected under Alternative 1. With the alternative, approximately 18,000 additional new daily transit trips are projected than would occur under the No Build Alternative. The overall

transit mode share would increase to approximately 2.27 percent for Alternative 1. Because Alternative 1 would increase transit's mode share, it would have a beneficial impact on the transit system.

The projected number of daily boardings on each Metro rail line that serves the Study Area is presented in Table 3.21. Daily boardings at each proposed station are presented in Table 3.22.

Table 3.21. WSAB Project and Metro Rail Daily Boardings by Line (within Study Area) for No Build Alternative and Alternative 1 (2042)

Line	No Build	Alternative 1	
	Number of Daily Boardings	Number of Daily Boardings	% Change from No Build
WSAB	N/A	60,839	N/A
North-South	212,478	201,084	-5.4%
East-West	135,297	133,079	-1.6%
Metro D (Purple) Line	214,457	216,629	1.0%
Metro B (Red) Line	122,074	122,277	0.2%
Metro C (Green) Line	112,600	110,620	-1.8%

Source: Metro 2018f
Notes: N/A = not applicable; WSAB = West Santa Ana Branch

Table 3.22. Station Boardings for Alternative 1 (2042)

Station	Alternative 1
Los Angeles Union Station	20,376
Little Tokyo	N/A
Arts/Industrial District (Alternative 1)	2,175
7th St/Metro Center	N/A
South Park/Fashion District	N/A
Arts/Industrial District (Alternative 2)	N/A
Slauson/A Line	8,438
Pacific/Randolph	3,096
Florence/Salt Lake	4,144
Firestone	4,941
Gardendale	1,272
I-105/C Line	5,797
Paramount/Rosecrans	2,245
Bellflower	2,649
Pioneer	5,706
Total Daily Boardings	**60,839**

Source: Metro 2018f
Note: N/A = not applicable

The number of bus trips made systemwide would decrease slightly under Alternative 1. Most lines that run parallel to the alternative would experience a slight decrease in boardings because Alternative 1 would provide faster and more reliable service. However, many of the routes that cross the corridor may experience a slight increase in boardings as passengers use these routes to access stations along the Project. More detailed information on the existing Metro Rail and bus service performance is provided in the Transportation Impact Analysis Report (Appendix D).

With Alternative 1, boardings on the future North-South Line (the current Metro A [Blue] and L [Gold] Lines with Regional Connector) would decrease, as the Project provides parallel north-south service into Downtown LA. By providing parallel service, Alternative 1 may help to alleviate some of the overcrowding currently experienced on the Metro A (Blue) Line. Similarly, boardings on the Metro C (Green) Line would slightly decrease. The impacts of Alternative 1 to boardings on the East-West Line (current Metro E [Expo] and L [Gold] Lines) and the B (Red) and D (Purple) Lines depend on the route selected into Downtown LA. With Alternative 1, boardings on the East-West Line would increase as passengers would transfer to the line to reach the downtown business core. Overall, impacts from Alternative 1 would be beneficial because a new LRT line would increase transit service in the Study Area. Under NEPA, Alternative 1 would not result in adverse effects related to transit service, and mitigation is not required.

3.4.2.3 Alternative 2: 7th St/Metro Center to Pioneer Station

The transit operating conditions described in Section 3.4.2.2 are also applicable to Alternative 2. The alignment and headways for Alternative 2 are summarized in Table 3.19. Alternative 2 is the only alternative to have 2.5-minute headways proposed during 1 hour of weekday peak periods for the section between the 7th St/Metro Center Station and the Slauson/A Line Station.

Table 3.20 summarizes the projected number of countywide trips for the No Build Alternative and Alternative 2 based on forecasts from Metro's Corridors Base Model for the year 2042. Under Alternative 2, the number of countywide transit trips would increase compared to the No Build Alternative. As shown in Table 3.20, approximately 1.77 million daily transit trips are projected under Alternative 2. The alternative is projected to result in 20,000 additional new daily transit trips than under the No Build Alternative. The overall transit mode share would increase to approximately 2.28 percent for Alternative 2. Because Alternative 2 would increase transit's mode share, it would have a beneficial impact on the transit system.

The projected number of daily boardings on each Metro rail line that serves the Study Area is presented in Table 3.23. Daily boardings at each proposed station are presented in Table 3.24. With Alternative 2, boardings on the future North-South Line (the current Metro A [Blue] and L [Gold] Lines with Regional Connector) would decrease, as the Project would provide parallel north-south service into Downtown LA. By providing parallel service, Alternative 2 could help to alleviate some of the overcrowding currently experienced on the Metro A (Blue) Line. Similarly, boardings on the Metro C (Green) Line would slightly decrease. The impacts of Alternative 2 to boardings on the East-West (current E [Expo] and Metro L [Gold] Lines) and the Metro B (Red) and D (Purple) Lines would depend on the route selected into Downtown LA. Alternative 2 would provide the greatest decrease in boardings on the North-South Line because it provides the most direct parallel service into the downtown business core. Under Alternative 2, boardings on the Metro B (Red) and D (Purple) Lines would increase slightly, and boardings on the East-West Line would decrease slightly. Overall, impacts from Alternative 2 would be beneficial because a new

LRT line would increase transit service in the Study Area. Under NEPA, Alternative 2 would not result in adverse effects related to transit service, and mitigation is not required.

Table 3.23. WSAB Project and Metro Rail Daily Boardings by Line (within Study Area) for No Build Alternative and Alternative 2 (2042)

Line	No Build	Alternative 2	
	Number of Daily Boardings	Number of Daily Boardings	% Change from No Build
WSAB	N/A	82,826	N/A
North-South	212,478	194,863	-8.3%
East-West	135,297	134,537	-0.6%
Metro D (Purple) Line	214,457	223,060	4.0%
Metro B (Red) Line	122,074	126,391	3.5%
Metro C (Green) Line	112,600	109,073	-3.1%

Source: Metro 2018f
Notes: N/A = not applicable; WSAB = West Santa Ana Branch

Table 3.24. Station Boardings for Alternative 2 (2042)

Station	Alternative 2
Los Angeles Union Station	N/A
Little Tokyo	N/A
Arts/Industrial District (Alternative 1)	N/A
7th St/Metro Center	30,905
South Park/Fashion District	1,972
Arts/Industrial District (Alternative 2)	2,110
Slauson/A Line	15,135
Pacific/Randolph	3,473
Florence/Salt Lake	4,655
Firestone	5,473
Gardendale	1,371
I-105/C Line	6,414
Paramount/Rosecrans	2,400
Bellflower	2,819
Pioneer	6,099
Total Daily Boardings	**82,826**

Source: Metro 2018f
Note: N/A = not applicable

3.4.2.4 Alternative 3: Slauson/A (Blue) Line to Pioneer Station

The transit operating conditions described in Section 3.4.2.2 are also applicable to Alternative 3. The alignment and headways for Alternative 3 are summarized in Table 3.19.

Table 3.20 summarizes the projected number of countywide trips for the No Build Alternative and Alternative 3 based on forecasts from Metro's Corridors Base Model for the year 2042. Under Alternative 3, the number of countywide transit trips would increase compared to the No Build Alternative, but there would be fewer transit trips than under Alternatives 1 and 2. As previously shown in Table 3.20, Alternative 3 is projected to result in 1.76 million daily transit trips, with 9,000 more new transit trips than the No Build Alternative. The increase in transit trips under Alternative 3 is not as high as Alternatives 1 and 2 but would increase the overall transit mode share compared to the No Build Alternative, resulting in a beneficial impact on the transit system.

The projected number of daily boardings on each Metro rail line that serves the Study Area is presented in Table 3.25. Daily boardings at each proposed station are presented in Table 3.26. Compared to the No Build Alternative, Alternative 3 would result in a slight increase in boardings on the North-South and Metro D (Purple) and B (Red) Lines. Alternative 3 would result in a decrease in boardings on both the East-West Line and the Metro C (Green) Line. Because Alternative 3 continues north past the Metro C (Green) Line to the North-South Line, passengers would not be forced to transfer at the Metro C (Green) Line as with Alternative 4. Unlike Alternatives 1 and 2, Alternative 3 would increase ridership on the North-South Line because passengers would transfer to this line to reach destinations north, including downtown Los Angeles. Therefore, Alternative 3 would not help to alleviate overcrowding on the North-South Line. Overall, impacts from Alternative 3 would be beneficial because a new LRT line would increase transit service in the Study Area. Under NEPA, Alternative 3 would not result in adverse effects related to transit service, and mitigation is not required.

Table 3.25. WSAB Project and Metro Rail Daily Boardings by Line (within Study Area) for No Build Alternative and Alternative 3 (2042)

Line	No Build	Alternative 3	
	Number of Daily Boardings	Number of Daily Boardings	% Change from No Build
WSAB	N/A	30,964	N/A
North-South	212,478	213,941	0.7%
East-West	135,297	134,129	-0.9%
Metro D (Purple) Line	214,457	215,692	0.6%
Metro B (Red) Line	122,074	122,513	0.4%
Metro C (Green) Line	112,600	111,338	-1.1%

Source: Metro 2018f
Notes: N/A = not applicable; WSAB = West Santa Ana Branch

Table 3.26. Station Boardings for Alternative 3 (2042)

Station	Alternative 3
Los Angeles Union Station	N/A
Little Tokyo	N/A
Arts/Industrial District (Alternative 1)	N/A
7th St/Metro Center	N/A
South Park/Fashion District	N/A
Arts/Industrial District (Alternative 2)	N/A
Slauson/A Line	7,987
Pacific/Randolph	2,153
Florence/Salt Lake	3,132
Firestone	3,834
Gardendale	1,013
I-105/C Line	4,477
Paramount/Rosecrans	1,752
Bellflower	2,187
Pioneer	4,432
Total Daily Boardings	**30,964**

Source: Metro 2018f
Note: N/A = not applicable

3.4.2.5 Alternative 4: I-105/C (Green) Line to Pioneer Station

The transit operating conditions described in Section 3.4.2.2 are also applicable to Alternative 4. The alignment and headways for Alternative 4 are summarized in Table 3.19. Table 3.20 is a summary of the projected number of countywide trips for the No Build Alternative and Alternative 4 based on forecasts from Metro's Corridors Base Model for the year 2042. Under Alternative 4, the number of countywide transit trips would increase compared to the No Build Alternative, but there would be fewer transit trips than under Alternatives 1 and 2. As previously shown in Table 3.20, Alternative 4 is projected to result in 1.75 million daily transit trips, with 5,000 more new transit trips than the No Build Alternative. Alternative 4 does not increase transit trips as much as Alternatives 1 and 2, but they still provide 25 percent of the benefit. In other words, it would increase the overall transit mode share compared to the No Build Alternative, resulting in a beneficial impact on the transit system.

The projected number of daily boardings on each Metro rail line that serves the Study Area is presented in Table 3.27. Daily boardings at each proposed station are presented in Table 3.28. Compared to the No Build Alternative, Alternative 4 would result in a slight increase in boardings on the North-South and Metro D (Purple) and B (Red) Lines. Alternative 4 would result in a 3 percent increase in boardings on the Metro C (Green) Line because the alternative would terminate at the I-105/C Line Station, and passengers would be forced to transfer to the Metro C (Green) Line to reach destinations farther north. As with Alternative 3, Alternative 4 would increase ridership on the North-South Line because passengers would transfer to this line to reach destinations north, including downtown Los Angeles. Therefore, Alternative 4 would not help to alleviate overcrowding on the North-South Line. Overall, impacts from Alternative 4 would be beneficial because a new LRT line would increase transit service in the Study Area. Under NEPA, Alternative 4 would not result in adverse effects related to transit service, and mitigation is not required.

Table 3.27. WSAB Project and Metro Rail Daily Boardings by Line (within Study Area) for No Build Alternative and Alternative 4 (2042)

Line	No Build	Alternative 4	
	Number of Daily Boardings	Number of Daily Boardings	% Change from No Build
WSAB	N/A	11,119	N/A
North-South	212,478	213,271	0.4%
East-West	135,297	135,320	0.0%
Metro D (Purple) Line	214,457	214,870	0.2%
Metro B (Red) Line	122,074	122,230	0.1%
Metro C (Green) Line	112,600	117,030	3.9%

Source: Metro 2018f
Notes: N/A = not applicable; WSAB = West Santa Ana Branch

Table 3.28. Station Boardings for Alternative 4 (2042)

Station	Alternative 4
Los Angeles Union Station	N/A
Little Tokyo	N/A
Arts/Industrial District (Alternative 1)	N/A
7th St/Metro Center	N/A
South Park/Fashion District	N/A
Arts/Industrial District (Alternative 2)	N/A
Slauson/A Line	N/A
Pacific/Randolph	N/A
Florence/Salt Lake	N/A
Firestone	N/A
Gardendale	N/A

Station	Alternative 4
I-105/C Line	4,529
Paramount/Rosecrans	1,412
Bellflower	1,792
Pioneer	3,388
Total Daily Boardings	**11,119**

Source: Metro 2018f
Note: N/A = not applicable

3.4.2.6 Design Options—Alternative 1

Design Option 1: LAUS at MWD

The transit operating conditions described in Section 3.4.2.2 are also applicable to Alternative 1 with Design Option 1 (MWD). The alignment and headways for Alternative 1 with Design Option 1 (MWD) are summarized in Table 3.19. Table 3.20 summarizes the projected number of countywide trips for the No Build Alternative and Alternative 1 with Design Option 1 (MWD) based on forecasts from Metro's Corridors Base Model for the year 2042. Under Alternative 1 with Design Option 1 (MWD), if the LAUS entrance is located near the MWD Building, the number of new transit trips is expected to be approximately 1,000 more than the Forecourt location, with 19,000 new daily transit trips, as shown in Table 3.20. The total transit mode share would remain the same as under Alternative 1 at 2.27 percent. Design Option 1 (MWD) may increase transit usage more than Alternative 1 because the transfer at LAUS between WSAB and the B (Red) and D (Purple) Lines would be shorter than under the LAUS Forecourt Station. As Design Option 1 (MWD) would still increase the overall transit mode share, it would have a beneficial impact on the transit system.

The projected number of daily boardings on each Metro rail line that serves the Study Area is presented in Table 3.29. Daily boardings at each proposed station are presented in Table 3.30. Under Design Option 1 (MWD), the effect of the Project on Metro rail lines and bus lines within the Study Area is similar to Alternative 1. However, if the LAUS entrance is shifted to the MWD Building instead of the Forecourt, the number of boardings at LAUS would double because the transfer distance between the Project and the Metro B (Red) and D (Purple) Lines is much shorter under Design Option 1 (MWD). The effect of Design Option 1 (MWD) on bus lines within the Study Area would be similar to Alternative 1. As Design Option 1 (MWD) would be underground, it would not introduce any new traffic impacts that were not already identified under Alternative 1, and therefore would not have any additional impacts to bus operations in mixed-flow traffic. Mode of access would be similar to Alternative 1 under Design Option 1 (MWD). Overall, impacts from Design Option 1 (MWD) would be beneficial because increased levels of transit service would be provided by a new LRT line.

Table 3.29. WSAB Project and Metro Rail Daily Boardings by Line (within Study Area) for No Build Alternative and Alternative 1 with Design Option 1 (2042)

Line	No Build	Alternative 1 with Design Option 1 (MWD)	
	Number of Daily Boardings	Number of Daily Boardings	% Change from No Build
WSAB	N/A	65,158	N/A
North-South	212,478	205,888	-3.1
East-West	135,297	137,181	1.4
Metro D (Purple) Line	214,457	213,679	-0.4
Metro B (Red) Line	122,074	119,621	-2.0
Metro C (Green) Line	112,600	110,803	-1.6

Source: Metro 2018f
Notes: LAUS = Los Angeles Union Station; MWD = Metropolitan Water District; N/A = not applicable; WSAB = West Santa Ana Branch

Table 3.30. Station Boardings for Alternative 1 with Design Option 1 (2042)

Station	Alternative 1 with Design Option 1 (MWD)
Los Angeles Union Station	20,632
Little Tokyo	N/A
Arts/Industrial District (Alternative 1)	2,238
7th St/Metro Center	N/A
South Park/Fashion District	N/A
Arts/Industrial District (Alternative 2)	N/A
Slauson/A Line	11,087
Pacific/Randolph	3,356
Florence/Salt Lake	4,412
Firestone	5,196
Gardendale	1,325
I-105/C Line	5,981
Paramount/Rosecrans	2,320
Bellflower	2,714
Pioneer	5,897
Total Daily Boardings	**65,158**

Source: Metro 2018f
Note: MWD = Metropolitan Water District; N/A = not applicable

Design Option 2: Add Little Tokyo Station

The transit operating conditions described in Section 3.4.2.2 are also applicable to Alternative 1 with Design Option 2. The alignment and headways for Alternative 1 with Design Option 2 are summarized in Table 3.19. Table 3.20 summarizes the projected number of countywide trips for the No Build Alternative and Alternative 1 with Design Option 2 based on forecasts from Metro's Corridors Base Model for the year 2042. If the Little Tokyo Station is included in

Alternative 1, the number of new transit trips is expected to increase by approximately 1,400 daily trips to 17,000 new daily transit trips, as previously shown in Table 3.20. The overall transit mode share would still increase to 2.27 percent. Because Design Option 2 would still increase the overall transit mode share, it would have a beneficial impact on the transit system.

The projected number of daily boardings on each Metro rail line that serves the Study Area is presented in Table 3.31. Daily boardings at each proposed station are presented in Table 3.32. Boardings on the East-West Line would increase and boardings on the Metro B (Red) and D (Purple) Lines would decrease as passengers would have to transfer at Little Tokyo instead of LAUS to the Metro B (Red) or D (Purple) Line to reach the downtown business core. The Little Tokyo Station would provide an earlier transfer point than having to travel to LAUS, reducing overall travel time to destination points in the central business district. As a result, project boardings at LAUS would decrease compared to Alternative 1. The effect of Design Option 2 on bus lines within the Study Area would be similar to Alternative 1. Mode of access would be similar to Alternative 1 under Design Option 2. Overall, impacts from Design Option 2 would be beneficial because increased levels of transit service would be provided by a new LRT line.

Table 3.31. WSAB Project and Metro Rail Daily Boardings by Line (within Study Area) for No Build Alternative and Alternative 1 with Design Option 2 (2042)

Line	No Build	Alternative 1 with Design Option 2	
	Number of Daily Boardings	Number of Daily Boardings	% Change from No Build
WSAB	N/A	68,785	N/A
North-South	212,478	209,668	-1.3%
East-West	135,297	142,759	5.5%
Metro D (Purple) Line	214,457	214,182	-0.1%
Metro B (Red) Line	122,074	119,937	-1.7%
Metro C (Green) Line	112,600	110,479	-1.9%

Source: Metro 2018f
Notes: N/A = not applicable; WSAB = West Santa Ana Branch

Table 3.32. Station Boardings for Alternative 1 with Design Option 2 (2042)

Station	Alternative 1 with Design Option 2
Los Angeles Union Station	9,610
Little Tokyo	16,002
Arts/Industrial District (Alternative 1)	2,119
7th St/Metro Center	N/A
South Park/Fashion District	N/A
Arts/Industrial District (Alternative 2)	N/A
Slauson/A Line	10,406
Pacific/Randolph	3,279
Florence/Salt Lake	4,314
Firestone	5,084

Station	Alternative 1 with Design Option 2
Gardendale	1,303
I-105/C Line	5,893
Paramount/Rosecrans	2,285
Bellflower	2,677
Pioneer	5,814
Total Daily Boardings	**68,786**

Source: Metro 2018f
Note: N/A = not applicable

3.4.2.7 Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options

The Paramount and Bellflower MSF site options would not affect regional transit performance because the options would not alter existing or planned transit routes or station locations.

3.4.3 Active Transportation

The active transportation evaluation considers potential impacts to existing and funded pedestrian and bicycle facilities. Impacts would occur if the Project would remove or degrade a bike facility or sidewalk. Beneficial impacts may occur where new facilities are added or existing facilities are upgraded. The potential for pedestrian and bicycle impacts is evaluated in the areas adjacent to stations and along the alignment. Because the evaluation of active transportation is broad, the evaluation in this section is conducted for the Study Area. In addition, the new transit service provided by the Build Alternatives would increase demand on bicycle and pedestrian facilities.

As summarized in Chapter 4, Section 4.1 (Land Use), jurisdictions in the Study Area have planned bicycle facilities. Because these facilities are not currently funded or scheduled for implementation, they are not considered reasonably foreseeable. Therefore, potential transportation impacts to these facilities are not evaluated within this section. Refer to Section 3.6.1 and Section 4.1 for a summary of potential impacts to these facilities from the perspective of consistency with adopted plans and policies.

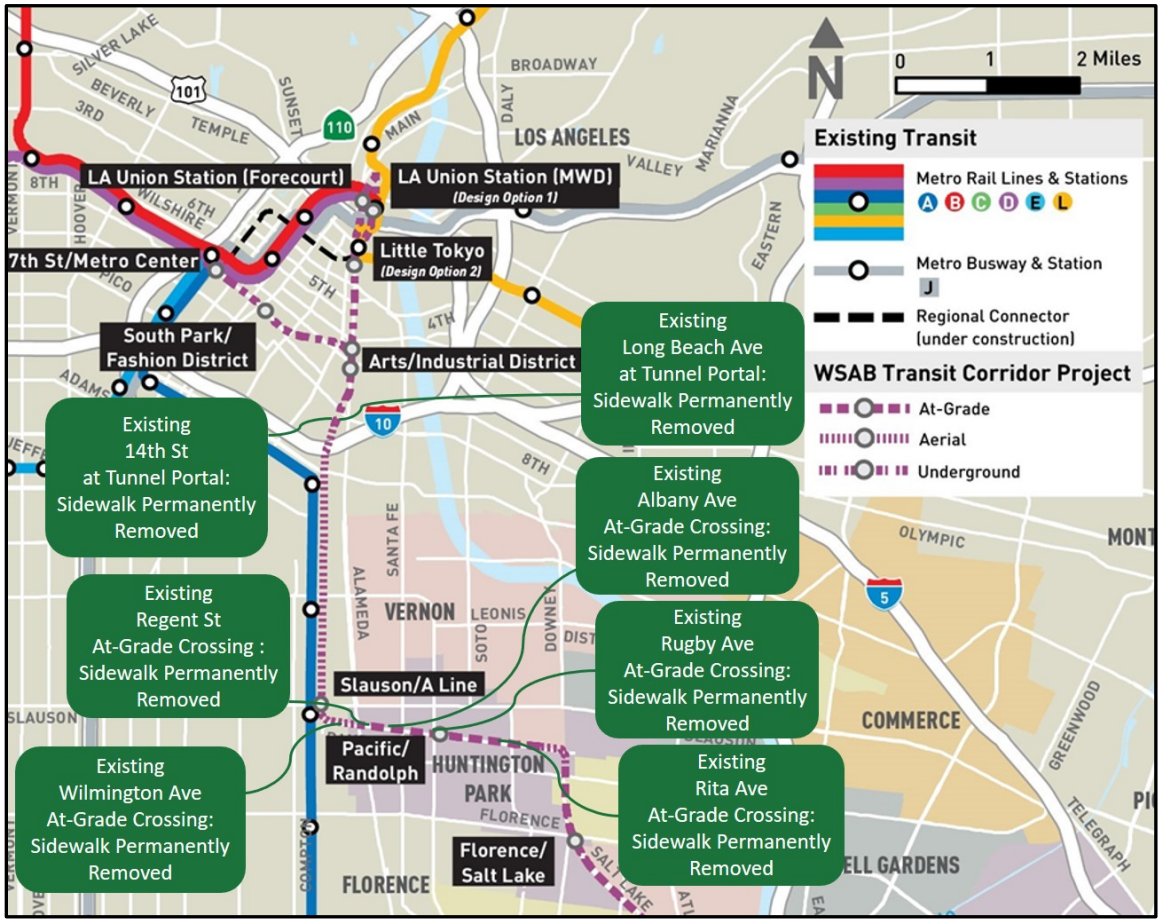
3.4.3.1 No Build Alternative

The committed and planned projects under the No Build Alternative may include potential impacts to and/or incorporation of active transportation elements to stand-alone or integrated projects. However, these projects and their potential impacts to active transportation elements would be subject to their own independent environmental review and approval process, which would identify and address potential impacts.

3.4.3.2 Alternative 1: Los Angeles Union Station to Pioneer Station

The bicycle and pedestrian system under Alternative 1 would generally be the same as with the No Build Alternative. Where features associated with Alternative 1 would encroach on existing bicycle facilities or sidewalks, these facilities would be realigned or reconstructed as part of Alternative 1, so the potential for permanent impacts would be avoided. Figure 3-8 and Figure 3-9 show the locations where Alternative 1 would remove or relocate existing pedestrian and bicycle facilities. These impacts are summarized as follows.

Figure 3-8. Active Transportation Facilities Removed or Relocated by the Project – Los Angeles to Huntington Park



Source: Metro 2021s

Figure 3-9. Active Transportation Facilities Removed or Relocated by the Project – Huntington Park to Artesia



Source: Metro 2021s

Alternative 1 would require closure of six existing at-grade crossings and one street closure to accommodate the tunnel portal. In these locations, the sidewalks would also be removed as they would no longer be required. Five of the at-grade crossing closures would occur along Randolph Street at: Wilmington Avenue, Regent Street, Albany Avenue, Rugby Avenue, and Rita Avenue. The other at-grade crossing closure would occur at 187th Street in Artesia. The street closure to accommodate the tunnel portal would occur along Long Beach Avenue between Olympic Boulevard and 14th Street. A portion of 14th Street just west of Long Beach Avenue would be closed as well.

Alternative 1 would be adjacent to the Paramount Bike Trail and Bellflower Bike Trail, located parallel along and partially within the Pacific Electric Right-of-Way (PEROW) in the Cities of Paramount and Bellflower. The Paramount Bike Trail is located south and adjacent to the rail ROW. Currently, the Paramount Bike Trail is between Somerset Boulevard and Lakewood Boulevard, but it is ultimately planned to be extended from the Los Angeles River

Bike Trail and connect to the Bellflower Bike Trail at Lakewood Boulevard. The Bellflower Bike Trail is located within the existing PEROW between Lakewood Boulevard and Ruth R. Caruthers Park and connects to the San Gabriel River Bike Trail.

The Paramount Bike Trail segment between Somerset Boulevard and Lakewood Boulevard is located within the PEROW. Segments of the PEROW extending south from the intersection of Rosecrans Avenue and Paramount Boulevard to Lakewood Boulevard may not have sufficient room to accommodate the alignment of Alternative 1, which may require a realignment of the Paramount Bike Trail. Specifically, under Alternative 1, tracks would be installed along the southwest side of the PEROW along this segment. To accommodate the track alignment, Alternative 1 would require the removal of an approximately 930-foot-long segment of the existing Paramount Bike Trail between Somerset Boulevard and Lakewood Boulevard. As part of Mitigation Measure LU-1 (Consistency with Bike Plans), as described in Section 4.1.4 of the Land Use Section, this segment of the existing bike trail would be realigned to the north side but within the PEROW in this area. The relocation of this segment of the Paramount Bike Trail would require users of the bike trail to cross the railroad tracks at Lakewood Boulevard to access the bike trail across the street. Although segments of the Paramount Bike Trail would be realigned, the bike trail would remain operational and the existing segment east of Lakewood Boulevard would remain..

Additionally, under Alternative 1 the Bellflower Station platform and tracks would conflict with an approximately 350-foot-long segment of the existing Bellflower Bike Trail east of Bellflower Boulevard. As part of Mitigation Measure LU-1 (Consistency with Bike Plans), as described in Section 4.1.4 of the Land Use Section, this segment of the existing bike trail would be realigned to the south side of the PEROW. The existing segment west of Bellflower Boulevard would remain.

Overall, although segments of the Paramount Bike Trail and Bellflower Bike Trail would be realigned with implementation of Mitigation Measure LU-1 (Consistency with Bike Plans), the bike trails would remain operational within the PEROW and the function of the bike trails would be maintained. Therefore, continuity with other segments of the Paramount Bike Trail and Bellflower Bike Trail would be maintained and with mitigation, there would not be adverse effects to these facilities.

The Alternative 1 alignment has been developed in consideration of the planned bike trail extension north of Somerset Boulevard to Paramount Park as identified in the *Bellflower-Paramount Active Transportation Plan* (City of Bellflower and City of Paramount 2019).

Alternative 1 would also include a wide range of features to enhance active transportation facilities for the benefit of users, including physical improvements (e.g., barriers and gates), channelization and signing, illumination, and other design improvements that would enhance user experience and security. Where new pedestrian trips would occur between stations and parking areas, pedestrian facilities would be enhanced with improved signing and lighting as part of the Project. Additional sidewalks and bicycle facilities implemented as part of the Project would result in a beneficial impact, both for active transportation users accessing the stations and for the broader community. Additional detail regarding design improvements are provided in Sections 4.1.2 and 5.2.3 of the *West Santa Ana Branch Safety and Security Impact Analysis Report* (Metro 2021c) (Appendix F) and Section 4.18 of the Safety and Security Section.

Under NEPA, Alternative 1 would result in adverse effects related to the Paramount and Bellflower Bike Trails. With implementation of Mitigation Measure LU-1 (Consistency with Bike Plans), these existing active transportation facilities would be realigned to maintain continuity. Therefore, there would not be adverse effects to these facilities with mitigation.

3.4.3.3 Alternative 2: 7th St/Metro Center to Pioneer Station

The impact analysis described in Section 3.4.3.2 is also applicable to Alternative 2. As discussed in Section 3.4.3.2, the bicycle and pedestrian system with Alternative 2 would be the same as with Alternative 1 (see Figure 3-8 and Figure 3-9). The impact conclusions identified for Alternative 1 are also applicable for Alternative 2. Under NEPA, Alternative 2 would result in adverse effects related to the Paramount and Bellflower Bike Trails. With implementation of Mitigation Measure LU-1 (Consistency with Bike Plans), these existing active transportation facilities would be realigned to maintain continuity. Therefore, there would not be adverse effects to these facilities with mitigation.

3.4.3.4 Alternative 3: Slauson/A (Blue) Line to Pioneer Station

The impact analysis described in Section 3.4.3.2 is also applicable to Alternative 3. As discussed in Section 3.4.3.2, the bicycle and pedestrian system with Alternative 3 would be the same as with Alternative 1 (see Figure 3-8 and Figure 3-9). The impact conclusions identified for Alternative 1 are also applicable for Alternative 3. Under NEPA, Alternative 3 would result in adverse effects related to the Paramount and Bellflower Bike Trails. With implementation of Mitigation Measure LU-1 (Consistency with Bike Plans), these existing active transportation facilities would be realigned to maintain continuity. Therefore, there would not be adverse effects to these facilities with mitigation.

3.4.3.5 Alternative 4: I-105/C (Green) Line to Pioneer Station

The impact analysis described in Section 3.4.3.2 is also applicable to Alternative 4. As discussed in Section 3.4.3.2, the bicycle and pedestrian system with Alternative 4 would be the same as with Alternative 1 south of I-105 (see Figure 3-9).Under NEPA, Alternative 4 would result in adverse effects related to the Paramount and Bellflower Bike Trails prior to mitigation. With implementation of Mitigation Measure LU-1 (Consistency with Bike Plans) these existing active transportation facilities would maintain continuity. Therefore, there would not be adverse effects to these facilities with mitigation.

3.4.3.6 Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station

The impact analysis described in Section 3.4.3.2 is also applicable to Design Options 1 and 2. Similar to Alternative 1, the bicycle and pedestrian system with Design Options 1 and 2 would generally be the same as with the No Build Alternative. Where construction would encroach on existing bicycle facilities or sidewalks, these facilities would be realigned or reconstructed as part of the Project. Under NEPA, Design Options 1 and 2 would not result in adverse effects to active transportation facilities.

3.4.3.7 Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options

The Paramount MSF site option would not affect active transportation facilities because it would not result in the closure of sidewalks or bicycle facilities. Therefore, no impacts related to active transportation are anticipated and no resulting adverse effects would occur.

The realignment of the segment of the Bellflower Bike Trail located within the PEROW may preempt future development and implementation of the Bellflower Bike Trail to the west of the Bellflower MSF site option. Implementation of Mitigation Measure LU-1 (Consistency

with Bike Plans) would be effective to demonstrate that modifications to the bicycle facilities would maintain continuity with other segments of the Paramount Bike Trail and Bellflower Bike Trail. Therefore, although changes related to active transportation are anticipated, no adverse effect would occur.

3.4.4 Parking

As summarized in Section 3.2.4, effects to parking were assessed considering how the Build Alternatives would effect on- and off street parking supplies, and whether the demand for transit parking would exceed the available parking supply, resulting in spillover. The evaluation considered parking availability from field observation, the expected demand for park-and-ride trips at each station, and the addition (through a new dedicated transit park-and-ride lot) or reduction (parking permanently removed to accommodate a Build Alternative) of parking spaces.

3.4.4.1 No Build Alternative

The committed and planned projects under the No Build Alternative may include potential impacts to parking through removal, modification, or reductions to existing parking resources. However, these projects and their potential parking impacts would be subject to their own independent and required environmental approval process, which would identify and address potential impacts.

3.4.4.2 Alternative 1: Los Angeles Union Station to Pioneer Station

The following sections summarize the permanent physical loss of on- and off-street parking that would occur with implementation of Alternative 1. Additionally, spillover parking impacts associated with the demand for transit parking is also evaluated. As summarized in Table 3.33 and Table 3.34, Alternative 1 would result in the permanent loss of approximately 136 on-street and 133 off-street parking spaces. Alternative 1 would add 2,779 parking spaces at five of the proposed new transit stations.

On- and Off-Street Parking Impacts

The results of the on-street parking impact analysis are summarized in Table 3.33. As shown, under Alternative 1, on-street parking would remain unchanged along the majority of the proposed project alignment. On-street parking would be removed at four locations (two in the City of Los Angeles, one in Huntington Park, and one in South Gate). Implementation of Alternative 1 would require the removal of all on-street parking spaces at two of the four locations (one in the City of Los Angeles and one in South Gate), which could result in an adverse effect. The loss of parking at these locations is described further in the text that follows.

Table 3.33. On-Street Parking Effects

Location	Jurisdiction	Existing On-Street Parking Spaces	Observed Field Utilization[a]	Parking Spaces Added/ Removed[b]	Alternative(s) Affected	Description of Effect
Los Angeles Union Station	Los Angeles	47	90%	0	1	No change.
Little Tokyo Station	Los Angeles	1,803	90%	0	1	No change.
Arts/Industrial District Station	Los Angeles	980	90%	0	1, 2	No change.
South Park/Fashion District Station	Los Angeles	888	70%	0	2	No change.
7th Street/Metro Center Station	Los Angeles	465	90%	0	2	No change.
Long Beach Avenue between Olympic Boulevard and 14th Street (between Arts/Industrial District and Slauson/A Line Stations)	Los Angeles	20	90%	-20	1, 2	LRT track would displace all of the on-street parking along this segment.
Long Beach Avenue between Vernon Avenue and 24th Street (between Arts/Industrial District and Slauson/A Line Stations)	Los Angeles	109	20%	-25	1, 2	LRT track would remove approximately 23% of the existing on-street parking supply.
Slauson/A Line Station	Los Angeles	729	80%	0	1, 2, 3	No change.
Randolph Street between Holmes Avenue and State Street (between Slauson/A Line Station – through Pacific/Randolph – and Florence/Salt Lake Stations)	Huntington Park	550	70%	-79	1, 2, 3	LRT track would remove approximately 14% of the existing on-street parking supply.
Pacific/Randolph Station	Huntington Park	1,624	60%	0	1, 2, 3	No change.
Florence/Salt Lake Station	Huntington Park	1,106	30%	0	1, 2, 3	No change.
Firestone Station	South Gate	461	50%	+600	1, 2, 3	Alternatives 1, 2, and 3 would add off-street transit parking.

Location	Jurisdiction	Existing On-Street Parking Spaces	Observed Field Utilization[a]	Parking Spaces Added/ Removed[b]	Alternative(s) Affected	Description of Effect
Gardendale Station	Downey	688	40%	0	1, 2, 3	No change.
Main Street Grade Crossing (between Gardendale and I-105/C Line Stations)	South Gate	12	20%	-12	1, 2, 3	LRT track would displace all of the on-street parking along this segment.
I-105/C Line Station	Paramount	818	40%	+326	1, 2, 3, 4	Alternatives 1, 2, 3, and 4 would add off-street transit parking.
Paramount/Rosecrans Station	Paramount	350	70%	+490	1, 2, 3, 4	Alternatives 1, 2, 3, and 4 would add off-street transit parking.
Bellflower Station	Bellflower	576	30%	+263	1, 2, 3, 4	Alternatives 1, 2, 3, and 4 would add off-street transit parking.
Pioneer Station	Artesia	785	20%	+1,100	1, 2, 3, 4	Alternatives 1, 2, 3, and 4 would add off-street transit parking.

Source: Metro 2021s
Notes: [a] Observations made during peak parking periods.
[b] Based on engineering plans included in Appendix B.
LRT = light rail transit

Alternative 1 would remove all 20 on-street parking spaces along Long Beach Avenue, between Olympic Boulevard and 14th Street in the City of Los Angeles, as the Alternative 1 alignment transitions from underground to aerial. As shown in Table 3.33, these spaces were 90 percent utilized (i.e., 18 spaces were occupied at the time of the survey). The land uses adjacent to the street closure are light industrial and warehouse with off-street parking. While the loss of the 20 on-street parking spaces would not affect the function of the adjacent land uses, changes in the location and availability of parking could result in local concern because the destination of those utilizing on-street parking is unknown. A potential consequence of this change in parking is increased traffic circulation on streets near the lost parking as existing drivers utilizing those spaces search for new places to park. This could cause an increase in localized traffic and delay along roadways and at intersections, including a corresponding increase in idling and vehicular emissions, and could result in an adverse effect. Mitigation Measures TRA-21 (Parking Monitoring and Community Outreach) and TRA-22 (Parking Mitigation Program [Permanent]), described in Section 3.5.2.4, are proposed to reduce these impacts. Nevertheless, because parking demand, the subsequent strategies that may be utilized, and the community response are unknown, it is possible that adverse effects would remain after mitigation.

Alternative 1 would remove all 12 on-street parking spaces at the Main Street grade crossing location in the City of South Gate. As shown in Table 3.33, these spaces were 20 percent utilized (i.e., 2 spaces were occupied at the time of the survey). The land uses for the properties adjacent to this location include light industrial, warehouse, and a church. The properties to the northeast, southeast, and southwest of the Main Street grade crossing have off-street parking lots that would not be affected by Alternative 1. Additionally, on-street parking is available on adjacent streets to accommodate parking demand, and any circulation on local roads to find parking would be minimal. Therefore, because the loss of the on-street parking spaces on Main Street would not affect the function of the properties and drivers utilizing these spaces would be able to find available on-street parking with minimal circulation, Alternative 1 would not result in an adverse effect.

At the other two locations, the loss of parking would not result in the supply decreasing below the observed utilization. Therefore, it is anticipated that parking demand would be accommodated despite the loss of parking and there would not be adverse effects. While adverse effects are unlikely, the physical loss of parking could contribute to local concern. Mitigation Measure TRA-22 (Parking Mitigation Program [Permanent]) would be implemented at all locations with a physical loss of on-street parking.

Off-street parking effects were analyzed for properties where Alternative 1 would require a permanent property acquisition that would result in the permanent loss of off-street parking spaces. The analysis did not include properties where the permanent acquisition resulted in the loss of all off-street parking and the corresponding business(es) that utilized that supply. This is because the business(es) would no longer exist, and, consequently, the associated parking demand would be eliminated. The loss of off-street parking spaces would, therefore, have no effect on the function of the properties on these site(s).

The off-street parking impacts analysis considered whether the loss of off-street parking spaces would result in the supply for that property to fall below the requirement as per the parking code from the applicable city[2]. Table 3.34 summarizes the impacts at each location. Metro would provide compensation as required under the Uniform Act at properties where off-street parking is removed. Governmental institutions are not required to comply with parking code requirements. These properties are included in the table for completeness but were not assessed further. Metro would enter into an agreement with each of these properties for the use of the existing off-street parking.

Under Alternative 1, there are 12 locations where off-street parking would be removed permanently with a total of 133 parking spaces affected, of which 4 locations and 56 parking spaces are governmental institutions. These properties are located in the Cities of Los Angeles, Huntington Park, Vernon, South Gate, Downey, and Bellflower. The loss of parking would result from the addition of Alternative 1 elements, including ventilation shafts, station entrances, TPSS sites, grade crossing modifications, and the LRT track. The removal of off-street parking spaces would not cause the off-street parking supply to decrease below the respective city parking code requirements and, therefore, would not result in an adverse effect.

[2] City of Los Angeles Municipal Code: Chapter 1 Planning and Zoning Code, Section 12.21 General Provisions; City of South Gate Municipal Code: Chapter 11.33 Parking Standards; City of Huntington Park Municipal Code: Chapter 3 General Regulations Article 8 Off-Street Parking Standards. City of Vernon Zoning Ordinance: Article V. Sec. 26.5.1. Off-Street Parking and Loading Facilities; City of Downey Municipal Code: Chapter 7 Section 9712. Nonresidential Parking Requirements; City of Bellflower Municipal Code: Chapter 17.88 Off-Street Parking Requirements.

Table 3.34. Off-Street Parking Effects

Location	Jurisdiction	Project Element	Alternative(s) Affected	Number of Lost Spaces	Approximate % of Total Parking	Remaining Spaces Within Code Requirements?
Parking lot on northeast corner of South Figueroa Street and West 8th Street	Los Angeles	Station Entrance – 7th St/Metro Center Station	2	22	10%	n/a
Bus parking lot on southeast corner of East 7th Street and South Alameda Street	Los Angeles	Station Entrance – Arts/Industrial District Station	2	7	5%	yes
Office building on southwest corner of East 7th Street and South Alameda Street	Los Angeles	Station Entrance – Arts/Industrial District Station	2	12	5%	no
US Post Office between Bauchet Street and North Vignes Street	Los Angeles	Ventilation Shaft	Design Option 1	20	10%	n/a governmental facility
USPS building on the northeast corner of North Alameda Street and East Cesar E Chavez Avenue	Los Angeles	Ventilation Shaft	1	5	10%	n/a governmental facility
Industrial building on the southeast corner of East 6th Street and South Alameda Street	Los Angeles	Station Entrance – Arts/Industrial District Station	1	5	5%	yes

Location	Jurisdiction	Project Element	Alternative(s) Affected	Number of Lost Spaces	Approximate % of Total Parking	Remaining Spaces Within Code Requirements?
Industrial building on the east side of South Alameda Street between East 6th Street and Industrial Street	Los Angeles	Station Entrance – Arts/Industrial District Station	1	2	<5%	yes
Strip mall north of the Randolph Street and Rita Avenue intersection	Huntington Park	TPSS Site 15	1, 2, 3	32	10%	yes
Strip mall at the southwest corner of State Street and Randolph Street	Huntington Park	Grade Crossing	1, 2, 3	4	15%	yes
San Antonio Elementary School and Magnet Center on the southeast corner of State Street and Randolph Street	Huntington Park	Grade Crossing	1, 2, 3	15	25%	n/a governmental facility
Industrial building at the northeast corner of State Street and Randolph Street	Vernon	Grade Crossing	1, 2, 3	18	5%	yes
Strip mall on the northeast corner of Walnut Street and California Avenue	Huntington Park	TPSS Site 13(E)	1, 2, 3	13	30%	yes

Location	Jurisdiction	Project Element	Alternative(s) Affected	Number of Lost Spaces	Approximate % of Total Parking	Remaining Spaces Within Code Requirements?
South Gate City Office south of Santa Ana Street and Salt Lake Avenue intersection	South Gate	Grade Crossing	1, 2, 3	4	5%	n/a governmental facility
Medical building on the northwest corner of South Atlantic Avenue and Wright Place	South Gate	Grade Crossing	1, 2, 3	1	<5%	yes
Los Angeles County Agriculture building at the southern end of Vulcan Street	Downey	Track	1, 2, 3	32	20%	n/a governmental facility
Paramount Bilingual SDA Church at the southeast corner of Pacific Avenue and Alondra Boulevard	Bellflower	Grade Crossing	1, 2, 3, 4	2	5%	yes

Source: Metro 2021s
Notes: n/a = not applicable; TPSS = traction power substation; USPS = United States Postal Service

Spillover Parking Impacts

Dedicated transit parking would be provided at the Firestone, I-105/C Line, Paramount/Rosecrans Bellflower, and Pioneer Stations. Project Measure TR PM-10 (Pioneer Station Parking Access) would be implemented at the Pioneer Station to limit vehicles accessing the parking structure through the adjacent residential streets. Table 3.35 summarizes the parking demand at each station where transit parking would be added under Alternative 1. A spillover parking analysis was deemed unnecessary for stations north of the Firestone Station and at the Gardendale Station because no transit parking would be added at these stations; therefore, it is unlikely passengers would attempt to access these stations via driving. As shown in Table 3.8, there is limited parking supply and/or availability around the LAUS, Arts/Industrial District, and Slauson/A Line Stations. Additionally, on- and off-street parking near the stations in downtown Los Angeles are regulated with metered and paid and/or private (reserved) lots. Consequently, if transit passengers attempt to drive and park at the stations, the parking demand would adjust based on the willingness of the drivers to pay the associated parking fees, with those drivers

utilizing existing parking lots. On-street parking around the Pacific/Randolph, Florence/Salt Lake, and Gardendale Stations is largely time unlimited and was 60 percent or less utilized at the time of surveys. While it is not anticipated that transit passengers would access these station via car because dedicated parking is not provided, on-street parking capacity is available to accommodate those who may try to do so without passengers displacing others using the spaces. Therefore, adverse effects from spillover parking would not occur.

Table 3.35. Station Parking Demand – Alternative 1

Station	Proposed Station Parking Spaces	Projected 2042 Parking Demand*	Excess Transit Parking Demand	Existing Unused On-Street Parking Capacity	Parking Supply Projected to be Exceeded?
Firestone	600	960	360	230	yes
I-105/C Line	326	380	56	490	no
Paramount/Rosecrans	490	450	-40	105	no
Bellflower	263	560	297	400	no
Pioneer	1,100	1,450	350	630	no

Source: Metro 2021s
Notes: * Projected parking demand rounded to nearest tenth

As shown in Table 3.35, dedicated transit parking provided under Alternative 1 would not accommodate projected demand at the I-105/C Line, Bellflower, and Pioneer Stations. However, unutilized on-street parking is available to meet the excess parking demand. At the Paramount/Rosecrans Station, the projected demand would be lower than the proposed transit parking. Based on the results of the analysis, spillover parking impacts would not occur at these four stations.

Alternative 1 would include 600 transit parking spaces at the Firestone Station. A daily parking demand for 960 spaces is projected at this station in the 2042 horizon year, which is greater than the number of dedicated transit parking spaces provided. Transit passengers may utilize adjacent on-street parking once the park-and-ride lot reaches capacity. As shown in Table 3.33, approximately 50 percent of the existing on-street parking is unutilized under existing conditions. As such, approximately 230 spaces could be available for transit passengers. However, even with the available on-street parking, the demand would still exceed the combined total of dedicated transit and available on-street parking spaces by approximately 130 spaces. If the parking demand reaches the full projection at peak hours, adverse effects could occur as a result of drivers circulating along roads adjacent to the station as they attempt to find available parking. This would cause an increase in localized traffic and delay on roadways and at intersections, including idling and increased vehicular emissions. Mitigation Measures TRA-21 (Parking Monitoring and Community Outreach) and TRA-22 (Parking Mitigation Program [Permanent]), described in Section 3.5.2.4, are proposed to reduce these impacts. Nevertheless, because parking demand, the subsequent strategies that may be utilized, and the community response are unknown, it is possible that adverse effects would remain after mitigation.

While adverse effects are unlikely at the stations north of the Firestone Station, as well as the I-105/C Line, Paramount/Rosecrans, Bellflower, and Pioneer Stations, Mitigation Measures TRA-21 (Parking Monitoring and Community Outreach) and TRA-22 (Parking Mitigation Program [Permanent]) would be implemented. Mitigation would be implemented to the system as a whole and would apply to all proposed stations.

3.4.4.3 Alternative 2: 7th St/Metro Center to Pioneer Station

The following sections summarize the results of the parking analysis for Alternative 2 based on the evaluation of permanent physical loss of on- and off-street parking and spillover parking impacts associated with the demand for transit parking. As summarized in Table 3.33 and Table 3.34, Alternative 2 would result in the permanent loss of approximately 136 on-street and 162 off-street parking spaces. Alternative 2 would add 2,779 parking spaces at five of the proposed new transit stations.

On- and Off-Street Parking Impacts

Implementation of Alternative 2 would have the same effect on on-street parking as Alternative 1, as the number of on-street parking spaces affected are identical. The two station locations unique to Alternative 2, South Park/Fashion District and 7th Street/Metro Center Stations, would not remove any additional on-street parking. Similarly, Alternative 2 would require the removal of all on-street parking spaces at one location in the City of Los Angeles and one location in the City of South Gate. In the City of Los Angeles, the removal of the 20 on-street parking spaces along Long Beach Avenue would not affect the function of the adjacent land uses. However, changes in the location and availability of parking could result in local concern because the destination of those utilizing on-street parking is unknown. A potential consequence of this change in parking is increased traffic circulation on streets near the lost parking as existing drivers utilizing those spaces search for new places to park. This could cause an increase in localized traffic and delay along roadways and at intersections, including a corresponding increase in idling and vehicular emissions, and could result in an adverse effect. Mitigation Measures TRA-21 (Parking Monitoring and Community Outreach) and TRA-22 (Parking Mitigation Program [Permanent]), described in Section 3.5.2.4, are proposed to reduce these impacts. Nevertheless, because parking demand, the subsequent strategies that may be utilized, and the community response are unknown, it is possible that adverse effects would remain after mitigation.

In the City of South Gate, the removal all 12 on-street parking spaces at the Main Street grade crossing location would not affect the function of the property. On-street parking is available directly adjacent to this location, and drivers utilizing these spaces would be able to find alternate parking with minimal circulation. Alternative 2 would not result in an adverse effect at this location.

At the other two locations where the removal of on-street parking is required, the loss of parking space would not result in the supply decreasing below the observed utilization. Therefore, the effects and impact conclusions described for on-street parking under Alternative 1 would also apply to Alternative 2, and Alternative 2 would not result in an adverse effect. While adverse effects are unlikely at these locations, the physical loss of parking could contribute to local concern. Mitigation Measure TRA-22 (Parking Mitigation Program [Permanent]) would be implemented at all locations with a physical loss of on-street parking.

Under Alternative 2, there are 12 locations where off-street parking would be removed permanently with a total of 162 parking spaces affected, of which 2 locations and 19 parking spaces are governmental institutions. These properties are located in the Cities of Los Angeles, Huntington Park, Vernon, South Gate, Downey, and Bellflower. Table 3.34 summarizes the results of the impact analysis at each location. Metro would provide compensation as required under the Uniform Act at properties where off-street parking is removed.

Similar to Alternative 1, governmental institutions are not required to comply with parking codes. Metro would enter into an agreement with each of these properties for the use of the existing off-street parking. Additionally, the public parking lot at South Figueroa Street and West 8th Street is not subject to parking code requirements; however, removal of parking at this location would be subject to the Uniform Act. The removal of off-street parking spaces under Alternative 2 would not cause the off-street parking supply to decrease below the respective city parking code requirements and, therefore, would not result in an adverse effect.

Spillover Parking Impacts

Alternative 2 would provide dedicated transit parking at the same five stations as Alternative 1, shown in Table 3.36. Project Measure TR PM-10 (Pioneer Station Parking Access) would be provided at Pioneer Station to limit vehicles accessing the parking structure through the adjacent residential streets. Compared to Alternative 1, while the number of proposed station parking spaces would be the same, the parking demand for Alternative 2 was projected to be higher at all five stations. This is because the Alternative 2 northern terminus station is more centrally located to the downtown Los Angeles business district core, an important activity center and destination. As such, compared to Alternative 1, Alternative 2 would have a higher ridership projection, and the corresponding higher parking demand.

Table 3.36. Station Parking Facility Demand – Alternative 2

Station	Proposed Station Parking Spaces	Projected 2042 Parking Demand*	Excess Transit Parking Demand	Existing Unused On-Street Parking Capacity	Parking Supply Projected to be Exceeded?
Firestone	600	1,120	520	230	yes
I-105/C Line	326	450	124	490	no
Paramount/Rosecrans	490	530	40	105	no
Bellflower	263	640	377	400	no
Pioneer	1,100	1,650	550	630	no

Source: Metro 2021s
Notes: * Projected parking demand rounded to nearest tenth

Similar to Alternative 1, spillover parking is not anticipated at the stations north of the Firestone Station or at the Gardendale Station as dedicated parking would not be provided at these stations. Similar to Alternative 1, on-street parking near the 7th Street/Metro Center, Arts/Industrial District, and South Park/Fashion District Stations is limited in supply and/or availability (Table 3.8). Additionally, on- and off-street parking around these stations is regulated with metered and paid and/or private (reserved) lots. Consequently, if transit

passengers attempt to drive and park at these stations, the parking demand would adjust based on the willingness of the drivers to pay the associated parking fees, with those drivers utilizing existing parking lots. The analysis presented for the Pacific/Randolph, Florence/Salt Lake, and Gardendale Stations for Alternative 1 would also apply to these stations under Alternative 2. Therefore, adverse effects from spillover parking would not occur at these stations.

The transit parking provided for all five locations under Alternative 2 would not accommodate the projected demand at each station. However, unutilized on-street parking is available at the I-105/C Line, Paramount/Rosecrans, Bellflower, and Pioneer Stations to meet the excess parking demand. Therefore, spillover parking impacts would not occur at these four stations.

At the Firestone Station, daily parking demand is projected to be 1,120 in the 2042 horizon year, which is greater than the 600 dedicated transit parking spaces provided. As shown in Table 3.36, even with the available on-street parking, the demand would still exceed the combined total of dedicated transit and available on-street parking spaces. If the parking demand reaches the full projection at peak hours, adverse effects could occur as a result of drivers circulating along roads adjacent to the station as they attempt to find available parking. This would cause an increase in localized traffic and delay on roadways and at intersections, including idling and increased vehicular emissions. Mitigation Measures TRA-21 (Parking Monitoring and Community Outreach) and TRA-22 (Parking Mitigation Program [Permanent]), described in Section 3.5.2.4, are proposed to reduce these impacts. Nevertheless, because parking demand, the subsequent strategies that may be utilized, and the community response are unknown, it is possible that adverse effects would remain after mitigation.

While adverse effects are unlikely at the stations where no additional parking is provided (stations north of the Firestone Station and Gardendale Station), as well as the I-105/C Line, Paramount/Rosecrans, Bellflower, and Pioneer Stations, Mitigation Measures TRA-21 (Parking Monitoring and Community Outreach) and TRA-22 (Parking Mitigation Program [Permanent]) would be implemented. Mitigation would be implemented to the system as a whole and would apply to all proposed stations.

3.4.4.4 Alternative 3: Slauson/A (Blue) Line to Pioneer Station

The following sections summarize the results of the parking analysis for Alternative 3 based on the evaluation of permanent physical loss of on- and off-street parking and spillover parking impacts associated with the demand for transit parking. As summarized in Table 3.33 and Table 3.34, Alternative 3 would result in the permanent loss of approximately 91 on-street and 89 off-street parking spaces. Alternative 3 would add 2,779 parking spaces at five of the proposed new transit stations.

On- and Off-Street Parking Impacts

Alternative 3 would have a shorter alignment than Alternatives 1 and 2 and would require the removal of fewer on- and off-street parking spaces. Similar to Alternatives 1 and 2, Alternative 3 would require the removal of all 12 on-street parking spaces at the Main Street grade crossing location in the City of South Gate, as summarized in Table 3.33. However, the removal of the 12 on-street parking spaces would not affect the function of the property. On street parking is available directly adjacent to this location, and drivers utilizing these

spaces would be able to find parking with minimal circulation. Alternative 3 would not result in an adverse effect at this location.

At the other locations where the removal of on-street parking is required, the loss of parking space would not result in the supply decreasing below the observed utilization. Therefore, the effects and impact conclusions described for on-street parking under Alternative 1 would also apply to Alternative 3, and Alternative 3 would not result in an adverse effect. While adverse effects are unlikely at these locations, the physical loss of parking could contribute to local concern. Mitigation Measure TRA-22 (Parking Mitigation Program [Permanent]) would be implemented at all locations with a physical loss of on-street parking.

Under Alternative 3, there are nine locations where off-street parking would be removed permanently with a total of 121 parking spaces affected, of which 2 locations and 19 parking spaces are governmental institutions. These properties are located in the Cities of Huntington Park, Vernon, South Gate, Downey, and Bellflower. Table 3.34 summarizes the impacts at each location. Metro would provide compensation as required under the Uniform Act at properties where off-street parking is removed. Similar to Alternatives 1 and 2, the removal of off-street parking spaces at these locations would not cause the off-street parking supply to decrease below the respective city parking code requirements and, therefore, would not result in an adverse impact.

Spillover Parking Impacts

Alternative 3 would provide dedicated transit parking at the same five stations as Alternatives 1 and 2. Project Measure TR PM-10 (Pioneer Station Parking Access) would be provided at Pioneer Station to limit vehicles accessing the parking structure through the adjacent residential streets. Table 3.37 summarizes the parking demand at each station with dedicated transit parking. Alternative 3 would have a shorter alignment than Alternatives 1 and 2, and a reduction in the projected ridership and corresponding parking demand is expected. The transit parking provided under Alternative 3 would accommodate projected demand at the I-105/C Line, Paramount/Rosecrans, and Pioneer Stations. Similar to the analysis presented for Alternatives 1 and 2, it is not anticipated that transit passengers would access stations without dedicated transit parking. Parking supply and availability is limited around the Slauson/A Line Station (Table 3.8). On-street parking supply is more available around the Pacific/Randolph, Florence/Salt Lake, and Gardendale Stations; therefore, if transit passengers access these stations via car, on-street parking capacity would likely be available to accommodate drivers without displacing others using the spaces. Therefore, spillover parking impacts would not occur at these stations.

The transit parking provided under Alternative 3 would not accommodate projected demand at the Firestone and Bellflower Stations. However, as shown in Table 3.37, unutilized on-street parking is available at both stations to meet the excess parking demand. Therefore, spillover parking impacts would not occur at these stations and Alternative 3 would not result in adverse effects related to spillover parking. While adverse effects are unlikely at all proposed stations, Mitigation Measures TRA-21 (Parking Monitoring and Community Outreach) and TRA-22 (Parking Mitigation Program [Permanent]) would be implemented.

Table 3.37. Station Parking Facility Demand – Alternative 3

Station	Proposed Station Parking Spaces	Projected 2042 Parking Demand*	Excess Transit Parking Demand	Existing Unused On-Street Parking Capacity	Parking Supply Projected to be Exceeded?
Firestone	600	670	70	230	no
I-105/C Line	326	240	-86	490	no
Paramount/Rosecrans	490	300	-190	105	no
Bellflower	263	420	157	400	no
Pioneer	1,100	1,090	-10	630	no

Source: Metro 2021s
Notes: * Projected parking demand rounded to nearest tenth

3.4.4.5 Alternative 4: I-105/C (Green) Line to Pioneer Station

The following sections summarize the results of the parking analysis for Alternative 4 based on the evaluation of permanent physical loss of on- and off-street parking and spillover parking impacts associated with the demand for transit parking. As summarized in Table 3.33 and Table 3.34, Alternative 4 would result in the permanent loss of approximately two off-street parking spaces and would not result in the permanent loss of on-street parking spaces. Alternative 4 would add 2,179 parking spaces at four of the proposed new transit stations.

On- and Off-Street Parking Impacts

Implementation of Alternative 4 would not require the removal of on-street parking and, therefore, would not result in an adverse effect related to on-street parking.

Alternative 4 would remove two off-street parking spaces at the Paramount Bilingual SDA Church in the City of Bellflower. Table 3.34 summarizes the results of the impact analysis at this location. Metro would provide compensation as required under the Uniform Act. The loss of parking at this location would not cause the off-street parking supply to decrease below the City of Bellflower parking code requirements and, therefore, Alternative 4 would not result in adverse effect related to off-street parking.

Spillover Parking Impacts

Dedicated transit parking would be provided at the I-105/C Line, Paramount/Rosecrans, Bellflower, and Pioneer Stations. All stations along the alignment would have dedicated transit parking. Project Measure TR PM-10 (Pioneer Station Parking Access) would be provided at Pioneer Station to limit vehicles accessing the parking structure through the adjacent residential streets Table 3.38 summarizes the parking demand at each station. Alternative 4 would have a shorter alignment than Alternatives 1, 2, and 3, and a reduction in the projected parking demand is expected. The transit parking provided under Alternative 4 would accommodate projected demand at the I-105/C Line, Paramount/Rosecrans, and Pioneer Stations. Therefore, spillover parking impacts would not occur at these stations.

Table 3.38. Station Parking Facility Demand – Alternative 4

Station	Proposed Station Parking Spaces	Projected 2042 Parking Demand*	Excess Transit Parking Demand	Existing Unused On-Street Parking Capacity	Parking Supply Projected to be Exceeded?
I-105/C Line	326	95	-231	490	no
Paramount/Rosecrans	490	210	-280	105	no
Bellflower	263	300	37	400	no
Pioneer	1,100	790	-310	630	no

Source: Metro 2021s
Notes: * Projected parking demand rounded to nearest tenth

The transit parking provided under Alternative 4 would not accommodate projected demand at the Bellflower Station. However, as shown in Table 3.38, unutilized on-street parking is available at the station to meet the excess parking demand. Therefore, spillover parking impacts would not occur at the Bellflower Station, and Alternative 4 would not result in adverse effects related to spillover parking. While adverse effects are unlikely at all proposed stations, Mitigation Measures TRA-21 (Parking Monitoring and Community Outreach) and TRA-22 (Parking Mitigation Program [Permanent]) would be implemented.

3.4.4.6 Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station

Design Option 1 would not require the removal of on-street parking and, therefore, would not result in an adverse effect. Implementation of Design Option 1 would result in the loss of 20 off-street parking spaces at the U.S. Post Office between Bauchet Street and North Vignes Street in the City of Los Angeles. As governmental institutions are not required to comply with parking codes, this property is included in Table 3.34 for completeness but was not assessed further. Design Option 1 would not result in adverse effects related to on- or off-street parking.

Design Option 2 would not result in the loss of on- or off-street parking. Therefore, Design Option 2 would not result in adverse effects related to on- or off-street parking.

Under Design Options 1 or 2, because no dedicated transit parking would be provided, it is unlikely passengers would attempt to access these stations via driving. Therefore, a spillover parking analysis was deemed unnecessary.

3.4.4.7 Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options

The Paramount and Bellflower MSF site options would not require the removal of on-street parking. Off-street parking would be removed along with the business(es) utilizing that parking. Therefore, there would not be adverse effects.

A spillover parking analysis was unnecessary for the Paramount MSF or the Bellflower MSF site options as these are not ridership-generating facilities, and spillover parking from transit users is not expected.

3.5 Project Measures and Mitigation Measures

This section addresses the project and mitigation measures identified for the transportation elements. Project measures are included as part of the design of the Project and would minimize or avoid impacts. Mitigation measures would minimize or eliminate the adverse impacts from the Build Alternatives identified in Section 3.4. The evaluation methodology described in Section 3.2 is applied to determine the effectiveness of the mitigation measures.

3.5.1 Project Measures

TR PM-1: Pre-signals and Queue-cutter Signals. Installation of pre-signals or queue-cutter signals to prevent vehicles from stopping on tracks. Pre-signals are traffic-control devices that control traffic approaching a grade crossing in conjunction with the traffic control for the intersection(s) beyond the tracks. Pre-signals can be used to stop vehicular traffic before the railroad crossing. Queue-cutter signals only control traffic approaching a crossing and are operated independently of other traffic signals in the vicinity. The concept of operation of a queue-cutter is to hold traffic upstream from a crossing before a queue caused by a downstream traffic control signal or other roadway congestion can grow long enough to back up into the crossing.

TR PM-2: Lane Configurations. Existing lane configurations near the at-grade crossings would be modified at the respective crossings to operate the pre-signals or queue-cutter signals as required by regulations.

TR PM-3: Long Beach Avenue Closure. Closing Long Beach Avenue north of the 14th Street and closing 14th Street west of Long Beach Avenue to accommodate the WSAB light rail portal tunnel (transition area between underground and aerial alignment).

TR PM-4: Randolph Avenue Intersection Modifications. Intersection modifications along Randolph Avenue, closing access for vehicles to cross the existing train tracks, resulting in the removal of the existing at-grade train crossing at the following intersections:

- Wilmington Avenue
- Regent Street
- Albany Street
- Rugby Avenue
- Rita Avenue

TR PM-5: Randolph Avenue Lane Reduction. Randolph Avenue reduction to one lane in each direction from two lanes in each direction between Alameda Street (West) and State Street and providing left-turn lanes along Randolph Avenue at each middle-of-intersection at-grade crossing to accommodate existing on-street parking.

TR PM-6: Dakota Avenue Street Conversion. One-way street conversion to Dakota Avenue between Gardendale Street and Main Street to accommodate the LRT tracks.

TR PM-7: Alondra Boulevard Intersection Modifications. Intersection modifications on the adjacent intersections to the Alondra at-grade train crossing. The intersections are Alondra Boulevard at Flora Vista Street and Alondra Boulevard at Pacific Avenue. Right-turn access only entering and leaving Flora Vista Street and Pacific Avenue to accommodate crossing features required by regulations.

TR PM-8: 187th Street Closure. Closing 187th Street between Corby Avenue (West) and Corby Avenue (East) to accommodate nearby station features required by regulations.

TR PM-9: 188th Street Closure. Closing 188th Street between Corby Avenue (West) and Pioneer Boulevard to accommodate the station parking structure.

TR PM-10: Pioneer Station Parking Access. Vehicle access to Pioneer Station parking structure to be primarily directed through signage to enter/exit from Pioneer Boulevard. Corby Avenue to serve as a secondary entrance/exit point as required, limiting vehicle access to/from adjacent residential streets.

3.5.2 Mitigation Measures

3.5.2.1 Traffic Operations

This section addresses mitigation measures for the intersections with adverse impacts from the Build Alternatives, as identified in Section 3.4.1. The evaluation assumes the roadway project measures identified in Section 3.5.1 are part of the Build Alternatives. These measures include existing at-grade crossing improvements, traffic signal installations, lane modifications, and street closures to enhance the safety and operations of traffic operations with the Build Alternatives in place. The intersections are evaluated with a structured assessment approach, and the evaluations are delineated by section because the impacts are specific to localized areas.

As described in Section 3.4.1, Alternatives 1 (with and without Design Options 1 and 2), 2, and 3 would result in adverse impacts at 20 intersections (related to LOS and delays). Alternative 4 would result in adverse impacts at 5 intersections. With the mitigation measures described, 8 of the 20 intersections would be fully mitigated (i.e., no adverse effects would remain after mitigation) under Alternatives 1 (with and without Design Options 1 and 2), 2, and 3. Mitigation would be effective for all 5 intersections that would have adverse impacts under Alternative 4, while adverse impacts would remain at 12 intersections for Alternatives 1 (with and without Design Options 1 and 2), 2, and 3.

Overview and Approach for Assessing Mitigation

For each intersection, potential mitigation measures, including strategies and improvement options, were identified and evaluated. The mitigation measures generally included three types of modifications:

- Signalizing intersections that are currently stop-controlled
- Adding lanes (right, through, and/or left)
- Extending turn bays (right or left)

In developing the mitigation options, consideration was given to the benefit of the mitigation (reducing delays); however, the potential for secondary impacts associated with mitigation measure implementation (typically right-of-way impacts to access, parking, or

adjacent properties) was considered. These mitigation strategies were then eliminated from further consideration.

In numerous scenarios, the mitigation options evaluated at one intersection could result in an effective mitigation or an additional impact at nearby intersections. For example, adding a turn lane to an intersection where the queues extend back to the upstream intersection would generally have a positive effect on both intersections. However, adding a through lane to one intersection may allow more traffic to pass through to a downstream intersection, thereby increasing delay and resulting in a potential impact.

Focused Assessment of Potential Mitigation Measures

Appendix A – Attachment 7 of the Transportation Impact Analysis Report (Appendix D) provides a detailed description of the evaluation of potential mitigation options to address traffic operations impacts. The discussion is organized by geographic section using groups of intersections with cross-effects between intersections (upstream or downstream). Six groups of intersections and two individual intersections were assessed. These are described in the following subsections.

Intersections Nos. 31, 35, 36, 39, 40, 42, 43, and 45: This intersection group is located on Randolph Street near the Pacific/Randolph Station and includes eight intersections:

- No. 31 – Randolph Street and Alameda Street (West)
- No. 35 – Randolph Street and Santa Fe Avenue
- No. 36 – Randolph Street and Malabar Street
- No. 39 – Pacific Boulevard and Clarendon Avenue
- No. 40 – Randolph Street and Pacific Boulevard
- No. 42 – Randolph Street and Seville Avenue
- No. 43 – Randolph Street and Miles Avenue
- No. 45 – Randolph Street and State Street

Alternatives 1 (with and without Design Options 1 and 2), 2, and 3 are projected to result in adverse effects to these intersections during one or both peak periods. With the proposed Build Alternatives, LRT would travel in the median of Randolph Street, passing through the listed intersections at-grade.

Multiple mitigation measures were considered, but many measures would require right-of-way acquisition and would have secondary impacts. A list of feasible mitigation measures was developed, as summarized in Table 3.39.

While delays related to the Build Alternatives would be reduced, impacts would remain after implementation of mitigation measures. Adding additional lanes or lane extensions without acquiring right-of-way would not provide substantial reduction in vehicle delay. Therefore, impacts would remain adverse after mitigation. Figure 3-10 illustrates the intersection lane configurations with the mitigation measures.

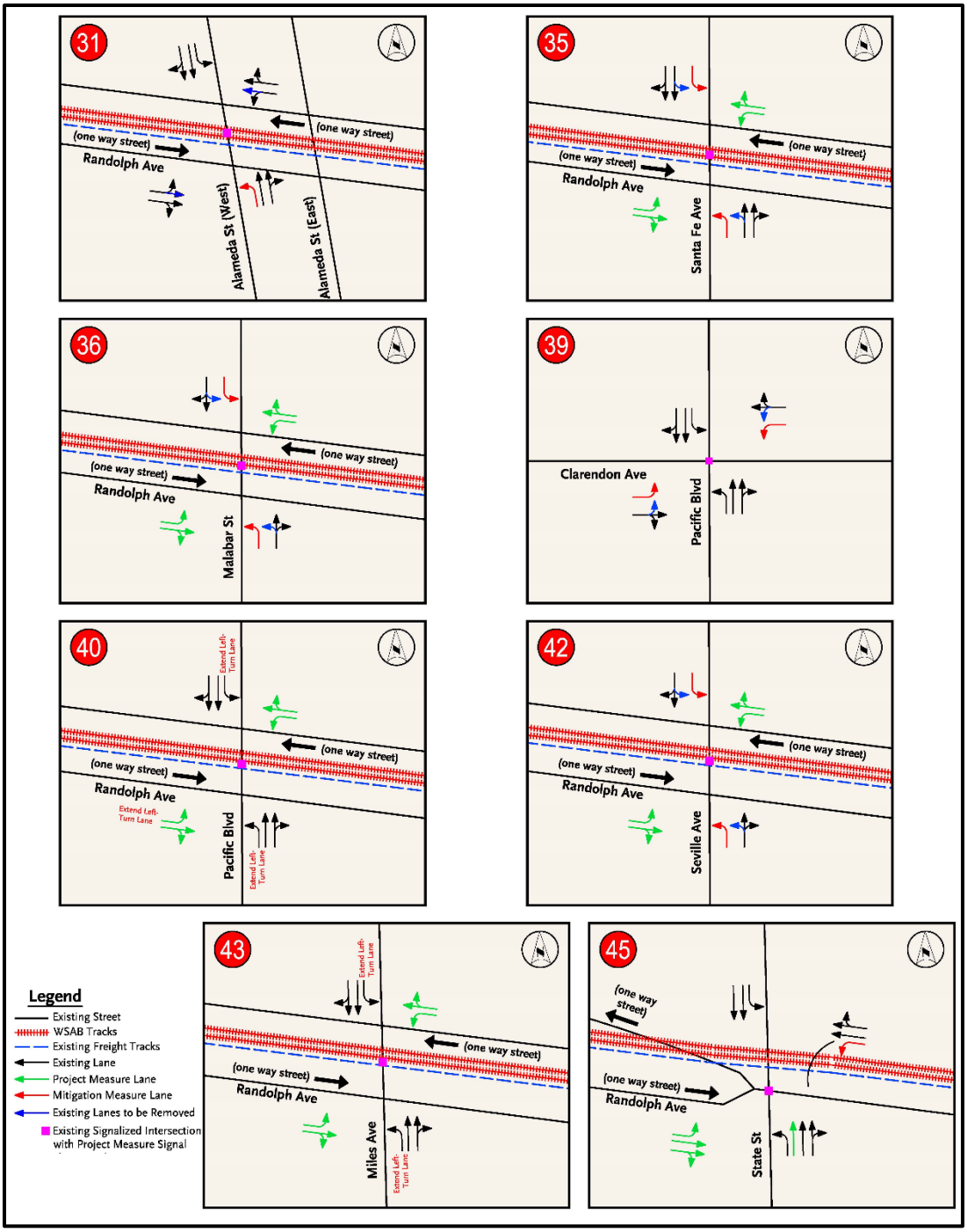
Table 3.39. Mitigation Measures for Intersections Nos. 31, 35, 36, 39, 40, 42, 43, and 45

No	Intersection	Mitigation Description	Peak	No Build Delay/ LOS[a]	Build Alternatives	Build Alternatives Delay/LOS Without Mitigation[a]	Build Alternatives Delay/LOS With Mitigation[a]	Adverse Effect With Mitigation?[b]
31	Randolph Street/ Alameda Street (West)	TRA-12: Add northbound left-turn lane with 150-foot turn bay. Convert eastbound and westbound left-through lane to left-turn lanes. Metro would implement this measure subject to approval of the applicable jurisdiction (City of Huntington Park).	AM	49.9/D	1, 2, 3, Design Options 1 and 2	142.7/F	71.9/E	**Yes**
			PM	60.8/E	1, 2, 3, Design Options 1 and 2	140.4/F	46.3/D	No
35	Randolph Street/Santa Fe Avenue	TRA-11: Add northbound and southbound left-turn lane with 150-foot turn bays. Metro would implement this measure subject to approval of the applicable jurisdiction (City of Huntington Park).	AM	30.3/C	1, 2, 3, Design Options 1 and 2	114.8/F	95.1/F	**Yes**
			PM	30.1/C	1, 2, 3, Design Options 1 and 2	141.2/F	92.3/F	**Yes**
36	Randolph Street/ Malabar Street	TRA-10: Add northbound and southbound left-turn-only lanes with 100-foot turn bays. Metro would implement this measure subject to approval of the applicable jurisdiction (City of Huntington Park).	AM	22.5/C	1, 2, 3, Design Options 1 and 2	81.9/F	58.6/E	**Yes**
			PM	22.1/C	1, 2, 3, Design Options 1 and 2	52.3/D	55.5/E	**Yes**
39	Pacific Boulevard/ Clarendon Avenue	TRA-9: Add eastbound and westbound left-turn lanes with 50-foot turn bays. Metro would implement this measure subject to approval of the applicable jurisdiction (City of Huntington Park).	AM	10.8/B	1, 2, 3, Design Options 1 and 2	51.1/D	21.7/C	**Yes**
			PM	9.1/A	1, 2, 3, Design Options 1 and 2	14.2/B	8.9/A	No

No	Intersection	Mitigation Description	Peak	No Build Delay/ LOS[a]	Build Alternatives	Build Alternatives Delay/LOS Without Mitigation[a]	Build Alternatives Delay/LOS With Mitigation[a]	Adverse Effect With Mitigation?[b]
40	Randolph Street/ Pacific Boulevard	TRA-8: Extend northbound, southbound, and eastbound left-turn lanes to 150-foot turn bays. Metro would implement this measure subject to approval of the applicable jurisdiction (City of Huntington Park).	AM	26.0/C	1, 2, 3, Design Options 1 and 2	90.1/F	60.3/E	**Yes**
			PM	32.5/C	1, 2, 3, Design Options 1 and 2	73.2/E	53.9/D	**Yes**
42	Randolph Street/ Seville Avenue	TRA-7: Add northbound and southbound through lanes with 150-foot left-turn bays in each direction. Metro would implement this measure subject to approval of the applicable jurisdiction (City of Huntington Park).	AM	37.5/D	1, 2, 3, Design Options 1 and 2	111.3/F	113.6/F	**Yes**
			PM	34.9/C	1, 2, 3, Design Options 1 and 2	129.4/F	102.8/F	**Yes**
43	Randolph Street/Miles Avenue	TRA-6: Extend northbound and southbound left-turn lanes to 150-foot turn bays. Metro would implement this measure subject to approval of the applicable jurisdiction (City of Huntington Park).	AM	36.7/D	1, 2, 3, Design Options 1 and 2	91.5/F	120.0/F	**Yes**
			PM	36.2/D	1, 2, 3, Design Options 1 and 2	121.6/F	120.3/F	**Yes**
45	Randolph Street/State Street	TRA-5: Add a westbound left-turn lane with a 150-foot turn bay. Metro would implement this measure subject to approval of the applicable jurisdiction (City of Huntington Park).	AM	43.6/D	1, 2, 3, Design Options 1 and 2	144.1/F	117.7/F	**Yes**
			PM	19.4/B	1, 2, 3, Design Options 1 and 2	76.1/E	73.4/E	**Yes**

Source: Metro 2021s
Notes: [a] This column shows the peak hour delay in seconds per vehicle, followed by the LOS.
[b] The cells highlighted in yellow with bold "Yes" text indicate that adverse effects still occur at the intersection after implementation of mitigation. The cells with "No" text indicate adverse effects from the Project would be fully mitigated such that no adverse effect would remain after mitigation.
LOS = level-of-service

Figure 3-10. Nos. 31, 35, 36, 39, 40, 42, 43, and 45 Lane Configuration with Mitigation Measures



Source: Metro 2021s

Intersections Nos. 48 and 49: This intersection group is located adjacent to the Gage Avenue crossing and includes intersections No. 48 – Gage Avenue and California Avenue and No. 49 – Gage Avenue and Salt Lake Avenue (West). Alternatives 1 (with and without Design Options 1 and 2), 2, and 3 are projected to result in adverse effects to these intersections during both peak periods. With the proposed Build Alternatives, LRT would travel through the at-grade crossing between the two intersections.

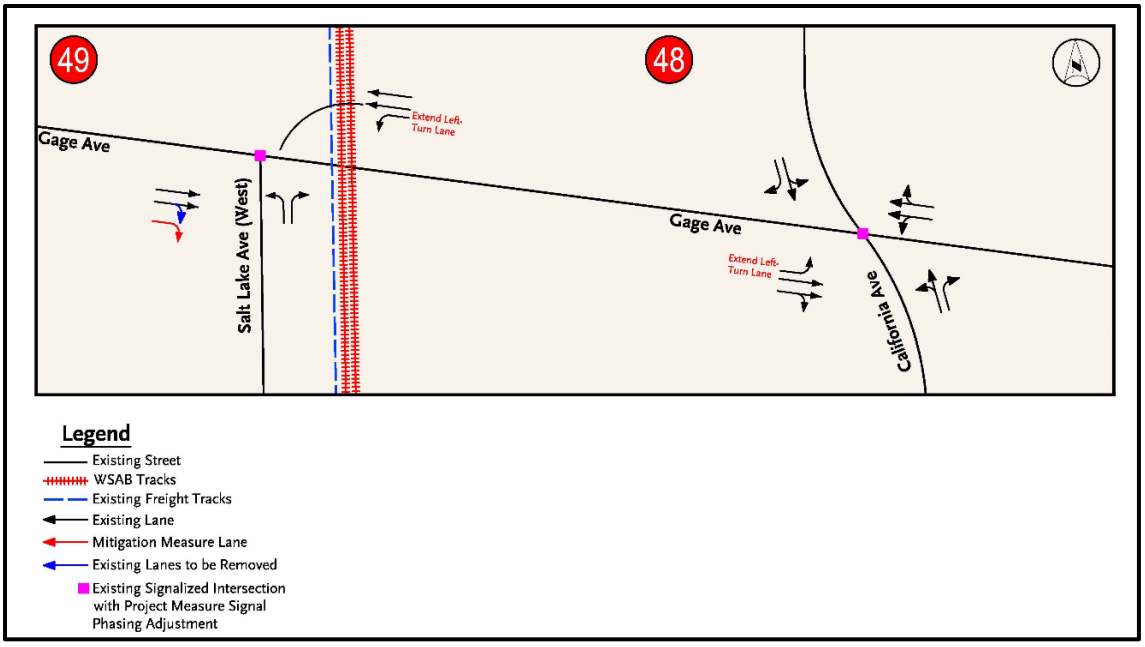
Multiple mitigation measures were considered, but many mitigation measures would require right-of-way acquisition and would have secondary impacts. A list of feasible mitigation measures was developed as summarized in Table 3.40. As shown, with implementation of mitigation, adverse effects would remain for both intersections during the AM and PM peak periods under the Build Alternatives. Figure 3-11 illustrates the intersection lane configurations with the mitigation measures.

Table 3.40. Mitigation Measures for Intersections Nos. 48 and 49

No	Intersection	Mitigation Description	Peak	No Build Delay/LOS[a]	Build Alternatives	Build Alternatives Delay/LOS Without Mitigation[a]	Build Alternatives Delay/LOS with Mitigation[a]	Adverse Effect With Mitigation?[b]
48	Gage Avenue/ California Avenue	TRA-4: Extend eastbound left-turn lane with a 150-foot turn bay. Metro would implement this measure subject to approval of the applicable jurisdiction (City of Bell).	AM	19.6/B	1, 2, 3, Design Options 1 and 2	69.4/E	63.1/E	**Yes**
			PM	97.5/F	1, 2, 3, Design Options 1 and 2	120.3/F	123.2/F	**Yes**
49	Gage Avenue/ Salt Lake Avenue (West)	TRA-3: Add eastbound right-turn lane with a 250-foot turn bay. Extend westbound left-turn lane with a 225-foot turn bay. Metro would implement this measure subject to approval of the applicable jurisdiction (City of Bell).	AM	16.3/B	1, 2, 3, Design Options 1 and 2	64.9/E	33.8/C	**Yes**
			PM	34.2/C	1, 2, 3, Design Options 1 and 2	114.4/F	100.9/F	**Yes**

Source: Metro 2021s
Notes: [a] This column shows the peak hour delay in seconds per vehicle, followed by the LOS.
[b] The cells highlighted in yellow with bold "Yes" text indicate that adverse effects still occur at the intersection after implementation of mitigation.
LOS = level-of-service

Figure 3-11. Intersections Nos. 48 and 49 Lane Configuration with Mitigation Measures



Source: Metro 2021s

While the projected delays are reduced, adverse effects would remain after implementation of the mitigation measures. Adding additional lanes or lane extensions would not provide substantial reduction in vehicle delay without acquiring right-of-way. Therefore, adverse effects would remain after mitigation.

Intersections No. 51: This intersection is located west of the Bell crossing. Alternatives 1 (with and without Design Options 1 and 2), 2, and 3 are projected to result in adverse effects at this intersection during both peak periods. Under these alternatives, LRT would travel through the at-grade crossing to the east of the intersection, and there would be additional traffic volumes associated with the projected kiss-and-ride peak-hour trips from the Florence/Salt Lake Station traveling through the intersection.

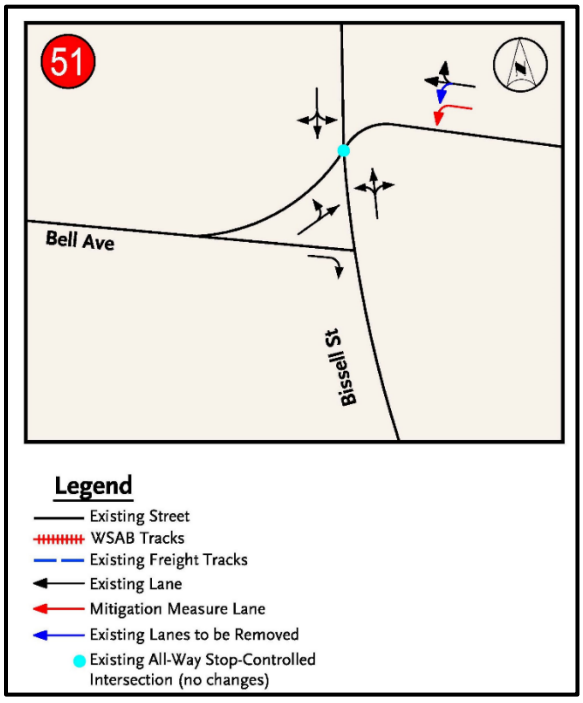
A set of mitigation measures, which eliminate the adverse impacts, is summarized in Table 3.41. Additionally, no right-of-way acquisitions associated with these mitigation measures are anticipated because they can be accommodated within the existing right-of-way. Figure 3-12 illustrates the intersection lane configurations with the mitigation measures.

Table 3.41. Mitigation Measures for Intersection No. 51

No	Intersection	Mitigation Description	Peak	No Build Delay/ LOS[a]	Build Alternatives	Build Alternatives Delay/LOS Without Mitigation[a]	Build Alternatives Delay/LOS With Mitigation[a]	Adverse Effect With Mitigation?[b]
51	Bell Avenue/ Bissell Street	TRA-2: Add a westbound through-right lane. Convert westbound left-through-right lane into a left-turn lane. Metro would implement this measure subject to approval of the applicable jurisdiction (City of Bell).	AM	5.3/A	1, 2, 3, Design Options 1 and 2	13.9/B	6.8/A	No
			PM	5.7/A	1, 2, 3, Design Options 1 and 2	22.5/C	9.6/A	No

Source: Metro 2021s
Notes: [a] This column shows the peak hour delay in seconds per vehicle, followed by the LOS.
[b] The cells with "No" text indicate adverse effects from the Project would be fully mitigated such that no adverse effect would remain after mitigation.
LOS = level-of-service

Figure 3-12. Intersection No. 51 Lane Configuration with Mitigation Measures



Source: Metro 2021s

Intersections Nos. 53 and 54: This group of intersections is located north of the Florence/Salt Lake Station and includes intersections No. 53 – Florence Avenue and California Avenue (West) and No. 54 – Florence Avenue and California Avenue (East). Alternatives 1 (with and without Design Options 1 and 2), 2, and 3 are projected to result in adverse effects to these intersections during one or both peak periods. With the proposed Build Alternatives, LRT would travel through the at-grade crossing between the two intersections, and there would be additional traffic volumes associated with the projected 40 kiss-and-ride peak hour trips at the Florence/Salt Lake Station.

After detailed evaluation, one feasible mitigation option was developed for No. 53 – Florence Avenue and California Avenue (West), and no feasible mitigation options were identified for No. 54 – Florence Avenue and California Avenue (East), as summarized in Table 3.42. The cells highlighted in yellow with bold "Yes" text indicate that adverse effects still occur at these intersections after implementation of mitigation. The cells with "No" text indicate adverse effects from the Project would be fully mitigated such that no adverse effect would remain after mitigation. Figure 3-13 illustrates the intersection lane configurations with the mitigation measures.

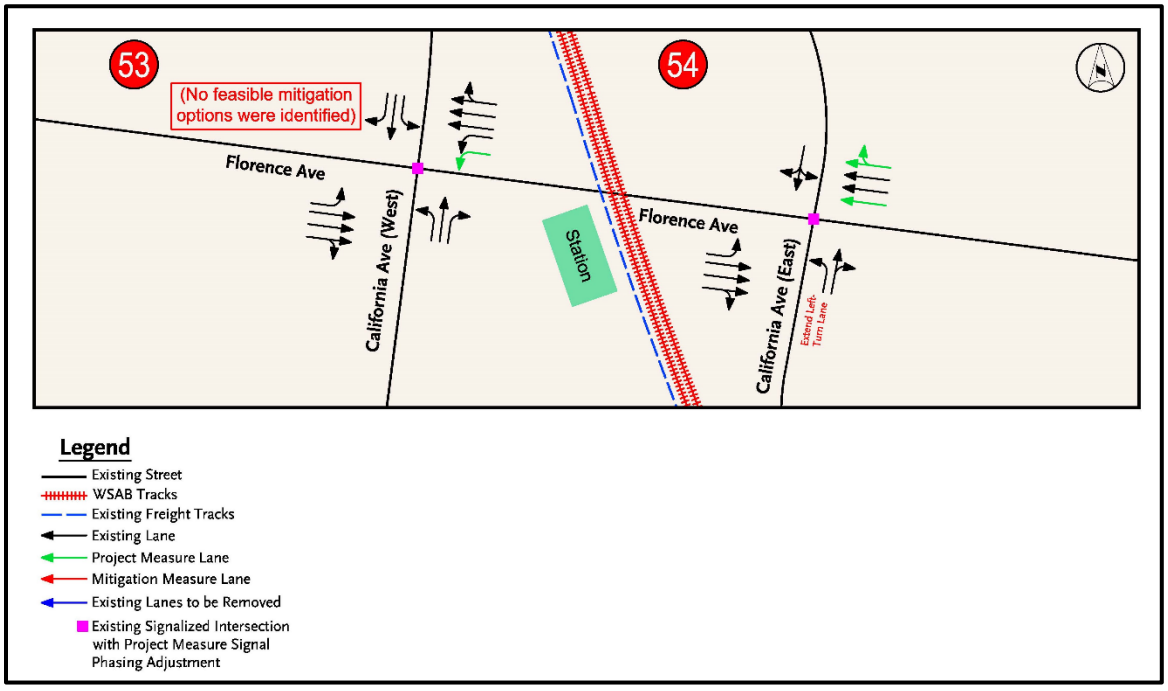
Table 3.42. Mitigation Measures for Intersections Nos. 53 and 54

No	Intersection	Mitigation Description	Peak	No Build Delay/ LOS[a]	Build Alternatives	Build Alternatives Delay/LOS Without Mitigation[a]	Build Alternatives Delay/LOS With Mitigation[a]	Adverse Effect With Mitigation?[b]
53	Florence Avenue/ California Avenue (West)	No feasible mitigation options were identified.	AM	37.1/D	1, 2, 3, Design Options 1 and 2	103.2/F	101.7/F	**Yes**
			PM	42.3/D	1, 2, 3, Design Options 1 and 2	80.8/F	50.3/D	**Yes**

No	Intersection	Mitigation Description	Peak	No Build Delay/ LOS[a]	Build Alternatives	Build Alternatives Delay/LOS Without Mitigation[a]	Build Alternatives Delay/LOS With Mitigation[a]	Adverse Effect With Mitigation?[b]
54	Florence Avenue/ California Avenue (East)	TRA-1: Extend the northbound left-turn lane to 300 feet. Metro would implement this measure subject to approval of the applicable jurisdiction (City of Huntington Park).	AM	65.2/E	1, 2, 3, Design Options 1 and 2	143.2/F	142.3/F	**Yes**
			PM	44.3/D	1, 2, 3, Design Options 1 and 2	31.4/C	31.8/C	No

Source: Metro 2021s
Notes: [a] This column shows the peak hour delay in seconds per vehicle, followed by the LOS.
[b] The cells highlighted in yellow with bold "Yes" text indicate that adverse effects still occur at the intersection after implementation of mitigation. The cells with "No" text indicate adverse effects from the Project would be fully mitigated such that no adverse effect would remain after mitigation.
LOS = level-of-service

Figure 3-13. Intersections Nos. 53 and 54 Lane Configuration with Mitigation Measures



Source: Metro 2021s

Based on the preliminary evaluation, adverse effects would remain at both intersections after implementation of mitigation measures. Adding additional lanes or lane extensions would not provide substantial reduction in vehicle delay without acquiring right-of-way. Therefore, these impacts would be unmitigable and an adverse effect would remain.

Intersections Nos. 68 and 70: This intersection group is located adjacent to the Gardendale Station crossing and includes intersections No. 68 – Gardendale Street and Center Street and No. 70 – Gardendale Street and Industrial Avenue intersections. Alternatives 1 (with and without Design Options 1 and 2), 2, and 3 are projected to result in adverse effects to these intersections during both peak periods. With the Build Alternatives, LRT would travel through the at-grade crossing between the two intersections, and there would be additional traffic volumes associated with the projected 53 park-and-ride and 56 kiss-and-ride peak hour trips traveling through the intersection.

A set of mitigation measures, which would eliminate the anticipated adverse impacts, are summarized in Table 3.43. As shown, adverse effects would be fully mitigated, as indicated by cells with "No" text. No substantial right-of-way impacts are anticipated; however, there would be minor impacts to landscaping on the north side of both intersections. Otherwise, all mitigation measures would be accommodated within the existing right-of-way. Figure 3-14 illustrates the intersection lane configurations with the mitigation measures.

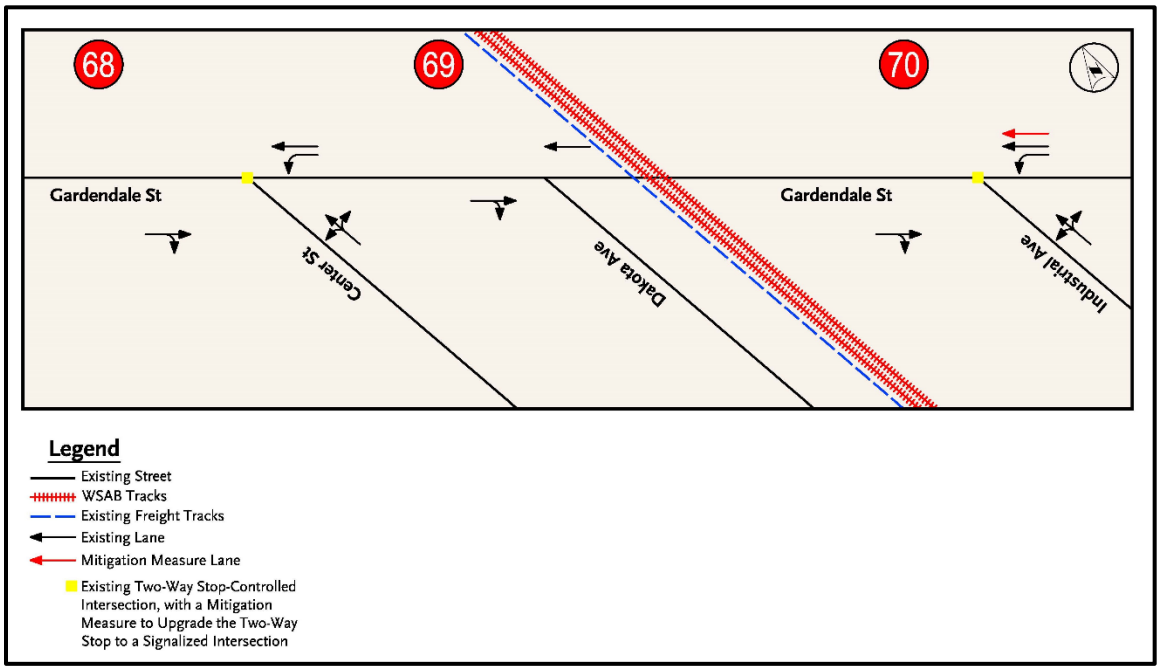
Table 3.43. Mitigation Measures for Intersections Nos. 68 and 70

No	Intersection	Mitigation Description	Peak	No Build Delay/LOS[a]	Build Alternatives	Build Alternatives Delay/LOS Without Mitigation[a]	Build Alternatives Delay/LOS With Mitigation[a]	Adverse Effect With Mitigation?[b]
68	Gardendale Street/ Center Street	TRA-13: Convert the two-way stop-controlled intersection to a signalized intersection. Metro would implement this measure subject to approval of the applicable jurisdiction (City of South Gate).	AM	23.5/C	1, 2, 3, Design Options 1 and 2	48.8/E	7.8/A	No
			PM	17.2/C	1, 2, 3, Design Options 1 and 2	41.0/E	15.6/B	No

No	Intersection	Mitigation Description	Peak	No Build Delay/LOS[a]	Build Alternatives	Build Alternatives Delay/LOS Without Mitigation[a]	Build Alternatives Delay/LOS With Mitigation[a]	Adverse Effect With Mitigation?[b]
70	Gardendale Street/ Industrial Avenue	TRA-14: Convert the two-way stop-controlled intersection to a signalized intersection. Add a westbound through lane, the length of which would continue through the grade crossing. Metro would implement this measure subject to approval of the applicable jurisdiction (City of South Gate).	AM	75.5/F	1, 2, 3, Design Options 1 and 2	594.2/F	4.0/A	No
			PM	28.9/C	1, 2, 3, Design Options 1 and 2	50.9/F	5.9/A	No

Source: Metro 2021s
Notes: [a] This column shows the peak hour delay in seconds per vehicle, followed by the LOS.
[b] The cells with "No" text indicate adverse effects from the Project would be fully mitigated such that no adverse effect would remain after mitigation.
LOS = level-of-service

Figure 3-14. Intersections Nos. 68 and 70 Lane Configuration with Mitigation Measures



Source: Metro 2021s

Intersections Nos. 81, 82, and 84: This intersection group is located adjacent to the Alondra and Clark crossings and includes intersections No. 81 – Flora Vista Street and Clark Avenue, No. 82 – Alondra Boulevard and Clark Avenue, and No. 84 – Alondra Boulevard and Flora Vista Street intersections. All Build Alternatives (with or without Design Options 1 and 2) are projected to result in adverse effects to these intersections during at least one peak period. With the Build Alternatives, LRT would travel through the at-grade crossing between the intersections, and there would be additional traffic volumes associated with the projected 20 park-and-ride and 7 kiss-and-ride peak hour trips traveling through the area.

A set of mitigation measures, which would address impacts, is summarized in Table 3.44. As shown, adverse effects would be fully mitigated such that no adverse effect would remain after mitigation. No right-of-way impacts are anticipated because all mitigation options can be accommodated within the existing right-of-way. Figure 3-15 illustrates the intersection lane configurations with the mitigation measures.

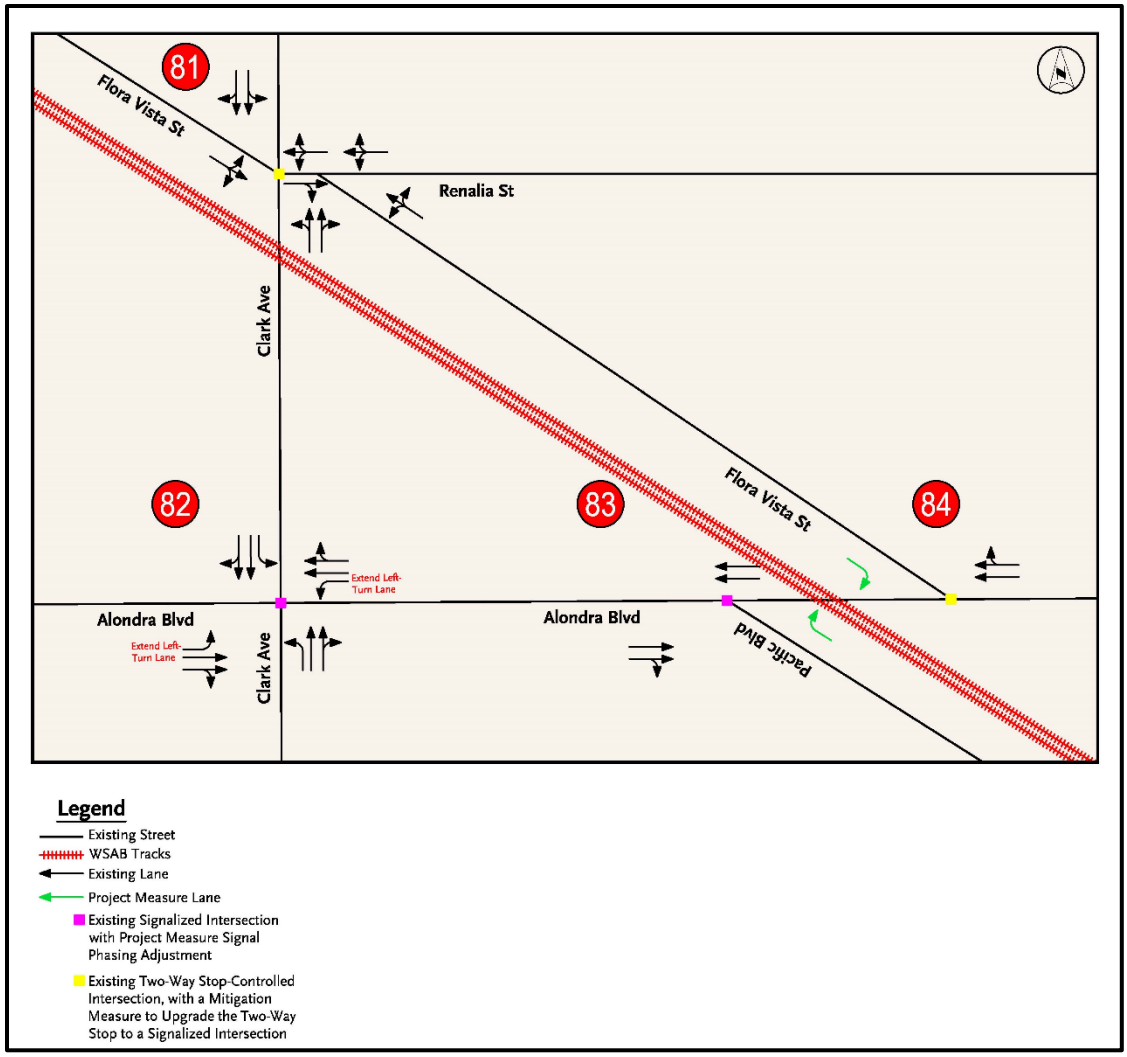
Table 3.44. Mitigation Measures for Intersections Nos. 81, 82, and 84

No	Intersection	Mitigation Description	Peak	No Build Delay/LOS[a]	Build Alternatives	Build Alternatives Delay/LOS Without Mitigation[a]	Build Alternatives Delay/LOS With Mitigation[a]	Adverse Effect With Mitigation?[b]
81	Flora Vista Street/ Clark Avenue	TRA-15: Convert the two-way stop-controlled intersection to a signalized intersection. Metro would implement this measure subject to approval of the applicable jurisdiction (City of Bellflower).	AM	7.6/A	1, 2, 3, 4, Design Options 1 and 2	172.1/F	10.1/B	No
			PM	22.4/D	1, 2, 3, 4, Design Options 1 and 2	389.0/F	12.3/B	No
82	Alondra Boulevard/ Clark Avenue	TRA-16: Extend eastbound left-turn lane to 150 feet. Extend westbound	AM	46.2/D	1, 2, 3, 4, Design Options 1 and 2	61.1/E	46.1/D	No

No	Intersection	Mitigation Description	Peak	No Build Delay/LOS[a]	Build Alternatives	Build Alternatives Delay/LOS Without Mitigation[a]	Build Alternatives Delay/LOS With Mitigation[a]	Adverse Effect With Mitigation?[b]
		left-turn lane to 200 feet. Metro would implement this measure subject to approval of the applicable jurisdiction (City of Bellflower).	PM	69.3/E	1, 2, 3, 4, Design Options 1 and 2	83.3/F	49.7/D	No
84	Alondra Boulevard/ Flora Vista Street	TRA-17: Convert the two-way stop-controlled intersection to a signalized intersection. Metro would implement this measure subject to approval of the applicable jurisdiction (City of Bellflower).	AM	52.6/F	1, 2, 3, 4, Design Options 1 and 2	420.6/F	30.8/C	No
			PM	41.4/E	1, 2, 3, 4, Design Options 1 and 2	37.6/E	4.0/A	No

Source: Metro 2021s
Notes: [a] This column shows the peak hour delay in seconds per vehicle, followed by the LOS.
[b] The cells with "No" text indicate adverse effects from the Project would be fully mitigated such that no adverse effect would remain after mitigation.
LOS = level-of-service

Figure 3-15. Intersections Nos. 81, 82, and 84 Lane Configuration with Mitigation Measures



Source: Metro 2021s

Intersection No. 89: Intersection No. 89 – Artesia Boulevard and Dumont Avenue is located adjacent to the Artesia crossing and was analyzed independently because there are no other existing intersections nearby. All Build Alternatives (with and without Design Options 1 and 2) are projected to result in adverse effects to these intersections during both peak periods. With the Build Alternatives, LRT would travel through the at-grade crossing east of the intersection.

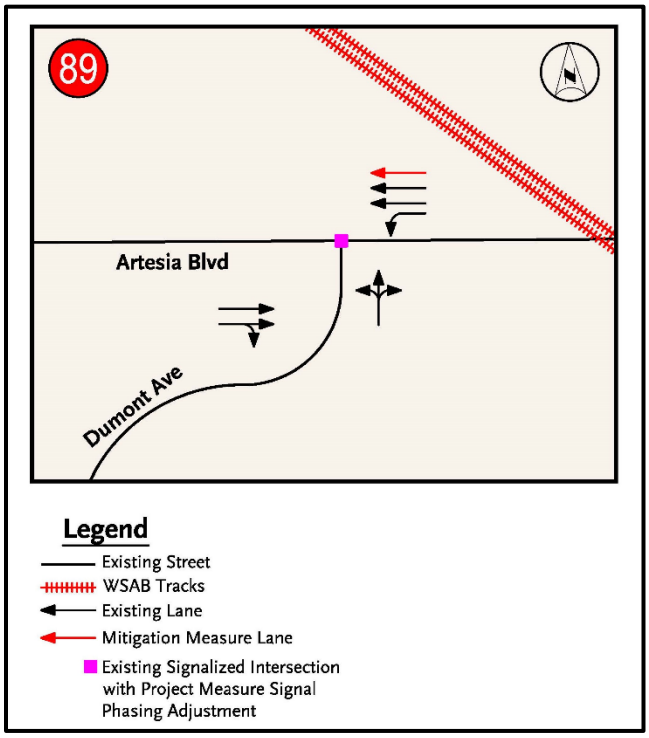
A mitigation measure, which would address the projected adverse impacts, is summarized in Table 3.45. As shown, adverse effects would be fully mitigated such that no adverse effect would remain after mitigation. Minimal right-of-way impacts are anticipated. The necessary right-of-way acquisition would include property on Artesia Boulevard west of Dumont Avenue, but these acquisitions would be limited to the existing landscaping areas along this street. Figure 3-16 illustrates the intersection lane configurations with the mitigation measures.

Table 3.45. Mitigation Measures for Intersection No. 89

No	Intersection	Mitigation Description	Peak	No Build Delay/LOS[a]	Build Alternatives	Build Alternatives Delay/LOS Without Mitigation[a]	Build Alternatives Delay/LOS with Mitigation[a,]	Adverse Effect With Mitigation?[b]
89	Artesia Boulevard/ Dumont Avenue	TRA-18: Add westbound through lane. Metro would implement this measure is subject to approval of the applicable jurisdiction (City of Cerritos).	AM	14.7/B	1, 2, 3, 4, Design Options 1 and 2	24.2/C	15.9/B	No
			PM	21.6/C	1, 2, 3, 4, Design Options 1 and 2	58.2/E	26.4/C	No

Source: Metro 2021s
Notes: [a] This column shows the peak hour delay in seconds per vehicle, followed by the LOS.
[b] The cells with "No" text indicate adverse effects from the Project would be fully mitigated such that no adverse effect would remain after mitigation.
LOS = level-of-service

Figure 3-16. Intersection No. 89 Lane Configuration with Mitigation Measures



Source: Metro 2021s

Intersection No. 91: Intersection No. 91 – Business Circle and Studebaker Road is located adjacent to the Studebaker crossing and was analyzed independently because there are no other existing intersections nearby. All Build Alternatives (with and without Design Options 1 and 2) are projected to result in adverse effects to these intersections during the PM peak period. With the Build Alternatives, LRT would travel through the at-grade crossing south of the intersection.

A mitigation measure, which would address the projected adverse impacts, is summarized in Table 3.46. As shown, adverse effects would be fully mitigated such that no adverse effect would remain after mitigation. No right-of-way impacts are anticipated because the mitigation measure can be accommodated within the existing right-of-way. Figure 3-17 illustrates the intersection lane configurations with the mitigation measures.

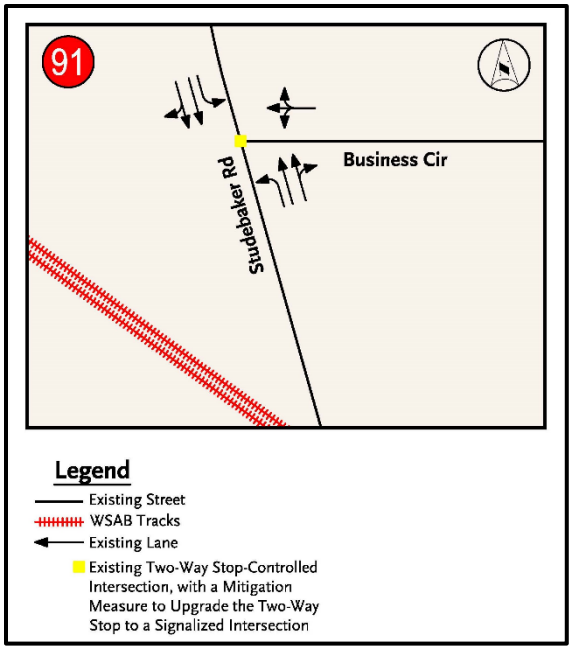
Table 3.46. Mitigation Measure for Intersection No. 91

No	Intersection	Mitigation Description	Peak	No Build Delay/LOS[a]	Build Alternatives	Build Alternatives Delay/LOS Without Mitigation[a]	Build Alternatives Delay/LOS with Mitigation[a,]	Adverse Effect With Mitigation?[b]
91	Business Circle/ Studebaker Road	TRA 19: Convert the two-way stop-controlled intersection to a signalized intersection. This measure is subject to approval of the applicable jurisdiction.	AM	8.4/A	1, 2, 3, 4, Design Options 1 and 2	3.3/A	6.3/A	No
			PM	8.0/A	1, 2, 3, 4, Design Options 1 and 2	15.3/C	8.9/A	No

Source: Metro 2021s
Notes: [a] This column shows the peak hour delay in seconds per vehicle, followed by the LOS.
[b] The cells with "No" text indicate adverse effects from the Project would be fully mitigated such that no adverse effect would remain after mitigation.
LOS = level-of-service

The mitigation measures described above would fully mitigate 9 of the 25 intersections where the Build Alternatives would result in impacts without mitigation. For the other 16 intersections, the identified mitigation measures would reduce the increase in delay caused by the Build Alternatives but not to the extent that the adverse impact would be fully mitigated. Mitigation measures that would further reduce delay, including adding additional lanes, were considered, but were determined to be infeasible, primarily because of the need to also acquire additional right-of-way. Therefore, adverse effects would remain after mitigation.

Figure 3-17. Intersection No. 91



Source: Metro 2021s

3.5.2.2 Transit Conditions

As described in Section 3.4.2, the Build Alternatives would be beneficial to transit conditions in the Study Area as increased levels of transit service would be provided by a new LRT line. No substantial impacts have been identified, so no adverse effects would result, and mitigation measures are not required.

Impacts to traffic operations, described in Section 3.4.1, have the potential to delay bus service and increase unreliability. While these impacts to traffic operations would affect bus operations, they would not result in adverse effects because the change in delays would be minimal because local bus service schedules are continually reviewed and adjusted by regional and local transit agencies.

3.5.2.3 Active Transportation

The Build Alternatives would affect existing and planned bicycle and pedestrian facilities at several locations. In addition, the new transit service provided by the Build Alternatives would increase demand for bicycle and pedestrian facilities. However, these facilities would be improved as part of the Build Alternatives, and no adverse effects to these facilities are anticipated; thus, no mitigation measures would be required. If it is not feasible to use the property that is currently a nursery for the Bellflower-Paramount Bike Trail, Mitigation Measure LU-1 (described in Section 4.1.4 of the Land Use Section and in more detail in the *West Santa Ana Branch Transit Corridor Project Final Land Use Impact Analysis Report* (Appendix E)) includes specific provisions that would help to modify the proposed Paramount Bike Trail sections west of Somerset Boulevard into a Class II bikeway.

3.5.2.4 Parking

Section 3.4.4 describes the expected parking impacts associated with the Build Alternatives. Parking impacts are associated with additional demand for new stations and the permanent loss of parking from station, track construction, and facilities to support the LRT operations. Mitigation Measures TRA-21 (Parking Monitoring and Community Outreach) and TRA-22 (Parking Mitigation Program [Permanent]) would be implemented to reduce the effects from the loss of on- and off-street parking spaces and the parking demand forecasted at the new stations.

TRA-21: Parking Monitoring and Community Outreach

- Within the one-half-mile area surrounding each WSAB station, an assessment would be conducted to monitor on-street and off-street parking activity resulting from project operation. The assessment would compare parking availability prior to the opening of service to the availability six months following the opening of service. Surveys would be conducted at each station area to identify where WSAB parking demand is at least 20 percent greater than the demand before opening of service (i.e., the new transit service has increased parking demand by 20 percent or more).
- Metro would work with the appropriate local jurisdiction, business owners, and affected communities for that station area to assess the need for an appropriate on- and off-street parking management program, considering the nearby community's and each proposed station's parking needs.
- Specific parking management strategies could include restriping, modifying parking restrictions, and adjusting the time limits for on-street parking. For off-street parking, signing and enforcement services could be included.
- Another element would be implementing or enhancing a residential permit parking program for the affected neighborhoods. Metro would coordinate with and support jurisdictions in outreach meetings within the affected communities to gauge the interest of residents participating in a residential permit parking program (prior to the opening of the new light rail service), regardless of whether parking shortages have been identified.

TRA-22: Parking Mitigation Program (Permanent)

Metro would coordinate with local jurisdictions to address the physical loss of public parking spaces resulting from implementation of the Project. This could include, but not be limited to, restriping the existing street to allow for diagonal parking, reducing the number of restricted parking areas, and adjusting the time limits for on-street parking.

Implementation of TRA-21 (Parking Monitoring and Community Outreach) and TRA-22 (Parking Mitigation Program [Permanent]) would reduce parking impacts and also provide indirect mitigation for the loss of off-street parking by allowing additional on-street parking where appropriate and feasible. These measures would be implemented shortly before the WSAB opening so that the parking, social, and economic conditions during that time are considered when identifying the most appropriate parking strategies to implement. Adverse effects would be reduced with implementation of this measure; however, adverse effects are likely to remain.

3.6 California Environmental Quality Act Determination

3.6.1 Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

3.6.1.1 No Project Alternative

Under the No Project Alternative, the Build Alternatives would not be introduced, and no changes would occur to the existing conditions within the Affected Area for operation of transit, roadway, bicycle, and pedestrian facilities. Therefore, conflicts with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system would not occur; impacts would be less than significant, and mitigation would not be required.

3.6.1.2 Alternative 1: Los Angeles Union Station to Pioneer Station

Regionally, Alternative 1 comprises 1 of the 17 transit projects funded by Measure R, a one-half cent sales tax approved by LA County voters in November 2008, and Measure M, an extension of Measure R and an additional one-half cent sales tax approved by voters in November 2016. The Project is identified in the LRTP (Metro 2009a). Alternative 1 would provide expanded transit service through a new LRT line consistent with adopted policies, plans, and programs related to public transit.

Table 3.47 summarizes an evaluation of general plans or transportation and traffic study guidelines for 15 cities, as well as Metro and LA County within the Study Area. As shown, Alternative 1 would be consistent with plans, ordinances, and policies addressing the circulation system for transit, roadway, bicycle, and pedestrian facilities.

Alternative 1 would include physical changes to local streets within the roadway circulation system. Modifications would vary throughout the corridor and would include new train at-grade crossings, modified access near grade separations, new driveways to provide access to parking and stations, realignment of existing bike crossings, modification of existing pedestrian crossings, elimination of left-turn movements, including for trucks, and realignment of local streets. These modifications have been identified to improve operations and safety for drivers, bicyclists, and pedestrians. The location and nature of the modifications are consistent with the programs, plans, ordinances, and policies of the affected jurisdictions, as summarized in Table 3.47. The guidance in those documents was reviewed to confirm that there are no inconsistencies. Additionally, implementation of the Alternative 1 would not preclude construction of a roadway project identified in approved plans. The new project elements (e.g., tracks, stations, and supporting infrastructure) would be designed consistent with Metro Rail Design Criteria or equivalent criteria[3] and with the local city General Plan Circulation Elements (e.g., City of Bellflower Circulation Element, Section 6.3 – Goal 3: Provide residents and business occupants in the City of Bellflower with a convenient and viable public transportation system).

[3] Flexibility for the development of other performance criteria, perhaps in support of a Public-Private Partnership procurement, is provided. The ultimate criteria used will achieve the same performance standards as those established in the Metro guidance.

Table 3.47. Alternative 1 Consistency with Circulation System Policy, by Study Area Jurisdiction

No.	City/Agency	Circulation System				Source	Web Site
		Transit	Roadway*	Bicycle	Pedestrian		
1	Los Angeles	yes	yes	yes	yes	*Transportation Impact Study Guidelines* (LADOT 2016)	http://ladot.lacity.org/sites/g/files/wph266/f/COLA-TISGuidelines-010517.pdf
2	Vernon	yes	yes	yes	yes	*General Plan* (City of Vernon 2015)	http://www.cityofvernon.org/images/community-services/Zoning/Circulation%20&%20Infrastructure%20Element%202015.pdf
3	Huntington Park	yes	yes	yes	yes	*General Plan* (City of Huntington Park 1991)	http://www.hpca.gov/DocumentCenter/View/407
4	Maywood	yes	yes	yes	yes	*General Plan* (City of Maywood no date)	https://evogov.s3.amazonaws.com/media/100/media/35350.pdf
5	Bell	yes	yes	yes	yes	*General Plan* (City of Bell 1996)	http://www.cityofbell.org/home/showdocument?id=714
6	Cudahy	yes	yes	yes	yes	*General Plan* (City of Cudahy 2016)	http://www.cityofcudahy.com/uploads/5/3/9/9/53994499/cudahy_existing_conditions_report_2-2016_final.pdf
7	South Gate	yes	yes	yes	yes	*General Plan* (City of South Gate 2009)	http://www.cityofsouthgate.org/DocumentCenter/View/147
8	Bell Gardens	yes	yes	yes	yes	*General Plan* (City of Bell Gardens 2016)	https://www.bellgardens.org/government/city-departments/community-development/planning/general-plan
9	Lynwood	yes	yes	yes	yes	*General Plan* (City of Lynwood 2003)	http://lynwood.ca.us/wp-content/uploads/2016/07/2003-08CityofLynwoodGeneralPlan.pdf
10	Downey	yes	yes	yes	yes	*General Plan* (City of Downey 2005)	http://www.downeyca.org/civicax/filebank/blobdload.aspx?BlobID=3490

No.	City/Agency	Circulation System				Source	Web Site
		Transit	Roadway*	Bicycle	Pedestrian		
11	Paramount	yes	yes	yes	yes	*General Plan* (City of Paramount 2007)	http://cdm16255.contentdm.oclc.org/cdm/ref/collection/p266301ccp2/id/714
12	Bellflower	yes	yes	yes	yes	*General Plan* (City of Bellflower 1997)	https://www.bellflower.org/civicax/filebank/blobdload.aspx?BlobID=28088
13	Lakewood	yes	yes	yes	yes	*General Plan* (City of Lakewood 2009)	http://www.lakewoodcity.org/civicax/filebank/blobdload.aspx?BlobID=22728
14	Artesia	yes	yes	yes	yes	*General Plan* (City of Artesia 2010)	http://www.cityofartesia.us/DocumentCenter/View/101
15	Cerritos	yes	yes	yes	yes	*General Plan* (City of Cerritos 2004)	http://www.cerritos.us/GOVERNMENT/_pdfs/Chapter04.Circulation.pdf
16	Metro Congestion Management Program	yes	yes	yes	yes	*Congestion Management Program* (Metro 2010e)	http://media.metro.net/docs/cmp_final_2010.pdf
17	LA County	yes	yes	yes	yes	*Traffic Impact Analysis Report Guidelines* (LA County 1997)	http://dpw.lacounty.gov/traffic/traffic%20impact%20analysis%20guidelines.pdf

Source: Metro 2021s
Notes: * LOS was not considered when determining environmental impacts.
LA = Los Angeles; LADOT = Los Angeles Department of Transportation

Alternative 1 would improve transit service and accessibility, which is a broad goal of most plans. Because Alternative 1 would operate in an exclusive right-of-way, travel times with the LRT would be shorter than existing transit service in the corridor. Reliability would also improve. Existing transit services in the Study Area include Metro Rail (six lines), Metrolink (three lines), Metro Rapid (six routes), Metro Express (two routes), shuttle bus (two routes), local bus (nine routes), municipal operators (seven routes), and local operators. For all of these transit services, there is the potential for positive and negative changes to individual routes and stops/stations. New service on Alternative 1 would result in shifts in transit riders away from some services but could also increase ridership on feeder routes and on transit service in general.

Changes to active transportation (pedestrians and bicyclists) facilities would occur where Alternative 1 would remove or limit the functionality of a bike facility or sidewalk. These changes would either result in new facilities or existing facilities would be upgraded and overall function maintained. Impacts (both beneficial and significant) could occur in the areas adjacent to stations and along the alignment. Where construction would encroach on existing

bike facilities or sidewalks, such as the Paramount Bike Trail and Bellflower Bike Trail, Mitigation Measure LU-1 (Consistency with Bike Plans), described in Section 4.1.4 of the Land Use Section, would require realignment of these segments so the overall function would be maintained and operational and there would not be permanent significant impacts.

Alternative 1 could also preempt the future development and implementation of several proposed bicycle paths including the Class I bicycle path along Salt Lake Avenue (Cities of Huntington Park, Bell, and Cudahy) and Class I bicycle path north of Rayo Avenue and south of the LA River (City of South Gate). However; while planned, the bike facilities are unfunded and not scheduled for implementation. As further discussed in Section 4.1.3.2 of the Land Use Section and Section 4.16.3.2 of the Parklands Section, sufficient space would be available to develop a Class II or Class III bicycle path along the street, which would maintain the connectivity identified in the bicycle master plans. However, the reclassification of the bike paths is considered a conflict with the current bike plans and a significant impact would occur. Section 4.18.3.2 of the Safety and Security Section addresses pedestrian and bicycle safety at individual station locations near the guideway and at-grade crossings. Potential conflicts have been identified, and measures to address safety are provided. The net effect is that the bicycle system with Alternative 1 would generally be the same as with the No Project Alternative. Additional sidewalks and bicycle facilities would provide a beneficial impact, both for active transportation users accessing the stations and the broader community. The Alternative 1 design would also comply with ADA requirements. Alternative 1 would improve nonmotorized/active transportation facilities by replacing and upgrading the existing ones removed during construction and confirming those facilities (crosswalks, sidewalks, paths, and mid-block crossings) are retained and/or replaced to meet the required continuity and performance.

Under Mitigation Measure LU-1(Consistency with Bike Plans) described in Section 4.1.4, Metro would continue coordination efforts with the Cities of Huntington Park, Bell, Cudahy, and South Gate to minimize potential impacts to the future implementation of the planned bike trails identified in their bike master plans. As part of this effort, Metro, as appropriate, would support preparation of amended language for each affected bicycle plan demonstrating that planned bicycle facilities could still achieve an individual city's mobility and connectivity goals. However, because the process to amend bike plans is a local process, including public participation, the ultimate outcome and resolution of plan elements cannot be predicted. As such, despite Metro's best efforts and coordination and with the implementation of mitigation, Alternative 1 may still conflict with bike master plans. Therefore, even with implementation of mitigation, Alternative 1 would result in a significant and unavoidable impact.

Mitigation Measures: Mitigation Measure LU-1

Impacts Remaining after Mitigation: Significant and unavoidable.

3.6.1.3 Alternative 2: 7th St/Metro Center to Pioneer Station

The impact analysis described for Alternative 1 in Section 3.6.1.2 is also applicable to Alternative 2. Alternative 2 would have similar proposed improvements to the public transit system as Alternative 1. Alternative 2 could preempt the future development and implementation of several proposed bicycle paths. Under Mitigation Measure LU-1 (Consistency with Bike Plans), Metro would continue coordination efforts with the Cities of Huntington Park, Bell, Cudahy, and South Gate to minimize potential impacts to the future

implementation of the planned bike trails identified in their bike master plans. However, the reclassification of the bike paths is considered a conflict with the current bike plans and a significant impact would occur. Therefore, even with implementation of mitigation, Alternative 2 would result in a significant and unavoidable impact.

Mitigation Measures: Mitigation Measure LU-1

Impacts Remaining after Mitigation: Significant and unavoidable.

3.6.1.4 Alternative 3: Slauson/A (Blue) Line to Pioneer Station

The impact analysis described for Alternative 1 in Section 3.6.1.2 is also applicable to Alternative 3. Alternative 3 would have similar proposed improvements to the public transit system as Alternative 1. Alternative 3 could preempt the future development and implementation of several proposed bicycle paths. Under Mitigation Measure LU-1 (Consistency with Bike Plans), Metro would continue coordination efforts with the Cities of Huntington Park, Bell, Cudahy, and South Gate to minimize potential impacts to the future implementation of the planned bike trails identified in their bike master plans. However, the reclassification of the bike paths is considered a conflict with the current bike plans and a significant impact would occur. Therefore, even with implementation of mitigation, Alternative 3 would result in a significant and unavoidable impact.

Mitigation Measures: Mitigation Measure LU-1

Impacts Remaining after Mitigation: Significant and unavoidable.

3.6.1.5 Alternative 4: I-105/C (Green) Line to Pioneer Station

The impact analysis described for Alternative 1 in Section 3.6.1.2 is also applicable to Alternative 4. Alternative 4 would have similar proposed improvements to the public transit system as Alternative 1. Alternative 4 could preempt the future development and implementation of several proposed bicycle paths. Under Mitigation Measure LU-1 (Consistency with Bike Plans), Metro would continue coordination efforts with the Cities of Huntington Park, Bell, Cudahy, and South Gate to minimize potential impacts to the future implementation of the planned bike trails identified in their bike master plans. However, the reclassification of the bike paths is considered a conflict with the current bike plans and a significant impact would occur.. Therefore, even with implementation of mitigation, Alternative 4 would result in a significant and unavoidable impact.

Mitigation Measures: Mitigation Measure LU-1

Impacts Remaining after Mitigation: Significant and unavoidable.

3.6.1.6 Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station

The impact analysis described for Alternative 1 in Section 3.6.1.2 is also applicable to Design Options 1 and 2. The design options would have similar proposed improvements to the public transit system as the Build Alternatives. Therefore, less-than-significant impacts would occur, and mitigation would not be required.

3.6.1.7 Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options

The impact analysis described for Alternative 1 in Section 3.6.1.2 also applies to the Paramount and Bellflower MSF site options. The Paramount MSF site option would be consistent with adopted policies, plans, or programs. Therefore, less-than-significant impacts would occur, and mitigation would not be required.

The realignment of the segment of the Bellflower Bike Trail located within the PEROW may preempt future development and implementation of the Bellflower Bike Trail to the west of the Bellflower MSF site option. Implementation of Mitigation Measure LU-1 would be effective to demonstrate that modifications to the bicycle facilities would maintain continuity with other segments of the Paramount Bike Trail and Bellflower Bike Trail. The Bellflower MSF site option would not result in inconsistencies with the *Bellflower-Paramount Active Transportation Plan*. Therefore, less-than-significant impacts would occur.

Mitigation Measures: Mitigation Measure LU-1

Impacts Remaining after Mitigation: Less than significant.

3.6.2 Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

Section 15064.3(b) addresses both land use and transportation projects, and broadly describes the methodology (including the potential for qualitative analysis used to assess VMT). The overall guidance for transportation projects is that they will have a less-than-significant project impact if they reduce VMT. Agencies are given "broad discretion" to select the methodology for analysis, or even apply a qualitative approach. The assessment for this CEQA requirement is focused on the projected change in VMT with the Project.

3.6.2.1 No Project Alternative

Under the No Project Alternative, the Build Alternatives would not be introduced and there would be no change to the existing conditions within the Affected Area for traffic operations. Therefore, there would be no change in VMT associated with the Project, and there would not be any significant impacts.

3.6.2.2 Alternative 1: Los Angeles Union Station to Pioneer Station

Using the regional travel demand model, VMT was assessed for Alternative 1. The six-county SCAG region was used as the basis for the geographic evaluation of VMT. Table 3.48 is a summary of the VMT for Alternative 1 (assuming operation in 2017) compared to the existing condition. The VMT for Alternative 1 regionally is approximately 463 million VMT per day. Alternative 1 would result in a reduction in VMT of approximately 0.05 percent.

Table 3.48. Existing and Build Alternatives Daily Vehicle Miles Traveled (2017)

Alternative	Daily Regional VMT	Reduction (over Existing) in VMT (Miles)	Reduction
Existing	463,245,800	-	-
Alternative 1	463,029,700	216,100	-0.05%
Alternative 2	463,030,800	215,000	-0.05%
Alternative 3	463,174,000	71,800	-0.02%

Alternative	Daily Regional VMT	Reduction (over Existing) in VMT (Miles)	Reduction
Alternative 4	463,209,500	36,300	-0.01%
Design Option 1 (MWD)	463,009,500	236,300	-0.05%
Design Option 2	463,027,300	218,500	-0.05%

Source: Metro 2018f
Notes: MWD = Metropolitan Water District; VMT = vehicle miles traveled

Table 3.49 is a summary of the VMT measure for Alternative 1 compared to the No Build Alternative for 2042. As shown, Alternative 1 would decrease VMT by approximately 0.06 percent compared to the No Build Alternative.

Table 3.49. No Build and Build Alternatives Daily Vehicle Miles Traveled (2042)

Alternative	Daily Regional VMT	Reduction (over the No Build) in VMT (Miles)	Reduction
No Build	606,329,900	-	-
Alternative 1	605,938,400	391,500	-0.06%
Alternative 2	605,952,500	377,400	-0.06%
Alternative 3	606,199,000	130,900	-0.02%
Alternative 4	606,259,100	70,800	-0.01%
Alternative 1 with Design Option 1 (MWD)	605,892,100	437,800	-0.07%
Alternative 1 with Design Option 2	605,931,500	398,400	-0.07%

Source: Metro 2018f
Notes: MWD = Metropolitan Water District; VMT = vehicle miles traveled

Alternative 1 would have a less-than-significant impact because VMT would be reduced under both the existing and horizon year scenarios, and mitigation would not be required. This conclusion is reinforced by guidance published by the OPR in December 2018. *CEQA Guidelines* Section 15064.3(b)(2) provides that "[t]ransportation projects that reduce, or have no impact on, [VMT] should be presumed to cause a less-than-significant transportation impact." Similarly, the *Technical Advisory on Evaluating Transportation Impacts in CEQA* (OPR 2018) notes that "transit and active transportation projects generally reduce VMT and therefore are presumed to cause a less-than-significant impact on transportation."

3.6.2.3 Alternative 2: 7th St/Metro Center to Pioneer Station

As shown in Table 3.48 and Table 3.49, Alternative 2 would reduce VMT compared to conditions without the Project, both under existing conditions and in the 2042 horizon year. Therefore, Alternative 2 would have a less-than-significant impact, and mitigation would not be required.

3.6.2.4 Alternative 3: Slauson/A (Blue) Line to Pioneer Station

As shown in Table 3.48 and Table 3.49, Alternative 3 would reduce VMT compared to conditions without the Project under both existing conditions and the 2042 horizon year. Therefore, Alternative 3 would have a less-than-significant impact, and mitigation would not be required.

3.6.2.5 Alternative 4: I-105/C (Green) Line to Pioneer Station

As shown in Table 3.48 and Table 3.49, Alternative 4 would reduce VMT compared to conditions without the Project under both existing conditions and the 2042 horizon year. Therefore, Alternative 4 would have a less-than-significant impact, and mitigation would not be required.

3.6.2.6 Design Options—Alternative 1

Design Option 1: LAUS at MWD

The VMT analysis for Design Option 1 (MWD) included the same geographic area as the Build Alternatives. As shown in Table 3.48 and Table 3.49, Alternative 1 with Design Option 1 (MWD) would reduce VMT compared to conditions without the Project under both existing condition and the 2042 horizon year. Therefore, Design Option 1 (MWD) would result in a less-than-significant impact, and mitigation would not be required.

Design Option 2: Add Little Tokyo Station

The VMT analysis for Design Option 2 included the same geographic area as the Build Alternatives. As shown in Table 3.48 and Table 3.49, Alternative 1 with Design Option 2 would reduce VMT compared to conditions without the Project under both existing condition and the 2042 horizon year. Therefore, Design Option 2 would result in a less-than-significant impact, and mitigation would not be required.

3.6.2.7 Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options

The Paramount and Bellflower MSF site options are project features of the Build Alternatives described in the prior sections. There is an overall VMT reduction associated with the Build Alternatives, and the MSF site options are integral elements of the Build Alternatives. The two MSF site options support the WSAB improvements that ultimately reduce VMT. Therefore, the MSF site options would have less-than-significant impacts and mitigation would not be required.

3.6.3 Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

3.6.3.1 No Project Alternative

Under the No Project Alternative, the Build Alternatives would not be introduced and there would be no change to the existing conditions within the Affected Area for traffic operations. Therefore, there would be no change in hazards, and mitigation would not be required.

3.6.3.2 Alternative 1: Los Angeles Union Station to Pioneer Station

This impact is discussed in Section 6.3 of the Safety and Security Impact Analysis Report (Appendix F) and Section 4.18.5 of the Safety and Security Section where a similar CEQA

threshold, "Would the Project Substantially Increase Hazards Due to a Design Feature or Incompatible Uses?" has been presented and analyzed. As shown in those sections, impacts from the Build Alternatives would be less than significant after mitigation (Mitigation Measure SAF-1, described in Section 4.18.4 of the Safety and Security Section).

Additionally, at-grade crossings would be designed with safety measures. Changes to the lengths of vehicle queues from nearby intersections back to train crossings could result in vehicle delays. The result could be vehicles stopped on the tracks, unless other measures are taken, such as placing signs to indicate that stopping on the tracks is not permitted. To minimize the potential for vehicles queuing onto at-grade crossings, Project Measures TR PM-1 (Pre-signals and Queue-cutter Signals) though TR PM-9 (188th Street Closure) will be implemented. Safety requirements would be established in accordance with FTA and CPUC requirements, along with coordination with the freight operators. At freeway crossing locations, safety requirements would be established in accordance with Caltrans requirements. Metro design criteria would also be followed; therefore, the at-grade crossings would be operated in accordance with Metro system safety plans, policies, and procedures. These strategies would reduce the potential for hazards between other users and the new LRT service to a less-than-significant level after mitigation.

Mitigation Measures: Mitigation Measure SAF-1 (introducing intrusion crash walls and intrusion detection systems), as described in Section 4.18.4 of the Safety and Security Section, would require implementation of an encroachment detection system to detect unauthorized entry into Metro right-of-way to reduce the potential safety impacts associated with operation of freight and LRT in shared right-of-way. With implementation of this measure, impacts would be less-than-significant.

Impacts Remaining after Mitigation: With implementation of Mitigation Measure SAF-1, impacts associated with the introduction of LRT vehicle operations along the corridor and the corresponding safety hazards that would result from these operations, as well as the corresponding interface with vehicular, bicycle, pedestrian, and freight rail operations, would be less than significant.

3.6.3.3 Alternative 2: 7th St/Metro Center to Pioneer Station

The impact analysis, mitigation measure, and conclusions described for Alternative 1 in Section 3.6.3.2 are also applicable to Alternative 2. The strategies would reduce the potential for hazards between other users and the new LRT service to a less-than-significant level after mitigation.

Mitigation Measures: Mitigation Measure SAF-1

Impacts Remaining after Mitigation: Less than significant.

3.6.3.4 Alternative 3: Slauson/A (Blue) Line to Pioneer Station

The impact analysis, mitigation measure, and conclusions described for Alternative 1 in Section 3.6.3.2 are also applicable to Alternative 3. The strategies would reduce the potential for hazards between other users and the new LRT service to a less-than-significant level after mitigation.

Mitigation Measures: Mitigation Measure SAF-1

Impacts Remaining after Mitigation: Less than significant.

3.6.3.5 Alternative 4: I-105/C (Green) Line to Pioneer Station

The impact analysis, mitigation measure, and conclusions described for Alternative 1 in Section 3.6.3.2 are also applicable to Alternative 4. The strategies would reduce the potential for hazards between other users and the new LRT service to a less-than-significant level after mitigation.

Mitigation Measures: Mitigation Measure SAF-1

Impacts Remaining after Mitigation: Less than significant.

3.6.3.6 Design Options—Alternative 1

Design Option 1: LAUS at MWD

Design Option 1 (MWD) would not introduce design elements that could increase hazards (e.g., new at-grade crossings, unsafe pedestrian crossings). The impact analysis described for design options in Section 6.3 of the Safety and Security Impact Analysis Report (Appendix F) and Section 4.18.5 of the Safety and Security Section has been presented and analyzed. Therefore, Design Option 1 (MWD) would have a less-than-significant impact, and mitigation would not be required.

Design Option 2: Add Little Tokyo Station

Design Option 2 would result in the addition of a station and the corresponding design features; however, these changes would not result in the introduction of new hazards associated with geometric design or incompatible uses. The impact analysis for design options is included in Section 6.3 of the Safety and Security Impact Analysis Report (Appendix F) and Section 4.18.5 of the Safety and Security Section. As summarized in those sections, Design Option 2 would have a less-than-significant impact and mitigation would not be required.

3.6.3.7 Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options

The Paramount and Bellflower MSF site options would not introduce design elements that could increase hazards (e.g., new at-grade crossings, pedestrian crossings with safety issues). The MSF site options would be located on a site with fencing, preventing public access. Therefore, the MSF site options would not introduce design features that could result in hazards, would have less-than-significant impacts, and mitigation would not be required.

3.6.4 Result in inadequate emergency access?

3.6.4.1 No Project Alternative

Under the No Project Alternative, the Build Alternatives would not be introduced and there would be no change to the existing conditions within the Affected Area for traffic operations. Therefore, there would be no changes that would result in inadequate emergency access and no impacts would occur.

3.6.4.2 Alternative 1: Los Angeles Union Station to Pioneer Station

As described in Section 4.18.5.1 of the Safety and Security Section, the potential for significant impacts would be less than significant because Alternative 1 would not interfere with adopted emergency response or evacuation plans, emergency service providers, or otherwise increase the demand for emergency response services, and mitigation would not be required. Alternative 1 would not remove access routes used by existing emergency

service providers. Delays in emergency response services or evacuation plans due to at-grade crossings gate down times would also be less than significant because these plans would not typically involve crossing active rail corridors.

3.6.4.3 Alternative 2: 7th St/Metro Center to Pioneer Station

The impact analysis described for Alternative 1 in Section 3.6.4.2 is also applicable to Alternative 2 because project elements and impact minimization strategies would be similar. Alternative 2 would not be expected to interfere with emergency response plans or increase the demand for emergency response services. Therefore, less-than-significant impacts would occur, and mitigation would not be required.

3.6.4.4 Alternative 3: Slauson/A (Blue) Line to Pioneer Station

The impact analysis described for Alternative 1 in Section 3.6.4.2 is also applicable to Alternative 3 because project elements and impact minimization strategies would be similar. Alternative 3 would not be expected to interfere with emergency response plans or increase the demand for emergency response services. Therefore, less-than-significant impacts would occur, and mitigation would not be required.

3.6.4.5 Alternative 4: I-105/C (Green) Line to Pioneer Station

The impact analysis described for Alternative 1 in Section 3.6.4.2 is also applicable to Alternative 4 because project elements and impact minimization strategies would be similar. Alternative 4 would not be expected to interfere with emergency response plans or increase the demand for emergency response services. Therefore, less-than-significant impacts would occur, and mitigation would not be required.

3.6.4.6 Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station

The impact analysis described for Alternative 1 in Section 3.6.4.2 would also apply to Design Options 1 and 2 because project elements and impact minimization strategies would be similar. The design options would not be expected to interfere with emergency response plans or increase the demand for emergency response services. Therefore, the design options would result in less-than-significant impacts, and mitigation would not be required.

3.6.4.7 Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options

The impact analysis described for Alternative 1 in Section 3.6.4.2 also applies to the Paramount MSF site option. The Paramount MSF site option would have similar impacts as described above because of the at-grade crossing to access the MSF site option. The Paramount MSF site option would use a connection track that uses the existing Rosecrans Avenue at-grade crossing to connect the remote MSF site option to the rest of the LRT track network. The Bellflower MSF site option would not add train crossing events, as it would be directly connected to the rest of the LRT track network. Train crossing frequency related to the Paramount MSF site option would be less compared to the Build Alternatives. The MSF site options would not remove access routes used by existing emergency service providers. Therefore, the MSF site options would not interfere with local jurisdictions' emergency response plans and would not overtax existing emergency service providers. Emergency response services could experience delays during gate down times at the at-grade crossing

associated with the Paramount MSF site, but those delays would result in less-than-significant impacts, and mitigation would not be required.

3.7 Construction

3.7.1 Construction Activities

The Project would include track and station construction at-grade through and adjacent to local streets with live traffic, underground track and station construction, overhead/aerial track and station construction, at-grade station parkway construction, and street closure/turning movement restrictions. The following summarizes Metro's current assumptions regarding construction activities; refer to the *West Santa Ana Branch Transit Corridor Project Construction Methods Report* (Metro 2021g) (Appendix L) and Section 4.19 of the Construction Section for additional detail. The analysis conservatively assumes longer durations of closures and more peak hour, weekday, and full street closures than are likely to be required.

Tunnels for the underground parts of Alternatives 1 and 2 would be constructed using tunnel boring machines (TBMs) to control ground and groundwater inflows into the tunnel that could lead to surface settlement if not mitigated. In addition, this technology allows the tunnel lining to be installed concurrently, which also prevents groundwater from entering the tunnel behind the TBM. The TBM would be launched from a portal located on a property adjacent to Long Beach Avenue between East 14th and Newton Streets. The TBM would be retrieved at a designated end point through a crossover cavern. The extraction of the TBMs would occur at the station box at the terminus locations for Build Alternative 2 in the downtown transit core or Build Alternative 1 at LAUS. In-street work areas would only be used when there is no viable off-street alternative.

Construction of the LRT tracks for the Project would occur within active and inactive rail corridors, depending on the location. In the San Pedro Subdivision, which is currently used for freight, a temporary shoo-fly track would be constructed to allow for the construction of new freight tracks. Freight trains would be redirected to the temporary shoo-fly while new freight tracks are constructed. After construction of the new freight tracks is complete, freight rail services would be transferred to the newly constructed freight tracks. The new LRT tracks would be constructed after the existing freight track service is switched to the relocated track. Coordination with the existing freight operator would be required.

Construction of an LRT aerial guideway would begin with the installation of piles for columns and piers that support the structure and loads that would be carried on it. Pile-supported columns would be constructed in two main stages. In the first stage, piles made from steel or concrete, typically about 12 to 15 inches in diameter, would be driven into the ground by vibratory or pile driving equipment or, alternatively, cast-in-drilled-hole (CIDH) piles. The second stage joins the piles with the construction of the pile cap, typically a 4- to 5-foot slab of reinforced concrete. The pile cap would be constructed to distribute the structural load to two or more piles. Large-diameter CIDH pile construction consists of drilling shafts that are up to 8 feet in diameter, or larger, with the placement of a rebar cage inside the shaft, and then filling it with concrete. The diameter of the CIDH piles would depend on the structural load limit to be supported. Driven piles and regular CIDH piles require a pile cap. Large-diameter CIDH piles do not require a pile cap and can be as large, or larger than, the column it supports. At a few locations along Long Beach Avenue, straddle bents would be used when a singular column supporting the aerial guideway is not feasible. These would occur, for example, to maintain an existing left-hand turn lane. Straddle bents consist of two large-

diameter columns, offset from the row of typical columns, with a beam between them and the aerial guideway on top of the beam.

At-grade crossings would use embedded tracks. The construction method for embedded tracks would begin with the demolition of existing median or roadway where the LRT would be built, preparation of the rail track bed, installation of the supporting track slab, and laying of the rail tracks. Grade crossings would be constructed using pre-fabricated panels that would incorporate the rails and roadway surface. To accommodate the guideway, street sections may require widening or reconstruction. Street reconstruction activities would be required at potential at-grade crossing locations and within the affected street right-of-way. Street reconstruction would allow for track slab placement, crossing gates, traffic signals, and rails.

The Project would require cut-and-cover construction for underground stations and track crossover caverns from the ground surface. This construction would entail a shoring system with a temporary deck over the excavated area, constructing the underground facilities beneath the deck, and then backfilling and restoring the surface once the facilities are complete. Underground stations would be constructed using a TBM or the cut-and-cover construction method. Temporary concrete decking could be placed over the cut immediately following the first lift of excavation (at about 12 to 15 feet below ground surface) to allow traffic to pass above. Construction of underground stations may also require the support of existing underground utilities that cannot be relocated.

Construction of the at-grade stations would involve cast-in-place concrete or pre-cast panels to construct platform along with ramps and stairs. Station furnishings would then be installed, including canopies, railings, lighting, seating, signage, artwork, bike racks, and fare vending equipment.

Construction of the surface parking facilities would involve initial demolition of each site where existing structures and pavement are present, subgrade preparation of the parking area, paving, and striping. Concrete curbs, lighting, driveways, sidewalks, and landscaping would be installed as necessary.

Table 3.50 is a summary of the potential staging and laydown area options. Multiple construction staging areas would be used throughout construction of the Project. Table 3.50 also lists the associated highways and streets where haul routes would likely operate. The haul routes were selected on the basis of safety and travel time while minimizing the potential effects to traffic, residences, and businesses. Highway haul routes would include I-10, I-105, I-110, I-605, I-710, SR-91, US-101, and others as appropriate. Major arterial streets are used for the haul routes. These haul routes would need approval from the local jurisdiction city or agency. Temporary easements would be required on sidewalks, streets, and private property in proximity to some of these construction staging areas and work areas. The staging, laydown, and haul routes are based on the latest information as identified at this stage of project development and are currently in review. All are subject to change based on coordination with the applicable local cities/agencies and optimization by the contractor during construction. Once the contractor has developed a detailed construction staging approach in coordination with the applicable local cities and/or agencies, Metro would review the approach for consistency with the project approval and Record of Decision. Based on the review, FTA and Metro would complete additional environmental documentation, if any is necessary.

Table 3.51 provides a summary of the anticipated road, sidewalk, and bicycle facility closures, and affected transit routes due to construction activities.

Table 3.50. Construction Staging Areas and Haul Routes

No.	Build Alternative Affected	Location	Location Description	Private/Public Ownership	Project Component	Haul Route
1	1	Northeast corner, Alameda St and Cesar Chavez Blvd	United States Postal Service parking lot	Private	LAUS – Forecourt	US-101, Alameda St, Commercial St, Los Angeles St
2	1	Northeast corner, Alameda St and Los Angeles St	LAUS Parking Lot B	Public	LAUS – Forecourt	US-101, Alameda St, Commercial St, Los Angeles St
3	1	Southeast corner, Alameda St and Los Angeles St	La Petite Academy of Los Angeles parking lot	Public	LAUS – Forecourt	US-101, Alameda St, Commercial St, Los Angeles St
4	1	East side of LAUS, north of US-101 freeway, west of Metro L (Gold) Line platform	LAUS Parking Lot P and landscape	Public	LAUS – Forecourt	US-101, Alameda St, Commercial St, Los Angeles St
5	1, Design Option 2	Northeast corner, E 1st St and Alameda St	Regional Connector staging site	Public	Little Tokyo Station	US-101, Alameda St, Arcadia St, Commercial St, Los Angeles St
6	1, Design Option 2	Northwest corner, E. 2nd St and Alameda St	Office Depot parking lot	Public and private	Little Tokyo Station	US-101, Alameda St, Arcadia St, Commercial St, Los Angeles St
7	1	West side of Alameda St between 6th and 7th St	Bus facility, partial sidewalk, and southbound lanes	Public and Metro-owned	Arts/Industrial District Station	I-10, Alameda St, Newton St
8	1	East side of Alameda St between 7th St and Alameda St	Bus facility, partial sidewalk, one northbound lane, commercial buildings	Permanent/partial take	Arts/Industrial District Station	I-10, Alameda St, Newton St

No.	Build Alternative Affected	Location	Location Description	Private/Public Ownership	Project Component	Haul Route
9	2	North side of 8th St between Francisco St and Figueroa St	Located on vacant parcel between Target parking structure and 777 S Figueroa St, Los Angeles, CA 90017. Partial lane and sidewalk	Public and private	7th St/Metro Center Station	I-110, 8th St, James M Wood Blvd/9th St
10	2	Southeast corner, 8th St and S Figueroa St	Parking lot	Private	7th St/Metro Center Station	I-110, 8th St, James M Wood Blvd/9th St
11	2	North side of 8th St between Figueroa Flower St	Partial lane and sidewalk	Public	7th St/Metro Center Station	I-110, 8th St, James M Wood Blvd/9th St
12	2	North side of 8th St between Flower St and Hope St	Partial lane and sidewalk	Public	7th St/Metro Center Station	I-110, 8th St, James M Wood Blvd/9th St, Hope St
13	2	South side of 8th St between Main St and Los Angeles St	Partial westbound lane and sidewalk	Public	South Park/Fashion District Station	I-10, 8th St, 18th St, Main St, Los Angeles St
14	2	South side of 8th St between Los Angeles St and Santee St	Partial lane street and sidewalk	Public	South Park/Fashion District Station	I-10, 8th St, 9th St, 18th St, Main St, Los Angeles St, Santee St
15	2	Northern end of Santee St, north of 8th St	End of local street	Public	South Park/Fashion District Station	I-10, 8th St, 9th St, 18th St, Main St, Los Angeles St, Santee St
16	2	Southwest corner, 8th St and Santee St	Parking lot	Private	South Park/Fashion District Station	I-10, 8th St, 9th St, 18th St, Main St, Los Angeles St, Santee St
17	1, 2	East side and West side of Long Beach Ave between Olympic Blvd and 14th St	Commercial/Industrial	Private	TBM launch portal	I-10, Long Beach Ave, 14th St, 16th St, 17th St, Alameda St, Newton St

No.	Build Alternative Affected	Location	Location Description	Private/Public Ownership	Project Component	Haul Route
18	1, 2	Long Beach Ave between Olympic Blvd and 14th St	Metro Bus facility partial strip of street and sidewalk	Public and private	TBM launch portal	I-10, Long Beach Ave, 14th St, 16th St, 17th St, Alameda St, Newton St
19	1, 2	Long Beach Ave between Olympic Blvd and 14th St	Industrial/Commercial/ street and sidewalk	Public and private	TBM launch pit	I-10, Long Beach Ave, 14th St, 16th St, 17th St, Alameda St, Newton St
20	1, 2	West side of Long Beach Ave between 14th and 15th St	Industrial/Commercial	Private	TBM launch pit	I-10, Long Beach Ave, 14th St, 16th St, 17th St, Alameda St, Newton St
21	1, 2	West side of Long Beach Ave, below I-10 Freeway	Freeway underpass	Public and private	TBM staging area	I-10, 14th St, 16th St, 17th St, Alameda St, Long Beach Ave, Newton St
22	1, 2	Northeast corner, Long Beach Ave and Washington Blvd	Parking lot and industrial property 1700 Long Beach Ave, Los Angeles	Private	Long Beach Blvd viaduct	I-10, 16th St, 17th St, Alameda St, Central Ave, Compton Ave, Washington Blvd
23	1, 2	Northwest corner, Long Beach Ave and Washington Blvd	Industrial building	Private	Long Beach Blvd viaduct	I-10, 16th St, 17th St, Alameda St, Central Ave, Long Beach Ave, Washington Blvd
24	1, 2	Northwest corner, Long Beach Ave and 20th St	Fueling facility	Private	Long Beach Blvd viaduct	I-10, 16th St, 20th St, Alameda St, Compton Ave, Hooper Ave, Washington Blvd
25	1, 2	Northeast corner, Long Beach Ave and Vernon Ave	Light Industrial	Public and private	Long Beach Blvd viaduct	I-10, Alameda St, Newton St, Vernon Ave
26	1, 2, 3	Northeast corner, Long Beach Ave and Slauson Ave	Industrial	Private	Long Beach Blvd viaduct	I-10, Alameda St, Newton St, Slauson Ave
27	1, 2, 3	Southeast corner, Long Beach Ave and Slauson Ave	Industrial	Private	Long Beach Blvd viaduct	I-10, Alameda St, Newton St, Slauson Ave

No.	Build Alternative Affected	Location	Location Description	Private/Public Ownership	Project Component	Haul Route
28	1, 2, 3	Southeast corner, Slauson Ave and Randolph St	Industrial	Private (UPRR ROW)	Long Beach Blvd viaduct	I-110, I-710, Alameda St, Atlantic Blvd, Florence Ave, Slauson Ave
29	1, 2, 3	Existing railroad ROW at Bissell St and Randolph St	Railroad ROW	Private (UPRR ROW)	Randolph Grade Separation	I-710, Atlantic Blvd, Florence Ave, Randolph St
30	1, 2, 3	Southeast of Firestone Blvd between Patata St and Mason St along railroad ROW	Warehousing/Logistics	Private	Firestone Station and grade separation	I-710, Firestone Blvd
31	1, 2, 3	West of Salt Lake Ave at end of Wood Ave	Vacant	Private	Los Angeles River Bridge	I-710, Firestone Blvd, Miller Way, Rayo Ave, Salt Lake Ave, Southern Ave
32	1, 2, 3	East of Salt Lake Ave between Duncan Way and Wood Ave	Vacant	Public and private	Los Angeles River Bridge	I-710, Firestone Blvd, Miller Way, Rayo Ave, Salt Lake Ave, Southern Ave
33	1, 2, 3	South of Miller Way, adjacent to I-710	Light Industrial Storage	Public and private	I-710 Undercrossing and Rio Hondo Channel Bridge	I-710, Firestone Blvd, Garfield Ave, Miller Way, Southern Ave
34	1, 2, 3	Northeast corner, railroad ROW and Garfield Ave, south of Imperial Hwy	Vacant	Private	Los Angeles River Bridge and I-170 Undercrossing	I-710, Imperial Hwy, Garfield Ave
35	1, 2, 3, 4	East of Center St and west of Industrial Ave between Lincoln and Nevada	Parking lot/ Commercial/Recycling	Public (permanent/full take for project facility)	I-105/C Line Station	I-105, Century Blvd, Center St
36	1, 2, 3, 4	North of Rosecrans Ave, South of San Pedro Subdivision railroad ROW	Railroad ROW	Private (rail ROW)	Paramount/ Rosecrans Station and grade separation	I-105, I-710, Rosecrans Ave, Paramount Blvd, Garfield Ave

No.	Build Alternative Affected	Location	Location Description	Private/Public Ownership	Project Component	Haul Route
37	1, 2, 3, 4	North of Rosecrans Ave, South of San Pedro Subdivision railroad ROW	Commercial and Industrial GCR Tires & Service 7801 E Rosecrans, Paramount	Public and private	Paramount/ Rosecrans Station and grade separation	I-105, I-710, Rosecrans Ave, Paramount Blvd, Garfield Ave
38	1, 2, 3, 4	Northwest corner, Bellflower Blvd and railroad ROW	Commercial and parking lot	Permanent/full take (project parking facility)	Bellflower Station	SR-91, Bellflower Blvd
39	1, 2, 3, 4	Southwest corner, San Gabriel River and SR-91	Vacant	Metro-owned right-of-way	San Gabriel River bridge	I-605, SR-91, Alondra Blvd, Artesia Blvd, Bellflower Blvd, South St, Studebaker Rd
40	1, 2, 3, 4	Northwest and Southwest corner, 188th and Pioneer Blvd	Commercial	Permanent/full take (project parking facility)	Pioneer Station parking structure	I-605, South St

Source: Metro 2021s
Notes: LAUS = Los Angeles Union Station; ROW = right-of-way; TBM = tunnel boring machine; UPRR = Union Pacific Railroad

Table 3.51. Anticipated Construction-Related Closures

City	No.	Build Alternative Affected	Closure Element	Project Element/Area	Closure Type	Street	Cross Street	Approximate Closure Duration (months)	Affected Transit Routes	Closure Details
City of Los Angeles	1	1, Design Option 2	Road	Little Tokyo Station	Temporary	Alameda St	1st St and Traction Ave	24-48	-	Half of street temporarily; full street closure (typically intermittently during nighttime or off-peak periods)
	2	1, Design Option 2	Sidewalk	Little Tokyo Station	Temporary	Alameda St	1st St and Traction Ave	24-48	-	Half of west sidewalk temporarily; full sidewalk closure (typically intermittently during nighttime or off-peak periods)
	3	1	Road	Arts/Industrial District Station	Temporary	Alameda St	6th St and Industrial St	24-48	-	Half of street temporarily; full street closure (typically intermittently during nighttime or off-peak periods)
	4	1	Sidewalk	Arts/Industrial District Station	Temporary	Alameda St	6th St and Industrial St	24-48	-	Half of west sidewalk temporarily; full sidewalk closure (typically intermittently during nighttime or off-peak periods)
	5	1, 2	Road	Tunnel portal	Permanent	Long Beach Ave	Olympic Blvd and Newton St	N/A	-	-
	6	1, 2	Sidewalk	Tunnel portal	Permanent	Long Beach Ave	Olympic Blvd and 14th St	N/A	-	At tunnel portal only
	7	1, 2	Sidewalk	Tunnel portal	Temporary	Long Beach Ave	Olympic Blvd and Newton St	24-48	-	Sidewalks on each side of street leading to portal

City	No.	Build Alternative Affected	Closure Element	Project Element/Area	Closure Type	Street	Cross Street	Approximate Closure Duration (months)	Affected Transit Routes	Closure Details
	8	1, 2	Road	Tunnel portal	Permanent	14th St	Compton Ave and Long Beach Ave	N/A	-	-
	9	1, 2	Sidewalk	Tunnel portal	Permanent	14th St	Compton Ave and Long Beach Ave	N/A	-	-
	10	2	Road, bicycle	7th St/Metro Center Station pedestrian tunnel	Temporary	Figueroa St	7th St and 8th St	24-48	Metro 493, 495, 497, 498, 499, 699; DASH 423, F	Two traffic lanes closed during construction
	11	2	Sidewalk	7th St/Metro Center Station pedestrian tunnel	Temporary	Figueroa St	7th St and 8th St	24-48	Metro 493, 495, 497, 498, 499, 699; DASH 423, F	East side full sidewalk closure (typically intermittently during nighttime or off-peak periods)
	12	2	Road	7th St/Metro Center Station	Temporary	8th St	Francisco St to Figueroa Ave	24-48	Metro 66	Half of street temporarily; full street closure (typically intermittently during nighttime or off-peak periods)
	13	2	Sidewalk	7th St/Metro Center Station	Temporary	8th St	Francisco St to Figueroa Ave	24-48	Metro 66	North half of sidewalk temporarily; full sidewalk closure (typically intermittently during nighttime or off-peak periods)

City	No.	Build Alternative Affected	Closure Element	Project Element/Area	Closure Type	Street	Cross Street	Approximate Closure Duration (months)	Affected Transit Routes	Closure Details
	14	2	Road	7th St/Metro Center Station	Temporary	8th St	Figueroa Ave to Flower St	24-48	Metro 66	Half of street temporarily; full street closure (typically intermittently during nighttime or off-peak periods)
	15	2	Sidewalk	7th St/Metro Center Station	Temporary	8th St	Figueroa Ave to Flower St	24-48	Metro 66	Southern half of sidewalk temporarily; full sidewalk closure (typically intermittently during nighttime or off-peak periods)
	16	2	Road	7th St/Metro Center Station	Temporary	8th St	Flower St to Hope St	24-48	Metro 66	Half of street temporarily; full street closure (typically intermittently during nighttime or off-peak periods)
	17	2	Sidewalk	7th St/Metro Center Station	Temporary	8th St	Flower St to Hope St	24-48	Metro 66	Southern half of sidewalk temporarily; full sidewalk closure (typically intermittently during nighttime or off-peak periods)
	18	2	Road	South Park/ Fashion District Station	Temporary	8th St	Main St to Los Angeles St	24-48	Metro 66	Half of street temporarily; full street closure (typically intermittently during nighttime or off-peak periods)

City	No.	Build Alternative Affected	Closure Element	Project Element/Area	Closure Type	Street	Cross Street	Approximate Closure Duration (months)	Affected Transit Routes	Closure Details
	19	2	Sidewalk	South Park/ Fashion District Station	Temporary	8th St	Main St to Los Angeles St	24-48	Metro 66	Southern half of sidewalk temporarily; full sidewalk closure (typically intermittently during nighttime or off-peak periods)
	20	2	Road	South Park/ Fashion District Station	Temporary	8th St	Los Angeles St to Santee St	24-48	Metro 66	Half of temporarily; full street closure (typically intermittently during nighttime or off-peak periods)
	21	2	Sidewalk	South Park/ Fashion District Station	Temporary	8th St	Los Angeles St to Santee St	24-48	Metro 66	Southern half of sidewalk temporarily; full sidewalk closure (typically intermittently during nighttime or off-peak periods)
	22	2	Road	Arts/Industrial District Station	Temporary	8th St	Alameda St to Naomi St	24-48	-	Half of street temporarily; full street closure (typically intermittently during nighttime or off-peak periods)
	23	2	Sidewalk	Arts/Industrial District Station	Temporary	8th St	Alameda St to Naomi St	24-48	-	Both sides of sidewalk temporarily; full sidewalk closure (typically intermittently during nighttime or off-peak periods)
	24	1, 2	Road	I-10 Bridge	Temporary	I-10	-	12-24	-	Intermittent nighttime closures

City	No.	Build Alternative Affected	Closure Element	Project Element/Area	Closure Type	Street	Cross Street	Approximate Closure Duration (months)	Affected Transit Routes	Closure Details
	25	1, 2	Road	Long Beach Ave viaduct	Temporary	Long Beach Ave; NB Lanes	Washington Blvd to Slauson Blvd	24-48	Metro A (Blue) Line	Half of northbound road temporarily closed; intersections closed (typically intermittently during nighttime or off-peak periods)
City of Huntington Park	26	1, 2, 3	Road	Grade crossing	Permanent grade crossing	Randolph St	Wilmington Ave, Regent St, Albany St, Rugby Ave, Rita Ave	N/A	-	Cross street closed to crossing railroad ROW; access to Randolph St limited to right-in and right-out turning movements
	27	1, 2, 3	Sidewalk	Grade Crossing	Permanent grade crossing	Randolph St	Wilmington Ave, Regent St, Albany St, Rugby Ave, Rita Ave	N/A	-	Cross street closed to crossing railroad ROW; access to Randolph St limited to right-in and right-out turning movements
	28	1, 2, 3	Road	Pacific/Randolph Station	Permanent	Randolph St	Rugby Ave to Arbutus Ave	N/A	-	Loss of street parking on both sides of street (due to Pacific/Randolph Station)
	29	1, 2, 3	Sidewalk	Grade crossing	Temporary	Randolph St	Santa Fe Ave, Malabar St, Seville Ave, Miles Ave, Pacific Blvd, State St, Arbutus St, Alameda St,	1	-	Close sidewalks during reconstruction and integration of new grade-crossing equipment

City	No.	Build Alternative Affected	Closure Element	Project Element/Area	Closure Type	Street	Cross Street	Approximate Closure Duration (months)	Affected Transit Routes	Closure Details
	30	1, 2, 3	Road	Grade crossing	Temporary	Randolph St	State St	3-6	Metro 254	Temporary lane closures and relocations during grade-crossing construction
	31	1, 2, 3	Road	Grade crossing	Temporary	Gage Ave	-	1	Metro 110	Temporary lane closures and relocations during grade-crossing construction; full closures (typically intermittently during nighttime)
	32	1, 2, 3	Road	Grade crossing	Temporary	Otis Ave	-	1	-	Temporary lane closures and relocations during grade-crossing construction; full closures (typically intermittently during nighttime)
	33	1, 2, 3	Sidewalk	Grade crossing	Temporary	Gage Ave	-	1	-	Close sidewalks during reconstruction and integration of new grade-crossing equipment
	34	1, 2, 3	Sidewalk	Grade crossing	Temporary	Otis Ave	-	1	Metro 612	Close sidewalks during reconstruction and integration of new grade-crossing equipment
City of Bell	35	1, 2, 3	Road	Grade crossing	Temporary	Bell Ave	-	1	-	Temporary lane closures and relocations during grade-crossing construction; intermittent nighttime closures

City	No.	Build Alternative Affected	Closure Element	Project Element/Area	Closure Type	Street	Cross Street	Approximate Closure Duration (months)	Affected Transit Routes	Closure Details
	36	1, 2, 3	Sidewalk	Grade crossing	Temporary	Bell Ave	-	1	-	Close sidewalks during reconstruction and integration of new grade-crossing equipment
City of Huntington Park/Bell/ Cudahy	37	1, 2, 3	Sidewalk	Grade crossing	Temporary	Florence Ave	-	1-3	Metro 111, 612	Temporary lane closures and relocations during grade-crossing and median construction; full closures (typically intermittently during nighttime)
	38	1, 2, 3	Road	Grade crossing	Temporary	Florence Ave	-	1-3	Metro 111, 612	Close sidewalks during reconstruction and integration of new grade-crossing equipment
City of Huntington Park/ Cudahy/ South Gate	39	1, 2, 3	Sidewalk	Grade crossing	Temporary	Santa Ana St	Salt Lake Ave	1-3	Metro 611	Close sidewalks during reconstruction and integration of new grade-crossing equipment
	40	1, 2, 3	Road	Grade crossing	Temporary	Santa Ana St	Salt Lake Ave	1-3	Metro 611	Temporary lane closures and relocations during grade crossing and median construction; intermittent nighttime closures
City of Cudahy	41	1, 2, 3	Sidewalk	Grade crossing	Temporary	Ardine St	Salt Lake Ave	1-3	-	Temporary lane closures and relocations during grade-crossing and median construction; full closures (typically intermittently during nighttime)

City	No.	Build Alternative Affected	Closure Element	Project Element/Area	Closure Type	Street	Cross Street	Approximate Closure Duration (months)	Affected Transit Routes	Closure Details
	42	1, 2, 3	Road	Grade crossing	Temporary	Ardine St	Salt Lake Ave	1-3	-	Close sidewalks during reconstruction and integration of new grade-crossing equipment
City of South Gate	43	1, 2, 3	Road	Firestone grade separation	Temporary	Atlantic Ave and Firestone Blvd	-	12-24	Metro 115, 260, 762	Lane width reduction to accommodate construction of modified median and grade separation column; full road closures (typically intermittently during nighttime)
	44	1, 2, 3	Sidewalk	Grade crossing	Temporary	Southern Ave, Rayo Ave	-	1-3	Metro 115	Close sidewalks during reconstruction and integration of new grade-crossing equipment
	45	1, 2, 3	Road, bicycle	Grade crossing	Temporary	Southern Ave, Rayo Ave	-	1-3	Metro 115	Temporary lane closures and relocations during grade-crossing construction; full closures (typically intermittently during nighttime)
	46	1, 2, 3	Road	I-710 undercrossing	Temporary	I-710	-	6-12	-	Full lane closures (typically intermittently during nighttime)
	47	1, 2, 3	Road	Grade crossing	Permanent Grade Crossing	Frontage Rd and Miller Way	-	1-3	-	Closure of private driveway grade crossings

City	No.	Build Alternative Affected	Closure Element	Project Element/Area	Closure Type	Street	Cross Street	Approximate Closure Duration (months)	Affected Transit Routes	Closure Details
	48	1, 2, 3	Road	Grade separation	Temporary	Imperial Blvd and Garfield Ave	-	12-24	Metro 117, 120, 258	Lane width reduction to accommodate construction of modified median and grade separation column; full road closures (typically intermittently during nighttime)
	49	1, 2, 3	Sidewalk	Grade separation	Temporary	Imperial Blvd and Garfield Ave	-	12-24	-	Close sidewalks during reconstruction
	50	1, 2, 3	Road	Grade crossing	Temporary	Main St	-	1-3	-	Temporary lane closures and relocations during grade-crossing construction; full closures (typically intermittently during nighttime)
	51	1, 2, 3	Sidewalk	Grade crossing	Temporary	Main St	-	1-3	-	Close sidewalks during reconstruction and integration of new grade-crossing equipment
	52	1, 2, 3, 4	Sidewalk	Grade crossing	Temporary	Century Blvd	-	1-3	-	Close sidewalks during reconstruction and integration of new grade-crossing equipment
	53	1, 2, 3, 4	Road	Grade crossing	Temporary	Century Blvd	-	1-3	-	Temporary lane closures and relocations during grade-crossing and median construction; full closures (typically intermittently during nighttime)

City	No.	Build Alternative Affected	Closure Element	Project Element/Area	Closure Type	Street	Cross Street	Approximate Closure Duration (months)	Affected Transit Routes	Closure Details
City of South Gate/ Cudahy	54	1, 2, 3, 4	Road	Grade crossing	Temporary	Gardendale St	-	1 – 3	-	Lane width reduction to accommodate construction of modified median and grade separation column; full road closures (typically intermittently during nighttime)
	55	1, 2, 3, 4	Road	Grade crossing	Permanent	Gardendale St	-	-	-	Westbound left-turn lane closed
	56	1, 2, 3, 4	Sidewalk	Grade crossing	Temporary	Gardendale St	-	1-3	-	Close sidewalks during reconstruction and integration of new grade-crossing equipment
City of Paramount	57	1, 2, 3, 4	Road	Grade separation	Temporary	N. Somerset Ranch Rd	-	12-24	-	Full closures (typically intermittently during nighttime)
	58	1, 2, 3, 4	Road	Grade separation	Temporary	I-105	-	12-24	Metro C (Green) Line	Full closures (typically intermittently during nighttime); potential lane width reduction
	59	1, 2, 3, 4	Road	Grade separation	Temporary	S. Somerset Ranch Rd	-	12-24	-	Full closures (typically intermittently during nighttime)
	60	1, 2, 3, 4	Road	Grade separation	Temporary	Paramount Blvd	-	12-24	Metro 265	Lane width reduction to accommodate construction of modified median and grade separation column; full road closures (typically intermittently during nighttime)

City	No.	Build Alternative Affected	Closure Element	Project Element/Area	Closure Type	Street	Cross Street	Approximate Closure Duration (months)	Affected Transit Routes	Closure Details
	61	1, 2, 3, 4	Sidewalk	Grade separation	Temporary	Paramount Blvd	-	12-24	Metro 265	Close sidewalks during reconstruction
	62	1, 2, 3, 4	Road	Grade separation	Temporary	Rosecrans Ave	-	12-24	Metro 125	Lane width reduction to accommodate construction of modified median and grade separation column; full road closures (typically intermittently during nighttime)
	63	1, 2, 3, 4	Sidewalk	Grade separation	Temporary	Rosecrans Ave	-	12-24	Metro 125	Close sidewalks during reconstruction
	64	1, 2, 3, 4	Road	Grade separation	Temporary	Downey Ave	-	12-24	LBT 22	Lane width reduction to accommodate construction of modified median and grade separation column; full road closures (typically intermittently during nighttime)
	65	1, 2, 3, 4	Sidewalk	Grade separation	Temporary	Downey Ave	-	12-24	LBT 22	Close sidewalks during reconstruction
	66	1, 2, 3, 4	Sidewalk	Grade crossing	Temporary	Somerset Blvd	-	1-3	Metro 127	Close sidewalks during reconstruction and integration of new grade-crossing equipment
	67	1, 2, 3, 4	Road, bicycle	Grade crossing	Temporary	Somerset Blvd	-	1-3	Metro 127	Temporary lane closures and relocations during grade-crossing and median construction; full closures (typically intermittently during nighttime)

City	No.	Build Alternative Affected	Closure Element	Project Element/Area	Closure Type	Street	Cross Street	Approximate Closure Duration (months)	Affected Transit Routes	Closure Details
	68	1, 2, 3, 4	Road, bicycle	Grade separation	Temporary	Woodruff Ave and Flower St	-	12-24	NTS 1; LBT 92	Temporary lane closures and relocations during grade-crossing and median construction; full closures (typically intermittently during nighttime)
	69	1, 2, 3, 4	Sidewalk	Grade separation	Temporary	Woodruff Ave and Flower St	-	12-24	NTS 1; LBT 92	Close sidewalks during reconstruction
City of Bellflower	70	1, 2, 3, 4	Sidewalk	Grade crossing	Temporary	Lakewood Blvd	-	1-3	Metro 266	Close sidewalks during reconstruction and integration of new grade-crossing equipment
	71	1, 2, 3, 4	Road, bicycle	Grade crossing	Temporary	Lakewood Blvd	-	1-3	Metro 266	Temporary lane closures and relocations during grade-crossing and median construction; full closures (typically intermittently during nighttime)
	72	1, 2, 3, 4	Sidewalk	Grade crossing	Temporary	Clark Ave	-	1-3	NTS 1	Close sidewalks during reconstruction and integration of new grade-crossing equipment
	73	1, 2, 3, 4	Road, bicycle	Grade crossing	Temporary	Clark Ave	-	1-3	NTS 1	Temporary lane closures and relocations during grade-crossing and median construction; full closures (typically intermittently during nighttime)

City	No.	Build Alternative Affected	Closure Element	Project Element/Area	Closure Type	Street	Cross Street	Approximate Closure Duration (months)	Affected Transit Routes	Closure Details
	74	1, 2, 3, 4	Road, bicycle	Grade crossing	Permanent	Clark Ave	-	-	NTS 1	Lane width reduction
	75	1, 2, 3, 4	Sidewalk	Grade crossing	Temporary	Alondra Blvd	-	1-3	-	Close sidewalks during reconstruction and integration of new grade-crossing equipment
	76	1, 2, 3, 4	Road, bicycle	Grade crossing	Temporary	Alondra Blvd	-	1-3	Metro 127, 128	Temporary lane closures and relocations during grade crossing and median construction; full closures (typically intermittently during nighttime)
	77	1, 2, 3, 4	Road, bicycle	Grade crossing	Permanent	Alondra Blvd	-	-	Metro 127, 128	Lane width reduction
	78	1, 2, 3, 4	Sidewalk	Grade crossing	Temporary	Bellflower Blvd	-	1-3	LBT 91, 93	Close sidewalks during reconstruction and integration of new grade-crossing equipment
	79	1, 2, 3, 4	Road, bicycle	Grade crossing	Temporary	Bellflower Blvd	-	1-3	LBT 91, 93	Temporary lane closures and relocations during grade-crossing and median construction; full closures (typically intermittently during nighttime)
	80	1, 2, 3, 4	Road, bicycle	Grade crossing	Permanent	Bellflower Blvd	-	-	LBT 91, 93	Lane width reduction

City	No.	Build Alternative Affected	Closure Element	Project Element/Area	Closure Type	Street	Cross Street	Approximate Closure Duration (months)	Affected Transit Routes	Closure Details
City of Cerritos	81	1, 2, 3, 4	Sidewalk	Grade crossing	Temporary	Artesia Blvd	-	1-3	Metro 130; COW 1B, 1C	Close sidewalks during reconstruction and integration of new grade-crossing equipment
	82	1, 2, 3, 4	Road	Grade crossing	Temporary	Artesia Blvd	-	1-3	Metro 130; COW 1B, 1C	Temporary lane closures and relocations during grade-crossing and median construction; full closures (typically intermittently during nighttime)
	83	1, 2, 3, 4	Road	Private driveway	Permanent	Extra Space Storage	San Gabriel River and Artesia Blvd	-	-	Close private driveway
	84	1, 2, 3, 4	Sidewalk	Grade crossing	Temporary	Studebaker Rd	-	1-3	-	Close sidewalks during reconstruction and integration of new grade-crossing equipment
	85	1, 2, 3, 4	Road	Grade crossing	Temporary	Studebaker Rd	-	1-3	Metro 130; COW 1B, 1C; LBT 172, 173; NTS 2	Temporary lane closures and relocations during grade-crossing and median construction; full closures (typically intermittently during nighttime)

City	No.	Build Alternative Affected	Closure Element	Project Element/Area	Closure Type	Street	Cross Street	Approximate Closure Duration (months)	Affected Transit Routes	Closure Details
	86	1, 2, 3, 4	Road	Grade crossing	Permanent	South St	-	-	COW 1B, 1C; LBT 173; OCTA 30	Lane width reduction
City of Cerritos/ Artesia	87	1, 2, 3, 4	Road	Grade separation	Temporary	Gridley Rd and 183rd St	-	12-24	Metro 62; COW 1B, 1C; LBT 172, 173; NTS 2; OCTA 30	Temporary lane closures and relocations during grade-crossing and median construction; full closures (typically intermittently during nighttime)
	88	1, 2, 3, 4	Sidewalk	Grade separation	Temporary	Gridley Rd and 183rd St	-	12-24	Metro 62; COW 1B, 1C; LBT 172, 173; NTS 2; OCTA 30	Close sidewalks during reconstruction
	89	1, 2, 3, 4	Sidewalk	Grade crossing	Temporary	Pioneer Blvd	-	1-3	-	Close sidewalks during reconstruction and integration of new grade-crossing equipment
	90	1, 2, 3, 4	Road	Grade crossing	Temporary	Pioneer Blvd	-	1-3	-	Temporary lane closures and relocations during grade-crossing and median construction; full closures (typically intermittently during nighttime)
	91	1, 2, 3, 4	Road	Grade crossing	Permanent	Pioneer Blvd	-	-	-	Lane width reduction

City	No.	Build Alternative Affected	Closure Element	Project Element/Area	Closure Type	Street	Cross Street	Approximate Closure Duration (months)	Affected Transit Routes	Closure Details
City of Artesia	92	1, 2, 3, 4	Road	Grade crossing	Temporary	186th St	-	1-3	-	Temporary lane closures and relocations during grade-crossing construction; full closures (typically intermittently during nighttime)
	93	1, 2, 3, 4	Sidewalk	Grade crossing	Temporary	186th St	-	1-3	-	Close sidewalks during reconstruction and integration of new grade-crossing equipment
	94	1, 2, 3, 4	Road	Grade crossing	Permanent	187th St	Corby Ave (West) to Corby Ave (East)	N/A	-	-
	95	1, 2, 3, 4	Sidewalk	Grade crossing	Permanent	187th St	Corby Ave (West) to Corby Ave (East)	N/A	-	-
	96	1, 2, 3, 4	Road	Parking structure	Permanent	188th St	Corby Ave (West) to Pioneer Blvd	N/A	-	-

Source: Metro 2021s
Notes: COW = Cerritos on Wheels; DASH = Downtown Area Short Hop; LBT = Long Beach Transit; Metro = Los Angeles County Metropolitan Transportation Authority; N/A = not applicable; NTS = Norwalk Transit System; OCTA = Orange County Transportation Authority; ROW = right-of-way

3.7.2 Construction Methodology

Refer to Section 3.2 for a discussion of the approach to assessing impacts to the transportation system. The evaluation considered the locations, number of lanes, and the duration of closures for traffic and parking. The methodology applied to the CEQA evaluation is described in Section 3.2.6. To satisfy CEQA requirements, transportation impacts related to construction are analyzed in accordance with Appendix G of the *CEQA Guidelines*, identified in Section 3.7.4 of this chapter.

3.7.3 Construction Impacts

3.7.3.1 No Build Alternative

The construction activities associated with the other planned projects under the No Build Alternative would include temporary street closures/turning restrictions, temporary lane closures, and road detours. All planned projects would undergo the required environmental approval process, which would disclose adverse construction impacts to the public if any are identified and unable to be fully mitigated.

3.7.3.2 Alternative 1: Los Angeles Union Station to Pioneer Station

Railroad Freight Effects

Table 3.52 summarizes the miles of existing freight tracks where Alternative 1 would share the rail ROW with active freight operations. Figure 3-18 identifies areas of relocation and ownership of railroad ROW. After construction, freight operations would be accommodated by Alternative 1. Metro would coordinate with rail operators to maintain freight operations during construction activities for Alternative 1 to the extent feasible. The LRT tracks would be designed with sufficient space that would separate Alternative 1 from existing freight. The spacing between LRT tracks and freight tracks would follow the safety standards set by the governing jurisdiction as currently exists on the Metro A (Blue) Line along the Wilmington Branch, where it shares ROW with freight tracks, so that that the freight mainline, storage tracks, loading docks/zones, and siding tracks would not be disrupted.

Table 3.52. Freight Shared Right-of-Way for Build Alternatives

Rail ROW	Shared ROW by Build Alternatives (miles)			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Wilmington Branch	1.8	1.8	0.5	—
La Habra Branch	2.3	2.3	2.3	—
San Pedro Subdivision	6.1	6.1	6.1	0.8
Metro-owned PEROW	1.2	1.2	1.2	1.2
Total	**11.4**	**11.4**	**10.1**	**2.0**

Source: Metro 2021g
Notes: PEROW = Pacific Electric Right-of-Way; ROW = right-of-way

Figure 3-18. Proposed Freight Relocation and Existing Rail Right-of-Way Ownership



Source: Metro 2021s

Where the rail ROW is limited, changes to the existing freight track alignment would be required to accommodate the Project. Table 3.53 summarizes the miles of existing freight tracks that would require relocation to accommodate Alternative 1. Specifically, freight track relocation would be required from Slauson Avenue and east along Randolph Street from Holmes Avenue to the San Pedro Subdivision ROW, along the San Pedro Subdivision ROW (Randolph to the PEROW), and along the PEROW from the San Pedro ROW to Somerset Boulevard in the City of Paramount.

Table 3.53. Length of Freight Relocation for Build Alternatives

Rail ROW	Freight Relocation by Build Alternatives (miles)			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Wilmington Branch	0.1	0.1	0.1	—
La Habra Branch	2.0	2.0	2.0	—
San Pedro Subdivision	5.4	5.4	5.4	0.7
Metro-owned PEROW	0.6	0.6	0.6	0.6
Total	**8.1**	**8.1**	**8.1**	**1.3**

Source: Metro 2021g
Notes: PEROW = Pacific Electric Right-of-Way; ROW = right-of-way

As summarized in Section 3.7.1, the new freight, storage, and/or siding track(s) would be constructed first to minimize disruptions to freight operations. A temporary shoo-fly track would be constructed to allow for the construction of new freight tracks. The freight rail would be redirected to the temporary shoo-fly while new freight tracks are constructed. At the completion of the new freight infrastructure, existing freight operations would be transferred to the new freight track. The old freight track would be demolished to allow space for the construction of the new LRT tracks.

Traffic circulation disruptions around the construction activities for freight track relocation would be minimized by staging construction so as to keep existing train crossings open (when feasible), providing detours with minimal additional delay, or conducting closures during nonpeak travel times (when feasible). Construction activities requiring closure of an existing train crossing could include installation of embedded tracks or installation of the overhead catenary system. Parking areas adjacent to construction areas would be accommodated when feasible by employing the same construction strategies for vehicular circulation, including staging construction strategies to minimize impacts or establishing nonpeak parking restrictions when parking demand is the lowest.

Staging and laydown areas would be adjacent or away from the railroad freight tracks and would not affect freight operations. Haul routes that cross existing at-grade crossings would comply with all the warning device signage and signaling when a freight train crosses. Therefore, no impacts to railroad freight associated with the staging/laydown areas or haul routes would occur and no adverse effects would result.

Traffic Operations Effects

Construction activities would have temporary traffic effects associated with lane closures, reconfiguration of roads, detours, and traffic related to construction workers accessing and departing construction staging areas, as summarized in Table 3.51. Temporary street and lane closures, width reductions, and reductions in the number of lanes would occur. In general, the traffic operations effects of restrictions would result in increased delay for drivers where there are lane reductions or increased travel distances due to detours, which would result in additional delay and traffic circulation. Where there is reduced capacity or where detours would be required for some construction activities, some travelers may choose alternate routes around the area to avoid construction activity and traffic delays. Detours would be identified to preserve circulation around temporary street closures or where turning movements are restricted. The detour route would be assessed to provide sufficient capacity. These enhancements could include adjusting traffic signal timing or installing temporary traffic signals.

In the northern end, Alternative 1 would cross existing freeways at US-101 and I-10. At the US-101 crossing, the alignment crosses in a tunnel configuration underneath the freeway. Construction would not impact the existing freeway infrastructure.

Alternative 1 would cross over the I-10 freeway in an aerial configuration to avoid potential traffic impacts to 15th and 16th Streets. The alignment would pass over the I-10 freeway in an aerial viaduct structure and continue south, parallel to the existing Metro A (Blue) Line at Washington Boulevard. Construction would require temporary closure of the existing freeway. These closures would occur during off-peak travel hours to the extent feasible, including the overnight hours to minimize the disruption to the traveling public. Detour routes would be identified. However, because of the impacts of the temporary closures and the identified detours, adverse effects would occur.

In the southern end, Alternative 1 would cross existing freeways at I-710, I-105, SR-91, and I-605. At the SR-91 and I-605 freeway crossings, the existing bridge structures contain sufficient space to accommodate the LRT tracks. Construction would occur below the existing bridges and would not result in adverse effects on the existing freeway travel lanes.

At I-710, there is insufficient horizontal clearance for the new LRT tracks, and the opening through the embankment would need to be widened. Therefore, a jacked box structure underneath the freeway is proposed. Construction is not anticipated to impact peak freeway operations, although ground improvements from the surface of the freeway may be needed to maintain support. The I-710 freeway would require ground monitoring to measure potential settlement that may occur during the jacking and excavation operations. It is anticipated the freeway lanes would remain open during this process, although there may be temporary closures to install ground-monitoring instruments and/or ground support infrastructure in the median. These closures would occur during the off-peak travel hours to the extent feasible, including the overnight hours to minimize disruption to travelers. Detour routes would be identified. Based on the timing of temporary closures and the implementation of detour routes, adverse effects would still occur.

During all construction activities, freeway access (i.e., on-ramps and off-ramps) would be maintained by not implementing long-term ramp closures. Short-term ramp closures would occur during off-peak travel hours to the extent feasible to minimize disruption to motorists.

Detour routes would be identified accordingly. All construction activities near or on freeway facilities, including ramp closures, would be coordinated with Caltrans.

Minor impacts to traffic operations associated with the staging/laydown areas and haul routes would occur. Construction vehicles and trucks entering and exiting the staging/laydown areas would increase traffic on local streets. All construction trucks would use designated haul routes, as listed in Table 3.50, to access the regional freeway system. The construction-related traffic volumes would be minimal compared to overall background traffic volumes and would generally occur during off-peak periods when volumes and congestion are lower. In addition, the increased traffic associated with these activities would be temporary. The impacts would be further minimized with the implementation of Mitigation Measure TRA-20 (Transportation Management Plan), which is described in Section 3.7.3.8.

Transit Effects

Construction of Alternative 1 may require temporary rerouting of existing transit routes. Table 3.51 outlines the locations and anticipated duration where transit routes would be affected by construction activities. Transit vehicles would experience minor increases in travel time. However, coordination with transit service operators would help to maintain transit routes and schedules. A detour route around the work zone would be identified, as well as temporary relocation of transit stops outside the work zone. Transit stop access would be maintained while providing ADA-compliant access. Although the temporary construction impacts would remain, no adverse effects are anticipated.

There would be impacts to transit associated with the staging and laydown areas. Transit stops may need to be relocated if there is a conflict with traffic at the staging area or with the physical constraints of the site itself. These impacts would be temporary and fully addressed by modifications (minor relocations) to transit stops. There would be impacts on transit associated with the haul routes, and adverse effects would result.

Active Transportation Effects

Construction of Alternative 1 may require temporary closures of sidewalks, crosswalks, and bicycle facilities to protect the safety of pedestrians, bicyclists, and construction workers. Table 3.51 outlines the locations and anticipated duration where sidewalk and bicycle facilities would be affected by construction activity. As a result, pedestrian and bicycle access routes in the construction area would be temporarily disrupted during construction. Many sidewalks along local streets in the vicinity of and/or crossed by improvements in the Build Alternatives are ADA-compliant. Because local streets, sidewalks, and crosswalks would be closed temporarily during construction, there could be alternative ADA accessibility routes identified during those closures to maintain access.

There would be impacts to active transportation associated with the staging and laydown areas. There also may be localized conflicts between bicycle and pedestrian facilities at staging areas if local access requires modifications to sidewalks or bike lanes. These impacts would be temporary and fully mitigated by contractor requirements to provide alternate access. There would be impacts on active transportation associated with the haul routes.

Section 7.3.2.1 of the Safety and Security Impact Analysis Report (Appendix F) and Section 4.19.2.18 of the Construction Section outlines the impacts of temporary construction-related activities/conditions on pedestrian, bicycle, and motorist safety. The Build Alternatives would

include designation of detour routes and signage to address the potential for these temporary impacts. In addition, a construction mitigation program would be developed during final design and would be implemented during construction. This program would be used for communicating traffic control measures, schedules of activities, appropriate detours, and durations of operations to the public and stakeholders. Nevertheless, temporary construction impacts would remain, and adverse effects associated with the impacts described above are anticipated.

Parking Effects

Temporary parking losses would occur during construction. Most impacts would be associated with physical construction activities, including the temporary shifting of vehicle lanes onto existing on-street parking areas to maintain the number of lanes. Table 3.51 lists the locations where temporary road closures and shifting lanes are anticipated to occur.

Table 3.50 lists the potential staging and laydown area options that could affect parking. Off-street parking would be temporarily removed where needed by the Project, specifically at parking lot locations. On-street parking adjacent to the staging areas could be temporarily removed during construction. There would also be effects on parking associated with the haul routes. Available open space for use as temporary parking is currently not available, resulting in the inability to accommodate any displaced parking areas by the construction activities and thereby resulting in an adverse impact. Mitigation Measure TRA-23 (Loss of Parking [Construction]), described in Section 3.7.3.8, has been identified to minimize parking impacts. Adverse effects would be reduced with implementation of this measure; however, adverse effects would likely remain.

3.7.3.3 Alternative 2: 7th St/Metro Center to Pioneer Station

Railroad Freight Effects

The analysis described for Alternative 1 in Section 3.7.3.2 is also applicable to Alternative 2. Table 3.52 summarizes the miles of existing freight tracks that Alternative 2 would share with active freight operations, and Table 3.53 summarizes the miles of existing freight tracks Alternative 2 would require for relocation and reconstruction.

Traffic Operations Effects

The analysis described for Alternative 1 in Section 3.7.3.2 is also applicable to Alternative 2. Construction activities would have temporary traffic effects associated with lane closures, reconfiguration of roads, detours, and traffic related to construction workers accessing and departing construction staging areas, as summarized in Table 3.51. In addition, Alternative 2 tail tracks would partially cross I-110. Mitigation Measure TRA-20 (Transportation Management Plan) (Section 3.7.3.8) would apply during construction and would involve implementing similar minimization strategies as described for Alternative 1. With implementation of the TMP, temporary construction-related impacts would be minimized, but adverse effects would occur resulting from construction activities on the street and highway system.

Transit Effects

The analysis described for Alternative 1 in Section 3.7.3.2 is also applicable to Alternative 2. Strategies for the temporary rerouting of existing transit routes as described for Alternative 1 would be implemented. Although the temporary construction impacts would remain, no adverse effects are anticipated.

Similar to Alternative 1, there would be impacts to transit associated with the staging and laydown areas. Transit stops may need to be relocated if there is a conflict with traffic at the staging area or with the physical constraints of the site itself. These impacts would be temporary and fully addressed by modifications (minor relocations) to transit stops. There would be impacts on transit associated with the haul routes, and adverse effects would result.

Active Transportation Effects

The analysis described for Alternative 1 in Section 3.7.3.2 is also applicable to Alternative 2. Construction activity may require temporary closures of sidewalks, crosswalks, and bicycle facilities to protect the safety of pedestrians, bicyclists, and construction workers, as described for Alternative 1. This would result in temporary construction impacts, and adverse effects associated with the impacts described above are anticipated.

Parking Effects

The analysis described for Alternative 1 in Section 3.7.3.2 is also applicable to Alternative 2. Similar temporary parking losses would occur during construction, as described for Alternative 1. Therefore, Mitigation Measure TRA-23 (Loss of Parking [Construction]) would be implemented. Adverse effects would be reduced with implementation of this measure; however, adverse effects would likely remain.

3.7.3.4 Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Railroad Freight Effects

The analysis described for Alternative 1 in Section 3.7.3.2 is also applicable to Alternative 3. Table 3.52 summarizes the miles of existing freight tracks that Alternative 3 would share with active freight operations, and Table 3.53 summarizes the miles of existing freight tracks Alternative 3 would require for relocation and reconstruction.

Traffic Operations Effects

The analysis described for Alternative 1 in Section 3.7.3.2 is also applicable to Alternative 3, except that the northern terminus for Alternative 3 would be located at the Metro Slauson/A Line Station. Therefore, Alternative 3 has fewer closures than Alternatives 1 and 2 as summarized in Table 3.51. In addition, freeway crossings at US-101 and I-10 would be eliminated for this alternative. Mitigation Measure TRA-20 (Transportation Management Plan) (described in Section 3.7.3.8) would apply during construction and would involve implementing similar minimization strategies as described for Alternatives 1 and 2. With the implementation of the TMP, temporary construction-related impacts would be minimized, but adverse effects would still occur resulting from construction activities on the street and highway system.

Transit Effects

The analysis described for Alternative 1 in Section 3.7.3.2 is also applicable to Alternative 3. The strategies for temporary rerouting of existing transit routes as described for Alternative 1 would be implemented. Although temporary construction impacts would remain, no adverse effects are anticipated.

Similar to Alternatives 1 and 2, there would be impacts to transit associated with the staging and laydown areas. Transit stops may need to be relocated if there is a conflict with traffic at the staging area or with the physical constraints of the site itself. These impacts would be

temporary and fully addressed by modifications (minor relocations) to transit stops. There would be impacts on transit associated with the haul routes, and adverse effects would result.

Active Transportation Effects

The analysis described for Alternative 1 in Section 3.7.3.2 is also applicable to Alternative 3. Construction activity may require temporary closures of sidewalks, crosswalks, and bicycle facilities to protect the safety of pedestrians, bicyclists, and construction workers, as described for Alternative 1. As a result, temporary construction impacts would remain, and adverse effects associated with the impacts described above are anticipated.

Parking Effects

The analysis described for Alternative 1 in Section 3.7.3.2 is also applicable to Alternative 3. Similar temporary parking losses would occur during construction, as described for Alternative 1. Therefore, Mitigation Measure TRA-23 (Loss of Parking [Construction]) would be implemented. Adverse effects would be reduced with implementation of this measure; however, adverse effects would likely remain.

3.7.3.5 Alternative 4: I-105/C (Green) Line to Pioneer Station

Railroad Freight Effects

The analysis described for Alternative 1 in Section 3.7.3.2 is also applicable to Alternative 4. Table 3.52 summarizes the miles of existing freight tracks that Alternative 4 would share with active freight operations, and Table 3.53 summarizes the miles of existing freight tracks that Alternative 4 would require for relocation and reconstruction.

Traffic Operations Effects

The analysis described for Alternative 1 in Section 3.7.3.2 is also applicable to Alternative 4. However, Alternative 4's northern end begins at the I-105/C Line Station. Therefore, Alternative 4 has fewer closures than Alternatives 1, 2, and 3, as summarized in Table 3.51. In addition, there is no freeway crossing at US-101, I-10, and I-710 for this alternative. Mitigation Measure TRA-20 (Transportation Management Plan) (described in Section 3.7.3.8) would apply during construction and would involve implementing similar minimization strategies as described for Alternatives 1, 2, and 3. With implementation of the TMP, temporary construction-related impacts would be minimized, but adverse effects would occur resulting from construction activities on the street and highway system.

Transit Effects

The analysis described for Alternative 1 in Section 3.7.3.2 is also applicable to Alternative 4. The strategies for temporary rerouting of existing transit routes as described for Alternative 1 would be implemented. Although temporary construction impacts would remain, no adverse effects are anticipated.

Similar to Alternatives 1, 2, and 3 there would be impacts to transit associated with the staging and laydown areas. Transit stops may need to be relocated if there is a conflict with traffic at the staging area or with the physical constraints of the site itself. These impacts would be temporary and fully addressed by modifications (minor relocations) to transit stops. There would be impacts on transit associated with the haul routes, and adverse effects would result.

Active Transportation Effects

The analysis described for Alternative 1 in Section 3.7.3.2 is also applicable to Alternative 4. Construction activity may require temporary closures of sidewalks, crosswalks, and bicycle facilities to protect the safety of pedestrians, bicyclists, and construction workers, as described for Alternative 1. As a result, temporary construction impacts would remain, and adverse effects associated with the impacts described above are anticipated.

Parking Effects

The analysis described for Alternative 1 in Section 3.7.3.2 is also applicable to Alternative 4. Similar temporary parking losses would occur during construction, as described for Alternative 1. Therefore, Mitigation Measure TRA-23 (Loss of Parking [Construction]) would be implemented. Adverse effects would be reduced with implementation of this measure; however, adverse effects are likely to remain.

3.7.3.6 Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station

The analysis described for Alternative 1 in Section 3.7.3.2 is also applicable to Design Options 1 and 2. Design Option 2 would also add road and sidewalk closures on Alameda Street between 1st Street and Traction Avenue, as summarized in Table 3.51. The design options include similar project elements and impact minimization strategies as Alternative 1.

3.7.3.7 Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options

The impact analysis described for Alternative 1 in Section 3.7.3.2 also applies to the Paramount and Bellflower MSF site options, which include similar project elements and impact minimization strategies as Alternative 1.

3.7.3.8 Mitigation Measures

TRA-20: Transportation Management Plan(s) (TMP)

TMP(s) would be prepared to address construction impacts on transportation facilities as applicable under the jurisdiction of all involved cities and agencies.

The TMP(s) would address potential impacts from construction activities on vehicular, transit, pedestrian, and bicycle access and mobility, including, but not limited to, temporary lane/roadway, sidewalk, bicycle facility, and freeway ramp closures; detours; increases in traffic volumes (including regular traffic and construction traffic, construction equipment, materials delivery vehicles, waste/haul vehicles, and employee commutes); construction parking; and emergency services (e.g., fire, police, ambulances).

The development of the TMP would be coordinated with Metro, local jurisdictions (cities and the county), agencies, and other potentially affected parties (e.g., school bus and transit operators and police, fire, and emergency services providers). The TMP(s) would identify specific TMP strategies, the party/parties responsible for implementing those strategies, the agencies and parties the TMP strategies would be coordinated with, and implementation timing.

TMPs are a proven strategy for minimizing impacts during construction. Metro has successfully implemented TMPs on its sponsored projects to minimize short-term transportation impacts during construction. These plans have proved to be effective at reducing potential transportation impacts during construction. Metro proactively follows the strategies identified in its TMPs and makes adjustments during construction to best accommodate all vehicles and active transportation users.

Additionally, temporary construction-related impacts would be minimized, but adverse effects would occur resulting from construction activities on the street and highway system.

TRA-23: Loss of Parking (Construction)

Metro would coordinate with local jurisdictions to address the loss of public parking spaces during construction. This could include, but not be limited to, restriping the existing street to allow for diagonal parking, reducing the number of restricted parking areas, phasing construction activities in a way that minimizes parking disruption, and adjusting the time limits for on-street parking.

Implementation of TRA-23 would reduce parking impacts and also provide indirect mitigation for the loss of off-street parking by allowing additional on-street parking where appropriate and feasible. Adverse effects would be reduced with implementation of this measure; however, adverse effects would likely remain.

3.7.4 California Environmental Quality Act Determination

3.7.4.1 Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, and bicycle and pedestrian facilities?

No Project Alternative

Project-related construction activities would not occur under the No Project Alternative. Therefore, no construction-related impacts would occur under the No Project Alternative, and no mitigation measures would be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Construction activities would not conflict with plans, policies, or ordinances associated with the transportation system. All modes of transportation would be accommodated within the construction areas when feasible. When closures would be needed, alternate routes would be provided to maintain connectivity for all modes of transportation. Therefore, less-than-significant impacts from construction activities would occur.

Mitigation Measures: Mitigation Measure TRA-20 (Transportation Management Plan(s)) would be implemented to further reduce impacts of construction activities.

Impacts Remaining after Mitigation: Less than significant.

Alternative 2: 7th St/Metro Center to Pioneer Station

Alternative 2 would have similar construction activities as described for Alternative 1. Therefore, less-than-significant impacts from construction activities would occur.

Mitigation Measures: Mitigation Measure TRA-20 (Transportation Management Plan(s)) would be implemented to further reduce impacts of construction activities.

Impacts Remaining after Mitigation: Less than significant.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Alternative 3 would have similar construction activities as described for Alternative 1. Therefore, less-than-significant impacts from construction activities would occur.

Mitigation Measures: Mitigation Measure TRA-20 (Transportation Management Plan(s)) would be implemented to further reduce impacts of construction activities.

Impacts Remaining after Mitigation: Less than significant.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Alternative 4 would have similar construction activities as described for Alternative 1. Therefore, less-than-significant impacts from construction activities would occur.

Mitigation Measures: Mitigation Measure TRA-20 (Transportation Management Plan(s)) would be implemented to further reduce impacts of construction activities.

Impacts Remaining after Mitigation: Less than significant.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: The impact analysis described for Alternative 1 is also applicable to Design Options 1 and 2. The design options would have similar construction activities as described for Alternative 1. Therefore, less-than-significant impacts from construction activities would occur.

Mitigation Measures: Mitigation Measure TRA-20 (Transportation Management Plan(s)) would be implemented to further reduce impacts of construction activities.

Impacts Remaining after Mitigation: Less than significant.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: The impact analysis described for Alternative 1 is also applicable to the Paramount and Bellflower MSF site options. The MSF construction activities would be consistent with adopted policies, plans, and programs. Therefore, less-than-significant impacts from construction activities would occur.

Mitigation Measures: Mitigation Measure TRA-20 (Transportation Management Plan(s)) would be implemented to further reduce impacts of construction activities.

Impacts Remaining after Mitigation: Less than significant.

3.7.4.2 Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?

No Project Alternative

Project-related construction activities would not occur under the No Project Alternative. Therefore, no construction-related impacts would occur, and no mitigation measures would be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Section 3.7.1 describes the construction activities anticipated for the Build Alternatives, and impacts are summarized in Section 3.7.3.2. Impacts during construction are identified for freight operations, traffic operations, transit, active transportation, and parking. VMT would be similar to the existing conditions within the Study Area. Construction activity would be localized to the work area and would not significantly change vehicle circulation in the Study Area as a whole. Therefore, no mitigation measures are required, and construction would have less-than-significant impacts.

Alternative 2: 7th St/Metro Center to Pioneer Station

Alternative 2 would have similar construction activities as described for Alternative 1. Therefore, no mitigation measures are required, and construction would have less-than-significant impacts.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Alternative 3 would have similar construction activities as described for Alternative 1. Therefore, no mitigation measures are required, and construction would have less-than-significant impacts.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Alternative 4 would have similar construction activities as described for Alternative 1. Therefore, construction would have less-than-significant impacts.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: The impact analysis described for Alternative 1 is also applicable to Design Options 1 and 2. The design options would have similar construction activities as described for Alternative 1. Therefore, no mitigation measures are required, and construction would have less-than-significant impacts.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: The impact analysis described for Alternative 1 is also applicable to the Paramount and Bellflower MSF site options. The MSF site options would be part of the construction activities. Therefore, no mitigation measures are required, and construction would have less-than-significant impacts.

3.7.4.3 Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

No Project Alternative

Project-related construction activities would not occur under the No Project Alternative. Therefore, no construction-related impacts would occur, and no mitigation measures would be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Construction activity associated with Alternative 1 would require, as needed, the temporary modification of the existing transportation facilities. These temporary modifications would follow standard construction practices for temporary vehicle, freight, pedestrian, and bicycle handling that would minimize hazards. These standards would also include preparation of a detailed transportation/traffic management plan. While application of these standards would not completely eliminate hazards, the resulting impacts would be less than significant.

Mitigation Measures: Mitigation Measure TRA-20 (Transportation Management Plan(s)) would be used to further reduce the hazards of construction activities.

Impacts Remaining after Mitigation: Less than significant.

Alternative 2: 7th St/Metro Center to Pioneer Station

Alternative 2 would have similar construction activities as described for Alternative 1. Therefore, less-than-significant impacts from construction activities would occur.

Mitigation Measures: Mitigation Measure TRA-20 (Transportation Management Plan(s)) would be used to further reduce the hazards of construction activities.

Impacts Remaining after Mitigation: Less than significant.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Alternative 3 would have a shorter alignment than Alternatives 1 and 2 and would have fewer potential hazards impacts. South of 55th Street/Long Beach Avenue, Alternative 3 would have similar construction activities as described for Alternative 1. Therefore, less-than-significant impacts from construction activities would occur.

Mitigation Measures: Mitigation Measure TRA-20 (Transportation Management Plan(s)) would be used to further reduce the hazards of construction activities

Impacts Remaining after Mitigation: Less than significant.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Alternative 4 would have a shorter alignment than Alternatives 1, 2, and 3 and would have fewer potential hazards impacts. South of Main Street/San Pedro Subdivision, Alternative 4 would have similar construction activities as described for Alternative 1. Therefore, less-than-significant impacts from construction activities would occur.

Mitigation Measures: Mitigation Measure TRA-20 (Transportation Management Plan(s)) would be used to further reduce the hazards of construction activities.

Impacts Remaining after Mitigation: Less than significant.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: The impact analysis described for Alternative 1 is also applicable to Design Options 1 and 2. The design options would have similar construction activities as described for Alternative 1. Therefore, less-than-significant impacts from construction activities would occur.

Mitigation Measures: Mitigation Measure TRA-20 (Transportation Management Plan(s)) would be used to further reduce the hazards of construction activities.

Impacts Remaining after Mitigation: Less than significant.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: The impact analysis described for Alternative 1 is also applicable to the Paramount and Bellflower MSF site options. The MSF site options would be part of the construction activities. Therefore, less-than-significant impacts from construction activities would occur.

Mitigation Measures: Mitigation Measure TRA-20 (Transportation Management Plan(s)) would be used to further reduce the hazards of construction activities.

Impacts Remaining after Mitigation: Less than significant.

3.7.4.4 Result in inadequate emergency access?

No Project Alternative

Project-related construction activities would not occur under the No Project Alternative. Therefore, no construction-related impacts would occur, and no mitigation measures would be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Construction activity would require, as needed, the temporary modification of the existing transportation facilities. Coordination with emergency responders would occur to maintain emergency access or to minimize delays in response times. However, the coordination would not completely eliminate interference with local jurisdictions' emergency response plans for emergency service providers.

As presented in Section 3.7.3.2, Mitigation Measure TRA-20 (Transportation Management Plan(s)) would require development of a TMP. As part of the TMP, all closures and detours would be coordinated with the affected emergency service providers to address access and response time requirements during construction and, once in operation, would reduce impacts to a less-than-significant level.

Section 5.2.5 of the Safety and Security Impact Analysis Report (Appendix F) and Section 4.18.3.2 of the Safety and Security Section describe the Emergency Preparedness Plan that would be integrated with local jurisdictional emergency response plans. The Emergency Preparedness Plan would be part of the Build Alternatives and would reduce impacts on emergency access by establishing the roles and responsibilities that would be carried out by emergency response agencies in the event of a fire, medical, or security emergency. Through this process and coordination with local jurisdictions, the construction and operation of the

Build Alternatives would avoid interference with emergency response plans, minimize scenarios where the emergency response services providers are overtaxed, and reduce the potential for significant delayed response times.

Mitigation Measures: Mitigation Measure TRA-20 (Transportation Management Plan(s)). Mitigation Measure COM-1 (Construction Outreach Plan), described in Section 4.19.11.2 of the Construction Section, would be implemented, which requires development of a Construction Outreach Plan in coordination with affected communities and businesses that would be implemented by Metro and its contractors during construction of the Project.

Impacts Remaining after Mitigation: Less than significant.

Alternative 2: 7th St/Metro Center to Pioneer Station

Alternative 2 would have similar construction activities as described for Alternative 1. Therefore, construction would have less-than-significant impacts.

Mitigation Measures: Mitigation Measures TRA-20 (Transportation Management Plan(s)) and COM-1 (Construction Outreach Plan)

Impacts Remaining after Mitigation: Less than significant.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Alternative 3 would have similar construction activities as described for Alternative 1. Therefore, construction would have less-than-significant impacts.

Mitigation Measures: Mitigation Measures TRA-20 (Transportation Management Plan(s)) and COM-1 (Construction Outreach Plan)

Impacts Remaining after Mitigation: Less than significant.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Alternative 4 would have similar construction activities as described for Alternative 1. Therefore, construction would have less-than-significant impacts.

Mitigation Measures: Mitigation Measures TRA-20 (Transportation Management Plan(s)) and COM-1 (Construction Outreach Plan)

Impacts Remaining after Mitigation: Less than significant.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Design Options 1 and 2 would have similar construction activities as described for Alternative 1. Therefore, less-than-significant impacts from construction activities would occur.

Mitigation Measures: Mitigation Measures TRA-20 (Transportation Management Plan(s)) and COM-1 (Construction Outreach Plan)

Impacts Remaining after Mitigation: Less than significant.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: The impact analysis described for Alternative 1 is also applicable to the Paramount and Bellflower MSF site options. Therefore, less-than-significant impacts from construction activities would occur.

Mitigation Measures: Mitigation Measures TRA-20 (Transportation Management Plan(s)) and COM-1 (Construction Outreach Plan)

Impacts Remaining after Mitigation: Less than significant.

4 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter discusses the existing conditions, environmental effects, project and mitigation measures, and impacts after mitigation for operation and construction of the West Santa Ana Branch (WSAB) Transit Corridor (Project). Effects during construction are discussed in Section 4.19, Construction Impacts, for each element of the environment. The National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) require the evaluation of potential effects of proposed government actions on the environment. This Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR) is a joint NEPA/CEQA environmental document, therefore, each section in this chapter includes both a NEPA finding and a CEQA determination. The CEQA determination included for each element of the environment identifies the CEQA significance thresholds that are applicable to that topic and provides an evaluation of Project effects relative to the thresholds. The analysis in this Draft EIS/EIR was initiated prior to the 2020 update to the NEPA implementing regulations (40 Code of Federal Regulations [CFR] 1500–1508) and prior to the Federal Transit Administration (FTA) updating its implementing regulations in 23 CFR 771; therefore, per the provisions of 40 CFR 1506.13, the NEPA regulations that were in place prior to September 14, 2000, have been applied throughout this Draft EIS/EIR.

The sections in this chapter summarize the analysis included in the impact analysis reports that are included as Appendices A through Q and S through FF of this Draft EIS/EIR and incorporated by reference. Each section of this chapter evaluates a No Build Alternative, four Build Alternatives, two design options, and two maintenance and storage facility (MSF) site options. The No Build Alternative reflects the reasonably foreseeable transportation network in 2042 and includes the existing transportation network and planned transportation improvements that have been committed to and identified in the Southern California Association of Governments (SCAG) *2016-2040 Regional Transportation Plan/Sustainable Communities Strategy* (RTP/SCS) (SCAG 2016a), the Los Angeles County Metropolitan Transportation Authority's (Metro) *2009 Long Range Transportation Plan* (LRTP) (Metro 2009a), and Measure M, as well as local transportation-related projects with the exception of the WSAB Project. The No Build and Build Alternatives are described in Chapter 2, Alternatives Considered/Project Description. FTA published the Notice of Intent (NOI) in the *Federal Register* on July 26, 2017, pursuant to NEPA requirements. Prior to the NOI publication, Metro issued a Notice of Preparation on May 25, 2017, pursuant to CEQA requirements. The required environmental baseline socioeconomic growth projections were established in July 2017, and preparation of the Draft EIS/EIR commenced. The SCAG 2016-2040 RTP/SCS was the adopted current regional growth forecast at the time the Draft EIS/EIR baseline was established. The Metro planning and travel demand modeling process has assumed incremental growth in the WSAB Study Area and surrounding region consistent with this forecast. On September 3, 2020, Connect SoCal (2020-2045 RTP/SCS) was adopted by SCAG after the Draft EIS/EIR modeling and relevant analyses were completed. To maintain consistency with Metro's overall approach to planning, the 2016 and 2020 RTP/SCS socioeconomic data have been compared for the WSAB Study Area. The results of the comparison for future year 2042 show a less than 1 percent difference in the population and employment growth forecasts for Los Angeles (LA) County and for the Study Area (i.e., the area within 2 miles of the Build Alternative alignments). This is within the

range of Metro's planning and travel demand modeling assumptions. The differences in the growth forecasts for the area are not substantive and would not alter Metro's planning assumptions.

The Affected Area for each element of the environment is a subset of the Study Area (described in Section 2.3 of the Project Description Chapter). The Affected Area varies for each element of the environment to include the geographical extents that may be affected by operation and construction of the Build Alternatives for that individual element. The Affected Area is defined in the evaluation of each element as an element-specific area surrounding the proposed alignments, stations, parking facilities, traction power substations (TPSSs), and MSF site options. Table 4.0.1 describes the geographic extent of the impact analysis for each environmental resource.

Table 4.0.1. Geographic Extent of Evaluation

Topic	Geographic Extent
Study Area	2-mile buffer from the project alignments
Transportation	Traffic Operations: key intersections identified that could be affected by the Project Parking: 0.25 mile around each station and along streets immediately adjacent to the alignment and other project features, and off-street parking lots where permanent easements or acquisitions are required for the Project
Land Use and Development	Within 50 feet of the Build Alternatives
Community and Neighborhoods	Within 0.25 mile of the proposed alignments, parking facilities, and MSF site options, and 0.5 mile around the proposed station areas
Displacements and Acquisitions	Displacement area: privately held residential, commercial, and industrial properties directly affected by the Build Alternatives Replacement area: cities affected by the Build Alternatives and other nearby cities that may provide replacement site options
Visual Quality and Aesthetics	Localized viewsheds for the Build Alternatives, including adjacent street ROWs that parallel, intersect, or face the Build Alternatives
Air Quality	South Coast Air Basin
Greenhouse Gas Emissions	South Coast Air Basin
Noise and Vibration	Immediate vicinity
Ecosystems and Biological Resources	Within 100 feet of the Build Alternatives
Geotechnical/Subsurface/Seismic	Within 250 feet of the Build Alternatives
Hazards and Hazardous Materials	Within 200 feet of the Build Alternatives; 0.25 mile for schools and landfills
Water Resources	Within 500 feet of the construction footprint

Topic	Geographic Extent
Energy	SCAG Region and service areas for electricity and natural gas suppliers
Electromagnetic Fields	1,000 feet from the project alignment for land uses that could have highly EMI-sensitive medical or scientific equipment
Historic Resources	The architectural APE, which includes areas that may be subject to potential direct and indirect effects, including visual, noise, vibration, and/or ground settlement that may result from construction or implementation of the Project. Where the project is underground or aerial, the architectural APE includes a one-parcel buffer extending out from the direct APE. Where the Project is at-grade, the architectural APE encompasses the same area as the direct APE described below.
Archaeological Resources	The direct APE encompassing the alignment ROWs, as well as all associated elements where construction would occur, including stations, laydown yards, maintenance facilities, and parking lots. Where the Project is at-grade, the direct APE includes the width of the existing railroad ROW. Where the Project is aerial, the direct APE encompasses the width of the proposed ROW. In areas with potential direct ground disturbance, the vertical extent of the direct APE extends approximately 115 feet below the existing ground surface and approximately 90 feet above the existing ground surface.
Paleontological Resources	The ground surface and subsurface within the proposed alignments, stations, MSF site options, TPSS sites, and parking facilities where ground disturbance associated with the Project may occur
Tribal Cultural Resources	Within the direct APE established for the Project
Parklands and Community Facilities	Within 0.25 mile of the Build Alternatives
Economic and Fiscal Impacts	Within 0.25 mile of the proposed alignments, parking facilities, and MSF site options, and 0.5 mile around the proposed station areas
Safety and Security	Within 100 feet of the Build Alternatives and within the 2-mile buffer from the project alignments for emergency services
Environmental Justice	Within 0.25 mile of the alignments, parking facilities, and MSF site options, and 0.5 mile of the station areas

Source: Metro 2021aa
Note: APE = Area of Potential Effects; EMI = electromagnetic interference; MSF = maintenance and storage facility; ROW = right-of-way; SCAG = Southern California Association of Governments; TPSS = traction power substation

Project and/or mitigation measures have been identified to address impacts. Project measures are incorporated as part of the Project and consist of design features, best management practices (BMPs), or other measures required by law and/or permit approvals that avoid or minimize potential effects. These measures are requirements of the Project. Where relevant, the measures were included in the impact analyses. Mitigation measures are additional actions, not otherwise part of the Project, that are designed to avoid, minimize, or compensate for

adverse or significant impacts. These measures are required where significant or adverse impacts have been identified based on the impact analyses.

Based on the current impacts of the recent social response to the COVID-19 virus and the resulting decline in travel demand, at this time, it is not possible to predict future changes to the project Purpose and Need, schedule, and operational impacts that may result from a COVID-19 response of an unpredictable nature and length. Should significant changes in the planning assumptions, project schedule, project scope, or surrounding project environment result because of a prolonged COVID-19 response, FTA and Metro will consider additional environmental evaluation and public input consistent with NEPA and CEQA.

4.1 Land Use

This section summarizes the potential adverse effects and impacts on existing land uses and developments for the No Build Alternative and Build Alternatives. Information in this section is based on the *West Santa Ana Branch Transit Corridor Project Final Land Use Impact Analysis Report* (Metro 2021a) (Appendix E).

4.1.1 Regulatory Setting and Methodology

4.1.1.1 Regulatory Setting

No federal plans, policies, or regulations are applicable regarding land use.

State and Regional

Applicable state and regional plans, policies, and regulations regarding land use include the Sustainable Communities and Climate Protection Act of 2008 (Senate Bill [SB] 375), California Planning and Zoning Law, SCAG *2016-2040* RTP/SCS (SCAG 2016a), *Metro Countywide Sustainability Planning Policy & Implementation Plan* (Metro 2012c), *Active Transportation Strategic Plan* (Metro 2016), 2009 LRTP (Metro 2009a), *Sustainable Rail Plan* (Metro 2013b), *Complete Streets Policy* (Metro 2014a), *First/Last Mile Strategic Plan* (Metro 2014b), and *Transit-Oriented Communities Policy* (Metro 2018a). The Project is identified as a financially constrained transit project from the Los Angeles/Orange County boundary toward downtown Los Angeles in the SCAG 2016-2040 RTP/SCS. The Project is also listed as a study in the *2017 Federal Transportation Improvement Program* (SCAG 2016b).

Local

Applicable local plans, policies, and regulations include general plans, community plans, specific plans, master plans and bicycle master plans for the 12 local jurisdictions that the Build Alternatives would be located in or adjacent to. These plans include: *City of Los Angeles General Plan Framework* (City of Los Angeles 2001a), *City of Los Angeles Mobility Plan 2035* (City of Los Angeles 2016), *Central City North Community Plan* (City of Los Angeles 2000b), *Central City Community Plan* (City of Los Angeles 2003), *Southeast Los Angeles Community Plan* (City of Los Angeles 2017a), *Los Angeles County General Plan* (Los Angeles County 2015), *Florence-Firestone Community Plan* (Los Angeles County 2019), *City of Huntington Park General Plan* (City of Huntington Park 1991), *City of Los Angeles Land Use/Transportation Policy* (City of Los Angeles 1993), *Connect US Action Plan* (Metro 2015b), *City of Bell 2030 General Plan* (City of Bell 2018a), *City of Cudahy 2040 General Plan* (City of Cudahy 2018a), *City of South Gate General Plan 2035* (City of South Gate 2009), *Gateway District Specific Plan* (City of South Gate 2017a), *Hollydale Village Specific Plan* (City of South Gate 2017b), *Downey Vision 2025* (City of Downey 2005), *City of Paramount General Plan* (City of Paramount 2007),

City of Bellflower General Plan: 1995-2010 (City of Bellflower 1994), *City of Cerritos General Plan* (City of Cerritos 2004), and *City of Artesia General Plan 2030* (City of Artesia 2010).

The adopted bicycle master plans in the affected jurisdictions are as follows: *City of Los Angeles 2010 Bicycle Master Plan* (City of Los Angeles 2011), *County of Los Angeles 2012 Bicycle Master Plan* (Los Angeles County 2012b), *City of Huntington Park Bicycle Transportation Master Plan* (City of Huntington Park 2014), *City of Vernon Bicycle Master Plan* (City of Vernon 2017), *South Gate Bicycle Transportation Plan* (City of South Gate 2012), *City of Bell Bicycle Master Plan* (City of Bell 2016), *City of Downey Bicycle Master Plan* (City of Downey 2015), and *Bellflower-Paramount Active Transportation Plan* (City of Bellflower and City of Paramount 2019).

4.1.1.2 Methodology

For purposes of the land use analysis, the Affected Area for land use is defined as the area within approximately 50 feet of the Build Alternatives, including the proposed alignment, stations, parking facilities, TPSSs, and MSF site options as these adjacent areas have been identified to be the area of potential impact. To provide an overall context regarding land uses surrounding the Affected Area for land use, land uses within 0.25 mile of the alignment and MSF site options and 0.5 mile of the station areas are presented in the figures.

To satisfy NEPA requirements, land use effects of the Build Alternatives are evaluated by examining the compatibility with existing land uses in the Affected Area for land use and consistency with pertinent objectives and policies of adopted plans and programs of the local and regional jurisdictions in which the Build Alternatives are located. The alternatives are evaluated against the existing and planned developments adjacent to and surrounding the Project to evaluate the compatibility of the facilities with neighboring land uses. An adverse effect on land use would involve physically dividing an established community (also see Section 4.2, Communities and Neighborhoods); conflicting with any applicable land use plan, policy, or regulation; or conflicting with any applicable habitat conservation plan or natural community conservation plan. The Project is not located in a habitat conservation plan.

To satisfy CEQA requirements, land use impacts are analyzed in accordance with the *CEQA Guidelines,* identified in Section 4.1.5 of this Land Use Section.

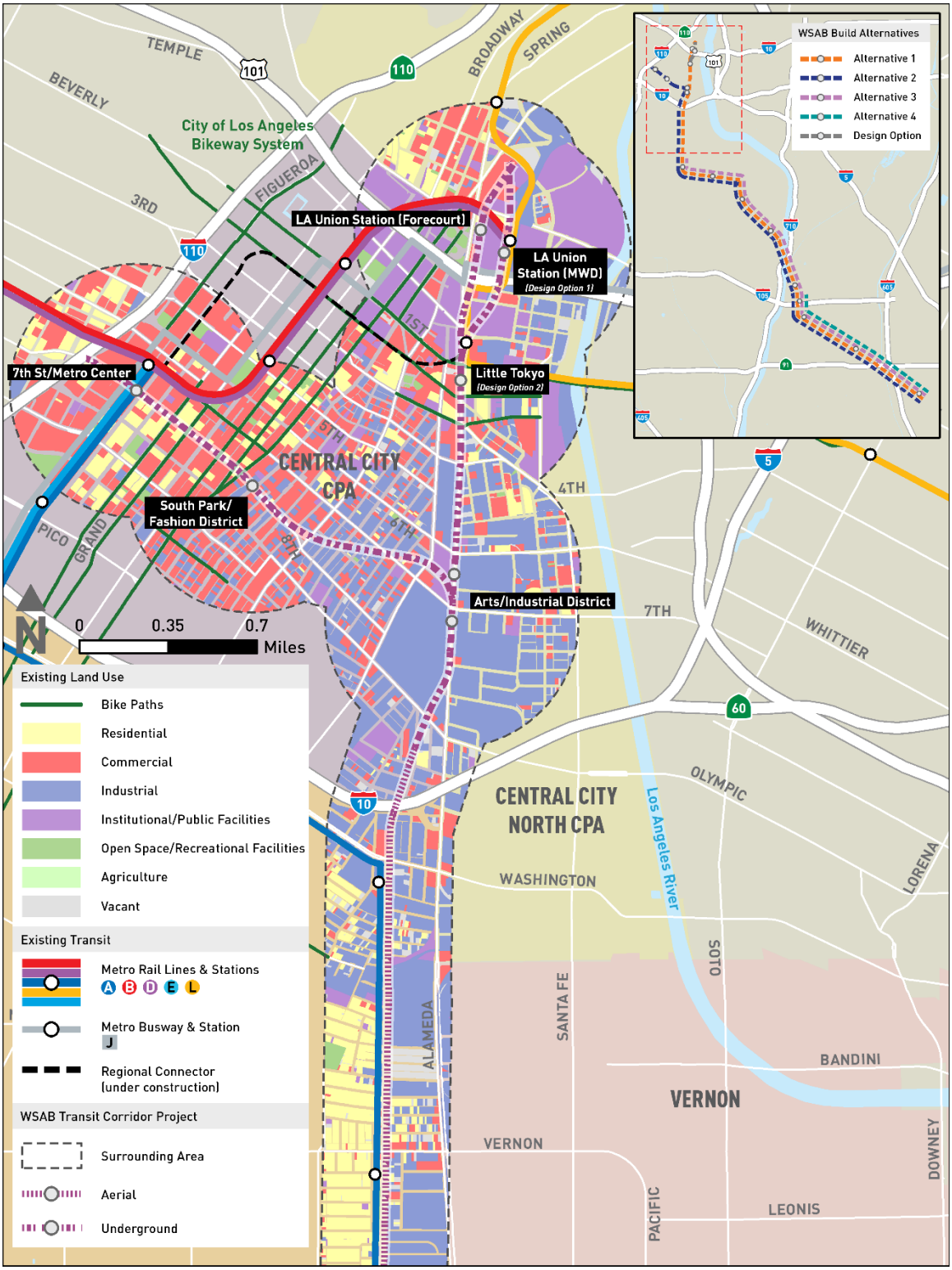
4.1.2 Affected Environment/Existing Conditions

The Build Alternatives would be located in or adjacent to the urban and suburban areas of the Cities of Los Angeles, Vernon, Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, Artesia, and Cerritos, and the unincorporated Florence-Firestone community of LA County (Figure 4.1-1 through Figure 4.1-5). The immediate surrounding urban land uses are characterized by public facilities, commercial (offices and retail), industrial, and residential (single- and multifamily) uses. Land uses in the Affected Area for land use described in this section are generalized and are not described on a parcel-by-parcel basis.

4.1.2.1 Build Alternatives

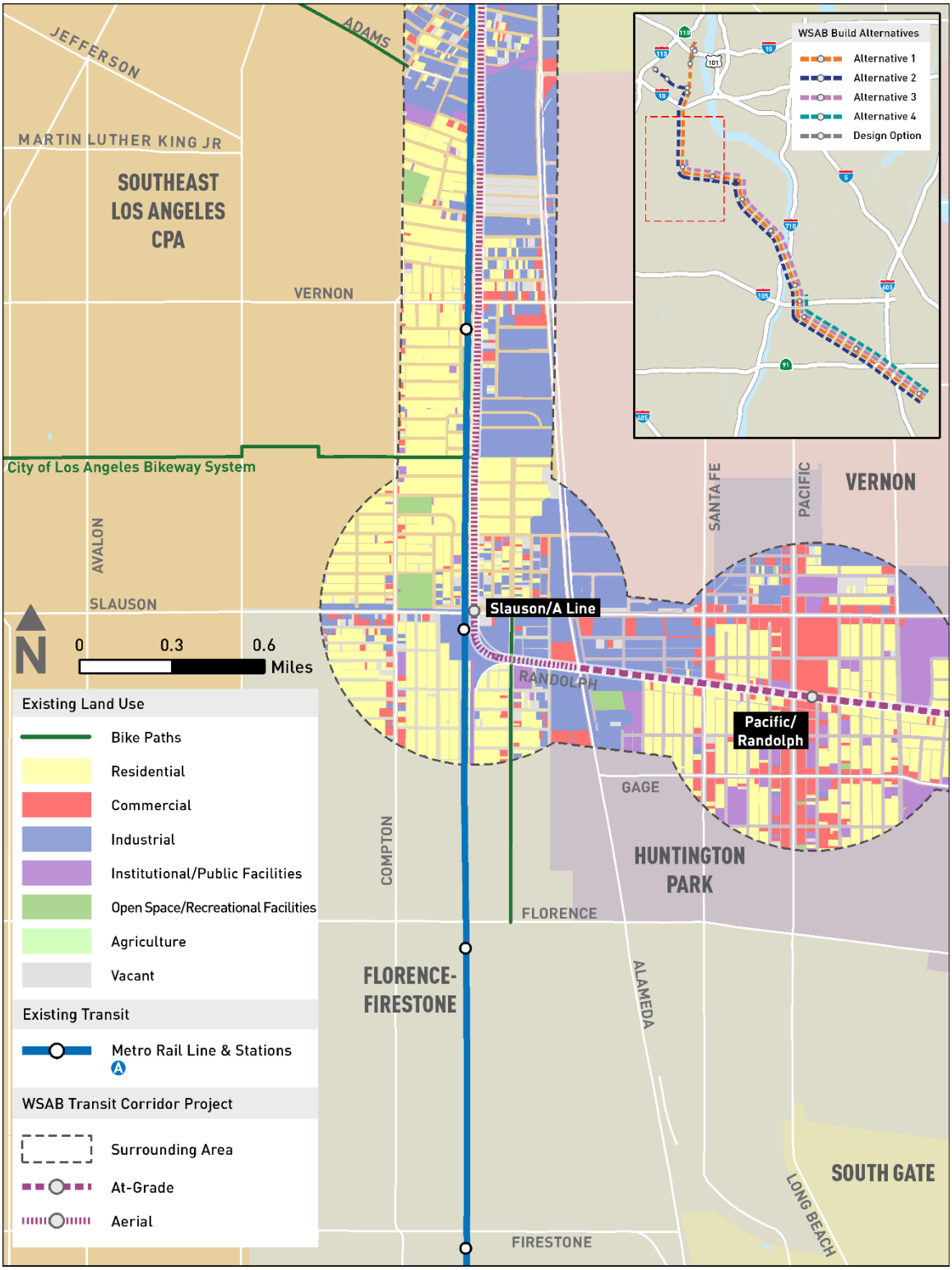
Figure 4.1-1 through Figure 4.1-5 provide an overall context of the land uses within 0.25 mile of the proposed alignment and 0.5 mile of the proposed stations that surround the Affected Area for land use.

Figure 4.1-1. Existing Land Use within 0.25 Mile of the Alignment and 0.5 Mile of the Proposed Stations (from Los Angeles Union Station to Southeast Los Angeles)



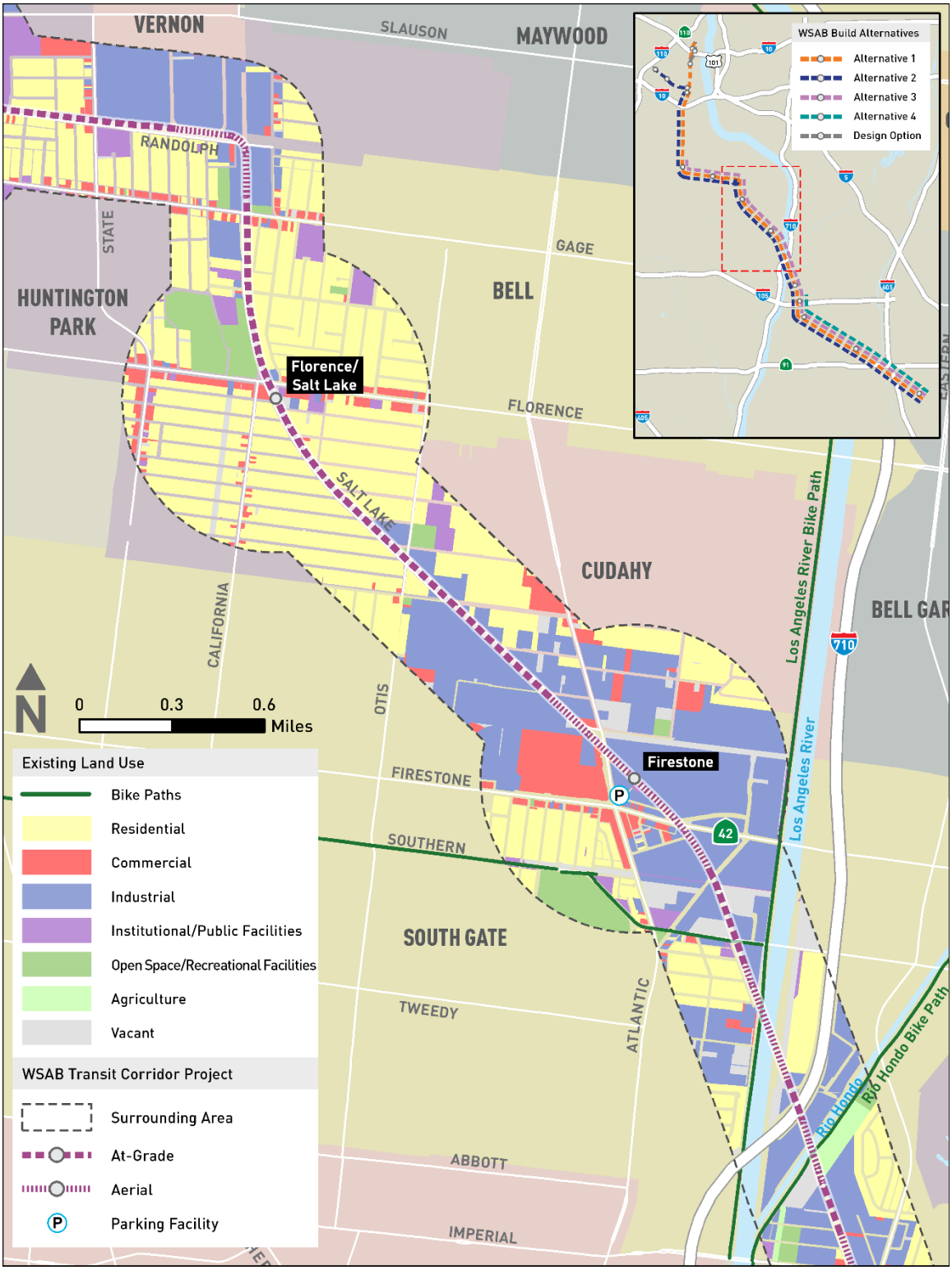
Source: Metro 2021a

Figure 4.1-2. Existing Land Use within 0.25 Mile of the Alignment and 0.5 Mile of the Proposed Stations (from Southeast Los Angeles to City of Huntington Park)



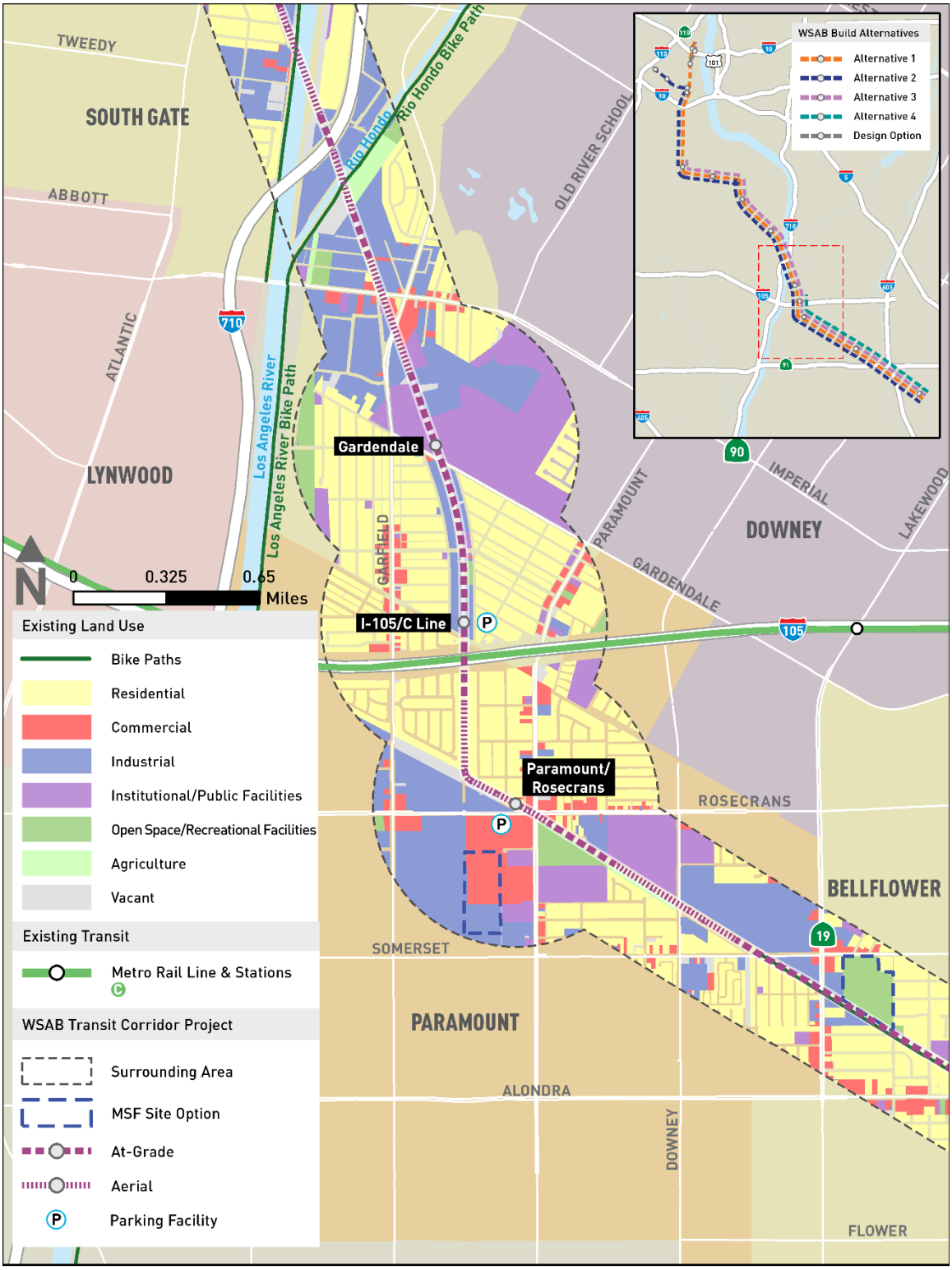
Source: Metro 2021a

Figure 4.1-3. Existing Land Use within 0.25 Mile of the Alignment and 0.5 Mile of the Proposed Stations (from City of Huntington Park to City of South Gate)



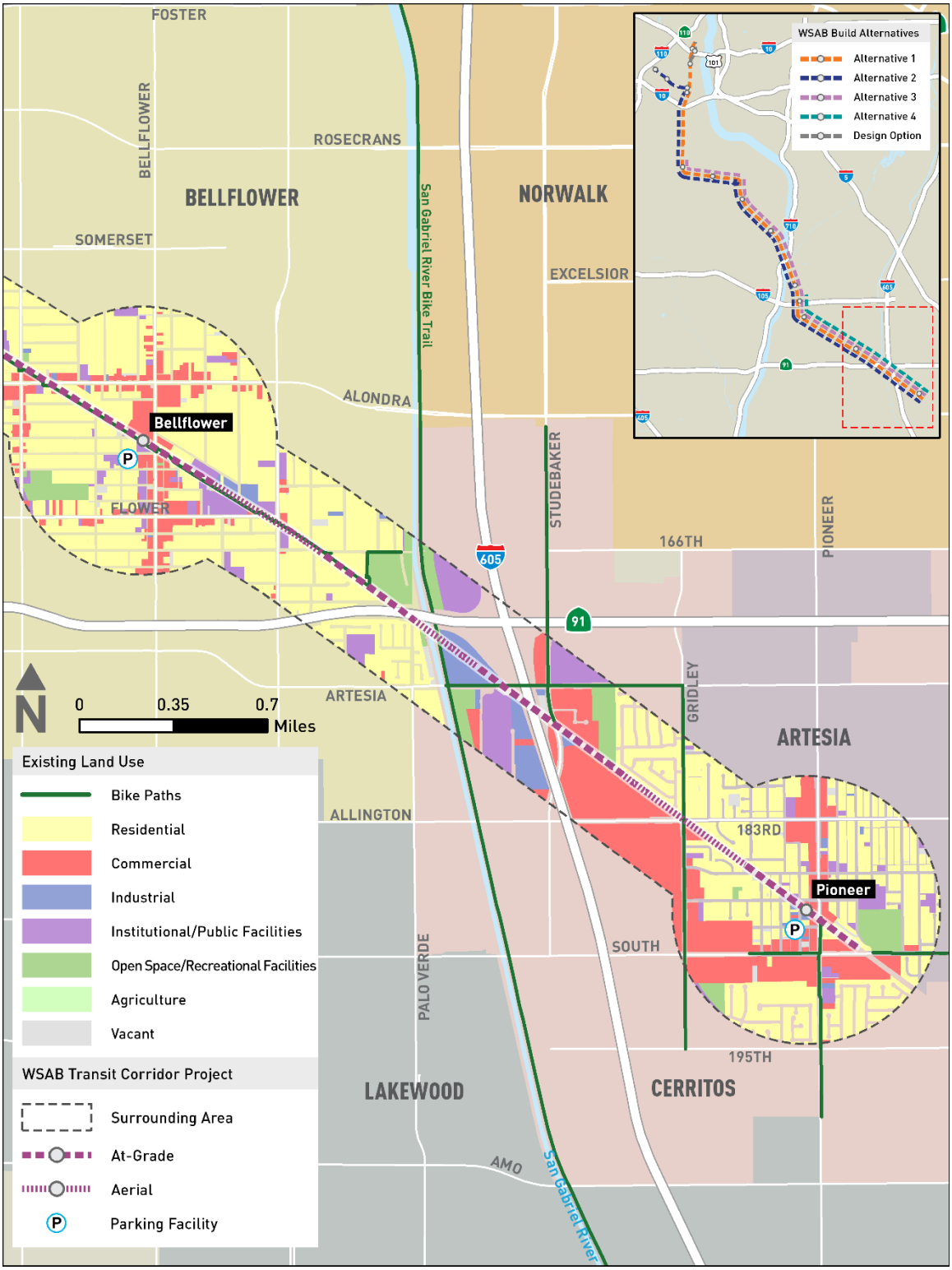
Source: Metro 2021a

Figure 4.1-4. Existing Land Use within 0.25 Mile of the Alignment and 0.5 Mile of the Proposed Stations (from City of South Gate to City of Bellflower)



Source: Metro 2021a

Figure 4.1-5. Existing Land Use within 0.25 Mile of the Alignment and 0.5 Mile of the Proposed Stations (from City of Bellflower to City of Artesia)



Source: Metro 2021a

Table 4.1.1 provides the land use distribution of the Affected Area for land use (50 feet adjacent) and the land uses within 0.25 mile of the alignment and 0.5 mile of the station areas) for each Build Alternative. Residential use is the most prominent land use adjacent to each Build Alternative, with the exception of Alternative 3 in which industrial land use is the most prominent land use.

Table 4.1.1. Land Use Distribution for the Build Alternatives

Land Use	Percent of Land Use (%)[1]							
	Alternative 1 19.3 miles		Alternative 2 19.3 miles		Alternative 3 14.8 miles		Alternative 4 6.6 miles	
	Affected Area[2]	Surrounding Area[3]	Affected Area[2]	Surrounding Area[3]	Affected Area[2]	Surrounding Area[3]	Affected Area[2]	Surrounding Area[3]
Agriculture	0.4	0.1	0.3	0.1	2.0	2.0	1.8	0.1
Commercial	2.6	7.0	3.8	20.1	6.2	8.2	11.6	9.3
Industrial	13.4	14.9	9.1	10.0	34.5	15.5	12.9	8.0
Institutional/ Public Facilities	6.1	10.5	3.2	2.7	18.1	6.0	1.6	6.9
Open Space/ Recreational Facilities	2.0	1.9	1.5	1.4	9.2	3.1	23.3	3.0
Residential	73.6	63.3	80.9	64.3	23.3	64.3	45.0	71.5
River	0.7	0.5	0.5	0.3	3.0	0.8	0.2	0.4
Vacant	1.2	1.8	0.8	1.0	3.9	1.8	3.5	0.9

Source: Metro 2021a

Notes: [1] The land use distribution characterizes the land uses within the Affected Area and in the Surrounding Area for each Build Alternative. Percentages of land use may not equal 100 percent due to rounding.

[2] "Affected Area" is defined as the adjacent area within approximately 50 feet of the Build Alternatives.

[3] "Surrounding Area" is defined as the area within 0.25 mile of the alignment and 0.5 mile of the station areas.

Table 4.1.2 identifies the adjacent and surrounding land uses for each proposed station, including both design options. Surrounding land uses generally include agricultural, commercial, industrial, institutional/public facilities (i.e., places of worship, preschools/daycares, schools, museums, libraries, medical facilities), open space/recreational facilities (i.e., parks and recreational facilities), residential, river, and vacant uses.

Table 4.1.2. Existing Land Uses in the Affected Area and Surrounding Area of the Station Areas and Design Options

	Station Area	Affected Area[1]	Surrounding Area[2]
Alternative 1	LA Union Station (Forecourt)	Residential, Institutional/Public Facilities	Residential, Industrial, Commercial, Open Space, Institutional/Public Facilities
	Arts/Industrial District (north of 7th Street)	Industrial, Institutional/Public Facilities	
Alternative 2	7th St/Metro Center	Residential, Commercial	Residential, Industrial, Commercial, Open Space, Institutional/Public Facilities
	South Park/Fashion District	Residential, Commercial	
	Arts/Industrial District (south 7th Street)	Industrial	
Alternative 1, 2, and 3	Slauson/A Line	Industrial	Residential, Industrial, Commercial, Open Space, Institutional/Public Facilities
	Pacific/Randolph	Residential, Commercial	Residential, Industrial, Commercial, Institutional/Public Facilities
	Florence/Salt Lake	Residential, Industrial	Residential, Commercial, Industrial, Open Space, Institutional/Public Facilities
	Firestone	Industrial	
	Gardendale	Institutional/Public Facilities	
Alternative 1, 2, 3, and 4	I-105/C Line	Roadway	Residential, Commercial, Industrial, Open Space, Institutional/Public Facilities
	Paramount/Rosecrans	Residential, Commercial, Industrial	
	Bellflower	Commercial	
	Pioneer	Commercial	Residential, Commercial, Open Space, Institutional/Public Facilities, Industrial
Design Options	Design Option 1: LA Union Station (Metropolitan Water District)	Residential, Institutional/Public Facilities	Residential, Industrial, Commercial, Open Space, Institutional/Public Facilities
	Design Option 2: Little Tokyo	Residential, Commercial	

Source: Metro 2021a
Notes: [1] "Affected Area" is defined as the adjacent area within approximately 50 feet of the Build Alternatives.
[2] "Surrounding Area" is defined as the area within 0.25 mile of the alignment and 0.5 mile of the station areas.

4.1.2.2 Maintenance and Storage Facilities

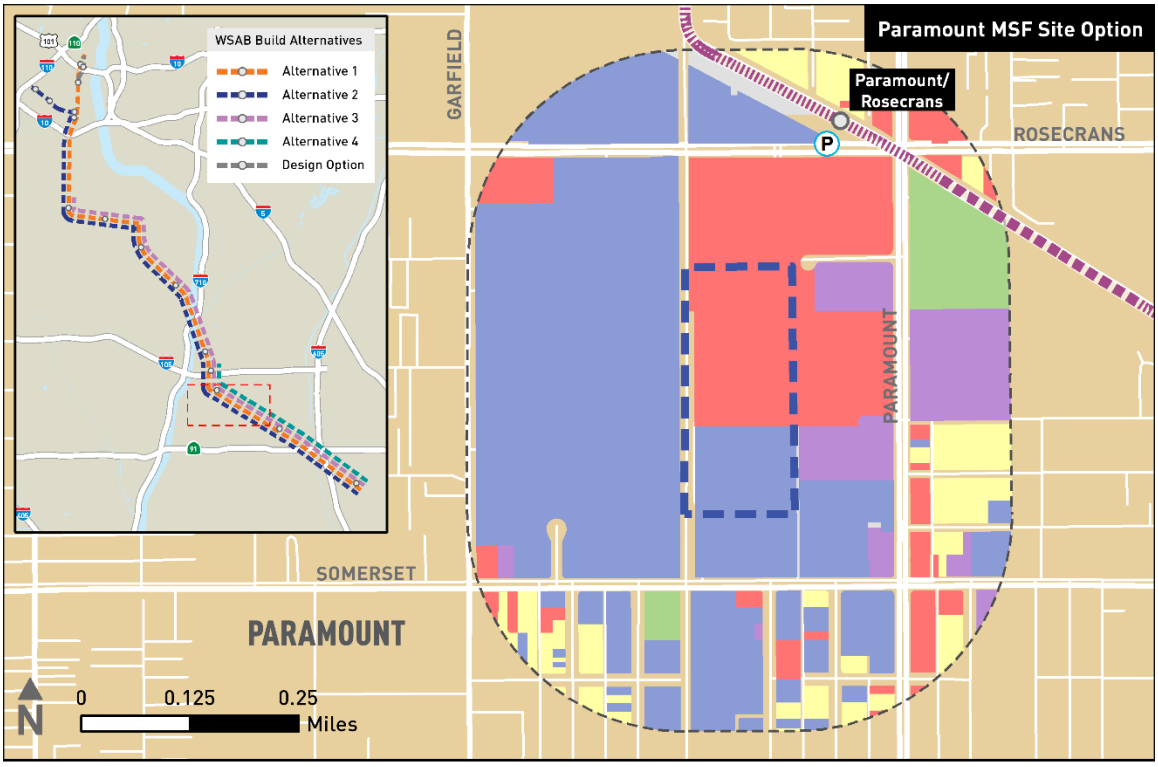
Figure 4.1-6 shows the existing land uses within 0.25 mile of the proposed MSF site options. Table 4.1.3 identifies land uses adjacent to the Paramount and Bellflower MSF site options. Surrounding land uses around the Paramount MSF site option generally include residences, commercial, industrial, institutional/public facilities (i.e., places of worship, preschools/daycares, schools), open space/recreational facilities (i.e., parks and recreational facilities), and vacant uses. Surrounding land uses around the Bellflower MSF site option generally include residential, commercial, industrial, institutional/public facilities (i.e., places of worship, schools), and open space/recreational facilities (i.e., parks and recreational facilities).

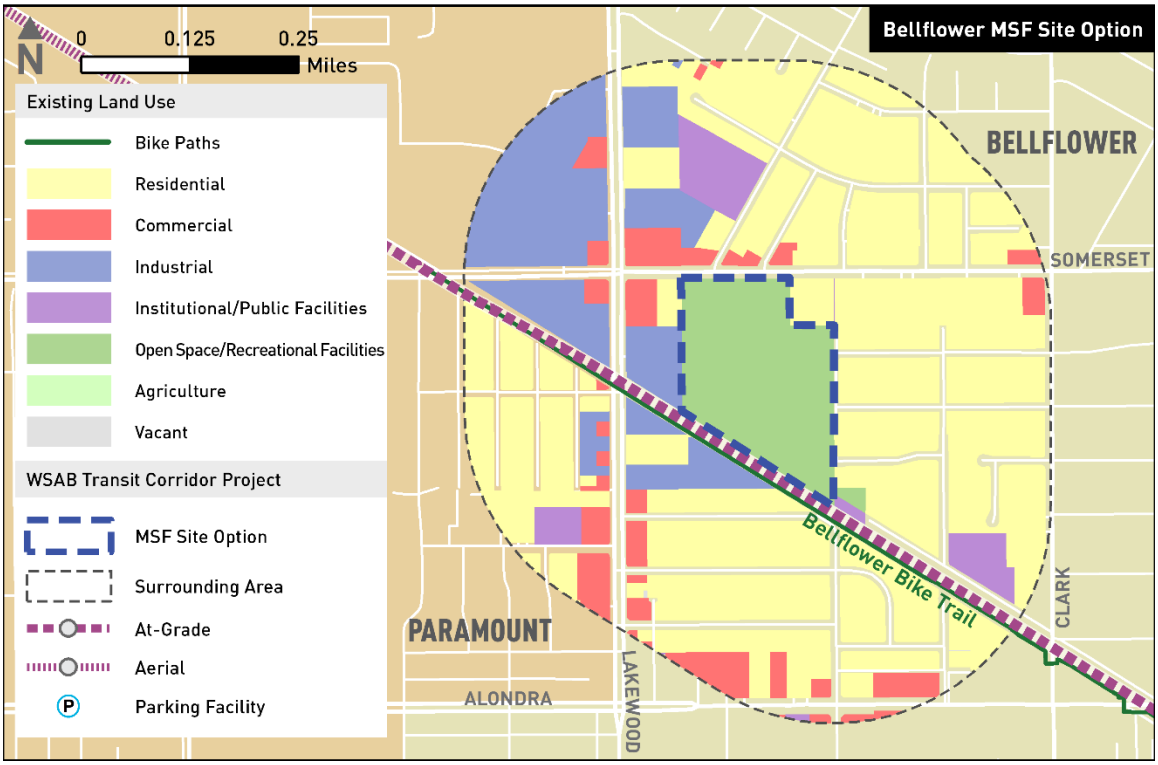
Table 4.1.3. Land Use Distribution Adjacent to MSF Site Options

MSF Site Option	Land Use	Percent of Land Use (%)[1]	
		Affected Area[2]	Surrounding Area[3]
Paramount MSF Site Option	Residential	0	8.6
	Commercial[4]	35.4	19.7
	Industrial[4]	61.3	55.7
	Institutional/Public Facilities	3.3	9.5
	Open Space/Recreational Facility	0	5.2
	Vacant	0	1.2
Bellflower MSF Site Option	Residential	44.3	67.9
	Commercial	8.4	9.0
	Industrial	42.2	18.2
	Institutional/Public Facilities	2.2	4.8
	Open Space/Recreational Facility[4]	2.8	0.2

Source: Metro 2021a
Notes: MSF = maintenance and storage facility
[1] Percent of land use may not equal 100 percent due to rounding.
[2] "Affected Area" is defined as the adjacent area within approximately 50 feet of the Build Alternatives.
[3] "Surrounding Area" is defined as the area within 0.25 mile of the alignment and 0.5 mile of the station areas.
[4] Percent does not include land use within MSF site option boundary.

Figure 4.1-6. Existing Land Use within 0.25 Mile of the Maintenance and Storage Facility Site Options





Source: Metro 2021a

4.1.3 Environmental Consequences/Environmental Impacts

4.1.3.1 No Build Alternative

Under the No Build Alternative, the Project would not be developed; properties would not be acquired for the Project; and no structures along the project alignment would be demolished. The existing freight tracks within the rail rights-of-way (ROW) would remain undisturbed, and no aerial structures would be built along the public or rail ROWs. Future bike paths identified along the project alignment in the City of Los Angeles 2010 Bicycle Master Plan (City of Los Angeles 2011), City of Cudahy 2040 General Plan (City of Cudahy 2018a), City of Huntington Park Bicycle Transportation Master Plan (City of Huntington Park 2014), South Gate Bicycle Transportation Plan (City of South Gate 2012), City of Bell Bicycle Master Plan (City of Bell 2016), and Bellflower-Paramount Active Transportation Plan (City of Bellflower and City of Paramount 2019) could be built and implemented within the rail ROW or public ROW that parallels the rail ROW.

Land Use Compatibility

Other projects developed under the No Build Alternative would undergo project-specific environmental reviews, as appropriate, that would identify potential land use impacts and mitigation as necessary. The projects would generally occur within existing transportation corridors on individual sites that are associated with transportation. The No Build Alternative is expected to be consistent with current development trends and would not be incompatible with adjacent and surrounding land uses. Under NEPA, the No Build Alternative would not result in adverse effects related to land use compatibility.

Consistency with Regional Land Use Plans, Policies, and Regulations

Under the No Build Alternative, the Build Alternatives would not be constructed, thereby making the No Build Alternative inconsistent with SCAG's regional policies for improving mobility as outlined in the SCAG 2016-2040 RTP/SCS. Specifically, the No Build Alternative would:

- Limit the opportunity to intensify land uses at potential station areas for the Build Alternatives, limit development of compact communities around a public transit system, and limit alternatives to automobile travel;
- Not support opportunities to integrate transportation investments with future land use patterns, promote sustainability, provide more transportation choices, or reduce overall air quality emissions and traffic congestion;
- Be inconsistent with policies for improving mobility, encouraging land use patterns that support transit use, and promoting sustainability; and
- Be inconsistent with the SCAG 2016-2040 RTP/SCS overarching strategy of growing more compact communities in existing urban areas with efficient public transit and safe mobility opportunities.

Under the No Build Alternative, land use development around the project station areas would not occur because no new stations would be built. The No Build Alternative would be inconsistent with SCAG 2016-2040 RTP/SCS Policy 6 to support investments and strategies to reduce non-recurrent congestion and demand for single-occupancy vehicle use, and Policy 7 to encourage transportation investments that would result in cleaner air, better environment, a more efficient transportation system, and sustainable outcomes in the long

run. Under NEPA, the No Build Alternative would result in adverse effects related to consistency with regional land use plans for improving mobility.

Consistency with Local Land Use Plans, Policies, and Regulations

Under the No Build Alternative, future development and implementation of bicycle paths within the rail ROW would continue to occur in the affected jurisdictions. However, as detailed in Table 4.1.4, the No Build Alternative would be inconsistent with the several local land use plans goals, objectives, and policies. The No Build Alterative would result in a continuation of current development patterns. Since the Project would not be built, future planning of transit-oriented developments (TODs) surrounding the project station areas cannot occur. As a result, the No Build Alternative would not support local land use plans and policies for compact and denser development, including the development of TODs. Therefore, the No Build Alternative would be inconsistent with applicable local land use plans and policies. Under NEPA, the No Build Alternative would result in adverse effects related to consistency with local land use plans and policies.

Table 4.1.4. No Build Alternative Inconsistency with Local Land Use Plans and Policies

Policy Topic	Plans and Policies
Alternative modes of transportation	• *City of Los Angeles Central City North Community Plan* Goal 12 • *City of Los Angeles Central City Community Plan* Goal 12 • *City of Los Angeles Southeast Los Angeles Community Plan* Objective 11-2 and Goal 13 • *Los Angeles County General Plan* Policy M4.1 • *City of Huntington Park General Plan* Goal 4.0 • *City of Cudahy 2040 General Plan Transportation Element* Policy CE-3.1 • *City of South Gate General Plan 2035 Community Design Element* Objective CD 3.1- Policy P.1, *Mobility Plan Element* Goal ME2, and *Healthy Community Element* Objective HC2.3-Policy P.1 • *Downey Vision 2025 Circulation Element* Goal 2.2, Policy 2.2.4, and Program 2.4.1.5 • *City of Paramount General Plan* Policies 6 and 9 • *City of Bellflower General Plan* Goal 4 • *City of Cerritos General Plan Circulation Element* Goal CIR-8 • *City of Artesia General Plan Circulation and Mobility Sub-Element* Policy Action CIR4.2.4 and Community Goal CIR5; *Air Quality and Climate Change Sub-Element* Policy Action AQ2.1.1; and *Sustainability Element Community* Goal SUS5
Increased mobility, transit access, and transit services	• *City of Los Angeles Mobility Plan 2035* Policies 3.5 and 3.7 • *City of Los Angeles Central City North Community Plan* Goal 10 and Objective 10-1.3 • *City of Los Angeles Southeast Los Angeles Community Plan* Goal 11 • *Los Angeles County General Plan* Policy M4.4 • *City of Cudahy 2040 General Plan Transportation Element* Goal CE-2 • *City of South Gate General Plan 2035 Community Design Element* Objective CD1.2-Policy P.1, Objective ME2.2-Policies P.1 and P.2 • *City of South Gate Gateway District Specific Plan* Goal 2

Policy Topic	Plans and Policies
	• *City of South Gate Hollydale Village Specific Plan* Policy 6.2 • *City of Paramount General Plan* Policy 11 • *City of Bellflower General Plan* Goal 3 and Policy 3.1 • *City of Cerritos General Plan Circulation Element* Policies CIR-6.6 and CIR-8.2 • *City of Artesia General Plan Circulation and Mobility Sub-Element* Policy CIR5.1 and Community Policy CIR6.2, *Air Quality and Climate Change Sub-Element* Policy Action AQ2.1.6, *Sustainability Element* Community Policy Action SUS5.1.7
Emissions reductions	• *City of Cudahy 2040 General Plan Air Quality Element* Goal AQE-2 • *City of South Gate General Plan 2035 Healthy Community Element* Objective HC7.2-Policies P.1 and P.8 • *City of Bellflower General Plan* Policy 4.1
Policies for compact and denser development, including TODs	• *City of Los Angeles General Plan* Objectives 3.13 and 3.15, Policy 3.15.3 • *Los Angeles County General Plan* Policies LU4.4 and M5.1, Goal M5 • *Florence-Firestone Community Plan* Goals R-2 and TD-3, Policies R-2.3 and TD-2.4 • *City of Los Angeles Land Use/Transportation Policy* • *City of Cudahy 2040 General Plan Air Quality Element* Policy AQE2.1 • *City of South Gate General Plan 2035 Community Design Element* Objective CD3.1- Policies P.2, P.4 and P.5 • *City of South Gate General Plan 2035 Healthy Community Element Objective* HC2.3-Policy P.4 • *City of Artesia General Plan Air Quality and Climate Change Sub-Element* Policy Action AQ2.2.3

Source: Metro 2021a
Note: TODs = transit-oriented developments

4.1.3.2 Alternative 1: Los Angeles Union Station to Pioneer Station

Land Use Compatibility

Alignment: Descriptions of the alignment configurations are described in Chapter 2, Alternatives Considered/Project Description. Alternative 1 would be primarily underground between Los Angeles Union Station (LAUS) to a point north of the 14th Street/Long Beach Avenue intersection. Land use in this area is characterized as highly urbanized and developed. Land uses surrounding the at-grade portions of the alignment are urban and suburban in character with surrounding communities developed around the rail ROW. Furthermore, the proposed aerial alignment would not result in land use incompatibility with urban and suburban areas along the alignment. Overall, the alignment would not conflict with or impede the use of the surrounding land uses, change the function of the public street and rail ROWs as transportation corridors, impede or change the function of the freight tracks and freight sidings that are used by nearby industrial uses, create new land use incompatibilities in the Affected Area for land use, or physically divide an established community.

Parking: Existing on-street and off-street parking would need to be removed/relocated in several areas along the proposed alignment. This would include the removal/relocation of several on-street parking spaces along Alameda Street between Bay Street and Newton Street, along Long

Beach Avenue between 24th Street and 41st Place and several off-street parking spaces, such as at an industrial property at the southeast corner of 6th Street/Alameda Street. Existing on-street and off-street parking would need to be removed/relocated in several areas along the rail ROWs (i.e., along Randolph Street, within the rail ROW along Randolph Street and Salt Lake Avenue, the northeast corner of Randolph Street/Pacific Boulevard intersection, the southwest and southeast corners of the Florence Avenue/Salt Lake Avenue intersection, and Main Street grade crossing). The removal of on- and off-street parking spaces may result in an increased demand for on-street parking that could affect parking in the surrounding streets. However, the removal/relocation of parking spaces and the loss of parking is not anticipated to impair the function of the affected private properties, and access to the surrounding uses would remain. Changes to parking would be compatible with the surrounding land uses and consistent with local land use policies and zoning code requirements. Additionally, the removal of parking within the rail ROW would not result in an incompatible land use as the rail ROW would continue to be used as a rail corridor. Furthermore, the Project would improve overall transit connectivity by providing alternate means of access to communities surrounding the alignment. Therefore, no adverse effects regarding land use compatibility would occur.

Parking facilities proposed at the Firestone, Interstate (I-) 105/C Line, Paramount/Rosecrans, Bellflower, and Pioneer Stations would provide ingress and egress and pedestrian walkways connecting the parking facilities to the proposed stations. The parking facility sites would be generally located on sites with industrial, manufacturing, or commercial uses, with the exception of the Pioneer Station parking facility, which is currently developed with multifamily residential, industrial, and commercial uses. Nonetheless, the parking facilities would be generally compatible with the surrounding land uses.

Stations: Proposed underground stations (i.e., LAUS and Arts/Industrial District) and at-grade stations (i.e., Pacific/Randolph, Florence/Salt Lake, Gardendale, I-105/C Line, Bellflower, and Pioneer) would include station entrances designed and integrated with the surrounding uses. Aerial stations (i.e., Slauson/A Line, Firestone, and Paramount/ Rosecrans) would be situated on an aerial structure over the public and/or rail ROWs. The stations would not change or impair the function of the surrounding land uses, and access to the surrounding uses would be maintained. Similarly, with future development efforts at the adjacent Rancho Los Amigos site, the Gardendale Station could also lead to additional street-level pedestrian-oriented development that would add vibrancy to the area. The proposed stations are anticipated to become important junctions for residents, employees, and visitors from neighboring communities and the region promoting existing and planned future development with street-level pedestrian uses, as well as improved pedestrian access to surrounding uses. The proposed station entrances are not expected to introduce physical barriers or change or impair the function of the surrounding uses; and access to the surrounding community would remain available. The proposed stations would be designed and integrated with the surrounding uses and be compatible with the surrounding land uses.

Freight Track Relocation: Alternative 1 would require the relocation of existing freight tracks south of Slauson Avenue and where the aerial structure curves from the La Habra Branch ROW to the San Pedro Subdivision ROW to accommodate the proposed aerial structures. Alternative 1 would also require the relocation of portions of the Union Pacific Railroad freight tracks to accommodate for dual tracks. Active freight service in the existing rail ROWs north of Somerset Boulevard would be maintained. Although freight tracks would be relocated, existing track sidings and spurs, and active freight service would be maintained within the rail ROWs and would not change the function of the rail ROW. The aerial

structures in and adjacent to the rail ROWs would be consistent with the use of the Wilmington Branch ROW, La Habra Branch ROW, San Pedro Subdivision ROW, and the Pacific Electric Right-of-Way (PEROW) as rail corridors. Therefore, no adverse effects regarding land use compatibility would occur.

Street Closures: The proposed aerial structure north of the I-10 freeway would result in permanent street closures at Long Beach Avenue north of 14th Street, and at 14th Street west of Long Beach Avenue. In addition, 188th Street between Corby Avenue and Pioneer Boulevard and 187th Street and Corby Avenue in Artesia would be permanently closed to build a parking structure, accommodate traffic flow, and reduce cut-through traffic. Access to the surrounding uses would be maintained by re-routing traffic to adjacent streets, and permanent access disruptions to existing land uses on either side of the alignment would not occur. The proposed street closures would not conflict with the surrounding land uses and would not physically divide an established community since the surrounding land uses would remain accessible.

Barriers: Physical barriers (e.g., fencing, walls) would be located along sections of the proposed alignment, along the rail ROWs, parallel to existing street ROWs, or along existing bike trails to create a buffer between the alignment and nearby uses. In locations where the alignment would be located along the rear of adjacent properties, existing barriers, such as fencing, currently separate adjacent land uses from the alignment. Portions of the alignment structures would be built on retained fill with retaining walls or supported by columns that could create a barrier and separate land uses on both sides of the rail ROW (specifically, Randolph Street between Holmes Avenue and Wilmington Avenue, Flora Vista Street between Cornuta Avenue and Flower Street, and Flora Vista Street between Woodruff Avenue and California Avenue). Alternative 1 would also introduce vehicle-turning restrictions at five streets that intersect with Randolph Street (Wilmington Avenue, Regent Street, Albany Street, Rugby Avenue, and Rita Avenue) that could create barriers to an established community. Alternative 1 would additionally add turning restrictions for trucks at two intersections along Randolph Street: Alameda Avenue East and Pacific Boulevard.

Barriers introduced along the proposed alignment would follow the Metro Rail Design Criteria (MRDC) guidance or equivalent criteria[1]. Access to surrounding uses would continue to be available at grade crossings, nearby intersections, and along alternative routes (i.e., between both sides of Randolph Street). Vehicular access to all properties would also be maintained, and permanent disruptions to access would not occur, thereby maintaining connectivity through the community. Barriers and vehicle-turning restrictions would not change or impair the function of the surrounding land uses, conflict with the surrounding land uses, or physically divide an established community.

Pedestrian Bridges: The existing pedestrian bridge on Long Beach Avenue at 53rd Street in the City of Los Angeles would remain at its existing location and accessible to pedestrians. The Arthur Avenue pedestrian bridge in the City of Paramount, which is currently closed off to pedestrians, would be reconstructed as part of Alternative 1 and would allow pedestrian access to the north and south sides of the I-105 freeway. The existing pedestrian bridge between Paramount High School and Paramount Park in the City of Paramount would be demolished and replaced with a pedestrian undercrossing or pedestrian tunnel allowing

[1] Flexibility for the development of other performance criteria, perhaps in support of a Public-Private Partnership procurement, is provided. The ultimate criteria used will achieve the same performance standards as those established in the Metro guidance.

undisturbed access to Paramount High School and Paramount Park. Changes to the pedestrian bridges would not change or impair their function, conflict with the surrounding land uses, or physically divide an established community.

Property Acquisition: Partial and full property acquisitions of public facilities and residential, industrial, and commercial properties would be required. Additional information on acquisitions is provided in Section 4.3, Acquisitions and Displacements. Alternative 1 would require partial property acquisitions of existing Los Angeles Department of Water and Power (LADWP) properties in the City of Paramount that parallel the PEROW, contain transmission towers, the Paramount Bike Trail, and are used as a nursery. The partial acquisition of the LADWP properties would not interfere with the use of the transmission towers and transmission lines, and the nursery would continue to operate on the remaining portions of the properties. As a result, the acquisition of these properties would not conflict with the current land uses on the site as current operations would be maintained. Metro's role in the ownership of these parcels would be limited to that of a property owner, and the parcels would be subject to the land use controls of the local jurisdictions. Although Metro transportation projects are not required to adhere to local land use regulations, Metro would comply with local policies and regulations regarding such improvements. Thus, property acquisitions would not conflict with other uses in the surrounding area, physically divide an established community, change or impair the function of surrounding uses, or create new land use incompatibilities.

TPSS Sites: TPSS sites are proposed within or directly adjacent to the rail ROW or on sites currently developed with surface parking lots, commercial uses, industrial uses, nursery uses, or vacant lots, and are not proposed on residential sites. Metro would require partial acquisition of the identified properties once the TPSS locations are finalized. The TPSS sites would be enclosed by a barrier and would not adversely affect circulation patterns, preclude access to the remainder of the potential site and adjacent properties, or affect continued use of the potential sites and adjacent properties for their designated purposes. Although Metro transportation projects are not required to adhere to local land use regulations, Metro would comply with local policies and regulations regarding such improvements. Therefore, no adverse effects regarding land use compatibility would occur.

Bicycle Trails: Alternative 1 would be adjacent to the Paramount Bike Trail and Bellflower Bike Trail, located parallel along and partially within the PEROW. Operation of Alternative 1 within segments of the PEROW extending south from the intersection of Rosecrans Avenue and Paramount Boulevard to Lakewood Boulevard may not have sufficient room to accommodate the project alignment and operate the Paramount Bike Trail safely, which may require a realignment of the Paramount Bike Trail. Specifically, the Paramount Bike Trail segment between Somerset Boulevard and Lakewood Boulevard is located within the PEROW. Alternative 1 would install tracks along the southwest side of the PEROW along this segment requiring the realignment of this segment of the existing bike trail to the north side of the PEROW. The relocation of this segment of the Paramount Bike Trail would require users of the bike trail to cross the railroad tracks at Lakewood Boulevard to access the bike trail across the street.

Alternative 1 would also require the removal of an approximately 930-foot-long segment of the existing Paramount Bike Trail near Somerset Boulevard to accommodate the track alignment; however, the segment close to Lakewood Boulevard would remain. This segment of the existing bike trail is located at the end of the Paramount Bike Trail.

Additionally, Alternative 1 would require realignment of the Bellflower Bike Trail segment east of Bellflower Boulevard on the north side of the PEROW and relocation of a bus stop to accommodate the Bellflower Station platform and tracks. Although segments of the bike trails would be realigned, the bike trail would remain within the PEROW and the function of the bike trail would be maintained. The bike trail and bus stop would continue to be available for use by the community. Nonetheless, implementation of Mitigation Measure LU-1 (Consistency with Bike Plans) would be effective to demonstrate that modifications to the bicycle facilities would maintain continuity with other segments of the Paramount Bike Trail and Bellflower Bike Trail. Changes to the existing trails would not conflict with other uses in the surrounding area, physically divide an established community, change or impair the function of the existing bike trail or surrounding uses, or create new land use incompatibilities. Therefore, no adverse effects regarding land use compatibility would occur.

Summary: Alternative 1 would not conflict with surrounding uses, change the function of the rail ROWs as rail corridors, impede or change the function of the freight tracks and freight sidings that are used by nearby industrial uses, or physically divide an established community. In addition, Alternative 1 would serve the residents, visitors, and employees of the surrounding community and cities. Under NEPA, Alternative 1 would not result in adverse effects related to land use compatibility.

Consistency with Regional Land Use Plans, Policies, and Regulations

Alternative 1 would provide jurisdictions with opportunities to develop compact communities around the public transit system; be an alternative to automobile travel; provide residents, visitors, and employees within the vicinity of the Project another mode of transportation to access regional destinations and employment areas; and would reduce overall air quality emissions and traffic congestion. Alternative 1 would be consistent with SCAG 2016-2040 RTP/SCS Policy 1 as the Project would provide reliable, fixed-guideway transit service that would increase mobility and connectivity for historically underserved, transit-dependent, and environmental justice communities. Alternative 1 would also support Policy 6 to encourage investments and strategies to reduce non-recurrent congestion and demand for single-occupancy vehicle use, and Policy 7 to encourage transportation investments that would result in cleaner air, a better environment, a more efficient transportation system, and sustainable outcomes in the long run. Under NEPA, Alternative 1 would not result in adverse effects related to consistency with regional land use plans for improving mobility.

Consistency with Local Land Use Plans, Policies, and Regulations

Alternative 1 would be consistent with applicable goals, objectives, and policies related to alternative transportation, public transportation, and future growth in transit identified in the general plans, community plans, specific plans, master plans, and bicycle master plans of the affected local jurisdictions. Several major transportation and alternative transportation plans and projects, including bicycle plans, regional transportation plans, and city-funded and Metro-funded TOD plans, are currently being studied in several jurisdictions.

Alternative 1 would connect with local transit lines and bicycle facilities; integrate safety measures for transit users and bicyclists; improve and provide greater transit opportunities to residents, visitors, and employees; and connect with local transit lines and bicycle facilities. Additionally, the station areas would be designed to be pedestrian and bicycle friendly.

Realignment of segments of the Paramount Bike Trail and Bellflower Bike Trail would not result in adverse physical effects or prevent access to existing bike facilities. Mitigation Measure LU-1 (Consistency with Bike Plans), described in Section 4.1.4, would be implemented to maintain connectivity. Alternative 1 could preempt future development and implementation of the planned Class 1 bicycle path along Salt Lake Avenue and the Class I bicycle path north of Rayo Avenue and south of the Los Angeles River, identified in the City of Huntington Park Bicycle Transportation Master Plan, City of Cudahy 2040 General Plan, South Gate Bicycle Transportation Plan, and the City of Bell Bicycle Master Plan. While planned, the bike facilities are unfunded and not scheduled for implementation in local capital improvement budgets/programs. However, Alternative 1 would result in an inconsistency with the current local plans and an adverse effect would occur.

Under Mitigation Measure LU-1 (Consistency with Bike Plans) described in Section 4.1.4, Metro would continue to coordinate with jurisdictions and local agencies to minimize the preemption of future development, goals, and plans within each jurisdiction. As part of this effort, Metro, as appropriate, would support preparation of amended language for each affected bicycle plan demonstrating that planned bicycle facilities could still achieve an individual city's mobility and connectivity goals. However, because the process to amend bike plans is a local process, including public participation, the ultimate outcome and resolution of plan elements cannot be predicted. Therefore, after mitigation, adverse effects would remain for Alternative 1 related to consistency with local land use plans.

4.1.3.3 Alternative 2: 7th Street/Metro Center to Pioneer Station

Land Use Compatibility

Similar to Alternative 1, Alternative 2 would be primarily underground from 7th Street/Metro Center to a point north of the 14th Street/Long Beach Avenue intersection with land uses characterized as highly urbanized and developed. Alternative 2 would not change or impair the function of the surrounding uses or physically divide an established community. Alternative 2 proposed underground stations (i.e., 7th Street/Metro Center, South Park/Fashion District, and Arts/Industrial District) would include station entrances designed and integrated with the surrounding uses. Several on- and off-street parking spaces would also be removed. Neither the stations nor parking removal would introduce any physical barriers or change or impair the function of the surrounding uses; and access to the surrounding community would also remain available.

Alternative 2 would include the same aerial and at-grade stations, structures, and effects from the alignment (i.e., parking, stations, freight track relocation, street closures, barriers, pedestrian bridges, TPSSs, property acquisitions, and bike trails) as those described for Alternative 1. Therefore, the impact conclusions for Alternative 1 are applicable to Alternative 2. Implementation of Mitigation Measure LU-1 (Consistency with Bike Plans), described in Section 4.1.4, would be effective to demonstrate that modifications to the bicycle facilities would maintain continuity with other segments of the Paramount Bike Trail and Bellflower Bike Trail. Under NEPA, Alternative 2 would not result in adverse effects related to land use compatibility.

Consistency with Regional Land Use Plans, Policies, and Regulations

Similar to Alternative 1, Alternative 2 would be consistent with and support SCAG 2016-2040 RTP/SCS Policy 1, Policy 6, and Policy 7. Under NEPA, Alternative 2 would not result in adverse effects related to consistency with regional land use plans for improving mobility.

Consistency with Local Land Use Plans, Policies, and Regulations

Alternative 2 would be consistent with the same applicable goals, objectives, and policies related to alternative transportation, public transportation, and future growth in transit as Alternative 1. Under NEPA, Alternative 2 could preempt the future development and implementation of planned bike paths identified for the Cites of Cudahy, Huntington Park, South Gate, and Bell as discussed under Alternative 1 and result in adverse effects. Implementation of Mitigation Measure LU-1 (Consistency with Bike Plans), described in Section 4.1.4, would be required. However, because the process to amend bike plans is a local process, including public participation, the ultimate outcome and resolution of plan elements cannot be predicted.

Alternative 2 would connect with local transit lines and bicycle facilities; integrate safety measures for transit users and bicyclists; improve and provide greater transit opportunities to residents, visitors, and employees; and connect with local transit lines and bicycle facilities. Additionally, the station areas would be designed to be pedestrian and bicycle friendly.

Realignment of segments of the Paramount Bike Trail and Bellflower Bike Trail would not result in adverse physical effects or prevent access to existing bike facilities. Mitigation Measure LU-1 (Consistency with Bike Plans) would be implemented to maintain connectivity. Alternative 2 could preempt future development and implementation of the planned Class 1 bicycle path along Salt Lake Avenue and the Class I bicycle path north of Rayo Avenue and south of the Los Angeles River, identified in the City of Huntington Park Bicycle Transportation Master Plan, City of Cudahy 2040 General Plan, South Gate Bicycle Transportation Plan, and the City of Bell Bicycle Master Plan. While planned, the bike facilities are unfunded and not scheduled for implementation in local capital improvement budgets/programs. However, Alternative 2 would result in an inconsistency with the current local plans and an adverse effect would occur.

Under Mitigation Measure LU-1 (Consistency with Bike Plans) described in Section 4.1.4, Metro would continue to coordinate with jurisdictions and local agencies to minimize the preemption of future development, goals, and plans within each jurisdiction. As part of this effort, Metro, as appropriate, would support preparation of amended language for each affected bicycle plan demonstrating that planned bicycle facilities could still achieve an individual city's mobility and connectivity goals. However, because the process to amend bike plans is a local process, including public participation, the ultimate outcome and resolution of plan elements cannot be predicted. Therefore, after mitigation, adverse effects would remain for Alternative 2 related to consistency with local land use plans.

4.1.3.4 Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Land Use Compatibility

Alternative 3 does not include an underground alignment. Alternative 3 would include the same aerial and at-grade stations and structures, and effects from the alignment, as those described for Alternatives 1 and 2, with these effects beginning at the tail tracks for the Slauson/A Line Station, located just north of Slauson Avenue in the Florence-Firestone community of unincorporated LA County at 55th Street in the City of Los Angeles. This is a shorter aerial alignment segment than Alternatives 1 and 2, where the northernmost aerial alignment begins at 14th Street/Long Beach Avenue. Therefore, the impact conclusions for Alternatives 1 and 2 are applicable to Alternative 3. Implementation of Mitigation Measure LU-1 (Consistency with Bike Plans) would be effective to demonstrate that modifications to

the bicycle facilities would maintain continuity with other segments of the Paramount Bike Trail and Bellflower Bike Trail. Under NEPA, Alternative 3 would not result in adverse effects related to land use compatibility.

Consistency with Regional Land Use Plans, Policies, and Regulations

Similar to Alternatives 1 and 2, Alternative 3 would be consistent with and support SCAG 2016-2040 RTP/SCS Policy 1, Policy 6, and Policy 7. Under NEPA, Alternative 3 would not result in adverse effects related to consistency with regional land use plans for improving mobility.

Consistency with Local Land Use Plans, Policies, and Regulations

Alternative 3 would be consistent with the same applicable goals, objectives, and policies related to alternative transportation, public transportation, and future growth in transit identified in Alternatives 1 and 2. Under NEPA, Alternative 3 could preempt the future development and implementation of planned bike paths identified for the Cites of Cudahy, Huntington Park, South Gate, and Bell, as discussed under Alternatives 1 and 2.

Alternative 3 would connect with local transit lines and bicycle facilities; integrate safety measures for transit users and bicyclists; improve and provide greater transit opportunities to residents, visitors, and employees; and connect with local transit lines and bicycle facilities. Additionally, the station areas would be designed to be pedestrian and bicycle friendly.

Realignment of segments of the Paramount Bike Trail and Bellflower Bike Trail would not result in adverse physical effects or prevent access to existing bike facilities. Mitigation Measure LU-1 (Consistency with Bike Plans) would be implemented to maintain connectivity. Alternative 3 could preempt future development and implementation of the planned Class 1 bicycle path along Salt Lake Avenue and the Class I bicycle path north of Rayo Avenue and south of the Los Angeles River, identified in the City of Huntington Park Bicycle Transportation Master Plan, City of Cudahy 2040 General Plan, South Gate Bicycle Transportation Plan, and the City of Bell Bicycle Master Plan. While planned, the bike facilities are unfunded and not scheduled for implementation in local capital improvement budgets/programs. However, Alternative 3 would result in an inconsistency with the current local plans and an adverse effect would occur.

Under Mitigation Measure LU-1 (Consistency with Bike Plans) described in Section 4.1.4, Metro would continue to coordinate with jurisdictions and local agencies to minimize the preemption of future development, goals, and plans within each jurisdiction. As part of this effort, Metro, as appropriate, would support preparation of amended language for each affected bicycle plan demonstrating that planned bicycle facilities could still achieve an individual city's mobility and connectivity goals. However, because the process to amend bike plans is a local process, including public participation, the ultimate outcome and resolution of plan elements cannot be predicted. Therefore, after mitigation, adverse effects would remain for Alternative 3 related to consistency with local land use plans.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Land Use Compatibility

Alternative 4 does not include an underground alignment. Alternative 4 would include the same aerial and at-grade stations and structures, and effects from the alignment, as those described for Alternatives 1, 2, and 3, with these effects beginning at the tail tracks for the

I-105/C Line Station at Main Street in the City of South Gate. This is a shorter segment of aerial alignment than Alternatives 1, 2, and 3. Therefore, the impact conclusions for Alternatives 1, 2, and 3 are applicable to Alternative 4. Implementation of Mitigation Measure LU-1 (Consistency with Bike Plans) would be effective to demonstrate that modifications to the bicycle facilities would maintain continuity with other segments of the Paramount Bike Trail and Bellflower Bike Trail. Under NEPA, Alternative 4 would not result in adverse effects related to land use compatibility.

Consistency with Regional Land Use Plans, Policies, and Regulations

Similar to Alternatives 1, 2, and 3, Alternative 4 would be consistent with and support SCAG 2016-2040 RTP/SCS Policy 1, Policy 6, and Policy 7. Under NEPA, Alternative 4 would not result in adverse effects related to consistency with regional land use plans for improving mobility.

Consistency with Local Land Use Plans, Policies, and Regulations

Alternative 4 would be consistent with the same applicable goals, objectives, and policies related to alternative transportation, public transportation, and future growth in transit identified in Alternatives 1, 2, and 3 for the Cites of South Gate, Downey, Paramount, Bellflower, Cerritos, and Artesia.

Alternative 4 would connect with local transit lines and bicycle facilities; integrate safety measures for transit users and bicyclists; improve and provide greater transit opportunities to residents, visitors, and employees; and connect with local transit lines and bicycle facilities. Additionally, the station areas would be designed to be pedestrian and bicycle friendly.

Realignment of segments of the Paramount Bike Trail and Bellflower Bike Trail would not result in adverse physical effects or prevent access to existing bike facilities. Mitigation Measure LU-1 (Consistency with Bike Plans) would be implemented to maintain connectivity. Alternative 4 could preempt future development and implementation of the planned Class 1 bicycle path along Salt Lake Avenue and the Class I bicycle path north of Rayo Avenue and south of the Los Angeles River, identified in the City of Huntington Park Bicycle Transportation Master Plan, City of Cudahy 2040 General Plan, South Gate Bicycle Transportation Plan, and the City of Bell Bicycle Master Plan. While planned, the bike facilities are unfunded and not scheduled for implementation in local capital improvement budgets/programs. However, Alternative 4 would result in an inconsistency with the current local plans and an adverse effect would occur.

Under Mitigation Measure LU-1 (Consistency with Bike Plans) described in Section 4.1.4, Metro would continue to coordinate with jurisdictions and local agencies to minimize the preemption of future development, goals, and plans within each jurisdiction. As part of this effort, Metro, as appropriate, would support preparation of amended language for each affected bicycle plan demonstrating that planned bicycle facilities could still achieve an individual city's mobility and connectivity goals. However, because the process to amend bike plans is a local process, including public participation, the ultimate outcome and resolution of plan elements cannot be predicted. Therefore, after mitigation, adverse effects would remain for Alternative 4 related to consistency with local land use plans.

4.1.3.5 Design Options—Alternative 1

Land Use Compatibility

Design Option 1: LAUS at the Metropolitan Water District (MWD): Design Option 1 would be an underground station and would not change or impair the function of street ROWs, public facilities, and industrial uses. The proposed station entrance would be at-grade, integrated into LAUS, and compatible with its use as a major transit station. No physical barriers would be introduced, and land use compatibility issues would not occur for this design option. Under NEPA, Design Option 1 would not result in adverse effects related to land use compatibility.

Design Option 2: Add Little Tokyo Station: Design Option 2 would be an additional underground station and would not change or impair the function of street ROWs or surrounding land uses. The proposed station entrance would be at-grade and would not introduce physical barriers or land use compatibility issues. Under NEPA, Design Option 2 would not result in adverse effects related to land use compatibility.

Consistency with Regional Land Use Plans, Policies, and Regulations

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Design Options 1 and 2 would be consistent with applicable SCAG 2016-2040 RTP/SCS policies and would provide jurisdictions with opportunities to develop compact communities around a public transit system; be an alternative to automobile travel; provide residents, visitors, and employees within the vicinity of the Project access to regional destinations and employment areas; and would reduce overall air quality emissions and traffic congestion. Therefore, Design Options 1 and 2 would be consistent with regional land use plans, polies, and regulations. Under NEPA, Design Options 1 and 2 would not result in adverse effects related to consistency with regional land use plans.

Consistency with Local Land Use Plans, Policies, and Regulations

Design Option 1: LAUS at MWD: Design Option 1 would be consistent with applicable land use plans, goals, objectives, and policies of regional agencies and local jurisdictions; would provide high-frequency transit service to residents, visitors, and employees of the community; and would promote use of public transit. The station would be designed following MRDC guidance or equivalent criteria and would be convenient, attractive, safe, clearly identifiable, and have user-friendly design amenities. Under NEPA, Design Option 1 would not result in adverse effects related to consistency with local land use plans, policies, and regulations.

Design Option 2: Add Little Tokyo Station: Design Option 2 would provide a direct connection to the Regional Connector Station in the Little Tokyo community, creating a high-frequency transit service for residents, visitors, and employees of the Little Tokyo community and increased use of public transit. Design Option 2 would be consistent with applicable land use plans, goals, objectives, and policies of regional agencies and local jurisdictions. Under NEPA, Design Option 2 would not result in adverse effects related to consistency with local land use plans, policies, and regulations.

4.1.3.6 Maintenance and Storage Facility Site Options

Land Use Compatibility

Paramount MSF Site Option: The Paramount MSF site option would follow MRDC guidance or equivalent criteria and would include barriers around the perimeter of the site to minimize potential adverse effects to surrounding land uses. All functions of the proposed MSF would be located within the facility and would not involve any roadway/intersection closures or turning restrictions that would restrict access to residential neighborhoods or community facilities. Although the MSF site option may potentially close All America City Way along the west side of the site and install security barriers along the perimeter, the MSF site option, including the lead tracks, would not involve roadway/intersection closures or turning restrictions that would restrict access to residential neighborhoods or community facilities. The lead tracks for the MSF site option would be located within the San Pedro Subdivision ROW and would parallel the existing freight rail within the rail ROW. Thus, no residential properties or community facilities would be isolated. Metro would comply with local policies and regulations regarding off-site improvements. The Paramount MSF site option, including the lead tracks, would not conflict with the surrounding land uses; change or impair the function of the surrounding land uses; create any new land use incompatibilities in the surrounding area; or physically divide an established community. Under NEPA, the Paramount MSF site option would not result in adverse effects related to land use compatibility.

Bellflower MSF Site Option: The Bellflower MSF site option would be located on a site currently designated as an open space/recreational use and is currently leased from the City of Bellflower to a private party. The site is currently operating as a recreational commercial business (the Hollywood Sports Paintball and Airsoft Park and Bellflower BMX). The MSF site option is bounded by Somerset Boulevard to the north and multi-family residential uses north of Somerset Boulevard, single family residential uses to the east, a dog park at the southeasterly corner, the San Pedro Subdivision ROW and Bellflower Bike Trail to the south, and a mobile home community and industrial uses to the west.

Operation and design of the Bellflower MSF site option, including the lead tracks, would be similar to the Paramount MSF site option. The existing walls and fencing along the perimeter of the MSF site option are likely to remain with implementation of the MSF site option. If these barriers are removed, other types of security barriers would be installed along the perimeter of the site following MRDC guidance or equivalent criteria and would not physically divide the surrounding community.

Metro would comply with local policies and regulations regarding off-site improvements. The Bellflower MSF site option, including the lead tracks, would not conflict with the surrounding land uses; change or impair the function of the surrounding land uses; create any new land use incompatibilities in the surrounding area; or physically divide an established community.

The Bellflower Bike Trail segment from Lakewood Boulevard south to Clark Avenue is located within the PEROW and south of the proposed Bellflower MSF site option. This segment of the PEROW may not have sufficient room to accommodate the MSF site option lead tracks, light rail transit (LRT) tracks, and operate the Bellflower Bike Trail safely. This may require a realignment in this segment of the Bellflower Bike Trail to maintain connectivity with the Paramount Bike Trail west of Lakewood Boulevard and the other

segments of the Bellflower Bike Trail. Implementation of Mitigation Measure LU-1 (Consistency with Bike Plans) would be effective to demonstrate that modifications to the bicycle facilities would maintain continuity with other segments of the Paramount Bike Trail and Bellflower Bike Trail. Thus, as all functions of the MSF would be located within the facility and the lead tracks would be located within the PEROW, the Bellflower MSF site option would not conflict with and would not change or impair the function of the surrounding land uses. Similarly, the Bellflower MSF site option would not create any new land use incompatibilities in the surrounding area or physically divide an established community. Under NEPA, the Bellflower MSF site option would not result in adverse effects related to land use compatibility.

Consistency with Regional Land Use Plans, Policies, and Regulations

Paramount MSF Site Option and Bellflower MSF Site Option: The Paramount and Bellflower MSF site options would be an integral part of the Project's infrastructure and would support the maintenance, operations, and storage activities for the proposed LRT system. Therefore, both site options would improve the regional transportation system and support SCAG mobility goals by providing a reliable, alternative mode of transportation to the region. As such, the proposed MSF site options would support SCAG regional growth policies. Under NEPA, the Paramount and Bellflower MSF site options would not result in adverse effects related to consistency with regional land use plans.

Consistency with Local Land Use Plans, Policies, and Regulations

Paramount MSF Site Option: The Paramount MSF site option is part of the Project's infrastructure and would support the proposed LRT system and be consistent with applicable goals and policies of the City of Paramount General Plan (City of Paramount 2007). This MSF site option would support the expansion, availability, and use of public transportation in the cities in which the alignment would traverse. Under NEPA, the Paramount MSF site option would not result in adverse effects related to consistency with local land use plans, policies, and regulations.

Bellflower MSF Site Option: The Bellflower MSF site option is part of the infrastructure for the Project and would support the proposed LRT system and be consistent with applicable goals and policies of the City of Bellflower General Plan (City of Bellflower 1994). The site is currently designated as Open Space and is currently owned and leased by the city to a private party for use as a recreational commercial business (Hollywood Sports Paintball and Airsoft Park and Bellflower BMX). The City of Bellflower has confirmed that the site currently operates as a commercial business, that the property is not designated as a significant park or recreation area, and is not designated as having an important role in meeting the park and recreation objectives of the city. Metro continues to coordinate with the city. Based on this coordination it is anticipated that the city would amend the General Plan so that the MSF facility use would be consistent with an appropriate city land use designation. Under NEPA, the Bellflower MSF site option would not result in adverse effects related to consistency with local land use plans, policies, and regulations.

The Bellflower MSF site option would be located adjacent to the Paramount Bike Trail and Bellflower Bike Trail and partially within the PEROW. With implementation of Mitigation Measure LU-1 (Consistency with Bike Plans), connectivity with the bike trails would be maintained, changes to the Paramount Bike Trail and Bellflower Bike Trail would not physically divide the community, affect the character of the existing bike trails, and would not

result in inconsistencies with the *Bellflower-Paramount Active Transportation Plan*. Therefore, no adverse effect would occur.

4.1.4 Project Measures and Mitigation Measures

4.1.4.1 Project Measures

There are no project measures required by law or permit related to land use.

4.1.4.2 Mitigation Measures

The following mitigation measure in its entirety would be implemented for Alternatives 1, 2, and 3 to minimize adverse effects related to inconsistency with the *City of Huntington Park Bicycle Transportation Master Plan* (City of Huntington Park 2014), City of Bell *Bicycle Master Plan* (City of Bell 2016), *Cudahy 2040 General Plan* (City of Cudahy 2018), and *City of South Gate Bicycle Transportation Plan* (City of South Gate 2012). Only the Paramount and Bellflower Bike Trail and the City of South Gate bike plan component of the mitigation measure would be applicable for Alternative 4.

LU-1: **Consistency with Bike Plans.** During the planning process and prior to construction, Metro would prepare amended language for each affected bicycle plan demonstrating that existing, planned, and modified bicycle facilities would be connected during project operation. This language would be subject to the approval of the Cities of Huntington Park, South Gate, Bell, Paramount, and Bellflower, as applicable. Metro would modify the following bike trail segments into a Class II bikeway:

- Within the San Pedro Subdivision Right-of-Way between Ardmore Avenue to Century Boulevard (City of South Gate)
- Along Salt Lake Avenue from Gage Avenue to Florence Avenue (City of Bell)

Metro would relocate the following bike trail segments:

- Paramount Bike Trail segments from Paramount Boulevard to Somerset Boulevard within the Metro-owned Pacific Electric Right-of-Way (PEROW) (City of Paramount)
- Bellflower Bike and Trail segment from Lakewood Boulevard to the maximum extent of Clark Avenue within the Metro-owned PEROW (City of Paramount and City of Bellflower)

4.1.5 California Environmental Quality Act Determination

4.1.5.1 Would the Project physically divide an established community?

No Project Alternative

Under the No Project Alternative, the Build Alternatives would not be constructed and the existing land uses would remain unchanged; no properties would be acquired for the Build Alternatives; no structures along the project alignment would be demolished; and no new structures would be constructed that could divide an established community. The existing freight tracks within the rail ROWs would remain undisturbed, and no aerial structures would be built along the public or rail ROWs. Bike paths proposed within or along the rail ROW could be built and implemented within the rail ROW or along the public ROW that parallel the rail ROW. These bike paths would enhance the existing active transportation corridors for the cities and would not physically divide a community. Therefore, the No

Project Alternative would not physically divide an established community; no impacts would occur; and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Alternative 1 could divide an established community if physical barriers are introduced that would affect access between existing communities and neighborhoods in the Affected Area for land use. Generally, existing development has been built around the rail ROW, which physically separates the neighborhoods and communities within the Affected Area for land use. Alternative 1 would introduce safety barriers along the alignment and stations to hinder residents and workers from illegally crossing the rail tracks and these safety barriers are not expected to physically divide an established community because safe access and crossings throughout the community would be maintained at intersections and via crosswalks. Further, proposed street closures (Long Beach Avenue north of 14th Street, 14th Street west of Long Beach Avenue, Newton Street west of Long Beach Boulevard, and both 188th and 187th Streets in Artesia) and turning restrictions at streets that intersect with Randolph Street (Wilmington Avenue, Regent Street, Albany Street, Rugby Avenue, and Rita Avenue) would not result in permanent access disruptions to existing land uses on either side of the project alignment as access to the surrounding uses would continue to be available through routing of traffic to adjacent streets.

The existing pedestrian bridge on Long Beach Avenue at 53rd Street in the City of Los Angeles would remain at its existing location and accessible to pedestrians. The existing Arthur Avenue pedestrian bridge at the I-105 freeway would be rebuilt to maintain the pedestrian connection across I-105, and the pedestrian bridge between Paramount High School and Paramount Park would be replaced with a pedestrian undercrossing or pedestrian tunnel to maintain pedestrian access. Parking facilities would operate entirely on-site and would not physically divide the surrounding community.

Alternative 1 is not expected to introduce physical barriers or generate permanent access disruptions to existing land uses on either side of the proposed alignment, and access to the surrounding community would remain available. Therefore, Alternative 1 would not divide an established community, impacts would be less than significant, and mitigation would not be required.

Alternative 2: 7th Street/Metro Center to Pioneer Station

Impacts resulting from Alternative 2 would be the same as Alternative 1. Alternative 2 would not introduce physical barriers or generate permanent access disruptions to existing land uses on either side of the project alignment, and access to the surrounding community would remain available. Therefore, Alternative 2 would not divide an established community; impacts would be less than significant; and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Impacts resulting from Alternative 3 would be the same as Alternatives 1 and 2, but with impacts beginning at its northern terminus at the Slauson/A Line Station in the City of Los Angeles/Florence-Firestone community of LA County rather than in downtown Los Angeles. Alternative 3 would not introduce physical barriers or generate permanent access disruptions to existing land uses on either side of the project alignment, and access to the surrounding community would remain available. Therefore, Alternative 3 would not divide an established community; impacts would be less than significant; and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Impacts resulting from Alternative 4 would be the same as Alternatives 1, 2, and 3 beginning at its northern terminus at the I-105/C Line Station in the City of South Gate. Alternative 4 would not introduce physical barriers or generate permanent access disruptions to existing land uses on either side of the project alignment, and access to the surrounding community would remain available. Therefore, Alternative 4 would not divide an established community; impacts would be less than significant; and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Design Options 1 and 2 would be constructed underground, with station entrances located at-grade and integrated with the surrounding community and area. No physical barriers would be introduced. Therefore, Design Option 1 and Design Option 2 would not physically divide an established community; impacts would be less than significant, and mitigation would not be required.

Maintenance and Storage Facility Site Options

Paramount MSF Site Option and Bellflower MSF Site Option: The Paramount and Bellflower MSF site options, including the lead tracks for each option, would be designed following MRDC guidance or equivalent criteria and would include barriers around the perimeter of the site with all functions of the proposed MSF located within the facility. The MSF site options, including the lead tracks, would not involve roadway/intersection closures or turning restrictions that would restrict access to residential neighborhoods or community assets. The lead tracks for the Paramount MSF site option would be within the San Pedro Subdivision ROW, and the lead tracks for the Bellflower MSF site option would be within the PEROW. Therefore, the Paramount MSF site option and Bellflower MSF site option would not physically divide an established community; impacts would be less than significant; and mitigation would not be required.

4.1.5.2 Would the Project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

No Project Alternative

The No Project Alternative would result in a continuation of current land use development patterns and trends that are not expected to change. Land uses in the Affected Area for land use would remain similar to existing conditions and would not conflict with applicable land use plans, policies, or regulations. However, the No Project Alternative would limit the opportunity to intensify land uses at potential project station areas and throughout the corridor, limit jurisdictions from developing compact communities around a public transit system, and limit alternatives to automobile travel. Bike paths proposed within or along the rail ROW identified in the *City of Los Angeles 2010 Bicycle Master Plan*, *City of Cudahy 2040 General Plan*, *City of Huntington Park Bicycle Transportation Master Plan*, *South Gate Bicycle Transportation Plan*, *City of Bell Bicycle Master Plan*, and *Bellflower-Paramount Active Transportation Plan* could be built and implemented. As the No Project Alternative would be inconsistent with applicable regional and local land use plans goals, objectives, and policies that are intended to avoid or mitigate environmental effects, significant and unavoidable impacts would occur.

Alternative 1: Los Angeles Union Station to Pioneer Station

Alternative 1 would be generally consistent with the applicable land use plans, goals, objectives, and policies of regional agencies and local jurisdictions. Alternative 1 would provide an alternative mode of transportation to the automobile; provide regional transit services to the Affected Area for land use; improve and provide greater transit opportunities to residents, visitors, and employees in the Affected Area for land use; construct transit stations that are pedestrian and bicycle friendly; and integrate safety measures for transit users and bicyclists. However, Alternative 1 could preempt future development and implementation of planned bike paths identified for the Cites of Cudahy, Huntington Park, South Gate, and Bell, as there would be inadequate space to accommodate the planned bicycle paths, project tracks, and relocated freight tracks. Alternative 1 would also require the realignment of existing segments of the Paramount Bike Trail and Bellflower Bike Trail. The preempted planned bike paths and potential impacts are detailed in Section 4.1.3.2. Converting the planned Class I bicycle paths into Class II or Class III bicycle paths is feasible and would maintain the connectivity identified in the bicycle master plans. However, the reclassification of the bike paths is considered an inconsistency with the current bike plans and a significant impact would occur.

Metro continues to coordinate with jurisdictions and local agencies so that Alternative 1 would not preempt future development, goals, and plans within each jurisdiction. Under Mitigation Measure LU-1 (Consistency with Bike Plans) described in Section 4.1.4, Metro would continue to coordinate with jurisdictions and local agencies to minimize the preemption of future development, goals, and plans within each jurisdiction. As part of this effort, Metro, as appropriate, would support preparation of amended language for each affected bicycle plan demonstrating that planned bicycle facilities could still achieve an individual city's mobility and connectivity goals. However, because the process to amend bike plans is a local process, including public participation, the ultimate outcome and resolution of plan elements cannot be predicted. As such, despite Metro's best efforts and coordination and with the implementation of mitigation, Alternative 1 may still preempt future development and the implementation of the planned bike paths. Therefore, even with implementation of mitigation, Alternative 1 would result in a significant and unavoidable impact.

Mitigation Measures: Mitigation Measure LU-1 (Consistency with Bike Plans).

Impacts Remaining After Mitigation: Significant and unavoidable impact.

Alternative 2: 7th Street/Metro Center to Pioneer Station

Alternative 2 would be consistent with the same applicable goals, objectives, and policies related to alternative transportation, public transportation, and future growth in transit identified for Alternative 1. As with Alternative 1, Alternative 2 could preempt the future development and implementation of planned bike paths identified for the Cites of Cudahy, Huntington Park, South Gate, and Bell. Implementation of Mitigation Measure LU-1 (Consistency with Bike Plans) would be required. However, because the process to amend bike plans is a local process, including public participation, the ultimate outcome and resolution of plan elements cannot be predicted. Similar to Alternative 1, Alternative 2 may still preempt future development and implementation of the future bike paths. Therefore, even with implementation of mitigation, Alternative 2 would result in a significant and unavoidable impact.

Mitigation Measures: Mitigation Measure LU-1 (Consistency with Bike Plans).

Impacts Remaining After Mitigation: Significant and unavoidable impact.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Alternative 3 would be consistent with the same applicable goals, objectives, and policies related to alternative transportation, public transportation, and future growth in transit as Alternatives 1 and 2. As with Alternatives 1 and 2, Alternative 3 could preempt the future development and implementation of planned bike paths identified for the Cites of Cudahy, Huntington Park, South Gate, and Bell. Implementation of Mitigation Measure LU-1 (Consistency with Bike Plans) would be required. However, because the process to amend bike plans is a local process, including public participation, the ultimate outcome and resolution of plan elements cannot be predicted. Similar to Alternatives 1 and 2, Alternative 3 may still preempt future development and implementation of the future bike paths. Therefore, even with implementation of mitigation, Alternative 3 would result in a significant and unavoidable impact.

Mitigation Measures: Mitigation Measure LU-1 (Consistency with Bike Plans).

Impacts Remaining After Mitigation: Significant and unavoidable impact.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Similar to Alternatives 1, 2 and 3, Alternative 4 would be consistent with the same applicable goals, objectives, and policies related to alternative transportation, public transportation, and future growth in transit identified in the general plans, specific plans, master plans, and bicycle master plans for the Cities of South Gate, Downey, Paramount, Bellflower, Cerritos, and Artesia. As with Alternatives 1, 2, and 3, Alternative 4 could preempt the future development and implementation of the planned bike path in the City of South Gate. Alternative 4 would also require the realignment of existing segments of the Paramount Bike Trail and Bellflower Bike Trail as discussed for Alternatives 1, 2, and 3. Implementation of Mitigation Measure LU-1 (Consistency with Bike Plans) would be required. However, because the process to amend the bike plan is a local process, including public participation, the ultimate outcome and resolution of plan elements cannot be predicted. Similar to Alternatives 1, 2, and 3, Alternative 4 may still preempt future development and implementation of the future bike path. Therefore, even with implementation of mitigation, Alternative 4 would result in a significant and unavoidable impact.

Mitigation Measures: Mitigation Measure LU-1 (Consistency with Bike Plans).

Impacts Remaining After Mitigation: Significant and unavoidable impact.

Design Options—Alternative 1

Design Option 1: LAUS at MWD: Design Option 1 would be consistent with applicable City of Los Angeles land use plans and policies; would provide high-frequency transit service to residents, visitors, and employees of the community; and would promote use of public transit. The station would be designed following MRDC guidance or equivalent criteria and would be convenient, attractive, safe, clearly identifiable, and have user-friendly design amenities. Therefore, impacts would be less than significant and mitigation would not be required.

Design Option 2: Add Little Tokyo Station: Design Option 2 would provide a direct connection to the Regional Connector Station in the Little Tokyo community, creating a high-frequency transit service for residents, visitors, and employees of the Little Tokyo community and

increased use of public transit. Design Option 2 would be consistent with the applicable local land use policies and regulations. Therefore, impacts would be less than significant and mitigation would not be required.

Maintenance and Storage Facility

Paramount MSF Site Option: The Paramount MSF site option is part of the infrastructure for the Project and would support the maintenance, operations, and storage activities for the LRT. The Paramount MSF site option would improve the regional transportation system and support SCAG mobility goals by providing a reliable, alternative mode of transportation to the region. The Paramount MSF site option would also support the expansion, availability, and use of public transportation in the cities, consistent with applicable goals and policies of the *City of Paramount General Plan* (City of Paramount 2007). Therefore, impacts would be less than significant and mitigation would not be required.

Bellflower MSF Site Option: The Bellflower MSF site option is part of the infrastructure for the Project, would support the proposed LRT system, and would support SCAG mobility goals and be consistent with applicable goals and policies of the City of Bellflower General Plan (City of Bellflower 1994).

Section 4.1.3.7 discusses the realignment of the segment of the Bellflower Bike Trail located within the PEROW. The Bellflower MSF site option would be located adjacent to the Paramount Bike Trail and Bellflower Bike Trail and partially within the PEROW. With implementation of Mitigation Measure LU-1 (Consistency with Bike Plans), connectivity with the bike trails would be maintained, changes to the Paramount Bike Trail and Bellflower Bike Trail would not physically divide the community, affect the character of the existing bike trails, and would not result in inconsistencies with the *Bellflower-Paramount Active Transportation Plan*. Therefore, with implementation of mitigation, impacts for the Bellflower MSF site option as it relates to the land use of the site would be less than significant.

Mitigation Measures: Mitigation Measure LU-1 (Consistency with Bike Plans).

Impacts Remaining After Mitigation: Less than significant impact.

4.2 Communities and Neighborhoods

This section summarizes the potential adverse effects and impacts from the No Build and Build Alternatives, including design options and MSF site options as they relate to communities and neighborhoods. Information in this section is based on the *West Santa Ana Branch Transit Corridor Project Final Communities and Neighborhoods Impact Analysis Report* (Metro 2021n) (Appendix G). Discussion of CEQA thresholds related to physically dividing an established community is provided in Section 4.1, Land Use.

4.2.1 Regulatory Setting and Methodology

4.2.1.1 Regulatory Setting

No federal and state plans, policies, or regulations are applicable regarding communities and neighborhoods.

Regional

Regional plans and policies related to community and neighborhoods include the SCAG 2016-2040 RTP/SCS, which identifies priorities for transportation planning within the SCAG region,

sets goals and policies, and identifies performance measures for transportation improvements for future projects with other planning goals for the area. The SCAG 2016-2040 RTP/SCS goals focus on communities and neighborhoods and include the following: (1) align the plan investments and policies with improving regional economic development and competitiveness, and (2) encourage land use and growth patterns that facilitate transit and active transportation.

Local

Local regulations and plans reviewed for policies related to community and neighborhoods are the same as listed for land use (see Section 4.1.1).

4.2.1.2 Methodology

For purposes of the community and neighborhood analysis, the Affected Area for communities is defined as those areas located 0.25 mile on each side of the proposed alignments, parking facilities, and MSF site options, and 0.5 mile around the proposed station areas as these areas have been identified to be the area of potential impact. Population, household, employment, and other demographic data (e.g., ethnicity, age, and languages spoken at home) is based on data from the U.S. Census Bureau and the 2015 American Community Survey (ACS) 5-Year Estimates (U.S. Census Bureau 2016).

Potential effects on communities and neighborhoods considers potential physical, social, or psychological barriers within an established community or neighborhood. Three primary components that affect communities and neighborhoods are addressed in this analysis: access and mobility, community character and cohesion, and community stability. Access and mobility are generally affected by the following elements: provision of parking, at-grade crossings, turning restrictions, street closures, and vehicle delay at intersections. The provision of sidewalks, underpasses and overpasses, safety barriers, and walls could also affect access and mobility of a community. Community character and cohesion are generally affected by the following elements: access to community facilities; displacement of residences, community assets, and commercial businesses; changes in noise levels; changes in visual character; changes to the types of land uses in an affected area; and demographic changes. Community stability can be determined by how long residents have lived at their current addresses. Communities or neighborhoods that generally experience frequent turnover are expected to be less cohesive than those that experience long-term residency. A large proportion of individuals remaining in the same house for a long period of time can indicate a strong cohesive community.

Adverse effects to access and mobility would occur if proposed parking facilities, at-grade crossings, turning restrictions, street closures, vehicle delays, safety barriers, and sound walls would impede access and mobility in the affected communities. The provision of pedestrian facilities, such as sidewalks and underpasses, were also considered when determining the Project's effect on access and mobility. Adverse effects on community stability would occur if the Project would cause residents to move out of the affected communities.

To comply with NEPA, an adverse effect on community character and cohesion would occur if the Project results in the following:

- Displace residences or community assets that would result in the isolation of a residential neighborhood or community assets from its community;
- Alter the physical layout of a community;
- Change surrounding visual character and noise levels in a manner that would alter the character of the affected community;

- Change land uses that would be inconsistent with the goals, policies, and objectives of the affected communities' plans; or
- Alter the demographics of the affected communities.

This analysis relies on the analysis of several other environmental topics, including Transportation (Chapter 3), Land Use (Section 4.1), Acquisitions and Displacements (Section 4.3), Visual and Aesthetics (Section 4.4), Air Quality (Section 4.5), Noise (Section 4.7), and Parklands and Community Facilities (Section 4.16).

To satisfy CEQA requirements, communities and neighborhoods impacts were analyzed in the context of population and housing in accordance with *CEQA Guidelines*. The Appendix G thresholds are identified in Section 4.2.5. *CEQA Guidelines* thresholds related to community and neighborhoods are also analyzed in Section 4.1.5 of the Land Use Section and 4.3.5 of the Acquisitions and Displacements Section.

4.2.2 Affected Environment/Existing Conditions

A community is defined in part by behavior patterns that individuals or groups of individuals hold in common (e.g., daily social interactions, use of local facilities, participation in local organizations, and involvement in activities that satisfy the population's economic and social needs) and shared perceptions or attitudes. Communities are generally grouped by geographical areas. A community asset is generally a facility that can be used to improve the quality of or characterize a community and can include community facilities and other types of facilities that characterize or support a community (i.e., medical centers, museums, and historic resources). Community stability can be determined by how long the residents have lived at their current addresses. The strength or cohesion of a community or neighborhood to successfully adapt to change is a function of the homogeneity of the population and its diversity, similarities in income, and shared cultural or ethnic backgrounds (Local Government Association 2004).

4.2.2.1 Affected Area Communities and Neighborhoods

The Affected Area for communities for each Build Alternative includes the following established communities[2] in which the alignment would traverse through or be adjacent to; these communities are illustrated in Figure 4.2-1. Figure 4.1-1 through Figure 4.1-5 in Section 4.1.2.1 also show the distribution of the land uses for each community:

- **Alternatives 1 and 2:** Los Angeles (including the Central City, Central City North, and Southeast Los Angeles Community Plan Areas), the unincorporated Florence-Firestone of LA County, Vernon, Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, Artesia, and Cerritos
- **Alternative 3:** Los Angeles (including the Southeast Los Angeles Community Plan Area), unincorporated Florence-Firestone of LA County, Vernon, Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, Artesia, and Cerritos
- **Alternative 4:** South Gate, Paramount, Bellflower, Artesia, and Cerritos

[2] For purposes of this analysis, the Central City, Central City North, and Southeast Los Angeles Community Plan Areas (CPA) in the City of Los Angeles and the unincorporated Florence-Firestone community of LA County are considered established communities within the Affected Area. CPAs are specific to the City of Los Angeles and establish neighborhood-specific goals and implementation strategies to achieve the broad objectives laid out in the City's General Plan. All other jurisdictions within the Affected Area (Vernon, Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, Artesia, and Cerritos) are considered an established community unless there are specific subareas of concern.

Figure 4.2-1. Communities along the Project Alignment



Source: Prepared for Metro in 2020

4.2.2.2 Demographic and Socioeconomic Characteristics of the Affected Area

Population, Housing, and Employment

Table 4.2.1 and Table 4.2.2 present the projected increase from existing 2017 conditions to the 2042 build-out year in population, housing, and employment for the Build Alternatives and station areas, respectively. The growth for Los Angeles County is also included in both tables for comparison purposes. Communities within the Affected Area for communities vary in terms of population density, and areas with a higher population density generally demonstrate a need for expanded transit service.

Table 4.2.1. Projected Growth in Population, Housing, and Employment of the Build Alternatives (2017-2042)

Build Alternative	Population	Housing	Employment
Los Angeles County	12.0%	12.0%	17.0%
Alternative 1	59.9%	66.4%	32.4%
Alternative 2	74.9%	84.5%	24.7%
Alternative 3	59.2%	62.0%	22.4%
Alternative 4	62.2%	65.9%	19.9%

Source: Metro 2021n

Table 4.2.2. Projected Growth in Population, Housing, and Employment of the Build Alternatives by Station Area (2017-2042)

	Station Area	Population	Housing	Employment
	Los Angeles County	12.0%	12.0%	17.0%
Alternative 1	LAUS (Forecourt) Station	68.3%	53.1%	16.8%
	Arts/Industrial District Station	232.0%	84.8%	74.1%
Alternative 2	7th St/Metro Center Station	107.7%	91.1%	8.3%
	South Park/Fashion District Station	128.6%	96.0%	27.1%
	Arts/Industrial District Station	226.2%	83.9%	80.1%
Alternatives 1, 2, and 3	Slauson/A Line Station	52.1%	56.7%	54.5%
	Pacific/Randolph Station	19.1%	21.4%	16.8%
	Florence/Salt Lake Station	19.9%	22.4%	22.4%
	Firestone Station	72.2%	74.8%	10.7%
	Gardendale Station	78.9%	93.3%	10.9%
Alternatives 1, 2, 3 and 4	I-105/C Line Station	25.4%	37.1%	33.9%
	Paramount/Rosecrans Station	21.6%	33.7%	41.1%
	Bellflower Station	40.6%	38.6%	17.5%
	Pioneer Station	109.2%	106.0%	22.1%
Design Options (Alternative 1)	LAUS (MWD)	68.3%	53.1%	16.8%
	Little Tokyo Station	189.8%	114.7%	35.1%

Source: Metro 2021n
Notes: LAUS = Los Angeles Union Station; MWD = Metropolitan Water District

Residential Stability

An indicator of the stability of a community or neighborhood can be determined by how long the residents have lived at their current addresses. Communities or neighborhoods that generally experience frequent turnover of residents would be expected to be less cohesive than those whose population resides in the same location long term. Low neighborhood stability may be a result of several factors, such as neighborhood dynamics, housing conditions, and metropolitan and housing market trends (Urban Institute 2018). The Project would have an adverse effect on community stability if it would cause residents to move out of their communities. The best available data to determine residential stability is the U.S. Census Bureau 2015 ACS data for "Residents in Same House After 1 Year." Based on this data, overall neighborhood stability in the Affected Area for communities is high and exceeds the LA County average of the percentage residents in the same residence after one year (87.2 percent), with the exception of Central City North (72.6 percent), Central City (67.4 percent), and Artesia (86.1 percent).

Age, Race and Ethnicity, and Languages Spoken at Home

Age is an important neighborhood characteristic as age patterns affect labor force participation, mobility, shopping patterns, and home purchases. As such, areas with large elderly or young populations tend to require different types of services than those areas with a high population of working-age people. Communities with the largest population under the age of 18 include Southeast Los Angeles (33.8 percent), Cudahy (32.6 percent), and Florence-Firestone (32.5 percent). Communities with the highest percentage of residents 65 years and older include Cerritos (20.2 percent), Vernon (19.5 percent), and Central City (14.7 percent). Cudahy represents a younger population with a median age of 27.0 years, and Vernon represents an older population with a median age of 51.3 years.

The Affected Area for communities includes several different ethnic and racial groups, which also define a community. All communities in the Affected Area for communities have a minority population over 50 percent. Communities with the largest number of Hispanic/Latino residents include Huntington Park (97.3 percent), Cudahy (96.2 percent), and South Gate (95.5 percent). Cerritos (60.5 percent) and Artesia (39.8 percent) have the largest number of Asian residents. Central City (19.8 percent) and Southeast Los Angeles (17.5 percent) have the highest percentage of Black/African American residents.

The language chosen to be spoken at home can characterize a community through racial and ethnic identity. The largest percentage of residents speaking Spanish at home are in Huntington Park (93.6 percent), Cudahy (92.5 percent), and South Gate (89.0 percent). The largest percentage of residents speaking an Asian/Pacific Island language are in Cerritos (41.8 percent) and Central City North (34.1 percent).

4.2.3 Environmental Consequences/Environmental Impacts

4.2.3.1 No Build Alternative

The transportation projects under the No Build Alterative would help improve mobility and access for residents within existing communities in the Affected Area for communities. Additionally, the projects under the No Build Alternative are not expected to alter the character and identity of the Affected Area for communities, but the projects would be subject to separate environmental review as required by federal and state law. The regional and local projects associated with the No Build Alternative would not introduce new barriers that would divide communities and are not anticipated to displace or disrupt existing residences

within the Affected Area for communities since these projects would occur within existing transportation corridors. Under the No Build Alternative, the Build Alternatives would not be developed. Under NEPA, the No Build Alternative would not adversely affect community access, mobility, community character, and cohesion; and adversely affect the stability of the communities within the Affected Area for communities.

4.2.3.2 Alternative 1: Los Angeles Union Station to Pioneer Station

Access and Mobility

Table 4.2.3 summarizes the project components that have the potential to affect community access and mobility within the Affected Area for communities, including the provision of parking, at-grade crossings, turning restrictions, street closures, and vehicle delay at intersections. The potential for the proposed sidewalks, pedestrian underpasses, safety barriers, and sound walls to affect access and mobility are discussed below. Additional details regarding access and mobility are provided in Chapter 3, Transportation.

Parking: Alternative 1 would provide an alternative mode of transportation with improved access and mobility in which pedestrian activities surrounding the proposed stations could increase. Parking facilities are proposed in South Gate, Paramount, Bellflower, and Artesia. Although no parking facilities are proposed in Cerritos, the proposed parking facility at Pioneer Station would be adjacent to this community. These proposed parking facilities would provide better access to the transit line to residents that live farther from the proposed stations. The proposed parking facility at the I-105/C Line Station in South Gate would further improve access to the regional transportation system as residents in the surrounding area would have access to both the proposed transit line and the Metro C (Green) Line. At this station, the Project would construct a new Metro C (Green) Line Station platform within the median of the I-105 freeway. While some of the proposed parking facilities are located adjacent to residential neighborhoods, none of the proposed facilities would impede access and mobility of motorists, pedestrians, and bicyclists to residential neighborhoods and community assets. Rather, regional and local access to and from these communities would increase.

Street Closures: Alternative 1 would result in permanent street closures at Long Beach Avenue north of 14th Street and at 14th Street west of Long Beach Avenue in the Central City community to accommodate the transition from an underground alignment to an aerial alignment. Access to industrial properties that are not acquired would be maintained through traffic routing within the surrounding local streets (i.e., Olympic Boulevard, 15th Street, Hooper Avenue, Compton Avenue, McGarry Street, and Alameda Street), located within one to three blocks from the proposed street closures. For example, motorists could access properties on the west side of the alignment via 15th Street or Olympic Boulevard and turn onto Hooper Avenue. Motorists could access properties on the east side of the alignment via 15th Street or Olympic Boulevard and turn onto Long Beach Avenue, McGarry Street, or Alameda Street. Although pedestrians and bicyclists could also be affected by the street closures, the street closures are located in an industrial area, and no residential neighborhoods or community assets would be adversely affected. In addition, 188th Street between Corby Avenue and Pioneer Boulevard and 187th Street and Corby Avenue in Artesia would be permanently closed to build a parking structure, accommodate traffic flow, and reduce cut-through traffic. However, vehicle, pedestrian, and bicycle access to the surrounding properties would be maintained through the surrounding streets (i.e., Pioneer Street, South Street, and Corby Avenue), which are one or two blocks (or less than 500 feet) from the proposed street closure. Therefore, street closures would not adversely affect access to and from the surrounding communities.

Table 4.2.3. Project Effects on Access and Mobility within Affected Area

	Community	Proposed Station(s)	Proposed Parking Lot	Parking Lot Adjacent to Residential	Street Closures	At-Grade Grade Crossings	Intersections Adversely Affected by Project[1]	Turning Restrictions	Access and Mobility Disrupted by Project?[2]
Alternative 1	Central City North	LAUS (Forecourt); Arts/Industrial District Design Options 1 and 2: LAUS (MWD); Little Tokyo	—	—	0	0	0	0	No
	Central City	Design Option 2: Little Tokyo (Optional); Arts/Industrial District	—	—	2[3]	0	0	0	No
Alternative 2	Central City	7th St/Metro Center; South Park/Fashion District; Arts/Industrial District	—	—	2[3]	0	0	0	No
	Central City North	Arts/Industrial District	—	—	0	0	0	0	No
Alternatives 1, 2, and 3	Southeast Los Angeles	Slauson/A Line	—	—	0	0	0	0	No
	Florence-Firestone	Slauson/A Line	—	—	0	0	0	1[4]	No
	Huntington Park	Pacific/Randolph; Florence/Salt Lake	—	—	0	13[5]	10	7[4]	No
	Bell	No station; alignment only	—	—	0	2[6]	2	0	No
	Vernon	No station; alignment only	—	—	0	1[7]	0	0	No
	Cudahy	No station; alignment only	—	—	0	4[8]	0	0	No

	Community	Proposed Station(s)	Proposed Parking Lot	Parking Lot Adjacent to Residential	Street Closures	At-Grade Grade Crossings	Intersections Adversely Affected by Project[1]	Turning Restrictions	Access and Mobility Disrupted by Project?[2]
	South Gate	Firestone	600 spaces	No	0	8[9]	0	0	No
Alternatives 1, 2, 3, and 4	South Gate	I-105/C Line	326 spaces	Yes	0	8[9]	0	0	No
	Downey	Gardendale	—	—	0	1[10]	0	0	No
	Paramount	Paramount/ Rosecrans	490 spaces	No	0	2[11]	0	0	No
	Bellflower	Bellflower	263 spaces	Yes	0	3[11]	0	0	No
	Cerritos	No station; alignment only	—	—	0	4[12]	0	0	No
	Artesia	Pioneer	1,100 spaces	Yes	2	3[13]	0	0	No

Source: Metro 2021n

Notes: — = Not Available/Not Applicable; LAUS = Los Angeles Union Station; MWD = Metropolitan Water District

[1] Metro 2021s.

[2] Access includes vehicular, pedestrian, and bicycle.

[3] The two street closures under Alternative 1 are at the same locations as Alternative 2.

[4] One turning restriction is shared with Florence/Firestone and Huntington Park since it is located at the boundary of these two communities.

[5] One at-grade grade crossing is shared with Vernon; two are shared with Bell; and two are shared with Cudahy since the grade crossings are located at the Huntington Park/Vernon, Huntington Park/Bell, and Huntington Park/Cudahy city boundaries, respectively.

[6] The two at-grade grade crossings are shared with Huntington Park as it is located at the Huntington Park/Bell city boundary.

[7] At-grade grade crossing is shared with Huntington Park since it is located at the Huntington Park/Vernon city boundary.

[8] Three at-grade grade crossing are shared with Huntington Park and/or South Gate. These grade crossings are located at the Huntington Park/Cudahy, Huntington Park/Cudahy/South Gate, and Cudahy/South Gate city boundaries.

[9] Three at-grade grade crossings are shared with Huntington Park, Cudahy, and/or Downey. These grade crossings are located at the Huntington Park/Cudahy/South Gate, South Gate/Cudahy, and South Gate/Downey city boundaries. One at-grade grade crossing is located on a private roadway of industrial properties.

[10] At-grade crossing is shared with South Gate since it is located at the South Gate/Downey city boundary.

[11] One at-grade grade crossing is located at the Paramount/Bellflower city boundary.

[112] One at-grade grade crossing is located on a private driveway of an industrial property, and one is located at the Artesia/Cerritos city boundary.

[13] One at-grade grade crossing is shared with Cerritos since it is located at the Artesia/City of Cerritos city boundary.

Vehicle Delays at Intersections and Turning Restrictions: Alternative 1 would result in adverse effects at 12 intersections after mitigation, and turning restrictions would occur at 5 streets that intersect with Randolph Street (i.e., Wilmington Avenue, Regent Street, Albany Street, Rugby Avenue, and Rita Avenue) that would prevent vehicles from turning left and from crossing Randolph Street. Truck turning restrictions would exist at both the Randolph Street/Alameda Avenue East and Randolph Avenue/Pacific Boulevard intersections. Alternative 1 could result in operational changes to the lengths of vehicle queues from nearby intersections back to train crossings and result in vehicle delays. The result could be vehicles stopped on the tracks, unless other measures are taken, such as placing signs to indicate that stopping on the tracks is not permitted.

To minimize the potential for vehicles queuing onto at-grade crossings, project measures TR PM-1 though TR PM-9, described in Chapter 3, Section 3.5.1 of the Transportation Chapter, would be implemented that would include existing at-grade crossing improvements, traffic signal installations, lane modifications, and street closures to enhance the safety and operations of traffic operations with Alternative 1 in place. With these design features, the vehicles in the queue would be prevented from stopping on the tracks, eliminating potential conflicts from queues on Alternative 1. Mitigation Measures TRA-1 through TRA-19, which are specific intersection improvements described in Chapter 3, Section 3.5.1.2 of the Transportation Chapter, would be implemented; however, adverse impacts would remain for several intersections even with the implementation of these mitigation measures. Nonetheless, the vehicle delays would be minimized with the project measures and mitigation measures, and access to community assets or residential neighborhoods would be maintained.

Access to the streets with turning restrictions would still be maintained through traffic routing within the surrounding local streets. Motorists would be required to proceed to the next cross street with a grade crossing (one to two blocks away) and make a U-turn to access the opposite side of Randolph Street and the cross streets with turning restrictions. The proposed turning restrictions along Randolph Street would not adversely affect access and mobility of pedestrians and bicyclists as community assets and residential neighborhoods are generally south of Randolph Street. At Rugby Avenue, residential neighborhoods are situated to the north and south of Randolph Street. Motorists, pedestrians, and bicyclists could still use other grade crossings to access the uses on the opposite side of the street. Similarly, residential uses on the south side of Randolph Street at Rita Avenue could access the commercial development and residential neighborhood north of Randolph Street via existing grade crossings. The existing grade crossing on Frontage Road in South Gate would be closed; however, this grade crossing is located on a private industrial property and does not provide access to any community assets or residential neighborhoods.

At-Grade Grade Crossings: Approximately 9 new at-grade grade crossings are proposed from Somerset Boulevard (Paramount) to the southern terminus in Artesia, and existing grade crossings (active and inactive) throughout the project corridor would be improved. Depending on the location of the existing and new grade crossings, vehicle and pedestrian crossing gates, new or restriped pedestrian crosswalks, new traffic signals, and/or raised medians would be installed to increase safety and improve access and mobility at the grade crossings. Such safety measures are not considered community barriers but may create physical barriers along the alignment to prevent pedestrians from unsafely crossing the railroad tracks mid-block and at grade crossings. Existing pedestrian crossings would remain available at intersections with grade crossings. In addition, new pedestrian crosswalks would be installed on Salt Lake Avenue, on the south side of the Florence/Salt Lake Station, Century Boulevard, Pacific Avenue, and on the west side of the Bellflower Station.

Sidewalks, Pedestrian Underpasses, Safety Barriers, and Sound Walls: Other project components that may affect access and mobility include a new sidewalk, a pedestrian underpass, and safety barriers and sound walls. A sidewalk on the south side of the I-105 freeway between the San Pedro Subdivision ROW and the Arthur Avenue pedestrian bridge would be added to allow residents southeast of the San Pedro Subdivision ROW in the Paramount community easier access to the new Metro C (Green) Line Station at the I-105 freeway median and the I-105/C Line Station. The existing pedestrian bridge over the PEROW between Paramount Park and Paramount High School would be demolished and replaced with an undercrossing, which would connect Paramount Park and Paramount High School.

Alternative 1 would include installation of safety barriers along at-grade portions of the project alignment that parallel street right-of-way or sound walls (see Mitigation Measure NOI-1 [Soundwalls]), both of which would prevent informal crossings of railroad tracks and would avoid potential conflicts between pedestrians and LRT vehicles. Residents within the Affected Area for communities would continue to use the existing grade crossings to access adjacent neighborhoods and nearby community facilities.

Summary: While increased vehicle delays at intersections, turning movement restrictions, street closures, and installation of safety barriers or sound walls would occur under Alternative 1, the physical layout of the affected communities would remain similar to existing conditions and would not impede community access and mobility. Alternative 1 would shift some access and mobility patterns in the Affected Area for communities, resulting in different community access routes when compared to those under existing conditions. Access to the surrounding residential neighborhoods, businesses, and community assets would remain. Under NEPA, Alternative 1 would not result in adverse effects related to community access and mobility.

Community Character and Cohesion

The Project has the potential to affect community character and cohesion as it has the potential to affect access to community facilities; permanently displace residences and community assets; increase noise levels; alter visual character; change the types of land uses that could be built around the proposed stations; and increase population surrounding the proposed stations. Table 4.2.4 identifies and summarizes how project-related changes in noise levels, changes in the access to community facilities, acquisition and displacement, and changes in visual character have the potential to affect community character and cohesion as a result of the Build Alternatives within the Affected Area for communities. The potential for land use and demographic changes to affect community character and cohesion are discussed further below.

Acquisition and Displacement: Alternative 1 would require permanent partial or full property acquisitions to accommodate underground easements for the subterranean portion of the alignment, aerial easements for aerial structures, grade separations, track alignments, TPSS, stations, and parking facilities. As summarized in Table 4.2.4, Alternative 1 would require partial or full acquisition of several commercial and residential properties, as well as the partial acquisition of a school property's corner. The acquisition of commercial and residential properties may result in the displacement of several businesses and residents. However, these acquisitions and displacements would not affect the overall function of community assets or adjacent and surrounding uses, and no community assets would be displaced. Residential neighborhoods and community assets would not be isolated, and residential neighborhoods and community assets would be maintained.

Table 4.2.4. Build Alternatives Effects on Community Character and Cohesion

Alternative	Community	Residential Areas with Adverse Noise Effects[1,2]	Access to Community Facilities	Residences, Community Assets, or Commercial Businesses Permanently Acquired/Displaced[3]	Changes in Visual Character
1	**Central City North**	▪ None	▪ No adverse effect; project alignment would be underground.	▪ Alternative 1: None ▪ Design Option 1: LAUS (MWD) Station entrance would displace an existing refreshment/snack store in the concourse area of LAUS.	▪ No adverse effect; project alignment would be underground.
	Central City	▪ None	▪ No adverse effect; project alignment would be underground.	▪ None	▪ No adverse effect; project alignment would be underground.
2	**Central City**	▪ None	▪ No adverse effect; project alignment would be underground.	▪ 7th St/Metro Center Station entrance would be located within building on a commercial property at southwest corner of 8th St/Flower St. ▪ South Park/Fashion District Station entrances would be located within buildings on commercial properties at southwest corner of 8th St/Main St and northeast corner of 8th St/Los Angeles St.	▪ No adverse effect; project alignment would be underground.
1 and 2	**Southeast Los Angeles**	**Unmitigated Impact** ▪ 22nd St to 24th St ▪ 27th St to 40th Pl ▪ 41st Pl to 46th St ▪ 47th St to 55th St **Residual Impacts with Mitigation** ▪ 22nd St to 24th St ▪ 42nd St to Vernon Ave ▪ Southwest of Vernon Ave north of 46th St	▪ No adverse effect; project alignment would be elevated.	▪ Partial acquisition of vacant commercial property at northwest corner of Long Beach Ave/52nd St for TPSS.	▪ No adverse effect; project components consistent with visual character of community.

Alternative	Community	Residential Areas with Adverse Noise Effects[1, 2]	Access to Community Facilities	Residences, Community Assets, or Commercial Businesses Permanently Acquired/Displaced[3]	Changes in Visual Character
1, 2, and 3	**Southeast Los Angeles**	**Unmitigated Impact** ▪ 55th St to 57th St **Residual Impacts with Mitigation** ▪ None	▪ No adverse effect; project alignment would be elevated.	▪ Full acquisitions of 2 single-family and 4 multifamily units to accommodate straddle bent for aerial structure. Displacement of 17 residents. ▪ Partial acquisitions of 2 multifamily residential properties to accommodate straddle bent for aerial structure. Displacement of 6 residents.	▪ No adverse effect; project components consistent with visual character of community.
	Florence-Firestone	**Unmitigated Impact** ▪ West of Holmes Ave and south of San Pedro Subdivision ROW ▪ East and west of Holmes Ave **Residual Impacts with Mitigation** ▪ West of Holmes Ave and south of San Pedro Subdivision ROW ▪ East and west of Holmes Ave	▪ No adverse effect; project alignment would be elevated.	▪ None	▪ No adverse effect; project components consistent with visual character of community.
	Huntington Park	**Unmitigated Impact** ▪ Cottage St to Bissell St ▪ Gage Ave ▪ Live Oak St to Santa Ana St **Residual Impacts with Mitigation**	▪ New safety barrier or sound walls along rail ROW: Residents could no longer informally cross San Pedro Subdivision ROW at mid-block to access San Antonio Continuation School, San Antonio Elementary School, and	▪ At commercial property at northeast corner of Pacific Blvd/Randolph St, approximately 24 parking spaces and some landscaping would be affected due to installation of TPSS. ▪ At commercial development adjacent to Florence/Salt Lake Station, approximately 11 parking spaces and landscaping would be removed to install TPSS, but commercial uses would remain.	▪ No adverse effect; project components consistent with visual character of community.

Alternative	Community	Residential Areas with Adverse Noise Effects[1, 2]	Access to Community Facilities	Residences, Community Assets, or Commercial Businesses Permanently Acquired/Displaced[3]	Changes in Visual Character
		▪ Cottage St to State St ▪ Gage Ave ▪ Hill St to Santa Ana St	Huntington Park High School. ▪ Grade crossing improvements at Randolph St and Salt Lake Ave (street markings, pedestrian and vehicular crossing gates, and curb cuts) would provide safe access to schools and facilitate access to Salt Lake Park.	▪ Partial acquisition of 2 multifamily residential properties on State St, south of Randolph St, for grade-crossing improvements; a portion of the front yard at two residential properties. Displacement of 8 residents. ▪ At commercial property at southwest corner of State St/Randolph St, approximately 3 parking spaces and landscaping would be affected due to grade crossing improvements. ▪ At San Antonio Elementary School, a strip of landscaping and approximately 15 parking spaces on the property would be affected by grade crossing improvements.	
	Bell	**Unmitigated Impact** ▪ Gage Ave to Florence Ave **Residual Impacts with Mitigation** ▪ Gage Ave to Florence Ave	▪ Residents could no longer informally cross San Pedro Subdivision ROW at mid-block to access Salt Lake Park due to safety barrier or sound walls along rail ROW.	▪ None	▪ No adverse effect; project components consistent with visual character of community.
	Vernon	▪ None	▪ No adverse effect.	▪ None	▪ No adverse effect; project components consistent with visual character of community.
	Cudahy	**Unmitigated Impact** ▪ Live Oak St to Cecilia St **Residual Impacts with Mitigation**	▪ Residents southeast of Salt Lake Park could no longer informally cross San Pedro Subdivision ROW at mid-block to access Salt Lake Park.	▪ None	▪ No adverse effect; project components consistent with visual character of community.

Alternative	Community	Residential Areas with Adverse Noise Effects[1, 2]	Access to Community Facilities	Residences, Community Assets, or Commercial Businesses Permanently Acquired/Displaced[3]	Changes in Visual Character
		▪ Santa Ana St to Cecilia St	▪ Existing grade crossing at Salt Lake Ave/Florence Ave improved to facilitate access of Salt Lake Park.		
	South Gate	**Unmitigated Impact** ▪ Firestone Blvd ▪ Mccallum Ave to Wood Ave ▪ Mobile home community between Los Angeles River and I-710 freeway ▪ Roosevelt Ave to Main St **Residual Impacts with Mitigation** ▪ Firestone Blvd ▪ Mccallum Ave to Wood Ave ▪ Mobile home community between Los Angeles River and I-710 freeway	▪ No adverse effects	▪ None	▪ No adverse effect; project components consistent with visual character of community.
	Downey	▪ None	▪ No adverse effects	▪ None	▪ No adverse effect; project components consistent with visual character of community.

Alternative	Community	Residential Areas with Adverse Noise Effects[1, 2]	Access to Community Facilities	Residences, Community Assets, or Commercial Businesses Permanently Acquired/Displaced[3]	Changes in Visual Character
1, 2, 3, and 4	**South Gate**	**Unmitigated Impact** ▪ Main St to Century Blvd **Residual Impacts with Mitigation** ▪ Main St to Century Blvd ▪ Nevada Ave	▪ No adverse effects	▪ None	▪ No adverse effect; project components consistent with visual character of community.
	Paramount	**Unmitigated Impact** ▪ Century Blvd to Lakewood Blvd **Residual Impacts with Mitigation** ▪ Century Blvd to Laredo Ave ▪ Rosecrans Ave to east of Orizaba Ave ▪ Jetmore Ave to Downey Ave ▪ North of Somerset Blvd to Lakewood Blvd	▪ Realignment of Paramount Bike Trail would not disrupt operation and access of the bike trail. ▪ Realignment of the Paramount Bike Trail is not expected to divide or affect the character of the bike trail.	▪ Commercial property at northwest corner of Rosecrans Ave/Paramount Blvd to be acquired for the relocation of freight track. ▪ Partial acquisition of 4 multifamily units to accommodate project alignment, grade crossing, retaining walls, and aerial structures. Displacement of 16 residents.	▪ Landscaping and decorative wall on south side of World Energy storage tracks to be removed. Views of storage tracks not visually compatible with surrounding residential area.
	Bellflower	**Unmitigated Impact** ▪ Lakewood Blvd to San Gabriel River **Residual Impacts with Mitigation** ▪ Mobile home community east of Lakewood Blvd ▪ Hegel St to Los Angeles St	▪ East of Bellflower Blvd, relocation of the Bellflower Bike Trail would allow users to access the bike trail without having to cross the proposed LRT tracks. Operation of and access to the Bellflower Bike Trail would remain. ▪ Residents in the southerly portion of the city would no	▪ At multifamily residential on east side of Bellflower Blvd, north of project alignment, partial acquisition of 10 multifamily residential units for grade-crossing improvements. Displacement of 16 residents. ▪ Auto business on west side of Bellflower Blvd, north of project alignment to be acquired for Bellflower Station parking facility.	▪ "Belle" public art cow statue in PEROW would be removed but would not detract from or conflict with visual character of the PEROW.

Alternative	Community	Residential Areas with Adverse Noise Effects[1, 2]	Access to Community Facilities	Residences, Community Assets, or Commercial Businesses Permanently Acquired/Displaced[3]	Changes in Visual Character
		▪ Orchard Ave to San Gabriel River	longer be able to use the Metro-owned PEROW informally as an equestrian trail. PEROW is currently identified as a rail corridor and an existing railroad track is located within the PEROW.		
	Cerritos	**Unmitigated Impact and Residual Impacts with Mitigation** ▪ Studebaker Rd ▪ Eric Ave to Gridley Rd/183rd St	▪ No adverse effects; no direct access to community facilities are available within the PEROW.	▪ None	▪ No adverse effect; project components consistent with visual character of community.
	Artesia	**Unmitigated Impact and Residual Impacts with Mitigation** ▪ Gridley Rd/183rd St to Pioneer Blvd	▪ No adverse effects; no direct access to community facilities area available within the PEROW.	▪ Property acquisition to accommodate proposed parking facility at Pioneer Station include commercial and residential properties along Corby Ave, 188th St, and Pioneer St south of project alignment. Full acquisition of 2 single-family residential units. Displacement of 8 residents.	▪ No adverse effect; project components consistent with visual character of community.

Source: Metro 2021n
Notes: [1] Metro 2021j
[2] Unmitigated impact are impacts that would occur without mitigation. Residual impacts are impacts that would still occur with the implementation of mitigation.
[3] Metro 2021m
LAUS = Los Angeles Union Station; LRT = light rail transit; MWD = Metropolitan Water District; PEROW = Pacific Electric Right-of-Way; ROW = right-of-way; TPSS = traction power substation

Access to Community Facilities: Alternative 1 would relocate the Paramount Bike Trail and Bellflower Bike Trail, as described in Table 4.2.4, to allow for the use of the pedestrian and bicycle paths without having to cross the proposed tracks. The Paramount Bike Trail and Bellflower Bike Trail in Paramount and Bellflower would not be permanently removed.

With the installation of security barriers and/or sound walls along the PEROW (see Mitigation Measure NOI-1 [Soundwalls]), some residents in the southerly portion of Bellflower would no longer be able to informally access the PEROW as an equestrian trail or cut across the PEROW to access the Bellflower Bike Trail and Flora Vista Park through their backyards (Table 4.2.4). Residents would still be able to access the Bellflower Bike Trail and Flora Vista Park through local streets. Regardless, Section 12.44.020 of the Bellflower Municipal Code states that equestrian use on the Bellflower Bike Trail is prohibited (Ordinance 1189) and the PEROW is an existing rail corridor and has not been designated as an equestrian trail. Thus, property displacement and acquisition, the realignment of the Bellflower Bike Trail, and the discontinued use of the PEROW as an informal equestrian trail would not change the character and cohesion of the communities in the Affected Area and Alternative 1 would not result in adverse effects.

Noise: As presented in Table 4.2.4, Alternative 1 would result in adverse noise effects in several residential neighborhoods. However, Mitigation Measures NOI-1 through NOI-7, which include soundwalls, low impact frogs, wheel squeal noise monitoring, crossing signal bells, gate-down-bell-stop variance, TPSS noise reduction, and freight track relocation soundwalls (see Section 4.7.4.2 of the Noise and Vibration Section), would be implemented to reduce noise levels to the extent feasible in which residual adverse noise effects could still occur in some communities. However, based on the community stability of the affected communities and reductions to the noise levels, such residual impacts are not anticipated to create a shift in the community that would result in an adverse effect to the cohesion of the communities. The anticipated changes in noise levels for Alternative 1 are not expected to adversely affect the character and cohesion of the communities within the Affected Area for communities.

Visual Character: Alternative 1 would be designed using the MRDC as guidance, and adverse changes to the visual character of the communities are not anticipated in the Affected Area for communities. Proposed station entrances would be integrated with the existing land uses and would be consistent and compatible with the existing transportation corridor. Alternative 1 would remove the existing landscaping and wall on the south side of the World Energy storage tracks in Paramount allowing views of the refinery storage tank cars on the railroad tracks along Somerset Boulevard. Views of the storage tracks would not be visually compatible with the surrounding residential area. Alternative 1 would also relocate the public art statue, "Belle," from the PEROW; however, it is not expected to adversely affect visual character and quality of the PEROW as the PEROW is a rail corridor and currently contains remnants of railroad tracks. Mitigation Measures VA-1 (Screening at Somerset Boulevard) and VA-2 (Relocation of "Belle), summarized in Section 4.4.4.2 of the Visual and Aesthetics Section, would be implemented so that views of the storage tracks north of Somerset Boulevard remain obstructed and that "Belle" would be relocated, respectively. In addition, segments of the alignment located to the rear of residences, community facilities, and industrial buildings would not be affected by the changes to the visual character within the rail ROW. As such, Alternative 1 would not result in visual changes and is not expected to adversely affect the character and cohesion of the communities within the Affected Area for communities.

Land Use: Alternative 1 could indirectly affect growth and development in the Affected Area for communities by providing opportunities for TODs around proposed stations. However, these changes would be consistent with the goals, policies, and objectives of the affected local jurisdictions; and new development around the proposed stations would be solely at the discretion and approval of the affected communities. Such development would not be part of the Project and would undergo separate reviews and approvals. City- and Metro-funded TOD plans are not expected to induce growth beyond SCAG's growth projections for the region and in local community plans. In this context, potential adverse indirect land use effects would be addressed and mitigated by restrictions imposed by local jurisdictions. As the potential land use changes would be consistent with the goals, policies, and objectives of the affected local jurisdictions and new development around the proposed stations would be solely at the discretion and approval of the affected communities, the character and cohesion of the communities within the Affected Area are not expected to be adversely affected.

Demographics: Population in the areas surrounding the proposed stations is projected to grow and would be consistent with SCAG's adopted growth projections, which are based on the General Plan land use designations of local jurisdictions. Furthermore, the Affected Area for communities includes several different ethnic and racial groups and locally identified cultural communities (i.e., El Pueblo de Los Angeles historic district and Little Tokyo in Los Angeles, and International Cultural District of Artesia, also known as "Little India"). Alternative 1 would increase connectivity to these districts.

Summary: Overall, Alternative 1 would not include components that may directly or indirectly affect community character and cohesion. Property acquisition and displacement of businesses and residents would not affect the overall function of community assets or adjacent and surrounding uses, and no community assets would be displaced. Access to community facilities would be maintained. Additionally, changes in noise levels, visual character (with implementation of Mitigation Measures VA-1 and VA-2), land use, and demographics would not adversely affect community character and cohesion. The cohesion of ethnic and racial groups within the Affected Area for communities and would not substantially change existing growth and development patterns. Development in the proposed station areas is anticipated to be consistent with the affected jurisdictions' General Plan land use designations. Under NEPA, Alternative 1 would not result in adverse effects related to community character and cohesion.

Community Stability

Approximately 87 percent of the residents living in the Alternative 1 affected communities have resided in the same residence for one year or more, which can indicate a strong cohesive community. Residential property acquisition and residential displacements would not alter the stability of the communities in the Affected Area for communities. Alternative 1 would increase the connection among the communities in the Affected Area for communities by providing additional transit services, which would benefit the existing residents of the communities, and could help support the stability of the communities in the Affected Area. Under NEPA, Alternative 1 would not result in adverse effects related to community stability.

4.2.3.3 Alternative 2: 7th Street/Metro Center to Pioneer Station

Alternative 2 would have the same alignment as Alternative 1 south of Bay Street; therefore, the effects and impact conclusions described for Alternative 1 south of Bay Street in Section 4.2.3.2 would also apply to Alternative 2. As such, the sections that follow summarize the effects assessment for the segment of Alternative 2 north of Bay Street.

Access and Mobility

As shown in Table 4.2.3, Alternative 2 would introduce two stations in the Center City community (i.e., 7th Street/Metro Center Station and South Park/Fashion District Station) and one station along the Center City North/Center City boundaries (i.e., Arts/Industrial District). The station entrances for these three stations would be located on surface parking lots or industrial, commercial, and/or public facility properties. The stations would not impede access and mobility of motorists, pedestrians, and bicyclists to residential neighborhoods and community assets. Instead, Alternative 2 would improve access and mobility by providing the affected communities with an alternative mode of transportation to automobiles. Pedestrian activities in the neighborhoods surrounding the proposed stations and regional and local access to and from the communities in the Affected Area for communities would increase. Additionally, Alternative 2 would not require street closures or turning restrictions north and west of Bay Street. South of Bay Street, the effects on access and mobility from parking, vehicle delays, turning restrictions, at-grade crossings, the proposed sidewalk on the south side of I-105, the pedestrian underpass in Paramount, safety barriers, and sound walls would be the same as Alternative 1. Under NEPA, Alternative 2 would not result in adverse effects related to community access and mobility.

Community Character and Cohesion

Acquisition and Displacement: Alternative 2 would require partial or full acquisition of surface parking lots, as well as commercial and industrial structures, for permanent underground easements for the underground portion of the project alignment and for station entrances north of Bay Street in Los Angeles. No residential properties or community assets would be displaced. Residential neighborhoods and community assets would not be isolated, and residential neighborhoods and community assets would be maintained.

Access to Community Facilities: Alternative 2 would have the same effect on the community facilities as Alternative 1, including access to the Paramount and Bellflower Bike Trails and the informal use of PEROW as an equestrian trail. The proposed changes would not alter the character and cohesion of the communities, and Alternative 2 would not result in adverse effects.

Noise: As presented in Table 4.2.4, Alternative 2 would result in the same adverse noise effects as Alternative 1. Similarly, noise mitigation measures (NOI-1 through NOI-7, which include soundwalls, low impact frogs, wheel squeal noise monitoring, crossing signal bells, gate-down-bell-stop variance, TPSS noise reduction, and freight track relocation soundwalls) would be implemented to reduce noise levels to the extent feasible in which residual adverse noise effects could still occur in some communities. The anticipated changes in noise levels are not expected to adversely affect the character and cohesion of the communities within the Affected Area for communities.

Visual Character: Alternative 2 would include the removal of the landscaping and decorative wall on the north side of Somerset Boulevard and the "Belle" public art statue, would implement Mitigation Measures VA-1 (Screening at Somerset Boulevard) and VA-2

(Relocation of "Belle"), and no adverse effects on visual character would occur. Overall, changes to the visual character are not expected to adversely affect the character and cohesion of the communities within the Affected Area for communities.

Land Use: Changes in land use would be similar to Alternative 1. TOD opportunities would be consistent with the goals, policies, and objectives of the affected local jurisdictions, and new development around the proposed stations would be solely at the discretion and approval of the affected communities. Any potential adverse indirect land use effects would be addressed and mitigated by restrictions imposed by local jurisdictions. The area surrounding the project alignment and station areas would remain accessible, and the overall functionality of the uses adjacent to and surrounding the project alignment and station entrances would not be adversely affected. Alternative 2 would be primarily underground north and west of Bay Street and would not alter the community layout north and west of Bay Street. As with Alternative 1, the physical layout of the affected communities would remain similar to existing conditions. As the potential land use changes would be consistent with the goals, policies, and objectives of the affected local jurisdictions and new development around the proposed stations would be solely at the discretion and approval of the affected communities, the character and cohesion of the communities within the Affected Area are not expected to be adversely affected.

Demographics: Changes to demographics from Alternative 2 would be similar to Alternative 1 and would be consistent with growth projections adopted by SCAG. Alternative 2 would not include components that may directly or indirectly affect the cohesion of ethnic and racial groups within the Affected Area for communities and would not substantially change existing growth and development patterns. Development in the proposed station areas is anticipated to be consistent with the affected jurisdictions' General Plan and land use designations. Alternative 2 would not change demographics in a manner that would adversely affect community character and cohesion.

Summary: Under NEPA, Alternative 2 would not result in adverse effects related to community character and cohesion.

Community Stability

Approximately 86 percent of the residents living in the Alternative 2 affected communities have resided in the same residence after one year, which can indicate a strong cohesive community. Similar to Alternative 1, residential property acquisition and residential displacements would not alter the stability of the communities in the Affected Area for communities. Alternative 2 would increase connection among the communities and could help support the stability of the communities in the Affected Area for communities. Under NEPA, Alternative 2 would not result in adverse effects related to community stability.

4.2.3.4 Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Alternative 3 would have a shorter alignment than Alternatives 1 and 2 and would have the same alignment, components, effects, and impact conclusions as Alternatives 1 and 2 south of 55th Street/Long Beach Avenue.

Access and Mobility

As presented in Table 4.2.3, and similar to Alternatives 1 and 2, vehicle, pedestrian, and bicycle access to the area surrounding Alternative 3 (the communities of Southeast Los Angeles,

Florence-Firestone, Huntington Park, Bell. Vernon, Cudahy, South Gate, Downey, Paramount, Bellflower, Cerritos, and Artesia) would be maintained through the surrounding streets that are one to three blocks away from the proposed street closures and turning restrictions. Alternative 3 would have the same alignment and components (including parking facilities, a sidewalk on the south side of I-105, and a pedestrian underpass in Paramount), vehicle delays, street closures, turning restrictions, at-grade-crossing modifications, new at-grade crossings, safety barriers, and sound walls as Alternatives 1 and 2 south of 55th Street/Long Beach Avenue. Alternative 3 would adversely affect the same 12 intersections as Alternatives 1 and 2 but would not involve any street closures or turning restrictions north and west of Bay Street as Alternative 3 would be located south of this area. Under NEPA, Alternative 3 would not result in adverse effects related to community access and mobility.

Community Character and Cohesion

Acquisition and Displacement: Alternative 3 would acquire and displace the same properties as Alternatives 1 and 2 south of 55th Street/Long Beach Avenue. No community assets would be displaced; property acquisition and displacement would not affect the overall function of community assets or adjacent and surrounding uses; and changes to residential properties would not cause residential neighborhoods and community assets to become isolated. As with Alternatives 1 and 2, acquisition and displacement would not adversely affect community character and cohesion.

Access to Community Facilities: Alternative 3 would have the same effect on the community facilities as Alternatives 1 and 2 south of 55th Street/Long Beach Avenue, including access to the Paramount and Bellflower Bike Trails and the informal use of PEROW as an equestrian trail. The proposed changes would not alter the character and cohesion of the communities, and Alternative 3 would not result in adverse effects.

Noise: As presented in Table 4.2.4, Alternative 3 would result in the same adverse noise and visual effects as Alternatives 1 and 2 south of 55th Street/Long Beach Avenue. Similarly, noise mitigation measures (NOI-1 through NOI-7, which include soundwalls, low impact frogs, wheel squeal noise monitoring, crossing signal bells, gate-down-bell-stop variance, TPSS noise reduction, and freight track relocation soundwalls) would be implemented to reduce noise levels to the extent feasible in which residual adverse noise effects could still occur in some communities. The anticipated changes in noise levels are not expected to adversely affect the character and cohesion of the communities within the Affected Area for communities.

Visual Character: Alternative 3 would include the removal of the landscaping and decorative wall on the north side of Somerset Boulevard and the "Belle" public art statue, would implement Mitigation Measures VA-1 (Screening at Somerset Boulevard) and VA-2 (Relocation of "Belle"), and no adverse effects on visual character would occur. Overall, changes to visual character are not expected to adversely affect the character and cohesion of the communities within the Affected Area for communities.

Land Use: Changes in land use would be similar to Alternatives 1 and 2. TOD opportunities would be consistent with the goals, policies, and objectives of the affected local jurisdictions, and new development around the proposed stations would be solely at the discretion and approval of the affected communities. Any potential adverse indirect land use effects would be addressed and mitigated by restrictions imposed by local jurisdictions. Similar to Alternatives 1 and 2, the physical layout of the affected communities would remain similar to

existing conditions. Potential land use changes under Alternative 3 would not result in adverse effects related to community character and cohesion.

Demographics: Changes to demographics from Alternative 3 would be similar to Alternatives 1 and 2 and would be consistent with growth projections adopted by SCAG. Alternative 3 would not include components that may directly or indirectly affect the cohesion of ethnic and racial groups within the Affected Area for communities and would not substantially change existing growth and development patterns. Development in the proposed station areas is anticipated to be consistent with the affected jurisdictions' General Plan and land use designations. Alternative 3 would not change demographics in a manner that would adversely affect community character and cohesion.

Community Stability

Approximately 89 percent of the residents living in the Alternative 3 affected communities have resided in the same residence after one year, which can indicate a strong cohesive community. Similar to Alternatives 1 and 2, residential property acquisition and residential displacements would not alter the stability of the communities in the Affected Area for communities. Alternative 3 would increase connection among the communities and could help support the stability of the communities in the Affected Area for communities. Under NEPA, Alternative 3 would not result in adverse effects related to community stability.

Summary: Under NEPA, Alternative 3 would not result in adverse effects related to community character and cohesion.

4.2.3.5 Alternative 4: I-105/C (Green) Line to Pioneer Station

Alternative 4 would have a shorter alignment than Alternatives 1, 2, and 3 and would result in the same effects as those alternatives south of Main Street/San Pedro Subdivision ROW (Table 4.2.3, Table 4.2.4, and Section 4.2.3.2).

Access and Mobility

Alternative 4 would traverse through South Gate, Paramount, Bellflower, Cerritos, and Artesia. As presented in Table 4.2.3, Alternative 4 would not adversely affect any intersections and would not result in any turning restrictions but would result in two street closures (at 188th Street between Corby Avenue and Pioneer Boulevard and 187th Street between Corby Avenue (East) and Corby Avenue (West)). Vehicle, pedestrian, and bicycle access to the surrounding area would be maintained through the surrounding streets that are within one to three blocks from the proposed street closures. Under NEPA, Alternative 4 would not result in adverse effects related to community access and mobility. The effects on access and mobility from parking, at-grade crossings, a sidewalk on the south side of I-15, a pedestrian underpass in Paramount, safety barriers, and sound walls would be the same as Alternatives 1, 2, and 3.

Community Character and Cohesion

Acquisition and Displacement: Alternative 4 would acquire and displace the same properties as Alternatives 1, 2, and 3 south of Main Street/San Pedro Subdivision ROW (Table 4.2.4). No community assets would be displaced; property acquisition and displacement would not affect the overall function of community assets or adjacent and surrounding uses; and changes to residential properties would not cause residential neighborhoods and community assets to become isolated. As with Alternatives 1, 2 and 3, acquisition and displacement would not adversely affect community character and cohesion.

Access to Community Facilities: Alternative 4 would have the same effect on community facilities as Alternatives 1, 2, and 3 south of Main Street/San Pedro Subdivision ROW, including access to the Paramount and Bellflower Bike Trails and the informal use of PEROW as an equestrian trail. The proposed changes would not alter the character and cohesion of the communities, and Alternative 4 would not result in adverse effects.

Noise: Alternative 4 would result in the same adverse noise effects as Alternatives 1, 2, and 3 south of Main Street/San Pedro Subdivision ROW. Similarly, noise mitigation measures (NOI-1 through NOI-7, which include soundwalls, low impact frogs, wheel squeal noise monitoring, crossing signal bells, gate-down-bell-stop variance, TPSS noise reduction, and freight track relocation soundwalls) would be implemented to reduce noise levels to the extent feasible in which residual adverse noise effects could still occur in some communities. The anticipated changes in noise levels are not expected to adversely affect the character and cohesion of the communities within the Affected Area for communities.

Visual Character: Alternative 4 would include the removal of the landscaping and decorative wall on the north side of Somerset Boulevard and the "Belle" public art statue, would implement Mitigation Measures VA-1 (Screening at Somerset Boulevard) and VA-2 (Relocation of "Belle"), and no adverse effects on visual character would occur. Overall, changes to the visual character are not expected to adversely affect the character and cohesion of the communities within the Affected Area for communities.

Land Use: Changes in land use would be similar to Alternatives 1, 2, and 3. TOD opportunities would be consistent with the goals, policies, and objectives of the affected local jurisdictions, and new development around the proposed stations would be solely at the discretion and approval of the affected communities. Any potential adverse indirect land use effects would be addressed and mitigated by restrictions imposed by local jurisdictions. Similar to Alternatives 1, 2, and 3, the physical layout of the affected communities would remain similar to existing conditions. Potential land use changes under Alternative 4 would not result in adverse effects related to community character and cohesion.

Demographics: Changes to demographics from Alternative 4 would be similar to Alternatives 1, 2, and 3 and would be consistent with growth projections adopted by SCAG. Alternative 4 would not include components that may directly or indirectly affect the cohesion of ethnic and racial groups within the Affected Area for communities and would not substantially change existing growth and development patterns. Development in the proposed station areas is anticipated to be consistent with the affected jurisdictions' General Plan and land use designations. Alternative 4 would not change demographics in a manner that would adversely affect community character and cohesion.

Summary: Under NEPA, Alternative 4 would not result in adverse effects related to community character and cohesion.

Community Stability

Approximately 88 percent of the residents living in the Alternative 4 affected communities have resided in the same residence after one year, which can indicate a strong cohesive community. Similar to Alternatives 1, 2, and 3, residential property acquisition and residential displacements would not alter the stability of the communities in the Affected Area for communities. Alternative 4 would increase connection among the communities and

could help support the stability of the communities in the Affected Area for communities. Under NEPA, Alternative 4 would not result in adverse effects related to community stability.

4.2.3.6 Design Options—Alternative 1

Access and Mobility

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Design Option 1 would be located underground with a station entrance at-grade with the surrounding uses at the concourse area inside the LAUS building. Design Option 2 would be primarily underground with two station entrances at-grade with the surrounding uses. One station entrance would be on the easterly side yard of a commercial property and another station entrance would be on a surface parking lot of a LADWP Materials Testing Laboratory. No parking facilities, at-grade crossings, street closures, turning restrictions, or physical barriers are proposed for Design Options 1 and 2 that would impede access or mobility to the surrounding community. Under NEPA, Design Options 1 and 2 would not result in adverse effects related to community access and mobility.

Community Character and Cohesion

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Design Option 1 would displace a commercial business at LAUS, but neither Design Option 1 nor Design Option 2 would displace or isolate any residential properties or community assets. The physical layout of Central City North and Central City would remain similar to existing conditions. Access to community facilities and residential properties would remain. Design Options 1 and 2 are not expected to change the visual character, noise, and land use of Central City North and Central City as the design options would primarily be underground and would be located at or near a site that is used as a transit stop for various regional and local rail and bus lines. The station entrances would be consistent with the scale, massing, and character of the surrounding area and would fit with the visual character of the Affected Area for communities. Residential uses near the station entrances would not experience adverse noise effects. Potential TOD developments in the station areas would be solely at the discretion and approval of the affected communities, would undergo separate environmental review, and would be responsible for confirming that these plans are consistent with General Plan goals, policies, and objectives.

Design Options 1 and 2 do not include components that may directly or indirectly affect the cohesion of ethnic and racial groups within the Affected Area for communities and are not expected to substantially change existing growth and development patterns. Any development that could result in the area surrounding this design option is anticipated to be consistent with the affected jurisdiction (i.e., City of Los Angeles) General Plan goals, policies, objectives, and land use designations. Changes in population, households, and employment as a result of these new developments are anticipated to be consistent with the SCAG-adopted growth projections as these growth projections are based on the General Plan land use designations of local jurisdictions. Under NEPA, Design Options 1 and 2 would not result in adverse effects related to community character and cohesion.

Community Stability

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Design Options 1 and 2 would increase connection among the communities in the Affected Area for communities by providing additional transit services and are not expected to cause residents to move out of their communities. Design Options 1 and 2 would not directly generate residents. Under NEPA, Design Options 1 and 2 would not result in adverse effects related to community stability.

4.2.3.7 Maintenance Storage Facility Site Options

Access and Mobility

Paramount MSF Site Option: The Paramount MSF site option would be located in an area with primarily industrial and commercial uses, including the Paramount Swap Meet, Paramount Drive-in Theatre and its associated parking, and industrial uses. The Paramount MSF site option does not contain residences. Our Lady of the Rosary Church and School adjoins the MSF site to the east, with Paramount Park, Paramount Park Middle School, and Paramount High School located farther east along Paramount Boulevard. Security barriers would be installed along the perimeter of the site, which would not create a physical barrier to an established community because the barrier would be around the perimeter of the site only and would not obstruct or close public street rights-of-way. However, the security barriers along the perimeter of the Paramount MSF site option would close a portion of All America City Way that is located within the MSF site option. This private road currently allows motorists along public street ROWs (i.e., Paramount Boulevard and Somerset Boulevard) to access the parking facilities for the existing uses. If this MSF site option is selected, these uses would no longer be located on the site and All America City Way would no longer be needed to connect the public street ROWs to the parking facilities associated with these uses. Bianchi Way, north of the MSF site option, would continue to connect Rosecrans Avenue to a portion of All America City Way.

The grade crossing at the intersection of Rosecrans Avenue and the San Pedro Subdivision ROW would be modified to accommodate two LRT tracks that would provide access for light rail vehicles to and from the Paramount MSF site. These lead tracks would not require roadway or intersection closures or turning restrictions that would restrict access to residential neighborhoods or community assets and are not expected to adversely affect any of the nearby street intersections. Thus, no residential properties or community assets would be isolated. Under NEPA, the Paramount MSF site option would not result in adverse effects related to community access and mobility.

Bellflower MSF Site Option: The Bellflower MSF site option is located south of Somerset Boulevard in Bellflower, and the site is currently leased by Bellflower to the owners of a privately owned recreational business. The Bellflower MSF site option is surrounded by single- and multifamily residences, mobile home communities, and industrial and commercial businesses. Security barriers would be installed along the perimeter of the Bellflower MSF site option. The MSF site option would not involve any roadway/intersection closures or turning restrictions that would restrict access to nearby residential neighborhoods or community assets. Pedestrian and vehicular access to nearby residential neighborhoods and mobile home communities would be maintained. Additionally, operation of the MSF is not expected to adversely affect any of the nearby street intersections. The lead tracks proposed within the PEROW on the south side of the MSF site option would not impede access to the Bellflower

Bike Trail because the bike trail would be located south of the proposed lead and LRT tracks. Under NEPA, the Bellflower MSF site option would not result in adverse effects related to community access and mobility.

Community Character and Cohesion

Paramount MSF Site Option: No residences or community assets are located on the Paramount MSF site option site, and this option would not permanently displace community assets. No residential or community assets would be affected to accommodate the MSF lead tracks. The acquisition of five commercial properties, which are not identified as community assets, would not result in the isolation of this residential neighborhood. The physical layout of the residential neighborhood and Paramount community would remain similar to existing conditions.

The Paramount MSF site option would not adversely affect the visual character of the surrounding area and would not result in adverse noise effects at the surrounding uses. The Paramount MSF site option would be consistent with the industrial and commercial uses on the site and in the surrounding area. The Paramount MSF site option would not directly induce population or housing growth as it would be a maintenance and industrial-focused use. It would not directly or indirectly affect the ethnic and racial groups within Paramount. Any increase in employment associated with the proposed MSF site option would be consistent with the SCAG growth projections for Paramount and is not expected to induce substantial unplanned population growth since it is anticipated that employment would be primarily filled by residents of the LA County region. Under NEPA, the anticipated changes associated with the Paramount MSF site option would not result in adverse effects related to community character and cohesion of the Paramount community.

Bellflower MSF Site Option: The Bellflower MSF site option site does not include any identifiable community assets. Although the privately owned recreational business would no longer be located on the site if this option is selected, no residential properties or community assets would be isolated, disrupted, or displaced. The Bellflower MSF site option would change the existing recreational/commercial site to an industrial-related use, but the use would be consistent with the mixed industrial, commercial, and residential character of its surrounding area, and the physical layout of the community surrounding the MSF site option would remain similar to existing conditions.

The Bellflower MSF site option would not result in adverse noise effects at the surrounding residential uses. Additionally, the Bellflower MSF site option would not adversely affect visual character because existing landscaping and barriers along the perimeter of the Bellflower MSF site option would either remain or be replaced with other types of landscaping and barriers that obstruct views of the MSF site option from the surrounding residential uses.

The Bellflower MSF site option would not directly or indirectly affect the cohesion of ethnic and racial groups. It is not expected to directly induce any population or housing growth as it would be a maintenance and industrial-focused use and would be consistent with the industrial uses adjacent to the west. Any increase in employment associated with the proposed MSF site option would be consistent with the SCAG growth projections for Bellflower. The potential increase in employment is not expected to induce substantial unplanned population growth since it is anticipated that employment would be primarily filled by residents of the LA County region. Under NEPA, the anticipated changes associated with the Bellflower MSF site option would not result in adverse effects related to community character and cohesion of the Bellflower community.

Community Stability

Paramount MSF Site Option: Approximately 88 percent of Paramount residents have resided in the same house after one year. The Paramount MSF site option would not require acquisitions for residential properties and would not alter the stability of Paramount. Under NEPA, the Paramount MSF site option would not result in adverse effects related to community stability.

Bellflower MSF Site Option: Approximately 90 percent of Bellflower residents have resided in the same house after one year. The Bellflower MSF site option would not acquire or displace any residential properties, and the development of the Bellflower MSF site option is not expected to cause residents living near the MSF site option to move out of the Bellflower community. Under NEPA, the Bellflower MSF site option would not result in adverse effects related to community stability.

4.2.4 Project Measures and Mitigation Measures

4.2.4.1 Project Measures

There are no project measures required by law or permit related to communities and neighborhoods.

4.2.4.2 Mitigation Measures

The following mitigation measures would apply to Alternatives 1, 2, 3, and 4. Refer to Mitigation Measures TRA-1 through TRA-19, which are specific intersection improvements described in Chapter 3, Section 3.5.1.2 of the Transportation Chapter, for the descriptions of intersection lane reconfigurations that would address intersection impacts identified in the Build Alternatives. These mitigation measures may not fully mitigate impacts at all intersections. Mitigation Measures VA-1 (Screening at Somerset Boulevard) and VA-2 (Relocation of "Belle") in Section 4.4.4.2 of the Visual and Aesthetics Section would address visual impacts by preserving screening elements and relocating public art. Mitigation Measures NOI-1 through NOI-7, which include soundwalls, low impact frogs, wheel squeal noise monitoring, crossing signal bells, gate-down-bell-stop variance, TPSS noise reduction, and freight track relocation soundwalls (see Section 4.7.4.2 of the Noise and Vibration Section), would reduce noise levels from the LRT, ancillary facilities, and freight, where noise impacts could occur in communities.

4.2.5 California Environmental Quality Act Determination

4.2.5.1 Would the Project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

No Project Alternative

Under the No Project Alternative, the Build Alternatives would not be constructed and the existing communities and neighborhoods would remain unchanged. No properties would be acquired; no structures along the project alignment would be demolished; and no new structures would be constructed. Additionally, the future planning for TODs around the project station areas would not be implemented. No population growth beyond that already anticipated in the SCAG growth projections for the region and in local community plans would occur either directly or indirectly. Therefore, no impacts would occur and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Alternative 1 would not directly result in population growth within surrounding communities. Alternative 1 could indirectly affect growth and development in the Affected Area for communities by providing opportunities for TODs around the proposed stations. However, this development would be subject to approval by the city and to all applicable requirements and regulations of the affected city; is anticipated to be consistent with the SCAG growth projections; and is not expected to induce growth beyond that already anticipated in the adopted growth projections for the region and in local community plans. Alternative 1 would be located in an area surrounded by urban uses with a limited number of vacant or underutilized parcels and is not expected to substantially change existing growth and development patterns. Thus, as Alternative 1 is not expected to induce substantial population growth in the Affected Area for communities beyond adopted growth projections; impacts would be less than significant; and mitigation would not be required.

Alternative 2: 7th Street/Metro Center to Pioneer Station

Similar to Alternative 1, Alternative 2 could indirectly affect growth and development in the Affected Area for communities through TOD opportunities, although development would be subject to approval of applicable jurisdictions and is anticipated to be consistent with the SCAG growth projections. Alternative 2 is not expected to induce growth in the Affected Area for communities beyond that already anticipated in the adopted growth projections for the region and in local community plans; impacts would be less than significant; and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Similar to Alternatives 1 and 2, Alternative 3 could indirectly affect growth and development in the Affected Area for communities through TOD opportunities. However, Alternative 3 is not expected to induce growth beyond that already anticipated in the adopted growth projections for the region and in local community plans; impacts would be less than significant; and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Similar to Alternatives 1, 2, and 3, Alternative 4 could indirectly affect growth and development in the Affected Area for communities through TOD opportunities. However, Alternative 4 is not expected to induce growth beyond that already anticipated in the adopted growth projections for the region and in local community plans; impacts would be less than significant; and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Design Options 1 and 2 would be primarily underground with at-grade station entrances. The station entrances are intended to increase the overall accessibility and mobility of persons within the Affected Area for communities and would not directly result in population growth within surrounding communities.

New development would be subject to approval by the city and subject to all applicable requirements and regulations of the affected city and is anticipated to be consistent with the SCAG growth projections. Therefore, Design Options 1 and 2 are not expected to induce

substantial population growth in the Affected Area for communities; impacts would be less than significant; and mitigation would not be required.

Maintenance and Storage Facility Site Options

Paramount MSF Site Option and Bellflower MSF Site Option: The Paramount and Bellflower MSF site options would not directly induce population or housing growth. The potential increase in employment is not expected to induce substantial unplanned population growth and would be consistent with the SCAG growth projections for Paramount and Bellflower. Therefore, impacts would be less than significant and mitigation would not be required.

4.3 Acquisitions and Displacements

This section summarizes the acquisitions and displacements required for the No Build and Build Alternatives, including design options and MSF site options. Information in this section is based on the *West Santa Ana Branch Transit Corridor Project Final Displacements and Acquisitions Impact Analysis Report* (Metro 2021m) (Appendix H).

4.3.1 Regulatory Setting and Methodology

4.3.1.1 Regulatory Setting

Property acquisitions and displacements, including the relocation of residents, are regulated by federal, state, and local policies.

Federal and State

Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 United States Code (U.S.C.) Section 61) (Uniform Act): The Uniform Act mandates that certain relocation services and payments be made available to eligible residents, businesses, and non-profit organizations displaced as a direct result of projects undertaken by a federal agency or with federal financial assistance. The Uniform Act provides uniform and equitable treatment of persons displaced from their homes and businesses and establishes uniform and equitable land acquisition policies. Owners and holders of real estate interests of private property have federal constitutional guarantees that their property will not be acquired, taken, or damaged for public use unless they first receive an offer of just compensation. Metro delivers right-of-way in compliance with the Uniform Act to meet eligibility requirements for federal funds should those funds become available.

California Relocation Act (Government Code Section 7260 et seq.): The California Relocation Act establishes uniform policies to provide for the fair and equitable treatment of people displaced from their homes or businesses as a direct result of state and/or local government projects or programs. This Act requires that comparable replacement housing be made available to displaced persons within a reasonable period of time prior to the displacement.

Relocation Resources: In accordance with the Uniform Act; 49 CFR Part 24; California Government Code 7260 et seq.; and California Code of Regulations (CCR) 600 et seq., in the event business or residential displacement occurs as a result of property acquisitions, relocation resources would be provided by Metro to displacees. This also includes a relocation plan as required by CCR, Title 25, Division 1, Chapter 6.

Local

Local regulations and plans reviewed for policies related to acquisitions and displacements include the *City of Los Angeles General Plan Housing Element 2013-2021* (City of Los Angeles 2013), *City of Vernon General Plan Housing Element 2014-2021* (City of Vernon 2017), *Florence-Firestone Community Plan* (Los Angeles County 2019), *City of Huntington Park General Plan 2030* (City of Huntington Park 2017), *City of South Gate General Plan 2035* (City of South Gate 2009), *City of Bellflower General Plan: 1995-2010* (City of Bellflower 1994), and *City of Artesia General Plan 2030* (City of Artesia 2010).

4.3.1.2 Methodology

Acquisition is the process of acquiring real property and can consist of full property acquisitions or partial property acquisitions. A full acquisition would result in the purchase of an entire property and would occur when the amount of property required could result in an uneconomic remnant to the property owner, including displacement of the primary structure or elimination of access. A partial acquisition would result in the purchase of a portion of the property and would occur if the Build Alternative requires only a limited portion of the property, leaving the remainder of the site economically viable. Under a partial acquisition, the property owner would retain the remaining portion of the property. Metro would purchase a "fee interest" for those identified areas and would become owner for that portion of the property (shown as "Fee Area"). An easement is the right to use all or part of the property of another owner for a specific purpose and can be at the surface level, underground/subsurface (beneath a property), or aboveground (aerial). Easements can be permanent or temporary. Temporary construction easements would revert to their former use after construction activities have been completed. Permanent underground/subsurface easements would be required for tunneling for a subway and underground utilities. Permanent aerial easements are used for the operation of an elevated transit line. The purchase of an easement is accomplished through a one-time payment and an easement deed is recorded.

For purposes of this analysis, the Affected Area for acquisitions is defined in terms of displacement and replacement areas as these areas have been identified to be the area of potential impact. A "displacement" occurs when the Build Alternatives acquire a parcel, or portion thereof, that is occupied by a structure. The displacement area includes privately held residential, commercial, and industrial properties (parcels) directly affected by the Build Alternatives. "Replacement" refers to the movement (or relocation) of affected businesses and residences into suitable replacement sites.[3] The replacement area includes the cities affected by the Build Alternatives and other nearby cities that may provide replacement site options. This analysis prioritized affected cities and communities for identification of replacement sites. A 6-mile search distance from the Build Alternatives' rail centerline was also used to identify potential replacement sites per standard right-of-way evaluation industry practice.

To satisfy NEPA requirements, property displacements are determined by evaluating the extent that the Build Alternatives would affect existing properties and identifying such properties where the current use would not be possible if the Build Alternatives were constructed. Full or partial acquisitions and the number and type of displacements were identified to analyze potential effects related to displacement and acquisition on residential properties. The evaluation of effects on commercial and industrial properties consists of direct physical effects

[3] Title 49 CFR 24.2 (a)(9)

on structures and effects that may disrupt the businesses' ability to conduct their primary function after project implementation (i.e., available parking and access to—and traffic circulation within—the property). Identifying potential replacement sites for non-residential properties required a search for properties currently for sale or lease within each of the Build Alternatives' replacement area cities and within 6 miles of the affected properties.

A "gap analysis" was conducted to determine if there is a surplus or deficit in available replacement sites compared with the number of displacements in those cities. For purposes of the "gap analysis," a "surplus" identifies a larger number of available replacement sites than required to accommodate and a "deficit" identified an insufficient number of replacement sites. A "suitable" replacement site would meet the definition of a "comparable replacement dwelling" as described in 49 CFR 24.2 (a)(6).

To satisfy CEQA requirements, displacement-related impacts were analyzed in accordance with *CEQA Guidelines*, identified in Section 4.3.5.

4.3.2 Affected Environment/Existing Conditions

The Build Alternatives would be located in or adjacent to the urban and suburban areas of the Cities of Los Angeles, Vernon, Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, Artesia, and Cerritos, and the unincorporated Florence-Firestone community of LA County. The immediate surrounding urban land uses are characterized by public facilities, commercial (offices and retail), industrial, and residential (single- and multifamily) uses. Section 4.1.2 of the Land Use Section details the land uses along the project alignment.

4.3.3 Environmental Consequences/Environmental Impacts

4.3.3.1 No Build Alternative

The projects associated with the No Build Alternative would continue to be built, and acquisitions and/or displacements may be required to support these projects. These acquisitions could include full acquisitions, partial acquisitions, permanent easements, and/or temporary construction easements that may result in the displacement of residents, businesses, and employees. The projects planned under the No Build Alternative would undergo separate environmental review, which would include an analysis of mitigation measures to mitigate potential impacts and compliance with applicable federal, state, and other applicable policies.

4.3.3.2 Alternative 1: Los Angeles Union Station to Pioneer Station

Acquisitions

Alternative 1 would require full and partial acquisitions, as shown in Table 4.3.1.. Full acquisitions would be required to accommodate the structures and columns for the aerial segments of the alignment, TPSS sites, parking facilities, and other ancillary facilities. Partial acquisitions for permanent underground easements would be required to accommodate tunneling for underground alignments and underground TPSS sites, in addition to station entrances, grade crossings and separations, freight track relocation, and other ancillary facilities (e.g., vents/switches/egress, train control house, radio house, and TPSSs). Property acquisitions would primarily affect commercial and industrial areas, although several residential properties would also be affected. Alternative 1 would affect 220 parcels and require 37 full property acquisitions and 254 partial acquisitions.

Table 4.3.1 summarizes the number of affected parcels and permanent acquisitions by Build Alternative, including design options and MSF site options. Table 4.3.2 presents permanent acquisitions by jurisdiction. Details on temporary construction easements (TCEs) are presented in Section 4.19, Construction Impacts and are not presented in the following permanent property acquisition tables. Each identified parcel may include more than one permanent partial acquisition and TCEs.

Table 4.3.1. Summary of Permanent Property Acquisitions by Build Alternative

Build Alternative	Affected Parcels[1]	Full Acquisitions	Partial Acquisitions	Affected Area (sq ft)[2]
Alternative 1	220	37	254	1,570,000
Alternative 2	283	38	309	1,688,200
Alternative 3	172	25	188	1,291,300
Alternative 4	59	17	54	681,200
Design Option 1	12	0	20	249,600
Design Option 2	4	1	8	23,900
Paramount MSF Site Option	43	3	44	1,052,800
Bellflower MSF Site Option	2	2	0	934,500

Source: Metro 2021m
Notes: MSF = maintenance and storage facility; sq ft = square feet
[1] Parcels are identified by parcel boundaries and APN. "Affected Parcels" is not a total sum of the permanent full and partial acquisitions. More than one permanent partial acquisition may occur on a single parcel and each permanent partial acquisition is counted.
[2] Affected Area rounded to nearest hundred.

Table 4.3.2. Permanent Property Acquisitions by Jurisdiction and Build Alternatives

	Build Alternative/Jurisdiction	Affected Parcels[1]	Full Acquisitions	Partial Acquisitions	Affected Area (sq ft)[2]
Alternatives 1, 2, 3	Los Angeles				
	Alternative 1	61	14	82	282,000
	Alternative 2	124	15	137	399,200
	Alternative 3	13	2	16	2,300
	Vernon	3	0	4	6,200
	Unincorporated LA County	1	0	1	100
	Huntington Park	43	2	47	52,000
	Cudahy	8	1	7	4,600
	Downey	2	0	4	3,800
	South Gate	48	5	59	699,100
Alternative 4	South Gate	5	2	4	158,100

	Build Alternative/Jurisdiction	Affected Parcels[1]	Full Acquisitions	Partial Acquisitions	Affected Area (sq ft)[2]
Alternatives 1, 2, 3, 4	Paramount	36	3	42	283,800
	Bellflower	5	1	6	134,900
	Artesia	13	11	2	104,400
Design Options (Alternative 1 Only)	Los Angeles (Design Option 1)	12	0	20	249,600
	Los Angeles (Design Option 2)	4	1	8	23,900
MSF Site Options	Paramount (Paramount MSF)	43	3	44	1,052,800
	Bellflower (Bellflower MSF)	2	2	0	934,500

Source: Metro 2021m

Notes: MSF = maintenance and storage facility; sq ft = square feet

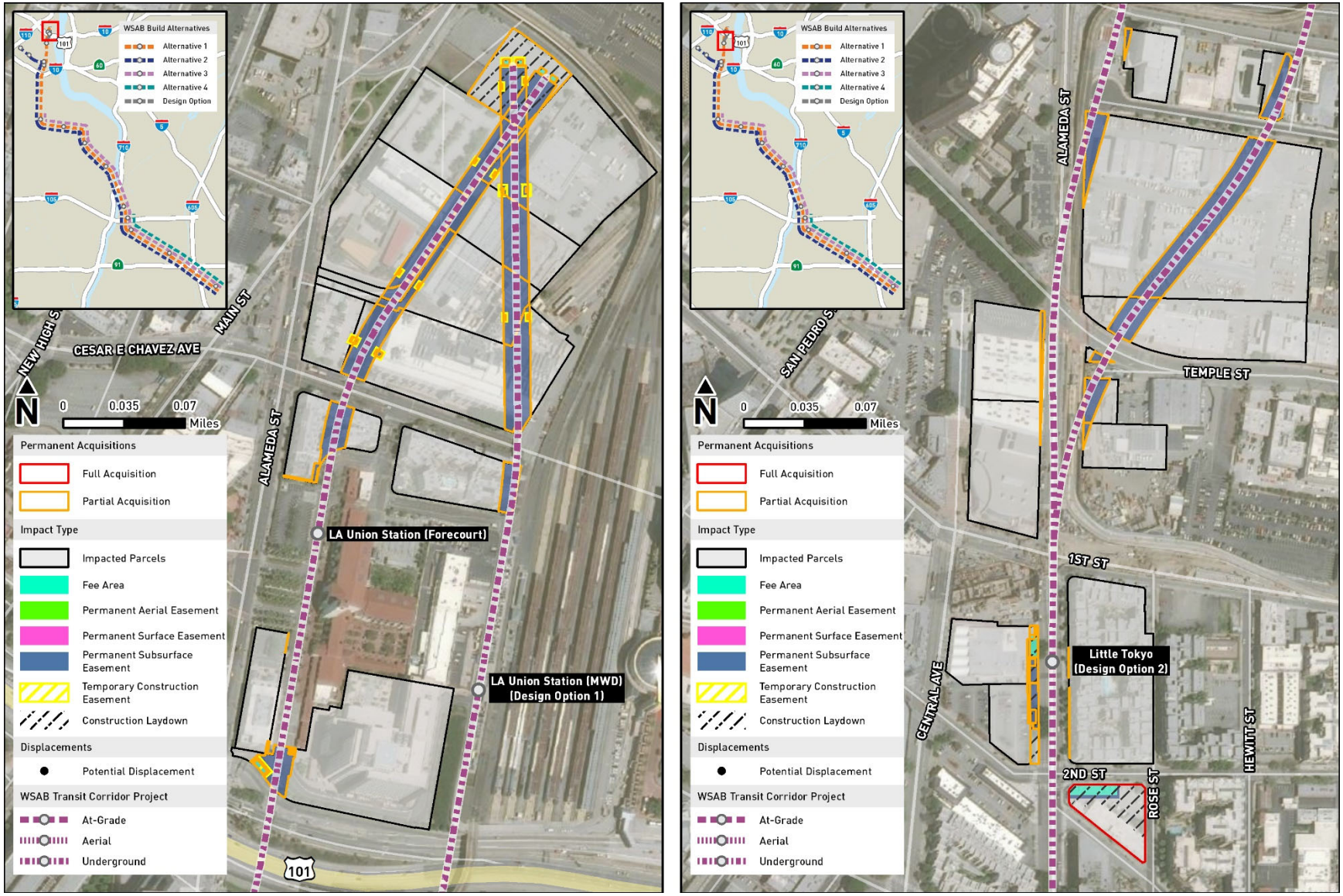
[1] Parcels are identified by parcel boundaries and APN. "Affected Parcels" is not a total sum of the permanent full and partial acquisitions. More than one permanent partial acquisition may occur on a single parcel and each permanent partial acquisition is counted.

[2] Affected Area rounded to nearest hundred.

Alternative 1 would also acquire portions of rail ROWs owned by the Union Pacific Railroad (UPRR), BNSF Railway, and the Ports of Los Angeles and Long Beach, including the portions of the PEROW, La Habra Subdivision, and San Pedro Subdivision. It is understood the freight tracks in the rail ROWs are active and would remain active during operation of the Project. Acquisition of portions of the rail ROW would allow the Project to realign the freight tracks to accommodate the Project tracks and allow continued operation of the freight tracks and spurs along the rail ROW.

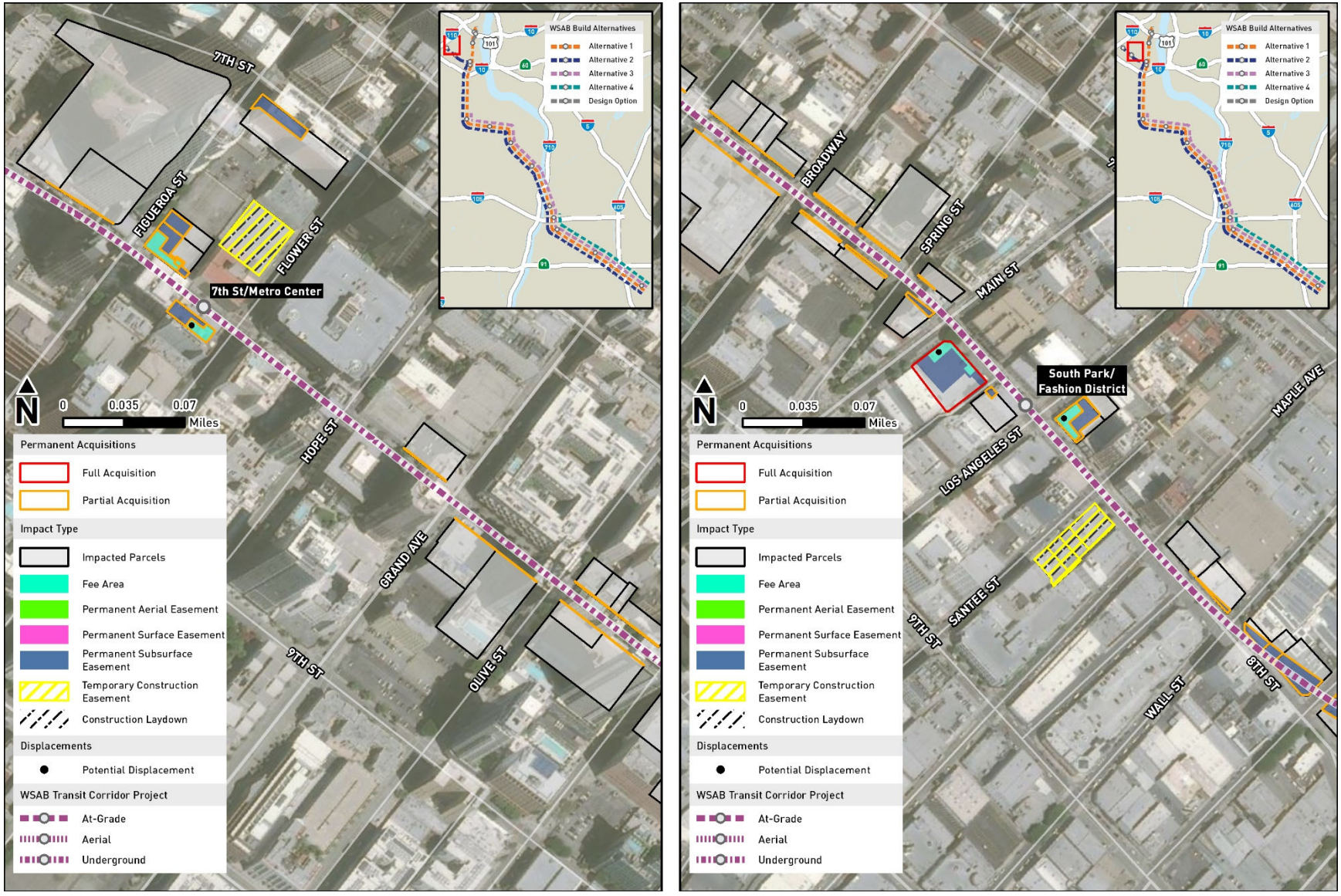
Figure 4.3-1 through Figure 4.3-17 show the permanent and temporary property acquisitions along the project corridor for the Build Alternatives, design options, and MSF site options.

Figure 4.3-1. Property Acquisitions for the Build Alternatives



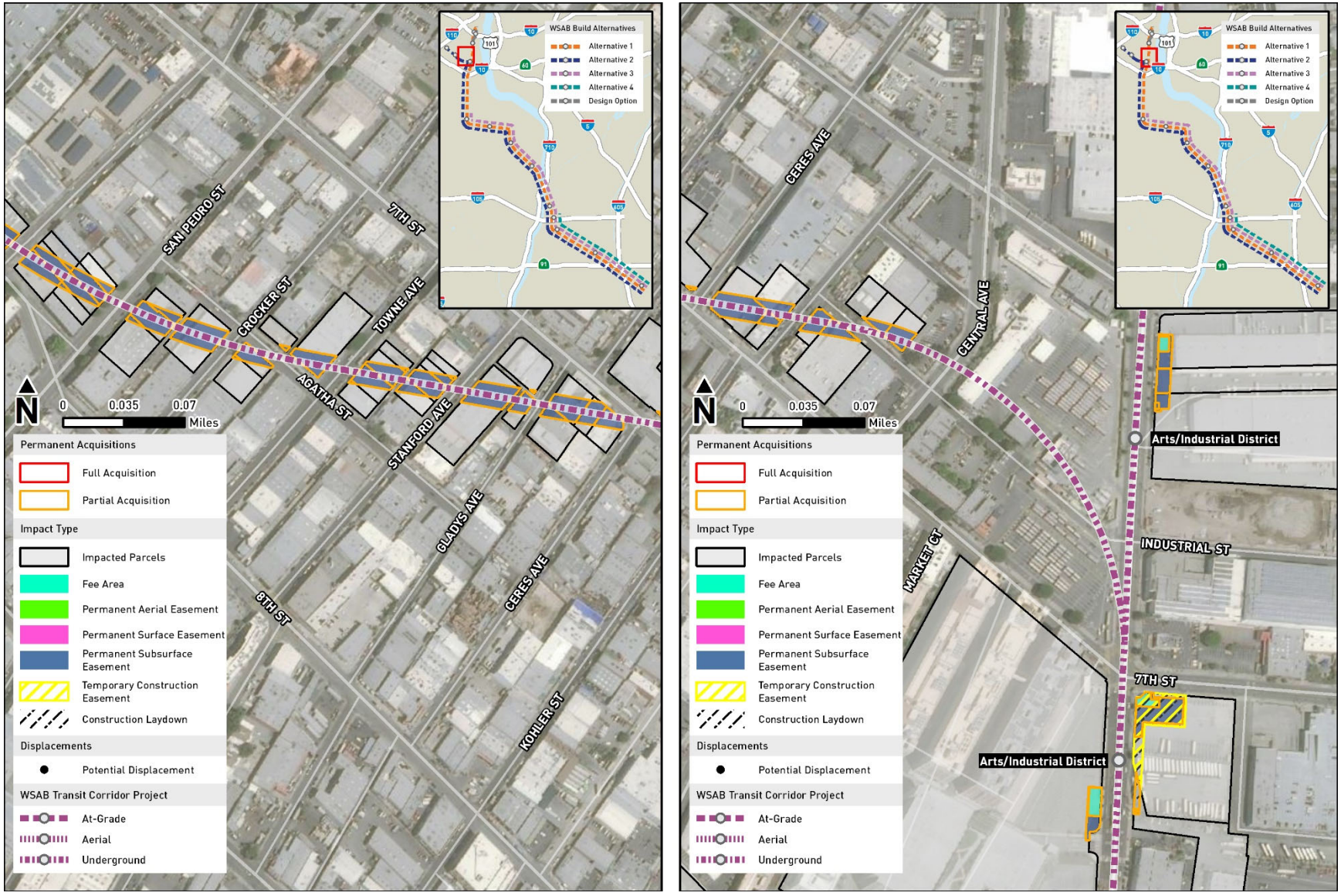
Source: Metro 2021m

Figure 4.3-2. Property Acquisitions for the Build Alternatives



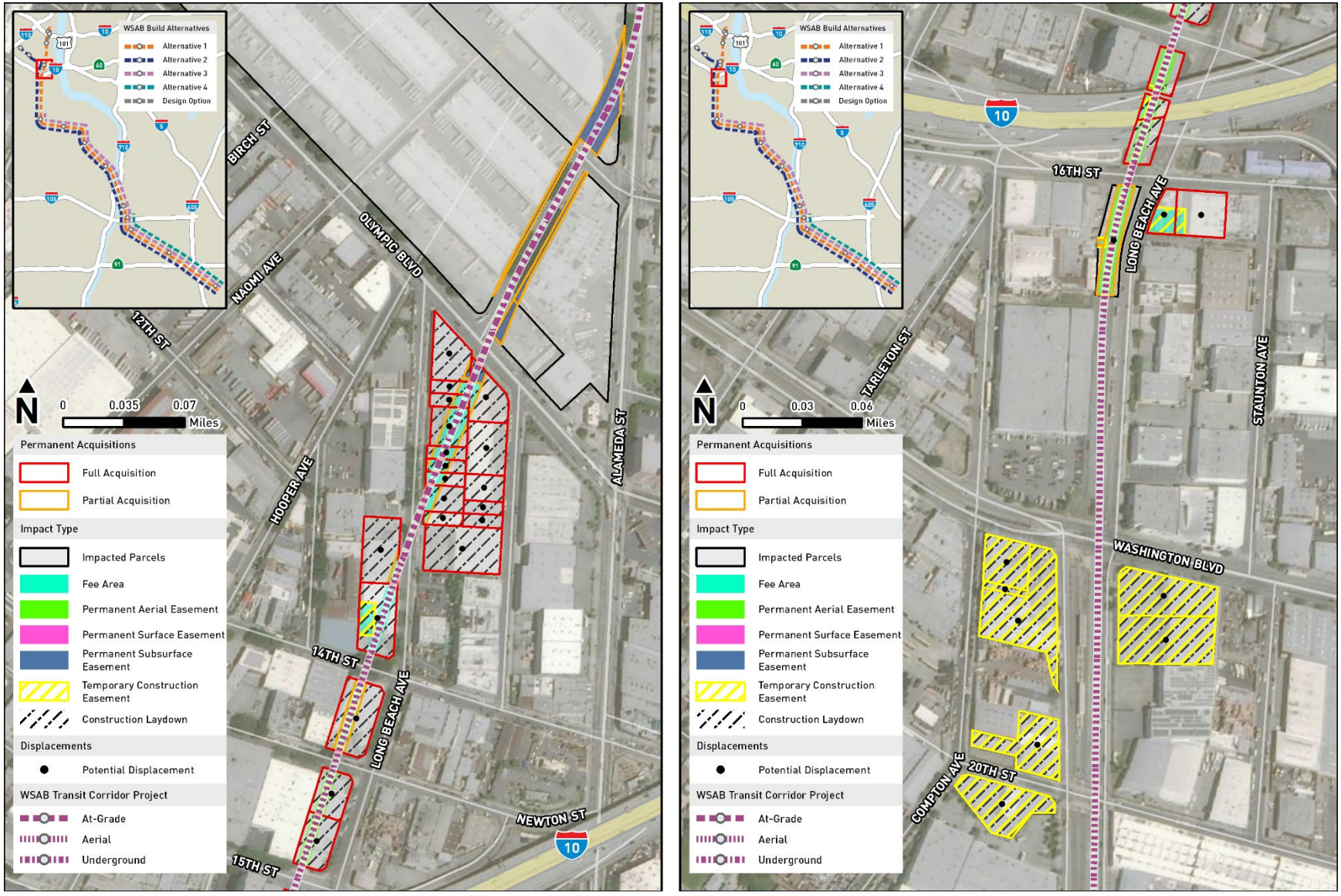
Source: Metro 2021m

Figure 4.3-3. Property Acquisitions for the Build Alternatives



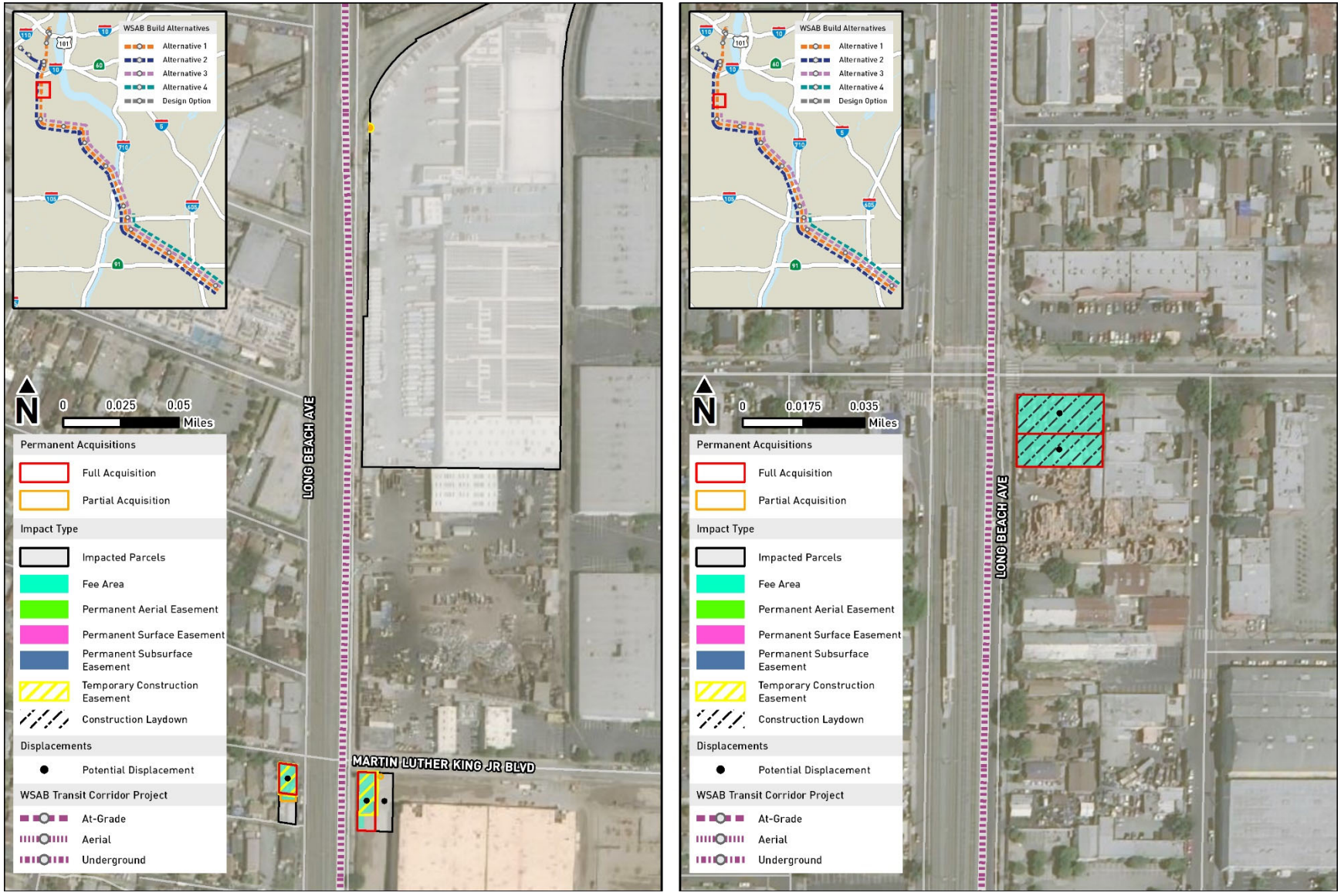
Source: Metro 2021m

Figure 4.3-4. Property Acquisitions for the Build Alternatives



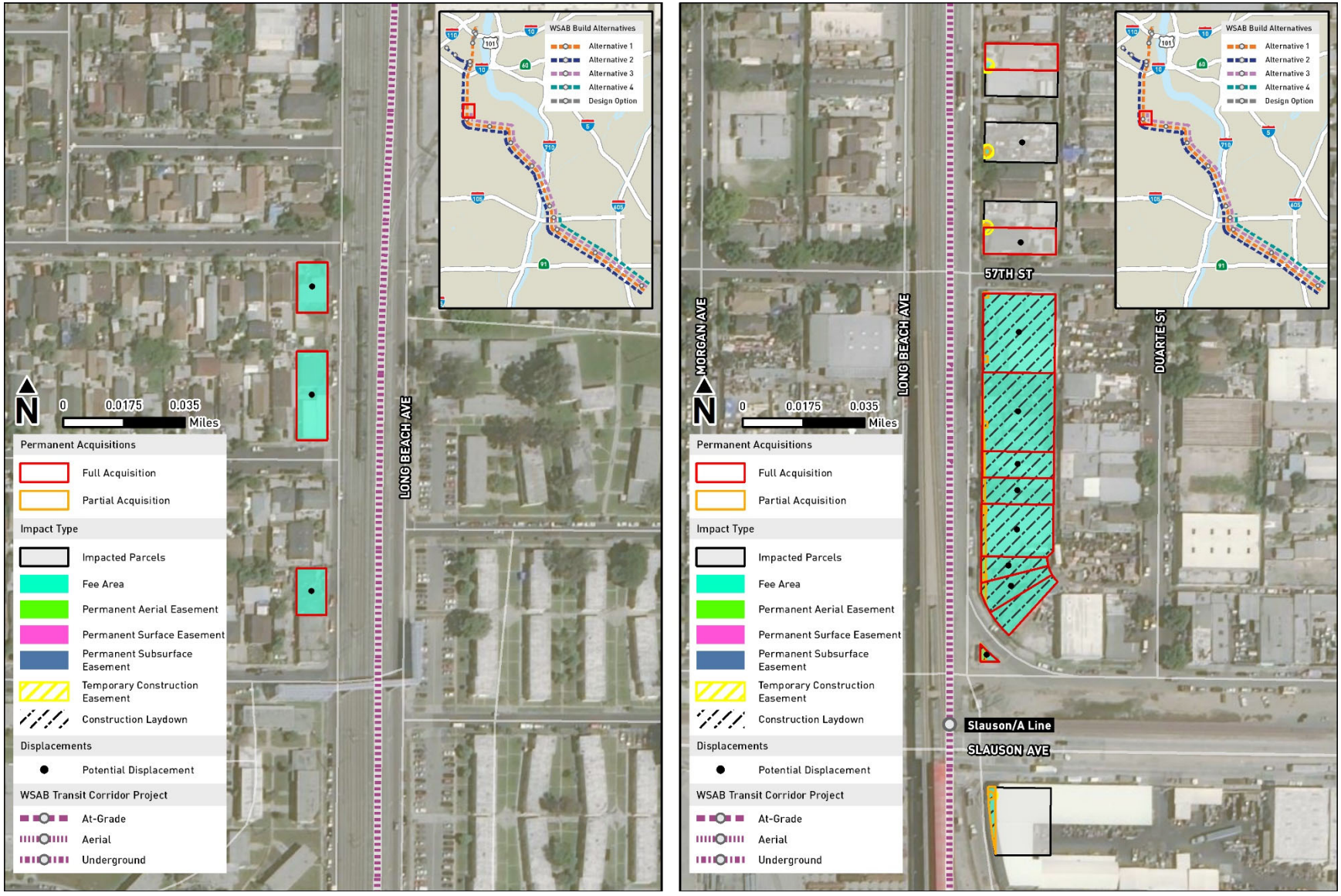
Source: Metro 2021m

Figure 4.3-5. Property Acquisitions for the Build Alternatives



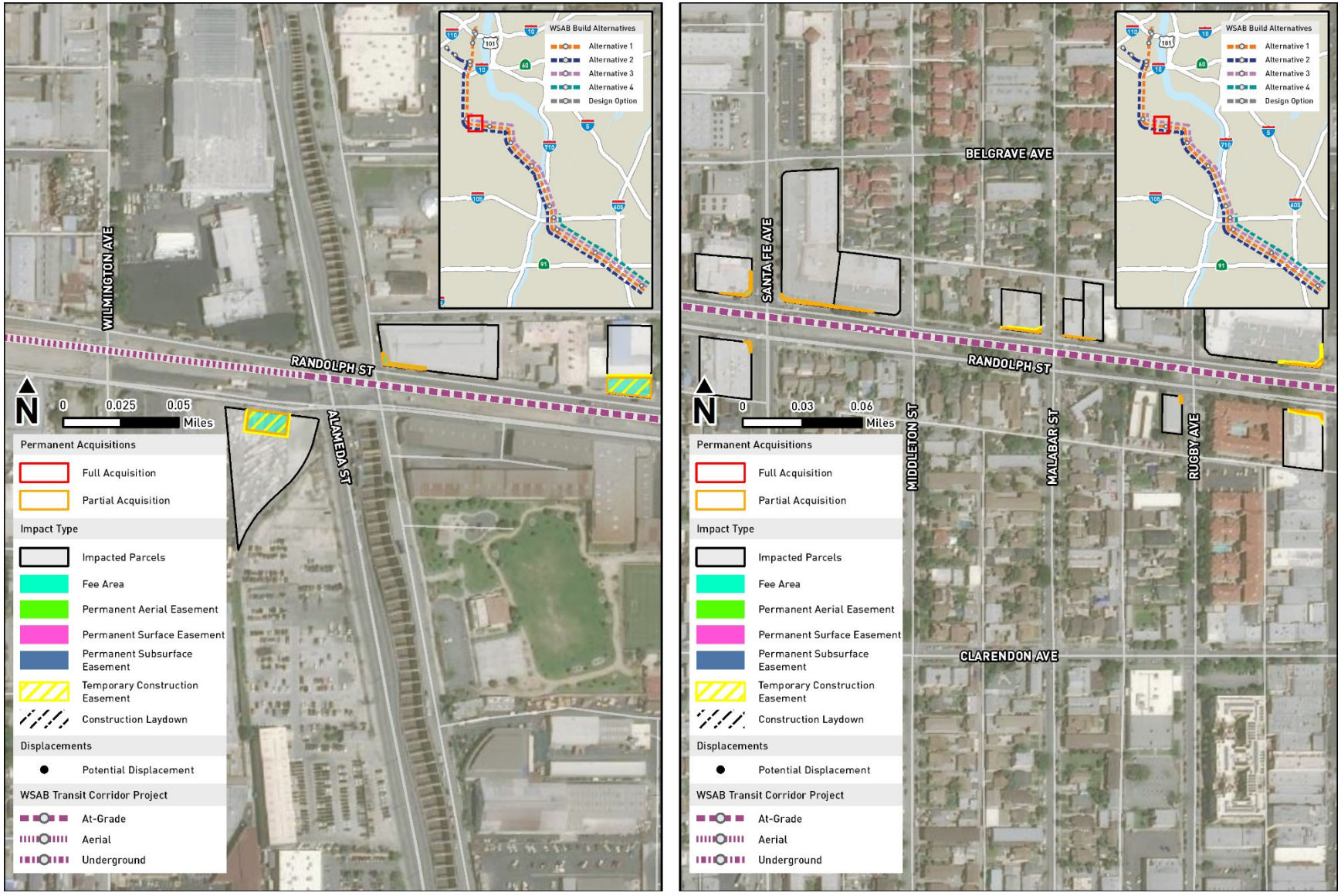
Source: Metro 2021m

Figure 4.3-6. Property Acquisitions for the Build Alternatives



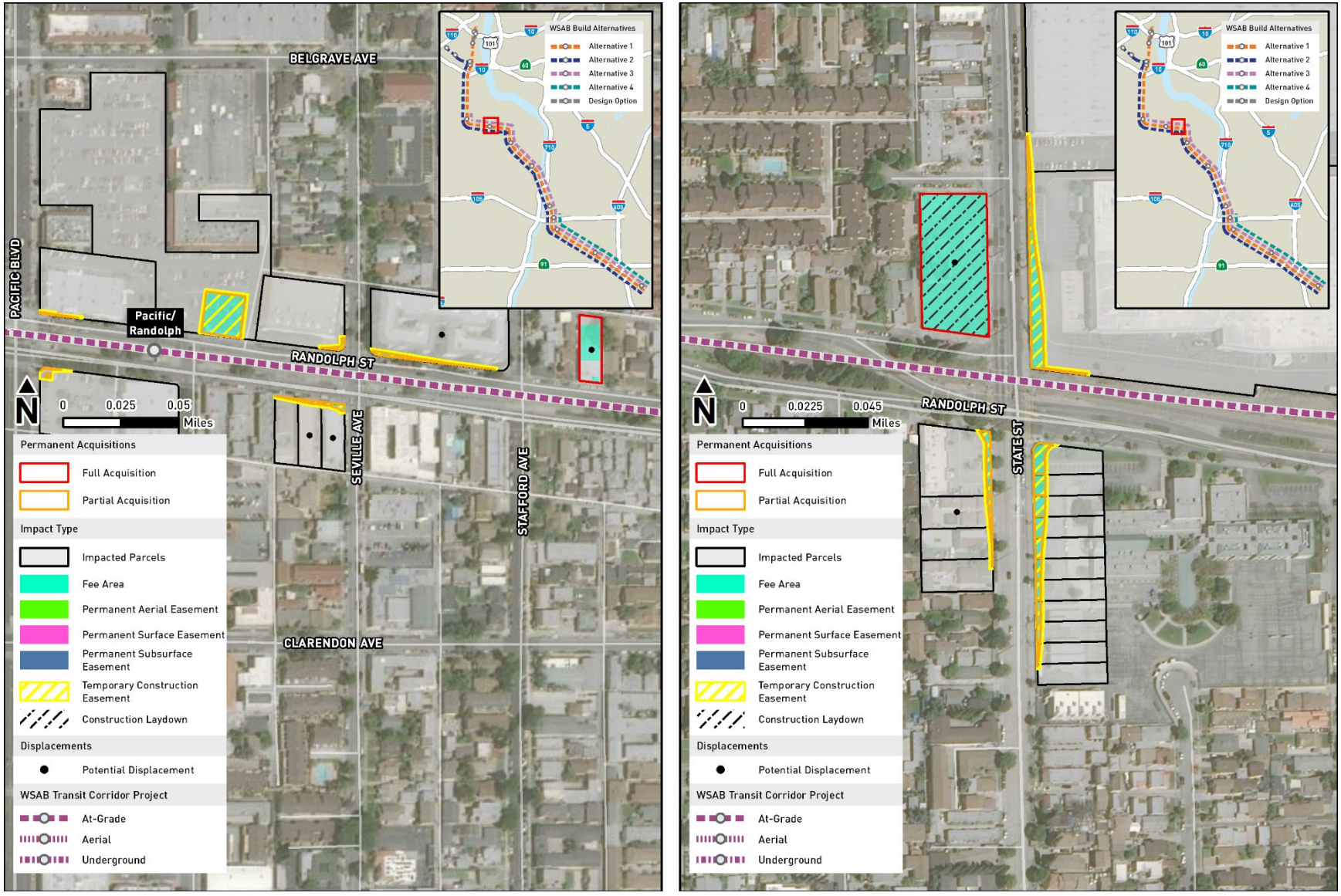
Source: Metro 2021m

Figure 4.3-7. Property Acquisitions for the Build Alternatives



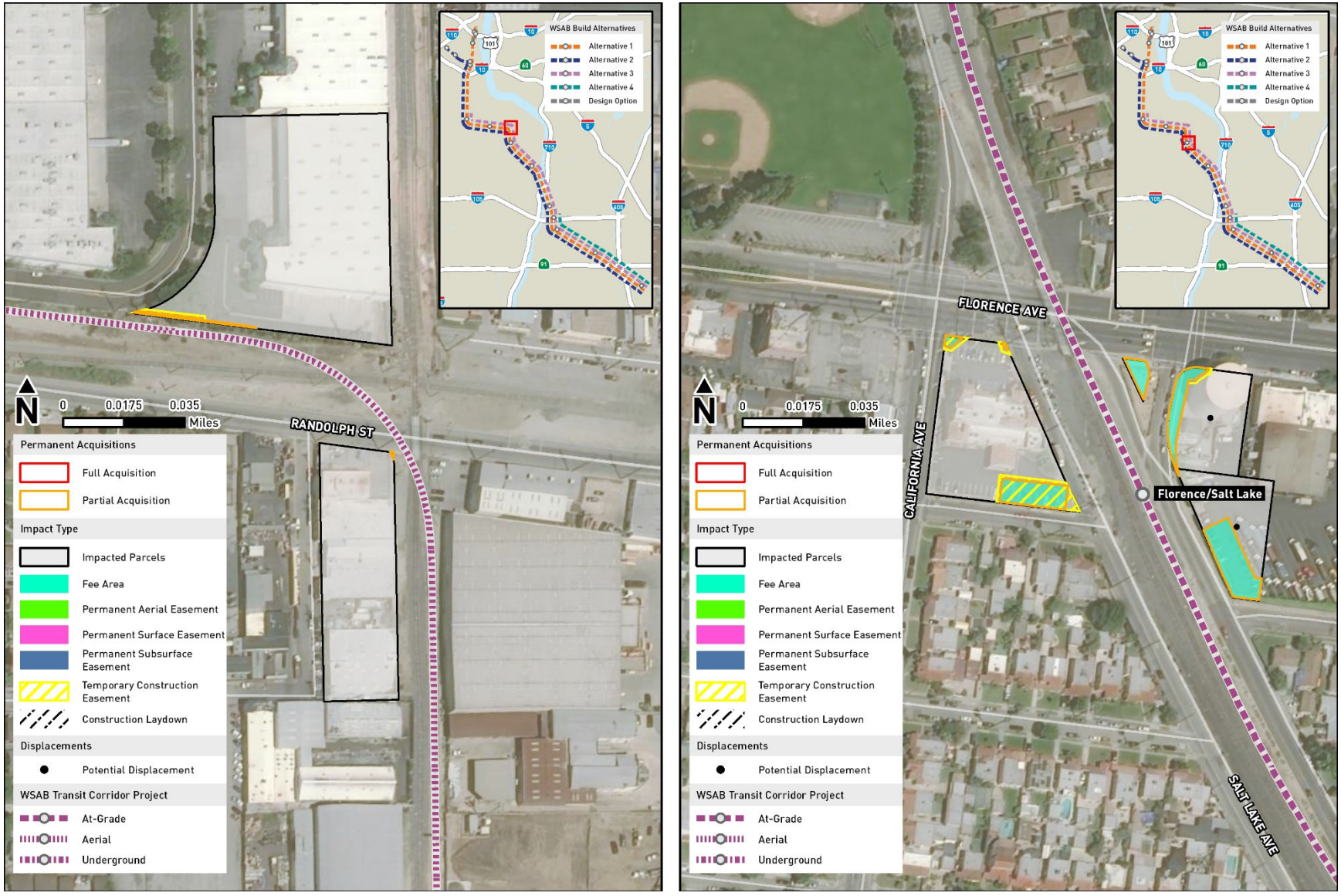
Source: Metro 2021m

Figure 4.3-8. Property Acquisitions for the Build Alternatives



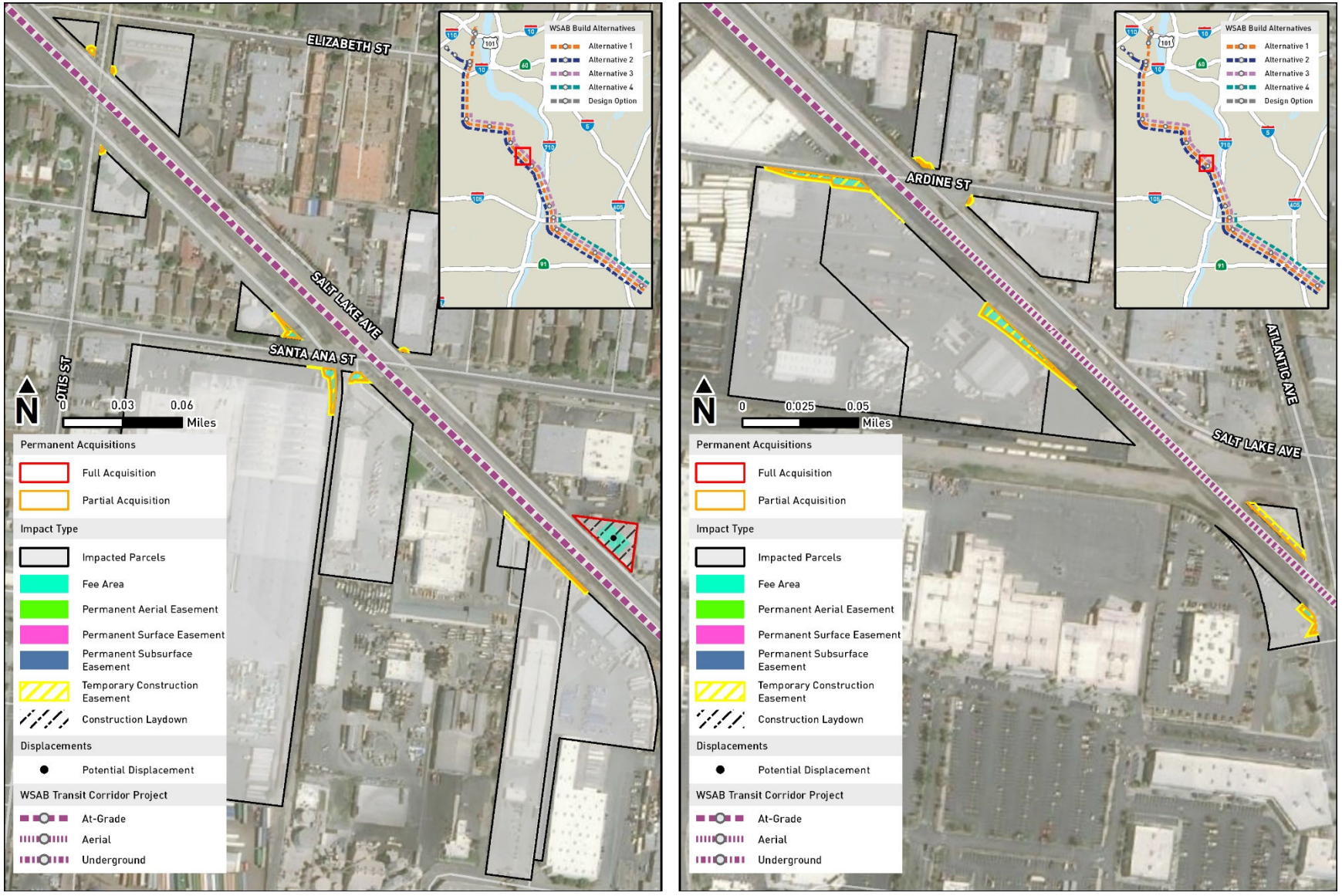
Source: Metro 2021m

Figure 4.3-9. Property Acquisitions for the Build Alternatives



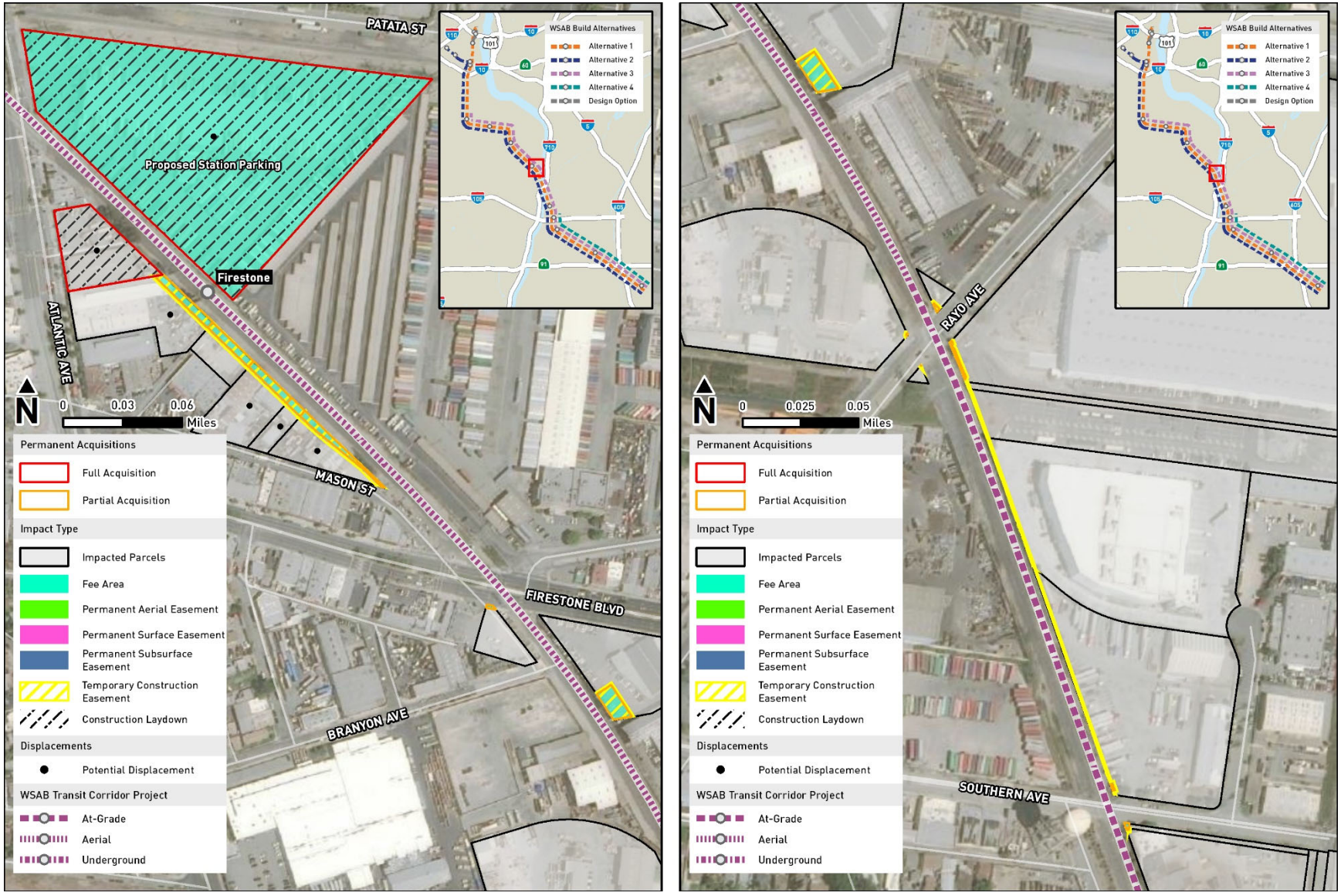
Source: Metro 2021m

Figure 4.3-10. Property Acquisitions for the Build Alternatives



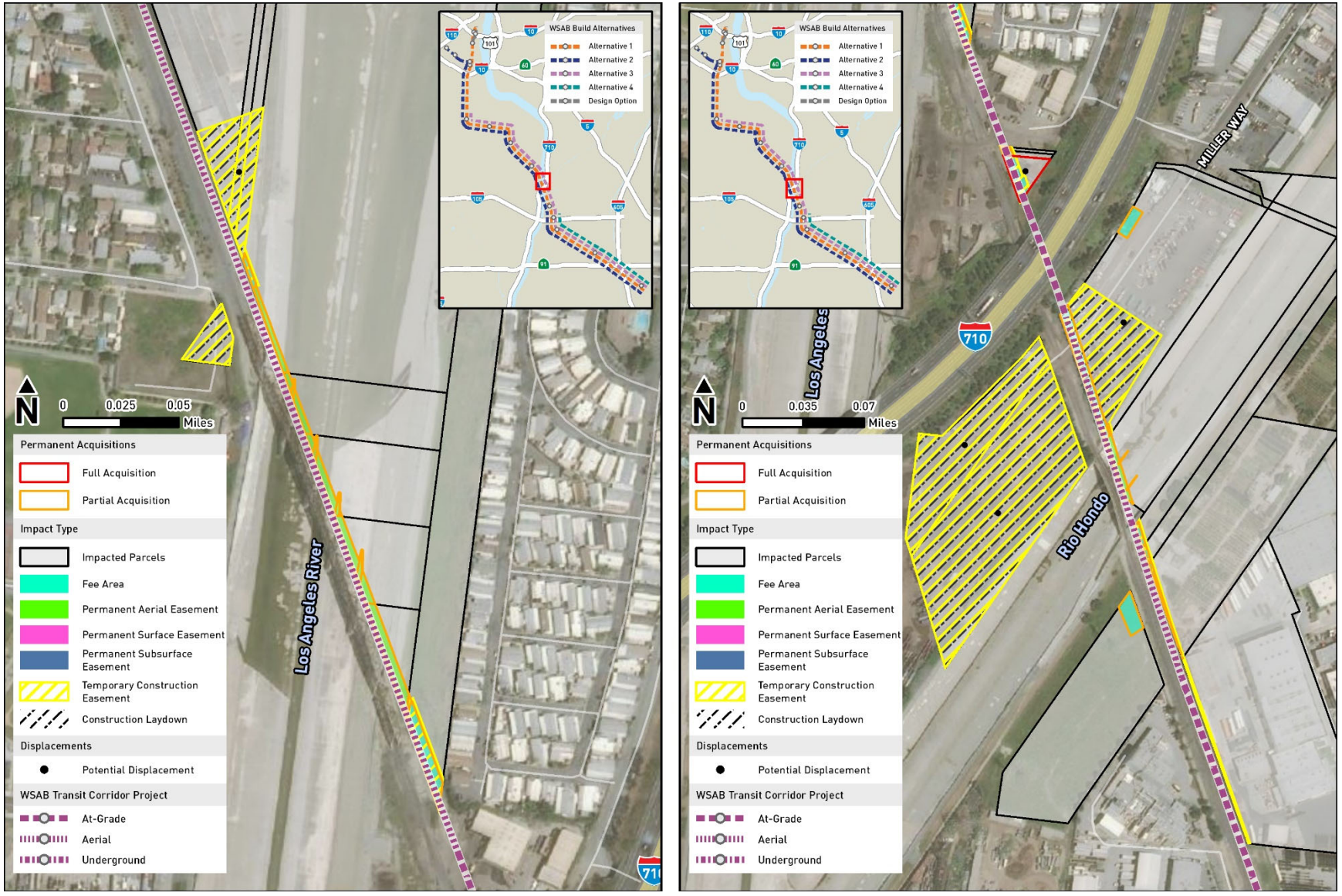
Source: Metro 2021m

Figure 4.3-11. Property Acquisitions for the Build Alternatives



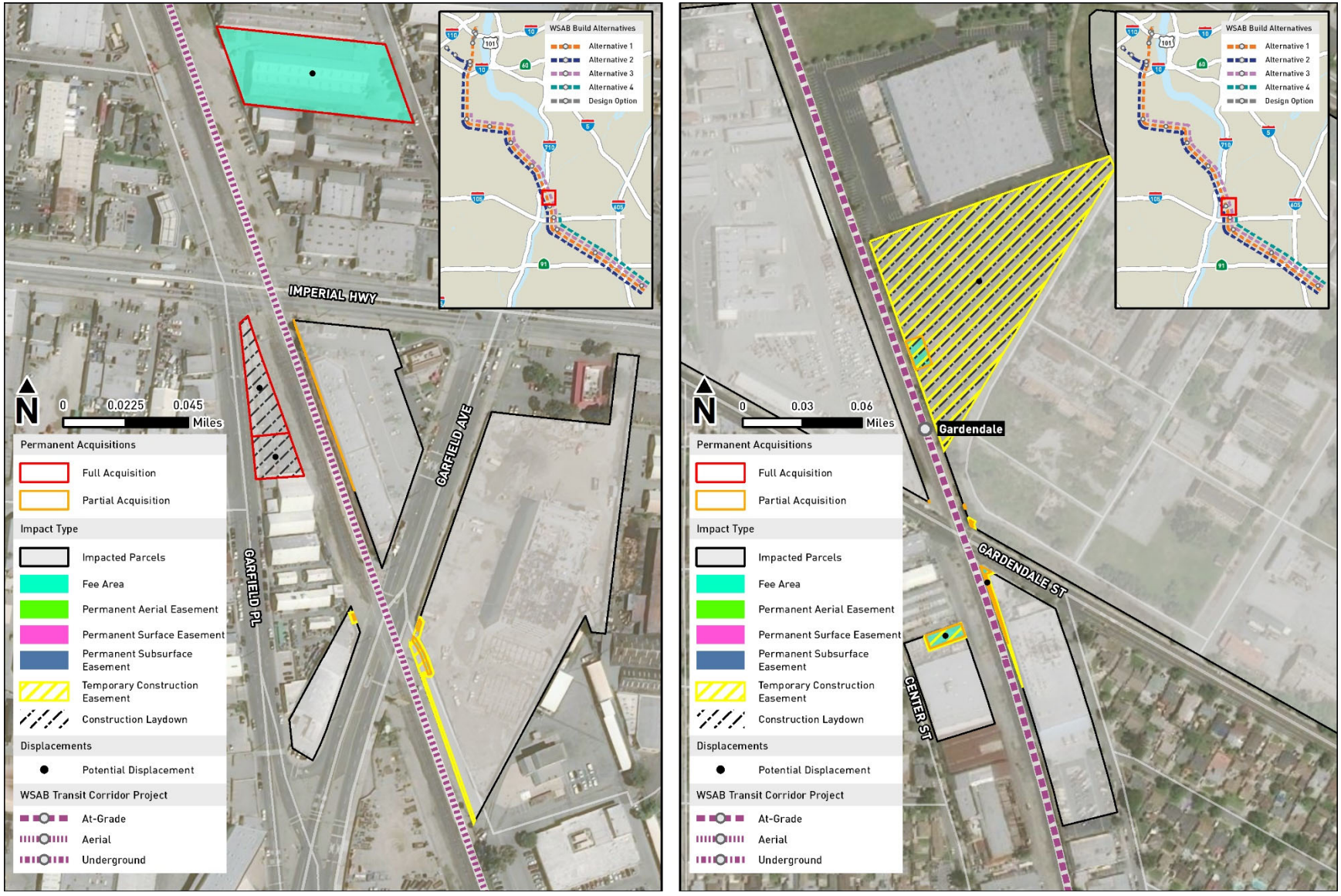
Source: Metro 2021m

Figure 4.3-12. Property Acquisitions for the Build Alternatives



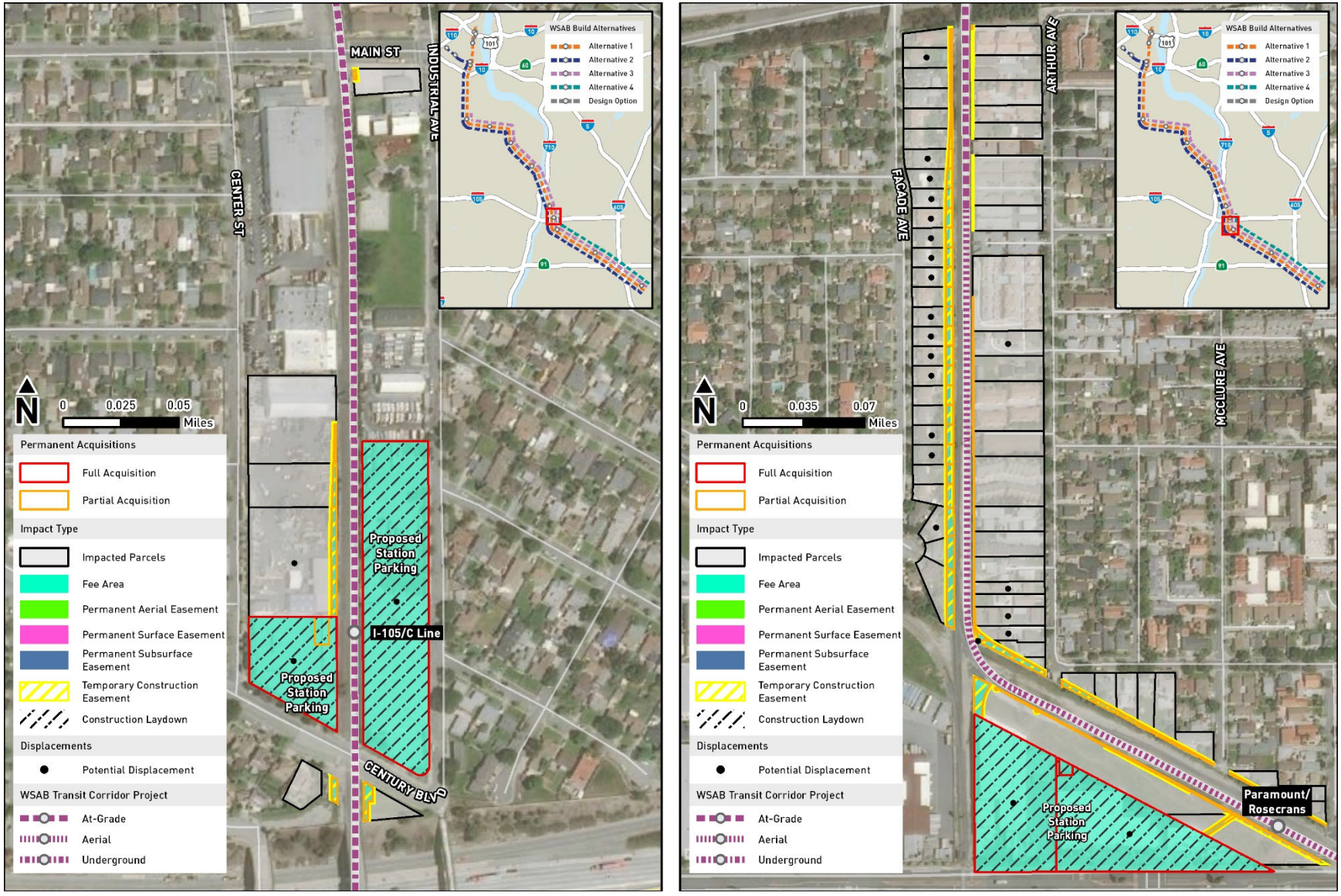
Source: Metro 2021m

Figure 4.3-13. Property Acquisitions for the Build Alternatives



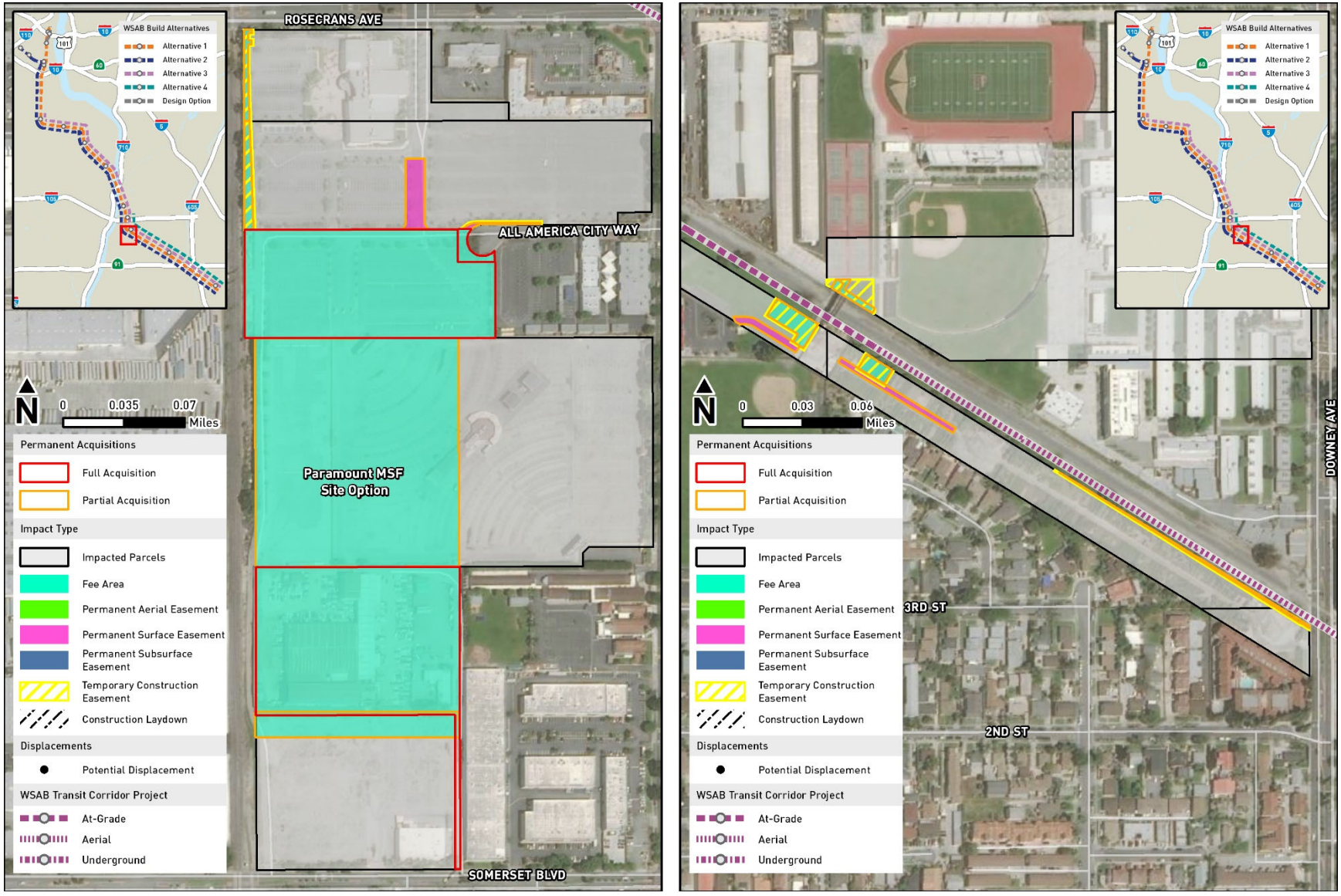
Source: Metro 2021m

Figure 4.3-14. Property Acquisitions for the Build Alternatives



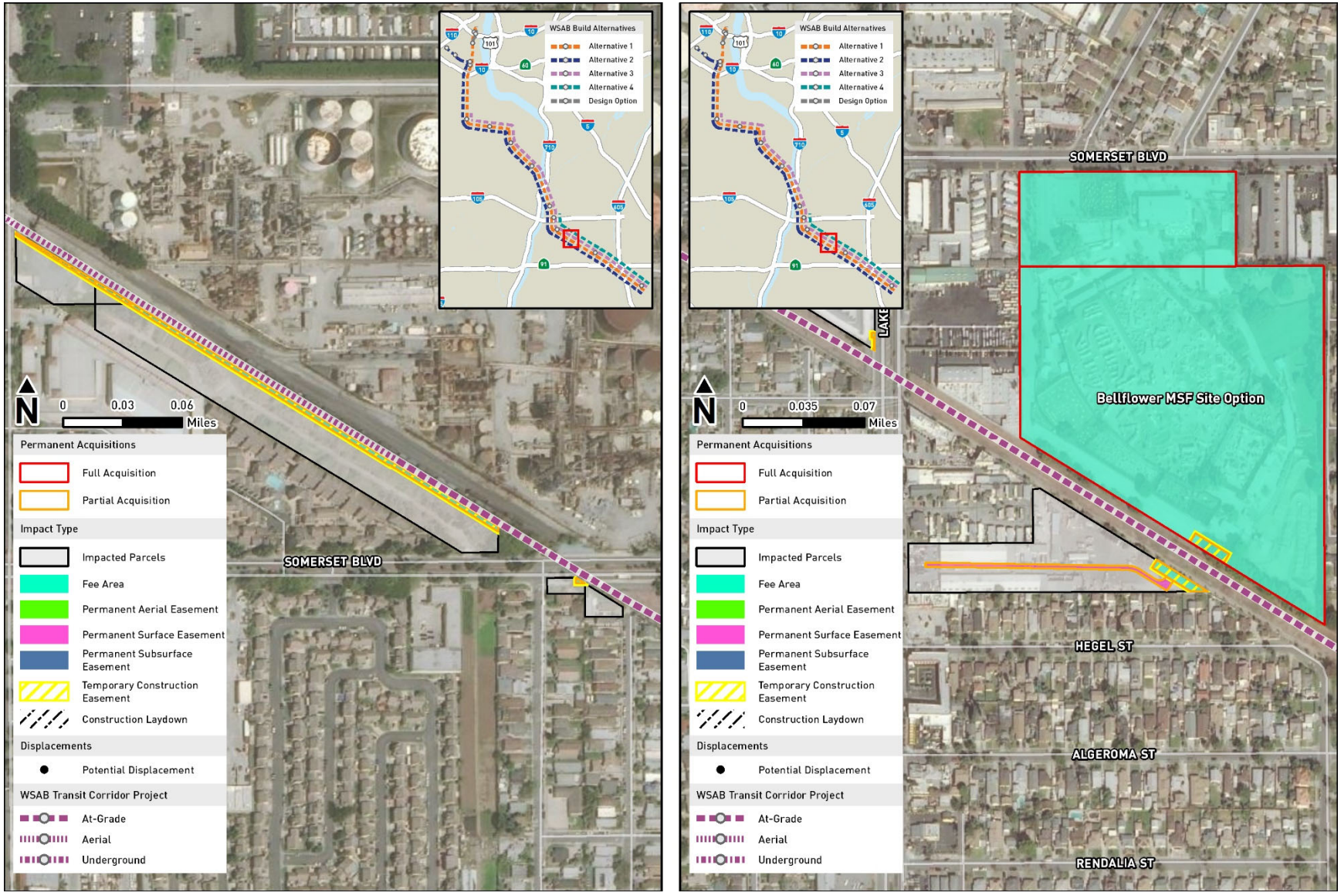
Source: Metro 2021m

Figure 4.3-15. Property Acquisitions for the Build Alternatives



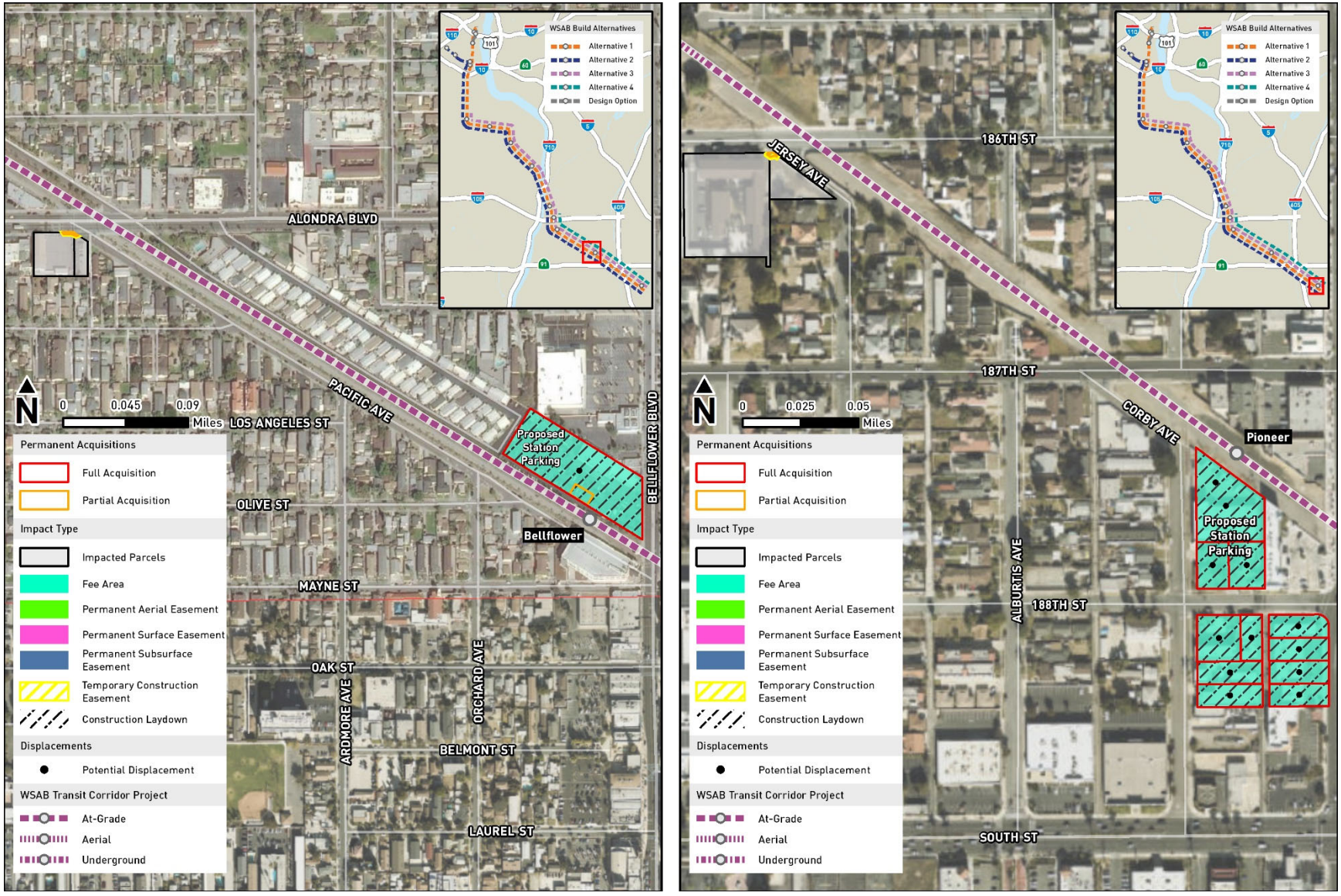
Source: Metro 2021m

Figure 4.3-16. Property Acquisitions for the Build Alternatives



Source: Metro 2021m

Figure 4.3-17. Property Acquisitions for the Build Alternatives



Source: Metro 2021m

Displacements

Business Displacements: Business displacements would be required to accommodate project-related facilities, including aerial structures, stations, TPSS sites, and grade crossings. For relocated businesses, jobs would also be relocated and would not be permanently displaced. However, permanent job loss could still occur as a result of the relocation. Table 4.3.3 and Table 4.3.4 summarize the number of potential businesses and employees that would be displaced by alternative and by jurisdiction. Alternative 1 would displace approximately 89 businesses and approximately 601 employees.

Table 4.3.3. Permanent Business and Employee Displacements by Build Alternative

Build Alternatives[1]	Business Displacement								
	Auto Services	Retail	Office	Food Service/ Restaurant	Industrial	Plant Nursery	Sports Center	Total	Estimated Employees Displaced[2]
Alternative 1	16	29	14	6	23	1	0	89	601
Alternative 2	16	44	14	10	23	1	0	108	687
Alternative 3	15	17	12	6	14	1	0	65	352
Alternative 4	4	8	3	0	3	0	0	18	115
Design Option 1	0	0	0	0	0	0	0	0	0
Design Option 2	0	0	1	0	0	0	0	1	23
Paramount MSF Site Option	0	4	1	0	0	0	0	5	113
Bellflower MSF Site Option	0	0	0	0	0	0	2	2	75

Source: Metro 2021m
Notes: [1] Businesses displaced for the City of Paramount and the City of Bellflower do not include businesses affected by the Paramount MSF site option and Bellflower MSF site option. The properties affected by the MSF site options are listed separately from the cities.
[2] Estimated number of displaced employees is based on research using RefUSA and CoStar's Tenant module. Employee counts for business records missing this information were estimated by referencing similarly sized businesses in the area where employee count data was available.
MSF = maintenance and storage facility

Table 4.3.4. Permanent Business and Employee Displacements by Jurisdiction and Build Alternatives

	Build Alternative	Business Displacement								
		Auto Services	Retail	Office	Food Service/ Restaurant	Industrial	Plant Nursery	Sports Center	Total	Estimated Employees Displaced[2]
Alternative 1, 2, 3[1]	Los Angeles									
	Alternative 1	5	13	3	0	12	0	0	33	278
	Alternative 2	5	28	3	4	12	0	0	52	365
	Alternative 3	4	1	1	0	3	0	0	9	30
	Huntington Park	0	3	4	2	1	0	0	10	60
	Cudahy	0	0	0	0	1	0	0	1	7
	South Gate	7	5	4	4	8	1	0	29	159
Alternative 4[1]	South Gate	0	0	0	0	2	0	0	2	18
Alternative 1, 2, 3, and 4[1]	Paramount	1	0	0	0	1	0	0	2	57
	Bellflower	1	0	0	0	0	0	0	1	10
	Artesia	2	8	3	0	0	0	0	13	30
Design Options	Los Angeles (Design Option 1)	0	0	0	0	0	0	0	0	0
	Los Angeles (Design Option 2)	0	0	1	0	0	0	0	1	23
MSF Site Options	Paramount (Paramount MSF Site Option)	0	4	0	0	1	0	0	5	113
	Bellflower (Bellflower MSF Site Option)	0	0	0	0	0	0	**2**	**2**	75

Source: Metro 2021m

Notes: [1] Businesses displaced for the City of Paramount and the City of Bellflower do not include businesses affected by the Paramount MSF site option and Bellflower MSF site option. The properties affected by the MSF site options are listed separately from the cities.

[2] Estimated number of displaced employees is based on research using RefUSA and CoStar's Tenant module. Employee counts for business records missing this information were estimated by referencing similarly sized businesses in the area where employee count data was available.

MSF = maintenance and storage facility

Residential Displacements: Full acquisitions of residential properties would be required to accommodate the aerial structure columns and parking facilities. Partial acquisitions of residential properties would be required to accommodate grade crossings, aerial crossings, track alignment, and other ancillary facilities. The partial acquisitions would be primarily in rear yards of properties adjacent to the rail ROW in which the primary dwelling units are set toward the front of the properties, away from the rail ROW and the area where the acquisition would be required.

Table 4.3.5 summarizes the number of displaced residential units and occupants by Build Alternative, and Table 4.3.6 provides a summary by jurisdiction. Alternative 1 would require 6 full acquisitions and 15 partial acquisitions of residential properties that would affect a total of 21 residential properties and displace approximately 78 residential occupants.

Table 4.3.5. Permanent Residential Displacements by Build Alternative

			Residential Units Displaced			Estimated Occupants Displaced		
		Acquisition Type	Single-Family	Multi-Family	Total	Single-Family	Multi-Family	Total
Build Alternative	Alternatives 1, 2, 3[1]	Full	4	2	**6**	14	8	**22**
		Partial	5	10	**15**	17	39	**56**
	Total		**9**	**12**	**21**	**31**	**47**	**78**
	Alternative 4[2]	Full	2	0	**2**	8	0	**8**
		Partial	2	4	**6**	8	16	**24**
	Total		**4**	**4**	**8**	**16**	**16**	**32**
Design Options	Design Options 1 and 2	Full/Partial	0	0	**0**	0	0	**0**
MSF Site Options	Paramount MSF Site Option	Full	1	0	**1**	4	0	**4**
		Partial	3	3	**6**	12	12	**24**
	Bellflower MSF Site Option	Full/Partial	0	0	**0**	0	0	**0**

Source: Metro 2021m
Notes: [1] Alternatives 1, 2, and 3 consist of residential displacements in the Cities of Los Angeles, Huntington Park, Paramount, and Artesia.
[2] Alternative 4 consists of residential displacements in the Cities of Paramount and Artesia.
MSF = maintenance and storage facility

Table 4.3.6. Permanent Residential Displacements by Jurisdiction

	Jurisdiction	Acquisition Type	Residential Units Displaced			Estimated Occupants Displaced		
			Single-Family Units	Multi-Family Units	Total	Single-Family	Multi-Family	Total
Alternatives 1, 2 and 3	Los Angeles	Full	2	0	**2**	6	0	**6**
		Partial	3	1	**4**	9	3	**12**
	Huntington Park	Full	0	2	**2**	0	8	**8**
		Partial	0	5	**5**	0	20	**20**
Alternatives 1, 2, 3, 4	Paramount	Partial	2	4	**6**	8	16	**24**
	Artesia	Full	2	0	**2**	8	0	**8**
Design Options	Design Options 1 and 2	Full/Partial	0	0	**0**	0	0	**0**
MSF Site Options	Paramount MSF Site Option	Full	1	0	**1**	4	0	**4**
		Partial	3	3	**6**	12	12	**24**
	Bellflower MSF Site Option	Full/Partial	0	0	**0**	0	0	**0**

Source: Metro 2021m
Note: MSF = maintenance and storage facility

Metro would compensate owners at fair market value to purchase the required property and would compensate owners for damages to the remainder property as applicable. Residents of fully acquired properties would need to relocate while residents affected by partial acquisitions may make a case that the remainder property is no longer compatible with their intended use and may choose to relocate. This may result in the need to relocate some residents, but further information will need to be obtained during discussions with owners at the time of acquisition.

Replacement and Relocation

Business Relocation: An inventory was developed for the Project of available replacement sites for lease and sale within each city and 6 miles of each affected property based on market conditions and vacancy as of June/July 2020. A "gap analysis" identifying if a surplus or deficit of replacement sites are available was conducted. Table 4.3.7 summarizes the gap analysis, which determined that a sufficient number of comparable replacement sites may not be available within displacement cities, specifically for automotive businesses in the Cities of Los Angeles and South Gate. These uses may not be able to relocate within the same city; however, expanding the search to nearby cities shows that a sufficient number of replacement sites are available within 6 miles of the affected business. Thus, suitable replacement sites would be available within a reasonable distance from affected properties.

Table 4.3.7. Gap Analysis of Displacements and Available Units

		Business Type	Businesses Displaced	Non-Residential Properties within City Boundary		Non-Residential Properties within 6 Miles of Property	
				Total Properties Available	Size of Surplus	Total Properties Available	Size of Surplus
Alternatives 1, 2, 3	**Los Angeles[1] Alternative 1**	Auto Services	5	0	-5	24	19
		Retail	13	293	280	915	902
		Office	3	249	246	465	462
		Industrial	12	254	242	583	571
	Los Angeles[1] Alternative 2	Auto Services	5	0	-5	24	19
		Retail	28	293	265	915	887
		Office	3	249	246	465	462
		Food Service	4	17	13	61	57
		Industrial	12	254	242	583	571
Alternative 3		Auto Services	4	0	-4	24	20
		Retail	1	293	292	915	914
		Office	1	249	248	465	464
		Industrial	3	254	251	61	581
	Huntington Park	Retail	3	60	57	710	707
		Office	4	26	22	542	538
		Food Service	2	12	10	11	9
		Industrial	1	16	15	367	366
	Cudahy	Industrial	1	1	0	367	366
	South Gate	Auto Services	7	2	-5	41	34
		Retail	5	43	38	396	391
		Office	4	3	-1	39	35
		Food Service	4	2	-2	17	13
		Industrial	8	8	0	458	450
		Plant Nursery	1	0	-1	0	-1
Alternative 4	**South Gate**	Industrial	2	8	6	458	456
Alternatives 1, 2, 3, 4	**Paramount**	Auto Services	1	2	1	17	16
		Industrial	1	12	11	170	169
	Bellflower	Auto Services	1	7	6	26	25
		Retail	8	38	30	242	234
		Office	3	5	2	95	92

		Business Type	Businesses Displaced	Non-Residential Properties within City Boundary		Non-Residential Properties within 6 Miles of Property	
				Total Properties Available	Size of Surplus	Total Properties Available	Size of Surplus
Design Option 2[2]	**Los Angeles**	Industrial	1	8	7	458	457
MSF Site Options	**Paramount**	Retail	2	11	9	220	218
		Industrial[2]	1	12	11	170	169
		Drive-in	1	0	-1	0	-1
		Swap Meet	1	0	-1	0	-1
	Bellflower	Sports Center	2	0	-2	0	-2

Source: Metro 2021m
Notes: [1] Includes the Los Angeles Zip codes of 90001, 90011, and 90058 and areas 6 miles from the respective displaced businesses.
[2] "Total Properties Available" and "Size of Surplus" does not take into account the Build Alternative totals.
MSF = maintenance and storage facility

Special property conditions, such as the nursery in the City of South Gate, may have a challenge finding a suitable replacement site to lease at the time of acquisition. GWS Nursery and Supply Company currently leases two large parcels from the City of South Gate, of which one 6-acre parcel would be acquired for the Build Alternatives. A search for similarly sized vacant land for lease was conducted by using available listing services and contacting real estate brokers in the area. The search resulted in no viable options for sale or lease within the city boundaries or within 6 miles of the affected property, suggesting that at the time of acquisition, finding suitable replacement sites would be challenging. Metro would provide relocation assistance and compensation for all displaced businesses and residences as required under the Uniform Act and California Relocation Act. Refer to Section 4.3.3.8 for additional information on special relocation considerations.

Residential Replacement: Table 4.3.8 summarizes the inventory and overall median price range of residential units available for sale and rent in the cities that would have residential displacements (i.e., Los Angeles, Huntington Park, Bellflower, Paramount, and Artesia). Inventory of the surrounding cities (Vernon, Downey, Cerritos, Lakewood, and North Long Beach) is also provided as these cities could be able to accommodate residential displacements in the project corridor. Based on 2020 market conditions, sufficient residential replacement sites for sale and rent are currently available in the affected cities. Sufficient supply for residential replacements in the surrounding cities would also be able to accommodate the residential displacements in the project corridor. Unless there is a significant change in vacancy rates at the time of acquisition, there would likely be sufficient replacement sites to relocate all displacees. This analysis does not account for residents currently living in rent-controlled units and relocation to market-rate units.

Metro would provide relocation assistance and compensation for all displaced businesses and residences as required under the Uniform Act and California Relocation Act. Under NEPA, with compliance with the Uniform Act, California Relocation Act, and other applicable regulations, Alternative 1 would not result in adverse effects related to acquisitions and displacements.

Table 4.3.8. Inventory of Residential Units for Sale and Rent

	Jurisdiction/Zip Code	Number of Units[1]				Price Range
		1- Bed	2- Bed	3- Bed	Total Units	Overall Median Range[2]
Single-Family Units for Sale	Los Angeles[3]	6	17	25	59	
	90001	1	10	3	14	$386,286
	90011	6	17	20	43	$472,899
	90058	0	0	2	2	$239,000
	Huntington Park	0	9	13	22	$475,693
	Paramount	3	12	17	11	$464,896
	Bellflower	0	4	26	30	$551,357
	Artesia	0	3	8	11	$600,218
	Total	**15**	**62**	**108**	**164**	
Single-Family Units for Rent	Los Angeles[3]	0	0	3	3	
	90001	0	0	1	1	$3,000
	90011	0	0	2	2	$2,250
	90058	0	0	0	0	N/A
	Huntington Park	1	0	1	2	$3,000
	Paramount	0	1	2	3	$2,600
	Bellflower	0	1	1	2	$2,500
	Artesia	0	5	4	8	$2,550
	Total	**1**	**7**	**11**	**18**	
Apartments for Rent	Los Angeles[3]	14	30	15	59	
	90001	7	13	4	24	$2,317
	90011	7	16	11	34	$2,385
	90058	0	1	0	1	N/A
	Vernon	0	0	0	0	N/A
	Huntington Park	5	2	2	9	$2,329
	Paramount	6	15	4	25	$2,288
	Bellflower	30	29	6	65	$2,345
	Downey	70	23	7	100	$2,479
	Norwalk	8	7	7	22	$2,380
	Artesia	9	9	0	18	$2,273
	Cerritos	29	5	10	44	$2,701
	Lakewood	271	11	15	297	$2,349
	North Long Beach	0	15	6	21	$2,245
	Total	**456**	**176**	**87**	**660**	

Source: Metro 2021m

Notes: It is assumed that residential units for rent that may be affected by the Build Alternatives and require residential replacement consist of 2-bedroom and 3-bedroom units only. No 1-bedroom units for rent are anticipated to be affected or replaced.

[1] Based on Hotpads.com and Zillow.com June/July 2020 search

[2] Los Angeles Almanac. "Average Rent* - Multifamily, Single-Family and Condominium Residences by Los Angeles County Zip Codes 2015-2020." Website: http://www.laalmanac.com/economy/ec40b.php. Accessed June 2020.

[3] Los Angeles includes the following Zip codes: 90001, 90011, 90058

N/A = not applicable

4.3.3.3 Alternative 2: 7th Street/Metro Center to Pioneer Station

Acquisitions

As shown in Table 4.3.1, Alternative 2 would affect 283 parcels and require 38 full acquisitions and 309 partial acquisitions. Similar to Alternative 1, Alternative 2 property acquisitions would be located in the Cities of Los Angeles, Huntington Park, Cudahy, South Gate, Downey, Paramount, Bellflower, Artesia, and Cerritos, and in unincorporated LA County (Table 4.3.2). Full and partial property acquisitions would be required for the same project components as Alternative 1. The locations of these acquisitions are shown in Figure 4.3-1 to Figure 4.3-17. Similar to Alternative 1, Alternative 2 would also acquire portions of rail ROWs owned by UPRR, BNSF Railway, and the Ports of Los Angeles and Long Beach. Acquisition of portions of the rail ROW would allow the Project to realign the freight tracks to accommodate the project tracks and allow continued operation of the freight tracks and spurs along the rail ROW.

Displacements

Business Displacements: Similar to Alternative 1, business displacements would occur to accommodate project-related facilities, including aerial structures, stations, TPSS sites, and grade crossings. Alternative 2 would displace approximately 108 businesses and approximately 687 employees (Table 4.3.3 and Table 4.3.4).

Residential Displacements: Similar to Alternative 1, full acquisitions and partial acquisitions of residential properties would be required to accommodate the aerial structure columns, grade crossings, aerial crossings, track alignment, parking facilities, and other ancillary facilities. Alternative 2 would result in the same number of residential property acquisitions and displaced residents as Alternative 1: 6 full acquisitions and 15 partial acquisitions of residential properties that would affect a total of 21 residential properties and displace approximately 78 residential occupants (Table 4.3.5). Residential displacement would occur in the Cities of Los Angeles, Huntington Park. Bellflower, Paramount, and Artesia (Table 4.3.6).

Replacement and Relocation

Business Relocation: Similar to Alternative 1, replacement sites would be available for displaced businesses; however, a sufficient number of comparable replacement sites may not be available within displacement cities for select businesses (i.e., automotive businesses in the City of Los Angeles and City of South Gate, and nursery property in the City of South Gate) (Table 4.3.7). These are the same businesses that would be affected by Alternative 1. Refer to the subheading "Replacement and Relocation" in Section 4.3.3.2 for additional information on relocation of these businesses. Refer to Section 4.3.3.8 for additional information on special relocation considerations.

Residential Replacement: Similar to Alternative 1, sufficient residential replacement sites for sale and rent are currently available in cities that would have residential displacements: cities of Los Angeles, Huntington Park, Bellflower, Paramount, and Artesia, as well as in surrounding cities (i.e., Vernon, Downey, Cerritos, Lakewood, and North Long Beach) (Table 4.3.8). Unless there is a significant change in vacancy rates at the time of acquisition, there would likely be sufficient replacement sites to relocate individuals displaced and owners of properties affected.

Metro would provide relocation assistance and compensation for all displaced businesses and residences as required under the Uniform Act and California Relocation Act. Under NEPA, with compliance with the Uniform Act, California Relocation Act, and other applicable regulations, Alternative 2 would not result in adverse effects related to acquisitions and displacements.

4.3.3.4 Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Acquisitions

Alternative 3 would affect 172 parcels and require 25 full acquisitions and 188 partial acquisitions (Table 4.3.1). Similar to Alternatives 1 and 2, Alternative 3 property acquisitions would be located in the Cities of Los Angeles, Huntington Park, Cudahy, South Gate, Downey, Paramount, Bellflower, Artesia, and Cerritos, and in unincorporated LA County (Table 4.3.2).

Full and partial property acquisitions would be required for the same project components as Alternatives 1 and 2, with the exception of tunneling, vents/switches/egress, and underground track. The locations of these acquisitions are shown in Figure 4.3-1 to Figure 4.3-17. Alternative 3 would acquire portions of rail ROWs owned by UPRR and the Ports of Los Angeles and Long Beach. Acquisition of portions of the rail ROW would allow the Project to realign the freight tracks to accommodate the project tracks and allow continued operation of the freight tracks and spurs along the rail ROW.

Displacements

Business Displacements: Similar to Alternatives 1 and 2, business displacements would be required to accommodate project-related facilities, including aerial structures, stations, TPSS sites, and grade crossings. Alternative 3 would displace approximately 65 businesses and approximately 352 employees (Table 4.3.3 and Table 4.3.4).

Residential Displacements: Similar to Alternatives 1 and 2, full acquisitions and partial acquisitions of residential properties would be required to accommodate the aerial structure columns, grade crossings, aerial crossings, track alignment, parking facilities, and other ancillary facilities. Alternative 3 would result in the same number of residential property acquisitions and displaced residents as Alternatives 1 and 2: 6 full acquisitions and 15 partial acquisitions of residential properties that would affect a total of 21 residential properties and displace approximately 78 residential occupants (Table 4.3.5). Residential displacement would occur in the Cities of Los Angeles, Huntington Park, Bellflower, Paramount, and Artesia (Table 4.3.6).

Replacement and Relocation

Business Relocation: Similar to Alternatives 1 and 2, replacement sites would be available for displaced businesses; however, a sufficient number of comparable replacement sites may not be available within displacement cities for the automotive businesses and nursery property in the City of South Gate (Table 4.3.7). Alternative 3 would avoid the displacement and relocation of automotive businesses in the City of Los Angeles that would be affected under Alternatives 1 and 2. Refer to the subheading “Replacement and Relocation” in Section 4.3.3.2 for additional information on relocation of displaced businesses. Refer to Section 4.3.3.8 for additional information on special relocation considerations.

Residential Replacement: Similar to Alternatives 1 and 2, sufficient residential replacement sites for sale and rent are currently available in cities that would have residential displacements: the Cities of Los Angeles, Huntington Park, Bellflower, Paramount, and Artesia, as well as in surrounding cities (i.e., Vernon, Downey, Cerritos, Lakewood, and North Long Beach) (Table 4.3.8). Unless there is a significant change in vacancy rates at the time of acquisition, there would likely be sufficient replacement sites to relocate all displacees.

Metro would provide relocation assistance and compensation for all displaced businesses and residences as required under the Uniform Act and California Relocation Act. Under NEPA, with compliance with the Uniform Act, California Relocation Act, and other applicable regulations, Alternative 3 would not result in adverse effects related to acquisitions and displacements.

4.3.3.5 Alternative 4: I-105/C (Green) Line to Pioneer Station

Acquisitions

Alternative 4 would affect 59 parcels and require 17 full acquisitions and 54 partial acquisitions (Table 4.3.1). Alternative 4 property acquisitions would be located in the Cities of South Gate, Paramount, Bellflower, Artesia, and Cerritos (Table 4.3.2). Full and partial property acquisitions would be required for the same project components as the other alternatives with the exception of tunneling, vents/switches/egress, and underground track. The locations of these acquisitions are shown in Figure 4.3-1 to Figure 4.3-17. Alternative 4 would acquire portions of rail ROWs owned by UPRR, which would allow the Project to realign the freight tracks to accommodate the project tracks and allow continued operation of the freight tracks and spurs along the rail ROW.

Displacements

Business Displacements: Similar to the other alternatives, Alternative 4 would require displacement of businesses to accommodate project-related facilities, including aerial structures, stations, TPSS sites, and grade crossings. Alternative 4 would displace approximately 18 businesses and approximately 115 employees (Table 4.3.3 and Table 4.3.4).

Residential Displacements: Similar to the other alternatives, full and partial acquisitions of residential properties would be required to accommodate the aerial structure columns, grade crossings, aerial crossings, track alignment, parking facilities, and other ancillary facilities. Alternative 4 would require the fewest displacements: 2 full acquisitions and 6 partial acquisitions of residential properties that would affect a total of 8 residential properties and displace approximately 32 residential occupants (Table 4.3.5). Residential displacement would occur in the Cities of Bellflower, Paramount, and Artesia (Table 4.3.6).

Replacement and Relocation

Business Relocation: Replacement sites would be available for displaced businesses for Alternative 4 (Table 4.3.7). Unless there is a significant change in vacancy rates at the time of acquisition, sufficient replacement sites to relocate the displaced businesses is anticipated.

Residential Replacement: Similar to the other Build Alternatives, sufficient residential replacement sites for sale and rent are currently available in cities that would have residential displacements: the Cities of Bellflower, Paramount, and Artesia (Table 4.3.8). Unless there is a

significant change in vacancy rates at the time of acquisition, there would likely be sufficient replacement sites to relocate individuals displaced and owners of properties affected.

Metro would provide relocation assistance and compensation for all displaced businesses and residences as required under the Uniform Act and California Relocation Act. Under NEPA, with compliance with the Uniform Act, California Relocation Act, and other applicable regulations, Alternative 4 would not result in adverse effects related to acquisitions and displacements.

4.3.3.6 Design Options—Alternative 1

Design Option 1: LAUS at MWD

Acquisitions: Design Option 1 would affect 12 parcels and require 20 partial acquisitions; no full acquisitions would be required (Table 4.3.1 and Table 4.3.2). Design Option 1 would also require permanent underground easements for the tunnel alignment at LAUS; these acquisitions would be similar to those identified for Alternative 1 without the design option.

Displacements: Design Option 1 would be located primarily underground east of the existing MWD building and would not displace businesses or residential units (Table 4.3.3 through Table 4.3.6).

Replacement and Relocation: Design Option 1 would be located primarily underground behind the existing MWD building and would not displace businesses or residential units that would require replacement or relocation.

Design Option 2: Add Little Tokyo Station

Acquisition: Design Option 2 would affect 4 parcels and require 1 full acquisition and 8 partial acquisitions (Table 4.3.1 and Table 4.3.2). Permanent underground easements would also be required for the underground station box and entrances.

Displacements: Under Design Option 2, the Little Tokyo Station would be constructed and would displace 1 additional commercial retail business and approximately 23 employees compared to Alternative 1 (Table 4.3.3 and Table 4.3.4). No residential displacements would occur (Table 4.3.5 and Table 4.3.6).

Replacement and Relocation: As discussed for Alternative 1 under the heading "Replacement and Relocation" in Section 4.3.3.2, the abundance of replacement sites currently available relative to the number of anticipated displacements suggests that replacement sites would be available to accommodate the business displacement (Table 4.3.7). No residential units would be displaced.

Metro would provide relocation assistance and compensation for all displaced businesses and residences as required under the Uniform Act and California Relocation Act. Under NEPA, with compliance with the Uniform Act, California Relocation Act, and other applicable regulations, Design Options 1 and 2 would not result in adverse effects related to acquisitions and displacements.

4.3.3.7 Maintenance and Storage Facilities

Paramount MSF Site Option

Acquisition: The Paramount MSF site option would affect 43 parcels and require 3 full acquisitions and 44 partial acquisitions (Table 4.3.1 and Table 4.3.2). The Paramount MSF

site option is currently developed with the Paramount Swap Meet, Paramount Drive-in Theatre, retail, and commercial parking.

Displacements: The Paramount MSF site option would displace 5 existing businesses (retail and industrial manufacturer businesses), including the Paramount Swap Meet and Paramount Drive-in Theatre (Table 4.3.3 and Table 4.3.4). Approximately 113 employees would be affected and displaced by this MSF site option. The proposed site for the Paramount MSF site option does not contain residential units. However, lead tracks to the Paramount MSF site option would affect residential properties: 1 full acquisition and 6 partial acquisitions for a total of 7 affected residential properties (Table 4.3.5 and Table 4.3.6). A total of approximately 28 residential occupants would be displaced.

Replacement and Relocation: Replacement sites would be available to accommodate the retail and industrial businesses affected by the Paramount MSF site option. However, comparable replacement sites may not be available for the drive-in theater and swap meet and they may not be able to relocate within the city or within 6 miles of the affected businesses. Currently, an insufficient number of potential replacement sites for sale or lease exist to accommodate these types of business displacements and they may not be able to successfully relocate (Table 4.3.7).

Sufficient residential replacement sites for sale and rent are currently available in the City of Paramount (Table 4.3.8). Unless there is a significant change in vacancy rates at the time of acquisition, there would likely be sufficient replacement sites to relocate individuals displaced and owners of properties affected. Refer to Section 4.3.3.8 for additional information on special relocation considerations.

Bellflower MSF Site Option

Acquisition: The Bellflower MSF site option would impact 2 parcels and result in 2 full acquisitions (Table 4.3.1 and Table 4.3.2). The Bellflower MSF site option is currently developed with the Hollywood Sports Paintball and Airsoft Park and Bellflower BMX business.

Displacements: The Bellflower MSF site option would displace two existing businesses, the Hollywood Sports Paintball and Airsoft Park and Bellflower BMX business, affecting and displacing approximately 75 employees (Table 4.3.3 and Table 4.3.4). The proposed site for the Bellflower MSF site option does not contain residential units; therefore, no residential displacements would occur (Table 4.3.5 and Table 4.3.6).

Replacement and Relocation: Comparable replacement sites may not be available for the Hollywood Sports Park and Bellflower BMX commercial businesses and they may not be able to relocate within the city or within 6 miles of the affected business (Table 4.3.7). Currently, an insufficient number of potential replacement sites for sale or lease exist to accommodate these types of displacements and they may not be able to successfully relocate. Based on the size and specialized use of the Hollywood Sports Park and Bellflower BMX commercial businesses, it would be difficult to relocate the business to another site in the City of Bellflower or surrounding cities. Attempting to find a suitable relocation site may require the business to relocate so far from the displacement location that relocation would not be feasible. The search could be expanded to Orange or Riverside Counties, but relocating the business a long distance from the displacement site would cause issues in regard to retaining patrons and employees and may introduce competition from other well-established facilities in these areas. Thus, attempting to find a suitable relocation site may require the business to

relocate so far from the displacement location that relocation would not be feasible. No residential units would be displaced. Refer to Section 4.3.3.8 for additional information on special relocation considerations.

Metro would provide relocation assistance and compensation for all displaced businesses and residences as required under the Uniform Act and California Relocation Act. Under NEPA, with compliance with the Uniform Act, California Relocation Act, and other applicable regulations, the Paramount and Bellflower MSF site options would not result in adverse effects related to acquisitions and displacements.

4.3.3.8 Special Relocation Considerations

Special relocation considerations for this Project are primarily related to the number of commercial and industrial displacements anticipated and the potentially limited number of replacement sites available. As discussed in Sections 4.3.3.2 and 4.3.3.7, special relocation conditions include the nursery in the City of South Gate, the drive-in theater and swap meet in the City of Paramount, and the paintball and BMX businesses in the City of Bellflower. Cities with higher numbers of displaced businesses may not have sufficient replacement sites within each city to accommodate the anticipated number of displaced commercial or industrial businesses. Replacement sites would need to be sought outside the immediate community and could result in loss of jobs for workers who would be unable to move or commute to the replacement business location.

In addition to the number of displacements identified, a number of complex relocations are anticipated, such as potential displacements with extensive personal property that must be relocated, specialized equipment requiring special handling, or particular provisions that must be made at the replacement site (such as high-voltage power or high-volume water pipes). Additionally, complexity could arise by nature of large companies with many employees whose schedules must be coordinated to accommodate the move. The number and complexity of relocations expected to result from the Project may also provide challenges to Metro in terms of available qualified consultants to provide relocation assistance advisory services. For example, other infrastructure projects occurring in the region that may also require replacement sites could reduce the availability of consultant resources, such as appraisers and relocation specialists, for the Project.

To address complex relocation issues related to commercial and industrial business displacements, several options may be considered to limit impacts to the displaced business, including, but not limited to, phasing acquisition and relocation activities, providing relocation consulting services, extending the timeframe for relocation activities, and expanding the replacement area to include other nearby cities.

Phasing acquisition and relocation activities would limit the number of industrial and commercial businesses affected at the same time and would allow the marketplace sufficient time to absorb the influx of businesses searching for replacement sites. As the quantity of replacement sites are limited, flooding the marketplace with displacees seeking to stay within reach of their client base might have the unintended consequence of making it more challenging to find suitable replacement sites. Phasing acquisition and relocation activities in strategic areas could allow for a higher percentage of businesses to relocate successfully. Ideally, replacement sites would be close enough to a business' current location to minimize burdens on employees who would need to travel from their homes to the new business location.

Affording additional time during the relocation process to search for replacement sites and staging the relocation process according to when properties would need to be vacated could help with the successful relocation of businesses within, or as close as possible to, displacement sites. Additional time for relocation agents to work with displacees on finding suitable replacement sites and facilitating complex moves would increase the probability of successful relocations.

To address the special needs of certain commercial or industrial displacees, expanding the replacement area to include other nearby cities may increase the chances of finding suitable replacement sites if the additional distance from the displacement site does not cause impacts to the business (such as moving them too far from existing customers or suppliers). This strategy may also identify replacement locations that do not force commercial businesses to compete with similar businesses.

Metro would provide relocation assistance and compensation for all displaced businesses and residences as required under the Uniform Act and California Relocation Act. Where acquisitions and relocation are unavoidable, the FTA and Metro would follow the provisions of both Acts, as amended. All real property acquired by Metro would be appraised to determine its fair market value. Just compensation would not be less than the approved appraisal for all real property acquired by Metro or utilized temporarily during construction. Each business and residence 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 under the Uniform Act. For relocated businesses, jobs would also be relocated and would not be permanently displaced. However, permanent job losses may be anticipated. To address potential permanent job loss, Metro will also coordinate with the appropriate jurisdictions regarding business relocation.

4.3.4 Project Measures and Mitigation Measures

Metro would provide relocation assistance and compensation for all displaced businesses and residences as required under the Uniform Act, California Relocation Act, and other applicable regulations. This also includes a relocation plan as required by CCR, Title 25, Division 1, Chapter 6 (see Section 4.3.3.8). No project measures or mitigation measures are required for Alternatives 1, 2, 3, and 4.

4.3.5 California Environmental Quality Act Determination

4.3.5.1 Displace substantial numbers of existing people, housing or business, necessitating the construction of replacement housing or replacement business elsewhere?

No Project Alternative

The No Project Alternative would not result in the displacement of residential units and their occupants or businesses and their employees that would necessitate the construction of replacement units. Therefore, no impacts would occur and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Alternative 1 would affect 220 parcels and require 37 full acquisitions and 254 partial acquisitions (Table 4.3.1). Property acquisitions for Alternative 1 would be located in the Cities of Los Angeles, Huntington Park, Cudahy, South Gate, Downey, Paramount, Bellflower, Artesia, and Cerritos, and in unincorporated LA County (Table 4.3.2). Alternative

1 would displace approximately 89 businesses (including automotive services, commercial retail, industrial/manufacturing, plant nursery, office) and approximately 601 employees (Table 4.3.3 and Table 4.3.4). Alternative 1 would require 6 full acquisitions and 15 partial acquisitions of residential properties that would affect 21 residential properties and displace approximately 78 residential occupants (Table 4.3.5 and Table 4.3.6). The business and residential acquisitions, displacements, and relocations associated with Alternative 1 are detailed in Section 4.3.3.2.

For relocated businesses, an abundance of replacement sites currently available relative to the number of anticipated displacements suggests that replacement sites would be available in the future. However, a sufficient number of comparable replacement sites may not be available within displacement cities for select businesses. The automotive businesses in the City of Los Angeles and City of South Gate and nursery in the City of South Gate may struggle to find a suitable replacement site to lease at the time of acquisition and may not be able to successfully relocate (Table 4.3.7).

At the time of this report, replacement sites for residential properties that are for sale or lease were identified in the affected cities and surrounding cities (Table 4.3.8). Unless there is a significant change in vacancy rates at the time of acquisition, there would likely be sufficient replacement sites to relocate all displacees and construction of new residences would not be required. Therefore, displacement of residential units and their occupants or businesses and their employees would not necessitate the construction of replacement housing or business; impacts would be less than significant; and mitigation would not be required.

Alternative 2: 7th Street/Metro Center to Pioneer Station

Alternative 2 would impact 283 parcels and require 38 full acquisitions and 309 partial acquisitions (Table 4.3.1). Similar to Alternative 1, Alternative 2 property acquisitions would be located in the Cities of Los Angeles, Huntington Park, Cudahy, South Gate, Downey, Paramount, Bellflower, Artesia, and Cerritos, and in unincorporated LA County (Table 4.3.2). Alternative 2 would displace approximately 108 businesses (including automotive services, commercial retail, industrial/manufacturing, plant nursery, office, and restaurants) and approximately 687 employees (Table 4.3.3 and Table 4.3.4). Alternative 2 would result in the same number of residential property acquisitions and displaced residents as Alternative 1: 6 full acquisitions and 15 partial acquisitions that would affect 21 residential properties and displace approximately 78 residential occupants (Table 4.3.5 and Table 4.3.6). The business and residential acquisitions, displacements, and relocations associated with Alternative 2 are detailed in Section 4.3.3.3.

As discussed for Alternative 1, replacement sites for displaced businesses would be available in the future. However, the automotive businesses in the City of South Gate may not be able to successfully relocate within their respective city, although a sufficient number of replacement sites are available within 6 miles of the affected location. The nursery property may struggle to find a suitable replacement site for sale or lease within the city and within 6 miles of the business at the time of acquisition and may not be able to successfully relocate (Table 4.3.7).

Similar to Alternative 1, sufficient residential replacement sites for sale and rent are currently available in cities that would have residential displacements (Table 4.3.8). Unless there is a significant change in vacancy rates at the time of acquisition, there would likely be sufficient replacement sites to relocate all displacees and construction of new residences would not be required. Therefore, displacement of residential units and their occupants or businesses and

their employees would not necessitate the construction of replacement housing or business; impacts would be less than significant; and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Alternative 3 would impact 172 parcels and require 25 full acquisitions and 188 partial acquisitions (Table 4.3.1). Similar to Alternatives 1 and 2, Alternative 3 property acquisitions would be located in the Cities of Los Angeles (from Slauson Avenue), Huntington Park, Cudahy, South Gate, Downey, Paramount, Bellflower, Artesia, and Cerritos, and in unincorporated LA County (Table 4.3.2). Alternative 3 would displace approximately 65 businesses (including automotive services, commercial retail, industrial/manufacturing, plant nursery, and office) and approximately 352 employees (Table 4.3.3 and Table 4.3.4). Alternative 3 would result in the same number of residential property acquisitions and displaced residents as Alternatives 1 and 2: 6 full acquisitions and 15 partial acquisitions that would affect 21 residential properties and displace approximately 78 residential occupants (Table 4.3.5 and Table 4.3.6). The business and residential acquisitions, displacements, and relocations associated with Alternative 3 are detailed in Section 4.3.3.4.

As discussed for Alternatives 1 and 2, replacement sites for displaced businesses would be available in the future. However, the automotive businesses in the City of South Gate may not be able to successfully relocate within their respective city, although a sufficient number of replacement sites are available within 6 miles of the affected location. The nursery property may struggle to find a suitable replacement site for sale or lease within the city and within 6 miles of the business at the time of acquisition, and may not be able to successfully relocate (Table 4.3.7). Sufficient residential replacement sites for sale and rent are currently available in cities that would have residential displacements (Table 4.3.8). Unless there is a significant change in vacancy rates at the time of acquisition, there would likely be sufficient replacement sites to relocate all displacees, and construction of new residences would not be required. Therefore, displacement of residential units and their occupants or businesses and their employees would not necessitate the construction of replacement units; impacts would be less than significant; and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Alternative 4 would impact 59 parcels and require 17 full acquisitions and 54 partial acquisitions (Table 4.3.1). Similar to Alternatives 1, 2, and 3, Alternative 4 property acquisitions would be located in the Cities of South Gate, Paramount, Bellflower, Artesia, and Cerritos (Table 4.3.2). Alternative 4 would displace approximately 18 businesses (including automotive services, commercial retail, industrial/manufacturing, and office) and approximately 115 employees (Table 4.3.3 and Table 4.3.4). Alternative 4 would result in a fewer number of residential property acquisitions and displaced residents compared to Alternatives 1, 2, and 3: 2 full acquisitions and 6 partial acquisitions of residential properties that would affect 8 residential properties and displace approximately 32 residential occupants (Table 4.3.5 and Table 4.3.6). The business and residential acquisitions, displacements, and relocations associated with Alternative 4 are detailed in Section 4.3.3.5.

Replacement sites for displaced businesses would be available in the future for Alternative 4. Sufficient residential replacement sites for sale and rent are currently available in cities that would have residential displacements (Table 4.3.7 and Table 4.3.8). Unless there is a significant change in vacancy rates at the time of acquisition, there would likely be sufficient replacement sites to relocate all displacees. Therefore, displacement of residential

units and their occupants or businesses and their employees would not necessitate the construction of replacement units, impacts would be less than significant, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD: Design Option 1 would impact 12 parcels and require no full acquisitions and 20 partial acquisitions (Table 4.3.1 and Table 4.3.2). Permanent underground easements would be needed for tunneling activities in the LAUS for Design Option 1. Similar to LAUS (Forecourt), Design Option 1 would be located primarily underground and would not require the acquisition of businesses or residential units. Design Option 1 would not displace businesses or residential units. Therefore, impacts would be less than significant and mitigation would not be required.

Design Option 2: Add Little Tokyo: Design Option 2 would impact 4 parcels and require 1 full acquisition and 8 partial acquisitions (Table 4.3.1 and Table 4.3.2). Permanent underground easements for the underground station box and station entrances would be required. Design Option 2 would add the underground Little Tokyo Station and may displace one additional commercial retail business and approximately 23 employees (Table 4.3.3 and Table 4.3.4). As discussed for Alternative 1, replacement sites are currently available relative to the number of anticipated displacements (Table 4.3.7). No residential units would require replacement or relocation. Therefore, impacts would be less than significant and mitigation would not be required.

Maintenance and Storage Facility

Paramount MSF Site Option: The Paramount MSF site option is currently developed with the Paramount Swap Meet, the Paramount Drive-in Theatre, retail, and commercial parking. The Paramount MSF site option would impact 43 parcels and require 3 full acquisitions and 44 partial acquisitions (Table 4.3.1 and Table 4.3.2). The Paramount MSF site option would displace 5 existing businesses (retail and industrial manufacturer businesses), including the Paramount Swap Meet and Paramount Drive-in Theatre. Approximately 113 employees could be affected and displaced by this MSF site option (Table 4.3.3 and Table 4.3.4). The proposed site for the Paramount MSF site option does not contain residential units. However, lead tracks to the Paramount MSF site option would affect residential properties: 1 full acquisition and 6 partial acquisitions for a total of 7 affected residential properties. A total of approximately 28 residential occupants would be displaced (Table 4.3.5 and Table 4.3.6).

Replacement sites would be available in the future for the industrial business affected by the Paramount MSF site option. However, comparable replacement sites may not be available for the drive-in and swap meet and they may not be able to relocate within the city or within 6 miles of the affected businesses. Currently, an insufficient number of potential replacement sites for sale or lease exist within the city or within 6 miles of the affected property to accommodate these types of displacements and they may not be able to successfully relocate (Table 4.3.7). Sufficient residential replacement sites for sale and rent are currently available in the City of Paramount (Table 4.3.8). Therefore, the displacement of residential units and their occupants or businesses and their employees would not necessitate the construction of replacement units, impacts would be less than significant, and mitigation would not be required.

Bellflower MSF Site Option: The Bellflower MSF site option is currently developed with the Hollywood Sports Paintball and Airsoft Park and Bellflower BMX business. The Bellflower MSF site option would impact 2 parcels and require 2 full acquisitions and no partial

acquisitions (Table 4.3.1 and Table 4.3.2). The Bellflower MSF site option would displace 2 existing businesses, the Hollywood Sports Paintball and Airsoft Park and Bellflower BMX business, displacing approximately 75 employees (Table 4.3.3 and Table 4.3.4). The proposed site for the Bellflower MSF site option does not contain residential units; therefore, no residential displacements would occur with this option.

Comparable replacement sites may not be available for the Hollywood Sports Park and Bellflower BMX commercial businesses and they may not be able to relocate within the city or within 6 miles of the affected business (Table 4.3.7). Currently, an insufficient number of potential replacement sites for sale or lease exist to accommodate these types of displacements and they may not be able to successfully relocate. Based on the size and specialized use of the Hollywood Sports Park and Bellflower BMX commercial business, it would be difficult to relocate the business to another site in the City of Bellflower or surrounding cities. Attempting to find a suitable relocation site may require the business to relocate so far from the displacement location that relocation would not be feasible. The search could be expanded to Orange or Riverside Counties, but relocating the business a long distance from the displacement site would cause issues in regard to retaining patrons and employees and may introduce competition from other well-established facilities in these areas. Thus, attempting to find a suitable relocation site may require the business to relocate so far from the displacement location that relocation would not be feasible. Therefore, the displacement of residential units and their occupants or businesses and their employees would not necessitate the construction of replacement units, impacts would be less than significant, and mitigation would not be required.

4.4 Visual and Aesthetics

This section summarizes the potential adverse effects and impacts on visual character and quality, scenic vistas, light, and glare from the No Build and Build Alternatives, including design options and the MSF site options. Information in this section is based on the *West Santa Ana Branch Transit Corridor Project Final Visual and Aesthetic Impact Analysis Report* (Metro 2021o) (Appendix I).

4.4.1 Regulatory Setting and Methodology

4.4.1.1 Regulatory Setting

Applicable federal, state, regional, and local regulations, plans, and policies regarding visual character and aesthetics were identified. Federal and state regulations include, but are not limited to, the National Historic Preservation Act Section 106 and California Department of Transportation (Caltrans) *State Scenic Highways Program* (Caltrans 1963)**.** Regional regulations include Metro's MRDC (Metro 2020h); *Metro Art Program Policy* (Metro 2020g); *Metro Standard/Directive Drawings* (Metro 2017d); *Metro Systemwide Station Design Standards Policy* (Metro 2018e). Local regulations include general plans and municipal codes of the affected jurisdictions (i.e., the Cities of Los Angeles, Huntington Park, Vernon, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, Artesia, and Cerritos, and Los Angeles County); and the City of Downey *Rancho Business Park Specific Plan* (City of Downey 1989).

4.4.1.2 Methodology

For the purposes of evaluating visual and aesthetic effects, the Affected Area consists of the localized viewsheds for the Build Alternatives. A viewshed is a geographical area that is normally visible from an observer's location, including all surrounding points that are in

line-of-sight with the location. The viewshed for the Project includes areas encompassing the proposed alignments and stations, areas acquired for project-related infrastructure (e.g., TPSSs, parking facilities, and MSF), adjacent parcels, and any additional parcels that would have views of and across the proposed alignments and project-related infrastructure. The Affected Area for visual also includes adjacent street rights-of-way that parallel, intersect, or face the Build Alternatives.

To satisfy NEPA requirements, the visual and aesthetic impact analysis follows principles contained in the Federal Highway Administration's (FHWA) *Guidelines for the Visual Impact Assessment of Highway Projects* (FHWA 2015). Characterizing and evaluating the existing visual character and quality of the Affected Area for visual and potential adverse effects to these resources are based on photographs, field observations, project data, and visual simulations of project components.

Primary viewer groups within the Affected Area for visual (along and surrounding the proposed alignments and stations) are identified and used to characterize potential viewer sensitivity and the value those viewer groups may place on views and visual elements. Viewer groups that are sensitive to changes in the visual environment are referred to as "sensitive viewers" (residents, tourists, and users of parklands and other public places). These viewer groups are likely to be aware of and concerned about their views and likely to have expectations of the built environment. Users and employees of commercial, industrial, and office facilities, as well as motorists and bicyclists, are not considered sensitive viewers for the Build Alternatives.

To determine the Build Alternatives' overall effect on visual quality, the components of each Build Alternative are evaluated with regard to compatibility with the existing visual character and viewer groups' sensitivity to changes in the visual environment to determine potential effects to visual quality. The height, mass, form, lighting, and glare of each component are compared to the existing visual character of the built and natural environment in the Affected Area for visual to determine whether the components are visually compatible. Project components are considered compatible with the visual character of the Affected Area for visual if the components' scale, massing, form, lighting, and glare do not contrast or conflict with the visual elements of the Affected Area for visual. Viewer sensitivity is evaluated based on how viewer groups would react to changes to the visual environment. Viewer sensitivity is ranked as either low (little to no reaction to changes in the visual environment), moderate (notice changes to visual environment but would not be sensitive to the change), or high (highly sensitive to changes in the visual environment and would likely react to the change). Changes in the visual environment that could affect viewer sensitivity include incompatible scale, massing, form, and lighting levels, as well as reflective surfaces that cast glare.

Based on the change to visual character and viewer sensitivity in the Affected Area for visual, the overall visual quality of the Build Alternatives is qualitatively categorized as adverse (negatively affect visual quality – viewer groups would be highly sensitive to visual character changes), beneficial (improve the quality of the visual environment – viewer groups would experience beneficial changes), or neutral (have little to no change to the visual environment – viewer group would have low sensitivity to visual character changes). To satisfy CEQA requirements, aesthetics impacts were analyzed in accordance with CEQA Guidelines. Based on the CEQA Guidelines Section 15387 definition of an urbanized area, the jurisdictions within the Affected Area for visual are considered urbanized areas, and a significant impact would occur if the Build Alternatives would conflict with applicable zoning and other

regulations governing scenic quality. Significant impacts related to light and glare would occur if the Project results in new light sources in low-lit areas, new reflective surfaces, or light spillover onto or glare at light-sensitive uses.

4.4.2 Affected Environment/Existing Conditions

The Affected Area for visual is relatively flat with minor changes in elevation, and gradually slopes downward in a south-southwesterly direction toward the Pacific Ocean. Elevations range from approximately 280 and 260 feet above mean sea level around LAUS and 8th Street/Figueroa Street (City of Los Angeles), respectively, to approximately 50 feet around South Street/PEROW (City of Artesia/City of Cerritos). Due to the relatively flat topography, the Affected Area for visual lacks elevated vantage or vista points.

The major visual feature of the Affected Area for visual is the built environment, which consists of a variety of commercial, industrial, public facility, institutional, and residential structures, as well as transportation corridors. Higher-density development with a mix of high-, mid-, and low-rise structures is generally found north of the I-10 freeway, while lower-density development consisting of primarily low-rise structures is located south of the I-10 freeway. Transportation corridors include roadways, freeways (i.e., US-101, I-10, I-710, I-105, State Route [SR]-91 and I-605), and freight rail (i.e., the Wilmington Branch, La Habra Branch, San Pedro Subdivision, and PEROW). Freeways, freight rail, and flood-control channels create well-defined visual boundaries and edges, and the rail ROWs create linear open spaces. Within the Affected Area for visual, the I-10, I-710, SR-91, and I-605 freeways are elevated on columns or engineered fill, and the US-101 and I-105 freeways are depressed from the surrounding uses. No local or state-designated scenic highways are located within the Affected Area for visual.

4.4.2.1 Scenic Vistas

No notable scenic views or vistas are located within the Affected Area for visual. None of the views within the Affected Area for visual are considered scenic vistas.

4.4.2.2 Scenic Resources

Scenic resources found within the Affected Area for visual primarily include urban features, such as structures with architectural or historic significance, public plazas, public art, and park areas that contribute to the distinct visual character of the Affected Area. Table 4.4.1 summarizes the notable scenic resources identified in the Affected Area for visual for each Build Alternative. No scenic resources are located within the Affected Area for visual for the MSF site options.

Rancho Los Amigos – South Campus in the City of Downey was previously determined eligible for the National Register of Historic Places and listed in the California Register of Historical Places; however, the site is not considered a scenic resource because views of this property are not visual assets to the surrounding community. Existing views of the campus include remnants of vacant dormitories and ancillary buildings, as well as other weed-filled vacant areas. Separately, the City of Cerritos identifies Navens Horse Stable at 10755½ Artesia Boulevard as a potential historic and cultural property that is within the viewshed of the PEROW. However, this property is not considered a scenic resource for the purpose of this visual and aesthetic analysis due to the use of corrugated metal roofs and various materials for the walls of the horse stables, both of which contribute to the incoherent and disorderly appearance of the property.

Table 4.4.1. Scenic Resources in Affected Area for Visual

	Scenic Resource	Historical Significance	Sensitive Viewers
Alternative 1	**Los Angeles Union Station** 800 N Alameda St, Los Angeles	▪ National Register ▪ California Register ▪ City of LA HCM #101	Residents north of LAUS, visitors/tourists
	El Pueblo de Los Angeles Historical Monument (Los Angeles Historic District) 125 Paseo de la Plaza, Los Angeles	▪ National Register ▪ California Register	Residents north of LAUS; visitors/tourists
	Plaza Substation[1] 125 Paseo de la Plaza, Los Angeles	▪ National Register ▪ California Register	Visitors/tourists
	Los Angeles Plaza Park[1] 125 Paseo de la Plaza, Los Angeles	▪ National Register ▪ California Register ▪ City of LA HCM #64	Visitors/tourists
	Father Serra Park[1] 125 Paseo de la Plaza, Los Angeles	▪ N/A	Residents north of LAUS, visitors/tourists
Alternative 2	**Barker Brothers Building** 800 W 7th St, Los Angeles	▪ City of LA HCM #356	Visitors/tourists
	Southern California Gas Company Complex 800-830 S Flower St, Los Angeles	▪ National Register ▪ California Register ▪ City of LA HCM #789	Building residents, visitors/tourists
	Hamburger's Department Store 801 S Broadway, Los Angeles	▪ National Register ▪ California Register ▪ City of LA HCM #459	Building residents, visitors/tourists
	Union Bank and Trust Building 760 S Hill St, Los Angeles	▪ City of LA HCM #1030	Building residents, visitors/tourists
	Tower Theater 802 S Broadway, Los Angeles	▪ National Register ▪ Broadway Theater District Contributor ▪ City of LA HCM #450	Building residents, visitors/tourists
	Garment Capitol Building 217 E 8th St, Los Angeles	▪ National Register ▪ California Register ▪ City of LA HCM #930	Visitors/tourists
	Textile Center Building 315 E 8th St, Los Angeles	▪ National Register ▪ California Register ▪ City of LA HCM #712	Building residents, visitors/tourists

	Scenic Resource	Historical Significance	Sensitive Viewers
Alternatives 1 and 2	**Fred Roberts Recreation Center** 4700 S. Honduras St, Los Angeles	N/A	Residents west of Honduras St, visitors
Alternatives 1, 2, and 3	**Salt Lake Park** 3401 E. Florence Ave, Huntington Park	N/A	Visitors
	Los Angeles River Truss Bridge City of South Gate	Eligible for National Register and California Register	Residents
	Hollydale Community Park 12221 Industrial Ave, South Gate	N/A	Residents, visitors to the park
Alternatives 1, 2, 3, and 4	**"Defiance" by Harold L. Pastorius Jr. – Public Art Sculpture** SW corner of Paramount Blvd and Rosecrans Ave, Paramount	N/A	Visitors/tourists
	Paramount Park 14400 Paramount Blvd, Paramount	N/A	Visitors
	Original Bellflower Pacific Electric Station 16394-16398 Bellflower Blvd, Bellflower	Eligible for National Register and California Register	Visitors
	"Belle" Public Art Cow Statue 10209 Flora Vista St, Bellflower	N/A	Visitors
	Ruth R. Caruthers Park 10500 E. Flora Visa St, Bellflower	N/A	Residents
	Valley Christian Junior High and High Schools 17700 Dumont Ave, Cerritos	Potential local historic property	No sensitive viewers
	Rosewood Park 17715 Eric Ave, Cerritos	Potential local historic property	Visitors
	Artesia Historical Museum (Frampton/Dantema House) 18648-18698 Alburtis Ave, Artesia	In locally designated Artesia Historic District	Nearby residents, visitors
	Old Station #30 18641 Corby Ave, Artesia	In locally designated Artesia Historic District	Nearby residents, visitors

Source: Metro 2021o; City of Los Angeles 2018b; City of Paramount 2019; City of Cerritos 2019
Notes: HCM = Historic-Cultural Monuments; LA = Los Angeles; LAUS = Los Angeles Union Station; N/A = not applicable;
[1] Also identified as El Pueblo de Los Angeles Historical Monument

4.4.2.3 Visual Character and Quality

Visual character and quality within the Affected Area for visual are categorized into the following landscape units: Downtown Low-Rise and Mid-Rise Landscape Unit, Downtown Mid-Rise and High-Rise Landscape Unit, Industrial Landscape Unit, Residential Landscape Unit, Industrial and Residential Landscape Unit, Suburban Residential Landscape Unit, and Suburban Residential and Industrial Landscape Unit. Each landscape unit has a distinct, but not necessarily homogenous, visual character.

Figure 4.4-1 and Figure 4.4-2 identify the landscape units along the alignment. Table 4.4.2 summarizes the existing visual character, scenic resources, visual quality, and primary viewer groups for the landscape units and MSF site options within the Affected Area for visual.

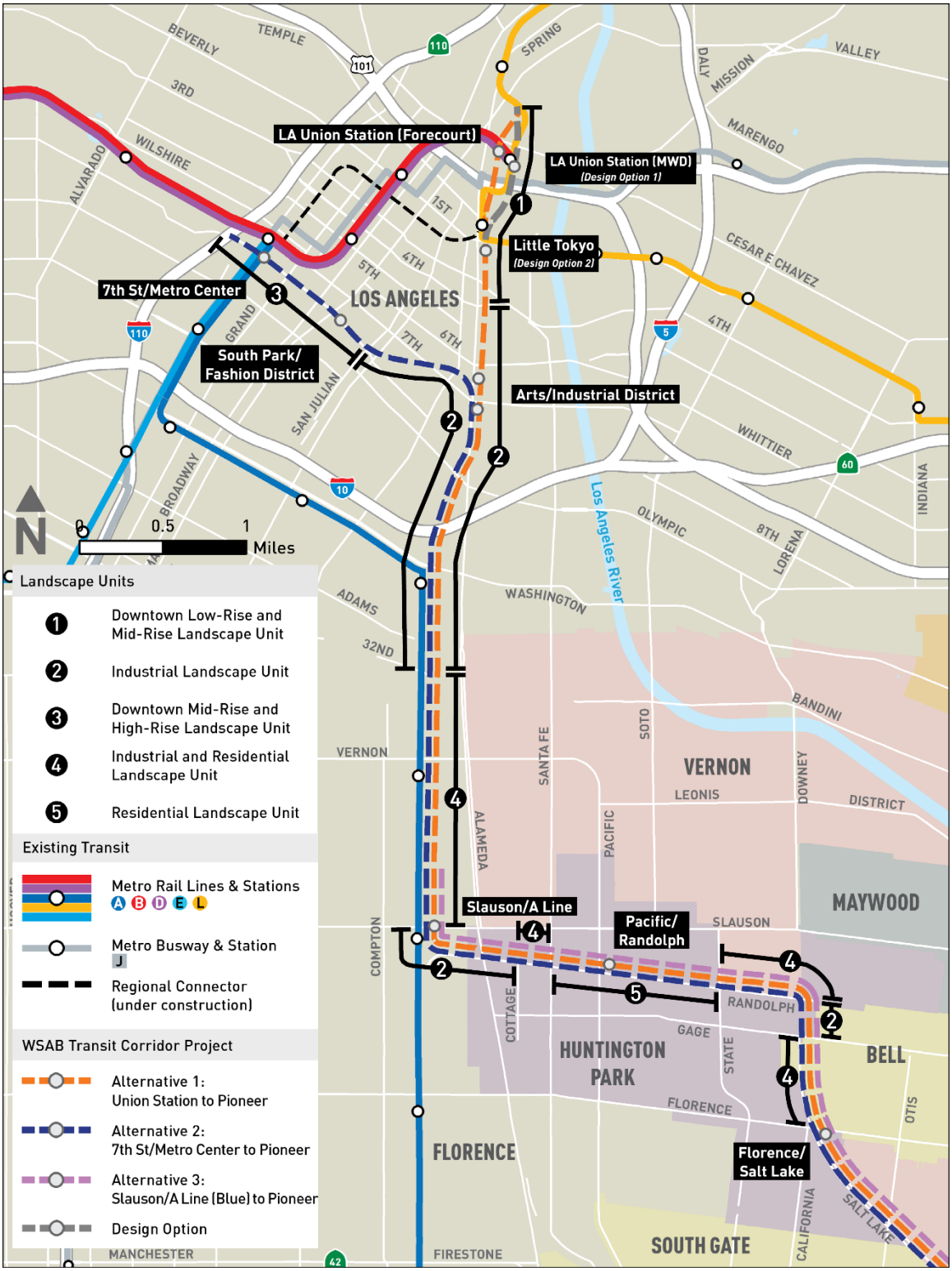
4.4.2.4 Light

Existing nighttime lighting sources typically emanate from streetlights, vehicle lights, building entrance lights, general illumination from lights shining through windows of structures, the Metro A (Blue) and C (Green) Line stations and light rail vehicles (LRVs), freight trains along the rail ROWs, surface parking lots, and pedestrian-scale lighting along the Paramount and Bellflower Bike Trails. Nighttime lighting in the industrial and residential areas is generally lower compared to commercial areas. Lighting along the Bellflower Bike Trail illuminates the rail ROW between Somerset Boulevard and Ruth R. Caruthers Park. Where the rail ROW extends between properties north of Somerset Boulevard, nighttime lighting is limited since no lighting is provided within the rail ROWs, except along the Paramount Bike Trail and when freight trains travel along the railroad tracks. South of Somerset Boulevard, nighttime lighting is limited where rail ROW extends between property, except along the Bellflower Bike Trail.

4.4.2.5 Glare

Glare is a common phenomenon in Southern California primarily due to the occurrence of a high number of days per year with direct sunlight and the highly urbanized nature of the region, resulting in a large concentration of reflective surfaces. Structures along 8th Street, west of Flower Street, consist of buildings comprised of glass walls and non-reflective surfaces. In all other portions of the Affected Area for visual, the majority of existing structures are comprised of non-reflective materials, such as concrete, stucco, and plaster. Parked vehicles are a large source of glare during the daytime from sunlight being reflected off windshields and other surfaces. Nighttime glare can occur from a variety of light sources not aimed downward, such as lighting from recreational fields and commercial and residential structures. These sources of glare are typical of the Affected Area for visual.

Figure 4.4-1. Landscape Units North of Florence Avenue/Salt Lake Avenue



Source: Metro 2021o

Figure 4.4-2. Landscape Units South of Florence Avenue/Salt Lake Avenue



Source: Metro 2021o

Table 4.4.2. Existing Visual Character, Scenic Resources, and Visual Quality, by Landscape Unit

Landscape Unit	Existing General Visual Character, Scenic Resources, and Overall Visual Quality[1]	Primary Viewer Groups
Downtown Low Rise and Mid-Rise	**Visual Character:** Mix of low- and mid-rise structures with one high-rise structure; higher density development generally west of Alameda Street, while lower density development generally east of Alameda Street; small and mid-size commercial structures; high-rise and mid-rise office buildings; residential uses generally in mid-rise buildings; institutional, cultural, and industrial uses generally in low-rise structures; amount and types of ornamental landscaping varies with moderate to high levels of landscaping north of US-101, low levels of landscaping between US-101 and 1st Street, and moderate levels of landscaping south of 1st Street. **Scenic Resources:** LAUS, El Pueblo de Los Angeles Historical-Cultural Monument **Visual Quality:** Some areas can be characterized as harmonious, orderly, and/or coherent, but the overall existing visual quality is inharmonious, disorderly, and incoherent.	Residents, employees, visitors/tourists, motorists, pedestrians
Industrial	**Visual Character:** Mix of large-, mid-, and small-scale industrial development with a limited amount of commercial and residential structures; primarily low-rise structures; limited amount of mid-rise structures (generally north of the I-10 freeway); structures vary in type and style; limited amount of vegetation; utility poles and overhead utility lines are apparent; billboards within the San Pedro Subdivision ROW at Firestone Boulevard, Rayo Avenue, I-710 freeway, and Garfield Avenue. **Scenic Resources:** Hollydale Community Park, Valley Christian Junior High and High Schools **Visual Quality:** Inharmonious, disorderly, and incoherent	Residents, employees, users of Hollydale Community Park, staff and students of Valley Christian Junior High and High Schools, motorists, pedestrians
Downtown Mid-Rise and High-Rise	**Visual Character:** Primarily mid-rise and high-rise structures with a few low-rise structures; commercial business offices and residential lofts primarily within mid-rise and high-rise buildings, retail uses are generally on the ground floor of these structures; many buildings are built up to the street right-of-way and have transparent storefront windows and doorways on the ground floor; scale and massing generally higher around Figueroa Street/8th Street and decreases toward the easterly portion of the landscape unit; modern buildings consisting of clean lines and shapes and are generally clustered west of Olive Street (although some historical structures are interspersed among modern buildings), while older buildings with ornate designs are generally located east of Olive Street; buildings east of Main Street generally vary in color; landscaping generally limited to street trees. **Scenic Resources:** Barker Brothers Building, Southern California Gas Company Complex, Hamburger's Department Store, Union Bank and Trust Building, Tower Theater, Garment Capitol Building, Textile Center Building **Visual Quality:** Inharmonious, disorderly, and incoherent	Residents, employees, visitors/tourists, motorists, pedestrians

Landscape Unit	Existing General Visual Character, Scenic Resources, and Overall Visual Quality[1]	Primary Viewer Groups
Industrial and Residential	**Visual Character:** Mix of residential and industrial development in low-rise one- and two-story structures; limited amount of commercial uses; utility poles and overhead utility lines are apparent; many of the properties facing rail ROWs have fences or walls along the property line; most of the landscaping are in the front yard of residential properties, while industrial uses either have limited or no landscaping; building materials and colors for industrial structures vary and are inconsistent; Metro A (Blue) Line tracks and freight tracks are located along the Wilmington Branch ROW in the middle of Long Beach Avenue; on Long Beach Avenue south of 57th Street, freight tracks are at-grade, while the Metro A (Blue) Line transitions to an elevated railway. **Scenic Resources:** Fred Roberts Recreation Center and Salt Lake Park **Visual Quality:** Inharmonious, disorderly, and incoherent	Residents, employees, users of Fred Roberts Recreation Center, users of Salt Lake Park baseball field and Huntington Park Community Center, motorists, pedestrians
Residential	**Visual Character:** Mostly residential structures, some commercial structures, and limited amounts of industrial structures; primarily one- and two-story structures; structures vary in building style, size, and color; utility poles and utility lines are apparent; many properties facing rail ROWs have fences or walls along the property line; ornamental landscaping primarily found on residential properties and surface parking lots; inconsistent level of landscaping; La Habra Branch and San Pedro Branch ROWs located in the middle of Randolph Street and Salt Lake Avenue, respectively, giving the perception that the streets on both sides of the rail ROWs are separate roadways; La Habra Branch ROW at-grade with Randolph Street and the surrounding land uses; San Pedro Subdivision ROW elevated from Salt Lake Avenue and adjacent residential properties by several feet. **Scenic Resources:** None **Visual Quality:** Some areas can be characterized as harmonious, orderly, and/or coherent, but the overall existing visual quality is inharmonious, disorderly, and incoherent.	Residents, employees, motorists, and pedestrians
Suburban Residential and Industrial	**Visual Character:** Mix of low-rise residential uses and large-scale industrial development, with limited commercial uses; utility poles and overhead utility lines are apparent; between Southern Avenue and Los Angeles River, rail ROW is elevated above Salt Lake Avenue and residential properties by approximately 10 feet and at-grade with the adjacent industrial property; billboard within rail ROW on southeast side of the I-710 freeway; transmission towers are a distinct visual element that parallel PEROW from north of the Paramount Boulevard/Rosecrans Avenue intersection to Somerset Boulevard and are approximately 100 feet tall; rail ROW on north side of Somerset Boulevard splits into multiple tracks, parts of which are used by the adjacent World Energy refinery for oil tank car storage; existing landscaping and decorative wall on north side of Somerset Boulevard partially block and soften views of the tank cars within the rail ROW and views of the refinery structures; Bellflower Bike Trail within rail ROW provides consistent landscaping and pedestrian-scale lighting. **Scenic Resources:** Los Angeles River Truss Bridge, "Defiance" public art sculpture Paramount Park **Visual Quality:** Inharmonious, disorderly, and incoherent	Residents, employees, users of Paramount Park, staff and students at Paramount High School, motorists, pedestrians

Landscape Unit	Existing General Visual Character, Scenic Resources, and Overall Visual Quality[1]	Primary Viewer Groups
Suburban Residential	**Visual Character:** Low rise residential structures; mix of large- and small-scale, low-rise commercial development; transmission towers are distinct visual element that are approximately 100 feet tall and generally parallel PEROW between San Pedro Subdivision ROW and Paramount Boulevard/Rosecrans Avenue intersection; Bellflower Bike Trail within rail ROW provides consistent landscaping and pedestrian-scale lighting. **Scenic Resources:** Original Bellflower Pacific Electric Station, "Belle" public art cow statue, Ruth R. Caruthers Park, Rosewood Park, Artesia Historical Museum, Old Station #30 **Visual Quality:** Some areas can be characterized as harmonious, orderly, and/or coherent, but the overall existing visual quality is inharmonious, disorderly, and incoherent	Residents, employees, users of Bellflower Bike Path and informal equestrian trail, visitors of the Artesia Historical Museum and Old Station #30, motorists, pedestrians
MSF Site Options Paramount (Suburban Residential and Industrial Landscape Unit)	**Visual Character:** Low-rise commercial and industrial structures, surface parking lots, schools, and a rail ROW adjoin the MSF site; Paramount Swap Meet, drive-in theater, and associated parking on MSF site; views of MSF site limited to All America City Way and through a gated driveway along Somerset Blvd; westerly views of MSF site obstructed by rear of buildings, walls, or landscaping. **Scenic Resources:** None **Visual Quality:** Inharmonious, disorderly, and incoherent	Employees, motorists, pedestrians
MSF Site Options Bellflower (Suburban Residential and Industrial Landscape Unit	**Visual Character:** Privately owned sport activity center for paintball and airsoft currently on-site; tall trees and vines along easterly perimeter obstruct view of the site from residential uses; vegetation along northerly and southerly perimeters of site partially obstructs views of the site; surrounded by low-rise industrial, commercial, and residential structures. **Scenic Resources:** None **Visual Quality:** Inharmonious, disorderly, and incoherent along Somerset Blvd and PEROW; harmonious, orderly, and coherent along easterly portion of Affected Area	Residents, employees, motorists, pedestrians

Source: Metro 2021o
Notes: LAUS = Los Angeles Union Station; MSF = maintenance and storage facility; ROW = right-of-way; PEROW = Pacific Electric Right-of-Way
[1] "Overall Visual Quality" follows principles contained in the Federal Highway Administration's *Guidelines for the Visual Impact Assessment of Highway Projects* (FHWA 2015)
Visual quality definitions:
Harmonious = Visual elements associated with the natural environment that, when combined, generally goes well with each other (visually compatible) or are visually pleasing.
Inharmonious = Visual elements associated with the natural environment that, when combined, do not contribute to a pleasant environment or are visually incompatible.
Orderly = Visual elements associated with the built environment that, when combined, usually result in a sense of visual order and are visually compatible with each other.
Disorderly = Visual elements associated with the built environment that are arranged in a manner that lacks a sense of order or pattern or are visually incompatible with each other.
Coherent = Visual elements in the project environment (e.g., project area or project corridor) that are arranged in a manner that are visually consistent and compatible with each other.
Incoherent = Visual elements in the project environment that are not visually consistent or compatible with each other.

4.4.3 Environmental Consequences/Environmental Impacts

4.4.3.1 No Build Alternative

The No Build Alternative would not degrade the visual character and quality of the project corridor because the other identified regional and local projects would generally occur within existing transportation corridors or on individual sites that are associated with transportation. No scenic vistas have been identified within the Affected Area for visual where the No Build Alternative projects are proposed. Additionally, nighttime lighting levels and sources of light and glare would remain similar to existing conditions. Existing lighting from the Metro A (Blue) Line LRVs and freight trains traveling within the Wilmington Branch ROW, La Habra Branch ROW, San Pedro Subdivision ROW, and PEROW would not change. Each project to be built under the No Build Alternative would be required to undergo separate environmental review to determine the individual project's environmental effects and mitigation, as necessary. While some projects (e.g., Link US and LAUS Forecourt and Esplanade Improvement) would occur at LAUS, a scenic resource in the Affected Area for visual, the visual changes associated with these projects would not result in visual changes beyond those considered for these projects. Under NEPA, the No Build Alternative would not result in adverse effects related to the visual character and quality of the Affected Area for visual for the Project.

4.4.3.2 Alternative 1: Los Angeles Union Station to Pioneer Station

Alternative 1 would introduce new visual elements, including new LRT double tracks, overhead catenary system, fences, retaining walls, sound walls (see Mitigation Measure NOI-1 [Soundwalls] in Section 4.7.4.2 of the Noise and Vibration Section), ventilation structures, train control and communication houses, TPSSs, radio towers, radio houses, aerial structures, bridges, a new tunnel under the I-710 freeway, station platforms, station canopies, station and LRV lighting, and station amenities (e.g., ticket vending machines, benches, trash receptacles, bike racks, lockers, and artwork). The height of various system components is included in Appendix C of this Draft EIS/EIR. The MRDC and Standard/Directive Drawings Station or equivalent would be used to design entrances and station amenities to be sensitive to the specific urban context for each station area. The MRDC and Metro *Systemwide Station Design Standards* or equivalent would also be used in the design and selection of landscaping and public art installations to improve the character of the area. In addition, the *Metro Art Program Policy* would be consulted for public art. Proposed elevated or belowground stations would also include elevators, escalators, and stairways.

Alternative 1 has the potential to visually change the Affected Area for visual by removing landscaping and billboards, demolishing structures, modifying existing and introducing new grade crossings at street rights-of-way, permanently closing streets around 14th Street/Long Beach Avenue and 187th and 188th Streets in Artesia, and developing parking facilities. North of 14th Street in downtown Los Angeles, the project alignment would be primarily underground. In this area, visual changes would be limited to station areas where project components would be at the ground level. Alternative 1's effect on visual character and quality would be most visible where the alignment parallels and project components face a street right-of-way and along the Paramount and Bellflower Bike Trails.

Alternative 1 includes the following landscape units: Downtown Low-Rise and Mid-Rise, Industrial, Industrial and Residential, Residential, Suburban Residential and Industrial, and Suburban Residential. The location of each landscape unit is shown in Figure 4.4-1 and Figure 4.4-2 and described in Table 4.4.2. Table 4.4.3 through Table 4.4.8 detail the potential

effects to the visual character and quality in each landscape unit. Based on visual compatibility and viewer sensitivity, the overall visual quality of the Project was qualitatively categorized as adverse, neutral, or beneficial. The Build Alternative's effects on the visual environment are summarized in the following text.

Downtown Low-Rise and Mid-Rise Landscape Unit: The Downtown Low-Rise and Mid-Rise Landscape Unit is only located in the downtown Los Angeles section of Alternative 1 (north of 4th Street) where Alternative 1 would be primarily underground with components and any potential changes in lighting primarily visible at station areas. Any potential sources of glare would also be from station areas. Sensitive viewers are generally limited to residents and visitors/tourists of the scenic resources within this landscape unit.

Table 4.4.3 summarizes the potential effects to the visual character, viewer sensitivity, and visual quality in the Downtown Low-Rise and Mid-Rise Landscape Unit. Project components would not change the natural topography of the Affected Area for visual and would not alter or obstruct views of scenic resources within this landscape unit. The Affected Area for visual currently has a substantial amount of nighttime lighting, and the level of nighttime lighting would not significantly increase. The effects of glare would be similar to existing conditions. Overall, changes in visual quality for this landscape unit would be neutral since project components would be compatible with the visual character of the Affected Area for visual; viewer groups in this landscape unit would have little to no reaction (low sensitivity) to visual changes associated with project components; and views of scenic resources would not be obstructed. Therefore, adverse visual effects are not expected in this landscape unit.

Industrial Landscape Unit: This landscape unit is located in the Cities of Los Angeles, Huntington Park, Cudahy, South Gate, Downey, and Cerritos, and unincorporated Florence-Firestone. The project alignment in the Industrial Landscape Unit would be primarily underground north of Long Beach Avenue/14th Street and either aerial or at-grade with the surrounding uses in all other areas. Sensitive viewers are generally limited to users of Hollydale Community Park, residents along Industrial Avenue facing Hollydale Community Park, and residents along Center Street and Industrial Avenue facing the proposed parking facility at the I-105/C Line Station area.

Table 4.4.4 summarizes the potential effects to the visual character, viewer sensitivity, and visual quality in the Industrial Landscape Unit. Figure 4.4-3 and Figure 4.4-4 depict the change in visual character and quality on Long Beach Avenue at the I-10 freeway with incorporation of an aerial structure and at the proposed southwesterly driveway to the proposed Firestone Station surface parking lot. Project components would be compatible and fit with the visual character of the Industrial Landscape Unit. Project components would also fit the urban context and would be consistent with the scale and massing of the surrounding structures. The natural topography of the Affected Area for visual would not be altered. The level of nighttime lighting and the effects of glare in the Affected Area for visual would not significantly increase. Viewer sensitivity in this landscape unit would be low as the components would be consistent with and would not detract from the visual character and existing elements of the Affected Area for visual. Given that project components would be visually compatible with the visual character of the Affected Area for visual and viewer sensitivity would be low, the overall change in visual quality would be neutral. Therefore, no adverse visual effects are anticipated in this landscape unit.

Table 4.4.3. Project Components' Effects on Visual Character, Viewer Sensitivity, and Visual Quality – Downtown Low-Rise and Mid-Rise Landscape Unit

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality [1]
Station Areas (Station Entrances i.e., canopies, elevators, escalators, and stairs) ▪ LAUS Forecourt ▪ LAUS MWD (Design Option 1) ▪ Little Tokyo Station (Design Option 2)	**Compatible.** **LAUS Forecourt Station:** ▪ Station entrance would be on north side of the LAUS Forecourt surface parking lot, next to a mid-rise multifamily residential development. Station entrance to be in area with low- and mid-rise structures. ▪ Scale and massing would be consistent and fit with visual character and context of Affected Area. **LAUS MWD Station (Design Option 1):** ▪ Station entrance to be within concourse area of LAUS, adjacent to Metro B/D (Red/Purple) Line Station entrance. ▪ Scale, massing, and character would be consistent and fit with visual character and context of the LAUS concourse area and existing Metro B/D (Red/Purple) Line Station entrance. **Little Tokyo Station (Design Option 2):** ▪ Two station entrances: 1) at easterly side yard of commercial building on Alameda Street; 2) on LADWP parking lot on southeast side of Alameda St/4th St. Station elements to be consistent with visual character. ▪ Scale, massing, and character would be consistent and fit with visual character and context of residential, commercial, and	**Low.** ▪ Station entrances would be visible in foreground; would not include features that would detract from visual character and quality of Affected Area. **Scenic Resources:** Views of scenic resources (i.e., LAUS and El Pueblo de Los Angeles Historical Monument) would not be obstructed; would remain available to sensitive viewers. **Lighting: The** Affected Area currently has a substantial amount of nighttime lighting. Type and level of lighting at station areas would be similar those that are currently present in the Affected Area. Per MRDC, all light sources at station areas would be directed downward to minimize potential spillover onto surrounding properties, including light-sensitive uses. **Glare:** Station elements would be treated so that new sources of glare would not be created and would not affect viewer sensitivity.	**Neutral.** ▪ Visible station elements and lighting levels would be compatible with existing visual character of Affected Area. ▪ Viewer groups would have little to no reaction to the change. ▪ No new sources of glare would be created.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality [1]
	industrial character, and the mix of low- and mid-rise structures. **Scenic Resources:** Station elements would not alter the visual character of scenic resources. **Lighting:** Lighting not expected to extend beyond station areas. Type and level of lighting would be similar to those that are currently present in the Affected Area and would not affect visual character. **Glare:** ▪ Station areas would follow MRDC or equivalent, Metro's *Systemwide Station Design Standards*, and Standard/Directive Drawings. Stainless steel for certain station elements (e.g., columns, railings, and walls), glass art panels, and glass canopies would be used. ▪ Glass canopies would be placed horizontally above the station, and the angle placement of the canopies would not create new sources of glare and would not affect the visual character around the station areas. Based on Metro design criteria and standards, vertical stainless-steel elements and glass art panels would be dulled so that new sources of glare would not be created.		
LRT Tracks, Tunnels, and TPSS	**Compatible.** Underground; not visible. **Scenic Resources:** Visual character of scenic resources would not be altered. **Lighting and Glare:** Underground; not visible.	**Low.** Underground; not visible. **Scenic Resources:** Views of scenic resources would not be altered. **Lighting and Glare:** Underground; not visible.	**Neutral.** Underground; not visible.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality [1]
Ventilation Structures and TC&C House	**Compatible.** Constructed of small buildings that would be compatible with scale, massing, and form of the surrounding low-, mid-, and high-rise structures. **Scenic Resources:** Visual character of scenic resources would not be altered. **Lighting and Glare:** No lighting proposed for structures. Materials to be used would not create new sources of glare.	**Low.** Visible in foreground; would not alter visual character and quality of the Affected Area or alter or obstruct views of scenic resources. **Scenic Resources:** Views of scenic resources would not be altered. **Lighting and Glare:** Project components would not create new sources of light and glare. Viewer sensitivity would not be altered.	**Neutral.** Visual character, quality, views of scenic resources, lighting levels, and effects of glare would not be altered. ▪ Viewer groups would have little to no reaction to the change.
Landscape and Billboard Removal	**Compatible** **Landscaping:** Although some landscaping would be removed for station entrances, new landscaping would be installed and designed to complement the character of the surrounding environment. **Billboard:** No billboards present. **Scenic Resources:** Landscaping (bushes) along the perimeter of LAUS parking lot does not contribute to the unique character of LAUS. The rows of palm trees lining the LAUS driveway and along the LAUS building frontage would not be affected by the station entrance at LAUS. **Lighting and Glare:** Project components would not create new sources of light and glare.	**Low.** ▪ Noticeable in foreground; existing landscaping to be removed would not contribute to the LAUS character and changes to landscaping would not alter visual character and quality of the Affected Area. **Scenic Resources:** New landscaping would not alter or obstruct views of scenic resources, and would remain available to sensitive viewers. **Lighting and Glare:** Project components would not create new sources of light and glare.	**Neutral.** ▪ Visual character, and quality, views of scenic resources, lighting levels, and effects of glare would not be altered by changes to landscaping. ▪ Sensitive viewers would have little to no reaction to change in landscaping and would not contribute to LAUS' unique character.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality [1]
Radio Antennas	**Compatible.** Height consistent with low- and mid-rise structures around proposed radio antennas; would not degrade overall visual character and quality of Affected Area. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** Project components would not create new sources of light and glare.	**Low.** Visible in foreground; would not detract from visual character and quality of Affected Area. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** Project components would not create new sources of light and glare.	**Neutral**. ▪ Visual character and quality of Affected Area would not change. ▪ Viewer groups would have little to no reaction to the change. ▪ New sources of light and glare would not be created.
OCS Poles, Overhead Wires, Fences and Retaining Walls, Sound Walls, Radio Houses, Aerial Structures, Pedestrian Bridges, Grade-Crossing Modifications, and Street Closures. None proposed in the landscape unit.			

Source: Metro 2021o
Notes: LADWP = Los Angeles Department of Water and Power; LAUS = Los Angeles Union Station; LRT = light rail transit; MRDC = Metro Rail Design Criteria; MWD = Metropolitan Water District; OCS = overhead catenary system; TC&C = train control and communication; TPSS = traction power substation
[1] Overall change in visual quality is determined based on 1) whether project components would be visually compatible with the visual character of the Affected Area, and 2) viewer sensitivity associated with the visual changes of the project components.

Table 4.4.4 Project Components' Effects on Visual Character, Viewer Sensitivity, and Visual Quality – Industrial Landscape Unit

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality [1]
Station Areas ▪ Arts/Industrial District Station (north of 7th Street for Alt. 1; south of 7th Street for Alt. 2) ▪ Slauson/A Line Station ▪ Firestone Station ▪ Gardendale Station ▪ I-105/C Line Station	**Compatible.** ▪ Consistent and fit with character and context of Affected Area with low-rise industrial structures; would not detract from visual character of Affected Area. ▪ Station Area design to be sensitive to specific urban context, pedestrian-oriented and public art to be installed to improve visual character. **Arts/Industrial District Station (Alts 1 and 2):** ▪ Underground with at-grade station entrances at surface parking areas of industrial properties. Station canopies would be consistent with scale and massing of the surrounding low- and mid-rise structures. **Slauson/A Line Station:** ▪ Station would be on an aerial structure in area with low-rise structures adjacent to existing aerial Metro A (Blue) Line Slauson Station. ▪ Scale, form, and massing similar to and consistent with existing Metro A (Blue) Line Slauson Station; would not conflict with the surrounding low-rise structures and adjacent Metro A (Blue) Line aerial structure. **Firestone Station:** ▪ Height of aerial station, including station canopy, would not exceed 47 feet and would not conflict with scale and massing of surrounding low-rise industrial structures. See discussion of "Aerial Structure" for further details about the visual effects.	**Low.** ▪ Station entrances would be visible in the foreground; would not include features that would detract from the visual character and quality of Affected Area. **Arts/Industrial District Station (Alts 1 and 2), Firestone, and Gardendale:** ▪ Viewer groups would have little to no reaction to changes due to industrial nature of Affected Area. No sensitive viewers are in the Affected Area. **Slauson/A Line Station:** ▪ Although sensitive viewers (residents) may be adjacent to the proposed station, these viewers and other viewer groups would have little to no reaction to changes due to industrial nature of the Affected Area. **I-105/C Line Stations:** ▪ Viewer groups and sensitive viewers (residents) would have little to no reaction to changes due to industrial nature of Affected Area. **I-105/C Line Station Platform for the Metro C (Green) Line:** ▪ No sensitive viewers in Affected Area for the proposed stations. ▪ View duration of proposed station platform would vary based on freeway conditions. Motorists would	**Neutral.** ▪ Visible elements at station areas, lighting levels, and effects of glare would be compatible with the industrial character and quality of the Affected Area. ▪ Viewer groups would have little to no reaction to the change.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality [1]
	Gardendale Station: ▪ Height of station canopies and OCS poles and overhead wires would not exceed 20 feet; would be consistent with scale and massing of surrounding uses. **I-105/C Line Station:** ▪ Stations would not exceed 20 feet in height; would be consistent with scale and massing of the surrounding uses and freeway. The new Metro C (Green) Line station platform in the I-105 freeway median would fit with the character and context of the I-105 freeway as a transportation corridor. ▪ See discussion of "Surface Parking Lots," "Pedestrian Bridges," and "Bridges" for further details associated visual effects with the Arthur Ave pedestrian bridge and San Pedro Subdivision bridge over the I-105 freeway. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting:** Lighting not expected to extend beyond station areas. Type and level of lighting would be similar to those that are currently present in the Affected Area and would not affect visual character. **Glare:** See Table 4.4.3. Project components would follow MRDC or equivalent, Metro's *Systemwide Station Design Standards*, and Standard/Directive Drawings. Project components would not create new sources of glare and would not affect the visual character around the station areas. Vertical stainless-steel elements and glass art panels would be dulled so that new sources of glare would not be created.	have little to no reaction to change since motorists' attention and focus are on the road. ▪ Transit users would be insensitive to view of new I-105/C Line platform as viewer group would expect view of transit station since the Metro C (Green) Line is already located in the I-105 median. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting:** Type and level of lighting at station areas would be similar to those that are currently present in the Affected Area. Per MRDC, all light sources at station areas would be directed downward to minimize potential spillover onto surrounding properties, including light-sensitive uses. **Glare:** Station elements would be treated so that new sources of glare would not be created and would not affect viewer sensitivity.	

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality [1]
Surface Parking Facilities ▪ Firestone Station ▪ I-105/C Line Station	**Compatible.** ▪ Fits with character and context of Affected Area and compatible with surrounding industrial uses. No visually prominent features proposed for parking facilities. ▪ Landscaping of parking facilities would be designed per MRDC or equivalent to improve visual quality of the parking facilities. **Firestone Station:** ▪ Existing industrial structures on proposed surface parking lot and wall on north side of San Pedro Subdivision ROW would be removed. ▪ Surface parking facility would minimize the scale and massing of proposed aerial structure as aerial structure would be set back farther from Patata Street than the existing industrial structure currently on the proposed parking facility site. **I-105/C Line Station:** ▪ Removal of existing industrial uses and construction of surface parking facilities would provide partial views of I-105/C Line Station at residential properties on Center St and Industrial Ave. ▪ Minimizes scale and massing of proposed station as station would be set back farther from Center St than the existing industrial structures in Affected Area. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting:** Lighting would be designed per MRDC or equivalent and would not be expected to extend beyond parking facilities. Type and level	**Low** **Firestone Station:** ▪ Visible in foreground; consistent with industrial character of Affected Area and would not detract from visual character and quality of Affected Area. No sensitive viewers in Affected Area. **I-105/C Line Station:** ▪ Consistent with visual character of Affected Area. ▪ Sensitive viewers (residents) would have little to no reaction to the changes as parking facilities would be located on industrial properties. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting:** Type and level of lighting at parking facilities would be similar to those currently present in the Affected Area. Per MRDC, all light sources at proposed surface parking lots would be directed downward and toward parking lots to minimize potential spillover onto surrounding properties, including light-sensitive uses. **Glare:** Sources of glare (e.g., parked vehicles) would be similar to existing conditions and would not affect viewer sensitivity.	**Neutral** **Firestone Station:** ▪ Compatible with industrial character of Affected Area. ▪ Viewers would have little to no reaction to the changes associated with the surface parking facility since the Affected Area is industrial in character. ▪ Lighting levels and effects of glare would be similar to existing conditions and would not affect viewer sensitivity. **I-105/C Line Station:** ▪ Compatible with industrial and residential character of Affected Area. ▪ Viewers would have little to no reaction to the changes associated with the surface parking lots since the Affected Area primarily consist of industrial uses. ▪ Lighting levels and effects of glare would be similar to existing conditions and would not affect viewer sensitivity.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality [1]
	of lighting would be similar to those that are currently present in the Affected Area and would not affect visual character. **Glare:** Sources of glare (e.g., parked vehicles) would be similar to existing conditions and are not expected to alter visual character.		
LRT Tracks, OCS Poles, Overhead Wires, and Utility Poles	**Compatible.** ▪ Similar visual elements (utility poles and overhead wires) are along and across street rights-of-way and rail ROWs. OCS poles, overhead wires, and LRT tracks currently located along Wilmington Branch ROW. Scale would be consistent with existing utility poles, wires, and tracks; would not conflict with visual character of Affected Area. ▪ PEROW currently has no tracks south of the San Gabriel River; new LRT tracks would be consistent with visual character of the rail corridor, which is currently used as parking for the adjacent industrial uses or contains unmaintained vegetation. **Scenic Resources:** Visual character of scenic resources would not be altered. ▪ **Hollydale Community Park:** Views to and from the rail ROW would be limited due to a sound wall that would be placed along the perimeter of the San Pedro Subdivision ROW. ▪ **Valley Christian Junior High and High Schools**: Views would not be obstructed by the project component; trees in the northerly portion of the schools softens views of the PEROW.	**Low**. ▪ Visible in foreground; would not detract from visual character and quality of Affected Area. ▪ Sensitive viewers would have little to no reaction to visual changes as similar visual elements exist in Affected Area. **Scenic Resources:** Views of Hollydale Community Park and Valley Christian Junior High and High Schools would not be obstructed. **Lighting:** No lighting proposed for project components. Lighting from LRVs traveling along LRT tracks would be directed away from residential uses and other light-sensitive uses; LRV lighting would not affect light-sensitive viewers. **Glare:** Materials to be used would not create new sources of glare.	**Neutral.** ▪ Project components would not change the industrial character and quality of the Affected Area. Similar visual elements currently exist in the Affected Area. ▪ Viewer groups would have little to no reaction to the change. Views of Hollydale Community Park and Valley Christian Junior High and High Schools would not be altered or obstructed. ▪ Lighting would be consistent with existing visual character of Affected Area, and viewer groups would have little to no reaction to changes in lighting.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality [1]
	Lighting: ▪ No lighting proposed for project components. ▪ North of Somerset Boulevard, light intensity from LRVs traveling along LRT tracks would be comparable to lighting from existing buildings, vehicles, LRVs from the existing Metro A (Blue) Line, and freight trains along the rail ROWs. ▪ South of Somerset Boulevard, LRVs would be a new source of light since the PEROW does not have any existing transportation-related lighting (e.g., freight trains and LRVs); light intensity from proposed LRVs would be consistent with existing lighting levels along the Bellflower Bike Trail and vehicle lights along surrounding streets, which currently produce transportation-related light. **Glare:** LRVs traveling along tracks not a substantial source of glare. Materials to be used for project components would not create new sources of glare.		
Fences and Retaining Walls ▪ Along at-grade portions that parallel a street right-of-way; low retaining walls with fences on top of retaining walls where rail ROW is slightly elevated from the adjacent street.	**Compatible.** ▪ Similar visual elements in Affected Area; properties facing the rail ROWs currently have fences or walls along the property lines. ▪ Scale of fences and retaining walls would be consistent and fit with the industrial visual character of Affected Area. Fences and a combination of retaining walls and fences along rail ROW would be approximately 6 feet tall. **Scenic Resources:** Visual character of scenic resources would not be altered.	**Low.** ▪ Visible in foreground; would not detract from visual character and quality of the Affected Area as similar elements are in the area. ▪ Sensitive viewers would have little to no reaction to visual changes. **Scenic Resources:** Views of Hollydale Community Park and Valley Christian Junior High and High Schools would not be obstructed.	**Neutral.** ▪ Industrial character and quality of Affected Area unchanged as similar visual elements, lighting levels, and sources of glare currently exist. ▪ Viewer groups would have little to no reaction to the change. ▪ Views of Hollydale Community Park and Valley Christian Junior High and

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality [1]
	Lighting and Glare: Project components would not create new sources of light and glare.	**Lighting and Glare:** Project components would not create new sources of light and glare.	High Schools would not be obstructed.
Sound Walls ▪ 4-foot-tall sound walls on aerial structures ▪ 8-foot-tall sound walls along at-grade portions of project alignment ▪ See Mitigation Measure NOI-1 (Soundwalls)	**Compatible.** ▪ 4-foot-tall sound walls would be placed on aerial structure south of 21st St/Long Beach Ave. Height of sound wall with aerial structure would be consistent with scale, character, and context of surrounding uses. ▪ Landscape unit has similar visual elements (walls). Scale and massing consistent with surrounding low-rise industrial character and context of the Affected Area. **Scenic Resources:** Visual character of scenic resources would not be altered. **Lighting and Glare:** Project component would not create new sources of light and glare; walls would limit the amount of light from LRVs that would spill over onto adjacent properties.	**Low.** ▪ Visible in foreground; would not detract from visual character and quality of Affected Area as similar visual elements are in area. ▪ Viewer groups would have little to no reaction to the change as sound walls would be in an industrial area with similar visual elements and would obstruct views of project components within rail ROW. Scenic Resources: ▪ Views of San Pedro Subdivision ROW at Hollydale Community Park would be obstructed by sound wall ▪ Residents across the street from Hollydale Community Park and users of the park would no longer have views of the rail ROW but would continue to have views of the park. **Lighting and Glare:** Project component would not create new sources of light and glare; walls would limit the amount of light from LRVs that would spill over onto areas with light-sensitive users.	**Neutral.** ▪ Industrial character and quality of Affected Area would not change; sound walls would be at similar scale as surrounding structures and would limit amount of LRV light that spills over onto adjacent properties. ▪ Viewer groups would have little to no reaction to the change as sound walls would be in an industrial area with similar visual elements. ▪ No new sources of light and glare would be created.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality [1]
Ventilation Structures, Radio Houses, and TC&C Houses	**Compatible.** ▪ Constructed as small buildings; height, massing, and form would be consistent with industrial low- and mid-rise structures in Affected Area and would fit with industrial character; would not degrade overall visual character and quality of Affected Area. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** No lighting proposed for structures. Materials to be used would not create new sources of glare.	**Low.** ▪ Visible in foreground; would not alter visual character and quality of Affected Area. ▪ Viewer groups would have little to no reaction to the change as project component would be in an industrial area. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** Project components would not create new sources of light and glare. Viewer sensitivity would not be altered.	**Neutral.** ▪ Visual character and quality of Affected Area would not be altered. ▪ Viewer groups would have little to no reaction to change as project component would be in industrial area; buildings consistent with surrounding structures. ▪ No new sources of light and glare would be created.
TPSS	**Compatible.** ▪ Scale, height, massing, and form consistent with low-rise industrial character of the Affected Area; would not degrade overall visual character and quality of the area. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** No lighting proposed for structures. Materials to be used would not create new sources of glare.	**Low.** ▪ Visible in foreground; would not detract from visual character and quality of Affected Area as similar visual elements are in Affected Area. Located on industrial properties that currently contain transmission towers, or within the rail ROW. ▪ No sensitive viewers located in areas with TPSS; viewers would have little to no reaction due to industrial character. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** Project component would not create new sources of light and glare. Viewer sensitivity would not be altered.	**Neutral.** ▪ Visual character and quality of Affected Area would not be altered. ▪ Viewer groups would have little to no reaction to the change as TPSSs are proposed on industrial properties that contain transmission towers, or within the rail ROW. ▪ No new sources of light and glare would be created.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality [1]
Radio Antennas	**Compatible.** ▪ Radio antennas would fit with industrial character; would not degrade overall visual character and quality of the Affected Area. ▪ 35- to 55-foot-tall radio antennas proposed on Alameda St and Long Beach Ave would be consistent with scale of low- and mid-rise structures surrounding 7th St/Alameda St and low-rise structures along Alameda St and Long Beach Ave. ▪ If 35-foot radio antenna is built at surface parking lot for I-105/C Line Station, antenna would be consistent with scale of low-rise structures in Affected Area. ▪ If 60-foot radio antenna is built, antenna would be taller than surrounding structures, but would be placed close to the San Pedro Subdivision ROW. Antenna would be farther from surrounding low-rise structures than existing industrial building on parking lot site, which is not set back from the Industrial Ave right-of-way. Location of antenna would reduce the scale from residential area. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** Project component would not create new sources of light and glare.	**Low.** ▪ Visible in foreground; would not detract from visual character and quality of Affected Area. No sensitive viewers near radio houses. ▪ Residents along Industrial Ave would have little to no reaction to the change; the proposed antenna location next to the San Pedro ROW would reduce its scale from the residential area; antenna would be consistent with industrial character of the Affected Area. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** Project component would not create new sources of light and glare.	**Neutral.** ▪ Industrial character and quality of the Affected Area would not change. ▪ Viewer groups would have little to no reaction to the change. ▪ No new sources of light and glare would be created.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality [1]
Aerial Structures **50 feet in height** ▪ I-10 freeway at Long Beach Ave **32 feet in height (~36 feet with sound walls)** ▪ Long Beach Ave ▪ Randolph Street (west of Wilmington Avenue) ▪ Randolph St/San Pedro Subdivision ROW ▪ Meadow Dr to South Gate/Downey City Boundary **32 feet in height (~47 feet with station canopy):** ▪ Ardine St to Rayo Ave (includes Firestone Station)	**Compatible.** **I-10 Freeway at Long Beach Ave:** ▪ I-10 freeway aerial structure proposed above the surrounding industrial structures would be taller than I-10 freeway; form and materials of aerial structure would be consistent with character and context of I-10 freeway as a transportation corridor. ▪ Would not conflict with industrial character and context of Affected Area would not occur. **Long Beach Ave and Randolph Street (west of Wilmington Avenue):** ▪ Parallel at-grade tracks for Metro A (Blue) Line and freight rail along Long Beach Ave. Supported on columns with retaining walls as structure rises/descends at 14th St/Long Beach Ave and Wilmington Ave/Randolph St. South of 55th Street, aerial structure along Long Beach Ave would parallel existing aerial structure for Metro A (Blue) Line. Straddle bents proposed as aerial structure curves eastward from Long Beach Ave to Randolph St. ▪ Similar height, form, massing, and materials as existing aerial structure and surrounding low-rise structures. Structures would fit with industrial character and context of area. **Randolph St/San Pedro Subdivision ROW:** ▪ Aerial structure would be new visual element. Scale and massing for aerial structure would be similar to surrounding low-rise structures and would not conflict with industrial character of Affected Area.	**Low.** ▪ Aerial structures would be visible in foreground; would not detract from industrial character and quality of the landscape unit. No sensitive viewers in the Affected Area. **I-10 Freeway at Long Beach Ave:** ▪ Viewer groups include motorists traveling on I-10 freeway, and motorists and pedestrians on nearby local streets; no sensitive viewers are in the Affected Area. ▪ Middle ground view of downtown Los Angeles skyline available to motorists traveling westbound on the I-10 freeway would be partially obstructed. Motorists would not be sensitive to visual changes since view of skyline is at an angle and motorists are focused on driving. ▪ Viewer groups would have little to no reaction to changes in visual character due to industrial character of the area and the aerial structure's consistency in visual character and context of I-10 freeway. **Randolph St/San Pedro Subdivision ROW:** ▪ Views of aerial structure would be limited and located to the rear of industrial properties on both sides of rail ROW.	**Neutral.** ▪ Aerial structures would not change industrial character and quality of Affected Area. ▪ Views and visual character of I-10 freeway as a transportation corridor would not change, would be consistent with, and would not degrade overall visual character and quality of Affected Area. ▪ Viewer groups would have little to no reaction to changes in visual character and quality of the Affected Area. ▪ LRV lighting would not alter visual character and would not adversely affect viewer sensitivity. ▪ Project component would not create new sources of glare.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality [1]
	Ardine St to Rayo Ave (including Firestone Station) and Meadow Dr to South Gate/Downey City Boundary: ▪ Primarily supported by retaining walls; supported by columns at Firestone Station and where San Pedro Subdivision ROW intersects at a street (i.e., Atlantic Ave, Firestone Blvd, Imperial Highway, and Garfield Ave). Aerial structures would be new visual element. ▪ Scale consistent with surrounding low-rise commercial and industrial structures; fits with character and context of Affected Area. ▪ Development of Firestone Station parking facility would allow views of the aerial structure along Patata St and Atlantic Ave. Scale and massing would be consistent with surrounding low-rise structures and would minimize the appearance of the aerial structure as the aerial structure would be set back farther from Atlantic Ave and Patata St than existing industrial structures within the station area. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting:** No lighting proposed for aerial structures. Lighting would primarily emanate from LRVs and is not expected to extend beyond aerial structures. See LRV lighting discussion under "LRT Tracks, OCS Poles, Overhead Wires, and Utility Poles." **Glare:** Materials to be used would not create new sources of glare.	**Long Beach Ave, Randolph St, Ardine St to Rayo Ave, and Meadow Dr to South Gate/Downey City Boundary:** ▪ Where rail ROWs face rears of buildings on both sides, views of aerial structures would be limited. ▪ Where rail ROWs face a street right-of-way, aerial structure would be visible in foreground but would not detract from character and quality of landscape unit due to industrial character of Affected Area. ▪ Viewer groups would have little to no reaction to visual change as aerial structures are in an industrial area. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting:** No lighting proposed for project component. See LRV lighting discussion under "LRT Tracks, OCS Poles, Overhead Wires, and Utility Poles." **Glare:** Materials to be used would not create new sources of glare.	

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality [1]
Pedestrian Bridges ▪ Arthur Ave over I-105 freeway	**Compatible.** ▪ Similar visual elements in Affected Area; two other bridges (San Pedro Subdivision and Grove St bridges) are within 500 feet of Arthur Ave pedestrian bridge. ▪ Reconstructed pedestrian bridge would be compatible in scale, form, and material to existing bridge; would not detract from the visual character of the I-105 freeway. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting:** Lighting would be directed downward and toward pedestrian pathway and would not extend beyond the pedestrian bridge. Lighting would be similar to the type and lighting levels in the Affected Area and would not detract from visual character of the Affected Area. **Glare:** Materials to be used would not create new sources of glare.	**Low.** ▪ No sensitive viewers in the area. Viewer groups would have little to no reaction to this change as pedestrian bridge would be reconstructed at the same location as the existing pedestrian bridge and would be compatible in scale, form, and material as the existing bridge. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting:** Lighting would be directed downward and toward pedestrian pathway, would not extend beyond the pedestrian bridge, and would not affect sensitive viewers and nighttime views of drivers along the I-105 freeway and other roadways. **Glare:** Materials to be used would not create new sources of glare.	**Neutral.** ▪ Visual character and quality of Affected Area would remain similar to existing conditions; would not detract from visual character of the I-105 freeway. ▪ Viewer groups would have little to no reaction to changes in visual character and quality of Affected Area. ▪ Lighting along pedestrian bridge would not alter visual character and would not adversely affect sensitive viewers, as well as drivers along I-105 freeway and other roadways. ▪ Project component would not create new sources of glare.
Bridges ▪ Rio Hondo River ▪ San Gabriel River ▪ I-105	**Compatible.** ▪ Scale and massing would be larger than existing bridges; however, similar visual elements (i.e., bridges) are located at the flood-control channels and I-105 freeway. ▪ New bridges compatible and fit with visual character and context of the concrete-lined flood-control channels and I-105 freeway. **Rio Hondo River:** Existing freight bridge over Rio Hondo River would remain; new bridge built for Project would be adjacent to existing bridge. **San Gabriel River:** Existing bridge over San Gabriel River would be removed; although new	**Low.** ▪ Visible in foreground; viewer groups (motorists on nearby streets) would have little to no reaction to bridges as views are fleeting and viewers' attention and focus are on the road. **Rio Hondo River:** Angled views of Rio Hondo River bridge available to motorists along Garfield Ave/Imperial Hwy. **San Gabriel River:** Angled views of bridge over San Gabriel River available	**Neutral.** ▪ Consistent with visual character and quality of the Affected Area. ▪ Although proposed bridges over the Rio Hondo and San Gabriel Rivers would be larger than the existing bridges, none of the proposed bridges would degrade the overall visual character and quality of the Affected Area.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality [1]
	bridge would be larger, reconstructed bridge at San Gabriel River would be similar in location and height of existing bridge, and would fit with visual character of the flood-control channel. **I-105 Freeway:** Reconstructed San Pedro Subdivision freight bridge over I-105 freeway would replace existing San Pedro Subdivision bridge at the same location. Reconstructed bridge would be similar in location, height, form, and material as the existing bridges over the I-105 freeway (Arthur Ave pedestrian bridge, San Pedro Subdivision bridge, and Grove St bridge). The width may be designed up to 35 feet wide. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting:** No lighting proposed on bridges. Lighting would primarily emanate from LRVs and is not expected to extend beyond the rail ROWs. See LRV lighting discussion under "LRT Tracks, OCS Poles, Overhead Wires, and Utility Poles." **Glare:** Materials to be used would not create new sources of glare.	to motorists along SR-91 freeway and Artesia Blvd. **I-105 Freeway:** View of reconstructed San Pedro Subdivision bridge over I-105 freeway available to motorists along I-105 freeway; views would be consistent with existing views in the Affected Area. Viewer groups would continue to be exposed to views of three bridges in Affected Area. Number of viewers and duration of view vary based on freeway conditions. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting:** No lighting proposed for bridges. See LRV lighting discussion under "LRT Tracks, OCS Poles, Overhead Wires, and Utility Poles." **Glare:** Materials to be used would not create new sources of glare.	▪ Viewers would have little to no reaction to the changes associated with the proposed bridges. ▪ LRV lighting would not alter visual character and would not adversely affect sensitive viewers. ▪ Project component would not create new sources of glare.
Undercrossing ▪ Firestone Station	**Compatible.** Undercrossing to be built under the Firestone Station to connect proposed driveway on Atlantic Ave to the Firestone Station surface parking lot (Figure 4.4-4); consistent with surrounding low-rise industrial structures. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting:** Lighting is not expected to extend beyond the undercrossing and would be consistent with industrial character of Affected Area.	**Low.** No sensitive viewers are in the area. Viewer groups would have little to no reaction to the change since views of the undercrossing would be limited. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting:** No sensitive viewers are in the area. Lighting is not expected to extend beyond the undercrossing and would not affect viewer sensitivity.	**Neutral.** ▪ Consistent with visual character and quality of the Affected Area. ▪ Viewer groups would have little to no reaction to changes in visual character and quality. ▪ Lighting would not alter visual character and would not adversely affect viewer sensitivity.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality [1]
	Glare: Materials to be used would not create new sources of glare.	**Glare:** Materials to be used would not create new sources of glare.	▪ No new sources of glare would be created.
Tunnels ▪ North of 14th St/Long Beach Ave ▪ I-710 ▪ I-605	**Compatible.** **North of 14th St/Long Beach Ave:** Underground; not visible. **I-710 Freeway:** ▪ Similar visual elements within the Affected Area; existing tunnel for freight tracks currently located under I-710 freeway; proposed tunnel would be constructed on northeast side of existing tunnel for project tracks. ▪ New tunnel would be narrower than the existing tunnel; form and materials would be similar to the existing tunnel. **I-605 Freeway:** ▪ No new tunnels proposed under I-605 freeway; Project would use the existing tunnel. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting:** Lighting is not expected to extend beyond tunnels and would be consistent with industrial character of Affected Area. **Glare:** Materials to be used would not create new sources of glare.	**Low.** **North of 14th St/Long Beach Ave:** Underground; not visible. **I-710 Freeway:** ▪ Views of tunnel generally available on adjacent industrial properties but not on public rights-of-way; would not detract from industrial character of the Affected Area. ▪ Viewer groups would have little to no reaction to visual changes due to industrial character of Affected Area. Sensitive viewers do not have views of proposed tunnel. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting:** Lighting is not expected to extend beyond tunnels and would not affect viewer sensitivity. **Glare:** Materials to be used would not create new sources of glare.	**Neutral.** **North of 14th St/Long Beach Ave:** Underground; not visible. **I-710 Freeway:** ▪ Consistent with character and quality of Affected Area; would not degrade overall visual character and quality of Affected Area due to limited and/or angled views of tunnels. ▪ Viewer groups would have little to no reaction to the changes in visual character and quality. ▪ Lighting at tunnels would not alter visual character and would not adversely affect viewer sensitivity. ▪ No new sources of glare would be created.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality [1]
Landscape and Billboard Removal	**Compatible.** **Landscaping:** ▪ Existing landscaping in Affected Area limited and/or sporadic. Vegetation on south side of San Pedro Subdivision ROW along Salt Lake Ave would be outside of the project work limits and would remain in place. ▪ Removal of vegetation in rail ROWs would not adversely affect visual character due to limited amount of vegetation along rail ROWs; not expected to adversely affect visual character of Affected Area. **Billboard:** Billboard in heavily industrialized area; removal would not alter overall visual character and quality of Affected Area. **Scenic Resources:** Project components would not alter the visual character of scenic resources. **Lighting and Glare:** Project components would not create new sources of light and glare.	**Low.** ▪ Changes in landscaping and billboard removal would not detract from industrial character and quality of Affected Area as changes would primarily occur within rail ROWs; existing vegetation along rail ROWs does not enhance the view of the Affected Area. ▪ Due to industrial nature of the landscape unit, viewer groups would have little to no reaction to visual changes associated with this project component. ▪ No sensitive viewers and scenic resources are in the Affected Area. **Scenic Resources:** Project components would not alter views of scenic resources. **Lighting and Glare:** Project components would not create new sources of light and glare.	**Neutral.** ▪ Changes in landscaping and billboard removal not expected to alter visual character and quality of Affected Area. ▪ Viewer groups would have little to no reaction to the change. ▪ No new sources of light and glare would be created.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality [1]
Grade-Crossing Modifications and Street Closures	**Compatible.** **Grade Crossing:** ▪ Consistent with scale, form, and materials of existing grade crossings. Existing grade crossings to be modified at Wilmington Ave and Regent St, which would not allow motorists and pedestrians to cross San Pedro Subdivision ROW. Visual character would be consistent with visual character of industrial area. ▪ Where new grade crossings are proposed, project component would be consistent with the visual character of the existing street rights-of-way. **Street Closure:** ▪ Street closure at Long Beach Ave north of 14th St and at 14th St west of Long Beach Ave would be consistent with scale, massing, and form of Affected Area. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting:** Type and level of lighting would be consistent with those that are present in the surrounding street rights-of-way and existing grade crossings. Lighting would not affect visual character. **Glare:** Project components would not create new sources of glare.	**Low.** ▪ Visible in foreground; grade-crossing modifications and street closures similar in character as existing grade crossings and would not detract from character and quality of Affected Area. ▪ No sensitive viewers and scenic resources are in Affected Area. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting:** Type and level of lighting would be similar to those that are currently present in the surrounding street rights-of-way and existing grade crossings. Lighting would not affect viewer sensitivity. **Glare:** Project components would not create new sources of light and glare.	**Neutral.** ▪ Visual character and quality of Affected Area would not be altered. ▪ Viewer groups would have little to no reaction to change. ▪ Lighting would be consistent with existing visual character of Affected Area, and viewer groups would have little to no reaction to changes in lighting. ▪ No new sources of glare would be created.

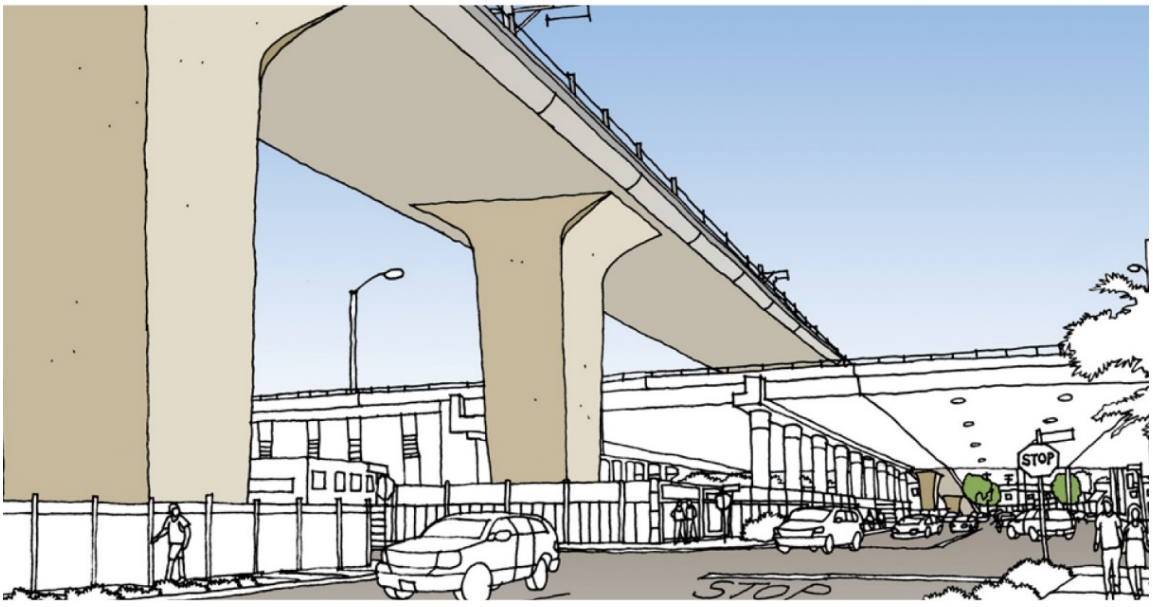
Source: Metro 2021o
Note: MRDC = Metro Rail Design Criteria; LRT = light rail transit; LRV = light rail vehicle; OCS = overhead catenary system; PEROW = Pacific Electric Right-of-Way; ROW = right-of-way; TC&C = train control and communications; TPSS = traction power substations
[1] Overall change in visual quality is determined based on 1) whether project components would be visually compatible with the visual character of the Affected Area, and 2) viewer sensitivity associated with the visual changes of the project components.

Figure 4.4-3. Existing and Proposed Views of I-10 Freeway, looking North at Long Beach Avenue

Existing I-10 Freeway



Proposed I-10 Freeway



Source: Prepared for Metro by Cityworks Design in 2019

Figure 4.4-4. Existing and Proposed Views at Atlantic Avenue, looking East toward Proposed Firestone Station Area

Existing Firestone Station



Proposed Firestone Station



Source: Prepared for Metro by Cityworks Design in 2020

Industrial and Residential Landscape Unit: This landscape unit is located in the Cities of Los Angeles, Huntington Park, Vernon, and Bell, and no stations are proposed in this landscape unit. The project alignment within the Industrial and Residential Landscape Unit would be aerial along Long Beach Avenue and where the La Habra Branch ROW intersects with the San Pedro Subdivision ROW, and at-grade within the rail ROWs in all other portions of this landscape unit. Sensitive viewers in the Affected Area for visual for the Industrial and Residential Landscape Unit include residents, users of the Fred Robert Recreation Center, and users of Salt Lake Park.

Table 4.4.5 summarizes the potential effects to visual character, viewer sensitivity, and visual quality in the Industrial and Residential Landscape Unit. Figure 4.4-5 and Figure 4.4-6 depict the change in visual character and quality of the Affected Area for visual at the 53rd Street pedestrian bridge and on Salt Lake Avenue at the Huntington Park Community Center, respectively. Project components would be compatible and fit with the visual character of the Industrial and Residential Landscape Unit. The components would be designed to fit the urban context and would be consistent with the scale and massing of the surrounding structures. Nighttime lighting levels in the Affected Area for visual would not significantly increase, and the effects of glare would be similar to existing conditions. Viewer sensitivity in this landscape unit would be low as the components would be consistent with and would not detract from the visual character and existing elements of the Affected Area for visual due to the mixed industrial and residential nature of the landscape unit. Alternative 1 would not change the natural topography of the Affected Area for visual and would not alter or obstruct views of scenic resources located within this landscape unit. Given that project components would be visually compatible with the visual character of the Affected Area for visual and viewer sensitivity would be low, the overall change in visual quality for the Industrial and Residential Landscape Unit would be neutral. Therefore, adverse visual effects are not expected in this landscape unit.

Residential Landscape Unit: This landscape unit is located in the Cities of Huntington Park, Cudahy, and South Gate. The project alignment would be primarily at-grade with the surrounding uses in the Residential Landscape Unit. No scenic resources are located in the Residential Landscape Unit, but Salt Lake Park is located just outside of this landscape unit. Sensitive viewers in the Affected Area for visual for this landscape unit include residents. Table 4.4.6 summarizes the potential effects to visual character, viewer sensitivity, and visual quality in the Residential Landscape Unit.

Figure 4.4-7 depicts the change in visual character and quality for this landscape unit on Randolph Street. Overall, the change in visual quality in the Residential Landscape Unit would be neutral as the project components would be compatible with the visual character of the Affected Area for visual and viewer sensitivity to project components would be low. Nighttime lighting levels in the Affected Area for visual would not significantly increase, and the effects of glare would be similar to existing conditions. Viewer groups in this landscape unit would have little to no reaction to visual changes associated with the project components. Additionally, Alternative 1 would not change the natural topography of the Affected Area for visual. Therefore, no adverse visual effects are anticipated in the Residential Landscape Unit.

Table 4.4.5. Project Components' Effects on Visual Character, Viewer Sensitivity, and Visual Quality – Industrial and Residential Landscape Unit

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
LRT Tracks, OCS Poles, Overhead Wires, and Utility Poles	**Compatible.** ▪ Similar visual elements are in Affected Area: LRT tracks and freight tracks are within Wilmington Branch ROW; freight tracks are within La Habra Branch and San Pedro Subdivision ROWs; Metro A (Blue) Line OCS poles and associated overhead wires located along Wilmington Branch ROW. Utility poles and overhead wires are along La Habra Branch and San Pedro Subdivision ROWs. ▪ Scale would be consistent with existing utility poles and wires; would not conflict with visual character of Affected Area (Figure 4.4-5 and Figure 4.4-6) **Scenic Resources:** Visual character of scenic resources would not be altered. **Lighting:** No lighting proposed for OCS poles, overhead wires, and utility poles. Light intensity from LRVs traveling along LRT tracks is expected to be comparable to lighting from existing buildings, vehicles, LRVs from the existing Metro A (Blue) Line, and freight trains along the rail ROWs. **Glare:** LRVs along tracks not a substantial source of glare. Materials to be used for project components would not create new sources of glare.	Low. ▪ Visible in foreground; would not detract or obstruct existing views of scenic resources (Fred Roberts Recreation Center and Salt Lake Park). ▪ Sensitive viewers would have little to no reaction to changes associated with project component as similar visual elements exist in Affected Area. **Scenic Resources:** Views of scenic resources would not be obstructed. **Lighting:** No lighting proposed for project components. Lighting from LRVs traveling along LRT tracks would be directed away from residential uses and other light-sensitive uses; LRV lighting is expected to be comparable to lighting from existing buildings, vehicles, LRVs from the existing Metro A (Blue) Line, and freight trains along the rail ROWs and would not affect viewer sensitivity. **Glare:** Materials to be used would not create new sources of glare.	Neutral. ▪ Visual quality would remain similar to existing conditions; would not detract from visual character and quality of Affected Area. ▪ Views of scenic resources remain available. Viewers would have little to no reaction to the changes. ▪ Lighting would be consistent with existing visual character of Affected Area, and viewer groups would have little to no reaction to changes in lighting.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
Fences and Retaining Walls ▪ Along at-grade portions that parallel a street ROW ▪ Low retaining walls with fences on top of retaining walls where rail ROW is slightly elevated from the adjacent street	**Compatible.** ▪ Properties facing rail ROWs currently have fences/walls along the property lines; fences and combination of retaining walls and fences along rail ROWs would be 6 feet tall. ▪ Similar visual elements in area; would not degrade overall visual character and quality of the Affected Area. Scale and form would be consistent and fit with mixed industrial and residential character of Affected Area (Figure 4.4-6) **Scenic Resources:** Visual character of scenic resources would not be altered. **Lighting and Glare:** Project components would not create new sources of light and glare.	**Low.** ▪ Visible in foreground; would not detract from visual character and quality of Affected Area as similar visual elements are in area. ▪ Sensitive viewers would have little to no reaction to the fences and walls as similar visual elements already exist in the Affected Area. Scenic Resources: ▪ Views of Fred Roberts Recreation Center from residential areas would not be obstructed. ▪ Views of Salt Lake Park from residential uses on east side of San Pedro Subdivision ROW currently obstructed by existing walls along property line facing rail ROW. Project component would not further obstruct views of the park. ▪ Users of Salt Lake Park and Huntington Park Community Center would see retaining walls with fencing on top instead of parking spaces within San Pedro Subdivision ROW (Figure 4.4-6). Affected Area has similar visual elements. **Lighting and Glare:** Project components would not create new sources of light and glare.	**Neutral.** ▪ Character and quality of Affected Area would not change as similar visual elements currently exist in Affected Area. ▪ Views of Salt Lake Park would remain available. Viewers would have little to no reaction to the change. ▪ Lighting levels similar to existing conditions and would not affect viewer sensitivity. ▪ No new sources of glare would be created.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
Sound Walls ▪ 4-foot-tall sound wall on aerial structure along Long Beach Ave and at Randolph St/San Pedro Subdivision ROW ▪ 8-foot-tall sound wall at-grade along Randolph St and Salt Lake Ave ▪ See Mitigation Measure NOI-1 (Soundwalls)	**Compatible.** ▪ Similar visual elements in Affected Area as properties facing the rail ROWs currently have walls along the property lines. ▪ Along Long Beach Ave, views of street right-of-way, Wilmington Branch ROW, and uses across from Long Beach Ave would remain unobstructed since sound wall would be on aerial structures that are supported by columns. See "Aerial Structure" for further discussion. ▪ New sound walls at-grade along Randolph St would obstruct views of La Habra Branch ROW and industrial uses across from Randolph St. ▪ Views of San Pedro Subdivision ROW would remain available along Salt Lake Ave (south of Bell Ave) and at Salt Lake Park and Huntington Park Community Center. Views generally would be obstructed at residential uses, including mobile home community, but visible at industrial uses north of Bell Ave. ▪ Scale and massing of sound walls along Randolph St and Salt Lake Ave consistent with surrounding low-rise structures; would fit with mixed industrial and residential character and context of Affected Area. ▪ Sound walls would be at a similar height as the existing walls at on east side of San Pedro Subdivision ROW along Salt Lake Ave; would not detract from existing views and visual character of the Affected Area. ▪ With the placement of sound walls along Randolph St, residences along Randolph St would no longer be able to see industrial uses across from Randolph St and would see a retaining wall within the rail ROW. The scale of	**Low.** Visible in foreground; would not detract from industrial and residential character and quality of the Affected Area as similar elements are in Affected Area. ▪ Sensitive viewers would have little to no reaction to the change due to mixed industrial and residential character and similar visual elements in the Affected Area. ▪ Sensitive viewers along Randolph St have views of the railroad tracks along the La Habra Branch ROW and industrial uses across from the rail ROW; new views would include a sound wall that would block views of industrial uses. Sound wall would not detract from existing views and visual character of the Affected Area. ▪ Residents on the east side of San Pedro Subdivision ROW would continue to have limited to no views of the rail ROW; existing walls on the west side of Salt Lake Ave along the easterly perimeter of the rail ROW currently obstruct views. Scenic Resources: ▪ Sound wall would be on an aerial structure near Fred Roberts Recreation Center; would not obstruct views of the park. ▪ Sound wall would not obstruct views of Salt Lake Park. San Pedro Subdivision ROW is across the street from Salt Lake Park and Huntington Park Community Center, where	**Neutral.** ▪ Mixed industrial and residential character and quality of Affected Area would not change as it would be a similar scale as the surrounding structures. ▪ Viewers would have little to no reaction to the change due to the mixed industrial and residential character. ▪ Sound wall would limit amount of LRV light that spills over onto adjacent properties.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
	the aerial structure would be consistent with surrounding low-rise structures. ▪ North of Bell Ave, sound wall along Salt Lake Ave would block views of the San Pedro Subdivision ROW along Salt Lake Ave from the mobile home community and some industrial uses on the west side of the street. Views of the rail ROW from residential area on the east side of the rail ROW is currently not available due to walls that separate the residential properties from the rail ROW and would continue to not be visible at residential area with implementation of sound walls. ▪ South of Bell Avenue, sound walls on Salt Lake Ave (across the street from Salt Lake Park and Huntington Park Community Center), would be constructed adjacent to the existing walls along the rear property lines of residential properties that adjoin the rail ROW. Views of the rail ROW would remain available along Salt Lake Ave, Salt Lake Park, and Huntington Park Community Center. The sound wall would be at a similar height as the existing walls along the rear of residential properties and would not detract from the existing views and visual character of the Affected Area. **Scenic Resources:** Visual character of scenic resources would not be altered. **Lighting and Glare:** Project component would not create new sources of light and glare; walls would limit the amount of light from LRVs that would spill over onto adjacent properties.	existing walls along the rear property line of adjacent residential properties currently limit views from the residential area (Figure 4.4-6). **Lighting and Glare:** Project component would not create new sources of light and glare; walls would limit the amount of light from LRVs that would spill over onto areas with light-sensitive users.	

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
Radio Houses and TC&C Houses	**Compatible.** ▪ Consist of small buildings; consistent with scale, massing, and form of the surrounding low-rise structures; would not degrade overall visual character and quality of Affected Area; would fit with the mixed industrial and residential character and scale of Affected Area. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** No lighting proposed for structures. Materials to be used would not create new sources of glare.	**Low.** ▪ Visible in foreground; would not alter visual character and quality of Affected Area. ▪ Sensitive viewers with views of radio houses and TC&C houses would have little to no reaction to the change as these project components would be compatible with scale, massing, and form of surrounding low-rise structures. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** Project components would not create new sources of light and glare. Viewer sensitivity would not be altered.	**Neutral.** ▪ Visual character and quality of Affected Area would not be altered. ▪ Viewer groups would have little to no reaction to the change. ▪ No new sources of light and glare would be created.
TPSS	**Compatible.** ▪ Scale, height, massing, and form consistent with low-rise structures in Affected Area; would not degrade overall visual character and quality of Affected Area. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** No lighting proposed for structures. Materials to be used would not create new sources of glare.	**Low**. ▪ Visible in foreground; would not detract from mixed industrial and residential character and quality of Affected Area. Located away from Fred Roberts Recreation Center and Salt Lake Park. ▪ Sensitive viewers with views of TPSSs would have little to no reaction to the change as TPSSs are proposed on industrial and commercial properties, and in San Pedro Subdivision ROW; would be similar in scale, massing, and form of surrounding low-rise structures. **Scenic Resources:** Project component not within viewshed of scenic resources.	**Neutral.** ▪ Consistent with visual character and quality of Affected Area. ▪ Viewer groups would have little to no reaction to the change as TPSSs are proposed on industrial commercial properties, and within the San Pedro Subdivision ROW. ▪ No new sources of light and glare would be created.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
		Lighting and Glare: Project component would not create new sources of light and glare. Viewer sensitivity would not be altered.	
Radio Antennas	**Compatible.** ▪ Similar components (utility poles) located in Affected Area; would fit with the mixed industrial and residential character of the Affected Area. ▪ 35-foot-tall radio antennas would be consistent with scale of low-rise structures in Affected Area. 55-foot-tall radio antennas would be taller than structures in Affected Area. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** Project component would not create new sources of light and glare.	**Low.** ▪ Visible in foreground; would not detract from visual character and quality of Affected Area. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** Project component would not create new sources of light and glare.	**Neutral.** ▪ Character and quality of Affected Area would not change. ▪ Viewer groups would have little to no reaction to the change as project component would be consistent with visual character of the Affected Area. ▪ No new sources of light and glare would be created.
Aerial Structures **~50 feet in height (~60 feet with sound wall)** ▪ Long Beach Ave at 53rd St pedestrian bridge (from 50th Pl to 55th St) **~32 feet height (~36 feet with sound wall)** ▪ Long Beach Ave north of 50th Pl and south of 55th St ▪ Randolph St/San Pedro Subdivision ROW	**Compatible** **Long Beach Ave:** ▪ Aerial structure would be supported on columns. ▪ Existing aerial structure for Metro A (Blue) Line located along Long Beach Ave south of 55th St and would parallel project alignment. ▪ Height of aerial structure (including the 4-foot-tall sound wall above aerial structure) north and south of 53rd St pedestrian bridge would be consistent with scale of the surrounding low-rise structures and pedestrian bridge. ▪ Aerial structure would be tallest at 53rd St pedestrian bridge (Figure 4.4-5). Although aerial structure would be taller than 53rd St pedestrian bridge and surrounding two-story structures, aerial structure (including sound wall on aerial	**Low.** ▪ Visible in foreground; would not detract from mixed industrial and residential character and quality of Affected Area. ▪ Along Long Beach Ave, aerial structures would be located on columns. ▪ Sensitive viewers would have little to no reaction to the change as the aerial structure would be consistent with massing and visual character of the Affected Area. **Scenic Resources:** Views of Fred Roberts Recreation Center would not be obstructed. Areal structure not proposed within viewshed of Salt Lake Park.	**Neutral.** ▪ Mixed industrial and residential character and quality of Affected Area would not change. ▪ Viewer groups would have little to no reaction to changes as the aerial structure would be consistent with the visual character of the Affected Area. ▪ LRV lighting would not alter visual character and would not adversely affect sensitive viewers.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
~50 feet in height ▪ Slauson/A Line Station (includes elevator shafts and pedestrian bridge that would connect the existing Metro A (Blue) Line Slauson Station to the proposed Project Slauson/A Line Station)	structure) would be consistent in massing, form, and material of the pedestrian bridge, as well as visual character and quality of Long Beach Ave right-of-way and Wilmington Branch ROW as a transportation corridor. ▪ It would not conflict with massing in the Affected Area, including the enclosed pedestrian ramp on both sides of the 53rd St pedestrian bridge as the aerial structure would be on supported columns, which would create a more open feel and would reduce the massing of the aerial structure than if the aerial structure were supported on a retaining wall. Randolph St/San Pedro Subdivision ROW: ▪ Aerial structure would be new visual element; would be supported by retaining walls as the structure; scale and massing of aerial structure would be consistent with surrounding low-rise structures rises/descends around Hollenbeck St and Bissell St. ▪ Residences would now see a retaining wall at San Pedro Subdivision ROW; however, scale and massing of aerial structure would be consistent with surrounding low-rise structures. **Scenic Resources:** Visual character of scenic resources would not be altered. **Lighting:** No lighting proposed for aerial structures. Lighting would primarily emanate from LRVs and is not expected to extend beyond aerial structures. See LRV lighting discussion under "LRT Tracks, OCS Poles, Overhead Wires, and Utility Poles." **Glare:** Materials to be used would not create new sources of glare.	**Lighting:** No lighting proposed for project component. See LRV lighting discussion under "LRT Tracks, OCS Poles, Overhead Wires, and Utility Poles." **Glare:** Materials to be used would not create new sources of glare.	▪ New sources of glare would not be created.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
Landscape and Billboard Removal	**Compatible** **Landscaping:** ▪ Limited vegetation within rail ROWs; landscape removal not expected to degrade visual character of Affected Area ▪ Existing vegetation does not beneficially contribute to visual character of rail ROWs, which are actively used by freight trains and Metro A (Blue) Line within the Wilmington Branch ROW and by freight trains within the La Habra Branch and San Pedro Subdivision ROWs (Figure 4.4-6) **Billboard:** No billboards would be removed in this landscape unit. **Scenic Resources:** Visual character of scenic resources would not be degraded. **Lighting and Glare:** Project components would not create new sources of light and glare.	**Low.** ▪ Changes to landscaping would not detract from mixed industrial and residential character and quality of Affected Area; Wilmington Branch ROW is currently used by the Metro A (Blue) Line and freight trains, and La Habra Branch and San Pedro Subdivision ROWs are used by freight trains. **Scenic Resources:** ▪ Would not detract views of Fred Roberts Recreation Center; Wilmington Branch ROW does not have any existing landscaping near Fred Roberts Recreation Center. ▪ Would not detract views of Salt Lake Park; landscape removal near Salt Lake Park would occur within the San Pedro Subdivision ROW, opposite side of the street from Salt Lake Park; would not alter visual character of rail ROW, which is currently an active freight corridor with limited landscaping. **Lighting and Glare:** Project components would not create new sources of light and glare.	**Neutral.** ▪ Changes to landscaping not expected to alter the visual character and quality of the Affected Area. ▪ Viewer groups would have little to no reaction to changes in visual character and quality as rail ROWs are used by freight trains and/or Metro A (Blue) Line. ▪ Views of Fred Roberts Recreation Center and Salt Lake Park would remain available and would not be altered. ▪ No new sources of light and glare would be created.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
Grade Crossing Modifications and Street Closures	**Compatible.** **Grade Crossing:** Similar in scale, form, and materials of existing grade crossings; would be similar in character as existing grade crossings. Existing grade crossing at Albany St would be modified to prevent motorists and pedestrians from crossing La Habra Branch ROW. **Street Closure:** No street closures proposed in this landscape unit. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting:** Type and level of lighting would be consistent with those that are present in the surrounding street rights-of-way and existing grade crossings. Lighting would not affect visual character. **Glare:** Project components would not create new sources of glare.	**Insensitive.** ▪ Visible in foreground; grade-crossing modifications similar in character to existing grade crossings; would not detract from mixed industrial and residential character and quality of the Affected Area. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting:** Type and level of lighting would be similar to those that are currently present in the surrounding street rights-of-way and existing grade crossings. Lighting would not affect viewer sensitivity. **Glare:** Project components would not create new sources of light and glare.	**Neutral.** ▪ Changes not expected to alter visual character and quality of the Affected Area; modified grade crossings would be consistent with visual character and quality of existing grade crossings in the Affected Area. ▪ Sensitive viewers would have little to no reaction to this change. ▪ Lighting would be consistent with existing visual character of Affected Area, and viewer groups would have little to no reaction to changes in lighting.
Parking Facilities, Pedestrian Bridges, Ventilation Structures, Tunnels, and Station Areas. None proposed in this landscape unit. Existing Long Beach Ave/53rd St pedestrian bridge would remain undisturbed.			

Source: Metro 2021o
Note: LRT = light rail transit; LRV – light rail vehicle; OCS = overhead catenary system; ROW = right-of-way; TC&C = train control and communications; TPSS = traction power substations
[1] Overall change in visual quality is determined based on 1) whether project components would be visually compatible with the visual character of the Affected Area, and 2) viewer sensitivity associated with the visual changes of the project components.

Figure 4.4-5 Existing and Proposed Views of Long Beach Avenue, looking South toward 53rd Street Pedestrian Bridge

Existing Long Beach Avenue at 53rd Street Pedestrian Bridge



Proposed Long Beach Avenue at 53rd Street Pedestrian Bridge



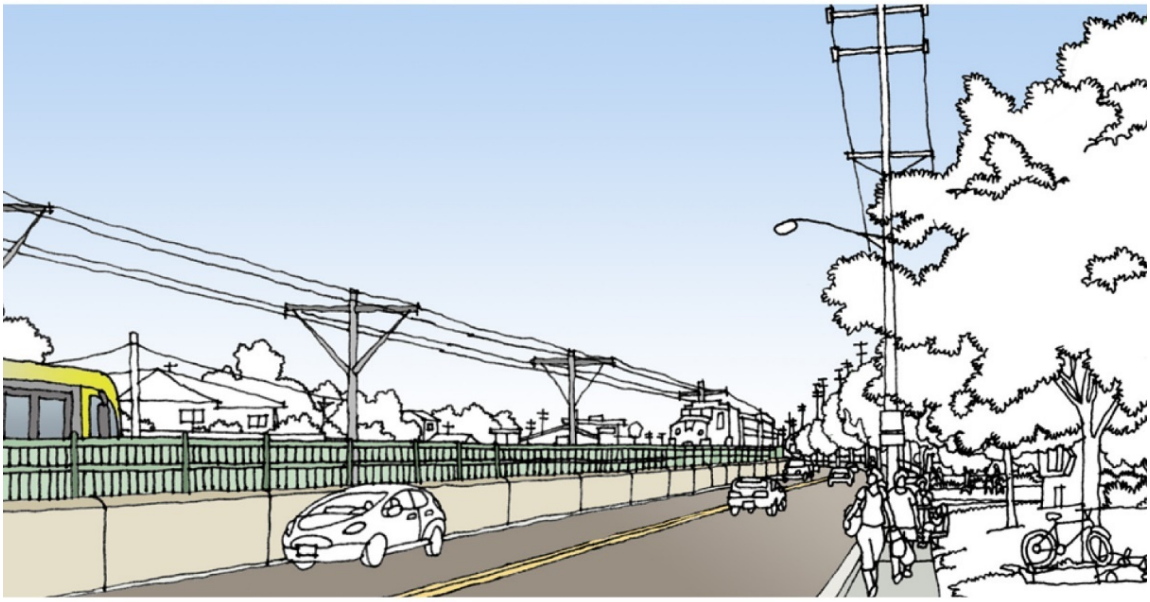
Source: Prepared for Metro by Cityworks Design in 2020

Figure 4.4-6. Existing and Proposed Views of Salt Lake Avenue at Huntington Park Community Center, looking South

Existing Salt Lake Avenue



Proposed Salt Lake Avenue



Source: Prepared for Metro by Cityworks Design in 2019

Table 4.4.6. Project Components' Effects on Visual Character, Viewer Sensitivity, and Visual Quality – Residential Landscape Unit

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
Station Areas ▪ Pacific/Randolph ▪ Florence/Salt Lake	**Compatible.** ▪ Pacific/Randolph Station would be in area with low-rise commercial and residential structures. ▪ Florence/Salt Lake Station would be in area with low-rise industrial, commercial, and residential uses. ▪ Station canopies, OCS poles, and overhead wire heights not to exceed 20 feet; would be consistent with scale, massing, character, and context of Affected Area; would not detract from visual character of rail ROWs and the Affected Area. ▪ Design to be sensitive to specific urban context at each station, pedestrian-oriented and in compliance with MRDC or equivalent and Standard/Directive Drawings. **Scenic Resources:** Visual character of Salt Lake Park would not be altered. **Lighting:** Lighting not expected to extend beyond station areas. Type and level of lighting would be similar to those that are currently present in the Affected Area and would not affect visual character. **Glare:** See Table 4.4.3. Project components would follow MRDC or equivalent, Metro's *Systemwide Station Design Standards*, and Standard/Directive Drawings. Project components would not create new sources of glare and would not affect the visual character around the station areas. Vertical stainless-steel elements and glass art panels would be	**Low.** ▪ Visible in foreground; scale and massing would be consistent with low-rise structures in the Affected Area; would not detract from visual character and quality of the Affected Area. ▪ Stations would be designed to be sensitive to the specific urban context of each station area. ▪ Sensitive viewers would have little to no reaction to changes associated with this project component since views toward the proposed stations from existing residential properties would be at an angle and the stations would not include features that would detract from the visual character of the rail ROWs. **Scenic Resources:** Views of Salt Lake Park would not be obstructed. **Lighting:** Type and level of lighting at station areas would be similar those that are currently present in the Affected Area. Per MRDC, all light sources at station areas would be directed downward to minimize potential spillover onto surrounding properties, including light-sensitive uses. **Glare:** Station elements would be treated so that new sources of glare	**Neutral.** ▪ Visual elements, lighting levels, and effects of glare would be compatible with character and quality of the Affected Area. ▪ Viewer groups would have little to no reaction to the changes associated with the proposed stations as the stations would be in the rail ROW and lighting would be directed away from light-sensitive uses.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
	dulled so that new sources of glare would not be created.	would not be created and would not affect viewer sensitivity.	
LRT Tracks, OCS Poles, Overhead Wires, and Utility Poles	**Compatible.** ▪ Similar visual elements located in Affected Area; project component would be consistent with scale and form of existing utility wires and poles in the Affected Area. **Scenic Resources:** Visual character of Salt Lake Park would not be altered. **Lighting:** No lighting proposed for OCS poles, overhead wires, and utility poles. Light intensity from LRVs traveling along LRT tracks is expected to be comparable to lighting from existing buildings, vehicles, and freight trains along the rail ROWs. **Glare:** LRVs traveling along tracks not a substantial source of glare. Materials to be used for project components would not create new sources of glare.	Low. ▪ Visible in foreground; would not detract from visual character and quality of Affected Area. ▪ Sensitive viewers would have little to no reaction to changes since similar visual elements are in the Affected Area. **Scenic Resources:** Visual character of Salt Lake Park would not be altered. **Lighting:** No lighting proposed for project components. Lighting from LRVs traveling along LRT tracks would be directed away from residential uses and other light-sensitive uses; LRV lighting is expected to be comparable to lighting from existing buildings, vehicles, and freight trains along the rail ROWs and would not affect viewer sensitivity. **Glare:** Materials to be used would not create new sources of glare.	Neutral. ▪ Visual character and quality of Affected Area would not change; would remain similar to existing condition. ▪ Viewers would have little to no reaction to the change. ▪ Lighting would be consistent with existing visual character of Affected Area, and viewer groups would have little to no reaction to changes in lighting.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
Fences and Retaining Walls ▪ Along at-grade portions that parallel a street ROW; low retaining walls with fences on top of retaining walls where rail ROW is slightly elevated from the adjacent street	**Compatible.** ▪ Fences and retaining walls along the rail ROWs would be approximately 6 feet in height. ▪ Similar visual elements in Affected Area; properties along Randolph St and Salt Lake Ave currently have fences or walls along the property lines. ▪ Scale, form, and massing to be consistent and fit with visual character of Affected Area; would not degrade overall visual character and quality of Affected Area. **Scenic Resources:** Visual character of Salt Lake Park would not be altered. **Lighting and Glare:** Project components would not create new sources of light and glare.	**Low.** ▪ Visible in foreground; would not detract from visual character and quality of Affected Area and sensitive viewers would have little to no reaction to the addition of project components since similar visual elements are in Affected Area. **Scenic Resources:** Views of Salt Lake Park would not be obstructed or altered. **Lighting and Glare:** Project components would not create new sources of light and glare.	**Neutral.** ▪ Visual character and quality of Affected Area would not change as similar visual elements and lighting levels exist in Affected Area; would not degrade overall visual character and quality of Affected Area. ▪ Viewers would have little to no reaction to the change. ▪ No new sources of light and glare would be created.
Sound Walls ▪ 8-foot-tall sound walls would be placed at-grade along edge of San Pedro Subdivision ROW (along Salt Lake Ave) ▪ See Mitigation Measure NOI-1 (Soundwalls)	**Compatible.** ▪ Sound walls at-grade along Salt Lake Ave would obstruct residential views across Salt Lake Ave and views of San Pedro Subdivision ROW. ▪ Scale of sound wall would be consistent with surrounding low-rise structures and existing visual elements. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** Project component would not create new sources of light and glare; walls would limit the amount of light from LRVs that would spill over onto adjacent properties.	**Low.** ▪ Visible in foreground; would not detract from visual character and quality of Affected Area as sound walls would be at similar scale as surrounding structures. ▪ Sensitive viewers would see new sound wall along San Pedro Subdivision ROW instead of railroad tracks and structures across the rail ROW. ▪ Viewer sensitivity would be low, and sensitive viewers would have little to no reaction to the change since sound walls would be at similar scale as the surrounding structures.	**Neutral.** ▪ Visual character and quality of Affected Area would not change because sound walls would be similar in scale as the surrounding structures and would limit amount of LRV light that spills over onto adjacent properties; would not degrade overall visual character and quality of Affected Area. ▪ Viewers would have little to no reaction to the change. ▪ No new sources of light and glare would be created.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
		Scenic Resources: Project component not within viewshed of scenic resources. **Lighting and Glare:** Project component would not create new sources of light and glare; walls would limit the amount of light from LRVs that would spill over onto areas with light-sensitive users.	
TC&C Houses	**Compatible.** ▪ TC&C houses would be small buildings; would be consistent with scale, massing, and form of surrounding low-rise structures. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** No lighting proposed for structures. Materials to be used would not create new sources of glare.	**Low.** ▪ Visible in foreground; would not alter visual character and quality of Affected Area. ▪ Sensitive viewers would have little to no reaction to TC&C house; would be compatible with scale, massing, and form of the surrounding low-rise structures. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** Project component would not create new sources of light and glare. Viewer sensitivity would not be altered.	**Neutral.** ▪ Visual character and quality of Affected Area would not be altered. ▪ Viewer groups would have little to no reaction the change. ▪ No new sources of light and glare would be created.
TPSS	**Compatible.** ▪ TPSS would be situated on commercial and industrial properties. ▪ Scale, height, massing, and form consistent with low-rise structures and residential character of Affected Area; would not degrade overall visual character and quality of area.	**Low.** ▪ Visible in foreground; would not detract from character and quality of Affected Area, which contains residential structures and a few commercial and industrial structures. ▪ Sensitive viewers would have little to no reaction as TPSS are	**Neutral.** ▪ Scale, massing, and form would be compatible with the character and quality of the Affected Area; would not degrade the overall visual character and quality of Affected Area. ▪ Viewers would have little to no reaction to the change as component would be consistent

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
	Scenic Resources: Project component not within viewshed of scenic resources. **Lighting and Glare:** No external lighting proposed for structures. Materials to be used would not create new sources of glare.	proposed on industrial and commercial properties. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** Project components would not create new sources of light and glare. Viewer sensitivity would not be altered.	with scale, massing, and form of surrounding low-rise structures. ▪ No new sources of light and glare would be created.
Radio Antennas	**Compatible.** ▪ 35- to 60-foot-tall radio antenna within La Habra Branch ROW at Randolph St/Seville Ave intersection; would be consistent with the scale of low- and mid-rise structures. A 5-story residential structure is located at northeast corner of this intersection. ▪ Antenna would not degrade overall visual character and quality of the Affected Area since similar components (utility poles) are in Affected Area; antenna would be consistent with the character of the existing utility poles. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** Project component would not create new sources of light and glare.	**Low.** ▪ Visible in foreground; would not detract from visual character and quality of Affected Area. ▪ No sensitive viewers and scenic resources near proposed radio antenna. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** Project component would not create new sources of light and glare.	**Low.** ▪ Visual character and quality of Affected Area would not change. ▪ Viewer groups would have little to no reaction to the change. ▪ No new sources of light and glare would be created.
Landscape and Billboard Removal	**Compatible** **Landscaping:** Landscape removal would not visually degrade overall visual character of Affected Area as La Habra Branch ROW and San Pedro Subdivision ROW are currently and has historically been used for freight rail and removal of existing landscaping would not change the character of the rail ROWs. **Billboard:** No billboards in landscape unit.	**Low.** ▪ Viewer sensitivity would be low as the changes would be within existing rail ROWs that are currently used by freight trains; viewer groups would continue to see the rail ROWs.	**Neutral.** ▪ Landscape removal not expected to degrade visual character and quality of Affected Area. ▪ Viewers would have little to no reaction to the change. ▪ No new sources of light and glare would be created.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
	Scenic Resources: Project component not within viewshed of scenic resources. **Lighting and Glare:** Project components would not create new sources of light and glare.	**Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** Project components would not create new sources of light and glare.	
Grade-Crossing Modifications	**Compatible.** ▪ Consistent with scale, form, and materials of existing grade crossings in the same areas. ▪ Existing grade crossing would be closed at Rugby Ave and Rita Ave; changes would be consistent with the visual character of the existing grade crossings. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting:** Type and level of lighting would be consistent with those that are present in the surrounding street rights-of-way and existing grade crossings. Lighting would not affect visual character. **Glare:** Project components would not create new sources of glare.	**Low.** ▪ Visible in foreground; viewer sensitivity would be low since grade-crossing modifications would be similar in character as existing grade crossings; would not detract from character and quality of the Affected Area. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting:** Type and level of lighting would be similar to those that are currently present in the surrounding street rights-of-way and existing grade crossings. Lighting would not affect viewer sensitivity. **Glare:** Project components would not create new sources of light and glare.	**Neutral.** ▪ Visual character and quality of Affected Area would not be altered as existing grade crossings are in the Affected Area. ▪ Viewers would have little to no reaction to the change. ▪ Lighting would be consistent with existing visual character of Affected Area, and viewer groups would have little to no reaction to changes in lighting. ▪ No new sources of glare would be created.
Aerial Structures, Pedestrian Bridges, Tunnels, Parking Facilities, Radio Houses, Ventilation Structures, and Street Closures. None proposed in this landscape unit.			

Source: Metro 2021o
Note: LRT = light rail transit; LRV = light rail vehicle; MRDC = Metro Rail Design Criteria; OCS = overhead catenary system; ROW = right-of-way; TC&C = train control and communications; TPSS = traction power substations
[1] Overall change in visual quality is determined based on 1) whether project components would be visually compatible with the visual character of the Affected Area, and 2) viewer sensitivity associated with the visual changes of the project components.

Figure 4.4-7. Existing and Proposed Views of Randolph Street at Miles Avenue, looking East

Existing Randolph Street



Proposed Randolph Street



Source: Cityworks Design 2019

Suburban Residential and Industrial Landscape Unit: This landscape unit is located in the Cities of South Gate and Paramount and no stations would be situated in this landscape unit. Sensitive viewers include residents and visitors of Paramount Park.

Table 4.4.7 summarizes the potential effects to visual character, viewer sensitivity, and visual quality in the Suburban Residential and Industrial Landscape Unit. Figure 4.4-8 depicts the change in visual character and quality at Downey Avenue.

Project components would not obstruct views of or alter the visual character and quality of the existing Los Angeles River truss bridge at the Los Angeles River, Los Angeles River "Defiance," a public art sculpture, and Paramount Park. Viewer sensitivity to the proposed changes at the Los Angeles River and at Paramount Boulevard/Rosecrans Avenue would be low. The realignment of the Paramount Bike Trail between Somerset Boulevard and Lakewood Boulevard, and potential removal of landscaping associated with the bike trail would not degrade the visual character of the PEROW as the PEROW currently contains wide strips of unpaved land. Where PEROW views are available, views of project components would either be obstructed by sound walls (Mitigation Measure NOI-1 [Soundwalls]) or by existing walls that are currently situated between the PEROW and residential properties. The sound walls would also obstruct views of project components along the Paramount and Bellflower Bike Trails. Nighttime lighting levels in the Affected Area for visual would not significantly increase, and the effects of glare would be similar to existing conditions.

Overall, project components would be compatible with the visual character of the Affected Area for visual and viewer sensitivity to the changes associated with the project components would be low. Additionally, Alternative 1 would not change the natural topography of the Affected Area for visual. However, the existing landscaping and decorative wall on the south side of the World Energy storage tracks (east of the proposed LRT tracks) could be removed, which would make the refinery storage tank cars on the railroad tracks more apparent along Somerset Boulevard. Views of the storage tracks would not be visually compatible with the surrounding residential area, and residents would be sensitive to the change in visual character. Therefore, adverse effects on visual quality would occur in the Suburban Residential and Industrial Landscape Unit. However, with implementation of Mitigation Measure VA-1 (Screening at Somerset Boulevard), no adverse effect would occur.

Table 4.4.7. Project Components' Effects on Visual Character, Viewer Sensitivity, and Visual Quality – Suburban Residential and Industrial Landscape Unit

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
LRT Tracks, OCS Poles and Overhead Wires	**Compatible.** ▪ Similar visual elements located within the Affected Area. Scale of OCS poles and overhead wires consistent with existing utility poles and wires and would not conflict with visual character of Affected Area. **Scenic Resources:** Visual character of scenic resources would not be altered. Lighting: ▪ No lighting proposed for OCS poles, overhead wires, and utility poles. ▪ North of Somerset Boulevard, light intensity from LRVs traveling along LRT tracks is expected to be comparable to lighting from existing buildings, vehicles, Paramount Bike Trail, and freight trains along the rail ROWs. ▪ South of Somerset Boulevard, LRVs would be a new source of light since the PEROW does not have any existing transportation-related lighting (e.g., freight trains and LRVs); light intensity from proposed LRVs would be consistent with existing lighting levels along the Bellflower Bike Trail and vehicle lights along surrounding streets, which currently produce transportation-related light. **Glare:** LRVs along tracks would not be a substantial source of glare. Materials to be used for project components would not create new sources of glare.	**Low.** ▪ Visible in foreground; Sensitive viewers would have little to no reaction to visual changes as similar visual elements already exist in Affected Area. **Scenic Resources:** Views of scenic resources would not be obstructed. **Lighting:** No lighting proposed for project components. Lighting from LRVs traveling along LRT tracks would be directed away from residential uses and other light-sensitive uses; LRV lighting would not affect light-sensitive viewers. **Glare:** Materials to be used would not create new sources of glare.	**Neutral.** ▪ Mixed industrial and residential character and quality of Affected Area unchanged as similar visual elements currently exist in Affected Area. ▪ Sensitive viewers would have little to no reaction to change. ▪ Lighting would be consistent with existing visual character of Affected Area, and viewer groups would have little to no reaction to changes in lighting.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
Fences and Retaining Walls ▪ Along at-grade portions of Project that parallel street ROW ▪ Low retaining walls with fences on top of retaining walls where rail ROW is slightly elevated from adjacent street	**Compatible.** ▪ Properties facing rail ROWs currently have fences or walls along property lines; fences, and combination of retaining walls/fences, along rail ROW would be 6 feet tall. ▪ Similar visual elements in Affected Area; scale and form would be consistent and fit with visual character of Affected Area. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** Project components would not create new sources of light and glare.	**Low.** Visible in foreground; would not detract from visual character and quality of Affected Area as similar visual elements are in Affected Area. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** Project components would not create new sources of light and glare.	**Neutral.** ▪ Mixed industrial and residential character and quality of Affected Area unchanged as similar visual elements and lighting levels currently exist in Affected Area. ▪ Sensitive viewers would have little to no reaction to change. ▪ No new sources of light and glare would be created.
Sound Walls ▪ 4-foot-tall sound wall from Southern Ave to Frontage Rd (including along edge of proposed bridge over the Los Angeles River), and on proposed aerial structures within PEROW ▪ 8-foot-tall sound wall along at-grade portions of PEROW ▪ See Mitigation Measure NOI-1 (Soundwalls)	**Compatible.** ▪ Scale and massing would be consistent and fit with the existing low-rise structures in the Affected Area. Similar visual elements in Affected Area. **Scenic Resources:** Visual character of scenic resources would not be altered. ▪ **Lighting and Glare:** Project component would not create new sources of light and glare; walls would limit the amount of light from LRVs that would spill over onto adjacent properties.	**Low.** ▪ Visible in foreground; would not detract from visual character and quality of Affected Area since similar visual elements are in the area. ▪ Sensitive viewers would have little to no reaction to sound walls since sound walls would be similar in scale as the surrounding low-rise structures. **Scenic Resources:** Project component would not obstruct views of scenic resources. **Lighting and Glare:** Project component would not create new sources of light and glare; walls would limit the amount of light from LRVs that would spill over onto areas with light-sensitive users.	**Neutral.** ▪ Mixed residential and industrial character and quality of Affected Area would not change as similar visual elements currently exist in Affected Area. ▪ Viewers would have little to no reaction to the change. ▪ Sound walls would limit amount of LRV light that spills over onto adjacent properties. ▪ No new sources of light and glare would be created.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
TC&C Houses	**Compatible.** Component consist of small buildings, which would be compatible with surrounding low-rise structures. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** No lighting proposed for structures. Materials to be used would not create new sources of glare.	**Low.** ▪ Visible in foreground; would not alter visual character and quality of Affected Area. ▪ Sensitive viewers would have little to no reaction as buildings would be small and would fit with scale of Affected Area. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** Project components would not create new sources of light and glare. Viewer sensitivity would not be altered.	**Neutral.** ▪ Visual character and quality of Affected Area would not be altered as structures would be consistent with scale of surrounding low-rise structures. ▪ Viewer groups would have little to no reaction the change. ▪ No new sources of light and glare would be created.
Radio Antennas	**Compatible.** ▪ Proposed on a surface parking lot on the rear side of a privately owned entertainment activity center facing PEROW and Bellflower Bike Trail. ▪ If a 35-foot-tall radio antenna is constructed, would be consistent with the scale of low-rise structures in the Affected Area. ▪ If a 55-foot-tall radio antenna is constructed, would be taller than surrounding low-rise structures. The radio antenna would fit the character of the Affected Area as it would be located on a surface parking lot to the rear of a privately owned entertainment center (the location of the Bellflower MSF site option); would not conflict with the character of industrial properties and a mobile home community	**Low.** ▪ Visible in foreground; would not detract from visual character and quality of Affected Area, consisting of low-rise industrial properties, a mobile home community, the unpaved PEROW, and Bellflower Bike Trail. ▪ Views of radio antenna would not be available at nearby residential properties. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** Project component would not create new sources of light and glare.	**Neutral.** ▪ Character and quality of Affected Area would not change. ▪ Viewer groups would have little to no reaction to the change as project component would be consistent with visual character of Affected Area; would be situated on a surface parking lot to the rear of a privately owned entertainment activity center. ▪ No new sources of light and glare would be created.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
	that are on the opposite side of the PEROW. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** Project component would not create new sources of light and glare.		
TPSS	**Compatible.** ▪ Scale, height, massing, and form would be consistent with low-rise structures in surrounding area; would not degrade overall visual character and quality of area. ▪ TPSS would be located on adjacent LADWP property with overhead utility towers and used as a nursery. **Scenic Resources:** Visual character of scenic resources would not be altered. **Lighting and Glare:** No lighting proposed for structures. Materials to be used would not create new sources of glare.	**Low.** ▪ Located on adjacent LADWP property between PEROW and rear of residential properties; views of TPSS would be limited. ▪ Viewer groups would have little to no reaction to change; sensitive viewers do not have views of TPSS. **Scenic Resources:** Views of scenic resources would not be obstructed. **Lighting and Glare:** Project component would not create new sources of light and glare. Viewer sensitivity would not be altered.	**Neutral.** ▪ Consistent with character and quality of Affected Area; would not degrade overall visual character and quality of Affected Area. ▪ Viewer groups would have little to no reaction to changes in visual character and quality, and sensitive viewers would not have views of TPSS. ▪ No new sources of light and glare would be created.
Aerial Structures ~32 feet height ▪ Paramount Blvd/ Rosecrans Ave ▪ Downey Ave	**Compatible.** ▪ Aerial structures primarily supported by retaining walls; supported by columns where aerial structure would cross over a street. Aerial structure would be new visual element, particularly at Paramount Blvd/Rosecrans Ave, Paramount Park, and Downey Ave. ▪ Trees and some landscaping in PEROW would be removed to accommodate aerial structure. **Paramount Blvd/Rosecrans Ave:** Scale would be consistent with surrounding low-rise one-story structures surrounding the Paramount Blvd/Rosecrans Ave intersection;	**Low.** Visible in foreground; would not detract from character and quality of Affected Area. ▪ **Paramount Blvd/Rosecrans Ave:** Sensitive viewers would have little to no reaction to visual change as aerial structure would be located along northerly edge of Paramount Park and surface parking lot. ▪ Limited views at residential neighborhood north of PEROW; most views blocked by walls and	**Neutral.** ▪ Would not degrade overall visual character and quality of Affected Area. ▪ Viewer groups would have little to no reaction to changes in visual character and quality. ▪ LRV lighting would not alter visual character and would not adversely affect sensitive viewers. ▪ Project component would not create new sources of glare.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
	would fit with the commercial character and context of the existing area. **Downey Ave:** Existing fences and vegetation in PEROW would be removed; landscaped medians outside work limit would be retained. Scale of aerial structure would be consistent with surrounding low-rise one- and two-story structures. **Scenic Resources:** ▪ Aerial structure would not degrade the visual character of Paramount Park; located along the northeastern boundary of the park, near existing surface parking lot for the park. ▪ "Defiance," a public art sculpture: would not be removed; views of the public art sculpture would remain available in the surrounding area (along Rosecrans Ave and Paramount Blvd). **Lighting:** No lighting proposed for aerial structures. Lighting would primarily emanate from LRVs and is not expected to extend beyond aerial structures. See LRV lighting discussion under "LRT Tracks, OCS Poles, Overhead Wires, and Utility Poles." **Glare:** Materials to be used would not create new sources of glare.	structures on adjacent residential properties. **Downey Ave:** ▪ Sensitive viewers (residents) on south side of Downey Ave would see a new retaining wall in PEROW (on west and east side of Downey Ave); new aerial structure would be supported by columns as aerial structure crosses over Downey Ave. ▪ Sensitive viewers would have little to no reaction to this change as retaining wall would be at a similar scale as surrounding structures. **Scenic Resources:** Views of scenic resources would not be obstructed. **Lighting:** No lighting proposed for project component. See LRV lighting discussion under "LRT Tracks, OCS Poles, Overhead Wires, and Utility Poles." **Glare:** Materials to be used would not create new sources of glare.	

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
Pedestrian Bridges/ Undercrossing ▪ Paramount High School	**Compatible.** ▪ Pedestrian bridge connecting Paramount Park to the Paramount High School main campus would be removed and replaced with an undercrossing or tunnel; views of undercrossing/tunnel would be limited. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting:** Lighting is not expected to extend beyond the pedestrian bridge/undercrossing and would be consistent with visual character of Affected Area. **Glare:** Materials to be used would not create new sources of glare.	**Low.** ▪ Pedestrian bridge would be removed and no longer visible; views of pedestrian undercrossing/tunnel would be limited. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting:** Lighting is not expected to extend beyond the pedestrian bridge/undercrossing and would not affect viewer sensitivity. **Glare:** Materials to be used would not create new sources of glare.	**Neutral.** ▪ Consistent with visual character and quality of the Affected Area. ▪ Viewer groups would have little to no reaction to changes in visual character and quality. ▪ Lighting would not alter visual character and would not adversely affect viewer sensitivity. ▪ Project component would not create new sources of glare.
Bridges ▪ Los Angeles River	**Compatible.** ▪ Existing angled views of bridge would continue to be available at residential area south of Southern Ave and to motorists along I-710 freeway and Firestone Blvd. **Scenic Resources:** ▪ Scale and massing of new bridge would be larger than existing Los Angeles River truss bridge; would change visual setting of the truss bridge, but new bridge would be compatible with visual character of flood-control channel. ▪ Existing Los Angeles River truss bridge would be retained; new bridge would be constructed immediately northeast and adjacent to existing truss bridge. ▪ New bridge would not obstruct views of existing truss bridge at residential area along Salt Lake Avenue (between Southern	**Low.** ▪ Visible in foreground; would not detract from character and quality of Affected Area around aerial structures. Existing use of Los Angeles River bike trail is low. **Scenic Resources:** ▪ Angled views of Los Angeles River truss bridge to remain; would not be obstructed at residential area along Salt Lake Ave (between Southern Ave and Los Angeles River) and at I-710 freeway. ▪ Viewer groups would have little to no reaction to visual change as the new bridge and existing Los Angeles River truss bridge are on a flood-control facility, views are at an angle, views of the truss bridge	**Neutral.** ▪ Proposed bridge would be larger than existing truss bridge; however, proposed bridge would be consistent with and would not degrade overall visual character and quality of Affected Area. ▪ Viewer groups would have little to no reaction to changes in visual character and quality. ▪ LRV lighting would not alter visual character and would not adversely affect sensitive viewers. ▪ Project component would not create new sources of glare.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
	Avenue and Los Angeles River) and along I-710 freeway; would obstruct views of bridge from Firestone Blvd and along Los Angeles River Bike Path north of the bridge. ▪ Public parking and stopping points not available on I-710 freeway and Firestone Blvd in immediate area for stationary viewing of this bridge. Area not generally used as stationary vantage points to view the truss bridge. ▪ Access to bicycle path is available on Firestone Blvd; however, heavily industrialized area and lack of public parking and stopover points make it difficult to access bicycle path for purpose of viewing the truss bridge. No other stationary vantage points are available north of truss bridge. **Lighting:** No lighting proposed on bridge. Lighting would primarily emanate from LRVs and is not expected to extend beyond the rail ROWs. See LRV lighting discussion under "LRT Tracks, OCS Poles, Overhead Wires, and Utility Poles." **Glare:** Materials to be used would not create new sources of glare.	are limited as motorists travel over the Los Angeles River, and views of the Los Angeles River truss bridge at residential area south of Southern Ave would not be obstructed. **Lighting:** No lighting proposed for bridges. See LRV lighting discussion under "LRT Tracks, OCS Poles, Overhead Wires, and Utility Poles." ▪ **Glare:** Materials to be used would not create new sources of glare.	

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
Tunnels/Undercrossings ▪ I-710 ▪ SR-91	**Compatible.** **I-710 Freeway:** See Table 4.4.4 **SR-91 Freeway:** No tunnels or new undercrossing proposed under SR-91. LRVs would travel under SR-91 using the existing passageway. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting:** Lighting would not extend beyond tunnels/undercrossing and would be consistent with character of Affected Area. **Glare:** Materials to be used would not create new sources of glare.	**Low.** **I-710 Freeway:** See Table 4.4.4 **SR-91 Freeway:** Limited views of PEROW at SR-91 freeway; PEROW situated below SR-91 freeway and between rear of Ruth R. Caruthers Park and residential properties. ▪ Landscaping around undercrossing limits views from park and residential area; viewer groups would have little to no reaction to change. **Scenic Resources**: Project component not within viewshed of scenic resources. **Lighting:** No sensitive viewers in Affected Area. Lighting would not extend beyond tunnels/undercrossing and would not affect viewer sensitivity. **Glare:** Materials to be used would not create new sources of glare.	**Neutral.** ▪ Viewer groups would have little to no reaction to changes in visual character and quality. ▪ Lighting would not alter visual character and would not adversely affect viewer sensitivity. ▪ Project component would not create new sources of glare. **I-710 Freeway:** See Table 4.4.4 **SR-91 Freeway:** Consistent with character of Affected Area; would not degrade overall visual character and quality of Affected Area.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
Landscape and Billboard Removal	**Incompatible (Without Mitigation); Compatible (With Mitigation)** **Landscaping:** Vegetation to be removed in PEROW; landscaping outside of work limits to be retained. **Downey Ave:** Vegetation removal within PEROW would not degrade visual character of street; landscaping outside of PEROW would remain. **Somerset Blvd:** Existing landscaping and decorative wall on south side of World Energy storage tracks could be removed and refinery storage tank cars may be more visible in Affected Area. Mitigation Measure VA-1 (Screening at Somerset Boulevard) requires existing walls and landscaping east of proposed LRT tracks to either remain or be replaced with new landscaping and wall. **Billboard:** No billboards in this landscape unit. **Scenic Resources:** ▪ Project component would not alter visual character of scenic resources. ▪ Paramount Park: Landscaping located near the park's surface parking lot; landscape removal along northeasterly edge of park not expected to degrade visual character and quality of park. **Lighting and Glare:** Project components would not create new sources of light and glare.	**Moderate (Without Mitigation); Low (With Mitigation)** ▪ Sensitive viewers would have little to no reaction to the change since changes to landscaping would not detract from visual character and quality of Affected Area. ▪ Vegetation to be removed within or adjacent to PEROW; landscaping outside of work limits would be retained. ▪ Increased visibility of World Energy storage tank cars at residential uses may occur. However, Mitigation Measure VA-1 (Screening at Somerset Boulevard) would reduce viewer sensitivity to low as the storage tank cars (east of the Project's LRT tracks) would be screened from public views with existing wall or new landscaping and wall. **Scenic Resources:** Project component would not alter or obstruct views of scenic resources. **Lighting and Glare:** Project components would not create new sources of light and glare.	**Adverse (Without Mitigation); Neutral (With Mitigation)** ▪ Changes to landscaping not expected to alter visual character and quality of Affected Area. ▪ Residents would be sensitive to the changes on Somerset Blvd with the removal of existing decorative wall and landscaping that currently obstruct views of refinery storage tank cars. ▪ Mitigation Measure VA-1 (Screening at Somerset Boulevard) would reduce viewer sensitivity to low as storage tank cars (east of the Project's LRT tracks) would continue to be screened from public views with existing wall or new landscaping and wall. ▪ No new sources of light and glare would be created.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
Grade-Crossing Modifications	**Compatible.** ▪ Consistent with scale, form, and materials of existing grade crossings. ▪ Existing grade crossing at Frontage Rd (northwest of I-710 freeway) would be closed; grade crossing is on private industrial property and would not alter industrial character of the Affected Area. **Scenic Resources:** Project component would not alter visual character of scenic resources. **Lighting:** Type and level of lighting would be consistent with those that are present in the surrounding street rights-of-way and existing grade crossings. Lighting would not affect visual character. **Glare:** Project components would not create new sources of glare.	**Low.** ▪ Visible in foreground; would not detract from character and quality of Affected Area and would be consistent with visual character of Affected Area. ▪ Viewers would have little to no reaction to the change. No sensitive viewers at Frontage Rd as grade crossing is on a private industrial property. **Scenic Resources:** Project component would not alter or obstruct views of scenic resources. **Lighting:** Type and level of lighting would be similar to those that are currently present in the surrounding street rights-of-way and existing grade crossings. Lighting would not affect viewer sensitivity. **Glare:** Project components would not create new sources of light and glare.	**Neutral.** ▪ Visual character and quality of Affected Area would not be altered. ▪ Viewers would have little to no reaction to the change. ▪ Lighting would be consistent with existing visual character of Affected Area, and viewer groups would have little to no reaction to changes in lighting.
Station, Parking Facilities, and Ventilation Structures. None proposed in this landscape unit.			

Source: Metro 2021o

Note: LADPW = Los Angeles Department of Power and Water; LRT = light rail transit; LRV = light rail vehicle; MSF = maintenance and storage facility; OCS = overhead catenary system; PEROW = Pacific Electric Right-of-Way; ROW = right-of-way; TC&C = train control and communications; TPSS = traction power substation

[1] Overall change in visual quality is determined based on 1) whether project components would be visually compatible with the visual character of the Affected Area, and 2) viewer sensitivity associated with the visual changes of the project components.

Figure 4.4-8. Existing and Proposed Views of Downey Avenue, looking South

Existing Downey Avenue



Proposed Downey Avenue



Source: Prepared for Metro by Cityworks Design in 2020

Suburban Residential Landscape Unit: This landscape unit is located in the Cities of Paramount, Bellflower, Cerritos, and Artesia. The project alignment would be at-grade with the surrounding uses or on aerial structures in the Suburban Residential Landscape Unit. Sensitive viewers include residents and visitors of the original Bellflower Pacific Electric Station, Artesia Historical Museum, and Old Station #30. Users of Ruth R. Caruthers Park and Rosewood Park are not considered sensitive viewers because views of the PEROW from the two parks are limited by landscaping and fencing/walls.

Table 4.4.8 summarizes the potential effects to the visual character, viewer sensitivity, and visual quality in the Suburban Residential Landscape Unit.

Between Hegel Street to Ruth R. Caruthers Park, the Bellflower Bike Trail would share the PEROW with the project alignment. Although project components would be visible along some portions of the Bellflower Bike Trail and at scenic resources, the realignment of the bike trail east of Bellflower Boulevard and potential removal of some landscaping associated with the bike trail would not degrade the visual character of the PEROW as the PEROW currently contains strips of unpaved land and/or remnants of railroad tracks. Project components would not detract from views of the original Bellflower Pacific Electric Station. Viewer sensitivity to the changes associated with project components, bike trail realignment, and potential landscape removal within the PEROW would be low. Figure 4.4-9 depicts the change in visual character and quality within the PEROW at Bellflower Boulevard. Figure 4.4-10 depicts the change in visual character and quality at Pioneer Station.

"Belle," a bronze public art cow statue at the southeast corner of Woodruff Avenue/Flora Vista Street, would be removed to accommodate the retaining walls for the proposed aerial structure. The statue area has limited aesthetic value since the PEROW consists of primarily a wide strip of dirt land, a patch of grass on which the statue is situated, and remnants of a railroad track. The removal of "Belle" would not conflict with or detract from the visual character of the Affected Area for visual; however, the statue is a piece of public art that has aesthetic value to the City of Bellflower; therefore, removal of the statue would cause an adverse effect to the visual environment.

Table 4.4.8. Project Components' Effects on Visual Character, Viewer Sensitivity, and Visual Quality – Suburban Residential Landscape Unit

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
Station Areas ▪ Paramount/Rosecrans Station ▪ Bellflower Station ▪ Pioneer Station	**Compatible.** ▪ Located in an area with low-rise structures; Consistent and fit with character and context of Affected Area; would not detract from visual character of Affected Area. Paramount/Rosecrans Station: Aerial station height not to exceed 47 feet (includes station canopy); would be consistent with scale and massing of surrounding uses. See discussion of "Aerial Structure." Bellflower and Pioneer Stations: Height of station canopies and OCS poles not to exceed 20 feet and would be consistent with scale and massing of Affected Area. **Scenic Resources:** Station elements would not alter the visual character of scenic resources. **Lighting:** Lighting is not expected to extend beyond station areas. Type and level of lighting would be similar to that currently present in the Affected Area and would not affect visual character. **Glare:** See Table 4.4.3. Project components would follow MRDC or equivalent, Metro's *Systemwide Station Design Standards*, and Standard/Directive Drawings. Project components would not create new sources of glare and would not affect the visual character around the station areas. Vertical stainless-steel elements and glass art panels would be dulled so that new sources of glare would not be created.	**Low.** ▪ Visible in foreground; would be at a similar scale as surrounding structures; would not detract from visual character and quality of Affected Area. ▪ Viewer groups would have little to no reaction to visual changes as station areas would be located in existing rail corridor. **Scenic Resources:** Views of scenic resources would not be obstructed; would remain available to sensitive viewers. **Lighting:** Type and level of lighting at station areas would be similar to those currently present in the Affected Area. Per MRDC, all light sources at station areas would be directed downward to minimize potential spillover onto surrounding properties, including light-sensitive uses. **Glare:** Station elements would be treated so that new sources of glare are not created and would not affect viewer sensitivity.	**Neutral.** ▪ Compatible with visual character and quality of Affected Area; would not include features that would detract from visual character and quality of Affected Area. ▪ Viewers would have little to no reaction to the changes. ▪ Lighting would be directed away from light-sensitive uses. ▪ No new sources of glare would be created.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
Parking Facilities ▪ Paramount/Rosecrans Station ▪ Bellflower Station ▪ Pioneer Station	**Compatible.** ▪ No visually prominent features proposed for parking facilities; landscaping would be designed to improve visual quality of parking facilities. **Paramount/Rosecrans Station:** ▪ Removal of existing industrial structures for surface parking lot would provide views of aerial structure for Paramount Station within PEROW; would fit with character and context of Affected Area. ▪ Aerial structure would be set back farther from Rosecrans Ave than existing industrial structures on the proposed parking site; surface parking lot would reduce the scale and massing of aerial structure and station. **Bellflower Station:** Located in commercial area used for automobile auctions that consists of a surface parking lot and low-rise structures; surface parking lot would fit with context of surrounding commercial area. Pioneer Station: Industrial, commercial, and residential structures would be removed to build a four-story parking structure and would fit with the context of surrounding residential, commercial, and industrial uses (Figure 4.4-10). **Scenic Resources:** Project component would not alter the visual character of scenic resources. **Lighting:** Lighting would be designed per MRDC or equivalent and would not be expected to extend beyond parking facilities. Type and level of lighting	**Low.** ▪ Visible in the foreground. ▪ Viewer groups would have little to no reaction to changes since similar visual elements exist in Affected Area. **Scenic Resources:** Views of scenic resources would not be obstructed; would remain available to sensitive viewers. **Lighting:** Type and level of lighting at parking facilities would be similar to that currently present in the Affected Area. Per MRDC, all light sources at proposed surface parking lots would be directed downward and toward parking lots to minimize potential spillover onto surrounding properties, including light-sensitive uses. **Glare:** Sources of glare (e.g., parked vehicles) would be similar to existing conditions and would not affect viewer sensitivity.	**Neutral.** ▪ Compatible with visual character and scale of Affected Area. ▪ Viewers would have little to no reaction to changes. ▪ Lighting levels and effects of glare would be similar to existing conditions and would not affect viewer sensitivity.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
	would be similar to that currently present in the Affected Area and would not affect visual character. **Glare:** Sources of glare (e.g., parked vehicles) would be similar to existing conditions and would not be expected to alter visual character.		
LRT Tracks, OCS Poles and Overhead Wires, and Utility Poles	**Compatible.** ▪ Scale and form consistent with existing freight tracks, utility poles, and wires; would not conflict with visual character of Affected Area. Similar visual elements along and across street rights-of-way and rail ROWs in Affected Area. ▪ South of Somerset Blvd, new LRT tracks would be installed within PEROW; would be consistent with existing visual character of the PEROW, which currently consists of remnants of freight tracks in some areas and wide strips of unpaved land. **Scenic Resources:** ▪ Project component would not alter the visual character of scenic resources. ▪ Views would remain available south of PEROW and along Bellflower Bike Trail; would not obstruct north-facing views of original Bellflower Pacific Electric Station. ▪ Located behind Rosewood Park, Artesia Historical Museum, and Old Station #30 and would not obstruct views of these scenic resources. Existing wall along southerly perimeter of Rosewood Park blocks views of PEROW from park. **Lighting:** ▪ No lighting proposed for OCS poles, overhead wires, and utility poles.	**Low.** ▪ Visible in foreground; viewer groups would have little to no reaction to visual changes due to similar visual elements in the Affected Area. **Scenic Resources:** ▪ Views of scenic resources would not be obstructed. ▪ Views of original Bellflower Pacific Electric Station, Artesia Historical Museum, and Old Station #30 would remain available. **Lighting:** No lighting proposed for project components. Lighting from LRVs traveling along LRT tracks would be directed away from residential uses and other light-sensitive uses; LRV lighting would not affect light-sensitive viewers. **Glare:** Materials to be used would not create new sources of glare.	**Neutral.** ▪ Visual character and quality of Affected Area would not change; similar visual elements exist in Affected Area. ▪ Viewers would have little to no reaction to the change. ▪ Lighting would be consistent with existing visual character of Affected Area, and viewer groups would have little to no reaction to changes in lighting.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
	▪ LRVs would be a new source of light since the PEROW does not have any existing transportation-related lighting (e.g., freight trains and LRVs); light intensity from proposed LRVs would be consistent with existing lighting levels along the Bellflower Bike Trail and vehicle lights along surrounding streets, which currently produce transportation-related light. **Glare:** LRVs along tracks would not be a substantial source of glare. Materials to be used for project components would not create new sources of glare.		
Fences and Retaining Walls Along at-grade portions that parallel a street ROW	**Compatible.** ▪ Similar visual elements in area; properties facing PEROW currently have fences or walls along property lines. Fences along rail ROW would be 6 feet tall; would be consistent and fit with visual character of Affected Area. **Scenic Resources:** Fences and retaining walls would not obstruct views of scenic resources. **Lighting and Glare:** Project components would not create new sources of light and glare.	**Low.** ▪ Visible in foreground; would not degrade overall visual character and quality of Affected Area as similar visual elements exist in Affected Area. ▪ Viewer groups would have little to no reaction to visual changes. **Scenic Resources:** Views of scenic resources would not be obstructed. **Lighting and Glare:** Project components would not create new sources of light and glare.	**Neutral.** ▪ Visual character and quality of Affected Area would not change; similar visual elements and lighting levels exist in Affected Area. ▪ Viewers would have little to no reaction to the change. ▪ No new sources of light and glare would be created.
Sound Walls ▪ 4-foot-tall sound walls on aerial structure ▪ 8-foot-tall sound walls at-grade along perimeter of the San Pedro Subdivision ROW and PEROW	**Compatible.** ▪ Sound walls would not detract with overall visual character of Affected Area. Height of aerial structure with sound wall would be approximately 36 feet; would be consistent with scale and massing of surrounding low-rise structures. ▪ At-grade sound walls along perimeter of San Pedro Subdivision ROW and PEROW would obstruct views of rail ROW. Sound walls would be of similar height	**Low.** ▪ Visible in foreground; views of scenic resources would remain available. ▪ Viewer groups would have little to no reaction to visual changes as sound walls would be consistent	**Neutral.** ▪ Visual character and quality of the Affected Area would not change as similar visual elements exist in Affected Area. ▪ Sound walls would be at similar scale as surrounding structures

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
▪ See Mitigation Measure NOI-1 (Soundwalls)	as surrounding low-rise structures and walls along rear of properties facing rail ROWs. ▪ Views of project components within PEROW would be limited along portions of the existing Bellflower Bike Trail and/or its surrounding area; views of existing Bellflower Bike Trail would no longer be available along some areas; however, scale and massing of at-grade sound walls would be consistent with surrounding low-rise structure and sound walls. **Scenic Resources:** Sound walls would not alter visual character of scenic resources. **Lighting and Glare:** Project component would not create new sources of light and glare; walls would limit the amount of light from LRVs that would spill over onto adjacent properties.	with low-rise structures in Affected Area. **Scenic Resources:** Views of scenic resources would not be obstructed. **Lighting and Glare:** Project component would not create new sources of light and glare; walls would limit the amount of light along the rail ROWs from spilling over onto areas with light-sensitive users.	and would limit amount of LRV light that spills over onto adjacent properties. ▪ Viewers would have little to no reaction to the change. ▪ No new sources of light and glare would be created.
TC&C Houses	**Compatible.** ▪ TC&C houses would be small buildings; compatible with surrounding low-rise structures. **Scenic Resources:** Project component would not alter visual character of scenic resources. **Lighting and Glare:** No lighting is proposed for structures. Materials to be used would not create new sources of glare.	**Low.** ▪ Visible in foreground; would be similar in scale as surrounding low-rise structures. ▪ Viewer groups would have little to no reaction. **Scenic Resources:** Views of scenic resources would not be obstructed. **Lighting and Glare:** Project component would not create new sources of light and glare. Viewer sensitivity would not be altered.	**Neutral.** ▪ Visual character and quality of Affected Area would not be altered. ▪ Viewer groups would have little to no reaction to the change. ▪ No new sources of light and glare would be created.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
TPSS	**Compatible.** ▪ Scale, height, massing, and form consistent with low-rise residential character of Affected Area; would not degrade overall visual character and quality of area. ▪ TPSS site would be landscaped if in residential area or would incorporate design features to screen or improve appearance of the structure; not expected to contrast with existing visual character and quality of surrounding residential neighborhood. **Scenic Resources:** Project component would not alter visual character of scenic resources. **Lighting and Glare:** No lighting is proposed for structures. Materials to be used would not create new sources of glare.	**Low.** ▪ Visible in foreground; would not detract from character and quality of Affected Area. ▪ Located in rail ROW, rear of proposed Bellflower MSF site option, adjacent to PEROW, at proposed parking facility for Bellflower Station, or on vacant properties. Landscaping to be incorporated if TPSS is in residential area. ▪ Viewer groups would have little to no reaction to TPSS; consistent with uses of area where it would be located. **Scenic Resources:** Views of scenic resources would not be obstructed. **Lighting and Glare:** Project component would not create new sources of light and glare. Viewer sensitivity would not be altered.	**Neutral.** ▪ Consistent and would not degrade overall visual character and quality of Affected Area. ▪ Viewers would have little to no reaction to the change. ▪ No new sources of light and glare would be created.
Radio Antennas	**Compatible.** ▪ Similar components (utility poles) located in Affected Area; proposed next to Paramount Station parking structure. ▪ 35-foot-tall radio antennas would be consistent with scale of low-rise structures. 60-foot-tall radio antennas would be taller than structures in the Affected Area but would not degrade overall visual character and quality of Affected Area.	**Low.** ▪ Visible in foreground; would not detract from visual character and quality of Affected Area. **Scenic Resources:** Project component not within viewshed of scenic resources. **Lighting and Glare:** Project component would not create new sources of light and glare.	**Neutral.** ▪ Character and quality of the Affected Area would not change. ▪ Viewer groups would have little to no reaction to the change.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
	Scenic Resources: Project component not within viewshed of scenic resources. **Lighting and Glare:** Project component would not create new sources of light and glare.		▪ No new sources of light and glare would be created.
Aerial Structures **~32 feet height (~36 feet with sound wall)** ▪ Woodruff Ave/Flower St/Floral Vista St ▪ Gridley Rd/183rd St **~32 feet height (~47 feet to top of station canopy)** ▪ Paramount Blvd/ Rosecrans Ave (includes Paramount/Rosecrans Station)	**Incompatible (Without Mitigation); Compatible (With Mitigation).** ▪ No scenic views located in Affected Area for aerial structures. **Paramount Blvd/Rosecrans Ave (Paramount/Rosecrans Station)** ▪ New visual element; would be visible along commercial area around Paramount Blvd/Rosecrans Ave intersection (particularly with the removal of industrial structures for the proposed parking facility) and at cul-de-sacs in residential neighborhood north of Rosecrans Ave. ▪ Aerial structures primarily supported by retaining walls; supported by columns at Paramount/Rosecrans Station platform and as it crosses over Rosecrans Ave/Paramount Blvd. Straddle bents proposed where alignment turns from San Pedro Subdivision ROW to PEROW. ▪ Views limited at residential neighborhood north of Rosecrans Ave since aerial structure is situated between the rear of adjacent residential properties; views of aerial structure would be mostly blocked by walls and structures on adjacent residential properties. ▪ Consistent with surrounding one- and two-story structures; fit with character and context of existing area.	**Moderate (Without Mitigation); Low (With Mitigation)** ▪ Visible in foreground; would not detract from character and quality of Affected Area around aerial structures. **Paramount Blvd/Rosecrans Ave (Paramount/Rosecrans Station)** ▪ Viewer groups would have little to no reaction to visual change as aerial structures would be at a similar scale as surrounding structures. **Woodruff Ave/Flower St/Floral Vista St** ▪ Retaining wall would be new visual element. Visible from residences south of PEROW (primarily from second-story windows) and along north side of Flora Vista St. ▪ Residents would have little to no reaction to change as retaining wall would be at similar scale as surrounding structures.	**Adverse (Before Mitigation); Neutral (After Mitigation)** ▪ Located within PEROW; would not degrade visual character and quality of rail ROWs and Affected Area. ▪ Removal of "Belle" would not detract from visual character and quality of PEROW and viewers generally would not be sensitive to the change, but statue has aesthetic value to City of Bellflower. ▪ "Belle" would be relocated to a different location with implementation of Mitigation Measure VA-2 (Relocation of "Belle") and City of Bellflower would be able preserve public art at a city-approved location. ▪ LRV lighting would not alter visual character and would not adversely affect sensitive viewers.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
	▪ See "Parking Facilities" for further discussion. Woodruff Ave/Flower St/Flora Vista St: ▪ New visual element in area with low-rise commercial and residential structures; scale consistent with surrounding low-rise structures. ▪ Aerial structure would be visible along Bellflower Bike Trail, Flora Vista St, Flower St, and Woodruff Ave; primarily supported by retaining walls and would be supported on columns as it crosses over Flower St, Woodruff Ave, and Bellflower Bike Trail. ▪ Landscaping at Bellflower Bike Trail within PEROW would be removed to accommodate aerial structure; landscaping outside of the work limits would remain. Users of bike trail and residents facing alignment (along Flora Vista St) would see a retaining wall within PEROW. **Gridley Rd/183rd St:** ▪ New visual element; would be visible at Gridley Rd/183rd St and by residents east of the PEROW. Scale and massing consistent with surrounding one- and two-story structures and fit with character and context of area. ▪ Aerial structure primarily supported by retaining walls but supported on columns over Gridley Rd/183rd St intersection. No scenic resources in the area. Scenic Resources: ▪ "Belle" public art cow statue in PEROW near Woodruff Ave/Flower St/Flora Vista St would be removed; would not detract from or conflict with visual character of area as statue is in PEROW,	**Gridley Rd/183rd St:** ▪ Views of retaining walls primarily obstructed by landscaping and/or walls that surround residential properties; some views of aerial structure would be visible at residential properties. ▪ Residents would have little to no reaction to change as retaining wall with 4-foot-tall sound wall on top of aerial structure would be at a similar scale as surrounding structures; would not obstruct any scenic views and scenic resources. Scenic Resources: ▪ Residents would have little to no reaction to removal of "Belle" as existing residential views of statute is limited due to angled views at residential properties. ▪ View of "Belle" at existing location from the bike trail would be gone; however, users of Bellflower Bike Trail generally do not access bike trail for purpose of viewing the statue and the statue is located within a rail corridor with remnants of railroad tracks that are visible in surrounding area.	▪ Project component would not create new sources of glare.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
	which has been historically used as a rail corridor and contains remnants of railroad tracks. ▪ Although removal of "Belle" would not conflict with visual character of the ROW, the public art statue has aesthetic value to the city and, thus, removal of statue would have an adverse effect. Mitigation Measure VA-2 (Relocation of "Belle") would reduce project-related effects on "Belle." **Lighting:** No lighting is proposed for aerial structures. Lighting would primarily emanate from LRVs and is not expected to extend beyond aerial structures. See LRV lighting discussion under "LRT Tracks, OCS Poles, Overhead Wires, and Utility Poles." **Glare:** Materials to be used would not create new sources of glare.	▪ Mitigation Measure VA-2 (Relocation of "Belle") would relocate "Belle" to a city-approved location where residents can continue to view the statue. **Lighting:** No lighting is proposed for project component. See LRV lighting discussion under "LRT Tracks, OCS Poles, Overhead Wires, and Utility Poles." **Glare:** Materials to be used would not create new sources of glare.	
Landscape and Billboard Removal	**Compatible.** **Landscaping:** ▪ Landscaped medians intersecting PEROW, and vegetation and decorative lighting within PEROW to be removed; landscaping outside of work limits to be retained. Landscaping would be replaced in residential areas if adequate space available. ▪ Existing landscaping, street amenities, fences, bollards, and billboards to be removed for installation of railroad tracks and other grade-crossing components. Vegetation removal would modify streetscape character at streets that intersect with PEROW but not expected to degrade visual quality of affected streets. ▪ Removal of vegetation on south side of I-105 freeway between San Pedro Subdivision ROW and Arthur Ave to accommodate a new sidewalk would	**Low.** ▪ Changes to landscaping and billboard removal would not detract from visual character and quality of Affected Area; changes located in existing rail ROW or on a strip of land between I-105 freeway and residential properties are currently blocked by fences. ▪ Viewers would have little to no reaction to the change as landscape and billboard removal would only occur within project work limits, which primarily consist of rail ROW and adjacent properties that would be acquired for the Project.	**Neutral.** ▪ Landscaping would be replaced in residential areas if adequate space available; landscape removal not expected to degrade visual character and quality of Affected Area; landscaping within work limits of rail ROWs is limited. ▪ Viewers would have little to no reaction to the change. ▪ No new sources of light and glare would be created.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
	not adversely affect visual character because views of this area are currently blocked by fences. ▪ Landscaping on Bellflower Bike Trail between Flower St and Woodruff Ave would be removed to accommodate support columns for the aerial structure; would not change character of Bellflower Bike Trail since existing landscaping and design of the bike trail characterizes the PEROW as a rail transit corridor. Landscape removal not expected to degrade visual quality of Affected Area and Bellflower Bike Trail. **Billboard:** Billboards within rail ROWs would be removed; would not adversely affect visual character of area (Figure 4.4-9). **Scenic Resources:** Project components would not alter visual character of scenic resources. **Lighting and Glare:** Project components would not create new sources of light and glare.	**Scenic Resources:** Project components would not alter views of scenic resources. **Lighting and Glare:** Project components would not create new sources of light and glare.	

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
Grade Crossing Modifications	**Compatible.** ▪ Although grade crossings would be new visual element at some street rights-of-way (e.g., street rights-of-ways south of the SR-91 freeway), grade-crossing elements would be consistent with scale and visual character of the street rights-of-way as transportation corridors. **Scenic Resources:** Unobstructed north-facing views of original Bellflower Pacific Electric Station would remain available south of PEROW and along Bellflower Bike Trail (Figure 4.4-9 and Figure 4.4-10). **Lighting:** Type and level of lighting would be consistent with those present in the surrounding street rights-of-way and existing grade crossings. Lighting would not affect visual character. **Glare:** Project components would not create new sources of glare.	**Low.** ▪ Visible in foreground; grade-crossing modifications would not detract from character and quality of Affected Area. ▪ Viewers would have little to no reaction to the change as grade crossings would be consistent with scale of Affected Area and visual character of street rights-of-way. **Scenic Resources:** Project component would not obstruct or alter views of scenic resources. **Lighting:** Type and level of lighting would be similar to those currently present in the surrounding street rights-of-way and existing grade crossings. Lighting would not affect viewer sensitivity. **Glare:** Project components would not create new sources of light and glare.	**Neutral.** ▪ Visual character and quality of Affected Area would not be altered. ▪ Viewers would have little to no reaction to change. ▪ Lighting would be consistent with existing visual character of Affected Area, and viewer groups would have little to no reaction to changes in lighting. ▪ No new sources of glare would be created.
Ventilation Structures, Pedestrian Bridges, Bridges, and Tunnels. None proposed in this landscape unit.			

Source: Metro 2021o
Note: LRT = light rail transit; LRV = light rail vehicle; OCS = overhead catenary system; MSF = maintenance and storage facility; MRDC = Metro Rail Design Criteria; PEROW = Pacific Electric Right-of-Way; ROW = right-of-way; TC&C = train control and communications; TPSS = traction power substation
[1] Overall change in visual quality is determined based on 1) whether project components would be visually compatible with the visual character of the Affected Area, and 2) viewer sensitivity associated with the visual changes of the project components.

Figure 4.4-9. Existing and Proposed Views of Bellflower Boulevard, looking East from Bellflower Bike Trail

Existing Bellflower Boulevard



Proposed Bellflower Boulevard



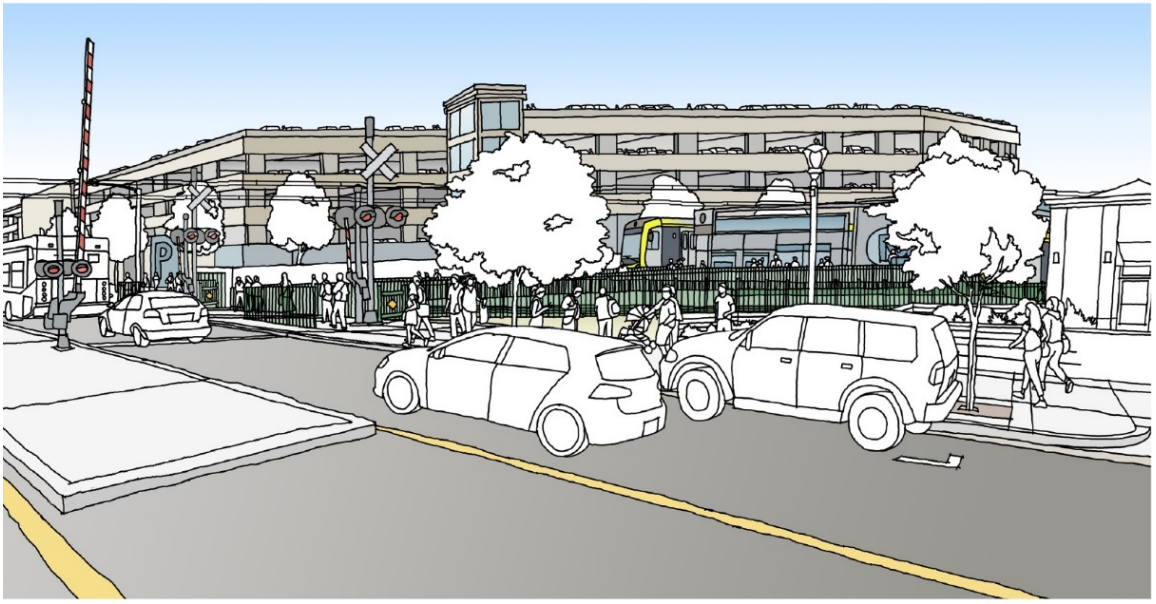
Source: Prepared for Metro by Cityworks Design in 2019

Figure 4.4-10. Existing and Proposed Views at Pioneer Boulevard, looking Southwest toward Proposed Pioneer Station Area

Existing Pioneer Boulevard



Proposed Pioneer Boulevard



Source: Prepared for Metro by Cityworks Design 2020

Project components would not detract from the visual character and quality of the Affected Area for visual. The level of lighting and glare in the Affected Area for visual would not significantly increase, and the effects of glare would be similar to existing conditions. With the exception of the portion of the landscape unit at Woodruff Avenue/Flora Vista Street, the change in visual quality in this landscape unit would be neutral since project components would be compatible with the visual character of the Affected Area for visual and viewer groups in this landscape unit would have little to no reaction to visual changes associated with the project components. Additionally, project components would not change the natural topography of the Affected Area for visual. At Woodruff Avenue/Flora Vista Street, the removal of the "Belle" public art cow statue would be considered an adverse effect since the statue has aesthetic value to the City of Bellflower. However, with implementation of Mitigation Measure VA-2 (Relocation of "Belle"), "Belle" would be relocated in coordination with the City of Bellflower, and no adverse effect would occur.

Summary of Visual Quality for Alternative 1: Alternative 1 would not change the natural topography of the Affected Area for visual and would not obstruct views of or alter the visual character and quality of scenic resources. No scenic vistas are available in the Affected Area for visual. The level of lighting and glare in the Affected Area for visual would not significantly increase, and the effects of glare would be similar to existing conditions. At Somerset Boulevard, the existing landscaping and decorative wall on the south side of the World Energy storage tracks (east of the proposed LRT tracks) could be removed, which would make the refinery storage tank cars more visible to sensitive viewers (residents). Views of the storage tank cars would not be visually compatible with the surrounding residential area, and residents would be sensitive to the change in visual character. While Alternative 1 would not adversely affect views of several scenic resources, the "Belle" public art cow statue, which has aesthetic value to the City of Bellflower, would be removed. Therefore, adverse visual effects would occur with the removal of the "Belle" public art cow statue and the decorative wall and landscaping at Somerset Boulevard. With implementation of Mitigation Measures VA-1 (Screening at Somerset Boulevard) and VA-2 (Relocation of "Belle), no adverse effects would occur. Under NEPA, with the implementation of mitigation, Alternative 1 would not result in adverse effects related to visual character and quality.

4.4.3.3 Alternative 2: 7th Street/Metro Center to Pioneer Station

Landscape units in Alternative 2 include Downtown Mid-Rise and High-Rise, Industrial, Industrial and Residential, Residential, Suburban Residential and Industrial, and Suburban Residential. The location of each landscape unit is shown in Figure 4.4-1 and Figure 4.4-2. The landscape units applicable to Alternative 2 are located in the same jurisdictions as Alternative 1. Additionally, project components would be placed in the same location as Alternative 1 south of Alameda Street/Bay Street.

Alternative 2 would introduce the same visual elements and potential to visually change the Affected Area for visual as Alternative 1. Alternative 2's effect on visual character and quality would be most visible where the alignment parallels and project components face a street right-of-way and along the Paramount and Bellflower Bike Trails.

While the Industrial Landscape Unit for Alternative 2 north and west of Alameda Street/Bay Street would be different from Alternative 1, Alternative 2 would be primarily underground and would not alter visual quality in the Industrial Landscape Unit north and west of this intersection. See Section 4.4.3.2 (including Table 4.4.4 through Table 4.4.8) for a detailed

assessment of the change in visual quality associated with each project component in each landscape unit applicable to Alternative 2. Figure 4.4-3 through Figure 4.4-10 depict changes in visual character and quality at locations along the alignment where Alternative 2 would introduce visually prominent features and/or where Alternative 2 would be located in an area with sensitive viewers (e.g., residents and visitors of scenic resources).

Downtown Mid-Rise and High-Rise Landscape Unit: The Downtown Mid-Rise and High-Rise Landscape Unit is only located in the downtown Los Angeles section of Alternative 2 and would be primarily underground in this landscape unit. Project components and any potential changes in lighting levels would primarily be visible at station areas. Any potential sources of glare would also be from station areas. Sensitive viewers in the Affected Area for visual for this landscape unit include residents and visitors of downtown Los Angeles.

Table 4.4.9 summarizes the potential effects to the visual character, viewer sensitivity, and visual quality in the Downtown Mid-Rise and High-Rise Landscape Unit. Overall, the change in visual quality in this landscape unit would be neutral since project components would be compatible with the visual character of the Affected Area for visual and viewer groups in this landscape unit would have little to no reaction to visual changes associated with the project components. The Affected Area for visual currently has a substantial amount of nighttime lighting, and the level of nighttime lighting would not significantly increase. The effects of glare would be similar to existing conditions. Additionally, project components would not obstruct views of scenic resources. Therefore, adverse visual effects are not expected in this landscape unit.

Summary of Visual Quality for Alternative 2: Alternative 2 would not change the natural topography of the Affected Area for visual and would not obstruct views of or alter the visual character and quality of scenic resources. No scenic vistas are available in the Affected Area for visual. The level of lighting in the Affected Area for visual would not significantly increase, and the effects of glare would be similar to existing conditions. At Somerset Boulevard, the existing landscaping and decorative wall on the south side of the World Energy storage tracks (east of the proposed LRT tracks) could be removed, which would make the refinery storage tank cars more visible to sensitive viewers (residents). Views of the storage tank cars would not be visually compatible with the surrounding residential area, and residents would be sensitive to the change in visual character. Additionally, Alternative 2 would remove the "Belle" public art cow statue, which has aesthetic value to the City of Bellflower, from the PEROW. Therefore, adverse visual effects would occur with the removal of the "Belle" public art cow statue and the decorative wall and landscaping at Somerset Boulevard. With implementation of Mitigation Measures VA-1 (Screening at Somerset Boulevard) and VA-2 (Relocation of "Belle"), no adverse effects would occur. Under NEPA, with the implementation of mitigation, Alternative 2 would not result in adverse effects related to visual character and quality.

Table 4.4.9. Project Components' Effects on Visual Character and Quality – Downtown Mid-Rise and High-Rise Landscape Unit

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
Station Areas (Station Entrances) ▪ 7th St/Metro Center ▪ South Park/Fashion District	**Compatible.** ▪ Scale and massing of station entrances would be consistent and fit with visual character and context of Affected Area. ▪ Design would be sensitive to specific urban context of each station and in compliance with MRDC or equivalent and Metro's Standard/Directive Drawings. ▪ Public art would be installed to improve visual character per MRDC or equivalent and Metro's *Systemwide Station Design Standards* and *Art Program Policy*. **7th St/Metro Center Station:** Station entrances would be in area with mid- and high-rise structures; integrated into an existing building and on a surface parking lot. **South Park/Fashion District Station:** Station entrances would be in area with low- and mid-rise structures; would be integrated into existing buildings. **Scenic Resources:** Station elements would not alter the visual character of scenic resources. **Lighting:** Lighting is not expected to extend beyond station areas. Type and level of lighting would be similar to that currently present in the Affected Area and would not affect visual character. **Glare:** See Table 4.4.3. Project components would follow MRDC or equivalent, Metro's *Systemwide Station Design Standards*, and Standard/Directive Drawings. Project components would not create	**Low.** ▪ Visible in foreground; would not include features that would detract from the visual character and quality of Affected Area. **Scenic Resources:** Views of scenic resources (Barker Brothers Building, Southern California Gas Complex, Garment Capitol Building, and Textile Center Building) would not be obstructed or altered and would remain available to viewer groups. **Lighting:** Affected Area currently has a substantial amount of nighttime lighting. Type and level of lighting at station areas would be similar those currently present in the Affected Area. Per MRDC, all light sources at station areas would be directed downward to minimize potential spillover onto surrounding properties, including light-sensitive uses. **Glare:** Station elements would be treated so that new sources of glare are not created and would not affect viewer sensitivity.	**Neutral.** ▪ Visible elements and lighting levels would be compatible with the existing visual character of Affected Area. ▪ Viewers would have little to no reaction to the change. ▪ No new sources of glare would be created.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
	new sources of glare and would not affect the visual character around station areas. Vertical stainless-steel elements and glass art panels would be dulled so that new sources of glare would not be created.		
LRT Tracks, Tunnels, TPSS	**Compatible.** ▪ Underground; not visible. **Scenic Resources:** Project components not within viewshed of scenic resources. **Lighting and Glare:** Underground; not visible.	**Low.** ▪ Underground; not visible. **Scenic Resources:** Project components not within viewshed of scenic resources. **Lighting and Glare:** Underground; not visible.	**Neutral.** ▪ Underground; not visible.
Ventilation Structures and TC&C Houses	**Compatible.** ▪ Constructed of small buildings that would be compatible with surrounding low-, mid, and high-rise structures. **Scenic Resources:** Project components would not alter the visual character of scenic resources. **Lighting and Glare:** No lighting proposed for structures. Materials to be used would not create new sources of glare.	**Low.** ▪ Visible in foreground; would not alter visual character and quality of the Affected Area. **Scenic Resources:** Project components would not obstruct views of scenic resources. **Lighting and Glare:** Project components would not create new sources of light and glare. Viewer sensitivity would not be altered.	**Neutral.** ▪ Visual character and quality, views of scenic resources, and level of lighting and glare would not be altered. ▪ Viewer groups would have little to no reaction to the change.

Project Components	Visual Character	Viewer Sensitivity	Change in Visual Quality[1]
Radio Antennas	**Compatible.** ▪ Height consistent with mid-rise structures in Affected Area; would not degrade overall visual character and quality of Affected Area. **Scenic Resources:** Project components would not alter the visual character of scenic resources. **Lighting and Glare:** Project components would not create new sources of light and glare.	**Low.** ▪ Visible in foreground; would not detract from visual character and quality of Affected Area. **Scenic Resources:** Project components would not obstruct views of scenic resources. **Lighting and Glare:** Project components would not create new sources of light and glare.	**Neutral.** ▪ Visual character and quality of the Affected Area would not change. ▪ Viewer groups would have little to no reaction to the change. ▪ New sources of light and glare would not be created.
Landscape and Billboard Removal	**Compatible.** **Landscaping:** Alignment would be primarily underground. New landscaping would be designed to complement character of the surrounding environment; existing sparse landscaping at station areas to be removed for station entrances. Landscaping would not alter overall visual character and quality of the Affected Area. **Billboard:** No billboards in this landscape unit. **Scenic Resources:** Project components would not alter the visual character of scenic resources. **Lighting and Glare:** Project components would not create new sources of light and glare.	**Low.** ▪ Noticeable in foreground; changes to landscaping would not alter visual character and quality of the Affected Area or obstruct views of scenic resources. **Scenic Resources:** Project components would not obstruct views of scenic resources. **Lighting and Glare:** Project components would not create new sources of light and glare.	**Neutral.** ▪ Changes in landscaping not expected to alter visual character and quality of Affected Area. ▪ Views of scenic resources would remain available in Affected Area. Viewer groups would have little to no reaction to the change. ▪ New sources of light and glare would not be created.
Parking Facilities, OCS Poles and Overhead Wires, Fences and Retaining Walls, Sound Walls, Radio Houses, Aerial Structures, Pedestrian Bridges, Grade-Crossing Modifications and Street Closures. None proposed in this landscape unit.			

Source: Metro 2021o
Note: LRT = light rail transit; MRDC = Metro Rail Design Criteria; OCS = overhead catenary system; TC&C = train control and communications; TPSS = traction power substation
[1] Overall change in visual quality is determined based on 1) whether project components would be visually compatible with the visual character of the Affected Area, and 2) viewer sensitivity associated with the visual changes of the project components.

4.4.3.4 Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Alternative 3 would be shorter than Alternatives 1 and 2. As a result, Alternative 3 would have fewer effects on visual character and quality than Alternatives 1 and 2. Alternative 3 would follow the same alignment as Alternatives 1 and 2 from 55th Street/Long Beach Avenue to South Street/PEROW. Landscape units in Alternative 3 include Industrial, Industrial and Residential, Residential, Suburban Residential and Industrial, and Suburban Residential. The Industrial Landscape Unit and Industrial and Residential Landscape Unit applicable to Alternative 3 are generally located at and south of 55th Street/Long Beach Avenue. Project components, as well as new sources of light and glare, would not be introduced north of 55th Street/Long Beach Avenue and, thus, no changes to visual character and quality would occur in these two landscape units north of 55th Street/Long Beach Avenue. Alternative 3 would introduce the same visual elements, the same sources of light and glare, and have the same potential to visually change the Affected Area for visual as Alternatives 1 and 2. However, no station entrances would be introduced since no underground alignment is proposed for this alternative. Alternative 3 would either be elevated on aerial structures or at-grade within rail ROWs.

Table 4.4.1 details the scenic resources in the Affected Area for visual. See Section 4.4.3.2 for a discussion of the potential adverse effects in the landscape units that are located in the Affected Area for visual of Alternative 3. Table 4.4.4 through Table 4.4.8 provide a detailed assessment of the change in visual quality associated with each project component for each landscape unit under Alternative 3. Figure 4.4-4 through Figure 4.4-10 depict changes in visual character and quality at locations along the alignment where Alternative 3 would introduce visually prominent features and/or where Alternative 3 would be located in an area with sensitive viewers (e.g., residents, users of recreational facilities, and visitors of scenic resources).

Summary of Visual Quality for Alternative 3: As discussed for Alternative 1 and Alternative 2, an adverse effect is anticipated at Somerset Boulevard and residents would be sensitive to the change in visual character. The removal of the "Belle" public art cow statue from the PEROW would also result in adverse effects because the statue has aesthetic value to the City of Bellflower. Implementation of Mitigation Measures VA-1 (Screening at Somerset Boulevard) and VA-2 (Relocation of "Belle") would be required to eliminate these adverse effects. Under NEPA, with the implementation of mitigation, Alternative 3 would not result in adverse effects related to visual character and quality.

4.4.3.5 Alternative 4: I-105/C (Green) Line to Pioneer Station

Alternative 4 would be shorter than Alternatives 1 through 3. Alternative 4 would follow the same alignment as Alternatives 1 through 3 from Main Street/San Pedro Subdivision ROW to Pioneer Station and would be in the following landscape units: Industrial, Suburban Residential, and Suburban Residential and Industrial. The Industrial Landscape Unit applicable to Alternative 4 is generally located at and south of Main Street/San Pedro Subdivision ROW. Project components, as well as new sources of light and glare, would not be installed north of Main Street/San Pedro Subdivision ROW and, thus, no changes in visual character and quality would occur north of Main Street/San Pedro Subdivision ROW. Alternative 4 would have fewer effects on visual character and quality than Alternatives 1 through 3 since Alternative 4 is a shorter alignment. At and south of Main Street/San Pedro Subdivision ROW, Alternative 4 would introduce the same visual elements, as well as new sources of light and glare, as Alternative 1. Alternative 4 would either be elevated on an aerial structure or at-grade within the rail ROWs.

Table 4.4.1 details the scenic resources in the Affected Area for visual. See Section 4.4.3.2 for a discussion of the potential adverse effects in the landscape units that are located in the Affected Area for visual of Alternative 4. Table 4.4.4, Table 4.4.7, and Table 4.4.8 provide a detailed assessment of the change in visual quality associated with each project component in each landscape unit for Alternative 4. Figure 4.4-8 through Figure 4.4-10 depict changes in visual character and quality at locations along the alignment where Alternative 4 would introduce visually prominent features and/or where Alternative 4 would be located in an area with sensitive viewers (e.g., residents, users of recreational facilities, and visitors of scenic resources).

Summary of Visual Quality for Alternative 4: As discussed for Alternatives 1, 2, and 3, an adverse effect is anticipated at Somerset Boulevard. The removal of the "Belle" public art cow statue from the PEROW would also result in adverse effects because the statue has aesthetic value to the City of Bellflower. Implementation of Mitigation Measures VA-1 (Screening at Somerset Boulevard) and VA-2 (Relocation of "Belle") would be required to eliminate adverse effects. Under NEPA, with the implementation of mitigation, Alternative 4 would not result in adverse effects related to visual character and quality.

4.4.3.6 Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station

Design Options 1 and 2 would be located in the Downtown Low-Rise and Mid-Rise Landscape Unit within the City of Los Angeles. No scenic vistas are available in the Affected Area for visual. Table 4.4.3 evaluates whether each project component would be compatible with the existing visual character of the Affected Area for visual and viewers' sensitivity to the change in visual character associated with each project component in this landscape unit. Under Design Option 1, little to no changes in visual character, viewer sensitivity, and visual quality would occur at the LAUS Forecourt since a station entrance would not be constructed in the LAUS Forecourt area and landscaping along the perimeter of the LAUS parking lot would not be removed.

Lighting from station entrances would occur at-grade with surrounding uses. In all other areas, lighting would occur underground. The types and level of lighting that would be used at station entrances would be similar to the surrounding areas. Stainless-steel elements, glass canopies, and glass art panels would be incorporated into the station entrances. For Design Option 1, these elements are not expected to create new sources of glare since the station entrance would be inside LAUS. For Design Option 2, these elements are not expected to create new sources of glare because the station elements would be designed and treated in a manner that would not create new sources of glare. Design Options 1 and 2 would follow the MRDC or equivalent, Metro's *Systemwide Station Design Standards*, *Station Design Standards*, and *Standard/Directive Drawings*. The design options would not create substantial light or glare with compliance with these requirements. Lighting at the station entrances would be consistent with the visual character of the Affected Area for visual and would not affect viewer sensitivity. The design options would not create new sources of glare.

Changes to visual quality are expected to be neutral because the proposed station entrance and ventilation structures would be consistent and integrated with the scale, massing, character, and lighting of the concourse area within LAUS and the baggage area parking lot behind the LAUS building. Under Design Option 2, changes to visual quality are expected to be neutral as the proposed station entrances and ventilation structures located on the east side of a low-rise commercial building and on a surface parking lot of LADWP Materials

Testing Laboratory would be consistent and integrated with the scale, massing, character, and lighting of the surrounding area.

Design Options 1 and 2 would not degrade the visual character and quality of the Affected Area for visual. The installation of public art at the station entrances per MRDC or equivalent, *Metro Systemwide Station Design Standards* (Metro 2018e), and *Metro Art Program Policy* (Metro 2020g) would improve the visual character of the station entrances and would not cause station elements to create new sources of glare. Further, the design options would not remove landscaping or alter natural topography. Sensitive viewers for Design Option 1, which include tourists who visit LAUS for its aesthetic value as a historic resource, would have little to no reaction to the changes associated with this design option because the proposed changes would be consistent with the existing Metro B/D (Red/Purple) Line Station and would be located in an area where historical design elements have been integrated with modern elements. Sensitive viewers for Design Option 2, which include residents, would have little to no reaction to the changes. Changes to visual quality would be neutral since the project components would be compatible with the visual character of the Affected Area for visual and viewer sensitivity to the proposed changes would be low. Under NEPA, Design Options 1 and 2 would not result in adverse effects related to visual character and quality.

4.4.3.7 Maintenance and Storage Facility

Paramount MSF Site Option: No scenic vistas, unique visual elements, landforms, or topographic features are present in the Affected Area for visual for the Paramount MSF site option. The MSF site option would introduce low-rise structures, storage tracks, lead tracks, and other industrial-related features to the Affected Area for visual. Landscaping along the perimeter and within the MSF site option would be removed; lead tracks along the San Pedro Subdivision ROW and PEROW would be installed; and the existing grade crossing where the San Pedro Subdivision ROW intersects with Rosecrans Avenue would be modified. Security lighting for all buildings and areas within the MSF site option would be provided.

The scale and massing of the proposed structures and other elements associated with the MSF site option would be consistent and fit with the surrounding low-rise industrial and commercial structures. While landscaping would be removed and industrial-related visual elements would be added to the MSF site option, viewer groups would have little to no reaction to the proposed changes given the industrial and commercial character of the Affected Area for visual. Views of the MSF site option would primarily be available at the surface parking lot of Paramount Entertainment Center. Grade-crossing modifications where the San Pedro Subdivision ROW intersects with Rosecrans Avenue would be similar in visual character as the existing grade crossing in the same area.

Lighting at the MSF site option is required to provide sufficient illumination to permit operating and maintenance activities to be performed safely on a 24-hour basis. These requirements include maintaining a minimum illumination of average-maintained 1-foot candle in all areas; requiring yard lights to be mounted on buildings or other structures whenever it is possible to minimize the need for separate yard lighting support structures; and designing and locating lights to maximize maintenance accessibility, minimize shadows, minimize light pollution, and avoid interference with operations. Lighting is not expected to spillover outside of the MSF site boundaries since light sources would be shielded so that nighttime lighting is focused on the MSF site. Additionally, the MSF site option does not include the use of materials that would be a substantial source of glare. Nighttime lighting

levels and would be consistent with the visual character of the Affected Area for visual, and no sensitive viewers would be affected by lighting and glare.

Changes in visual quality would be neutral since the visual character of the area, lighting levels, and sources of light and glare would be consistent and compatible with the commercial and industrial character of the Affected Area for visual, and viewer groups would have little to no reaction to the proposed changes. No sensitive viewers would have views of the project components associated with the MSF site option. Development of the Paramount MSF site option would not result in the visual degradation of the area. Under NEPA, the Paramount MSF site option would not result in adverse effects related to visual character and quality.

Bellflower MSF Site Option: No scenic vistas, unique visual elements, landforms, or topographic features are present in the Affected Area for visual for the Bellflower MSF site option. The Bellflower MSF site option would introduce low-rise structures, storage tracks, a radio antenna, and other industrial-related features to the Affected Area for visual. Security lighting for all buildings and areas within the MSF site option would be provided. Lead tracks would be installed within the PEROW south of the MSF site option. The scale and massing of the proposed structures and other elements associated with the Bellflower MSF site option would be consistent with the low-rise commercial, industrial, and residential structures surrounding the MSF site option. The lead tracks would not detract from the visual character of the PEROW immediately south of the MSF site option, which currently contains the Bellflower Bike Trail, its associated landscaping, and a wide strip of unpaved land. A radio antenna would be placed to the rear of the MSF site option, near the PEROW, and would not be visible at the surrounding residential areas.

Similar to the Paramount MSF site option, lighting is not expected to spillover outside of the MSF site boundaries since light sources would be shielded so that nighttime lighting is focused on the MSF site. Additionally, the MSF site option does not include the use of materials that would be a substantial source of glare. Nighttime lighting levels would be consistent with the visual character of the Affected Area for visual, and no sensitive viewers would be affected by lighting and glare.

Tall trees and vines along the easterly perimeter of the MSF site currently obstruct views of the site from a residential neighborhood. Existing vegetation along the northerly and southerly perimeters of this MSF site option (along Somerset Boulevard and PEROW, respectively) partially obstruct views of this MSF site option. The existing landscaping and barriers along the perimeter of the Bellflower MSF site option would either remain or be replaced with other types of landscaping and barriers that would obstruct views of this MSF site option from the surrounding residential uses. As a result, viewer groups would have little to no reaction to changes associated with the Bellflower MSF site option. Changes in visual quality would be neutral since the visual character of the area, nighttime lighting levels, and sources of glare would be consistent and compatible with the existing visual character of the Affected Area for visual, and viewer groups would have little to no reaction to the proposed changes due to the mixed commercial, industrial, and residential character of the Affected Area for visual, as well as the landscaping and barriers that obstruct views of the MSF site option. The landscaping and barriers would also limit the amount of light that would spill over onto nearby properties. Development of the Bellflower MSF site option would not result in the visual degradation of the area. Under NEPA, the Bellflower MSF site option would not result in adverse effects related to visual character and quality.

4.4.4 Project Measures and Mitigation Measures

4.4.4.1 Project Measures

The following project measures would be implemented for Alternatives 1, 2, 3, and 4.

VA PM-1 **Design Standards.** Project components, including but not limited to track alignment, auxiliary facilities, parking facilities, and MSF site options, would be designed per MRDC, Metro's *Systemwide Station Design Standards*, and Standard/Directive Drawings, or equivalent.

VA PM-2 **Public Art.** Public art would be installed at station areas and would follow MRDC, Metro's *Systemwide Station Design Standards,* and *Metro Art Program Policy,* or equivalent.

VA PM-3 **Landscaping.** New landscaping would be installed consistent with MRDC and *Systemwide Station Design Standards,* or equivalent.

VA PM-4 **Landscaping Screening.** TPSSs in residential areas would be landscaped or incorporate design features to screen or improve the appearance of structures.

VA PM-5 **Landscaping at Bellflower MSF Site Option.** At the Bellflower MSF site option, existing landscaping and barriers facing residential areas would either remain in place or would be replaced with other types of landscaping and barriers that would obstruct views of the Bellflower MSF site option from residential areas.

VA PM-6 **Local Zoning Ordinances.** Project elements that are located on properties outside of the rail ROW and public ROW would adhere to local zoning ordinances.

VA PM-7 **Lighting.** Operational lighting would be consistent with MRDC or equivalent. Lighting would be directed away from surrounding properties.

4.4.4.2 Mitigation Measures

The following mitigation measures would be implemented for Alternatives 1, 2, 3, and 4 to minimize adverse effects related to visual character and quality at Somerset Boulevard and associated with the "Belle" public art cow statute:

VA-1 Screening at Somerset Boulevard. The existing World Energy landscaping and decorative wall north of Somerset Boulevard and east of the proposed light rail transit tracks would remain in place. If the existing decorative screening wall and/or landscaping directly south of the World Energy storage tracks and east of the proposed light rail transit tracks are removed, these screening elements would be replaced with a new screening wall and/or landscaping. A decorative screening wall and/or landscaping would be placed within the PEROW between the proposed light rail transit tracks and storage tracks at a length and height capable of screening the refinery storage track from views on Somerset Boulevard.

VA-2 Relocation of "Belle." Metro would provide relocation site alternatives to determine the best possible location to relocate the public art statue, "Belle," in its existing condition, subject to a condition assessment detailing the current physical condition of the artwork. The site would be subject to approval by the City of Bellflower.

Refer also to Mitigation Measure NOI-1 (Soundwalls) in Section 4.7.4.2, Noise and Vibration.

4.4.5 California Environmental Quality Act Determination

4.4.5.1 Would the Project have a substantial adverse effect on a scenic vista?

No Project Alternative

No scenic vistas are present in the Affected Area for visual. Therefore, no impact is expected for scenic vistas and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

No scenic vistas are present in the Affected Area for visual. As such, the proposed underground, at-grade, and aerial project components are not expected to adversely affect scenic vistas. None of the views in the Affected Area for visual are considered unique or of aesthetic significance. Although distant north-facing views of the mountains and west-facing views of the downtown Los Angeles skyline are available at a few locations, the built-out urban landscape (e.g., intervening structures, trees, and utility poles) prevent clear views of the mountains and skyline.

At the I-10 freeway, the proposed aerial structure would partially obstruct view of the downtown Los Angeles skyline. However, the view of the downtown Los Angeles skyline at the I-10 freeway is not considered a scenic vista because the view is limited to motorists traveling along the freeway, viewing duration of the skyline is short, and motorists are focused on the road. Additionally, overhead utility poles and overhead wires are visible in the foreground and do not beneficially contribute to the skyline view. Thus, no impacts on scenic vistas would occur and mitigation is not required.

Alternatives 2, 3, and 4

No scenic vistas are present in the Affected Area for visual. None of the views within the Affected Area for visual are considered unique or of aesthetic significance. The built-out urban landscape generally prevents clear views of the mountains and the downtown Los Angeles skyline, where available. Therefore, no impacts on scenic vistas would occur and mitigation is not required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: No scenic vistas are located in the Affected Area for visual for Design Options 1 and 2. Therefore, no impacts on scenic vistas would occur and mitigation is not required.

Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option: No scenic vistas are located in the Affected Area for visual. Therefore, no impacts on scenic vistas would occur and mitigation is not required.

4.4.5.2 Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Project Alternative

No state scenic highways are located within the Affected Area for visual. Therefore, no scenic resources within a state scenic highway would be affected. No impact would occur and mitigation is not required.

Alternatives 1, 2, 3, and 4

No state scenic highways are located within the Affected Area for visual. Therefore, no scenic resources within a state scenic highway would be affected. No impact would occur and mitigation is not required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: No state scenic highways are located within the Affected Area for visual. Therefore, no scenic resources within a state scenic highway would be affected. No impact would occur and mitigation is not required.

Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option: No state scenic highways are located within the Affected Area for visual. Therefore, no scenic resources within a state scenic highway would be affected. No impact would occur and mitigation is not required.

4.4.5.3 In nonurbanized areas, would the Project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?

No Project Alternative

Under the No Project Alternative, the visual character and quality of the Affected Area for visual would remain similar to existing conditions. Therefore, no impact is expected under the No Project Alternative and mitigation is not required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Figure 4.4-3 through Figure 4.4-10 show existing and project-related changes in visual character and quality at various locations within the Affected Area for visual. As discussed in Section 4.4.1.2, the jurisdictions within the Affected Area for visual are considered urbanized areas in accordance with *CEQA Guidelines* Section 15387. Since the Project would occur in an urbanized area, a significant impact would occur if the Project conflicts with applicable zoning and other regulations governing scenic quality. While each jurisdiction within the Affected Area for visual has a zoning ordinance that regulates scenic quality of development projects, the zoning ordinances do not directly regulate the design of transportation infrastructure elements, including LRT. Additionally, Metro projects are not required to adhere to local zoning ordinances. However, certain project elements that would be located on properties outside of the rail ROWs and public street rights-of-way (such as station entrances and TPSSs) would comply with local zoning ordinances as they pertain to scenic quality.

Alternative 1 would remove the existing decorative wall and landscaping on the south side of the World Energy storage tracks (east of the proposed LRT tracks) in the City of Paramount and the "Belle" public art cow statue in the City of Bellflower. The decorative wall and landscaping that would be removed, as well as the "Belle" public art cow statue, are within the PEROW. Removal of the decorative wall and landscaping on the south side of the World Energy storage tracks (east of the proposed LRT tracks) would make the refinery storage tank cars within the PEROW more apparent along Somerset Boulevard and would not comply with Section 44.82(53) of the City of Paramount Municipal Code, which requires open storage or outdoor uses be concealed from view from nearby streets and adjoining property by buildings or solid masonry walls not less than 6 feet in height. Mitigation Measure VA-1 (Screening at Somerset Boulevard) would be implemented so that the Project would comply with Section 44.82(53) of the City of Paramount Municipal Code and views of the World Energy storage tracks would continue to be blocked by a decorative screening wall and landscaping.

The "Belle" public art cow statue was installed as part of the City of Bellflower's public arts program (codified in City of Bellflower Municipal Code Chapter 3.32) and has aesthetic value to the city. With the removal of the "Belle" public art cow statue, Alternative 1 would be inconsistent with the program's intent of promoting visual arts in the city. So that the city would not lose one of its permanent outdoor artworks, Mitigation Measure VA-2 (Relocation of "Belle") would require Metro to coordinate with the city to relocate the "Belle" public art cow statue so that the public art cow statue would continue to be displayed in the city.

Alternative 1 would follow the MRDC or equivalent, *Metro Art Program Policy* (Metro 2020g), *Systemwide Station Design Standards* (Metro 2018e), and *Standard/Directive Drawings* (Metro 2017d). MRDC provides a uniform basis for the design of light rail projects; *Metro Art Program Policy* (Metro 2020g) mandates the inclusion of art in the design of its transit systems; the *Systemwide Station Design Standards Policy* (Metro 2018e) provides a consistent, streamlined systemwide design approach for Metro stations that includes sustainable design features and sustainable landscaping; and Metro requires its rail projects to incorporate architectural directive and standard drawings based on lessons learned from past rail projects completed by Metro (*Standard/Directive Drawings*).

As the Project would conflict with the City of Paramount Municipal Code requirement to conceal views of open storage areas and the City of Bellflower's public arts program, significant impacts on visual character and quality would occur without implementation of mitigation measures. Implementation of Mitigation Measures VA-1 (Screening at Somerset Boulevard) and VA-2 (Relocation of "Belle") would be required to reduce impacts to less than significant levels.

Mitigation Measures: Mitigation Measures VA-1 (Screening at Somerset Boulevard) and VA-2 (Relocation of "Belle").

Impacts Remaining After Mitigation: Less than significant impact after mitigation.

Alternative 2: 7th Street/Metro Center to Pioneer Station

Alternative 2 would be located in the same jurisdictions as Alternative 1, would introduce the same visual elements as Alternative 1, and project components would be placed in the same location as Alternative 1 south of Alameda Street/Bay Street. As with Alternative 1, significant impacts on visual character and quality would occur without implementation of mitigation

measures. Implementation of Mitigation Measures VA-1 (Screening at Somerset Boulevard) and VA-2 (Relocation of "Belle") would be required to reduce impacts to less than significant levels.

Mitigation Measures: Mitigation Measures VA-1 (Screening at Somerset Boulevard) and VA-2 (Relocation of "Belle").

Impacts Remaining After Mitigation: Less than significant impact after mitigation.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Alternative 3 would be located in the same jurisdictions and would introduce the same visual components at the same location as Alternatives 1 and 2 from 55th Street/Long Beach Avenue to the southern terminus at Pioneer Station. Alternative 3 is a shorter alignment than Alternatives 1 and 2 and, as a result, would have fewer effects on visual character and scenic quality as Alternatives 1 and 2. Nevertheless, significant impacts on visual character and quality would occur without implementation of mitigation measures. Implementation of Mitigation Measures VA-1 (Screening at Somerset Boulevard) and VA-2 (Relocation of "Belle") would be required to reduce impacts to less than significant levels.

Mitigation Measures: Mitigation Measures VA-1 (Screening at Somerset Boulevard) and VA-2 (Relocation of "Belle").

Impacts Remaining After Mitigation: Less than significant impact after mitigation.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Alternative 4 would introduce the same visual elements at the same location as Alternatives 1, 2, and 3 from Main Street/San Pedro Subdivision ROW to the southern terminus at Pioneer Station. As a result, Alternative 4 would have fewer effects on visual character and scenic quality than Alternatives 1, 2, and 3. Nevertheless, significant impacts on visual character and quality would occur without implementation of mitigation measures. Implementation of Mitigation Measures VA-1 (Screening at Somerset Boulevard) and VA-2 (Relocation of "Belle") would reduce impacts to less than significant levels.

Mitigation Measures: Mitigation Measures VA-1 (Screening at Somerset Boulevard) and VA-2 (Relocation of "Belle").

Impacts Remaining After Mitigation: Less than significant impact after mitigation.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Design Options 1 and 2 would be in the City of Los Angeles, which is considered an urbanized area under *CEQA Guidelines* Section 15387. Design Option 1 would follow MRDC or equivalent, *Metro Art Program Policy* (Metro 2020g), *Systemwide Station Design Standards* (Metro 2018e), and *Standard/Directive Drawings* (Metro 2017d). Although Metro projects are not required to adhere to local zoning ordinances, certain project components that would be located on properties outside of the public street rights-of-way would comply with local zoning ordinances as they pertain to scenic quality, where applicable. Therefore, impacts would be less than significant and mitigation would not be required.

Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option: The Paramount MSF site option would be located in the City of Paramount and the Bellflower MSF site option would be located in the City of Bellflower, both of which are considered urbanized areas under CEQA Guidelines Section 15387. The MSF site options would follow MRDC or equivalent and Metro's Standard/Directive Drawings (Metro 2017d). Activities occurring within the MSF site option would also adhere to the Cities of Paramount and Bellflower zoning ordinances and other city regulations governing scenic quality, where applicable. Therefore, impacts would be less than significant and mitigation would not be required.

4.4.5.4 Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

No Project Alternative

Under the No Project Alternative, lighting levels and sources of light and glare would remain similar to existing conditions. Existing lighting from the Metro A (Blue) Line LRVs and freight trains traveling within the rail ROWs would not change. Light and glare effects in year 2042 would remain similar to existing conditions. Therefore, no impact on light and glare would occur and mitigation is not required.

Alternative 1: Los Angeles Union Station to Pioneer Station

North of 14th Street/Long Beach Avenue, lighting associated with Alternative 1 would primarily emanate from station entrances, which would not significantly increase the amount of lighting in the Affected Area for visual, which currently has a substantial amount of nighttime lighting and glare. Lighting at the station entrances are not expected to extend beyond the station areas. Additionally, the type and level of lighting would be similar to the type and lighting levels in the Affected Area for visual.

South of 14th Street/Long Beach Avenue, lighting would primarily emanate from LRVs and station areas (including at-grade and above-grade station platforms and parking facilities). Project-related lighting would primarily occur along the rail ROW, street rights-of-way, and/or proposed parking facilities. Lighting would be designed per MRDC or equivalent and would be directed toward the rail ROWs, street rights-of-way, and/or proposed parking facilities. Light emanating from the proposed aerial structures would be directed away from adjacent residential uses and other light-sensitive use. Lighting from LRVs (on at-grade tracks and on aerial structures) is not expected to extend beyond the rail ROWs or public street rights-of-way. Per MRDC, all light sources at the proposed surface parking lots and stations would be directed downward to minimize potential spillover onto surrounding properties, including light-sensitive uses. Light intensity from LRVs is expected to be comparable to lighting from existing buildings, vehicles, LRVs from the existing Metro A (Blue) Line (along the Wilmington Branch ROW), freight trains along the rail ROWs, and the Paramount Bike Trail.

South of Somerset Boulevard, LRVs would be a new source of light within the Affected Area for visual since the PEROW south of Somerset Boulevard does not have any existing transportation-related lighting (e.g., freight trains and LRVs). However, light intensity from the proposed LRVs south of Somerset Boulevard would be consistent with vehicle lights along surrounding streets, which currently produce transportation-related light. LRV lighting would also be consistent with existing lighting levels along the Bellflower Bike Trail.

Existing walls that separate adjacent properties from the PEROW would limit the amount of light along the PEROW from spilling over onto adjacent properties in the portions of the rail ROWs that are between the rears of properties on both sides (e.g., from Randolph Street to Gage Street, Atlantic Avenue to Southern Avenue, Los Angeles River to Meadow Road, Imperial Highway to Virginia Avenue, Bellflower Boulevard to Cornuta Avenue, Flora Vista Park to South Street).

None of the project components are expected to be a substantial source of glare. Station areas would follow the MRDC or equivalent, Metro's *Systemwide Station Design Standards*, and Standard/ Directive Drawings. Metro's *Systemwide Station Design Standards* include the use of stainless steel for certain station elements (such as columns, railings, and walls), glass art panels, and glass canopy. The glass canopy would be placed horizontally above the stations. The angle in which the canopy would be placed is not expected to create new sources of glare around the station areas. Vertical stainless-steel elements and glass art panels could create new sources of glare; however, based on Metro design criteria and standards, the elements would be dulled so that new sources of glare are not created.

Project components are not expected to result in a substantial change in existing light and glare in the Affected Area for visual. Therefore, impacts would be less than significant and mitigation would not be required.

Alternative 2: 7th Street/Metro Center to Pioneer Station

Alternative 2 would involve similar sources of light and glare as Alternative 1. The area north of 14th Street/Long Beach Avenue currently has a substantial amount of existing lighting and glare in the Affected Area for visual, and the proposed station entrances would not significantly increase the amount of lighting in the Affected Area for visual. Lighting at the station entrances are not expected to extend beyond the station areas. South of 14th Street/Long Beach Avenue, project-related lighting would primarily occur within the rail ROW, street rights-of-ways, and/or proposed parking facilities. Project components are not expected to result in a substantial change in existing light and glare in the Affected Area for visual. Therefore, impacts would be less than significant and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Alternative 3 would not create any new or additional light sources or cast glare north of 55th Street/Long Beach Avenue. Light sources and lighting levels south of 55th Street/Long Beach Avenue would be the same as Alternatives 1 and 2. Lighting and glare from Alternative 3 would affect fewer areas since Alternative 3 would be a shorter alignment. Project-related lighting would primarily occur within the rail ROWs, street rights-of-way, and on properties acquired for the project components. Lighting from LRVs and station platforms would be directed toward the rail ROWs. Therefore, impacts would be less than significant and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Alternative 4 would not create any new or additional light sources or cast glare north of Main Street/San Pedro Subdivision ROW. Light sources and lighting levels south of Main Street/San Pedro Subdivision ROW would be the same as Alternatives 1 through 3. Lighting and glare from Alternative 4 would affect fewer areas than Alternatives 1, 2, and 3 since Alternative 4 would be a shorter alignment. Project-related lighting would primarily occur within the rail ROWs and on properties acquired for the project components. Lighting from

LRVs and station platforms would be directed toward the rail ROWs. Therefore, impacts would be less than significant and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD: Design Option 1 would not create new sources of substantial light and glare and would not increase the amount of light and glare in the Affected Area for visual. Lighting from the LAUS MWD station would occur at-grade with surrounding uses within the LAUS concourse area, where similar light sources and levels currently exist. In all other areas, lighting would occur underground. Stainless-steel elements and glass art panels would be incorporated into the station entrance, and these elements are not expected to create new sources of glare since the station entrance would be inside LAUS. Design Option 1 would follow the MRDC or equivalent, Metro's *Systemwide Station Design Standards*, *Station Design Standards*, and *Standard/Directive Drawings*. Design Option 1 would not create substantial light or glare in the Affected Area for visual with compliance with these requirements. Therefore, impacts related to light and glare would be less than significant and mitigation would not be required.

Design Option 2: Add Little Tokyo Station: Design Option 2 would not create new sources of substantial light and glare and would not increase the amount of light and glare in the Affected Area for visual. Lighting from the station entrances would occur at-grade with surrounding uses. In all other areas, lighting would occur underground. The types and level of lighting that would be used at the station entrances would be similar to the surrounding area. Station entrances would be located on the easterly side yard of a commercial development and on a surface parking lot of a LADWP Materials Testing Laboratory. Stainless-steel elements, glass canopies, and glass art panels would be incorporated into the station entrances. These elements are not expected to create new sources of glare because station areas would be designed so that no new sources of glare are created through the use and placement of stainless steel and glass art panels. Design Option 2 would follow the MRDC or equivalent, Metro's *Systemwide Station Design Standards*, *Station Design Standards*, and *Standard/Directive Drawings*. Design Option 2 would not create substantial light or glare in the Affected Area for visual if these requirements are complied with. Therefore, impacts related to light and glare would be less than significant and mitigation would not be required.

Paramount MSF Site Option and Bellflower MSF Site Option: The Paramount and Bellflower MSF site options would include security lighting for all buildings and areas within the MSF site option. Per MRDC, lighting at the MSF site option is required to provide sufficient illumination to permit operating and maintenance activities to be performed safely on a 24-hour basis. These requirements include maintaining a minimum illumination of average-maintained one-foot candle in all areas; requiring yard lights to be mounted on buildings or other structures whenever it is possible to minimize the need for separate yard lighting support structures; and designing and locating lights to maximize maintenance accessibility, minimize shadows, minimize light pollution, and avoid interference with operations. Lighting is not expected to spillover or create glare outside of the MSF site boundaries since light sources would be shielded so that nighttime lighting is focused on the MSF site. Additionally, the MSF site option does not include the use of materials that would be a substantial source of glare. Thus, impacts on lighting and glare would be less than significant and mitigation would not be required.

4.5 Air Quality

This section summarizes the existing air quality conditions in the Affected Area, daily air pollutant emissions under the No Build and Build Alternatives, including design options and MSF site options, and evaluates the potential adverse effects and impacts on air quality. Information in this section is based on the *West Santa Ana Branch Transit Corridor Project Final Air Quality Impact Analysis Report* (Metro 2021i) (Appendix J).

4.5.1 Regulatory Setting and Methodology

4.5.1.1 Regulatory Setting

The applicable federal, state, regional, and local air quality regulatory framework includes, but is not limited to, the federal Clean Air Act (CAA), California Clean Air Act (CCAA), South Coast Air Quality Management District (SCAQMD) *Air Quality Management Plan* (AQMP) (SCAQMD 2017), SCAG 2016-2040 RTP/SCS (SCAG 2016a) and 2020-2045 RTP/SCS, *2019 and 2021 Federal Transportation Improvement Program* (FTIP) (SCAG 2018), and Metro *Green Construction Policy* (Metro 2011b). The Transportation Conformity requirements are based on CAA Section 176, which prohibits the U.S. Department of Transportation and other federal agencies from funding, authorizing, or approving plans, programs, or projects that do not conform to the State Implementation Plan (SIP) for attaining the National Ambient Air Quality Standards (NAAQS). Transportation Conformity applies to highway and transit projects and is enforced at both the regional and project level. A project must conform at both levels to receive federal funds.

Regulated Air Pollutants

Air pollution is defined as any discharge, release, or other propagation into the atmosphere, and includes, but is not limited to, smoke, charred paper, dust, soot, grime, carbon, fumes, gases, odors, particulate matter, acids, or any combination thereof (California Health and Safety Code, Chapter 2, Section 39013). Sources of air pollution can be classified as stationary sources (e.g., industrial processes, generators), mobile sources (e.g., automobiles, trucks) or area sources (e.g., residential water heaters).

Criteria air pollutants are pollutants for which the federal and state governments have established ambient air quality standards (AAQS) to protect public health and welfare. Criteria air pollutants regulated by the federal and state governments include carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter ten microns or less in diameter (PM_{10}), fine particulate matter 2.5 microns or less in diameter ($PM_{2.5}$) and lead (Pb). Table 4.5.1 summarizes the properties and associated health effects of exposure to these pollutants, in addition to ultrafine particulate matter (PM), diesel PM, and toxic air contaminants.

Table 4.5.1. Criteria Air Pollutants and Characteristics

Pollutant	Characteristics
Carbon Monoxide (CO)	▪ Colorless, odorless gas formed by incomplete combustion of fossil fuels (e.g., motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains). ▪ Excess exposure can reduce the blood's ability to transport oxygen, causing dizziness, fatigue, and impairment of central nervous system functions.
Ozone (O_3)	▪ Colorless gas and secondary pollutant formed by complex atmospheric interactions between two or more reactive organic gas compounds (including VOC and NO_X) in the presence of ultraviolet sunlight. Automobile travel and industrial sources are greatest source of atmospheric O_3 formation. ▪ Short-term exposure (lasting for a few hours) to O_3 levels typically in Southern California can result in breathing pattern changes, restricted breathing, increased susceptibility to infections, inflammation of lung tissue, and immunological changes.
Nitrogen Dioxide (NO_2)	▪ Formed in the atmosphere through chemical reaction between NO and atmospheric oxygen. NO and NO_2 are collectively referred to as NO_X and are major contributors to O_3 formation and contribute to the formation of PM_{10}. ▪ High concentrations can cause breathing difficulties, are linked to chronic pulmonary fibrosis, an increase of bronchitis in children (two and three years old), and result in a brownish-red cast to the atmosphere with reduced visibility.
Respirable Particulate Matter (PM_{10})	▪ Comprised of airborne liquid and solid particles (e.g., smoke, soot, dust, salts, acids, and metals) formed by atmospheric chemical reactions of gases emitted from industrial and motor vehicles. ▪ Results from crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood-burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. ▪ Collects in the upper portion of the respiratory system and can increase the number and severity of asthma, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections.
Fine Particulate Matter ($PM_{2.5}$)	▪ Formed in the atmosphere from gases (i.e., SO_2, NO_X, and VOC) and results from fuel combustion (e.g., motor vehicles, power generation, and industrial facilities); residential fireplaces, and wood stoves. ▪ Inhalation (i.e., Pb, sulfates, nitrates, chlorides, ammonia) can be absorbed into the bloodstream and damage human organs, tissues, and cells throughout the body. Suspended $PM_{2.5}$ can damage and discolor surfaces and produce haze and reduce regional visibility.
Ultrafine Particulate Matter (PM)	▪ Results from engine combustion and post-combustion atmospheric interactions. ▪ Includes internal combustion engines. Particles emitted from gasoline-powered engines are less than 80 nm (0.08 µm) in diameter; particles from engines fueled by compressed natural gas are between 20 nm and 60 nm (0.02 µm – 0.06 µm). ▪ Can rapidly penetrate organs, tissues, cells, and subcellular organelles, where they induce structural damage.

Pollutant	Characteristics
Sulfur Dioxide (SO_2)	▪ Refers to any compounds of sulfur and oxygen. A colorless, pungent gas that forms primarily through the combustion of sulfur-containing coal and oil. ▪ Stringent controls placed on stationary SO_2 emissions and limits on sulfur content of fuels have reduced atmospheric SO_2 concentrations. Highest levels of SO_2 are found near large industrial complexes (e.g., power plants) and can harm plant leaves and erode iron and steel. ▪ An irritant gas that attacks the throat and lungs; can cause acute respiratory symptoms and diminished lung function in children.
Lead (Pb)	▪ Occurs in atmosphere as PM emitted from leaded gasoline combustion; manufacture of batteries, paint, ink, ceramics, and ammunition; and secondary lead smelting facilities. ▪ Phased-out leaded gasoline reduced overall airborne Pb by 95% between 1978 and 1987. Current emission sources of greater concern include lead smelters, battery recycling, and manufacturing facilities. ▪ Prolonged exposure can lead to serious threats to human health (i.e., gastrointestinal disturbances, anemia, kidney disease, and neuromuscular and neurological dysfunction). Infancy and childhood exposure can impair neurobehavioral performance.
Toxic Air Contaminants (TACs)	▪ Can exist as PM_{10} and $PM_{2.5}$ or as vapors (gases), metals, other particles, gases absorbed by particles, and certain vapors from fuels and other sources; no corresponding ambient air quality standard. ▪ Emitted by a variety of industrial processes (e.g., petroleum refining, electric utility and chrome plating operations, gasoline stations, dry cleaners, and motor vehicle exhaust). ▪ May increase a person's risk of developing cancer and/or other serious health effects; does not automatically create a health hazard.
Diesel Exhaust	▪ Emitted from a broad range of diesel engines; on-road diesel engines (e.g., trucks, buses, and cars); off-road diesel engines (e.g., locomotives, marine vessels, and heavy-duty equipment). ▪ Causes health effects from both short-term (acute) exposures and long-term (chronic) exposures; nature and severity of health effects depends upon several factors (i.e., dose and duration of exposure). ▪ Acute exposure may irritate eyes, nose, throat, and lungs; neurological effects (e.g., lightheadedness); elicit cough or nausea; or exacerbate asthma. Chronic inhalation exposure is likely a carcinogen and may lead to increased lung cancer rates in occupational settings.

Source: CARB, 2018
Notes: µm = micrometers; nm = nanometers; NO = nitric oxide; NOx = nitrogen oxide; VOC = volatile organic compounds

Ambient Air Quality Standards

The U.S. Environmental Protection Agency (USEPA) is authorized to establish NAAQS that set protective limits on concentrations of air pollutants in ambient air. As required by the CAA, NAAQS have been established for CO, O_3, NO_2, PM_{10}, $PM_{2.5}$, SO_2, and Pb. The CCAA is administered by the California Air Resources Board (CARB) at the state level and the Air Quality Management District at the regional and local levels. The CCAA requires all areas of the state to achieve and maintain the California Ambient Air Quality Standards (CAAQS) by the earliest feasible date. The NAAQS and CAAQS are summarized in Table 4.5.2.

Table 4.5.2. National and California Ambient Air Quality Standards

Pollutant	Averaging Time	NAAQS	CAAQS
Ozone (O_3)	1 Hour	—	0.09 ppm (180 µg/m^3)
	8 Hour	0.07 ppm (137 µg/m^3)	0.07 ppm (137 µg/m^3)
Carbon Monoxide (CO)	1 Hour	35 ppm (40 mg/m^3)	20 ppm (23 mg/m^3)
	8 Hour	9.0 ppm (10 mg/m^3)	9.0 ppm (10 mg/m^3)
Nitrogen Dioxide (NO_2)	1 Hour	0.10 ppm (188 µg/m^3)	0.18 ppm (339 µg/m^3)
	Annual Average	0.053 ppm (100 µg/m^3)	0.030 ppm (57 µg/m^3)
Sulfur Dioxide (SO_2)	1 Hour	0.075 ppm (196 µg/m^3)	0.25 ppm (655 µg/m^3)
	24 Hour	0.14 ppm (180 µg/m^3)	0.04 ppm (105 µg/m^3)
Respirable Particulate Matter (PM_{10})	24 Hour	150 µg/m^3	50 µg/m^3
	Annual Average	—	20 µg/m^3
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	35 µg/m^3	—
	Annual Average	12 µg/m^3	12 µg/m^3
Lead (Pb)	30-Day Average	—	—
	3-Month Average	0.15 µg/m^3	—
Visibility Reducing Particles	8 Hour	—	Extinct 0.23/km
Sulfates	24 Hour	—	25 µg/m^3
Hydrogen Sulfide	1 Hour	—	0.03 ppm (42 µg/m^3)
Vinyl Chloride	24 Hour	—	0.01 ppm (26 µg/m^3)

Source: CARB, 2018
Notes: CAAQS = California Ambient Air Quality Standards; km = kilometer; NAAQS = National Ambient Air Quality Standards; ppm = parts per million; µg/m^3 = micrograms per cubic meter; "—" = not available

4.5.1.2 Methodology

The Study Area is located within the LA County portion of the South Coast Air Basin (Basin). The Basin represents the Affected Area for air at the regional scale because all sources of emissions associated with construction and operations would be located within it, and the attainment status of the LA County portion is most representative of regional air quality conditions. Under NEPA and CEQA, air quality impacts are typically characterized by estimates of air pollutant emissions within the Affected Area for air that are assessed on daily timescales, in terms of pounds per day (lbs/day) of pollutants emitted. Defining a baseline for emissions comparisons differs under NEPA and CEQA. The NEPA assessment evaluates daily

air pollutant emissions from direct and indirect sources that would be generated by the Build Alternatives—including induced changes in regional on-road vehicle emissions due to transportation mode shift—in the horizon year of 2042 relative to Existing Conditions and the future No Build Alternative. Existing Conditions represent a baseline year of 2017 based on the CEQA Notice of Preparation date. The CEQA assessment evaluates direct and indirect sources of emissions that would be generated by the Build Alternatives if operational in 2017 relative to Existing Conditions, and qualitatively considers induced changes to daily regional on-road vehicle travel under the Existing plus Project condition for each of the Build Alternatives.

The direct sources of operational air pollutant emissions with implementation of the Project would be Metro employee vehicle and vendor trips and area/energy sources associated with operation of the rail system and the MSF site options, which represent relatively minor sources of emissions in terms of Metro systemwide air pollutant emissions (a vast majority of which are attributed to the bus fleet). Operation of the MSF site options would create employee and vendor vehicle trips, and area and energy source emissions associated with landscaping and facility upkeep. The California Emissions Estimator Model (CalEEMod, version 2016.3.2) is the preferred regulatory model for estimating air pollutant emissions from land use development projects under CEQA. CalEEMod produces emissions estimates using widely accepted methodologies and data, including, but not limited to, USEPA AP-42 emission factors, CARB vehicle emissions models, and local air district data. CalEEMod was used to estimate air pollutant emissions associated with MSF operations in 2017 and 2042 based on proposed site plans for the Paramount and Bellflower MSF site options developed by Metro. As the MSF sites are an underlying component of all of the Build Alternatives and design options and would not be implemented independently, operational emissions associated with the MSF are accounted for in the air quality impact discussions for each of the Build Alternatives and design options.

As a transit project, the effects that project implementation would have on regional air quality are best represented in terms of long-term changes in regional transportation emissions from vehicles traveling on the roadway network within the Affected Area for air. Implementation of the Project would induce transportation mode shift throughout the region by replacing vehicle trips with transit ridership. Table 4.5.3 presents the daily on-road vehicle miles traveled (VMT) occurring throughout the Affected Area for air under Existing Conditions, if each of the Build Alternatives were operational in 2017, in 2042 under the No Build Alternative, and with implementation of each of the Build Alternatives in 2042. Results of the transportation modeling demonstrate that regional VMT reductions would be between 0.01 percent and 0.05 percent in 2017 depending on the Build Alternative. By 2042, induced regional VMT reductions resulting from project implementation would range between 0.01 percent and 0.07 percent. The 2042 analysis represents a characterization of the holistic, long-term benefits of the Project as transit-oriented development expands within the Affected Area for air around the LRT corridor.

Table 4.5.3. Affected Area Daily Vehicle Miles Traveled – 2017 Existing Scenarios vs. 2042

Scenario	2017 Daily Total[1]	2017 Change vs. Existing Condition[2]		2042 Daily Total[3]	2042 Change vs. No Build[4]		2042 Change vs. Existing Condition[5]	
		Change	%		Change	%	Change	%
No Build	—	—	—	606,329,900	—	—	—	30.89%
Existing 2017	463,245,800	—	—	—	—	—	—	—
Alt. 1	463,029,700	-216,100	(0.05%)	605,938,400	-391,500	(0.06%)	142,692,600	30.80%
Alt. 2	463,030,800	-215,000	(0.05%)	605,952,500	-377,400	(0.06%)	142,706,700	30.81%
Alt. 3	463,174,000	-71,800	(0.02%)	606,199,000	-130,900	(0.02%)	142,953,200	30.86%
Alt. 4	463,209,500	-36,300	(0.01%)	606,259,100	-70,800	(0.01%)	143,013,300	30.87%
Design Option 1	463,009,500	-236,300	(0.05%)	605,892,100	-437,800	(0.07%)	142,646,300	30.79%
Design Option 2	463,027,300	-218,500	(0.05%)	605,931,500	-398,400	(0.07%)	142,685,700	30.80%

Source: Compiled for Metro in 2020
Note: mph = miles per hour; "-" or ( ) = reduction/decrease; "—" = not applicable
[1] "2017 Daily Total" evaluates "Existing 2017 + Build Alternative)
[2] "2017 Change vs. Existing Condition": Difference between the Build Alternative and Existing 2017 Scenario
[3] "2042 Daily Total" evaluates the Build Alternative in year 2042
[4] "2042 Change vs. No Build": Difference between the 2042 Build Alternative and No Build Scenario
[5] "2042 Change vs. Existing Condition": Difference between the 2042 Build Alternative and Existing 2017 Scenario

CARB maintains a statewide mobile source emissions inventory, which is accessible through the mobile source EMission FACtor (EMFAC) model interface. The mobile source emissions inventory is CARB's tool for assessing the populations, activities, and emissions from mobile sources throughout California. The EMFAC model is developed and used by CARB to assess emissions from on-road vehicles, including cars, trucks, and buses in California, and to support CARB's regulatory and air quality planning efforts to meet the FHWA transportation planning requirements. USEPA approves EMFAC for use in State Implementation Plan and Transportation Conformity analyses; the most recently approved version of the model is EMFAC2017. To robustly assess long-term direct and indirect air quality impacts of the Project, emissions from daily regional VMT presented in Table 4.5.3 under the No Build Alternative and each of the Build Alternatives in 2042 were estimated using EMFAC2017 and combined with operational emissions associated with the MSF site options analyzed in CalEEMod. The EMFAC2017 model produces factors for air pollutant emissions per VMT that correspond to specific areas of California for various vehicle types in desired analysis years. The regional vehicle fleet in the Affected Area for air was estimated to be approximately 7 percent trucks using regional transportation modeling, and emissions were estimated for each of the VMT datasets presented in Table 4.5.3.

In November 2019, the USEPA passed the Safer Affordable Fuel Efficient Vehicles Rule Part One, which revoked California's authority to set state-specific fuel efficiency standards and zero-emission vehicle sales goals in future years. Beginning in 2021, previously applicable statewide requirements for zero-emission vehicle sales and fuel efficiency that were incorporated into EMFAC2017 will be rescinded, rendering the default EMFAC2017 database emission factors for future years potentially inaccurate. To account for the regulatory change,

CARB published off-model adjustment factors for emissions from light- and medium-duty autos and trucks (USEPA 2020) that were approved by USEPA in March 2020. The adjustment factors apply to exhaust emissions of total organic gases (excluding carbon dioxide, methane, and other exempt compounds), nitrogen oxides (NO_X), CO, and PM_{10} and $PM_{2.5}$. The applicable adjustment factors for the 2042 analysis year were incorporated into the emissions calculations for induced changes to on-road VMT, as well as construction worker vehicle trips and MSF operational vehicle trips.

SCAQMD established mass daily thresholds for emissions during operation of CEQA projects. Under CEQA, a significant regional air quality impact may occur if incremental increases in daily emissions exceed any of the threshold values presented in Table 4.5.4.

Table 4.5.4. SCAQMD Air Quality Significance Thresholds – Operation Mass Daily Thresholds

Pollutant	Threshold Value (lbs/day)
Volatile Organic Compounds (VOC)	55
Nitrogen Oxides (NO_X)	55
Carbon Monoxide (CO)	550
Sulfur Oxides (SO_X)	150
Respirable Particulate Matter (PM_{10})	150
Fine Particulate Matter ($PM_{2.5}$)	55
Lead (Pb)	3

Source: SCAQMD, 2015
Note: lbs/day = pounds per day; SCAQMD = South Coast Air Quality Management District

Potential impacts related to localized CO hot-spot emissions are evaluated following the methodology prescribed in the *Transportation Project-Level Carbon Monoxide Protocol* (Caltrans 2010) developed for Caltrans by the Institute of Transportation Studies. Potential impacts related to localized PM were evaluated using the USEPA and FHWA guidance manual, *Transportation Conformity Guidance for Quantitative Hot-spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas* (USEPA and FHWA 2015). Mobile source air toxics (MSAT) emissions were evaluated using the FHWA *Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents* (FHWA 2016). Regional conformity was analyzed by comparing the Project's design, concept, and scope to its description in the 2020-2045 SCAG RTP/SCS and associated air quality analyses.

4.5.2 Affected Environment/Existing Conditions

4.5.2.1 Regional Air Quality Conditions

The CAA grants the USEPA authority to designate areas as attainment, nonattainment, or maintenance (previously nonattainment and currently attainment) for each criteria pollutant based on whether representative pollutant concentrations within the area have consistently been measured below the NAAQS. The Basin represents the Affected Area for air at the regional scale because all sources of emissions associated with construction and operations would be located within it, and the designation status of the LA County portion is most representative of regional air quality conditions. As shown in Table 4.5.5, the USEPA has classified the LA County portion of the Basin as a nonattainment area for O_3, $PM_{2.5}$ and Pb and a maintenance area for PM_{10} and CO.

Table 4.5.5. National and State Attainment Status for Criteria Pollutant Standards – Los Angeles County

Pollutant	Averaging Time	NAAQS Status	CAAQS Status
Ozone (O_3)	1 Hour	Nonattainment (Extreme)	Nonattainment
	8 Hour	Nonattainment (Extreme)	Nonattainment
Carbon Monoxide (CO)	1 Hour	Attainment (Maintenance)	Attainment
	8 Hour	Attainment (Maintenance)	Attainment
Nitrogen Dioxide (NO_2)	1 Hour	Attainment	Attainment
	Annual Average	Attainment	Attainment
Sulfur Dioxide (SO_2)	1 Hour	Unclassifiable/Attainment	Attainment
	24 Hour	Unclassifiable/Attainment	Attainment
Respirable Particulate Matter (PM_{10})	24 Hour	Attainment (Maintenance)	Nonattainment
	Annual Average	No Federal Standard	Nonattainment
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	Nonattainment (Serious)	No State Standard
	Annual Average	Nonattainment (Moderate)	Nonattainment
Lead (Pb)	30 Day Average	No Federal Standard	Attainment
	3 Month Average	Nonattainment (Partial)	Attainment

Source: SCAQMD, 2017
Notes: CAAQS = California Ambient Air Quality Standards; NAAQS = National Ambient Air Quality Standards

Under the CCAA, areas are designated as nonattainment for a pollutant if air quality data shows that a state standard for the pollutant was violated at least once during the previous three calendar years. The LA County portion of the Basin is designated as a CAAQS nonattainment area for O_3, $PM_{2.5}$ and PM_{10}. Additionally, LA County is in attainment of the CAAQS for sulfates and hydrogen sulfide, although it is not presented in Table 4.5.5.

4.5.2.2 Local Air Quality Conditions

The attainment status designations are based on concentrations of air pollutants measured at air monitoring sites throughout the Basin. SCAQMD operates 43 air monitoring sites used to characterize air quality within the 37 subdivided Source/Receptor Areas (SRAs) of the Basin. The geographic boundaries of each SRA are determined by the proximity to the nearest air monitoring station and local topography and meteorological patterns. The proposed LRT corridor transects portions of SRA 1 (Central Los Angeles County), SRA 12 (South Central Los Angeles County), SRA 5 (Southeast Los Angeles County), and SRA 4 (South Coastal Los Angeles County). The following discussions address pollutant concentrations measured at stations along the project alignment.

SRA 1—Central Los Angeles County—extends southward to Slauson Avenue and eastward to I-710, encompassing portions of the Cities of Los Angeles, South Park, Vernon, and Huntington Park. Air quality conditions in SRA 1 are characterized by concentrations of air pollutants measured at the Los Angeles – North Main Street (LA-NMS) monitoring site located in downtown Los Angeles. The LA-NMS site actively measures and records concentrations of O_3, CO, NO_2, SO_2, PM_{10}, and $PM_{2.5}$. Table 4.5.6 summarizes the air quality data recorded at the LA-NMS monitoring site between 2015 and 2017. Concentrations of O_3, PM_{10}, and $PM_{2.5}$ measured at the LA-NMS site exceeded applicable state and federal AAQS. The monitoring data are consistent with the LA County attainment status.

Table 4.5.6. SRA 1 Los Angeles – North Main Street Station Monitoring Data (2015 – 2017)

Pollutant	Metric	Maximum Concentrations and Frequencies of Exceeded Standards		
		2015	2016	2017
Ozone (O_3)	Maximum 1-Hour Concentration	0.104	0.103	0.116
	Days >0.09 ppm (CAAQS)	2	2	6
	Maximum 8-Hour Concentration	0.074	0.078	0.086
	Days >0.070 ppm (NAAQS/CAAQS)	6	4	16
Carbon Monoxide (CO)	Maximum 1-Hour Concentration	3.2	1.9	N/A
	Days >20 ppm (CAAQS)	0	0	0
	Maximum 8-Hour Concentration	1.8	1.4	N/A
	Days >9.0 ppm (NAAQS/CAAQS)	0	0	0
Nitrogen Dioxide (NO_2)	Maximum 1-Hour Concentration	0.079	0.065	0.081
	Days > 0.10 ppm (NAAQS)	0	0	0
	Annual Average	0.022	0.021	0.020
	>0.030 ppm (CAAQS)	No	No	No
Sulfur Dioxide (SO_2)	Maximum 1-Hour Concentration	0.013	0.013	N/A
	Days >0.075 ppm (NAAQS)	0	0	0
	Maximum 24-Hour Concentration	N/A	N/A	N/A
	Days >0.040 ppm (CAAQS)	0	0	0
Respirable Particulate Matter (PM_{10})	Maximum 24-Hour Concentration	88.0	67.0	96.2
	Days >50 µg/m^3 (CAAQS)	26	18	40
	Annual Average Concentration	33.1	32.4	N/A
	>20 µg/m^3 (CAAQS)	Yes	Yes	0
Fine Particulate Matter ($PM_{2.5}$)	Maximum 24-Hour Concentration	56.4	44.4	54.9
	Days >35 µg/m^3 (NAAQS)	7	2	6
	Annual Average Concentration	12.4	11.8	16.3
	>12 µg/m^3 (NAAQS/CAAQS)	Yes	No	Yes

Source: CARB 2018
Notes: CAAQS = California Ambient Air Quality Standards; NAAQS = National Ambient Air Quality Standards; N/A = not available; ppm = parts per million; µg/m^3 = microgram per cubic meter

SRA 12—South Central Los Angeles County—extends southward from Slauson Avenue to State Route 91 and is bordered by I-110 on the western edge and I-710 on the eastern edge. SRA 12 encompasses portions of the Cities of Huntington Park, Bell, Cudahy, South Gate, and Downey. Air quality conditions in SRA 12 are characterized by concentrations of air pollutants measured at the Compton monitoring site at 700 North Bullis Road, which measures and records concentrations of O_3, CO, NO_2, and $PM_{2.5}$. Table 4.5.7 summarizes the air quality data recorded at the Compton monitoring site between 2015 and 2017. Concentrations of O_3 and $PM_{2.5}$ measured at the Compton site exceeded applicable state and federal AAQS from 2015 to 2017. The air monitoring data are consistent with the attainment status designations for LA County.

Table 4.5.7. SRA 12 and SRA 5 – Compton Monitoring Station Data (2015 – 2017)

Pollutant	Metric	Maximum Concentrations and Frequencies of Exceeded Standards		
		2015	2016	2017
Ozone (O_3)	Maximum 1-Hour Concentration	0.091	0.098	0.092
	Days >0.09 ppm (CAAQS)	1	1	0
	Maximum 8-Hour Concentration	0.072	0.071	0.076
	Days >0.070 ppm (NAAQS/CAAQS)	1	1	6
Carbon Monoxide (CO)	Maximum 1-Hour Concentration	4.4	4.4	N/A
	Days >20 ppm (CAAQS)	No	No	0
	Maximum 8-Hour Concentration	3.3	3.9	N/A
	Days >9.0 ppm (NAAQS/CAAQS)	No	No	0
Nitrogen Dioxide (NO_2)	Maximum 1-Hour Concentration	0.074	0.064	0.099
	Days >0.10 ppm (NAAQS)	0	0	0
	Annual Average	0.017	0.016	0.016
	>0.030 ppm (CAAQS)	No	No	No
Fine Particulate Matter ($PM_{2.5}$)	Maximum 24-Hour Concentration	41.3	36.4	66.7
	Days >35 µg/m^3 (NAAQS)	3	3	5
	Annual Average Concentration	11.8	11.1	13.2
	>12 µg/m^3 (NAAQS/CAAQS)	No	No	Yes

Source: SCAQMD 2018
Note: CAAQS = California Ambient Air Quality Standards; NAAQS = National Ambient Air Quality Standards; N/A = not available; ppm = parts per million; µg/m^3 = microgram per cubic meter

SRA 5—Southeast Los Angeles County—is bounded by I-710 on the west, Whittier Boulevard (SR-72) on the north and northeast, the Los Angeles County line on the east and southeast, and Artesia Freeway (SR-91) on the south. There are no active monitoring stations within SRA 5 operated by SCAQMD, CARB, or USEPA. Existing ambient air quality conditions within the portion of SRA 5 transected by the Project are best characterized by the concentrations of pollutants measured at the Compton monitoring station shown in Table 4.5.7. Within SRA 5, the project corridor runs between approximately 2.4 and 5.8 miles from the Compton monitoring station, and the topography and land use patterns along the project alignment in SRA 5 are generally consistent with those surrounding the Compton monitoring station. The proximity of the Compton station and lack of topographical features that would disrupt local meteorological patterns make the data obtained there a reasonable characterization of ambient air quality conditions along the project corridor within SRA 5.

Air quality conditions in SRA 4—South Coastal Los Angeles County—are characterized by concentrations of air pollutants measured at three monitoring sites in the greater Long Beach area:

- Long Beach – Hudson (LB-H): Located at 2425 Webster Street, approximately 8.5 miles southwest of the Pioneer Station southern terminus; continuously recorded O_3, CO, NO_2, SO_2, and PM_{10} concentrations between 2013 and 2015

- Long Beach North (LBN): Located at 3648 North Long Beach Boulevard, approximately 6.3 miles west–southwest of the Pioneer Station southern terminus; monitored concentrations of $PM_{2.5}$ since 2014
- Long Beach – I-710 Near Road (LB-NR): Located at 5895 Long Beach Boulevard, approximately 6.2 miles west of the Pioneer Station southern terminus; monitored NO_2 and $PM_{2.5}$ since being activated in 2015

Table 4.5.8 summarizes the air quality data recorded at the nearest SRA 4 active site to the Affected Area for each pollutant between 2015 and 2017. The monitoring stations recorded several concentrations of O_3, PM_{10}, and $PM_{2.5}$ exceeding applicable air quality standards during this timeframe. The air monitoring data are consistent with the nonattainment status designations for the LA County portion of the Basin.

Table 4.5.8. SRA 4 – South Coastal Los Angeles County Monitoring Station Data (2015 – 2017)

Pollutant	Metric	Maximum Concentrations and Frequencies of Exceeded Standards		
		2015	2016	2017
Ozone (O_3)	Maximum 1-Hour Concentration	0.104	0.079	0.082
	Days > 0.09 ppm (CAAQS)	2	0	0
	Maximum 8-Hour Concentration)	0.074	0.059	0.069
	Days > 0.070 ppm (NAAQS/CAAQS	6	0	0
Carbon Monoxide (CO)	Maximum 1-Hour Concentration	3.3	3.3	N/A
	Days > 20 ppm (CAAQS)	0	0	0
	Maximum 8-Hour Concentration	2.2	2.2	N/A
	Days > 9.0 ppm (NAAQS/CAAQS)	0	0	0
Nitrogen Dioxide (NO_2)	Maximum 1-Hour Concentration	0.095	0.076	0.116
	Days > 0.10 ppm (NAAQS)	0	0	1
	Annual Average	0.020	0.019	0.025
	> 0.030 ppm (CAAQS)	No	No	No
Sulfur Dioxide (SO_2)	Maximum 1-Hour Concentration	0.038	0.018	N/A
	Days > 0.075 ppm (NAAQS)	0	0	0
	Maximum 24-Hour Concentration	N/A	N/A	N/A
	Days > 0.040 ppm (CAAQS)	0	0	0
Respirable Particulate Matter (PM_{10})	Maximum 24-Hour Concentration	80.0	75.0	N/A
	Days > 50 µg/m^3 (CAAQS)	6	8	0
	Annual Average Concentration	31.5	32.0	N/A
	> 20 µg/m^3 (CAAQS)	Yes	Yes	0
Fine Particulate Matter ($PM_{2.5}$)	Maximum 24-Hour Concentration	48.8	29.4	85.4
	Days > 35 µg/m^3 (NAAQS)	7	0	8
	Annual Average Concentration	12.9	12.0	12.8
	> 12 µg/m^3 (NAAQS/CAAQS)	Yes	Yes	Yes

Source: SCAQMD 2018
Note: CAAQS = California Ambient Air Quality Standards; NAAQS = National Ambient Air Quality Standards; N/A = not available; ppm = parts per million; µg/m^3 = microgram per cubic meter

4.5.3 Environmental Consequences/Environmental Impacts

4.5.3.1 No Build Alternative

Under the No Build Alternative, regional and local projects would continue to be built. The operational air quality benefits resulting from transportation mode shift attributed to implementation of the Project would not materialize, and population growth within the region would increase VMT on the existing roadway network relative to Existing Conditions. On-road motor vehicle emissions would continue to be controlled by mandatory emissions standards set by the USEPA and the CARB.

Criteria Pollutant and Ozone Precursor Emissions

The No Build Alternative accounts for general population growth that would lead to increased vehicle use and associated pollutant emissions, as well as planned transportation projects throughout the region that would be completed by 2042. Annual VMT in the region would increase from approximately 463.25 million VMT (2018) to approximately 606.33 million VMT (2042). Table 4.5.9 shows the regional air pollutant emissions associated with on-road VMT for the existing condition and the No Build Alternative based on the regional VMT.

Table 4.5.9. Daily Operational Emissions—Existing Conditions (2017) and No Build Alternative (2042)

Scenario	Measured in lbs/day					
	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Existing (2017)	66,263.0	1,604,017.0	424,311.0	4,155.3	113,725.0	35,789.5
No Build Alternative (2042)	26,985.6	789,690.8	194,423.3	3,548.5	141,795.3	39,185.0
Net Change	(39,277.4)	(814,326.3)	(229,887.7)	(606.8)	28,070.3	3,395.5
Percent Change	(59.3%)	(50.8%)	(54.2%)	(14.6%)	24.7%	9.5%

Source: Metro 2021i
Note: lbs/day = pounds per day; CO = carbon monoxide; NO_x = nitrogen oxide; $PM_{2.5}$ = fine particulate matter of diameter less than 2.5 microns; PM_{10} = respirable particulate matter of diameter less than 10 microns; ROG = reactive organic gases; SO_x = sulfur oxides; ( ) = decrease

Emission reductions between Existing Conditions and the No Build Alternative are attributed to alternative-fueled passenger vehicles (i.e., electric and natural gas) added to the vehicle fleet and continued improvements in fuel efficiency. The incremental increases in particulate matter emissions relative to Existing Conditions are solely attributed to ambient regional population growth spurring additional regional VMT and associated road dust and break and tire wear. As regional air quality continues to improve in the future, the deposition of dust on roads will be reduced.

Mobile Source Air Toxics

Federal and state regulations for vehicle engines and fuels will cause overall MSAT emissions to decline significantly over the next several decades. An analysis of national trends with the USEPA MOVES model forecasts a combined reduction of over 80 percent in the total annual emission rate for the priority MSAT from 2010 to 2050 and VMT is projected to increase by over 100 percent.

The No Build Alternative would reduce emissions relative to the Existing Conditions due to the addition of alternative-fueled passenger vehicles (i.e., electric and natural gas) to the

vehicle fleet and continued improvements in fuel efficiency. These conditions are supported by CARB in the publication of EMFAC2017. The No Build Alternative would not reduce regional VMT as is the case with the Build Alternatives. Under NEPA, the No Build Alternative would not result in an adverse effect related to operational emissions.

4.5.3.2 Alternative 1: Los Angeles Union Station to Pioneer Station

Alternative 1 would not introduce a new substantial direct source of air pollutant emissions into the Affected Area for air. The primary direct source of emissions associated with each Build Alternative would be operation of the MSF, which would introduce new minor sources of air pollutant emissions generated by the use of landscaping and consumer products (e.g., cleaners and architectural coatings), as well as new employee and supply delivery trips constituting mobile source emissions. Additional minor stationary sources would be associated with the use of landscaping equipment and the application of architectural coatings at the aerial and at-grade stations and parking facilities. Indirectly, regional emission levels within the Affected Area for air would be influenced by changes in on-road traffic patterns resulting from induced transportation mode shift, as well as improvements in fuel efficiency and engine technologies that are accounted for in the regulatory emissions model. Indirect criteria pollutant and ozone precursor emissions would be generated through energy use (e.g., LRT propulsion, lighting, and accessory equipment at station platforms, and MSF operations).

Implementation of Alternative 1 would induce changes in regional transportation patterns by replacing vehicle trips with transit ridership. Every displaced vehicle start and VMT induced by project implementation would indirectly reduce regional emissions related to transportation. As shown in Table 4.5.3, implementation of Alternative 1 (if operational in 2017) would reduce daily VMT within the Affected Area for air by approximately 216,100 miles relative to Existing Conditions. By 2042, Alternative 1 would reduce daily VMT by approximately 391,500 compared to the No Build Alternative. Implementation of the Project would improve regional air quality by taking passenger vehicle trips off the roadway network and encouraging alternative and active modes of transportation. The expansion of LRT infrastructure and the displacement of VMT are critical components of regional transportation planning initiatives to improve air quality and public health.

Criteria Pollutant and Ozone Precursor Emissions

Alternative 1 would affect regional air pollutant emissions primarily through changes in regional transportation patterns due to mode shift and increased Metro ridership, which would decrease regional VMT throughout the Affected Area for air relative to the No Build Alternative. Additionally, the MSF would introduce new minor sources of air pollutant emissions generated by landscaping, consumer product use, and employee and supply delivery trips. Table 4.5.10 presents the results of the daily operational emissions modeling for Alternative 1 and the relative change from the No Build Alternative.

Alternative 1 would decrease daily regional air pollutant emissions compared to the No Build Alternative. As emissions decrease, there is no potential for the Project to cause a new NAAQS or CAAQS violation or exacerbate an existing NAAQS or CAAQS violation. Under NEPA, Alternative 1 would not result in adverse effects related to criteria pollutant and ozone precursor emissions.

Table 4.5.10. Daily Operational Emissions—Alternative 1 (2042)

Scenario/Source	Measured in lbs/day					
	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Alternative 1 VMT	26,953.0	789,073.0	194,228.6	3,545.7	141,703.2	39,159.2
Alternative 1 MSF[1]	3.9	5.6	2.2	<0.1	2.4	0.7
Alternative 1 Total	26,956.9	789,078.6	194,230.8	3,545.7	141,705.6	39,160.0
No Build Alternative	26,985.6	789,690.8	194,423.3	3,548.5	141,795.3	39,185.0
Net Change	(28.7)	(612.2)	(192.5)	(2.9)	(89.7)	(25.1)
SCAQMD Threshold	55	550	55	150	150	55

Source: Metro 2021i, SCAQMD 2015
Notes: [1]As both the Bellflower and Paramount MSF site options can accommodate a fully operational MSF, it was assumed that the size of the MSF would not be constrained based on location, and facility emissions would be comparable.
lbs/day = pounds per day; MSF = maintenance and storage facility; VMT = vehicle miles traveled; SCAQMD = South Coast Air Quality Management District; ROG = reactive organic gases; CO = carbon monoxide; NO_X = nitrogen oxide; SO_X = sulfur oxides; $PM_{2.5}$ = fine particulate matter of diameter less than 2.5 microns; PM_{10} = respirable particulate matter of diameter less than 10 microns; ( ) = reduction/decrease

Mobile Source Air Toxics

MSAT emissions are directly correlated to VMT; therefore, reductions in daily MSAT emissions would result through project implementation. Alternative 1 would reduce daily regional VMT by 391,500 miles relative to the No Build Alternative, thereby decreasing daily MSAT emissions throughout the Affected Area for air. Under NEPA, Alternative 1 would not result in adverse effects related to MSAT emissions.

Transportation Conformity

Regional Transportation Conformity: The Project is included in the SCAG 2020-2045 RTP/SCS Transportation System Financially Constrained Project List as a LA County transit project under the RTP ID 1TR1011. The Project is described as follows: "West Santa Ana Branch Transit Corridor LRT." The FHWA and FTA determined that the SCAG 2020-2045 RTP/SCS and the accompanying conformity analysis satisfied all air quality conformity requirements, documented in a letter to SCAG on June 5, 2020. Additionally, the Project is listed in the 2019 FTIP (FTIP ID is LA0G1094), although it is currently only programmed as a Project Study. The FHWA and FTA determined that Amendment No. 19-12 to the SCAG 2019 FTIP and accompanying conformity analysis satisfied all air quality conformity requirements in the same letter on June 5, 2020. The Project is accurately programmed (for study only) in both the SCAG 2020-2045 RTP/SCS and the 2019 FTIP; therefore, Alternative 1 would satisfy the regional Transportation Conformity requirements.

Project-Level Transportation Conformity: Project-level conformity requires that the Project demonstrate it would not result in a new local CO, PM_{10}, or $PM_{2.5}$ air quality standard violation or worsen existing violations. Regarding CO hot-spots, although the Basin is designated as a maintenance area for CO, it is no longer a pollutant of concern in the region. According to CARB, the NAAQS for CO was last exceeded in 2002 (SCAQMD 2016). The SCAQMD last published data for 2016 included maximum 1- and 8-hour concentrations of 4.4 and 3.9 parts per million (ppm). These concentrations were below the 1- and 8-hour NAAQS of 20 and 9 ppm. The Project is planned to open in 2028. As indicated in the CARB EMFAC model, CO emission rates would be substantially less in 2028 than in 2003 when CO attainment was demonstrated in the AQMP. Therefore, Alternative 1 would not generate a CO hot spot.

Regarding PM hot-spots, the Project is within a nonattainment area for the federal $PM_{2.5}$ NAAQS and a maintenance area for the PM_{10} NAAQS. Therefore, pursuant to 40 CFR 93, project-level $PM_{2.5}$ and PM_{10} Interagency Consultation and/or analyses are required for conformity purposes. A quantitative hot-spot analysis is required only for a project that has been identified as a Project of Air Quality Concern, as defined in 40 CFR 93.123(b)(1).

The Project is an electrically powered transit project that would not directly increase diesel truck traffic on the roadway network. Therefore, Alternative 1 would not influence the level-of-service associated with increased traffic volumes from a significant number of diesel vehicles. In addition, the project corridor has not been identified as including possible violation sites in the $PM_{2.5}$ Implementation Plan or PM_{10} Implementation Plan or submission. Metro presented the Project to SCAG's Transportation Conformity Working Group (TCWG) to obtain a project-level conformity determination at the January 26, 2021 TCWG meeting. The members of the TCWG concurred that the Project would not be a Project of Air Quality Concern, thereby establishing that PM emissions from diesel trucks would not present localized air quality concerns along roadways affected by the Project. Under NEPA, Alternative 1 would not result in adverse effects related to worsening existing or contributing to new localized PM hot-spots.

4.5.3.3 Alternative 2: 7th Street/Metro Center to Pioneer Station

As shown in Table 4.5.3, implementation of Alternative 2 (if operational in 2017) would reduce daily VMT within the Affected Area for air by approximately 215,000 miles relative to Existing Conditions. By 2042, Alternative 2 would reduce daily VMT by approximately 377,400 compared to the No Build Alternative.

Criteria Pollutant and Ozone Precursor Emissions

Alternative 2 includes the same emission sources as Alternative 1. Table 4.5.11 presents the results of the daily operational emissions modeling for Alternative 2 and the relative change from the No Build Alternative. Alternative 2 would decrease daily regional air pollutant emissions when compared to the No Build Alternative. As emissions decrease, there is no potential for Alternative 2 to cause a new NAAQS or CAAQS violation or exacerbate an existing NAAQS or CAAQS violation. Under NEPA, Alternative 2 would not result in adverse effects related to criteria pollutant and ozone precursor emissions.

Table 4.5.11. Daily Operational Emissions—Alternative 2 (2042)

Scenario/Source	Measured in lbs/day					
	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Alternative 2 VMT	26,966.9	789,140.1	194,260.3	3,546.1	141,707.0	39,160.6
Alternative 2 MSF [1]	3.9	5.6	2.2	<0.1	2.4	0.7
Alternative 2 Total	26,970.8	789,145.7	194,262.5	3,546.1	141,709.4	39,161.3
No Build Alternative	26,985.6	789,690.8	194,423.3	3,548.5	141,795.3	39,185.0
Net Daily Change	(14.8)	(545.1)	(160.8)	(2.4)	(85.9)	(23.7)
SCAQMD Threshold	55	550	55	150	150	55

Source: Metro 2021i, SCAQMD 2019
Notes: [1]As both the Bellflower and Paramount MSF site options can accommodate a fully operational MSF, it was assumed that the size of the MSF would not be constrained based on location, and facility emissions would be comparable.
lbs/day = pounds per day; MSF = maintenance and storage facility; VMT = vehicle miles traveled; SCAQMD = South Coast Air Quality Management District; ROG = reactive organic gases; CO = carbon monoxide; NO_X = nitrogen oxide; SO_X = sulfur oxides; $PM_{2.5}$ = fine particulate matter of diameter less than 2.5 microns; PM_{10} = respirable particulate matter of diameter less than 10 microns; ( ) = reduction/decrease

Mobile Source Air Toxics

Alternative 2 would reduce daily regional VMT by 377,400 miles relative to the No Build Alternative, thereby decreasing daily MSAT emissions throughout the Affected Area for air. Under NEPA, Alternative 2 would not result in adverse effects related to MSAT emissions.

Transportation Conformity

The Transportation Conformity analysis for Alternative 2 is identical to the analysis presented for Alternative 1. The Project is identified in the 2020-2045 RTP/SCS and listed in the 2019 FTIP (FTIP ID is LA0G1094). Alternative 2 would comply with regional Transportation Conformity requirements prior to receiving a Record of Decision (ROD) and would comply with project-level Transportation Conformity requirements. Similar to Alternative 1, the TCWG concurred that the Project would not be a Project of Air Quality Concern and would not present localized air quality concerns along roadways affected by the Project. Under NEPA, Alternative 2 would not result in adverse effects related to transportation conformity.

4.5.3.4 Alternative 3: Slauson/A (Blue) Line to Pioneer Station

As shown in Table 4.5.3, implementation of Alternative 3 (if operational in 2017) would reduce daily VMT within the Affected Area for air by approximately 71,800 miles relative to Existing Conditions. By 2042, Alternative 3 would reduce daily VMT by approximately 130,900 compared to the No Build Alternative.

Criteria Pollutant and Ozone Precursor Emissions

Alternative 3 includes the same emission sources as Alternatives 1 and 2. Table 4.5.12 presents the results of the daily operational emissions modeling for Alternative 3 and the relative change from the No Build Alternative. Alternative 3 would decrease daily regional air pollutant emissions when compared to the No Build Alternative. As emissions decrease, there is no potential for Alternative 3 to cause a new NAAQS or CAAQS violation or exacerbate an existing NAAQS or CAAQS violation. Under NEPA, Alternative 3 would not result in adverse effects related to criteria pollutant and ozone precursor emissions.

Table 4.5.12. Daily Operational Emissions—Alternative 3 (2042)

Scenario/Source	Measured in lbs/day					
	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Alternative 3 VMT	26,980.9	789,569.1	194,405.7	3,547.9	141,764.6	39,176.5
Alternative 3 MSF[1]	3.9	5.6	2.2	<0.1	2.4	0.7
Alternative 3 Total	26,984.8	789,574.7	194,407.9	3,547.9	141,767.0	39,177.2
No Build Alternative	26,985.6	789,690.8	194,423.3	3,548.5	141,795.3	39,185.0
Net Daily Change	(0.8)	(116.0)	(15.4)	(0.7)	(28.3)	(7.8)
SCAQMD Threshold	55	550	55	150	150	55

Source: Metro 2021i, SCAQMD 2019
Notes: [1]As both the Bellflower and Paramount MSF site options can accommodate a fully operational MSF, it was assumed that the size of the MSF would not be constrained based on location, and facility emissions would be comparable.
lbs/day = pounds per day; MSF = maintenance and storage facility; VMT = vehicle miles traveled; SCAQMD = South Coast Air Quality Management District; ROG = reactive organic gases; CO = carbon monoxide; NO_X = nitrogen oxide; SO_X = sulfur oxides; $PM_{2.5}$ = fine particulate matter of diameter less than 2.5 microns; PM_{10} = respirable particulate matter of diameter less than 10 microns; ( ) = reduction/decrease

Mobile Source Air Toxics

Alternative 3 would reduce daily regional VMT by 130,900 miles relative to the No Build Alternative, thereby decreasing daily MSAT emissions throughout the Affected Area for air. Under NEPA, Alternative 3 would not result in adverse effects related to MSAT emissions.

Transportation Conformity

The Transportation Conformity analysis for Alternative 3 is identical to the analysis presented for the other Build Alternatives. Alternative 3 would comply with regional Transportation Conformity requirements prior to receiving a ROD and would comply with project-level Transportation Conformity requirements. Similar to Alternatives 1 and 2, the TCWG concurred that the Project would not be a Project of Air Quality Concern and would not present localized air quality concerns along roadways affected by the Project. Under NEPA, Alternative 3 would not result in adverse effects related to transportation conformity.

4.5.3.5 Alternative 4: I-105/C (Green) Line to Pioneer Station

As shown in Table 4.5.3, implementation of Alternative 4 (if operational in 2017) would reduce daily VMT within the Affected Area for air by approximately 36,300 miles relative to Existing Conditions. By 2042, Alternative 4 would reduce daily VMT by approximately 70,800 compared to the No Build Alternative.

Criteria Pollutant and Ozone Precursor Emissions

Alternative 4 includes the same emission sources as Alternatives 1, 2, and 3. Table 4.5.13 presents the results of the daily operational emissions modeling for Alternative 4 and the relative change from the No Build Alternative. Alternative 4 would decrease daily regional air pollutant emissions compared to the No Build Alternative. Under NEPA, Alternative 4 would not result in adverse effects related to criteria pollutant and ozone precursor emissions.

Table 4.5.13. Daily Operational Emissions—Alternative 4 (2042)

Scenario/Source	Measured in lbs/day					
	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Alternative 4 VMT	26,973.8	789,618.9	194,396.2	3,547.8	141,778.1	39,179.9
Alternative 4 MSF[1]	3.9	5.6	2.2	<0.1	2.4	0.7
Alternative 4 Total	26,977.7	789,624.5	194,398.4	3,547.8	141,780.5	39,180.6
No Build Alternative	26,985.6	789,690.8	194,423.3	3,548.5	141,795.3	39,185.0
Net Daily Change	(7.9)	(66.3)	(24.9)	(0.7)	(14.8)	(7.8)
SCAQMD Threshold	55	550	55	150	150	55

Source: Metro 2021i, SCAQMD 2015
Notes: [1]As both the Bellflower and Paramount MSF site options can accommodate a fully operational MSF, it was assumed that the size of the MSF would not be constrained based on location, and facility emissions would be comparable.
lbs/day = pounds per day; MSF = maintenance and storage facility; VMT = vehicle miles traveled; SCAQMD = South Coast Air Quality Management District; ROG = reactive organic gases; CO = carbon monoxide; NO_X = nitrogen oxide; SO_X = sulfur oxides; $PM_{2.5}$ = fine particulate matter of diameter less than 2.5 microns; PM_{10} = respirable particulate matter of diameter less than 10 microns; ( ) = reduction/decrease

Mobile Source Air Toxics

Alternative 4 would reduce daily regional VMT by 70,800 miles relative to the No Build Alternative, thereby decreasing daily MSAT emissions throughout the Affected Area for air. Under NEPA, Alternative 4 would not result in adverse effects related to MSAT emissions.

Transportation Conformity

The Transportation Conformity analysis for Alternative 4 is identical to the analysis presented for the other Build Alternatives. Alternative 4 would comply with regional Transportation Conformity requirements prior to receiving a ROD and would comply with project-level Transportation Conformity requirements. Similar to Alternatives 1, 2, and 3, the TCWG concurred that the Project would not be a Project of Air Quality Concern and would not present localized air quality concerns along roadways affected by the Project. Under NEPA, Alternative 4 would not result in adverse effects related to transportation conformity.

4.5.3.6 Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station

Design Options 1 and 2 would involve sources of operational emissions consistent with those of Alternative 1. Design Option 1 would move the northern terminus of the project corridor to the LAUS MWD location instead of the Forecourt location, which would consequently change the project corridor configuration and accessibility at the northern terminus, and result in a change to regional on-road VMT patterns relative to Alternative 1. As shown in Table 4.5.3, implementation of Design Option 1 (if operational in 2017) would reduce daily VMT within the Affected Area for air by approximately 236,300 miles relative to Existing Conditions. By 2042, Design Option 1 would reduce daily VMT by approximately 437,800 compared to the No Build Alternative and would further reduce daily VMT compared to Alternative 1 by approximately 46,300 miles.

Under Design Option 2, a new underground Little Tokyo Station would spur increased LRT accessibility and ridership and result in a further reduction of roadway network VMT compared to Alternative 1. As shown in Table 4.5.3, implementation of Design Option 2 (if operational in 2017) would reduce daily VMT within the Affected Area for air by approximately 218,500 miles relative to Existing Conditions. By 2042, Design Option 2 would reduce daily VMT by approximately 398,400 miles relative to the No Build Alternative, which would represent an additional daily VMT decrease of 6,900 miles beyond that achieved by implementation of Alternative 1.

Criteria Pollutant and Ozone Precursor Emissions: Design Options 1 and 2 include the same emission sources as Alternative 1. Table 4.5.14 presents the results of the daily operational emissions modeling for the design options and the relative change from the No Build Alternative. Design Options 1 and 2 would marginally decrease daily regional air pollutant emissions when compared to the No Build Alternative. Design Options 1 and 2 would result in a greater benefit than Alternative 1. Under NEPA, Design Options 1 and 2 would not result in adverse effects related to criteria pollutant and ozone precursor emissions.

Table 4.5.14. Daily Operational Emissions—Design Options 1 and 2 (2042)

Design Option	Scenario/Source	Measured in lbs/day					
		ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
1	Design Option 1 VMT	26,947.8	788,999.1	194,199.6	3,545.4	141,692.2	39,156.1
	Design Option 1 MSF[1]	3.9	5.6	2.2	<0.1	2.4	0.7
	Design Option 1 Total	26,951.7	789,004.7	194,201.8	3,545.4	141,694.6	39,156.8
	No Build Alternative	26,985.6	789,690.8	194,423.3	3,548.5	141,795.3	39,185.0
	Net Daily Change	(33.9)	(686.1)	(221.5)	(3.1)	(100.7)	(28.2)
	SCAQMD Threshold	55	550	55	150	150	55
2	Design Option 2 VMT	26,956.5	789,043.5	194,215.0	3,546.6	141,701.7	39,158.9
	Design Option 2 MSF[1]	3.9	5.6	2.2	<0.1	2.4	0.7
	Design Option 2 Total	26,960.4	789,049.1	194,217.2	3,546.6	141,704.1	39,159.6
	No Build Alternative	26,985.6	789,690.8	194,423.3	3,548.5	141,795.3	39,185.0
	Net Daily Change	(25.1)	(641.6)	(206.1)	(1.9)	(91.2)	(25.4)
	SCAQMD Threshold[2]	55	550	55	150	150	55

Source: Metro 2021i, SCAQMD 2015
Notes: [1]As both the Bellflower and Paramount MSF site options can accommodate a fully operational MSF, it was assumed that the size of the MSF would not be constrained based on location, and facility emissions would be comparable.
lbs/day = pounds per day; MSF = maintenance and storage facility; VMT = vehicle miles traveled; SCAQMD = South Coast Air Quality Management District; ROG = reactive organic gases; CO = carbon monoxide; NO_X = nitrogen oxide; SO_X = sulfur oxides; $PM_{2.5}$ = fine particulate matter of diameter less than 2.5 microns; PM_{10} = respirable particulate matter of diameter less than 10 microns; ( ) = reduction/decrease

Mobile Source Air Toxics: Design Option 1 would reduce daily regional VMT by 437,800 miles relative to the No Build Alternative, thereby decreasing daily MSAT emissions throughout the Affected Area for air. Design Option 2 would reduce daily regional VMT by 398,400 miles relative to the No Build Alternative. Under NEPA, Design Options 1 and 2 would not result in adverse effects related to MSAT emissions.

Transportation Conformity: The Transportation Conformity analysis for Design Options 1 and 2 is identical to the analysis presented for the Build Alternatives. The design options would comply with regional Transportation Conformity requirements prior to receiving a ROD and would comply with project-level Transportation Conformity requirements. Under NEPA, Design Options 1 and 2 would not result in adverse effects related to transportation conformity.

4.5.3.7 Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option

Air pollutant emissions that would be generated by operation of the Paramount and Bellflower MSF site options were estimated using CalEEMod and are accounted for in the analyses of each Build Alternative presented in the prior sections. Operation of the two MSF site options would be similar and result in emissions associated with vehicle trips to and from the site, natural gas use, and the use of consumer products such as cleaners and solvents. SCAQMD guidance requires that all project components be considered in a

comprehensive emissions analysis. The MSF will be a requisite component of the Project and would not operate independently. The analysis of operational emissions generated by the MSF is therefore incorporated with the Build Alternatives analysis.

4.5.4 Project Measures and Mitigation Measures

No project or mitigation measures are required for Alternatives 1, 2, 3, and 4.

4.5.5 California Environmental Quality Act Determination

4.5.5.1 Would the Project conflict with or obstruct implementation of the applicable air quality plan?

The following analyses address the No Project Alternative and Build Alternatives' consistency with applicable SCAQMD and SCAG policies, including the SCAQMD's 2016 AQMP and growth projections within the SCAG's 2016–2040 RTP/SCS. In accordance with the procedures established in the SCAQMD's *CEQA Air Quality Handbook* (SCAQMD 1993), the following criteria are required to be addressed in order to determine the consistency with applicable SCAQMD and SCAG policies:

- Would the proposed project result in any of the following?
  - An increase in the frequency or severity of existing air quality violations;
  - Cause or contribute to new air quality violations; or,
  - Delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP.
- Would the proposed project exceed the assumptions utilized in preparing the AQMP?
  - Is the project consistent with the population and employment growth projections upon which AQMP forecasted emission levels are based?
  - Does the project include air quality mitigation measures? or,
  - To what extent is project development consistent with the AQMP land use policies?

The Project is included in the 2016-2040 RTP/SCS under Project ID 1TR1011. On June 1, 2016, FHWA and FTA determined that the 2016-2040 RTP/SCS is in conformity with the SIP. Demonstrating conformity with the SIP is a crucial element of transportation planning, as it assures that the projects approved for implementation will not create emissions of air pollutants that will impede or delay improvements in regional air quality achieved by various control strategies. The expansion of LRT infrastructure and the displacement of VMT are critical components of regional transportation planning initiatives to improve air quality and public health. The Governor's Office of Planning and Research (OPR) recommends streamlining the environmental analyses of transit and active transportation projects that reduce VMT, as decreasing vehicle travel is widely acknowledged to directly correlate with improving air quality.

In response to SB 743, OPR and Caltrans have collaboratively and separately developed guidance for analyzing induced changes to transportation patterns and the associated air pollutant emissions. Caltrans is finalizing guidance related to analyzing transportation impacts from state highway projects, asserting in the draft documentation that the appropriate CEQA analysis for induced changes to on-road VMT be assessed in the design or horizon year of a proposed project relative to the No Project Alternative. Taking into consideration these recent developments in transportation planning approach, the most

appropriate holistic comparison of the Build Alternatives operational emissions is to those of the No Project Alternative in 2042, as presented in Table 4.5.10.

No Project Alternative

Under the No Project Alternative, no new sources of air pollutant emissions would be introduced to the Affected Area for air, and no new growth would be introduced to the County in terms of population, housing, or employment. Metro systemwide operations would not include the project corridor and its benefits related to VMT displacement, reducing vehicle trips, encouraging active transportation, and other proven strategies that enhance regional air quality.

As part of its initiative to minimize the environmental consequences of its operations, Metro has committed to implementing a cleaner fleet of buses and service vehicles that reduce air pollution. Between 2012 and 2017, Metro reduced its systemwide NO_X emissions by 40 percent and reduced its systemwide hydrocarbon and particulate matter emissions by over 50 percent; and in 2017 alone Metro reduced NO_X emissions from service vehicles by 26 percent. These benefits are consistent with regional emission reduction strategies incorporated into the AQMP. On July 27, 2017, the Metro Board of Directors unanimously voted to transition the entire Metro bus fleet to zero-emission vehicles by 2030. The No Project Alternative would not interfere with Metro's efforts to reduce its systemwide air pollutant emissions and would not conflict with implementation of the 2016 AQMP. Therefore, no impact on regional air quality would occur under the No Project Alternative and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Implementation of Alternative 1 would not introduce new population or housing growth into Los Angeles County, and the expansion of Metro operations would represent a negligible increase in regional employment compared to the 1.35 million jobs that are anticipated to be created in Los Angeles County between 2015–2040. As such, the Project is consistent with the objectives and assumptions of the AQMP, and thus would not interfere with the region's ability to attain the air quality standards on the designated schedule.

Implementation of Alternative 1 would improve regional connectivity and encourage transit ridership, and would induce changes in regional transportation patterns by replacing vehicle trips with transit ridership, as discussed in Section 4.5.3.2. Every displaced vehicle start and VMT induced by project implementation would indirectly reduce regional emissions related to transportation. As shown in Table 4.5.3, implementation of Alternative 1 (if operational in 2017) would reduce daily VMT within the Affected Area for air by approximately 216,100 miles relative to Existing Conditions. By 2042, Alternative 1 would reduce daily VMT by approximately 391,500 miles compared to the No Project Alternative.

The VMT displacement would reduce emissions associated with vehicle exhaust and road dust from passenger vehicle trips that would not occur with implementation of the Project. The changes in emissions associated with VMT displacement are induced, indirect air quality benefits. Daily operational emissions would remain below applicable SCAQMD thresholds for all criteria pollutants and ozone precursors and would not contribute to an increase in the frequency or severity of air quality violations in the context of Existing Conditions.

Implementation of Alternative 1 would reduce emissions of criteria pollutants and ozone precursors relative to the No Project Alternative. Therefore, Alternative 1 would result in a less than significant impact related to conflicts with the AQMP, and mitigation would not be required.

Alternative 2: 7th Street/Metro Center to Pioneer Station

The same discussion of regional conformity presented above for Alternative 1 applies to Alternative 2. Alternative 2 would improve regional connectivity, encourage transit ridership, and decrease VMT on the regional roadway network. As shown in Table 4.5.3, the Existing + Alternative 2 scenario (if operational in 2017) would reduce daily VMT from 463,245,800 miles under Existing Conditions to 463,030,800 miles, a decrease of 215,000 VMT. By 2042 the daily VMT reduction with implementation of Alternative 2 would be 377,400 relative to the No Project Alternative. Table 4.5.11 presents the regional emissions that would be generated by Alternative 2 and compares them to the No Project Alternative. Daily regional emissions of criteria pollutants and ozone precursors would decrease relative to the No Project Alternative and would therefore not have the potential to exceed any applicable SCAQMD operational threshold.

Implementation of Alternative 2 would contribute to regional goals that support alternative modes of transportation, would not generate permanent emissions that exceed the SCAQMD operational significance thresholds, and would not interfere with implementation of the AQMP. Therefore, Alternative 2 would result in a less than significant impact related to potential conflicts with the AQMP, and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Alternative 3 would improve regional connectivity, encourage transit ridership, and decrease VMT on the regional roadway network. As shown in Table 4.5.3, the Existing + Alternative 3 scenario (if operational in 2017) would reduce daily VMT from 463,245,800 miles under Existing Conditions to 463,174,000 miles, a decrease of 71,800 VMT. By 2042 the daily VMT reduction with implementation of Alternative 3 would be 130,900 relative to the No Project Alternative. Table 4.5.12 presents the regional emissions that would be generated by Alternative 3 and compares them to the No Project Alternative. Daily regional emissions of criteria pollutants and ozone precursors would decrease relative to the No Project Alternative and would therefore not have the potential to exceed any applicable SCAQMD operational threshold.

Implementation of Alternative 3 would contribute to regional goals that support alternative modes of transportation, would not generate permanent emissions that exceed the SCAQMD operational significance thresholds, and would not interfere with implementation of the AQMP. Therefore, Alternative 3 would result in a less than significant impact related to potential conflicts with the AQMP, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Alternative 4 would improve regional connectivity, encourage transit ridership, and decrease VMT on the regional roadway network. As shown in Table 4.5.3, the Existing + Alternative 4 scenario (if operational in 2017) would reduce daily VMT from 463,245,800 miles under Existing Conditions to 463,210,500 miles, a decrease of 36,300 VMT. By 2042 the daily VMT reduction with implementation of Alternative 3 would be 70,800 relative to the No Project Alternative. Table 4.5.13 presents the regional emissions that would be generated by Alternative 4 and compares them to the No Project Alternative. Daily regional emissions of criteria pollutants and ozone precursors would decrease relative to the No Project Alternative and would therefore not have the potential to exceed any applicable SCAQMD operational threshold.

Implementation of Alternative 4 would contribute to regional goals that support alternative modes of transportation, would not generate permanent emissions that exceed the SCAQMD operational significance thresholds, and would not interfere with implementation of the AQMP. Therefore, Alternative 4 would result in a less than significant impact related to potential conflicts with the AQMP, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Design Options 1 and 2 would improve regional connectivity, encourage transit ridership, and decrease VMT on the regional roadway network. Table 4.5.3, discussed in Section 4.5.3.6, summarizes the daily VMT reductions for the design options in the Existing + Design Option scenario and the 2042 scenario compared to the No Project Alternative. Table 4.5.14 presents the regional emissions that would be generated by the design options and compares them to the No Project Alternative. Daily regional emissions of criteria pollutants and ozone precursors would decrease relative to the No Project Alternative and would therefore not have the potential to exceed any applicable SCAQMD operational threshold.

Implementation of Design Options 1 and 2 would contribute to regional goals that support alternative modes of transportation, would not generate permanent emissions that would exceed the SCAQMD operational significance thresholds, and would not interfere with implementation of the AQMP. Therefore, the design options would result in a less than significant impact related to conflicts with the AQMP, and mitigation would not be required.

Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option: The MSF would be the predominant source of direct and indirect air pollutant emissions introduced to the SCAQMD jurisdiction during project operations, generating up to approximately 250 additional vehicle trips per day. The Project considers two MSF site options: the Paramount MSF site option and the Bellflower MSF site option. The AQMP consistency analyses for the Build Alternatives considers the MSF site options as a component of the Project, as the MSF would not function independently of the LRT corridor. Table 4.5.15 presents operational emissions associated with the MSF in 2017 and compares them to the SCAQMD mass daily air quality significance thresholds at the regional and localized levels. Daily emissions of criteria pollutants and ozone precursors would remain below applicable thresholds at both levels of analysis. Therefore, the MSF site options would result in a less than significant impact related to AQMP consistency for all Build Alternatives, and mitigation would not be required.

Table 4.5.15. MSF Daily Regional Operational Emissions

Source[1]	Measured in lbs/day					
	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Off-Site Mobile Trips	0.9	13.3	4.3	<0.1	2.9	0.8
On-Site Area Sources	3.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
On-Site Energy Consumption	< 0.1	0.4	0.5	<0.1	<0.1	<0.1
Total Regional Emissions	4.4	13.8	4.8	<0.1	2.9	0.8
SCAQMD Regional Threshold	55	550	55	150	150	55
Regional Threshold Exceeded?	No	No	No	No	No	No
Total On-Site Emissions	3.5	0.5	0.5	< 0.1	< 0.1	< 0.1
SRA 5 Localized Significance Threshold Value	—	1,480	172	—	4	2
Localized Threshold Exceeded?	—	No	No	—	No	No

Source: Metro 2021i, SCAQMD 2015
Notes: [1]As both the Bellflower and Paramount MSF site options can accommodate a fully operational MSF, it was assumed that the size of the MSF would not be constrained based on location, and facility emissions would be comparable.
lbs/day = pounds per day; SRA = Source/Receptor Areas; ROG = reactive organic gases; CO = carbon monoxide; NO_X = nitrogen oxide; SO_X = sulfur oxides; $PM_{2.5}$ = fine particulate matter of diameter less than 2.5 microns; PM_{10} = respirable particulate matter of diameter less than 10 microns

4.5.5.2 Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

The Basin is the Affected Area for evaluation of cumulative impacts for air quality. The Basin is currently designated as in nonattainment of the federal and/or state AAQS for O_3, PM_{10}, and $PM_{2.5}$. Therefore, there is an ongoing cumulative impact associated with these air pollutants. The potential for the Project to contribute to a permanent cumulative impact is assessed through consistency with air quality plans. The SCAQMD has promulgated guidance related to cumulative emissions, stating that if daily emissions associated with implementation of a project do not exceed any applicable regional or localized threshold values, those emissions would not be considered cumulatively significant. Daily air pollutant emissions that would be generated by the No Project Alternative and each of the Build Alternatives and design options are evaluated in the context of the SCAQMD Air Quality Significance Thresholds.

No Project Alternative

As previously described in Section 4.5.5.1 under the No Project Alternative, the project alignment and components would not be developed and the associated LRT corridor would remain unchanged. No new sources of air pollutant emissions would be introduced to the Affected Area for air that could contribute to a cumulatively considerable increase in emissions of pollutants for which the region is designated in nonattainment. The No Project Alternative would not result in regional air quality impacts related to cumulatively considerable increases in nonattainment pollutant emissions, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

As discussed in Section 4.5.5.1, the Project is listed in the region's currently conforming 2020-2045 RTP/SCS. Furthermore, as shown in Table 4.5.10, Alternative 1 would not result in an incremental increase in daily emissions that would exceed any applicable SCAQMD threshold. Permanent emissions associated with Alternative 1 emissions would not be cumulatively considerable; this impact would be less than significant; and mitigation would not be required.

Alternative 2: 7th Street/Metro Center to Pioneer Station

As shown in Table 4.5.11, Alternative 2 would not result in an incremental increase in daily emissions that would exceed any applicable SCAQMD threshold. The Project is also listed in the region's currently conforming 2020-2045 RTP/SCS. Therefore, Alternative 2 would not contribute to a cumulatively considerable impact, and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

As shown in Table 4.5.12, Alternative 3 would not result in an incremental increase in daily emissions that would exceed any applicable SCAQMD threshold. The Project is also listed in the region's currently conforming 2020-2045 RTP/SCS. Therefore, Alternative 3 would not contribute to a cumulatively considerable impact, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

As shown in Table 4.5.13, Alternative 4 would not result in an incremental increase in daily emissions that would exceed any applicable SCAQMD threshold. The Project is also listed in the region's currently conforming 2020-2045 RTP/SCS. Therefore, Alternative 4 would not contribute to a cumulatively considerable impact, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: As shown in Table 4.5.14, Design Options 1 and 2 would not result in an incremental increase in daily emissions that would exceed any applicable SCAQMD threshold. The Project is also listed in the region's currently conforming 2016-2040 RTP/SCS. Therefore, Design Options 1 and 2 would not contribute to a cumulatively considerable impact, and mitigation would not be required.

Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option: The MSF site options are considered a component in the Build Alternatives assessment of the potential for a cumulatively considerable net increase in criteria pollutant emissions analysis. Based on the assessment for each Build Alternative and the emissions presented in Table 4.5.15, the MSF, at either site option, would not contribute to a cumulatively considerable impact, and mitigation would not be required.

4.5.5.3 Would the Project expose sensitive receptors to substantial pollutant concentrations?

No Project Alternative

Under the No Project Alternative, the project alignment and components would not be developed, and the associated LRT corridor would remain unchanged. No new sources of air pollutant emissions would be introduced to the Affected Area for air that could expose

sensitive receptors to substantial pollutant concentrations. The No Project Alternative would not result in regional air quality impacts related to the exposure of sensitive receptors to substantial pollutant concentrations, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Alternative 1 would not introduce a new land use development that would constitute a substantial direct source of air pollutant emissions to the Affected Area for air during operation. Permanent sources of operational emissions associated with Alternative 1 would include LRT operations and maintenance activities at the MSF. The MSF, located at either site option, would constitute the only permanent, stationary source of direct emissions associated with Alternative 1. No direct source of air pollutant emissions along the Alternative 1 alignment would occur as the LRVs are powered by electrical propulsion. Operation of Alternative 1 would not have the potential to expose sensitive receptors to substantial pollutant concentrations; impacts would be less than significant; and mitigation would not be required.

Alternative 2: 7th Street/Metro Center to Pioneer Station

Similar to Alternative 1, Alternative 2 would not introduce a substantial direct source of air pollutant emissions and no direct source of air pollutant emissions along the alignment would occur. LRT operations and MSF maintenance activities would be the only permanent sources of operational emissions. Therefore, Alternative 2 would not have the potential to expose sensitive receptors to substantial pollutant concentrations; impacts would be less than significant; and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Similar to Alternatives 1 and 2, Alternative 3 would not introduce a substantial direct source of air pollutant emissions and no direct source of air pollutant emissions along the alignment would occur. LRT operations and MSF maintenance activities would be the only permanent sources of operational emissions. Therefore, Alternative 3 would not have the potential to expose sensitive receptors to substantial pollutant concentrations; impacts would be less than significant; and mitigation would not be required

Alternative 4: I-105/C (Green) Line to Pioneer Station

Similar to Alternatives 1, 2, and 3, Alternative 4 would not introduce a substantial direct source of air pollutant emissions and no direct source of air pollutant emissions along the alignment would occur. LRT operations and MSF maintenance activities would be the only permanent sources of operational emissions. Therefore, Alternative 4 would not have the potential to expose sensitive receptors to substantial pollutant concentrations; impacts would be less than significant; and mitigation would not be required

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Similar to the Build Alternatives, Design Options 1 and 2 would not introduce a substantial direct source of air pollutant emissions, and permanent sources of operational emissions include LRT operations and MSF maintenance activities. Therefore, Design Options 1 and 2 would not have the potential to expose sensitive receptors to substantial pollutant concentrations; impacts would be less than significant; and mitigation would not be required

Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option: Operation of either the Paramount MSF site option or the Bellflower MSF site option would not constitute a substantial source of pollutant emissions within the Affected Area for air. Primary emissions sources on the MSF site during operation would be consumer product use (e.g., solvents and cleaners) and ancillary activities (i.e., landscaping and building upkeep). Table 4.5.15 presents the operational emissions that would be generated by the MSF regardless of location and compares the localized emissions to the applicable SCAQMD Localized Significance Threshold values for SRA 5, Southeast Los Angeles County. On-site operational emissions would be approximately 3.5 pounds per day of volatile organic compounds, less than 0.5 pound per day of CO and NO_X, and less than 0.1 pound per day of SO_X, PM_{10}, and $PM_{2.5}$. Emissions would remain substantially below the applicable SCAQMD Localized Significance Threshold values for SRA 5. Operation of the MSF would not have the potential to expose sensitive receptors to substantial pollutant concentrations; impacts would be less than significant; and mitigation would not be required.

4.5.5.4 Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

No Project Alternative

Under the No Project Alternative, the project alignment and components would not be developed, and the associated LRT corridor would remain unchanged. No new sources of air pollutant emissions would be introduced to the Affected Area for air that could expose sensitive receptors to substantial pollutant concentrations. The No Project Alternative would have no impact on regional air quality related to public nuisance, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Alternative 1 would not generate a substantial source of operational odors. Land uses and industrial operations commonly associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. Any unpleasant odors from transit operations would be subject to management under the odor complaint tracking system mandated by SCAQMD Rule 402 (Nuisance), which prevents nuisance odor conditions. As a result, Alternative 1 would have a minor, if any, impact with respect to odors. Therefore, Alternative 1 would result in a less than significant impact related to operational odors.

Alternative 1 would not introduce a new substantial source of dust emissions to the Affected Area for air. As shown in Table 4.5.3, the Existing + Alternative 1 scenario (if operational in 2017) would reduce daily VMT by 216,100, which would reduce regional mobile source emissions associated with both vehicle exhaust and re-entrained dust on the roadways. By 2042, Alternative 1 would reduce daily VMT by approximately 391,500 compared to the No Project Alternative. As such, Alternative 1 would decrease road dust emissions in direct correlation with VMT. Therefore, Alternative 1 would result in a less than significant impact related to operational odors and dust, and mitigation would not be required.

Alternative 2: 7th Street/Metro Center to Pioneer Station

Similar to Alternative 1, any unpleasant odors from transit operations would be subject to management under the odor complaint tracking system mandated by SCAQMD Rule 402

(Nuisance). Therefore, Alternative 2 would have a minor, if any, impact with respect to odors, and impacts would be less than significant.

As shown in Table 4.5.3, the Existing + Alternative 2 scenario (if operational in 2017) would reduce daily VMT by 215,000. By 2042, the daily VMT reduction with implementation of Alternative 2 would be 377,400 relative to the No Project Alternative. As such, Alternative 2 would decrease road dust emissions in direct correlation with VMT; impacts related to operational odors and dust would be less than significant; and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Similar to Alternatives 1 and 2, any unpleasant odors from transit operations would be subject to management under the odor complaint tracking system mandated by SCAQMD Rule 402 (Nuisance). Therefore, Alternative 3 would have a minor, if any, impact with respect to odors, and impacts would be less than significant.

As shown in Table 4.5.3, the Existing + Alternative 3 scenario (if operational in 2017) would reduce daily VMT by 71,800. By 2042, the daily VMT reduction with implementation of Alternative 3 would be 130,900 relative to the No Project Alternative. As such, Alternative 3 would decrease road dust emissions in direct correlation with VMT; impacts related to operational odors and dust would be less than significant; and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Similar to the Alternatives 1, 2, and 3, any unpleasant odors from transit operations would be subject to management under the odor complaint tracking system mandated by SCAQMD Rule 402 (Nuisance). Therefore, Alternative 4 would have a minor, if any, impact with respect to odors, and impacts would be less than significant impact.

As shown in Table 4.5.3, the Existing + Alternative 4 scenario (if operational in 2017) would reduce daily VMT by 36,300. By 2042, the daily VMT reduction with implementation of Alternative 4 would be 70,800 relative to the No Project Alternative. As such, Alternative 4 would decrease road dust emissions in direct correlation with VMT; impacts related to operational odors and dust would be less than significant; and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD: Any unpleasant odors from transit operations would be subject to management under the odor complaint tracking system mandated by SCAQMD Rule 402 (Nuisance). Therefore, Design Option 1 would have a minor, if any, impact with respect to odors, and impacts would be less than significant.

As shown in Table 4.5.3, the Existing + Design Option 1 scenario (if operational in 2017) would reduce daily VMT by 236,300. By 2042, the daily VMT reduction with implementation of Design Option 1 would be 437,800 relative to the No Project Alternative. As such, Design Option 1 would decrease road dust emissions in direct correlation with VMT; impacts related to operational odors and dust would be less than significant; and mitigation would not be required.

Design Option 2: Add Little Tokyo Station: Any unpleasant odors from transit operations would be subject to management under the odor complaint tracking system mandated by SCAQMD Rule 402 (Nuisance). Therefore, Design Option 2 would have a minor, if any, impact with respect to odors, and impacts would be less than significant impact.

As shown in Table 4.5.3, the Existing + Design Option 2 scenario (if operational in 2017) would reduce daily VMT by 218,500. By 2042, the daily VMT reduction with implementation of Design Option 2 would be 398,400 relative to the No Project Alternative. As such, Design Option 2 would decrease road dust emissions in direct correlation with VMT; impacts related to operational odors and dust would be less than significant; and mitigation would not be required.

Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option: Operation of an MSF would not generate a substantial source of operational odors. Operational activities at the MSF would include the use of common household cleaners that generate localized odors that are not anticipated to be detectable beyond the MSF property line. Therefore, the MSF site options would result in a less than significant impact related to operational odors.

Operation of the MSF would not introduce a new substantial source of dust emissions to the Affected Area for air. Primary sources of operational emissions at the MSF include mobile vehicle trips to and from the site, as well as area source emissions from consumer products and ancillary activities such as landscaping. The MSF property would be paved and would not involve large aggregate storage piles or other sources of fugitive dust emissions. Operation of the MSF would be subject to adherence to the SCAQMD rules controlling fugitive dust emissions (Rule 401 Visible Emissions, Rule 402 Nuisance, and Rule 403 Fugitive Dust). As no sources of fugitive dust emissions would be present on the MSF site, operation of the MSF would result in a less than significant impact related to dust emissions, and mitigation would not be required.

4.6 Greenhouse Gas Emissions

This section summarizes the existing greenhouse gas (GHG) emissions in the Affected Area and evaluates the potential adverse effects and impacts as a result of the No Build and Build Alternatives, including design options and MSF site options under consideration. Information in this section is based on the *West Santa Ana Branch Transit Corridor Project Final Greenhouse Gas Emissions Impact Analysis Report* (Metro 2021f) (Appendix K).

4.6.1 Regulatory Setting and Methodology

4.6.1.1 Regulatory Setting

No federal plans, policies, or regulations are applicable regarding GHG emissions.

State

California Green Building Standards Code (CALGreen): The California Building Standards Commission adopted the statewide mandatory CALGreen Part 11 of Title 24, CCR, requiring energy-saving measures to be applied to planning, design, operation, construction, use, and occupancy of newly constructed buildings or structures.

Assembly Bill (AB) 32: AB 32 created a comprehensive, multi-year program to reduce GHG emissions in California and required CARB to develop a scoping plan to reduce GHGs and reduce emissions to 1990 levels by 2020.

AB 1493: AB 1493 amended the Clean Car Standards (Chapter 200, Statutes of 2002) that require reductions in GHG emissions in new passenger vehicles from 2009 through 2016. The Advanced Clean Cars program extends AB 1493 for model years 2017 to 2025. This program promotes clean fuel technologies (i.e., plug-in hybrids, battery electric vehicles,

compressed natural gas vehicles, and hydrogen powered vehicles), reduces smog, and provides fuel saving costs.

SB 32: SB 32 codifies the 2030 emissions reduction goal of Executive Order (EO) B-30-15 by requiring a reduction goal of 40 percent below 1990 levels by 2030. CARB's *2017 Climate Change Scoping Plan* (2017 Scoping Plan) (CARB 2017) describes California's strategy for achieving the 2030 GHG emissions reduction target established by SB 32. The 2017 Scoping Plan also recognized the critical and complementary role of local government in achieving the state's climate goals. CARB's *Mobile Source Strategy* (CARB 2016b) describes California's strategy for containing air pollutant emissions from vehicles and quantifies growth in VMT that is compatible with achieving state climate targets.

SB 375: SB 375 reduces GHG emissions from automobiles and light trucks through integrated transportation, land use, housing, and environmental planning. Metropolitan planning organizations are also required to incorporate sustainable community strategies as an element of the regional transportation plan.

SB 743: SB 743 encourages land use and transportation planning decisions and investments that reduce VMT that contribute to GHG emissions, as required by AB 32. SB 743 requires the Office of Planning Research to develop revisions to the *CEQA Guidelines* and establish criteria to determine the significance of transportation impacts of projects within transit-priority areas.

SB 100: SB 100 establishes a state goal of 100 percent clean electricity by 2045 and advances the Renewables Portfolio Standard to 50 percent by 2025 and 60 percent by 2030.

EO S-3-05, EO B-16-12, EO B-30-2015, and EO B-55-18: EO S-3-05 established state GHG emission targets of 1990 levels by 2020 and 80 percent below 1990 levels by 2050. EO-B-16-12 specifies a GHG emissions reduction target of 80 percent below 1990 levels by 2050 specifically for transportation. EO B-30-2015 extends the goal of AB 23 and sets a GHG emission reduction goal of 40 percent below 1990 levels by 2030, addresses the need for climate adaptation, and directs the state government to undertake a number of actions. EO B-55-18 directs the state to achieve carbon neutrality no later than 2045 and to achieve and maintain net negative emissions thereafter.

Regional

SCAG 2016-2040 RTP/SCS (SCAG 2016a): The SCAG 2016-2040 RTP/SCS includes a commitment to reduce emissions from transportation sources to comply with SB 375. The 2016-2040 RTP/SCS states that the region will meet or exceed the SB 375 per capita targets, lowering regional per capita GHG emissions (below 2005 levels) by 8 percent by 2020, 18 percent by 2035, and 22 percent by 2040.

Policy on Global Warming and Stratospheric Ozone Depletion: This policy commits SCAQMD to consider global impacts in rulemaking and in drafting revisions to the AQMP. SCAQMD has yet to adopt a GHG significance threshold for land use development or transportation projects and has formed a GHG CEQA Significance Threshold Working Group to further evaluate potential GHG significance thresholds.

Metro Countywide Sustainability Planning Program: Metro has developed policies directed toward controlling GHG emissions, enhancing sustainability, and adapting to the effects of climate change, including, but not limited to, the Metro *Moving Beyond Sustainability Strategic Plan 2020* (Metro 2020f), the *Metro Countywide Sustainability Planning Policy & Implementation Plan* (Metro

2012c), the *Climate Action and Adaptation Plan* (Metro 2019e), the *Energy Conservation and Management Plan* (ECMP) (Metro 2011d), the *Green Construction Policy* (Metro 2011b), and the *Resiliency Indicator Framework Report* (Metro 2015c).

4.6.1.2 Methodology

The Affected Area for the GHG emissions analysis is the six-county geographic region under SCAG jurisdiction. Environmental impacts and consequences resulting from the generation of GHG emissions were analyzed for the No Build Alternative and Build Alternatives. In accordance with technical advisory guidance from OPR and CARB, transit projects that substantially reduce VMT qualify for streamlined environmental assessments related to GHG emissions. Operational GHG emission sources would include induced changes in on-road vehicular traffic patterns along the LRT corridor resulting from transportation mode shift reflected in roadway network VMT, GHG emissions through consumption of electricity for rail system propulsion, and sources associated with MSF operations such as employee and service vehicle trips and energy consumption. GHG emissions associated with operation of the Build Alternatives were quantified using CalEEMod Version 2016.3.2 and the EMFAC2017 mobile source emissions model.

Regional On-Road Vehicle Miles Traveled

According to CARB, transportation sources are responsible for approximately half of statewide GHG emissions. GHG emissions are released through the exhaust of combusted engine fuel when vehicles travel along the roadway network. Table 4.6.1 presents the annual roadway network VMT for Existing Conditions and the Build Alternatives in 2017 in millions of miles per year and the annual roadway network VMT for the No Build Alternative and the Build Alternatives in 2042. The CARB EMFAC2017 mobile source emissions model was used to estimate VMT emissions.

Table 4.6.1. Affected Area Annual Vehicle Miles Traveled (in Millions) – 2017 and 2042

Scenario	2017 Existing Annual Total[1]	2017 vs. Existing Condition[2]		2042 No Build Alternative Annual Total[3]	2042 vs. No Build Alternative[4]	
		Change	%		Change	%
No Build Alternative	—	—	—	210,396	—	—
Existing 2017	160,746	—	—	—	—	—
Alternative 1	160,671	(75)	(0.047%)	210,261	(136)	(0.065%)
Alternative 2	160,672	(75)	(0.046%)	210,266	(131)	(0.062%)
Alternative 3	160,721	(25)	(0.016%)	210,351	(45)	(0.022%)
Alternative 4	160,734	(13)	(0.008%)	210,372	(25)	(0.012%)
Design Option 1	160,664	(82)	(0.051%)	210,245	(152)	(0.072%)
Design Option 2	160,670	(76)	(0.047%)	210,258	(138)	(0.066%)

Source: Prepared for Metro in 2020
Notes: VMTs presented are rounded to the nearest million; mph = miles per hour; VMT = vehicle miles traveled; ( ) = decrease; "—" = not applicable
[1] "2017 Existing Annual Total" evaluates "Existing 2017 + Build Alternative)
[2] "2017 vs. Existing Condition": Difference between the Build Alternative and 2017 Existing Scenario
[3] "2042 No Build Alternative Annual Total" evaluates the Build Alternative in year 2042
[4] "2042 vs. No Build Alternative": Difference between the 2042 Build Alternative and No Build Alternative

Rail System Propulsion

Implementation of the Project would generate indirect GHG emissions through the consumption of electricity required for rail propulsion throughout the LRT corridor. Under Existing Conditions and the No Build Alternative, there would be no additional LRT system revenue service miles. Revenue service miles refer to total miles traveled by transit service vehicles while in revenue service. Metro has published systemwide LRT energy use based on revenue miles in its *2018 Energy and Resource Report* (Metro 2019a) that were used to estimate GHG emissions associated with LRV propulsion. Table 4.6.2 presents the annual LRV revenue miles accounted for in the operational GHG emissions analysis for each of the Build Alternatives and Alternative 1 with the design options. The annual LRV revenue miles are specific to each Build Alternative and represent train miles traveled only for the identified Build Alternative. The values presented account for a 5 percent buffer corresponding to non-revenue miles that would occur during out-of-service hours.

Table 4.6.2. Annual Light Rail Vehicle Revenue Miles – Build Alternatives

Build Alternatives and Design Options	Annual LRV Revenue Miles[1]
Alternative 1	2,109,200
Alternative 2	2,120,400
Alternative 3	1,604,300
Alternative 4	706,800
Design Option 1	2,109,200
Design Option 2	2,109,200

Source: Metro 2021f
Notes: LRV = light rail vehicle
[1] Rounded to nearest hundred.

Maintenance and Storage Facility Operations

Operation of an MSF would result in GHG emissions associated with vehicle trips to and from the facilities, electricity and natural gas usage, water and wastewater conveyance, and solid waste disposal. These emissions were quantified using the CalEEMod Version 2016.3.2 (California Air Pollution Control Officers Association 2016). Sources of emissions related to MSF operation are accounted for in the analysis of each of the alternatives and are shown in the corresponding emissions tables under each impact criterion. The MSF is a critical component of the LRT project that would provide essential infrastructure and services to Metro operations; however, it would not be constructed or operated under the No Project Alternative or the No Build Alternative. Therefore, GHG emissions that would be generated by the MSF are analyzed cumulatively with the entirety of the LRT system. GHG emissions that would be generated by construction of the MSF site options were also estimated using CalEEMod and included in the GHG analysis for each of the Build Alternatives.

4.6.2 Affected Environment/Existing Conditions

The Affected Area for the GHG emissions analysis is the six-county geographic region under SCAG jurisdiction. GHG refers to a group of chemical compounds believed to affect global climate conditions. The “greenhouse effect” is a process by which certain atmospheric gases absorb energy from sunlight within the Earth’s atmosphere and prevent it from being released back into space, resulting in a warm, habitable environment on the planet’s surface.

The GHGs most prominently associated with man-made sources include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). The global warming potential (GWP) is a metric that indicates the relative climate-forcing effect of a kilogram of emissions when averaged over the period of interest. Table 4.6.3 shows 20-year and 100-year horizons used for the GWPs. To account for this higher potential, emissions of other GHGs are frequently expressed in the equivalent mass of CO_2 (CO_2e).

Table 4.6.3. Global Warming Potential for Selected Greenhouse Gases

Pollutant	Lifetime (years)	Global Warming Potential (20-Year)	Global Warming Potential (100-Year)
Carbon dioxide (CO_2)	100	1	1
Nitrous oxide (N_2O)	121	264	265
Methane (CH_4)	12	84	28

Source: Intergovernmental Panel on Climate Change 2014

Long-term and irrevocable shifts in weather, including changes in temperature, precipitation, and seasonal patterns, are referred to as climate change. According to *Global Warming Potential Values* (Intergovernmental Panel on Climate Change 2014), anticipated effects of climate change caused by GHG emissions include sea-level rise, climate-related hazards, extinction of species, species migration, reduced food production, exacerbated health problems, slower economic growth, and displacement of people. Possible effects of climate change along the California Coast include:

- Sea-level rise that threatens coastal wetlands, infrastructure, and property
- Increased storm activity, together with sea-level rise, that increase beach erosion and cliff undercutting
- Warmer temperatures and more frequent storms due to El Niño that bring more rain instead of snow to the Sierra Nevada Mountains, reducing supply of water for summer needs
- Decreased summer runoff and warming ocean temperatures that affect salinity, water circulation, and nutrients in the Pacific Ocean, possibly leading to complex changes in marine life

The majority of California GHG emissions are from automobile exhaust associated with the transportation sector, including public and private vehicles. As shown in Table 4.6.4, transportation emissions declined from 182 million metric tons of CO_2e ($MMTCO_2e$) to 174 $MMTCO_2e$ between 2008 and 2017. Between October 2015 and February 2016, an exceptional natural gas leak event occurred at the Aliso Canyon natural gas storage facility that resulted in unexpected GHG emissions of considerable magnitude. The exceptional incident released approximately 109,000 metric tons of methane, which equated to approximately 1.96 $MMTCO_2e$ of unanticipated emissions in 2015 and an additional 0.52 $MMTCO_2e$ in 2016 (CARB 2016). 2017 is the most recent CARB GHG inventory year available.

Table 4.6.4. California GHG Emissions Inventory

Sector	Annual $MMTCO_2e$ Emissions									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Transportation	182	175	170	167	166	166	167	171	173	174
Industrial	100	98	102	101	102	104	105	103	101	101
Electric power	121	102	91	88	96	90	89	84	68	63
Commercial and residential	49	50	52	54	52	54	48	50	52	53
Agriculture	35	33	34	34	35	34	35	34	34	32
High global warming potential	12	12	14	15	15	17	18	19	19	20
Recycling and waste	8	8	8	8	8	9	9	9	9	9
Emissions total	**507**	**478**	**471**	**467**	**474**	**474**	**471**	**470**	**456**	**452**

Source: CARB 2019
Notes: The emission total may slightly vary within the years due to rounding of the CARB emissions inventory.
GHG = greenhouse gas; $MMTCO_2e$ = million metric tons of CO_2e

The occurrence of unexpected incidents such as the Aliso Canyon natural gas leak and the exacerbated severity of drought and wildfires throughout the state are impossible to predict and present additional challenges in reducing statewide GHG emissions. While the GHG emissions produced by these atypical circumstances are not included in the state routine inventory emissions, ultimately California must account for and mitigate the emissions to achieve its climate goals.

Based on SCAG's estimated regional transportation GHG emissions presented in the 2016-2040 RTP/SCS, approximately 185,519 tons per day of regional transportation-related CO_2 emissions would occur in 2040. Los Angeles County, the largest county in the SCAG region, represents 78,831 tons per day of transportation emissions (50 percent of the regional transportation total).

The single largest contributor to Metro GHG emissions is the directly operated bus fleet that accounts for approximately 57 percent of Metro transportation and transit emissions that total 432,000 $MTCO_2e$ in 2017 (Metro 2020f). However, the Metro transit network offsets considerably more emissions than it generates. In 2017, Metro's net GHG emissions benefit was approximately 580,000 $MTCO_2e$ due to displacement of on-road vehicle trips and land use benefits. New fleet technologies powered by renewable energy and reduced building energy usage can reduce Metro's emissions over the long term. Through implementation of the *Climate Action and Adaptation Plan* (Metro 2019e), Metro is committed to reducing systemwide GHG emissions by 79 percent by 2030 relative to the 2017 baseline.

4.6.3 Environmental Consequences/Environmental Impacts

4.6.3.1 No Build Alternative

Under the No Build Alternative, projects identified in the 2016-2040 RTP/SCS, Metro's 2009 LRTP, and Measure M, as well as local projects, would continue to be built. The No Build Alternative excludes the facilities and infrastructure of the Build Alternatives that would increase GHG emissions. The No Build Alternative would not reduce regional GHG emissions to the same degree as the Build Alternatives. The reduction in regional GHG emissions under the No Build Alternative is attributed to improvements in fuel and engine technologies mandated by regulatory programs that are built into the emissions modeling software. Under NEPA, the No Build Alternative would not result in an adverse effect related to GHG emissions.

4.6.3.2 Alternative 1: Los Angeles Union Station to Pioneer Station

The regional emission analysis shown in Table 4.6.5 includes construction emissions, which are recommended by the SCAQMD to be averaged over 30 years and added to operational emissions. With the exception of the MSF, Alternative 1 does not include a direct source of emissions; however, indirect GHG emissions would be generated through energy use (i.e., LRT propulsion, lighting and accessory equipment at station platforms, and MSF operations). As shown in Table 4.6.1, implementation of Alternative 1 would result in a reduction of approximately 136 million annual VMT compared to the No Build Alternative for 2042. Displacing on-road VMT through public transit is fundamental to improving regional transportation and reducing GHG emissions from transportation sources. As shown in Table 4.6.5, Alternative 1 would reduce regional emissions by 34,824 metric tons of CO_2e ($MTCO_2e$) annually (0.061 percent decrease) relative to the No Build Alternative. The MSF emissions presented in Table 4.6.5correspond to the Paramount site option, as the preliminary design for this site option has slightly more building area than the Bellflower site option, and therefore would have marginally higher emissions associated with building energy use. Under NEPA, Alternative 1 would not result in an adverse effect related to GHG emissions.

4.6.3.3 Alternative 2: 7th Street/Metro Center to Pioneer Station

Similar to Alternative 1, Alternative 2 does not include a direct source of emissions, with the exception of the MSF, and indirect GHG emissions would be generated through energy use. As shown in Table 4.6.1, implementation of Alternative 2 would result in a reduction of approximately 131 million annual VMT compared to the No Build Alternative for 2042. As shown in Table 4.6.5, Alternative 2 would reduce regional emissions by 27,234 $MTCO_2e$ annually (0.048 percent decrease) relative to the No Build Alternative. The change in annual operational GHG emissions relative to the No Build Alternative is attributed to increased Metro ridership and enhanced circulation patterns. Under NEPA, Alternative 2 would not result in an adverse effect related to GHG emissions.

4.6.3.4 Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Alternative 3 would have a shorter alignment than Alternatives 1 and 2, which would result in less VMT reduction. Alternative 3 would also require less energy to operate the LRT and stations as the shorter track length and reduced number of stations would consume less electricity for propulsion, lighting, and other end uses. As shown in Table 4.6.1, implementation of Alternative 3 would result in a reduction of approximately 45 million annual VMT compared to the No Build Alternative for 2042. Table 4.6.5 shows that Alternative 3 would reduce regional GHG emissions by approximately 1,681 $MTCO_2e$ annually (0.003 percent decrease) relative to the No Build Alternative. This decrease in emissions represents a nominal to no change from the No Build Alternative. Under NEPA, Alternative 3 would not result in an adverse effect related to GHG emissions.

4.6.3.5 Alternative 4: I-105/C (Green) Line to Pioneer Station

Alternative 4 would have a shorter alignment than Alternatives 1, 2, and 3, which would result in less VMT reduction from the No Build Alternative but would also require less energy to operate the shorter LRT and fewer stations. As shown in Table 4.6.1, implementation of Alternative 4 would result in a reduction of approximately 25 million annual VMT compared to the No Build Alternative for 2042. Table 4.6.5 shows that Alternative 4 would reduce regional emissions by approximately 4,916 $MTCO_2e$ annually (0.008 percent decrease) relative to the No Build Alternative. Under NEPA, Alternative 4 would not result in an adverse effect related to GHG emissions.

Table 4.6.5. Operational GHG Emissions

Emissions Source	Annual Greenhouse Gas Emissions ($MTCO_2e$/year)							
	Existing 2017	No Build Alternative 2042	Alternative 1 2042	Alternative 2 2042	Alternative 3 2042	Alternative 4 2042	Design Option 1 2042	Design Option 2 2042
Regional On-Road VMT	66,199,911	57,179,713	57,133,472	57,140,967	57,168,737	57,168,568	57,129,472	57,132,225
LRT Propulsion/Station/Parking Energy	–	–	8,179	8,213	6,633	3,885	8,179	8,179
MSF Operations[1]	–	–	1,834	1,834	1,834	1,834	1,834	1,834
Amortized Construction[2]	–	–	1,404	1,466	828	511	1,446	1,483
Total Emissions	66,199,911	57,179,713	57,144,889	57,152,480	57,178,032	57,174,798	57,140,931	57,143,721
Change from No Build Alternative	–	–	(34,824)	(27,234)	(1,681)	(4,916)	(38,783)	(35,992)
Percent Change from No Build Alternative	–	–	(0.061%)	(0.048%)	(0.003%)	(0.008%)	(0.068%)	(0.063%)

Source: Metro 2021f

Notes: [1]The MSF operations emissions represent annual Paramount MSF site option emissions, excluding amortized construction, which are accounted for as part of total project construction. [2]Construction emissions are analyzed in Section 4.19, Construction Impacts, and associated emissions are presented in Table 4.18-3. SCAQMD guidance states that amortized construction emissions over 30 years should be considered as part of operational emissions due to the cumulative nature of GHG emissions' environmental influence (SCAQMD 2008).

GHG = greenhouse gas; LRT = light rail transit; MSF = maintenance and storage facility; $MTCO_2e$ = million metric tons of CO_2e; VMT = vehicle miles traveled

4.6.3.6 Design Options—Alternative 1

Table 4.6.5 shows the GHG emissions for Design Options 1 and 2 in comparison with the No Build Alternative and Alternative 1.

Design Option 1: LAUS at MWD: Implementation of Design Option 1 would result in similar LRT/station GHG emissions as Alternative 1. As shown in Table 4.6.1, the overall reduction in annual VMT would be approximately 152 million miles relative to the No Build Alternative for 2042, which would represent an additional decrease of 16 million VMT than Alternative 1. As shown in Table 4.6.5, Design Option 1 would reduce regional emissions by 38,783 MTCO2e annually (0.068 percent decrease). Under NEPA, Design Option 1 would not result in an adverse effect related to GHG emissions.

Design Option 2: Add Little Tokyo Station: Implementation of Design Option 2 would result in similar LRT/station GHG emissions as Alternative 1. As shown in Table 4.6.1, the overall reduction in annual on-road VMT would be approximately 138 million miles relative to the No Build Alternative for 2042, which would represent an additional decrease of approximately 2 million more VMT than Alternative 1. As shown in Table 4.6.5, Design Option 2 would reduce regional emissions by 35,992 $MTCO_2e$ annually (0.063 percent decrease). Under NEPA, Design Option 2 would not result in an adverse effect related to GHG emissions.

4.6.3.7 Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option

The Paramount and Bellflower MSF site options would result in the consumption of fuels and electricity from the operation of facility equipment and vehicle trips to and from the site. As the MSF site option is an essential component of the Build Alternatives, MSF energy consumption and associated emissions are accounted for in the overall analysis of each of the Build Alternatives. Independently, it is estimated that the Paramount MSF site option would generate approximately 1,998 $MTCO_2e$ per year, including approximately 165 $MTCO_2e$ of amortized construction emissions as discussed in detail in Section 4.19, Construction Impacts. The Bellflower MSF site option would generate approximately 1,885 $MTCO_2e$ per year, including approximately 165 $MTCO_2e$ of amortized construction emissions. The MSF site options would comply with mandatory Title 24 and CALGreen Building Code requirements and would achieve a minimum Silver rating from the Leadership in Energy and Environmental Design (LEED) certification, as specified in the ECMP. The MSF site options would contribute to a net GHG emissions reduction compared to the No Build Alternative by contributing to implementation of the LRT and the associated VMT reductions. Under NEPA, the Paramount and Bellflower MSF site options would not result in an adverse effect related to GHG emissions.

4.6.4 Project Measures and Mitigation Measures

No project or mitigation measures are required for Alternatives 1, 2, 3, and 4.

4.6.5 California Environmental Quality Act Determination

To satisfy CEQA requirements, impacts related to GHG emissions are analyzed in accordance with Appendix G of the *CEQA Guidelines*, discussed in this section. The state *CEQA Guidelines* recommend that the significance criteria established by the applicable air quality management district or air pollution control district be relied upon to make

determinations of significant effect on the environment. Although SCAQMD has a regulatory role in the South Coast Air Basin, it has not adopted or proposed any quantitative thresholds that would be applicable to the proposed LRT corridor. Neither CARB, OPR, SCAQMD, nor Metro have officially promulgated specific thresholds for analyzing GHG emissions under CEQA. CARB and OPR acknowledge that transforming public transit systems and reducing VMT is an effective climate adaptation strategy. OPR recommends the streamlining of GHG emissions impacts analyses for transit and active transportation projects because these projects reduce GHG emissions, increase multimodal transportation networks, and facilitate mixed-use development, which are crucial land use planning initiatives for climate adaptation. As such, project GHG emissions are assessed in the context of the existing GHG emissions inventory, the Metro systemwide GHG emissions displacement, and climate adaptation plans and policies.

4.6.5.1 Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

No Project Alternative

The No Project Alternative would not involve operation of any project-related facilities or infrastructure and would not introduce any new direct or indirect sources of GHG emissions into the region. Under the No Project Alternative, the Build Alternatives would not be constructed and the existing Metro LRT network would remain unchanged. Existing on-road VMT would not be reduced throughout the project corridor; energy consumption used to power the Metro LRT system would not increase; and sources of GHG emissions involved in MSF operations would not be present.

Climate change is a significant issue on multiple geographic levels, including regionally and statewide, and ongoing efforts to reduce emissions both locally and regionally would remain in place. Numerous GHG reduction plans and policies have been developed by local, regional, state, and national authorities to reduce emissions. These are discussed in Section 4.6.1 and Section 3 of the Greenhouse Gas Emissions Impact Analysis Report (Appendix K). The No Project Alternative would neither contribute to nor interfere with ongoing endeavors to achieve the GHG emission reduction targets. Additionally, the No Project Alternative includes a wide range of transit projects designed to reduce VMT and regionally significant climate change effects. These projects are accounted for in the approved and adopted SCAG 2016–2040 RTP/SCS, the CARB Climate Change Scoping Plan, and other regional and state GHG reduction plans. Therefore, impacts would be less than significant, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Implementation of Alternative 1 would generate direct GHG emissions through operations at the MSF and indirect GHG emissions would be generated through energy use (i.e., LRT propulsion, lighting and accessory equipment at station platforms, and MSF operations). GHG emissions from on-road motor vehicles would also be substantially affected through induced mode shift emissions displacement. The *2017 Climate Change Scoping Plan* (CARB 2017) identifies that the transportation sector has three major means of reducing GHG emissions: increasing vehicle efficiency, reducing fuel carbon content, and reducing VMT. CARB acknowledges that employing VMT as the metric of transportation impact statewide will help GHG reductions planned under SB 375 will be achieved. Furthermore, CARB determined it would not be possible to achieve the state's 2030 and post-2030 emissions goals

without reducing VMT growth, and Metro identifies VMT reduction as the primary contributor to GHG emissions displacement. As shown in Table 4.6.1, Alternative 1 (if operational in 2017) would result in a reduction of approximately 75 million annual VMT compared to the Existing (No Project) Conditions, further contributing to the Metro public transit system mode shift that in 2017 displaced approximately 431,009 $MTCO_2e$ annually and achieved a net reduction of 40,758 $MTCO_2e$ (Metro 2019a). Alternative 1 would result in a reduction of approximately 136 million annual VMT in 2042 compared to the No Build Alternative (Table 4.6.1), and the GHG emissions impact would be less than significant in accordance with OPR and CARB guidance.

As demonstrated by the analysis in Table 4.6.5, implementation of Alternative 1 would reduce regional emissions by 34,824 $MTCO_2e$ annually (0.061 percent decrease) in 2042. Implementation of Alternative 1 would enhance regional transportation planning efforts to reduce VMT and GHG emissions from transportation sources. Alternative 1 is consistent with the objectives of OPR and CARB plans and policies to reduce GHG emissions from passenger vehicles by providing alternative transportation modes for both local and regional trips. Therefore, Alternative 1 would result in a less than significant impact related to the generation of GHG emissions, and mitigation would not be required.

Alternative 2: 7th Street/Metro Center to Pioneer Station

Similar to Alternative 1, with the exception of the MSF, Alternative 2 does not include a direct source of emissions and indirect GHG emissions would be generated through energy use. Induced transportation mode shift would displace GHG emissions from on-road vehicle trips that would not occur with implementation of Alternative 2. As shown in Table 4.6.1, Alternative 2 (if operational in 2017) would result in a reduction of approximately 75 million annual VMT compared to the Existing (No Project) Conditions. Implementation of Alternative 2 would reduce annual VMT in 2042 by approximately 131 million compared to the No Build Alternative (Table 4.6.1), and the GHG emissions impact would be less than significant in accordance with OPR and CARB guidance.

As demonstrated by the analysis summarized in Table 4.6.5, Alternative 2 would decrease regional emissions by 27,234 $MTCO_2e$ annually (0.05 percent decrease) in 2042. Implementation of Alternative 2 would enhance regional transportation planning efforts to reduce VMT and GHG emissions from transportation sources and is consistent with the objectives of OPR and CARB plans and policies. Therefore, Alternative 2 would result in a less than significant impact related to the generation of GHG emissions, and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Similar to Alternative 1, with the exception of the MSF, Alternative 3 does not include a direct source of emissions and indirect GHG emissions would be generated through energy use. Alternative 3 would have a shorter alignment than Alternatives 1 and 2, would result in less VMT reduction from the No Build Alternative, and would also require less energy to operate the LRT and stations. Induced transportation mode shift would also displace GHG emissions from on-road vehicle trips that would not occur with implementation of Alternative 3.

As shown in Table 4.6.1, Alternative 3, if operational in 2017 or 2042, would result in a reduction of annual VMT compared to the conditions without the Project under those same timeframes. Therefore, the GHG emissions impact would be less than significant in accordance with OPR and CARB guidance.

As demonstrated by the analysis in Table 4.6.5, Alternative 3 would reduce regional emissions by approximately 1,681 $MTCO_2e$ annually (0.003 percent decrease) in 2042. Implementation of Alternative 3 would enhance regional transportation planning efforts to reduce VMT and GHG emissions from transportation sources and is consistent with the objectives of OPR and CARB plans and policies. Therefore, Alternative 3 would result in a less than significant impact related to the generation of GHG emissions, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Similar to Alternative 1, with the exception of the MSF, Alternative 4 does not include a direct source of emissions and indirect GHG emissions would be generated through energy use. Alternative 4 would have a shorter alignment than Alternatives 1, 2, and 3; would result in less VMT reduction from the No Build Alternative; and would require less energy to operate the LRT and stations. Induced transportation mode shift would also displace GHG emissions from on-road vehicle trips that would not occur with implementation of Alternative 4. As shown in Table 4.6.1, Alternative 4, if operational in 2017 or 2042, would result in a reduction of annual VMT compared to the conditions without the Project under those same timeframes. Therefore, GHG emissions impact would be less than significant in accordance with OPR and CARB guidance.

As demonstrated by the analysis in Table 4.6.5, Alternative 4 would reduce regional emissions by 4,916 $MTCO_2e$ annually (0.009 percent decrease). Implementation of Alternative 4 would enhance regional transportation planning efforts to reduce VMT and GHG emissions from transportation sources and is consistent with the objectives of OPR and CARB plans and policies. Therefore, Alternative 4 would result in a less than significant impact related to the generation of GHG emissions, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD: Similar to Alternative 1, with the exception of the MSF, Design Option 1 does not include a direct source of emissions and indirect GHG emissions would be generated through typical LRT and station energy use. Induced transportation mode shift would also displace GHG emissions from on-road vehicle trips that would not occur with implementation of Design Option 1. As shown in Table 4.6.1, Design Option 1 (if operational in 2017) would result in a reduction of approximately 82 million annual VMT compared to the Existing (No Project) Conditions, further contributing to the Metro public transit system mode shift that in 2017 displaced approximately 431,009 $MTCO_2e$ annually and achieved a net reduction of 40,758 $MTCO_2e$ (Metro 2019a). Design Option 1 would result in a reduction of approximately 152 million annual VMT in 2042 compared to the No Build Alternative (Table 4.6.1), and the GHG emissions impact would be less than significant in accordance with OPR and CARB guidance.

As demonstrated by the analysis in Table 4.6.5, Design Option 1 would reduce regional emissions by 38,783 $MTCO_2e$ annually (0.068 percent decrease). Implementation of Design Option 1 would enhance regional transportation planning efforts to reduce VMT and GHG

emissions from transportation sources and is consistent with the objectives of OPR and CARB plans and policies. Therefore, Design Option 1 would result in a less than significant impact related to the generation of GHG emissions, and mitigation would not be required.

Design Option 2: Add Little Tokyo Station: Similar to Alternative 1, with the exception of the MSF, Design Option 2 does not include a direct source of emissions and indirect GHG emissions would be generated through typical LRT and station energy use. Induced transportation mode shift would also displace GHG emissions from on-road vehicle trips that would not occur with implementation of Design Option 2. As shown in Table 4.6.1, Design Option 2, if operational in 2017 or 2042, would result in a reduction of annual VMT compared to conditions without the Project under each timeframe. Therefore, the GHG emissions impact would be less than significant in accordance with OPR and CARB guidance.

As demonstrated by the analysis in Table 4.6.5, Design Option 2 would reduce regional emissions by 35,992 $MTCO_2e$ annually (0.063 percent decrease). Implementation of Design Option 2 would enhance regional transportation planning efforts to reduce VMT and GHG emissions from transportation sources and is consistent with the objectives of OPR and CARB plans and policies. Therefore, Design Option 2 would result in a less than significant impact related to the generation of GHG emissions, and mitigation would not be required.

Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option: The Paramount and Bellflower MSF site options would result in the consumption of fuels and electricity from the operation of facility equipment and vehicle trips to and from the site. As the MSF is a component of the Build Alternatives, energy consumption is accounted for in the overall analysis of the Build Alternatives.

It is estimated that the Paramount MSF site option would generate approximately 1,998 $MTCO_2e$ per year, which includes 165 $MTCO_2e$ of amortized construction emissions. Annual operational emissions would be approximately 1,834 $MTCO_2e$ per year, as shown in Table 4.6.5. The Bellflower MSF site option would generate approximately 1,885 $MTCO_2e$ per year, including approximately 165 $MTCO_2e$ of amortized construction emissions (Table 4.6.5). Annual operational emissions would be approximately 1,720 $MTCO_2e$ per year, which is slightly less than the Paramount MSF site option.

The MSF site options would comply with mandatory Title 24 and CALGreen Building Code requirements, would achieve a minimum LEED Silver rating, and would contribute to a net GHG emissions reduction by contributing to implementation of the LRT and the associated VMT reductions. Therefore, the MSF site options would result in a less than significant impact related to the generation of GHG emissions, and mitigation would not be required.

4.6.5.2 Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHG?

No Project Alternative

The No Project Alternative would not include the operation of any project-related facilities or infrastructure. Therefore, no significant impact would occur and mitigation is not required. The No Project Alternative would not reduce VMT and associated GHG emissions from transportation sources (Table 4.6.1).

Alternative 1: Los Angeles Union Station to Pioneer Station

No state, regional, or local GHG reduction plans promote increased passenger vehicles on the roadway network. As described Section 4.6.5.1, reducing VMT is one of the three major means of reducing GHG emissions identified in the *2017 Climate Change Scoping Plan* (CARB 2017). CARB acknowledges that employing VMT as the metric of transportation impact statewide will help GHG reductions planned under SB 375 will be achieved. Furthermore, CARB determined it would not be possible to achieve the state's 2030 and post-2030 emissions goals without reducing VMT growth. Implementation of Alternative 1 would enhance regional transportation planning efforts to reduce VMT and GHG emissions from transportation sources. Alternative 1 is consistent with the objectives of OPR and CARB plans and policies to reduce GHG emissions from passenger vehicles by providing alternative transportation modes for both local and regional trips.

As shown in Table 4.6.1, implementation of Alternative 1 would reduce annual on-road VMT by approximately 75 million VMT if operational in 2017 and would reduce annual on-road VMT by approximately 136 million in 2042. Metro identifies transportation mode shift as the primary mechanism of GHG emissions displacement, and the expansion of public transit infrastructure is an essential element of statewide and regional GHG emissions reduction strategies within long-range planning objectives. Alternative 1 would be consistent with the 2016-2040 RTP/SCS and relevant GHG reduction and conservation plans through achieving a net reduction in emissions as presented in Table 4.6.5 and enhancing the Metro transit system's net displacement of GHG emissions. Therefore, Alternative 1 would result in a less than significant impact related to GHG reduction plans, and mitigation would not be required.

Alternative 2: 7th Street/Metro Center to Pioneer Station

Similar to Alternative 1, Alternative 2 would be consistent with the 2016-2040 RTP/SCS and relevant GHG reduction and conservation plans through achieving a net reduction in emissions as presented in Table 4.6.5 and enhancing the Metro transit system's net displacement of GHG emissions. Implementation of Alternative 2 would reduce annual on-road VMT by approximately 75 million VMT (if operational in 2017) and by approximately 131 million in 2042, as shown in Table 4.6.1. Therefore, Alternative 2 would result in a less than significant impact related to GHG reduction plans, and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Similar to Alternatives 1 and 2, Alternative 3 would be consistent with the 2016-2040 RTP/SCS and relevant GHG reduction and conservation plans through achieving a net reduction in emissions as presented in Table 4.6.5 and enhancing the Metro transit system's net displacement of GHG emissions. Implementation of Alternative 3 would reduce annual on-road VMT by approximately 25 million VMT (if operational in 2017), and by approximately 45 million in 2042, as shown in Table 4.6.1. Therefore, Alternative 3 would result in a less than significant impact related to GHG reduction plans, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Similar to Alternatives 1, 2, and 3, Alternative 4 would be consistent with the 2016-2040 RTP/SCS and relevant GHG reduction and conservation plans through achieving a net reduction in emissions as analyzed in Table 4.6.5 and enhancing the Metro transit system's net displacement of GHG emissions. As shown in Table 4.6.1, implementation of Alternative 4 would reduce

annual on-road VMT by approximately 13 million VMT (if operational in 2017) and by approximately 25 million in 2042. Therefore, Alternative 4 would result in a less than significant impact related to GHG reduction plans, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Similar to Alternative 1, Design Options 1 and 2 would be consistent with the 2016-2040 RTP/SCS and relevant GHG reduction and conservation plans. Therefore, Design Options 1 and 2 would result in a less than significant impact related to GHG reduction plans, and mitigation would not be required.

Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option: The MSF site options would be designed and constructed in compliance with mandatory Title 24 and the CALGreen Building Code requirements and would achieve a minimum of a LEED Silver rating, as specified in the ECMP. The MSF is a necessary component of the Build Alternatives and would be consistent with applicable policies and plans designed to enhance sustainable development and reduce the regional GHG emissions inventory. The Paramount and Bellflower MSF site options would generate approximately 1,998 $MTCO_2e$ and 1,885 $MTCO_2e$ annually, respectively. However, the Build Alternatives would ultimately result in a substantial net reduction in regional GHG emissions. Therefore, the MSF would result in a less than significant impact related to GHG emission reduction plans, and mitigation would not be required.

4.7 Noise and Vibration

This section summarizes the existing noise and vibration environment and sensitive land uses that were used in the evaluation of the Build Alternatives, MSFs, and design options, and the potential adverse effects and impacts on these resource areas. Information in this section is based on the *West Santa Ana Branch Transit Corridor Project Final Noise and Vibration Impact Analysis Report* (Metro 2021j) (Appendix M).

The following background information is summarized from the FTA *Transit Noise and Vibration Assessment Manual* (FTA 2018). Sound is technically described in terms of the amplitude (loudness) and pitch (frequency) of the sound. Sound is transmitted as acoustic energy, which is vibration (sound waves) transmitted through various media. The standard unit of measurement for sound is the decibel (dB). The human ear is not equally sensitive to sound at all frequencies. The A-weighted scale (dBA) reflects the normal hearing sensitivity range of the human ear. Noise is generally defined as unwanted sound. The noise analysis discusses sound levels in terms of equivalent noise level (L_{eq}), day-night noise level (L_{dn}), sound exposure level (SEL), and maximum sound level (L_{max}). L_{eq} is the average noise level on an energy basis for any specific time period.

For the purposes of the operational noise impact analysis, the L_{eq} for one hour is the energy average noise level during the hour. An 8-hour L_{eq} is the energy average noise level during a time period of eight hours. The average noise level is based on the energy content (acoustic energy) of the sound. L_{eq} can be thought of as the level of a continuous noise that has the same energy content as the fluctuating noise level. The L_{eq} is expressed in units of dBA.

L_{dn} is a 24-hour L_{eq} with an adjustment to reflect the greater sensitivity of most people to nighttime noise. The adjustment is a 10-dBA penalty for all sound that occurs in the nighttime hours of 10:00 p.m. to 7:00 a.m. The effect of the penalty is that in the calculation of L_{dn}, any event that occurs during the nighttime hours is equivalent to 10 of the same events during the daytime hours. L_{max} is the maximum A-weighted sound level reached during a single noise event. However, L_{max} is not used as the descriptor for transit environmental noise impact assessment for several reasons. L_{max} ignores the number and duration of transit events, which are important to people's reaction to noise and cannot be totaled into a one-hour or a 24-hour cumulative measure of impact. For the purposes of this analysis, L_{max} was used to obtain SEL.

SEL is the cumulative noise exposure from a single noise event. The fact that SEL is a cumulative measure means that (1) louder events have greater SELs than do quieter ones, and (2) events that last longer in time have greater SELs than do shorter ones.

The degree to which noise can impact the human environment ranges from levels that interfere with speech and sleep (annoyance and nuisance) to levels that cause adverse health effects (hearing loss and psychological effects). Human response to noise is subjective and can vary greatly from person to person. Factors that influence individual response include the intensity, frequency, and pattern of noise as well as the amount of background noise present before the intruding noise and the nature of work or human activity that is exposed to the noise source. The health effects of noise-induced hearing loss are largely an occupational hazard and are not relevant to this analysis.

In addition to noise impacts, the following analysis assesses groundborne vibration (GBV) and groundborne noise (GBN). Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Some common sources of vibration are trains, buses on rough roads, and construction activities, such as blasting, pile driving, and heavy earth-moving equipment. According to the FTA, train wheels rolling on the rails create vibration energy that is transmitted through the track support system into the transit structure (FTA 2018). The vibration of the transit structure excites the adjacent ground, creating vibration waves that propagate through the ground and into nearby buildings creating GBV effects that potentially interfere with activities. The vibrating building components may radiate sound, which is known as GBN. GBN occurs when vibration radiates through a building interior and creates a low-frequency sound, often described as a rumble, as a train passes by. GBN is assessed for below-grade and underground transit operations where the wayside noise of the train is shielded from the receivers. At- or above-grade transit operations do not consider GBN since the exterior wayside noise from train pass-bys would be greater than the GBN inside a building interior.

The vibration analysis discusses vibration in terms of peak particle velocity (PPV) and root mean square (RMS) amplitude. PPV is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings and is usually measured in inches per second. The RMS amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the square root of the average of the squared amplitude of the signal. Decibel notation (VdB) is used to report RMS particle velocity.

4.7.1 Regulatory Setting and Methodology

4.7.1.1 Regulatory Setting

Federal, state, regional, and local plans and regulations have been reviewed regarding the generation and control of noise that could adversely affect population and noise-sensitive land uses. FTA, in conjunction with the Federal Highway Administration, has issued detailed regulations implementing NEPA for transit and highway projects. The regulations are codified in Part 771 of Title 23, CFR, and are titled Environmental Impact and Related Procedures.

The Project would traverse multiple local jurisdictions with distinct noise regulations, plans, and policies, which are most relevant to stationary sources (e.g., TPSSs) and the compatibility of land uses with the existing noise levels.

4.7.1.2 Methodology

The following sections summarize the methodology used for the noise and vibration analysis.

To satisfy NEPA requirements, the analysis utilized the FTA's *Transit Noise and Vibration Impact Assessment Manual* guidance for assessing operational noise and vibration associated with transit projects. Impacts are analyzed in accordance with the FTA noise and vibration impact criteria, as discussed in more detail below.

To satisfy CEQA requirements, noise and vibration impacts are analyzed in accordance with Appendix G of the *CEQA Guidelines*, identified in Section 4.7.5 of this Draft EIS/EIR.

Noise

FTA published the *Transit Noise and Vibration Assessment Manual* (FTA 2018) to provide technical guidance for conducting noise and vibration analyses for transit projects, as well as direction regarding preparation of the information for FTA's environmental documents.

Operational sources of noise include train movements, audible warnings (crossing signal bells), station public address systems, special trackwork (turnouts and crossovers), wheel squeal, ancillary facilities (TPSS and ventilation shafts), parking facilities, and MSF activity. A model was developed to estimate the project noise using SELs and calculation formulas provided in the FTA guidance document. The potential for noise impacts was analyzed using a series of steps provided in the FTA guidance, including identifying sensitive land uses, monitoring existing noise levels, estimating project noise from the source, propagating project noise to the land uses, comparing project noise to the FTA impact criteria, and identifying mitigation where necessary.

The impact criteria were determined with a sliding scale dependent on the type of land use and existing noise levels. Sensitive land uses along the alignment were categorized using the FTA Land Use Categories of 1, 2, or 3. The category definitions are as follows:

- **Category 1 (High Sensitivity)** – Buildings where quiet is an essential element of their purpose (e.g., recording studios, concert halls, and theaters)
- **Category 2 (Residential) –** Residences and buildings where people normally sleep (e.g., hospitals and hotels) and where nighttime sensitivity is assumed to be of utmost importance

- **Category 3 (Institutional)** – Institutional land uses with primarily daytime use that depend on quiet as an important part of operations (e.g., schools, libraries, and churches)

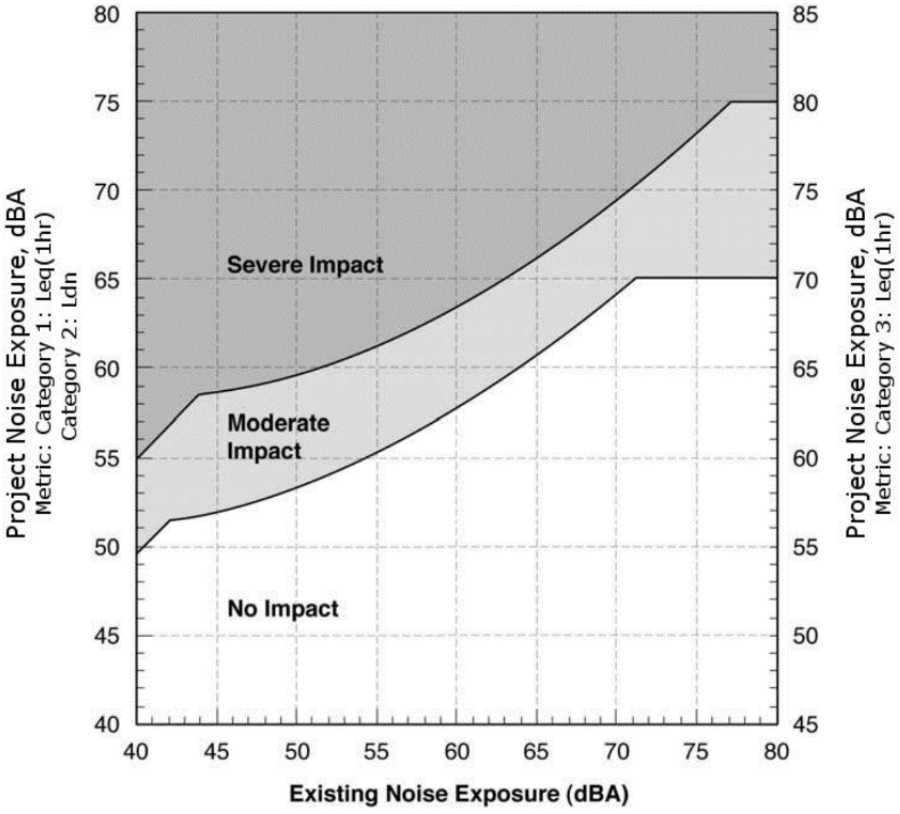
The FTA has defined three levels of impacts for sensitive uses affected by transit projects: no impact, moderate impact, or severe impact. A description of each impact level is provided in Table 4.7.1. The following three impact levels are also illustrated in Figure 4.7-1. Sensitive land uses may experience an impact at levels defined as moderate or severe.

Table 4.7.1. Levels of Impact

Level of Impact	Description of Land Use Category
No Impact	Project-generated noise is not likely to cause community annoyance. Noise projections in this range are considered acceptable by FTA and mitigation is not required.
Moderate Impact	Project-generated noise in this range is considered to cause impact at the threshold of measurable annoyance. Moderate impacts serve as an alert to project planners for potential adverse impacts and complaints from the community. Mitigation should be considered at this level of impact based on project specifics and details concerning the affected properties.
Severe Impact	Project-generated noise in this range is likely to cause a high level of community annoyance. The project sponsor should first evaluate alternative locations/ alignments to determine whether it is feasible to avoid severe impacts altogether. In densely populated urban areas, evaluation of alternative locations may reveal a trade-off of affected groups, particularly for surface rail alignments. Projects that are characterized as point sources rather than line sources often present greater opportunity for selecting alternative sites. This guidance manual and FTA's environmental impact regulations both encourage project sites which are compatible with surrounding development when possible. If it is not practical to avoid severe impacts by changing the location of the project, mitigation measures must be considered.

Source: FTA 2018
Note: FTA = Federal Transit Administration

Figure 4.7-1. Noise Impact Criteria for Transit Projects



Source: FTA 2018

The noise impact criteria for transit operations are summarized in Table 4.7.2. The first column shows the existing noise exposure and the remaining columns show the additional noise exposure caused by a transit project that would result in the two impact levels. As the existing noise exposure increases, the amount of allowable increase in noise exposure from the Build Alternatives decreases. For the purposes of this analysis, the FTA impact criteria was calculated for each cluster (group of sensitive land uses with similar existing noise conditions, distance to the alignment, and other similar conditions) based upon existing noise exposure using equations found within Table C-1 of FTA *Transit Noise and Vibration Impact Assessment Manual* guidance. The future noise exposure would be the combination of the existing noise exposure and the additional noise exposure caused by a transit project.

Table 4.7.2. Noise Impact Criteria for Transit Operations

Existing Noise Exposure L_{eq} or L_{dn} (dBA)	Project Noise Impact Exposure, L_{eq}(h) or L_{dn} (dBA)					
	Category 1 or 2 Sites			Category 3 Sites		
	No Impact	Moderate Impact	Severe Impact	No Impact	Moderate Impact	Severe Impact
<43	< Ambient + 10	Ambient + 10 to 15	>Ambient + 15	< Ambient + 15	Ambient + 15 to 20	>Ambient + 20
43	<52	52-58	>58	<57	57-63	63
44	<52	52-58	>58	<57	57-63	63
45	<52	52-58	>58	<57	57-63	63
46	<53	53-59	>59	<58	58-64	64
47	<53	53-59	>59	<58	58-64	64
48	<53	53-59	>59	<58	58-64	64
49	<54	54-59	>59	<59	59-64	64
50	<54	54-59	>59	<59	59-64	64
51	<54	55-60	>60	<59	59-65	65
52	<55	55-60	>60	<60	60-65	6
53	<55	55-60	>60	<60	60-65	65
54	<55	55-61	>61	<60	60-66	66
55	<56	55-61	>61	<61	61-66	66
56	<56	56-62	>62	<61	61-67	67
57	<57	57-62	>62	<62	62-67	67
58	<57	57-62	>62	<62	62-67	67
59	<58	58-63	>63	<63	63-68	68
60	<58	58-63	>63	<63	63-68	68
61	<59	59-64	>64	<64	64-69	69
62	<59	59-64	>64	<64	64-69	69
63	<60	60-65	>65	<65	65-70	70
64	<61	61-65	>65	<66	66-70	70
65	<61	61-66	>66	<66	66-71	71
66	<62	62-67	>67	<67	67-72	72
67	<63	63-67	>67	<68	68-72	72
68	<63	63-68	>68	<68	68-73	73
69	<64	64-69	>69	<69	69-74	74
70	<65	65-69	>69	<70	70-74	74

Existing Noise Exposure L_{eq} or L_{dn} (dBA)	Project Noise Impact Exposure, $L_{eq}(h)$ or L_{dn} (dBA)					
	Category 1 or 2 Sites			Category 3 Sites		
	No Impact	Moderate Impact	Severe Impact	No Impact	Moderate Impact	Severe Impact
71	<66	66-70	>70	<71	71-75	75
72	<66	66-71	>71	<71	71-76	76
73	<66	66-71	>71	<71	71-76	76
74	<66	66-72	>72	<71	71-77	77
75	<66	66-73	>73	<71	71-78	78
76	<66	66-74	>74	<71	71-79	79
77	<66	66-74	>74	<71	71-79	79
>77	<66	66-75	>75	<71	71-80	80

Source: FTA 2018
Note: dBA = A-weighted decibels; L_{eq} = equivalent noise level; $L_{eq}(h)$ = hourly equivalent noise level; L_{dn} = day-night noise level

Vibration

The primary source of vibration would be train movements either above ground, at-grade, or below ground. A model was developed to predict vibration levels based on train speed, trackwork, transit structure, and propagation characteristics. The vibration model used was the FTA General Vibration Assessment that used reference vibration levels and calculation formulas provided in the FTA guidance document. Impacts associated with the modeled vibration levels were identified using the FTA impact criteria that were developed specifically for transit vibration sources operating on fixed guideways. However, because actual levels of groundborne vibration sometimes differ substantially from the general assessment predictions, the following FTA guidelines are used to interpret vibration impact:

- If predicted ground-borne vibration is below the impact threshold, vibration impact is unlikely.
- If the predicted ground-borne vibration is 0 to 5 dB greater than the impact threshold, there is a strong chance that actual ground-borne vibration levels would be below the impact threshold. More detailed studies to refine the vibration impact analysis at these locations should be conducted during the engineering phase for the Final EIS/EIR.
- If predicted ground-borne vibration is 5 dB or greater than the impact threshold, a vibration impact is probable and a Detailed Vibration Analysis must be conducted during the engineering phase for the Final EIS/EIR to determine appropriate vibration-control measures.

As part of the FTA General Assessment, generalized ground-surface vibration emissions are provided for locomotive-powered freight trains at different track centerline distances operating at 50 miles per hour (mph). These vibration emission levels were compared to *in-situ* measurements conducted of BNSF Railway operations along the Los Angeles – San Diego – San Luis Obispo Rail Corridor (LOSSAN) train alignment in Carlsbad as part of a double-track project conducted for the San Diego Association of Governments. The freight train vibration measurements at Carlsbad were conducted for trains operating at 30 mph. At a reference speed of 20 mph and 20 feet, the FTA vibration emission levels are 6 VdB higher

than the LOSSAN measurements. The FTA General Assessment vibration assessment for freight train operations were adjusted by -6 VdB to determine the predicted levels. This adjustment is used to determine vibration impacts at the freight train relocation sites.

FTA has developed impact criteria for acceptable levels of ground-borne noise and vibration. These criteria, as summarized in Table 4.7.3, are presented in terms of acceptable indoor ground-borne vibration and noise levels. Ground-borne noise occurs when vibration radiates through a building interior and creates a low-frequency sound, often described as a rumble, as a train passes by. Impact will occur if these levels are exceeded. Criteria for ground-borne vibration are expressed in terms of RMS velocity levels in VdB, and criteria for GBN are expressed in terms of A-weighted sound pressure levels in dBA. The criteria for special buildings such as concert halls, television and recording studios, auditoriums, and theaters, which are also sensitive to vibration but do not fit into the three FTA sensitive land use categories previously described, are also presented in Table 4.7.3. Since the Project would have more than 70 train pass-bys per day, the FTA criteria for frequent events is used to assess potential impact.

Table 4.7.3. Ground-borne Vibration and Ground-borne Noise Impact Criteria

Land Use Category	GBV Impact Levels (VdB, 1 micro-inch/sec)			GBN Impact Levels (dBA, 20 micro Pascals)		
	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]
Category 1: Buildings where vibration would interfere with interior operations	65	65	65	N/A	N/A	N/A
Category 2: Residences and buildings where people normally sleep	72	75	80	35	38	43
Category 3: Institutional land uses with primarily daytime use	75	78	83	40	43	48
Special Use – Concert halls, TV studios, and recording studios	65	65	65	25	25	25
Special Use – Auditoriums	72	80	80	30	38	38
Special Use – Theaters	72	80	80	35	43	43

Source: FTA 2018
Notes: [1] More than 70 events per day
[2] 30 to 70 events per day
[3] Fewer than 30 events per day
dBA = A-weighted decibels; GBN = ground-borne noise; GBV = ground-borne vibration; N/A = not applicable; VdB = decibel notation

The limit of 0.12 inches per second (in/sec) for fragile historic structures is among the most restrictive limits used for vibration damage risk to buildings. A damage risk criterion of 0.2 in/sec (PPV) is protective of all but the most fragile buildings.

4.7.2 Affected Environment/Existing Conditions

4.7.2.1 Noise

Land uses along the alignment are described in Section 4.1.2 of the Land Use Section of this Draft EIS/EIR. The noise environment in urban areas is dominated by traffic noise. Several industrial areas along the alignment for the Build Alternatives generate noise from the operation of machinery and truck trips associated with the land use activities. Occasional aircraft flyovers and movement of trains along existing freight tracks also contribute to the existing noise environment.

For the analysis, existing noise levels were identified at sensitive land uses. The sensitive land uses were grouped into clusters, each having one receiver determined based on a location that best represents the entire cluster (i.e., the receptor closest to the noise source). Land uses were identified using geographic information system (GIS), assessor's parcel maps, and aerial photos, and were verified through field work. Monitoring was completed at 8 long-term locations (24-hour measurements) and 31 short-term locations (30-minute measurements) along the alignment of the Build Alternatives during October and November 2017, including near the Bellflower MSF site option. Additional measurements were taken at the Paramount MSF site option on November 27, 2018. Figure 4.7-2 through Figure 4.7-4 show the monitoring locations and the existing noise levels. Refer to Section 4 of the Noise and Vibration Impact Analysis Report (Appendix M) for a detailed discussion of the existing noise environment.

4.7.2.2 Vibration

The Project would be located in an urban center. Primary existing sources of GBV include trucks traveling along roadways, construction utilizing heavy equipment, and active freight lines within the corridor. According to FTA guidance, the background vibration levels are expected to range from 50 VdB to 65 VdB in typical urban environments. Ambient vibration levels were not measured as part of this study because the FTA vibration impact assessment is not based on the ambient levels but rather on the FTA Vibration Impact Criteria. These criteria were used to identify vibration-sensitive receivers along the project alignments where potential impacts may occur based on existing land use activities. Existing ambient vibration levels were not measured at these locations.

Figure 4.7-2. Noise Monitoring Locations and Existing Noise Levels



Source: Prepared for Metro in 2020

Figure 4.7-3. Noise Monitoring Locations and Existing Noise Levels



Source: Prepared for Metro in 2020

Figure 4.7-4. Noise Monitoring Locations and Existing Noise Levels



Source: Prepared for Metro in 2020

4.7.3 Environmental Consequences/Environmental Impacts

4.7.3.1 No Build Alternative

Under the No Build Alternative, the Build Alternative would not be developed. However, several infrastructure and transportation-related projects would be implemented and built in the vicinity of the project alignment. These projects would change the regional transportation system and likely reduce regional vehicle miles traveled. This would result in fewer automobiles on the regional roadway network and less mobile noise. Projects under the No Build Alternative would generate noise and vibration levels typical to urban long-term transportation noise and would have their own environmental evaluations with mitigation identified, if necessary. Under the No Build Alternative, no changes related to the Build Alternatives and no project-related noise or vibration sources would occur. The existing freight tracks within the rail ROWs would remain in place and the rail ROWs would be undisturbed. Existing noise sources such as industrial areas along the project alignment, occasional aircraft flyovers, traffic noise, and the movement of trains along existing railroads would remain the dominant noise sources in the project area. Under NEPA, the No Build Alternative would not result in new adverse effects related to increased noise or vibration levels at sensitive receivers.

4.7.3.2 Alternative 1: Los Angeles Union Station to Pioneer Station

Noise

LRT Pass-by (underground): The subterranean portions of Alternative 1 would not generate pass-by noise audible to surface receptors. Ventilation shaft and station noise is assessed below in the Ancillary Facilities subsection. Under NEPA, Alternative 1 would not result in adverse effects related to underground LRT pass-by noise.

LRT (at-grade and aerial): Noise associated with LRT includes noise from steel wheels rolling on steel rails (wheel/rail noise), propulsion motors, air conditioning, and other auxiliary equipment on the vehicles. Sensitive uses would be exposed to a combination of noise sources, including LRT pass-by noise, audible warnings noise (crossing signal bells), wheel squeal noise, and special trackwork noise. A total of 31 protected at-grade crossings with crossing signals would contribute to LRT noise at sensitive uses. Curves with a radius of less than 600 feet could produce wheel squeal. Three curves along the alignment could produce wheel squeal: the first curve serves as the transition point from the San Pedro Subdivision ROW to Randolph Street; the second curve is the transition from Randolph Street to Long Beach Boulevard; and the third curve serves as the transition point from the Pacific Electric Right-of-Way (PEROW) to the San Pedro Subdivision ROW following Arthur Avenue, just before it crosses the I-105 freeway. A 10-dBA adjustment was added to LRT pass-by noise to account for possible wheel squeal at clusters near these locations.

Table 4.7.4 provides a summary of sensitive land uses considered for the analysis of LRT pass-by noise. Refer to Appendix A of the Noise and Vibration Impact Analysis Report (Appendix M) for additional site-specific information. Under Alternative 1, Category 2 clusters would experience 76 moderate impacts and 171 severe impacts. Ten Category 3 clusters would experience moderate impacts and two would experience severe impacts. No Category 1 clusters would experience impacts. Regarding health effects of noise, it is unlikely for LRT noise to result in noise-induced hearing loss, as this is an occupational hazard related to working over long periods of time in high noise environments. FTA defines moderate impacts as those having the potential to result in measurable annoyance in a community and severe impacts as those causing a high level of community annoyance. LRT noise could increase stress and the potential for stress-related diseases at affected sensitive uses. This applies to other areas that would result in noise impacts. Under NEPA, Alternative 1 would result in adverse effects related to LRT pass-by noise.

Table 4.7.4. Summary of Alternative 1 LRT Pass-by Noise Impacts

Land Use	FTA Land Use Category[2]	Impacts		
		Moderate	Severe	Total
Kairos Music	1	0	0	0
Residential clusters[1]	2	76	171	247
Templo Asamblea De Oracion	3	1	0	1
Huntington Park High School	3	1	0	1
Trinity Bible Church	3	1	0	1
American Indian Bible Church	3	1	0	1
Paramount High School	3	0	1	1
Door Christian Fellowship Church	3	1	0	1
Los Angeles County Fire Museum	3	1	0	1
Bristol Civic Auditorium	3	1	0	1
Bellflower Health Center	3	1	0	1
Rio Hondo Metal Health Clinic	3	1	0	1
Artesia Historical Museum	3	1	0	1
Wan Yuen Temple	3	0	1	1
		Total Number of Impacts		**259**

Source: Prepared for Metro in 2021
Notes: [1] Cluster sites (groups of sensitive land uses) are shown in the Noise and Vibration Impact Analysis Report (Appendix M).
[2] Category 1 – Land where quiet is an essential element of its intended purpose (e.g. recording studios). Category 2 – Residences and buildings where people normally sleep; nighttime sensitivity (e.g., hospitals, hotels). Category 3 – Institutional land uses; primarily daytime use that depend on quiet as an important part of operations (e.g., schools, libraries, and churches).
FTA = Federal Transit Administration; LRT = light rail transit

Ancillary Facilities: TPSSs are a transit system ancillary facility that contributes to noise perceived at sensitive receptors. Sources of TPSS noise include heating, ventilation, and cooling systems (HVAC) and transformer hum. The HVAC system is the primary source of sound emitted from a TPSS. Alternative 1 would require 19 at-grade TPSS units. Each underground station would typically include a TPSS to power the LRT. Although the underground alignment of the Build Alternatives would differ, the TPSS facilities would be located underground and would therefore not be audible to aboveground receivers.

Emergency, standby, and critical operations power system generators, located along the alignment, at maintenance facilities, and at a rail operations control center would be another potential source of noise. Reduction of noise from these sources will be provided by barriers, enclosures, sound-absorptive materials, and engine silencers as applicable to the individual facility or unit design. Operation of the generators would not be a part of regular operation and would only be used during emergency situations and during weekly testing for approximately 20 minutes. Thus, generator operation has not been included as part of the operational analysis. The underground station entrances would also include ventilation shafts and ventilation equipment. Ventilation shafts and emergency ventilation fans would be designed in accordance with Metro systemwide design criteria noise guidelines (or equivalent policy) for residential areas. The

ventilation system would adhere to a noise ceiling of 60 dBA for train pass-by noise and 50 dBA for fan noise at a distance of 50 feet. Compliance with these standards would ensure ventilation noise would be inaudible above the existing noise environment. During emergency situations, the ventilation system noise limits would not apply, and ventilation system noise may be audible. However, these situations would not occur during regular operation of the Project.

The at-grade and aerial portions of the alignment would utilize the same TPSS units. Of the proposed TPSS site locations, 26 would be located near a residence. Table 4.7.5 summarizes affected land uses. Five moderate impacts and two severe impacts would occur. Under NEPA, Alternative 1 would result in adverse effects related to ancillary facility noise.

Parking Facilities: Alternative 1 includes five stations with parking: Firestone Station, I-105/C Line Station, Paramount/Rosecrans Station, Bellflower Station, and Pioneer Station. According to FTA guidance, the appropriate screening distance to identify sensitive receivers for parking facilities is 125 feet. Sensitive receivers would be located within 125 feet of each of the parking facilities, except for the Firestone Station parking facility. Under NEPA, Alternative 1 would not result in adverse effects related to parking facility noise.

Freight Track Relocation: Relocation of existing freight tracks would be required to the south of the project alignment within the La Habra Branch ROW, to the west of the project alignment within the San Pedro Subdivision ROW, and to the north of the project alignment within the Metro-owned PEROW to accommodate the Build Alternative alignments and maintain existing operations along the ROW where the proposed LRT tracks would overlap.

Freight train counts were conducted in September 2019. Only one train traversed the freight tracks along Randolph Street over a period of nine days, with this event occurring at midnight. One daytime train event occurred near the junction of Randolph Street and Slauson Avenue, but it did not fully traverse Randolph Street. Due to the infrequency and timing of freight trains along Randolph Street, it is unlikely that noise measurements captured freight train noise. Therefore, the FTA impact criteria have been based upon the existing freight noise calculated using the existing location of freight tracks. Existing noise levels were also adjusted along Facade Avenue to account for existing freight that was not captured during noise measurements.

Relocated freight tracks would generally differ from their current alignments by only a few feet and would remain in the rail ROW. Freight train noise is generally intermittent, and only approximately two to three trains pass-by per day. No new noise source would be added, and the frequency of freight trains would not change. However, the freight tracks would be relocated closer to sensitive receivers at two locations. At the first location, there would be an approximately 20-foot shift of the centerline of the freight tracks to the south of the La Habra Branch ROW along Randolph Street. This would bring the freight tracks within approximately 50 feet from inhabited structures along the southern side of Randolph Street. Freight trains are anticipated to travel at a speed of 10 mph along Randolph Street and would be required to sound their warning horns due to grade crossings.

The other location would be near the I-105 freeway, where the centerline of the freight tracks would be shifted approximately 15 feet. This relocation would be in proximity to residences along Facade Avenue and near Rosecrans Avenue. Freight trains are anticipated to travel at a speed of 10 mph along Facade Avenue and would only be required to sound their warning horns near the grade crossing at Century Boulevard. Freight train noise at both of these locations has been added to the LRT noise in Table 4.7.4.

Table 4.7.5. Ancillary Facility Noise Impacts by TPSS Site

TPSS Site	Location	Closest Residence	Distance (feet)[1]	Existing (dBA, L_{dn})	TPSS Noise (dBA, L_{dn})	Noise Impact Criteria		Impact
						Moderate	Severe	
18(e)	South of E Martin Luther King Jr Blvd on the west side of Long Beach Ave and within private property	SFR/MFR to the south, west, and north	15	66.8	66.9	62.0	67.3	Moderate
17	South of E 51st St on the west side of Long Beach Ave within private property	SFR/MFR to the west	15	70.5	66.9	64.7	69.8	Moderate
17b	Just north of E 52nd St on the west side of Long Beach Ave within private property	SFR/MFR to the west, north, and south	15	70.5	66.9	64.7	69.8	Moderate
17a	Between E 52nd and 53rd St on the west side of Long Beach Ave within private property	SFR/MFR to the west, north, and south	15	70.5	66.9	64.7	69.8	Moderate
15(e)	East of Stafford Ave and north of Randolph St within private property	SFR to the west, east, and south	15	61.8	66.9	58.3	64.3	Severe
8(e)	Just southwest of Arthur Ave/Rose St and north of Rosecrans Ave within public-owned property	SFR to the north	20	58.7	64.4	57.1	62.8	Severe
2	Northwest of the crossing at Gridley Rd and 183rd St within Metro-owned property	SFR to the north	40	51.2	58.3	53.8	59.9	Moderate

Source: Prepared for Metro in 2021
Notes: [1] Distance to the closest area of human use or closest building façade.
dBA = A-weighted decibel; L_{dn} = day-night noise level; L_{eq} = equivalent noise level; MFR = multifamily residential; SFR = single-family residential; TPSS = traction power substation

In summary, under Alternative 1, 30 Category 2 clusters would experience moderate impacts and 24 would experience severe impacts. Five Category 3 clusters would experience moderate impacts and two would experience severe impacts. Category 3 clusters along Randolph Street are unlikely to regularly experience impacts due to a combination of freight and LRT noise because Category 3 uses are daytime uses and would not typically be open when the freight is traversing Randolph Street at night. Under NEPA, Alternative 1 would result in adverse effects related to relocated freight track noise.

Vibration

LRT Pass-by (underground): Subterranean train travel could generate perceptible GBV or GBN at surface land uses. Under Alternative 1, GBV are predicted not to exceed the FTA threshold of 72 VdB and the GBN FTA threshold of 35 dBA, with the exception of cluster 7 residents near McGarry Street and 14th Street in the City of Los Angeles. At this location, the GBV is predicted to exceed the FTA GBV threshold by 7 VdB and GBN and the GBN FTA threshold by 9 dB. Therefore, where the projected GBV and GBN are predicted to be greater than the FTA threshold by more than 5 dB, there is a strong chance that an adverse effect may occur. Under NEPA, Alternative 1 may result in an adverse effect related to underground LRT pass-by vibration.

LRT Pass-by (at-grade and aerial): Train travel would vibrate the transit structure and create GBV that could interfere with land use activities. No impacts were identified at Category 3 institutional facilities, including, but not limited to, schools, medical facilities, or religious facilities. However, the FTA vibration thresholds would be exceeded at 101 Category 2 residential clusters. These predicted GBV levels are in the range of 1 to 20 VdB above the FTA vibration criteria. Thirty-eight clusters are predicted to exceed the impact criteria by more than 5 VdB. Therefore, under NEPA, where the projected ground-borne vibration is 1 to 5 dB greater than the impact threshold, there is a strong chance that actual ground-borne vibration levels would be below the impact threshold and would not result in an adverse effect related to projected groundborne vibration. Where the projected ground-borne vibration is 5 dB greater than the impact threshold, vibration impact is probable. Under NEPA, Alternative 1 could result in an adverse effect related to at-grade and aerial LRT pass-by vibration.

Freight Track Relocation: Under Alternative 1, freight tracks would be relocated 15 feet closer to the residences along Facade Avenue near Rosecrans Avenue. The vibration level associated with freight trains at the new location operating at 20 mph would be 78 VdB at occupied building structures along Facade Avenue. These levels are based on at-grade ballast and tie track. Freight train vibration would be infrequent as only two to three trains are estimated to travel near this location in any one day. The FTA impact criterion for residential properties exposed to infrequent vibration events is 80 VdB. Under NEPA, Alternative 1 projected freight train vibration would not exceed the impact threshold and would not result in adverse effects related to freight track relocation vibration.

4.7.3.3 Alternative 2: 7th St/Metro Center to Pioneer Station

Noise

LRT Pass-by (underground): The subterranean portions of Alternative 2 would not generate pass-by noise audible to surface receptors. Under NEPA, Alternative 2 would not result in adverse effects related to underground LRT pass-by noise.

LRT (at-grade and aerial): Alternative 2 would follow the same alignment for at-grade and aerial segments as Alternative 1. LRT pass-by noise impacts related to Alternative 2 would be primarily the same as Alternative 1. However, headways under Alternative 2 would decrease to 2.5 minutes during one hour of each weekday peak period between 7th St/Metro Center Station and the Slauson/A Line Station. Clusters 12, 23, 29, 34, and 44 would experience severe impacts instead of moderate impacts.

Cluster 33 would change from no impact to moderate impact. Alternative 2 would result in 72 moderate impacts and 176 severe impacts at Category 2 clusters. Impacts at Category 3 clusters would remain the same as Alternative 1. Under NEPA, Alternative 2 would result in adverse effects related to LRT pass-by noise.

Ancillary Facilities: Alternative 2 would utilize the same ancillary facility locations as Alternative 1, with the exception of underground TPSS sites. Underground TPSS sites would not produce audible noise at aboveground sensitive receptors. Ancillary facility noise impacts related to Alternative 2 would be the same as Alternative 1. Under NEPA, Alternative 2 would result in adverse effects related to ancillary facility noise.

Parking Facilities: Alternative 2 would utilize the same parking facilities as Alternative 1. Consistent with Alternative 1 and consistent with NEPA, Alternative 2 would not result in adverse effects related to parking facility noise.

Freight Track Relocation: Alternative 2 would follow the same alignment for at-grade and aerial segments as Alternative 1. Freight track relocation noise impacts related to Alternative 2 would be the same as Alternative 1. Under NEPA, Alternative 2 would result in adverse effects related to relocated freight track noise.

Vibration

LRT Pass-by (underground): The analysis did not identify impacts related to LRT pass-by vibration associated with the underground portion of Alternative 2. Under NEPA, Alternative 2 would not result in adverse effects related to underground LRT pass-by vibration.

LRT (at-grade and aerial): Alternative 2 would follow the same alignment for at-grade and aerial segments as Alternative 1 and would have the same potential impacts. Therefore, under NEPA, where the projected ground-borne vibration is 1 to 5 dB greater than the impact threshold, there is a strong chance that actual ground-borne vibration levels would be below the impact threshold and would not result in an adverse effect. Where the projected ground-borne vibration is 5 dB greater than the impact threshold, vibration impact is probable. None of the vibration Category 3 receivers are predicted to exceed the FTA vibration impact threshold. Under NEPA, Alternative 2 would result in adverse effects related to LRT pass-by vibration.

Freight Track Relocation: Alternative 2 freight track relocation would be the same as Alternative 1. Under NEPA, Alternative 2 projected freight train vibration would not exceed the impact threshold and would not result in adverse effects related to freight track relocation vibration.

4.7.3.4 Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Noise

LRT Pass-by: Noise impacts related to Alternative 3 would largely be the same as Alternatives 1 and 2. Alternative 3 would be entirely at-grade or aerial and, therefore, no noise impacts related LRT pass-by underground would occur. However, noise impacts would be reduced overall due to the shortened length of the alignment. The northern tail tracks would end at civil station 645+50, which would reduce speeds and noise levels at clusters 33 through 45. Alternative 3 would affect clusters 33 through 347 and would result in moderate impacts at 59 of 289 Category 2 clusters and severe impacts at 153 Category 2 clusters. Impacts at Category 3 clusters would remain the same as Alternatives 1 and 2. Under NEPA, Alternative 3 would result in adverse effects related to LRT pass-by noise.

Ancillary Facilities: Seventeen TPSS locations are proposed for Alternative 3. Two severe impacts would occur at TPSS site 15e and TPSS site 8e. One moderate impact would occur at TPSS site 2. Under NEPA, Alternative 3 would result in adverse effects related to ancillary facility noise.

Parking Facilities: Alternative 3 would utilize the same parking facilities as Alternatives 1 and 2. Under NEPA, Alternative 3 would not result in adverse effects related to parking facility noise.

Freight Track Relocation: Freight tracks would be relocated at the same locations as Alternatives 1 and 2. Noise impacts related to freight track relocation would be the same as Alternatives 1 and 2. Under NEPA, Alternative 3 would result in adverse effects related to relocated freight track noise.

Vibration

LRT Pass-by: Vibration impacts related to Alternative 3 would largely be the same as Alternative 1 and 2. Alternative 3 would be entirely at-grade or aerial and, therefore, no vibration impacts related to underground LRT pass-by would occur. Vibration impacts would be reduced overall due to the shortened length of the alignment. Alternative 3 would affect vibration clusters 41 through 233. Under Alternative 3, LRT pass-by vibration would result in 96 impacts exceeding the FTA impact criteria of 72 VdB. Thirty-five clusters are predicted to exceed the impact criteria by more than 5 VdB. Under NEPA, Alternative 3 would result in adverse effects related to LRT pass-by vibration.

Freight Track Relocation: Alternative 3 freight track relocation would be the same as Alternatives 1 and 2. Under NEPA, Alternative 3 projected freight train vibration would not exceed the impact threshold and would not result in adverse effects related to freight train vibration.

4.7.3.5 Alternative 4: I-105/C (Green) Line to Pioneer Station

Noise

LRT Pass-by: Noise impacts related to Alternative 4 would be similar south of the I-105/C Line as Alternatives 1, 2, and 3. Alternative 4 would be entirely at-grade or aerial and, therefore, no noise impacts related to LRT pass-by underground would occur. However, noise impacts would be reduced overall due to the shortened length of the alignment. Alternative 4 would affect clusters 181 through 347 and would result in moderate impacts at 15 of 149 Category 2 clusters and severe impacts at 117 Category 2 clusters. Six of 18 Category 3 clusters would experience moderate impacts and two would experience severe impacts. Under NEPA, Alternative 4 would result in adverse noise effects related to LRT pass-by noise.

Ancillary Facilities: Eight TPSS locations are proposed for Alternative 4. One severe impact would occur at TPSS site 8e and one moderate impact would occur at TPSS site 2. Under NEPA, Alternative 4 would result in adverse effects related to ancillary facility noise.

Parking Facilities: Alternative 4 would utilize four of the five parking facilities as Alternatives 1, 2, and 3—the Firestone parking facility would not be required due to the shortened length of Alternative 4. Similar to Alternatives 1, 2, and 3, under NEPA, Alternative 4 would not result in adverse effects related to parking facility noise.

Freight Track Relocation: Alternative 4 would not require the relocation of freight tracks north of civil station 1068+50, near the Main Street grade crossing. Freight track relocation would therefore only affect clusters 183 to 213. Freight train noise at both of these locations have been added to the LRT noise. Under Alternative 4, six Category 2 clusters would experience moderate impacts and 15 would experience severe impacts. One Category 3 cluster would experience a moderate impact. Under NEPA, Alternative 4 would result in adverse effects related to relocated freight track noise.

Vibration

LRT Pass-by: Vibration impacts related to Alternative 4 would largely be the same as Alternatives 1, 2, and 3. Alternative 4 would be entirely at-grade or aerial and, therefore, no vibration impacts related to underground LRT pass-by would occur. Vibration impacts would be reduced overall due to the shortened length of the alignment. Alternative 4 would affect vibration clusters 125 through 233. Under Alternative 4, LRT pass-by vibration would result in 62 impacts exceeding the FTA impact criterion of 72 VdB. Twenty-eight clusters are predicted to exceed the impact criteria by more than 5 VdB. Under NEPA, Alternative 4 would result in adverse effects related to LRT pass-by vibration.

Freight Track Relocation: Alternative 4 would not require the relocation of freight tracks north of civil station 1068+50, near the Main Street grade crossing. South of the Main Street grade crossing, Alternative 4 freight track relocation would be the same as Alternative 1. Under NEPA, Alternative 4 projected freight train vibration would not exceed the impact threshold and would not result in adverse effects related to freight train vibration.

4.7.3.6 Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station

Noise: Noise related to underground LRT would not be readily transmitted to surface-level receivers, similar to those analyzed for Alternative 1. Design Options 1 and 2 would not include additional impacts beyond those described above for Alternative 1.

Vibration: GBV and GBN levels were modeled at each cluster along the underground segment for Design Options 1 and 2. No clusters would experience levels that are predicted to exceed the FTA impact criteria. Design Options 1 and 2 would not include additional impacts beyond those described above for Alternative 1.

4.7.3.7 Maintenance and Storage Facility

Paramount MSF Site Option

Noise: MSF noise sources include train movements within the MSF and on lead tracks, wheels striking special trackwork, wheel squeal on curves, maintenance shops, the car wash, and associated vehicular traffic from employee trips. Noise levels related to these sources were modeled at the 18 sensitive use clusters near the Paramount MSF site option, and noise levels would not exceed the FTA impact criteria at nearby sensitive uses. Under NEPA, the Paramount MSF site option would not result in adverse effects related to noise.

Vibration: Vibration impacts may occur related to the light rail vehicles moving around the MSF, at lead tracks, and near special trackwork. The Paramount MSF site option is more than 200 feet from any residential land uses. GBV from train movements through crossover trackwork at 10 mph in the yard are not predicted to exceed the FTA impact threshold of 72 VdB. Lead tracks to the Paramount MSF site option would enter the site along its western edge approximately 0.3 mile south of the WSAB mainline track. Movement of the LRT trains on the lead tracks in and out of the facility at 20 mph would result in a GBV level of 70 VdB at the nearest residential property. No vibration impacts would occur from the vehicle movements on the lead tracks. The lead tracks would require relocation of the existing freight track 15 feet closer to the residential properties along Facade Avenue. GBV levels caused by the relocation of the freight line at the clusters near the Paramount MSF site option and the lead tracks were modeled. Freight train operations would be infrequent as only two to three trains are estimated to travel past this location in any one day. The FTA impact criterion for residential properties exposed to infrequent vibration events is 80 VdB. Thus, the GBV is predicted not to exceed the impact criterion and no adverse

effects related to vibration are predicted to occur as a result of realignment of the freight tracks. Under NEPA, the Paramount MSF site option would not result in adverse effects related to vibration.

Bellflower MSF Site Option

Noise: Noise levels related to MSF noise sources were modeled at the 57 sensitive use clusters near the Bellflower MSF site option, and noise levels would not exceed the FTA noise impact criteria at nearby sensitive uses. Under NEPA, the Bellflower MSF site option would not result in adverse effects related to noise.

Vibration: The Bellflower MSF site option is approximately 75 feet from the nearest residential land uses along Virginia Avenue. Train movements through crossover trackwork at 10 mph are predicted to result in a GBV level at these residential land uses of 71 VdB, which would not exceed the FTA impact threshold of 72 VdB. Train vibration is predicted to be below the impact threshold based on FTA guidance. Vibration impact is unlikely at the residential land uses along Virginia Avenue. Under NEPA, the Bellflower MSF site option would not result in adverse effects related to vibration.

4.7.4 Project Measures and Mitigation Measures

4.7.4.1 Project Measures

There are no project measures required by law or permit related to noise and vibration.

4.7.4.2 Mitigation Measures

Noise

NOI-1 **Soundwalls.** Soundwalls would be placed at the edge of the right-of-way or at the edge of aerial structures to reduce noise related to light rail transit vehicles at the identified sensitive receiver locations shown in the following table where moderate and severe impacts have been identified based on design completed to date. Height and length will be verified during final design to meet Federal Transit Administration requirements.

NOI-1 LRT Soundwall Locations

Civil Station	Alternative(s)	Location	Track Side	Placement	Height
562+00 to 570+00	1 and 2	Between 21st St and 24th St	Left	Aerial	4 Feet
563+00 to 571+50	1 and 2	Between 22nd St and 25th St	Right	Aerial	4 Feet
577+00 to 658+25	1 and 2	Between Adams Blvd. and 57th St	Right	Aerial	4 Feet
596+50 to 627+00	1 and 2	Between 41st Pl and 48th Pl	Left	Aerial	4 Feet
635+75 to 660+75	1 and 2	Between 51st St and 57th St	Left	Aerial	4 Feet
764+00 to 779 +15	1, 2, and 3	Between Boyle Ave and Hollenbeck St	Right	Edge of Right-of-Way	8 feet
777+40 to 792+50	1, 2, and 3	Between Hollenbeck St and Benedict Wy	Right	Aerial	4 Feet
803+25 to 813+50	1, 2, and 3	Between Gage Ave and Bell Ave	Left	Edge of Right-of-Way	8 feet

Civil Station	Alternative(s)	Location	Track Side	Placement	Height
815+15 to 829+15	1, 2, and 3	Between Bell Ave and Florence Ave	Left	Edge of Right-of-Way	8 feet
807+50 to 812+50	1, 2, and 3	Between Iris Ave and Bell Ave	Right	Edge of Right-of-Way	8 feet
840+00 to 869+00	1, 2, and 3	Between Live Oak St and Otis Ave	Right	Edge of Right-of-Way	8 feet
840+00 to 861+50	1, 2, and 3	Between Live Oak St and Olive St	Left	Edge of Right-of-Way	8 feet
871+00 to 877+50	1, 2, and 3	Between Otis Ave and Santa Ana St	Right	Edge of Right-of-Way	8 feet
872+50 to 878+00	1, 2, and 3	Between Otis Ave and Santa Ana St	Left	Edge of Right-of-Way	8 feet
881+20 to 893+50	1, 2, and 3	Between Santa Ana St and Cecilia St	Left	Edge of Right-of-Way	8 feet
957+50 to 968+00	1, 2, and 3	Between Southern Ave and center of Los Angeles River Channel	Right	Edge of Right-of-Way	8 feet
960+00 to 973+00	1, 2, and 3	Between McCallum Ave and center of Los Angeles River Channel	Right	Aerial	4 Feet
968+00 to 982+00	1, 2, and 3	Between center of Los Angeles River Channel and Frontage Rd	Left	Aerial	4 feet
1067+75 to 1073+50	1, 2, 3, and 4	Between Main St and Lincoln Ave	Left	Edge of Right-of-Way	8 feet
1070+50 to 1074+00	1, 2, 3, and 4	Between Harding Ave and Lincoln Ave	Right	Edge of Right-of-Way	8 feet
1083+50 to 1084+50	1, 2, 3, and 4	Between Century Blvd and Grove St	Right	Edge of Right-of-Way	8 feet
1088+00 to 1107+75	1, 2, 3, and 4	Between I-105 Fwy and Racine Ave	Right	Edge of Right-of-Way	8 feet
1089+50 to 1108+00	1, 2, 3, and 4	Between I-105 Fwy and Rose St	Left	Edge of Right-of-Way	8 feet
1095+00 to 1136+25	1, 2, 3, and 4	Between Denver St and approximately 300 feet east of 144th St	Left	Aerial	4 feet
1095+00 to 1108+00	1, 2, 3, and 4	Between Denver St and Rose St	Right	Aerial	4 feet
1141+00 to 1155+50	1, 2, 3, and 4	Between Paramount High School railroad pedestrian crossing and Downey Ave	Left	Aerial	4 feet

Civil Station	Alternative(s)	Location	Track Side	Placement	Height
1140+00 to 1167+00	1, 2, 3, and 4	Between Paramount High School railroad pedestrian crossing and approximately 400 feet west Somerset Blvd	Right	Aerial	4 feet
1167+00 to 1171+00	1, 2, 3, and 4	Between approximately 400 feet west of Somerset Blvd and Somerset Blvd	Right	Edge of Right-of-Way	8 feet
1173+00 to 1184+00	1, 2, 3, and 4	Between Somerset Blvd and Lakewood Blvd	Right	Edge of Right-of-Way	8 feet
1186+50 to 1215+70	1, 2, 3, and 4	Between Lakewood Blvd and approximately 400 feet west of Clark Ave	Right	Edge of Right-of-Way	8 feet
1198+50 to 1215+70	1, 2, 3, and 4	Between approximately 50 feet west of Virginia Ave and Clark Ave	Left	Edge of Right-of-Way	8 feet
1217+00 to 1222+00	1, 2, 3, and 4	Between Clark Ave and Alondra Blvd	Left	Edge of Right-of-Way	8 feet
1224+00 to 1241+75	1, 2, 3, and 4	Between Alondra Blvd and Orchard Ave	Right	Edge of Right-of-Way	8 feet
1226+50 to 1241+75	1, 2, 3, and 4	Between approximately 220 feet southeast of Alondra Blvd and Orchard Ave	Left	Edge of Right-of-Way	8 feet
1248+50 to 1255+50	1, 2, 3, and 4	Between Bellflower Blvd and approximately 120 feet northwest of Civic Center Dr	Left	Edge of Right-of-Way	8 feet
1250+00 to 1263+00	1, 2, 3, and 4	Between approximately 350 feet southeast of Bellflower Blvd and Pacific Ave	Right	Edge of Right-of-Way	8 feet
1261+00 to 1286+00	1, 2, 3, and 4	Between Pacific Ave and approximately 70 feet southeast of California Ave	Left	Aerial	4 Feet
1261+00 to 1286+00	1, 2, 3, and 4	Between Pacific Ave and approximately 270 feet southeast of California Ave	Right	Aerial	4 Feet
1286+00 to 1303+00	1, 2, 3, and 4	Between California Ave and Beach St	Right	Edge of Right-of-Way	8 feet
1286+00 to 1300+00	1, 2, 3, and 4	Between California Ave and approximately 100 feet northwest of Beach St	Left	Edge of Right-of-Way	8 feet
1309+00 to 1316+00	1, 2, 3, and 4	Between SR-91 Fwy and approximately 220 feet southeast of San Gabriel River Channel	Right	Edge of Right-of-Way/Structure	4 feet

Civil Station	Alternative(s)	Location	Track Side	Placement	Height
1355+10 to 1360+00	1, 2, 3, and 4	Between Rosewood Park and approximately 450 feet northwest of Harvest Ave	Left	Edge of Right-of-Way	8 feet
1360+00 to 1389+00	1, 2, 3, and 4	Between approximately 900 feet northwest of Harvest Ave and approximately 300 feet northwest of 186th St	Left	Aerial	4 Feet
1374+50 to 1389+00	1, 2, 3, and 4	Between 183rd St and approximately 300 feet northwest of 186th St	Right	Aerial	4 Feet
1390+00 to 1392+40	1, 2, 3, and 4	Between approximately 200 feet northwest of 186th St and approximately 150 feet northwest of 186th St	Left	Edge of Right-of-Way	8 feet
1390+00 to 1391+50	1, 2, 3, and 4	Between approximately 200 feet northwest of 186th St and approximately 150 feet northwest of 186th St	Right	Edge of Right-of-Way	8 feet
1393+75 to 1401+20	1, 2, 3, and 4	Between 186th St and 187th St	Left	Edge of Right-of-Way	8 feet
1393+40 to 1400+75	1, 2, 3, and 4	Between 186th St and 187th St	Right	Edge of Right-of-Way	8 feet
1409+50 to 1417+87	1, 2, 3, and 4	Between Pioneer Blvd and South St	Left	Edge of Right-of-Way	8 feet
1409+20 to 1413+60	1, 2, 3, and 4	Between Pioneer Blvd and approximately 300 feet northwest of South St	Right	Edge of Right-of-Way	8 feet

LRT = light rail transit

NOI-2 **Low Impact Frogs**. Low impact frogs (crossing point of two rails) would be installed at the identified locations shown in the following table to reduce crossover impact noise. Locations will be verified during final design.

NOI-2 Low Impact Frog Locations

Civil Station	Alternative(s)	Location
602+00	1 and 2	Between 41st Pl and 42nd St
655+00	1, 2, and 3	Between 55th St and 57th St
740+50	1, 2, and 3	Between Templeton St and Miles Ave
808+00	1, 2, and 3	Between Iris Ave and Nevada St
874+00	1, 2, and 3	Between Otis Ave and Santa Ana St
1075+50	1, 2, 3, and 4	Between Lincoln Ave and Florence Ave
1179+00	1, 2, 3, and 4	Between Castana Ave and Olivia Ave

Civil Station	Alternative(s)	Location
1229+50	1, 2, 3, and 4	Between Alondra Blvd and Harvard St
1289+50	1, 2, 3, and 4	Between Flora Vista St and Park St
1294+00	1, 2, 3, and 4	Between Flora Vista St and Park St
1399+00	1, 2, 3, and 4	Between 184th St and 186th St
1411+50	1, 2, 3, and 4	Between Pioneer Blvd and South Ave

NOI-3 Wheel Squeal Noise Monitoring. Metro would conduct wheel squeal noise monitoring prior to the start of revenue operations to determine if wheel squeal is occurring at the curves identified in the following table. If wheel squeal occurs, Metro would use wayside rail lubrication.

NOI-3 Wheel Squeal Wayside Friction Applicator Locations

Civil Station	Alternative(s)	Curve
670+00	1, 2, and 3	Curve from Randolph St to Long Beach Ave
788+00	1, 2, and 3	Curve from San Pedro Subdivision Right-of-Way to Randolph St
1109+00	1, 2, 3, and 4	Curve from PEROW to San Pedro Subdivision Right-of-Way following Arthur Ave

NOI-4 Crossing Signal Bells. Crossing signal bells at the locations identified in the following table would be equipped with shrouds to direct bell noise away from sensitive receivers. Crossing signal bell noise would not exceed 104 dBA SEL at 50 feet. This measure is subject to California Public Utilities Commission approval.

NOI-4 Crossing Signal Bells Shroud Locations

Civil Station	Alternative(s)	Grade Crossing Locations
709+00	1, 2, and 3	Santa Fe Ave
716+50	1, 2, and 3	Malabar St
732+50	1, 2, and 3	Seville Ave
743+00	1, 2, and 3	Miles Ave
756+50	1, 2, and 3	Arbutus Ave
763+00	1, 2, and 3	State St/Boyle Ave
801+00	1, 2, and 3	Gage Ave
814+50	1, 2, and 3	Bell Ave
830+50	1, 2, and 3	Florence Ave
869+50	1, 2, and 3	Otis Ave
879+50	1, 2, and 3	Santa Ana St
1067+00	1, 2, and 3	Main St

Civil Station	Alternative(s)	Grade Crossing Locations
1083+00	1, 2, 3, and 4	Century Blvd
1172+50	1, 2, 3, and 4	Somerset Blvd
1185+50	1, 2, 3, and 4	Lakewood Blvd
1216+50	1, 2, 3, and 4	Clark Ave
1223+00	1, 2, 3, and 4	Alondra Blvd
1247+50	1, 2, 3, and 4	Bellflower Blvd
1393+00	1, 2, 3, and 4	186th St
1408+00	1, 2, 3, and 4	Pioneer Blvd

NOI-5 **Gate-Down-Bell-Stop Variance.** Metro would apply for a gate-down-bell-stop variance at the locations identified in the following table to reduce the duration of bell ringing and therefore reduce impacts at sensitive receivers. Crossing signal noise would not exceed 30 seconds in duration. This measure is subject to California Public Utilities Commission approval.

NOI-5 Gate Down Stop Variance Locations

Civil Station	Alternative(s)	Grade Crossing Locations
814+50	1, 2, and 3	Bell Ave
1083+00	1, 2, 3, and 4	Century Blvd
1393+00	1, 2, 3, and 4	186th St

NOI-6 **TPSS Noise Reduction**. At the TPSS locations identified in the following table, Metro would implement measures to reduce TPSS noise below the performance criteria shown in the table below. FTA impact criteria shown in the table are based on existing noise levels per FTA guidance. Measures to reduce TPSS noise may include, but are not limited to:

- Orient cooling fans and HVAC equipment away from sensitive receivers
- Utilize quieter cooling fans or HVAC equipment
- Provide a surrounding enclosure around the TPSS unit
- Install baffles on the exterior of the cooling fan and HVAC equipment
- Provide sound insulation of TPSS unit enclosure or mount sound isolation materials to minimize transformer hum

NOI-6 TPSS Locations

Civil Station	Alternative(s)	TPSS	Location	FTA Impact Criteria (dBA, L_{dn})
589+00	1 and 2	18 (e)	South of E Martin Luther King Jr Blvd on the west side of Long Beach Ave and within private property	62.0
638+00	1 and 2	17	South of E 51st St on the west side of Long Beach Ave within private property	64.7

Civil Station	Alternative(s)	TPSS	Location	FTA Impact Criteria (dBA, L_{dn})
640+00	1 and 2	17b	Just north of E 52nd St on the west side of Long Beach Ave within private property	64.7
642+25	1 and 2	17a	Between E 52nd and 53rd St on the west side of Long Beach Ave within private property	64.7
737+75	1, 2, and 3	15(e)	East of Stafford Ave and north of Randolph St within private property	58.8
1110+50	1, 2, 3, and 4	8(e)	Just southwest of Arthur Ave/Rose St and north of Rosecrans Ave within public-owned property	57.1
1372+50	1, 2, 3, and 4	2	Northwest of the crossing at Gridley Rd and 183rd St within Metro-owned property	53.8

Note: dBA = A-weighted decibel; FTA = Federal Transit Administration; L_{dn} = day-night noise level; TPSS = traction power substation; Leq = equivalent sound level

Mitigated Ancillary Facility Noise: Implementation of Mitigation Measure NOI-6 (TPSS Noise Reduction) would reduce TPSS noise levels. However, at this stage in design, various TPSS noise-reduction methods may or may not be completely effective due to design constraints for individual TPSS locations, which would be determined as part of final design. Therefore, under NEPA, adverse effects for Alternatives 1, 2, 3, and 4 could remain related to ancillary facility noise.

NOI-7 **Freight Track Relocation Soundwalls**. Soundwalls would be placed at the edge of the right-of-way at the locations identified in the following table to reduce freight and light rail transit noise related to the freight track relocation. Height and length will be verified during final design to meet Federal Transit Administration requirements.

NOI-7 Freight Track Relocation Soundwalls

Civil Station	Alternative(s)	Location	Track Side	Placement	Height
1111+00 to 1121+00	1, 2, 3, and 4	Between Arthur Ave and Colorado Ave	Left	Edge of Right-of-Way	8 feet
1088+00 to 1107+75	1, 2, 3, and 4	Between I-105 Fwy and Rose St	Right	Edge of Right-of-Way	8 feet
1089+50 to 1108+00	1, 2, 3, and 4	Between I-105 Fwy and Rose St	Left	Edge of Right-of-Way	8 feet

Mitigated LRT Noise: As shown in Table 4.7.6, after implementation of Mitigation Measures NOI-1 (Soundwalls), NOI-2 (Low Impact Frogs), and NOI-3 (Wheel Squeal Noise Monitoring), Alternatives 1 and 2 would result in 110 moderate and 60 severe impacts. Alternative 3 would have 101 moderate impacts and 59 severe impacts, and Alternative 4 would have 59 moderate impacts and 44 severe impacts. Implementation of mitigation would reduce impacts at many receptors, if not eliminating them. Mitigation under Alternative 1 would result in 165 benefited receptors, 166 benefited receptors under Alternative 2, 132 benefited receptors under Alternative 3, and 89 benefited receptors under Alternative 4. Mitigated impacts and impacts remaining after mitigation are shown in Table 4.7.7 through Table 4.7.10 and Figure 4.7-5 through Figure 4.7-11. Some impacts are not mitigable due to physical features preventing installation of soundwalls or the combination of mitigation measures not being able to provide adequate attenuation due to elevated project noise levels. Available mitigation methods, including soundwalls, methods to reduce special track work noise, and wheel squeal have been applied to reduce LRT noise to the greatest extent feasible. An explanation of areas where mitigation is not feasible or reasonable is included in Table 4.7.8. Mitigation Measures NOI-4 (Crossing Signal Bells) and NOI-5 (Gate-Down-Bell-Stop Variance) may result in additional reductions in impacts but would require California Public Utilities Commission (CPUC) approval before implementation. Therefore, under NEPA, adverse effects for Alternatives 1, 2, 3, and 4 would remain related to LRT noise. Please note that the numbering of the noise clusters does not correspond to the vibration clusters because different screening distances were used to identify clusters that were included in these assessments.

Table 4.7.6. Summary of Mitigated LRT Noise Impacts by Alternative

Alternative	Benefited Receptors[1]	Impacts Remaining		
		Moderate	Severe	Total
1	165	110	60	170
2	166	110	60	170
3	132	101	59	160
4	89	59	44	103

Source: Prepared for Metro in 2021
Notes: [1] Benefited receptors are clusters that have received a reduction in impact severity as a result of implementation of mitigation. This includes clusters that have gone from an impact of severe to moderate, severe to no impact, and moderate to no impact.
LRT = light rail transit

Table 4.7.7. Mitigated LRT Noise – Alternative 1

Cluster No.	Cat.[1]	Land Use	Soundwalls	Soundwall Height	Mitigation Measures	Noise Level (Cat. 2 dBA, L_{dn}) (Cat. 3 dBA, L_{eq})					Impact After Mitigation
						Existing	Unmitigated	Mitigated	Impact Threshold		
									Moderate	Severe	
N2	2	SFR/MFR	Yes	4	NOI-1	56.3	68.3	60.3	55.9	61.7	Moderate
N3	2	SFR/MFR	Yes	4	NOI-1	56.3	64.1	59.1	55.9	61.7	Moderate
N4	2	SFR/MFR	Yes	4	NOI-1	56.3	70.8	61.8	55.9	61.7	Severe
N5	2	SFR/MFR	Yes	4	NOI-1	56.3	63.5	58.5	55.9	61.7	Moderate
N6	2	SFR/MFR	Yes	4	NOI-1	56.3	68.3	60.3	55.9	61.7	Moderate
N7	2	SFR/MFR	Yes	4	NOI-1	56.3	63.5	58.5	55.9	61.7	Moderate
N10	2	SFR/MFR	Yes	4	NOI-1	66.8	63.5	57.5	62.0	67.3	No
N11	2	SFR/MFR	Yes	4	NOI-1	66.8	64.7	58.7	62.0	67.3	No
N12	2	SFR/MFR	Yes	4	NOI-1	66.8	66.9	59.9	62.0	67.3	No
N13	2	SFR/MFR	Yes	4	NOI-1, NOI-2	66.8	68.7	58.7	62.0	67.3	No
N14	2	SFR/MFR	Yes	4	NOI-1, NOI-2	66.8	71.9	59.9	62.0	67.3	No
N15	2	SFR/MFR	Yes	4	NOI-1, NOI-2	66.8	70.9	59.9	62.0	67.3	No
N16	2	SFR/MFR	Yes	4	NOI-1, NOI-2	66.8	68.5	58.5	62.0	67.3	No
N17	2	SFR/MFR	Yes	4	NOI-1, NOI-2	66.8	80.6	65.6	62.0	67.3	Moderate
N18	2	SFR/MFR	Yes	4	NOI-1	66.8	65.9	59.9	62.0	67.3	No
N19	2	SFR/MFR	Yes	4	NOI-1	66.8	75.6	65.6	62.0	67.3	Moderate
N20	2	SFR/MFR	Yes	4	NOI-1, NOI-2	66.8	71.9	59.9	62.0	67.3	No
N21	2	SFR/MFR	Yes	4	NOI-1	66.8	62.3	57.3	62.0	67.3	No
N22	2	SFR/MFR	Yes	4	NOI-1	66.8	62.3	57.3	62.0	67.3	No
N23	2	SFR/MFR	Yes	4	NOI-1	66.8	66.9	59.9	62.0	67.3	No

Cluster No.	Cat.[1]	Land Use	Soundwalls	Soundwall Height	Mitigation Measures	Noise Level (Cat. 2 dBA, L_{dn}) (Cat. 3 dBA, L_{eq})					Impact After Mitigation
						Existing	Unmitigated	Mitigated	Impact Threshold		
									Moderate	Severe	
N24	2	SFR	Yes	4	NOI-1	66.8	72.6	62.6	62.0	67.3	Moderate
N25	2	SFR/MFR	Yes	4	NOI-1	66.8	68.3	60.3	62.0	67.3	No
N27	2	SFR/MFR	Yes	4	NOI-1	66.8	62.6	57.6	62.0	67.3	No
N29	2	SFR/MFR	Yes	4	NOI-1	66.8	66.9	59.9	62.0	67.3	No
N30	2	SFR/MFR	Yes	4	NOI-1	66.8	63.7	58.7	62.0	67.3	No
N32	2	SFR/MFR	Yes	4	NOI-1	70.5	67.0	55.0	64.7	69.8	No
N34	2	MFR	Yes	4	NOI-1	70.5	69.6	58.6	64.7	69.8	No
N35	2	SFR/MFR	Yes	4	NOI-1	70.5	68.3	57.3	64.7	69.8	No
N37	2	MFR	Yes	4	NOI-1	70.5	66.1	55.1	64.7	69.8	No
N38	2	MFR	Yes	4	NOI-1	70.5	65.2	58.2	64.7	69.8	No
N40	2	SFR	Yes	4	NOI-1, NOI-2	70.5	67.3	56.3	64.7	69.8	No
N42	2	SFR/MFR	Yes	4	NOI-1, NOI-2	70.5	70.6	55.6	64.7	69.8	No
N43	2	SFR	Yes	4	NOI-1, NOI-2	70.5	75.6	58.6	64.7	69.8	No
N44	2	SFR	Yes	4	NOI-1, NOI-2	70.5	69.7	57.7	64.7	69.8	No
N45	2	SFR	No	0	NOI-2	70.5	66.5	61.5	64.7	69.8	No
N50	2	SFR/MFR	No	0	NOI-3	65.4	74.0	64.0	61.1	66.4	Moderate
N54	2	SFR	No	0	NOI-4	68.0	64.4	64.4	62.9	68.1	Moderate
N56	2	SFR	No	0	NOI-4	68.0	67.0	67.0	62.9	68.1	Moderate
N58	2	SFR/MFR	No	0	NOI-4	68.0	64.4	64.4	62.9	68.1	Moderate
N60	2	SFR/MFR	No	0	NOI-4	68.0	68.6	68.6	62.9	68.1	Severe
N61	2	SFR	No	0	NOI-4	68.0	64.9	64.9	62.9	68.1	Moderate

Cluster No.	Cat.[1]	Land Use	Soundwalls	Soundwall Height	Mitigation Measures	Noise Level (Cat. 2 dBA, L_{dn}) (Cat. 3 dBA, L_{eq})					Impact After Mitigation
						Existing	Unmitigated	Mitigated	Impact Threshold		
									Moderate	Severe	
N62	3	Templo Asamblea De Oracion	No	0	NOI-4	64.2	73.9	66.2	65.3	70.7	Moderate
N65	2	SFR/MFR	No	0	NOI-4	68.0	65.8	65.8	62.9	68.1	Moderate
N71	2	MFR	No	0	NOI-4	61.8	67.0	67.0	58.8	64.3	Severe
N73	2	SFR/MFR	No	0	NOI-2, NOI-4	61.8	68.0	65.4	58.8	64.3	Severe
N74	2	SFR/MFR	No	0	NOI-2	61.8	63.3	58.3	58.8	64.3	No
N75	2	MFR	No	0	NOI-2	61.8	59.9	54.9	58.8	64.3	No
N76	2	SFR/MFR	No	0	NOI-2	61.8	67.0	62.0	58.8	64.3	Moderate
N77	2	SFR/MFR	No	0	NOI-2	61.8	63.0	58.0	58.8	64.3	No
N78	2	SFR/MFR	No	0	NOI-2, NOI-4	61.8	63.1	59.2	58.8	64.3	Moderate
N79	2	SFR/MFR	No	0	NOI-2, NOI-4	61.8	71.2	67.9	58.8	64.3	Severe
N80	2	SFR/MFR	No	0	NOI-2, NOI-4	61.8	70.6	67.6	58.8	64.3	Severe
N81	2	SFR	No	0	NOI-2	61.8	61.0	56.0	58.8	64.3	No
N82	2	SFR/MFR	No	0	NOI-4	61.8	59.6	59.6	58.8	64.3	Moderate
N83	3	Huntington Park High School	No	0	NOI-4	63.8	71.9	65.8	65.1	70.5	Moderate
N85	2	SFR/MFR	No	0	None[2]	61.8	62.4	62.4	58.8	64.3	Moderate
N86	2	SFR/MFR	No	0	NOI-4	61.8	67.6	67.6	58.8	64.3	Severe
N88	2	SFR/MFR	No	0	NOI-4	61.8	66.1	66.1	58.8	64.3	Severe
N89	2	SFR/MFR	No	0	None[2]	63.1	62.9	62.9	59.6	65.1	Moderate
N92	2	SFR/MFR	No	0	NOI-4	63.1	61.6	61.6	59.6	65.1	Moderate
N93	2	SFR	No	0	NOI-4	63.1	67.0	67.0	59.6	65.1	Severe
N94	2	SFR/MFR	No	0	NOI-4	63.1	64.3	64.3	59.6	65.1	Moderate

Cluster No.	Cat.[1]	Land Use	Soundwalls	Soundwall Height	Mitigation Measures	Noise Level (Cat. 2 dBA, L_{dn}) (Cat. 3 dBA, L_{eq})					Impact After Mitigation
						Existing	Unmitigated	Mitigated	Impact Threshold		
									Moderate	Severe	
N96	2	SFR	No	0	NOI-4	63.1	62.4	62.4	59.6	65.1	Moderate
N98	2	SFR/MFR	No	0	NOI-4	63.1	63.1	63.1	59.6	65.1	Moderate
N99	2	SFR/MFR	No	0	NOI-4	63.1	60.9	60.9	59.6	65.1	Moderate
N102	2	SFR	Yes	8	NOI-1	63.1	62.6	58.6	59.6	65.1	No
N104	2	SFR	Yes	4	NOI-1	63.1	61.9	57.9	59.6	65.1	No
N105	2	SFR/MFR	Yes	4	NOI-1, NOI-3	63.1	76.0	55.0	59.6	65.1	No
N107	2	SFR	No	0	NOI-2, NOI-4	66.8	66.1	62.6	62.0	67.3	Moderate
N108	2	SFR	Yes	8	NOI-1, NOI-2, NOI-4	66.8	78.4	65.6	62.0	67.3	Moderate
N109	2	SFR	Yes	8	NOI-1, NOI-2	66.8	62.2	48.2	62.0	67.3	No
N110	2	SFR	Yes	8	NOI-1, NOI-2	66.8	64.9	53.9	62.0	67.3	No
N111	2	SFR	Yes	8	NOI-1	66.8	67.6	62.6	62.0	67.3	Moderate
N112	2	SFR/MFR	Yes	8	NOI-1, NOI-4, NOI-5	66.8	68.3	59.6	62.0	67.3	No
N113	2	SFR/MFR	Yes	8	NOI-1, NOI-2, NOI-4, NOI-5	66.8	77.1	71.6	62.0	67.3	Severe
N114	2	SFR	No	0	NOI-4NOI-5	66.8	66.0	66.0	62.0	67.3	Moderate
N116	2	SFR/MFR	Yes	8	NOI-1, NOI-4, NOI-5	64.0	74.2	71.6	60.2	65.6	Severe
N118	2	SFR	Yes	8	NOI-1	64.0	67.6	59.6	60.2	65.6	No
N119	2	SFR	Yes	8	NOI-1, NOI-4	64.0	69.4	63.2	60.2	65.6	Moderate
N120	2	SFR	No	0	NOI-4	64.0	60.3	60.3	60.2	65.6	Moderate
N133	2	SFR	Yes	8	NOI-1	63.1	62.9	58.9	59.6	65.1	No

Cluster No.	Cat.[1]	Land Use	Soundwalls	Soundwall Height	Mitigation Measures	Noise Level (Cat. 2 dBA, L_{dn}) (Cat. 3 dBA, L_{eq})					Impact After Mitigation
						Existing	Unmitigated	Mitigated	Impact Threshold		
									Moderate	Severe	
N135	2	SFR	Yes	8	NOI-1	63.1	60.3	57.3	59.6	65.1	No
N137	2	SFR	Yes	8	NOI-1	63.1	65.6	57.6	59.6	65.1	No
N140	2	MFR	Yes	8	NOI-1	63.1	62.7	56.7	59.6	65.1	No
N141	2	SFR	Yes	8	NOI-1	63.1	64.1	59.1	59.6	65.1	No
N144	2	SFR	Yes	8	NOI-1	63.1	64.9	58.9	59.6	65.1	No
N146	2	SFR	Yes	8	NOI-1	63.1	63.4	59.4	59.6	65.1	No
N149	2	SFR	Yes	8	NOI-1	63.1	63.4	59.4	59.6	65.1	No
N153	2	SFR	Yes	8	NOI-1	63.1	65.2	59.2	59.6	65.1	No
N155	2	SFR	Yes	8	NOI-1	63.1	60.3	56.3	59.6	65.1	No
N156	2	SFR	Yes	8	NOI-1	63.1	63.8	58.8	59.6	65.1	No
N157	2	SFR	Yes	4	NOI-1	61.1	61.4	61.4	58.4	64.0	Moderate
N158	2	SFR	Yes	4	NOI-1	61.1	67.8	66.8	58.4	64.0	Severe
N159	2	SFR	Yes	4	NOI-1	61.1	64.2	65.2	58.4	64.0	Severe
N160	2	SFR	Yes	8	NOI-1, NOI-4	61.1	65.5	62.2	58.4	64.0	Moderate
N161	2	SFR	No	0	NOI-4	61.1	67.8	67.8	58.4	64.0	Severe
N162	2	SFR	Yes	8	NOI-1, NOI-2, NOI-4	61.1	69.1	60.4	58.4	64.0	Moderate
N163	2	SFR/MFR	Yes	8	NOI-1, NOI-2, NOI-4	61.1	71.6	61.9	58.4	64.0	Moderate
N164	2	SFR/MFR	Yes	8	NOI-1, NOI-2	61.1	65.8	54.8	58.4	64.0	No
N165	2	MFR	No	0	NOI-4	61.1	64.0	64.0	58.4	64.0	Severe
N166	2	MFR	Yes	8	NOI-1, NOI-4	61.1	68.6	61.9	58.4	64.0	Moderate
N168	2	Mobile Homes	Yes	8	NOI-1	61.1	64.9	58.9	58.4	64.0	Moderate

Cluster No.	Cat.[1]	Land Use	Soundwalls	Soundwall Height	Mitigation Measures	Noise Level (Cat. 2 dBA, L_{dn}) (Cat. 3 dBA, L_{eq})					Impact After Mitigation
						Existing	Unmitigated	Mitigated	Impact Threshold		
									Moderate	Severe	
N169	2	Motel	No	0	None[2]	68.0	63.1	63.1	62.9	68.1	Moderate
N170	2	SFR	Yes	4	NOI-1, NOI-4	58.7	61.9	60.1	57.1	62.8	Moderate
N171	2	SFR	Yes	4	NOI-1	58.7	59.4	57.4	57.1	62.8	Moderate
N172	2	SFR	Yes	4	NOI-1	58.7	62.2	60.2	57.1	62.8	Moderate
N173	2	SFR	Yes	4	NOI-1	58.7	63.5	60.5	57.1	62.8	Moderate
N174	2	SFR	Yes	4	NOI-1	68.0	65.9	62.9	62.9	68.1	No
N175	2	SFR	Yes	4	NOI-1	58.7	63.5	59.5	57.1	62.8	Moderate
N176	2	MFR	Yes	4	NOI-1	58.7	65.7	60.7	57.1	62.8	Moderate
N177	2	Thunderbird Villa Mobile Home Estates	Yes	4	NOI-1	57.4	65.9	59.9	56.4	62.2	Moderate
N178	2	Thunderbird Villa Mobile Home Estates	Yes	4	NOI-1	57.4	64.9	59.9	56.4	62.2	Moderate
N179	2	Thunderbird Villa Mobile Home Estates	Yes	4	NOI-1	57.4	67.8	61.8	56.4	62.2	Moderate
N180	2	Thunderbird Villa Mobile Home Estates	Yes	4	NOI-1	57.4	73.4	64.4	56.4	62.2	Severe
N181	3	Trinity Bible Church	No	0	NOI-4	75.3	78.9	76.9	70.0	78.4	Moderate
N184	3	American Indian Bible Church	No	0	NOI-4	74.7	76.7	76.7	70.0	78.0	Moderate
N185	2	SFR	Yes	8	NOI-1, NOI-2	59.9	58.3	45.3	57.7	63.3	No
N188	2	SFR	No	0	NOI-4, NOI-5	60.3	58.4	58.4	58.0	63.5	Moderate
N189	2	SFR	No	0	NOI-4, NOI-5	61.2	60.0	60.0	58.5	64.0	Moderate
N190	2	SFR	No	0	NOI-4, NOI-5	63.7	70.2	70.2	60.0	65.4	Severe
N191	2	SFR	Yes	8	NOI-1	64.0	69.6	62.6	60.2	65.6	Moderate

Cluster No.	Cat.[1]	Land Use	Soundwalls	Soundwall Height	Mitigation Measures	Noise Level (Cat. 2 dBA, L_{dn}) (Cat. 3 dBA, L_{eq})					Impact After Mitigation
						Existing	Unmitigated	Mitigated	Impact Threshold		
									Moderate	Severe	
N192	2	SFR	Yes	8	NOI-1	64.0	71.3	63.3	60.2	65.6	Moderate
N193	2	SFR	Yes	8	NOI-1	64.0	72.6	63.6	60.2	65.6	Moderate
N194	2	SFR	Yes	8	NOI-1	64.0	67.8	60.8	60.2	65.6	Moderate
N195	2	SFR	Yes	8	NOI-1	64.0	60.7	56.7	60.2	65.6	No
N196	2	SFR	Yes	8	NOI-1	64.0	67.8	60.8	60.2	65.6	Moderate
N197	2	SFR	Yes	8	NOI-1	64.0	72.6	63.6	60.2	65.6	Moderate
N199	2	SFR	Yes	4	NOI-1	57.9	62.8	58.8	56.7	62.4	Moderate
N200	2	SFR	Yes	4	NOI-1	66.7	75.6	65.6	62.0	67.3	Moderate
N201	2	SFR	Yes	4	NOI-1	66.1	69.2	59.2	61.6	66.9	No
N202	2	SFR	Yes	4	NOI-1	58.9	63.5	52.5	57.2	62.9	No
N203	2	SFR	No	0	NOI-3	50.3	65.8	55.8	53.5	59.7	Moderate
N204	2	SFR	No	0	NOI-3	50.3	70.4	60.4	53.5	59.7	Severe
N205	2	SFR	Yes	4	NOI-1, NOI-3	59.9	64.1	49.1	57.7	63.3	No
N206	2	SFR	Yes	4	NOI-1, NOI-3	65.1	76.8	56.8	60.9	66.3	No
N207	2	SFR	Yes	4	NOI-1, NOI-3	58.7	69.8	50.8	57.1	62.8	No
N208	2	SFR	Yes	4	NOI-1, NOI-3	64.6	66.3	50.3	60.6	66.0	No
N209	2	SFR	Yes	4	NOI-1, NOI-3	67.5	68.8	53.8	62.5	67.8	No
N210	2	SFR	Yes	4	NOI-1, NOI-3	60.6	74.4	55.4	58.1	63.7	No
N213	2	SFR	Yes	4	NOI-1	65.2	61.2	49.2	61.0	66.3	No
N214	2	MFR	Yes	4	NOI-1	51.7	60.4	56.4	53.9	60.0	Moderate
N215	2	SFR	Yes	4	NOI-1	58.0	67.4	59.4	56.7	62.4	Moderate
N216	2	SFR	Yes	4	NOI-1	58.0	68.9	59.9	56.7	62.4	Moderate

Cluster No.	Cat.[1]	Land Use	Soundwalls	Soundwall Height	Mitigation Measures	Noise Level (Cat. 2 dBA, L_{dn}) (Cat. 3 dBA, L_{eq})					Impact After Mitigation
						Existing	Unmitigated	Mitigated	Impact Threshold		
									Moderate	Severe	
N217	2	SFR	Yes	4	NOI-1	58.0	67.4	60.4	56.7	62.4	Moderate
N218	2	SFR	Yes	4	NOI-1	58.0	68.6	60.6	56.7	62.4	Moderate
N219	2	SFR	Yes	4	NOI-1	58.0	68.0	62.0	56.7	62.4	Moderate
N220	2	SFR	Yes	4	NOI-1	58.0	67.7	60.7	56.7	62.4	Moderate
N221	3	Paramount High School	Yes	4	NOI-1	53.7	66.0	58.0	59.7	65.7	No
N222	2	SFR	Yes	4	NOI-1	51.7	67.7	61.7	53.9	60.0	Severe
N223	2	SFR	Yes	4	NOI-1, NOI-2	51.7	67.5	59.5	53.9	60.0	Moderate
N224	2	SFR	Yes	8	NOI-1, NOI-4	51.7	66.6	59.8	53.9	60.0	Moderate
N225	2	SFR	No	0	None[2]	51.7	61.4	61.4	53.9	60.0	Severe
N226	2	SFR	No	0	NOI-4	51.7	67.2	67.2	53.9	60.0	Severe
N227	2	SFR	Yes	8	NOI-1, NOI-2, NOI-4	51.7	79.9	68.0	53.9	60.0	Severe
N228	2	SFR	Yes	8	NOI-1, NOI-2	51.7	66.8	55.8	53.9	60.0	Moderate
N229	2	SFR	Yes	8	NOI-1, NOI-2	51.7	69.8	58.8	53.9	60.0	Moderate
N230	2	SFR	Yes	8	NOI-1, NOI-2	51.7	75.0	63.0	53.9	60.0	Severe
N231	2	SFR	Yes	8	NOI-1, NOI-4	51.7	70.4	65.5	53.9	60.0	Severe
N232	2	SFR	No	0	NOI-4	51.7	67.7	67.7	53.9	60.0	Severe
N233	2	SFR/MFR	No	0	None[2]	51.7	61.6	61.6	53.9	60.0	Severe
N234	2	Mobile Homes	Yes	8	NOI-1	52.0	58.3	52.3	54.1	60.1	No
N235	2	Mobile Homes	Yes	8	NOI-1	52.0	67.0	59.0	54.1	60.1	Moderate
N236	2	SFR	Yes	8	NOI-1	52.0	64.8	56.8	54.1	60.1	Moderate
N237	2	SFR	Yes	8	NOI-1	52.0	62.8	54.8	54.1	60.1	Moderate

Cluster No.	Cat.[1]	Land Use	Soundwalls	Soundwall Height	Mitigation Measures	Noise Level (Cat. 2 dBA, L_{dn}) (Cat. 3 dBA, L_{eq})					Impact After Mitigation
						Existing	Unmitigated	Mitigated	Impact Threshold		
									Moderate	Severe	
N238	2	SFR	Yes	8	NOI-1	52.0	60.5	53.5	54.1	60.1	No
N239	2	SFR	Yes	8	NOI-1	48.1	62.5	56.5	52.8	59.2	Moderate
N240	2	SFR	Yes	8	NOI-1	48.1	65.3	59.3	52.8	59.2	Severe
N241	2	SFR	Yes	8	NOI-1	52.0	62.9	55.9	54.1	60.1	Moderate
N242	2	SFR	Yes	8	NOI-1	52.0	61.5	53.5	54.1	60.1	No
N243	2	SFR	Yes	8	NOI-1	52.0	67.0	59.0	54.1	60.1	Moderate
N245	2	MFR	No	0	None[2]	51.2	66.4	66.4	53.8	59.9	Severe
N246	2	MFR	No	0	NOI-4	51.2	70.9	70.9	53.8	59.9	Severe
N247	2	SFR	No	0	NOI-4	51.2	68.2	68.2	53.8	59.9	Severe
N248	2	MFR	Yes	8	NOI-1	51.2	62.5	57.5	53.8	59.9	Moderate
N249	2	SFR	No	0	NOI-4	59.5	64.6	64.6	57.5	63.1	Severe
N251	2	SFR	No	0	NOI-4	59.5	67.4	67.4	57.5	63.1	Severe
N252	3	Door Christian Fellowship Church	No	0	NOI-4	61.5	64.0	64.0	63.6	69.2	Moderate
N253	2	SFR	No	0	NOI-4	59.5	65.4	65.4	57.5	63.1	Severe
N254	2	SFR	Yes	8	NOI-1, NOI-2	59.5	66.6	57.6	57.5	63.1	Moderate
N255	2	Aztec Mobile Home	Yes	8	NOI-1, NOI-2	59.5	69.0	56.0	57.5	63.1	No
N259	2	SFR	Yes	8	NOI-1	59.5	59.4	55.4	57.5	63.1	No
N261	2	SFR/MFR	No	0	NOI-4, NOI-5	59.5	65.8	65.8	57.5	63.1	Severe
N264	2	MFR	No	0	NOI-4	59.5	57.7	57.7	57.5	63.1	Moderate
N266	3	Los Angeles County Fire Museum	No	0	NOI-4	58.0	61.7	61.7	61.7	67.4	Moderate
N267	2	MFR	No	0	NOI-4, NOI-5	56.0	69.9	69.9	55.7	61.6	Severe

Cluster No.	Cat.[1]	Land Use	Soundwalls	Soundwall Height	Mitigation Measures	Noise Level (Cat. 2 dBA, L_{dn}) (Cat. 3 dBA, L_{eq})					Impact After Mitigation
						Existing	Unmitigated	Mitigated	Impact Threshold		
									Moderate	Severe	
N268	2	MFR	No	0	None[2]	56.0	66.4	66.4	55.7	61.6	Severe
N270	2	MFR	Yes	8	NOI-1	56.0	63.3	57.3	55.7	61.6	Moderate
N271	2	MFR	Yes	8	NOI-1	56.0	63.7	59.7	55.7	61.6	Moderate
N272	3	Bristol Civic Auditorium	Yes	8	NOI-1	58.0	66.8	58.8	61.7	67.4	No
N273	3	Bellflower Health Center	Yes	4	NOI-1	58.0	64.5	60.5	61.7	67.4	No
N274	2	SFR	Yes	4	NOI-1	56.0	67.8	62.8	55.7	61.6	Severe
N275	2	MFR	Yes	4	NOI-1	56.0	64.1	62.1	55.7	61.6	Severe
N276	2	MFR	Yes	4	NOI-1	69.4	68.4	63.4	63.9	69.1	No
N277	2	SFR	Yes	4	NOI-1	69.4	66.2	59.2	63.9	69.1	No
N278	2	SFR/MFR	Yes	4	NOI-1	69.4	74.0	65.0	63.9	69.1	Moderate
N279	2	SFR	Yes	4	NOI-1	69.4	67.9	61.9	63.9	69.1	No
N281	2	MFR	Yes	4	NOI-1	69.4	68.1	62.1	63.9	69.1	No
N282	2	MFR	Yes	4	NOI-1	69.4	68.7	64.7	63.9	69.1	Moderate
N283	2	SFR	Yes	4	NOI-1	57.7	71.4	67.4	56.6	62.3	Severe
N284	2	SFR	Yes	4	NOI-1	57.7	66.4	63.4	56.6	62.3	Severe
N285	2	SFR	Yes	8	NOI-1, NOI-2	57.7	71.1	61.1	56.6	62.3	Moderate
N286	2	Bel Tooren Villa Convalescent Hospital	Yes	4	NOI-1	69.4	68.0	61.0	63.9	69.1	No
N287	2	SFR	Yes	4	NOI-1	57.7	71.8	64.8	56.6	62.3	Severe
N288	2	SFR	Yes	4	NOI-1	57.7	65.4	61.4	56.6	62.3	Moderate
N289	2	SFR	Yes	8	NOI-1, NOI-2	57.7	70.8	57.8	56.6	62.3	Moderate

Cluster No.	Cat.[1]	Land Use	Soundwalls	Soundwall Height	Mitigation Measures	Noise Level (Cat. 2 dBA, L_{dn}) (Cat. 3 dBA, L_{eq})					Impact After Mitigation
						Existing	Unmitigated	Mitigated	Impact Threshold		
									Moderate	Severe	
N290	2	SFR	Yes	8	NOI-1, NOI-2	57.7	73.3	59.3	56.6	62.3	Moderate
N291	2	SFR	Yes	8	NOI-1, NOI-2	57.7	69.8	58.8	56.6	62.3	Moderate
N292	2	SFR	Yes	8	NOI-1, NOI-2	57.7	63.3	54.3	56.6	62.3	No
N293	2	SFR	Yes	8	NOI-1, NOI-2	57.7	66.2	57.2	56.6	62.3	Moderate
N294	2	SFR	Yes	8	NOI-1, NOI-2	57.7	71.7	61.7	56.6	62.3	Moderate
N295	2	SFR	Yes	8	NOI-1	57.7	62.8	54.8	56.6	62.3	No
N296	2	SFR	Yes	8	NOI-1, NOI-2	57.7	63.5	54.5	56.6	62.3	No
N297	2	SFR	Yes	8	NOI-1, NOI-2	57.7	72.0	60.0	56.6	62.3	Moderate
N298	2	SFR	Yes	4	NOI-1	57.7	65.0	62.0	56.6	62.3	Moderate
N299	2	SFR	Yes	4	NOI-1	57.7	63.0	59.0	56.6	62.3	Moderate
N300	2	SFR	Yes	4	NOI-1	57.7	65.8	61.8	56.6	62.3	Moderate
N301	2	SFR	Yes	4	NOI-1	57.7	66.1	62.1	56.6	62.3	Moderate
N303	3	Rio Hondo Metal Health Clinic	No	0	NOI-4	61.4	63.7	63.7	63.6	69.1	Moderate
N306	2	SFR	Yes	8	NOI-1	51.2	65.6	57.6	53.8	59.9	Moderate
N307	2	SFR	Yes	8	NOI-1	51.2	71.8	64.8	53.8	59.9	Severe
N308	2	SFR	Yes	4	NOI-1	51.2	65.6	60.6	53.8	59.9	Severe
N309	2	SFR	Yes	4	NOI-1	51.2	71.8	61.8	53.8	59.9	Severe
N310	2	SFR	Yes	4	NOI-1	51.2	71.8	61.8	53.8	59.9	Severe
N311	2	SFR	Yes	4	NOI-1	51.2	67.3	61.3	53.8	59.9	Severe
N312	2	SFR	Yes	4	NOI-1	51.2	71.8	62.8	53.8	59.9	Severe
N313	2	SFR	Yes	4	NOI-1	51.2	66.4	60.4	53.8	59.9	Severe

Cluster No.	Cat.[1]	Land Use	Soundwalls	Soundwall Height	Mitigation Measures	Noise Level (Cat. 2 dBA, L_{dn}) (Cat. 3 dBA, L_{eq})					Impact After Mitigation
						Existing	Unmitigated	Mitigated	Impact Threshold		
									Moderate	Severe	
N314	2	SFR	Yes	4	NOI-1	51.2	70.4	59.4	53.8	59.9	Moderate
N315	2	SFR	Yes	4	NOI-1	51.2	72.8	57.8	53.8	59.9	Moderate
N316	2	SFR	Yes	4	NOI-1	51.2	63.2	51.2	53.8	59.9	No
N317	2	SFR	Yes	4	NOI-1	51.2	65.4	55.4	53.8	59.9	Moderate
N318	2	SFR	Yes	4	NOI-1	51.2	68.4	57.4	53.8	59.9	Moderate
N319	2	SFR	Yes	4	NOI-1	51.2	71.8	58.8	53.8	59.9	Moderate
N320	2	SFR	Yes	4	NOI-1	51.2	63.9	52.9	53.8	59.9	No
N321	2	SFR	Yes	4	NOI-1	48.0	65.6	61.6	52.7	59.2	Severe
N322	2	SFR	Yes	4	NOI-1, NOI-4, NOI-5	48.0	75.8	69.8	52.7	59.2	Severe
N323	2	SFR	Yes	4	NOI-1	48.0	72.3	64.3	52.7	59.2	Severe
N324	2	SFR	Yes	4	NOI-1	48.0	65.8	60.8	52.7	59.2	Severe
N325	2	SFR	Yes	4	NOI-1	48.0	67.3	63.3	52.7	59.2	Severe
N326	2	SFR	Yes	4	NOI-1, NOI-4, NOI-5	48.0	74.9	70.0	52.7	59.2	Severe
N327	2	MFR	No	0	NOI-4, NOI-5	48.0	64.6	64.6	52.7	59.2	Severe
N328	2	SFR, MFR	Yes	8	NOI-1, NOI-2, NOI-4, NOI-5	48.0	73.5	65.2	52.7	59.2	Severe
N329	2	SFR	Yes	8	NOI-1	48.0	60.6	54.6	52.7	59.2	Moderate
N330	2	SFR	Yes	8	NOI-1, NOI-2	48.0	59.6	48.6	52.7	59.2	No
N331	2	MFR, SFR	Yes	8	NOI-1, NOI-2	48.0	72.0	60.0	52.7	59.2	Severe
N332	3	Artesia Historical Museum	Yes	8	NOI-1, NOI-2	50.0	64.4	53.4	58.4	64.6	No

Cluster No.	Cat.[1]	Land Use	Soundwalls	Soundwall Height	Mitigation Measures	Noise Level (Cat. 2 dBA, L_{dn}) (Cat. 3 dBA, L_{eq})					Impact After Mitigation
						Existing	Unmitigated	Mitigated	Impact Threshold		
									Moderate	Severe	
N333	2	SFR	No	0	None[2]	48.0	59.4	59.4	52.7	59.2	Severe
N334	2	SFR	Yes	8	NOI-1, NOI-2, NOI-4, NOI-5	48.0	74.1	66.2	52.7	59.2	Severe
N335	2	SFR, MFR	No	0	None[2]	48.0	58.6	58.6	52.7	59.2	Moderate
N336	2	SFR	Yes	8	NOI-1, NOI-2	48.0	61.9	48.9	52.7	59.2	No
N337	3	Wan Yuen Temple	Yes	8	NOI-1, NOI-2	50.0	66.5	54.5	58.4	64.6	No
N338	2	SFR, MFR	Yes	8	NOI-1, NOI-2	48.0	63.4	50.4	52.7	59.2	No
N339	2	SFR, MFR	Yes	8	NOI-1, NOI-2	48.0	68.9	57.9	52.7	59.2	Moderate
N340	2	SFR	No	0	NOI-2	48.0	57.6	52.6	52.7	59.2	No
N341	2	SFR	No	0	NOI-2	48.0	63.2	58.2	52.7	59.2	Moderate
N342	2	SFR	No	0	NOI-2	48.0	64.5	59.5	52.7	59.2	Severe
N343	2	SFR	No	0	NOI-2	48.0	57.6	52.6	52.7	59.2	No
N344	2	SFR	Yes	8	NOI-1, NOI-2	52.0	64.0	52.0	54.1	60.1	No
N346	2	SFR	Yes	8	NOI-1, NOI-2	52.0	61.0	49.0	54.1	60.1	No
N347	2	SFR	Yes	8	NOI-1	52.0	55.5	48.5	54.1	60.1	No

Source: Prepared for Metro in 2021

Notes: [1] Category 2: Residences and buildings where people normally sleep. This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.

Category 3: Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums, campgrounds, and recreational facilities can also be considered to be in this category. Certain historical sites and parks are also included.

[2] See Table 4.7.8 for explanation.

Cat = category; dBA = A-weighted decibel; Ldn = day-night noise level; Leq = equivalent sound level; LRT = light rail transit; MFR = multifamily residential; SFR = single-family residential

Table 4.7.8. Sensitive Land Uses Where Mitigation is Not Feasible or Reasonable

Cluster No.	Cat.[1]	Land Use	Mitigation Measures	Explanation of Feasibility/Reasonableness of Mitigation
N85	2	SFR/MFR	None	Soundwall not physically feasible, design speed reduced at this location.
N89	2	SFR/MFR	None	Soundwall not physically feasible, design speed reduced at this location.
N169	2	Motel	None	No other receptor within 1,000 feet of receptor. FTA moderate impact criteria exceeded only by 0.2 dBA, resulting in a moderate impact. Not reasonable to implement soundwall for isolated receptor.
N225	2	SFR	None	Receptor at intersection and implementation of soundwall not physically feasible.
N233	2	SFR/MFR	None	Receptor at intersection and implementation of soundwall not physically feasible.
N245	2	MFR	None	Receptor greater than height of soundwall and located near intersection.
N268	2	MFR	None	Receptor greater than height of soundwall.
N333	2	SFR	None	Receptor at intersection and implementation of soundwall not physically feasible.
N335	2	SFR	None	Receptor at intersection and implementation of soundwall not physically feasible.

Source: Prepared for Metro in 2021
Notes: [1] Category 2: Residences and buildings where people normally sleep. This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.
Cat. = category; dBA = A-weighted decibel; FTA = Federal Transit Administration; SFR = single-family residential; MFR = multifamily residential

Table 4.7.9. Mitigated LRT Noise – Alternative 2

Cluster No.	Cat.[1]	Land Use	Soundwalls	Soundwall Height	Mitigation Measures	Noise Level (Cat. 2 dBA, L_{dn}) (Cat. 3 dBA, L_{eq})					Impact
						Existing	Unmitigated	Mitigated	Impact Threshold		
									Moderate	Severe	
N2	2	SFR/MFR	Yes	4	NOI-1	56.3	68.7	60.7	55.9	61.7	Moderate
N3	2	SFR/MFR	Yes	4	NOI-1	56.3	64.6	59.6	55.9	61.7	Moderate
N4	2	SFR/MFR	Yes	4	NOI-1	56.3	71.2	62.2	55.9	61.7	Severe
N5	2	SFR/MFR	Yes	4	NOI-1	56.3	64.0	59.0	55.9	61.7	Moderate
N6	2	SFR/MFR	Yes	4	NOI-1	56.3	68.7	60.7	55.9	61.7	Moderate
N7	2	SFR/MFR	Yes	4	NOI-1	56.3	64.0	59.0	55.9	61.7	Moderate
N10	2	SFR/MFR	Yes	4	NOI-1	66.8	63.6	58.0	62.0	67.3	No
N11	2	SFR/MFR	Yes	4	NOI-1	66.8	65.1	59.1	62.0	67.3	No
N12	2	SFR/MFR	Yes	4	NOI-1	66.8	67.4	60.4	62.0	67.3	No
N13	2	SFR/MFR	Yes	4	NOI-1, NOI-2	66.8	69.2	59.2	62.0	67.3	No
N14	2	SFR/MFR	Yes	4	NOI-1, NOI-2	66.8	72.4	60.4	62.0	67.3	No
N15	2	SFR/MFR	Yes	4	NOI-1, NOI-2	66.8	71.3	60.3	62.0	67.3	No
N16	2	SFR/MFR	Yes	4	NOI-1, NOI-2	66.8	69.0	59.0	62.0	67.3	No
N17	2	SFR/MFR	Yes	4	NOI-1, NOI-2	66.8	81.0	66.0	62.0	67.3	Moderate
N18	2	SFR/MFR	Yes	4	NOI-1	66.8	66.3	60.3	62.0	67.3	No
N19	2	SFR/MFR	Yes	4	NOI-1	66.8	76.0	66.0	62.0	67.3	Moderate
N20	2	SFR/MFR	Yes	4	NOI-1, NOI-2	66.8	72.4	60.4	62.0	67.3	No
N21	2	SFR/MFR	Yes	4	NOI-1	66.8	62.7	57.7	62.0	67.3	No
N22	2	SFR/MFR	Yes	4	NOI-1	66.8	62.7	57.7	62.0	67.3	No
N23	2	SFR/MFR	Yes	4	NOI-1	66.8	67.4	60.4	62.0	67.3	No
N24	2	SFR	Yes	4	NOI-1	66.8	73.0	63.0	62.0	67.3	Moderate

Cluster No.	Cat.[1]	Land Use	Soundwalls	Soundwall Height	Mitigation Measures	Noise Level (Cat. 2 dBA, L_{dn}) (Cat. 3 dBA, L_{eq})					Impact
						Existing	Unmitigated	Mitigated	Impact Threshold		
									Moderate	Severe	
N25	2	SFR/MFR	Yes	4	NOI-1	66.8	68.7	60.7	62.0	67.3	No
N27	2	SFR/MFR	Yes	4	NOI-1	66.8	63.0	58.0	62.0	67.3	No
N29	2	SFR/MFR	Yes	4	NOI-1	66.8	67.4	60.4	62.0	67.3	No
N30	2	SFR/MFR	Yes	4	NOI-1	66.8	64.2	59.2	62.0	67.3	No
N32	2	SFR/MFR	Yes	4	NOI-1	70.5	67.4	55.4	64.7	69.8	No
N33	2	MFR	Yes	4	NOI-1	70.5	64.8	58.8	64.7	69.8	No
N34	2	MFR	Yes	4	NOI-1	70.5	70.0	59.0	64.7	69.8	No
N35	2	SFR/MFR	Yes	4	NOI-1	70.5	68.7	57.7	64.7	69.8	No
N37	2	MFR	Yes	4	NOI-1	70.5	66.5	55.5	64.7	69.8	No
N38	2	MFR	Yes	4	NOI-1	70.5	66.0	58.6	64.7	69.8	No
N40	2	SFR	Yes	4	NOI-1, NOI-2	70.5	67.7	56.7	64.7	69.8	No
N42	2	SFR/MFR	Yes	4	NOI-1, NOI-2	70.5	71.0	56.0	64.7	69.8	No
N43	2	SFR	Yes	4	NOI-1, NOI-2	70.5	76.0	59.0	64.7	69.8	No
N44	2	SFR	Yes	4	NOI-1, NOI-2	70.5	70.1	58.1	64.7	69.8	No
N45	2	SFR	No	0	NOI-2	70.5	66.9	61.9	64.7	69.8	No
N50	2	SFR/MFR	No	0	NOI-3	65.4	74.4	64.4	61.1	66.4	Moderate

Source: Prepared for Metro in 2021
Notes: Only clusters (groups of sensitive uses) that would have different effects from Alternative 1 are shown.
[1] Category 2: Residences and buildings where people normally sleep. This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.
Category 3: Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums, campgrounds, and recreational facilities can also be considered to be in this category. Certain historical sites and parks are also included.
Cat. = category; dBA = A-weighted decibel; Ldn = day-night noise level; Leq = equivalent sound level; LRT = light rail transit; MFR = multifamily residential; SFR = single-family residential

Table 4.7.10. Mitigated LRT Noise – Alternative 3

Cluster No.	Cat.[1]	Land Use	Soundwalls	Soundwall Height	Mitigation Measures	Noise Level (Cat. 2 dBA, L_{dn}) (Cat. 3 dBA, L_{eq})					Impact
									Impact Threshold		
						Existing	Unmitigated	Mitigated	Moderate	Severe	
N43	2	SFR	No	0	NOI-2	70.5	66.0	61.0	64.7	69.8	No

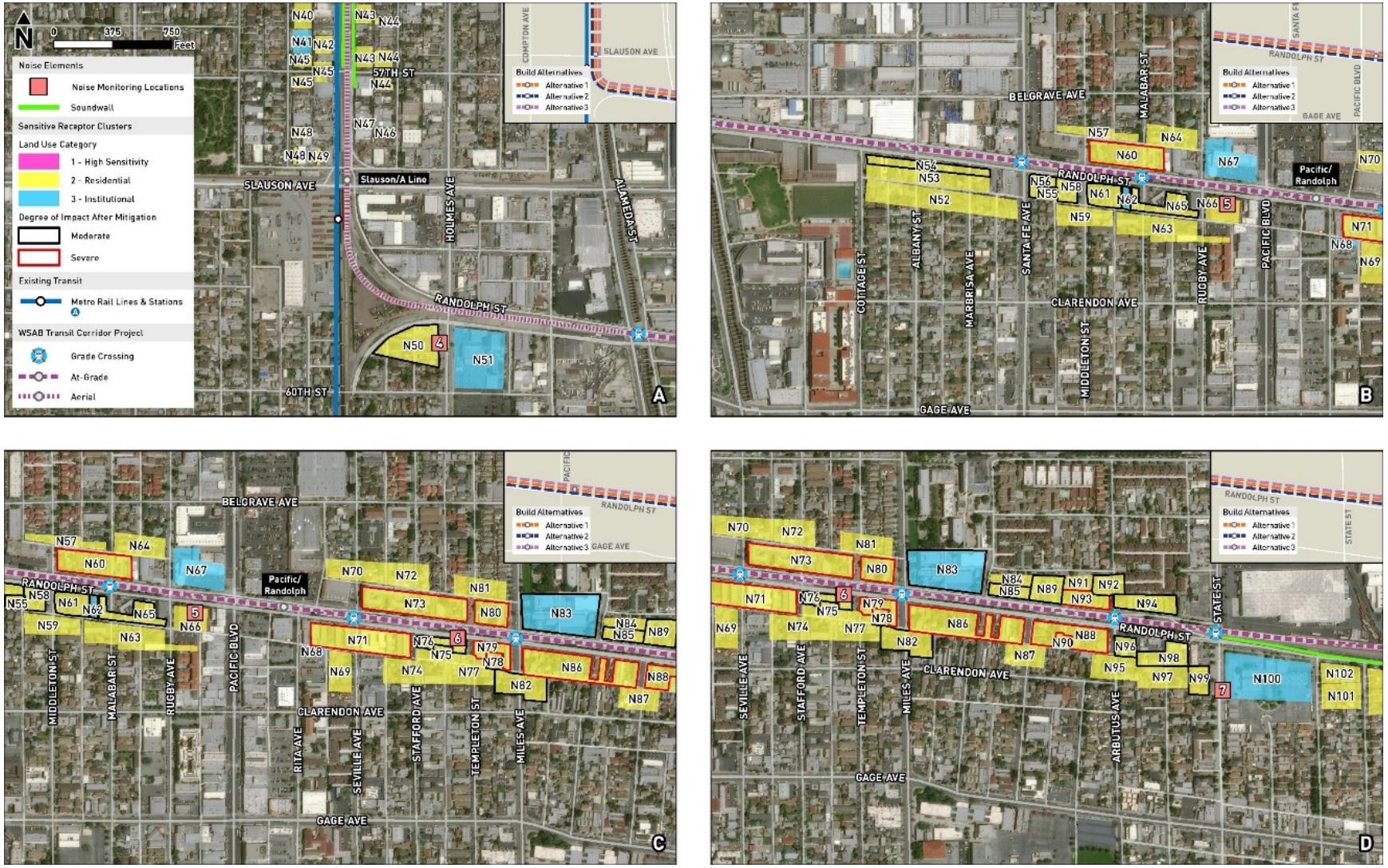
Source: Prepared for Metro in 2021
Notes: Only clusters (groups of sensitive uses) that would have different effects from Alternative 1 are shown.
[1] Category 2: Residences and buildings where people normally sleep. This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.
Category 3: Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums, campgrounds, and recreational facilities can also be considered to be in this category. Certain historical sites and parks are also included.
Cat. = category; dBA = A-weighted decibel; Ldn = day-night noise level; Leq = equivalent sound level; LRT = light rail transit; SFR = single-family residential

Figure 4.7-5. LRT Noise Impacts Remaining After Mitigation, including Soundwalls (Southeast Los Angeles to Florence)



Source: Prepared for Metro in 2021

Figure 4.7-6. LRT Noise Impacts Remaining After Mitigation, including Soundwalls (Florence to City of Huntington Park)



Source: Prepared for Metro in 2021

Figure 4.7-7. LRT Noise Impacts Remaining After Mitigation, including Soundwalls (City of Huntington Park to City of Cudahy)



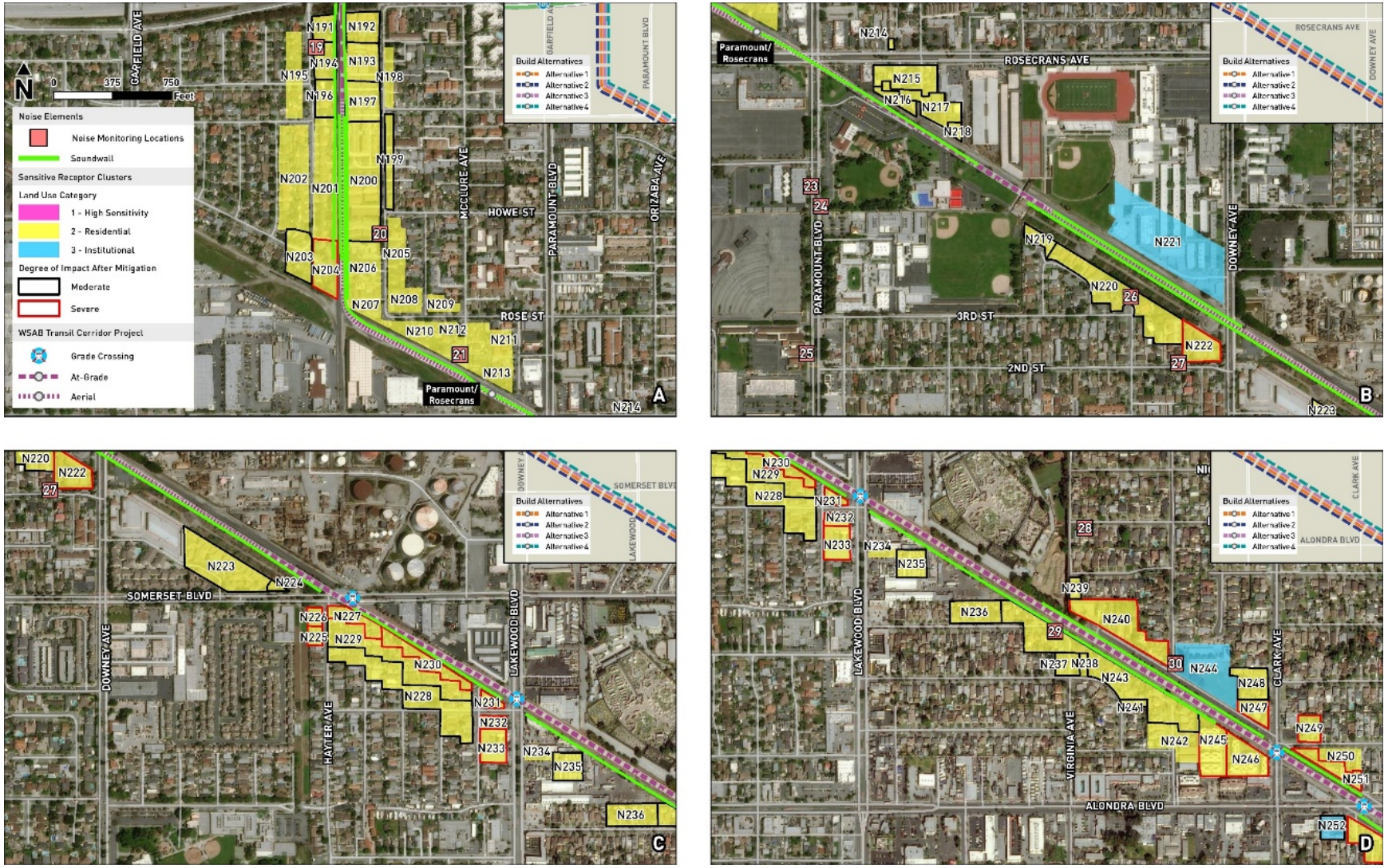
Source: Prepared for Metro in 2021

Figure 4.7-8. LRT Noise Impacts Remaining After Mitigation, including Soundwalls (City of South Gate)



Source: Prepared for Metro in 2021

Figure 4.7-9. LRT Noise Impacts Remaining After Mitigation, including Soundwalls (City of Paramount to City of Bellflower)



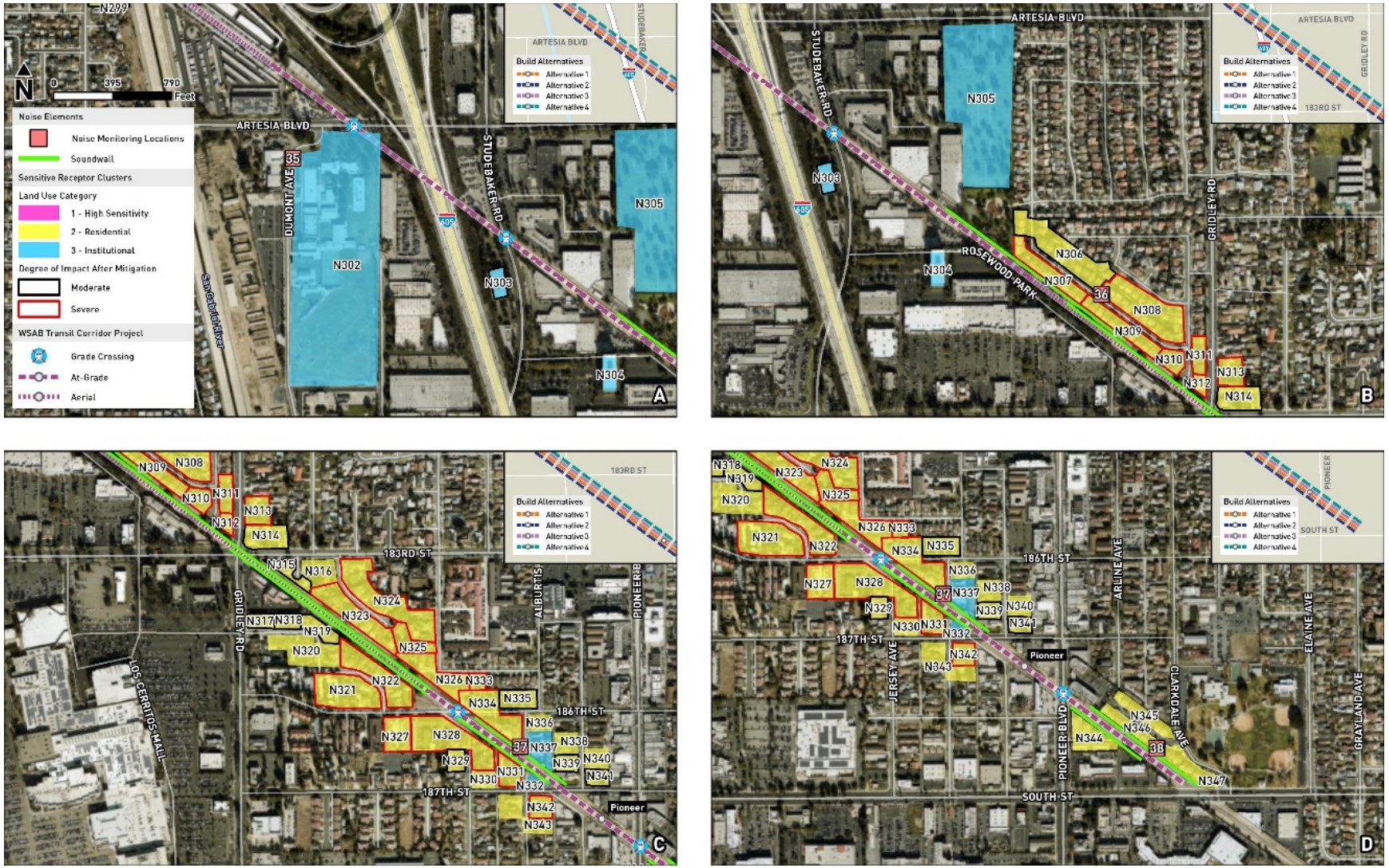
Source: Prepared for Metro in 2021

Figure 4.7-10. LRT Noise Impacts Remaining After Mitigation, including Soundwalls (City of Bellflower to City of Cerritos)



Source: Prepared for Metro in 2021

Figure 4.7-11. LRT Noise Impacts Remaining After Mitigation, including Soundwalls (City of Cerritos to City of Artesia)



Source: Prepared for Metro in 2021

Mitigated Freight Noise: In many cases, mitigation of the LRT would reduce impacts related to freight track relocation. The combination of the LRT noise with freight noise is the primary driver for noise impacts in the instances that freight and LRT would pass-by at the same time. Mitigation Measures NOI-1 through NOI-5, which include soundwalls, low impact frogs, wheel squeal noise monitoring, crossing signal bells, and gate-down-bell-stop variance, would apply to LRT noise, which would reduce overall noise impact related to freight track relocation. However, the analysis does not take into account reductions associated with Mitigation Measures NOI-4 (Crossing Signal Bells) or NOI-5 (Gate-Down-Bell-Stop Variance) because they would first require CPUC approval. Additional soundwalls necessary to mitigate noise related to freight track relocation have been proposed under Mitigation Measure NOI-7 (Freight Track Relocation Soundwalls). Mitigated impacts and impacts remaining after mitigation are shown in Figure 4.7-12 and Figure 4.7-13.

Mitigated noise levels for Alternative 1 are shown in Table 4.7.11. Under Alternative 1, nine clusters would be reduced from a moderate impact to no impact, and four clusters would be reduced from severe to no impact for a total of 13 benefited clusters. Thirty-three moderate impacts and nine severe impacts would remain at Category 2 clusters after implementation of Mitigation Measures NOI-1(Soundwalls), NOI-2 (Low Impact Frogs), NOI-3 (Wheel Squeal Noise Monitoring), and NOI-7 (Freight Track Relocation Soundwalls). Four moderate impacts and two severe impacts would remain at Category 3 clusters. Category 3 clusters along Randolph Street are unlikely to regularly experience impacts due to a combination of freight and LRT noise. This is because Category 3 uses are daytime uses and would not typically be open when the freight is traversing Randolph Street at night. Mitigation Measures NOI-4 (Crossing Signal Bells) and NOI-5 (Gate-Down-Bell-Stop Variance) would provide noise reductions to impacted clusters near grade crossing should CPUC approval be obtained. Mitigated impacts related to freight track relocation for Alternatives 2 and 3 would be the same as Alternatives 1. Mitigated noise levels for Alternative 4 are shown in Table 4.7.12. Under Alternative 4, four clusters would be reduced from a moderate impact to no impact, and four clusters would be reduced from severe to no impact for a total of eight benefited clusters. Thirteen moderate impacts and one severe impact would remain at Category 2 clusters after implementation of Mitigation Measures NOI-1 (Soundwalls), NOI-2 (Low Impact Frogs), NOI-3 (Wheel Squeal Noise Monitoring) and NOI-7 (Freight Track Relocation Soundwalls). One moderate impact would remain at Category 3 clusters. Therefore, under NEPA, adverse effects for Alternatives 1, 2, 3, and 4 would remain adverse even after implementation of mitigation.

Table 4.7.11. Mitigated Freight Track Relocation Noise – Alternatives 1, 2, and 3

Street	Cluster No.	Cat.[1]	Land Use	Mitigation Measures	Noise Level (Cat. 2 dBA, L_{dn}) (Cat. 3 dBA, L_{eq})					Impact
					Existing	Unmitigated	Mitigated	Impact Threshold		
								Moderate	Severe	
Randolph Street	N50	2	SFR/MFR	NOI-3	68.9	74.3	66.3	63.5	68.7	Moderate
	N51	3	Lillian Street Elementary	NOI-2	71.6	73.5	73.0	70.0	76.7	Moderate
	N54	2	SFR	NOI-4	71.0	67.2	67.2	65.1	70.2	Moderate
	N56	2	SFR	NOI-4	71.0	68.5	68.5	65.1	70.2	Moderate
	N58	2	SFR/MFR	NOI-4	71.0	66.8	66.8	65.1	70.2	Moderate
	N60	2	SFR/MFR	NOI-4	71.0	69.4	69.4	65.1	70.2	Moderate
	N61	2	SFR	NOI-4	71.0	67.1	67.1	65.1	70.2	Moderate
	N62	3	Templo Asamblea De Oracion	NOI-4	71.1	73.2	73.2	70.0	75.9	Moderate
	N65	2	SFR/MFR	NOI-4	71.0	68.0	68.0	65.1	70.2	Moderate
	N66	2	MFR	NOI-4	71.0	65.9	65.2	65.1	70.2	Moderate
	N67	3	UEI College	NOI-4	70.4	71.8	71.8	70	75.4	Moderate
	N71	2	MFR	NOI-4	64.8	69.1	69.1	60.7	66.1	Severe
	N73	2	SFR/MFR	NOI-2, NOI-4	64.8	68.9	66.8	60.7	66.1	Severe
	N74	2	SFR/MFR	NOI-2	64.8	64.4	61.0	60.7	66.1	Moderate
	N75	2	MFR	NOI-2	64.8	61.5	58.7	60.7	66.1	No
	N76	2	SFR/MFR	NOI-2	64.8	68.9	66.4	60.7	66.1	Severe
	N77	2	SFR/MFR	NOI-2	64.8	64.7	62	60.7	66.1	Moderate
	N78	2	SFR/MFR	NOI-2, NOI-4	64.8	63.9	61	60.7	66.1	Moderate
	N79	2	SFR/MFR	NOI-2, NOI-4	64.8	72.0	69.5	60.7	66.1	Severe
	N80	2	SFR/MFR	NOI-2, NOI-4	64.8	71.1	68.6	60.7	66.1	Severe
	N81	2	SFR	NOI-2	64.8	62.4	59.5	60.7	66.1	No
	N82	2	SFR/MFR	NOI-4	64.8	61.8	61.9	60.7	66.1	Moderate
	N83	3	Huntington Park High School	NOI-4	70.6	71.3	71.3	70.0	75.5	Moderate

Street	Cluster No.	Cat.[1]	Land Use	Mitigation Measures	Noise Level (Cat. 2 dBA, L_{dn}) (Cat. 3 dBA, L_{eq})					Impact
					Existing	Unmitigated	Mitigated	Impact Threshold		
								Moderate	Severe	
	N85	2	SFR/MFR	None	64.8	65	65.1	60.7	66.1	Moderate
	N86	2	SFR/MFR	NOI-4	64.8	69.1	69.1	60.7	66.1	Severe
	N88	2	SFR/MFR	NOI-4	64.8	68.1	68.1	60.7	66.1	Severe
	N89	2	SFR/MFR	None	66.1	65.2	65.2	61.6	66.9	Moderate
	N92	2	SFR/MFR	NOI-4	66.1	63.4	63.4	61.6	66.9	Moderate
	N93	2	SFR	NOI-4	66.1	68.2	68.2	61.6	66.9	Severe
	N94	2	SFR/MFR	NOI-4	66.1	65.8	65.8	61.6	66.9	Moderate
	N96	2	SFR	NOI-4	66.1	65.2	65.1	61.6	66.9	Moderate
	N98	2	SFR/MFR	NOI-4	66.1	65.6	65.5	61.6	66.9	Moderate
	N99	2	SFR/MFR	NOI-4	66.1	62.7	62.7	61.6	66.9	Moderate
	N100	3	San Antonio Elementary	NOI-1, NOI-4	69.8	70.4	63.5	70.0	75.3	No
	N101	2	SFR	NOI-1	66.1	61.8	57.8	61.6	66.9	No
	N102	2	SFR	NOI-1	66.1	65.3	60.4	61.6	66.9	No
Facade Avenue	N181	3	Trinity Bible Church	NOI-4	75.2	78.6	78.6	70.0	78.4	Severe
	N182	2	SFR	NOI-4	59.3	58.9	57.5	57.1	62.8	Moderate
	N184	3	American Indian Bible Church	NOI-4	70.6	77.5	77.5	70.0	75.1	Severe
	N185	2	SFR	NOI-1, NOI-2	59.9	60.8	52.9	57.4	63	No
	N186	2	SFR	NOI-1	59.3	57.6	53.6	57.1	62.8	No
	N187	2	SFR	NOI-2	59.9	59.5	58	57.4	63	Moderate
	N188	2	SFR	NOI-4, NOI-5	60.3	60.7	60.8	57.6	63.2	Moderate
	N189	2	SFR	NOI-4, NOI-5	61.2	62.5	62.5	58.1	63.7	Moderate
	N190	2	SFR	NOI-4, NOI-5	63.7	70.9	70.9	59.5	65	Severe
	N191	2	SFR	NOI-1, NOI-7	64.0	71.0	63.7	60.2	65.6	Moderate
	N192	2	SFR	NOI-1, NOI-7	64.0	71.9	64.3	60.2	65.6	Moderate
	N193	2	SFR	NOI-1, NOI-7	64.0	73.1	64.3	60.2	65.6	Moderate

Street	Cluster No.	Cat.[1]	Land Use	Mitigation Measures	Noise Level (Cat. 2 dBA, L_{dn}) (Cat. 3 dBA, L_{eq})					Impact
					Existing	Unmitigated	Mitigated	Impact Threshold		
								Moderate	Severe	
	N194	2	SFR	NOI-1, NOI-7	64.0	69.8	62.5	60.2	65.6	Moderate
	N195	2	SFR	NOI-1, NOI-7	64.0	61.3	57.1	60.2	65.6	No
	N196	2	SFR	NOI-1, NOI-7	64.0	70.0	62.7	60.2	65.6	Moderate
	N197	2	SFR	NOI-1, NOI-7	64.0	73.2	64.5	60.2	65.6	Moderate
	N199	2	SFR	NOI-1, NOI-7	57.9	63.1	59	56.3	62	Moderate
	N200	2	SFR	NOI-1, NOI-7	66.7	75.9	66.1	61.3	66.6	Moderate
	N201	2	SFR	NOI-1, NOI-7	66.1	70.9	61.7	60.9	66.3	Moderate
	N202	2	SFR	NOI-1, NOI-7	58.9	63.9	53.4	56.7	62.4	No
	N205	2	SFR	NOI-1, NOI-3, NOI-7	57.7	64.3	51.0	56.2	61.9	No
	N209	2	SFR	NOI-1, NOI-3, NOI-7	58.0	68.9	54.2	56.4	62.1	No
	N210	2	SFR	NOI-1, NOI-3, NOI-7	65.6	75.0	60.7	60.6	66	Moderate
	N212	2	SFR	NOI-1, NOI-7	60.1	59.1	49.0	57.4	63	No
	N213	2	SFR	NOI-1, NOI-7	65.2	66.9	59.0	60.3	65.7	No

Source: Prepared for Metro in 2021

Notes: [1] Category 2: Residences and buildings where people normally sleep. This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.

Category 3: Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums, campgrounds, and recreational facilities can also be considered to be in this category. Certain historical sites and parks are also included.

Cat. = category; dBA = A-weighted decibel; Ldn = day-night noise level; Leq = equivalent sound level; LRT = light rail transit; MFR = multifamily residential; SFR = single-family residential

Table 4.7.12. Mitigated Freight Track Relocation Noise – Alternative 4

	Cluster No.	Cat.[1]	Land Use	Mitigation Measures	Noise Level (Cat. 2 dBA, L_{dn}) (Cat. 3 dBA, L_{eq})					Impact
					Existing	Unmitigated	Mitigated	Impact Threshold		
								Moderate	Severe	
Facade Avenue	N184	3	American Indian Bible Church	NOI-4	70.6	77.5	70.2	70.0	75.1	Moderate
	N185	2	SFR	NOI-1, NOI-2	59.9	60.8	52.4	57.4	63.0	No
	N187	2	SFR	NOI-2	59.9	59.5	57.5	57.4	63.0	Moderate

Source: Prepared for Metro in 2020

Notes: [1] Category 2: Residences and buildings where people normally sleep. This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.

Category 3: Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums, campgrounds, and recreational facilities can also be considered to be in this category. Certain historical sites and parks are also included.

Cat. = category; dBA = A-weighted decibel; Ldn = day-night noise level; Leq = equivalent sound level; SFR = single-family residential

Figure 4.7-12. Freight Noise Impacts Remaining After Mitigation, including Soundwalls



Source: Prepared for Metro in 2021

Figure 4.7-13. Freight Noise Impacts Remaining After Mitigation, including Soundwalls



Source: Prepared for Metro in 2021

Vibration

VIB-1 Ballast Mat or Resilient Rail Fasteners. At the locations identified in the following table where vibration impacts would occur, Metro would isolate trackwork using ballast mats for ballast and tie track and resilient rail fasteners for direct fixation track or other equally or more effective vibration isolation techniques. Locations will be verified during final design.

VIB-1 Ballast Mat or Resilient Rail Fasteners

Civil Station	Alternative(s)	Location
705+00 to 757+00	1, 2, and 3	Between Albany St and Arbutus Ave
802+00 to 893+00	1, 2, and 3	Between Gage Ave and Cecilia St
1082+00 to 1135+00	1, 2, 3, and 4	Between Nevada Ave and Paramount High School
1162+00 to 1232+00	1, 2, 3, and 4	Between approximately 600 feet southeast of Downey Ave and Ardmore Ave
1251+00 to 1257+00	1, 2, 3, and 4	Between approximately 300 feet southeast of Bellflower Blvd and approximately 200 feet northeast of Civic Center Dr
1273+00 to 1311+00	1, 2, 3, and 4	Between Flower St and San Gabriel River Channel
1363+00 to 1403+00	1, 2, 3, and 4	Between approximately 500 feet southeast of Rosewood Park and 187th St
1410+00 to 1419+00	1, 2, 3, and 4	Between Pioneer Blvd and South St

VIB-2 Low Impact Frogs. Low impact frogs would be used at the turnout and crossover track locations identified in the following table where exceedance of the Federal Transit Administration impact thresholds has been identified. These locations would be verified during final design.

VIB-2 Low Impact Frogs

Civil Station	Alternative(s)	Location	Clusters
415+50	1	Between Flower St and Hope St	8, 9, and 10
602+00	1 and 2	Between 41st Pl and 42nd St	31, 33, and 34
655+00	1, 2, and 3	Between 55th St and 57th St	43
740+50	1, 2, and 3	Between Templeton St and Miles Ave	62, 63, and 64
808+00	1, 2, and 3	Between Iris Ave and Nevada St	81
874+00	1, 2, and 3	Between Otis Ave and Santa Ana St	115 and 116
1179+00	1, 2, 3, and 4	Between Lincoln Ave and Florence Ave	153, 154, and 156
1229+50	1, 2, 3, and 4	Between Castana Ave and Olivia Ave	172, 173, 174, and 175
1289+50	1, 2, 3, and 4	Between Alondra Blvd and Harvard St	192, 193, and 194
1294+00	1, 2, 3, and 4	Between Flora Vista St and Park St	195, 196, 197, and 198
1399+00	1, 2, 3, and 4	Between 186th St and 187th St	221,222, and 223
1411+50	1, 2, 3, and 4	Between Pioneer Blvd and South Ave	230, 231 and 232

Mitigated LRT Vibration: An FTA Detailed Vibration Assessment will be conducted during the final design for those locations identified as exceeding the FTA impact thresholds along the Project. A Detailed Vibration Assessment at these locations may show that vibration impacts would not occur and control measures are not needed. Nonetheless, under NEPA, adverse effects for Alternatives 1, 2, 3, and 4 would remain even after implementation of mitigation. Residual impacts are shown in Figure 4.7-14 through Figure 4.7-19.

Alternative 1: Los Angeles Union Station to Pioneer Station: As shown in Table 4.7.13, although Mitigation Measures VIB-1 (Ballast Mat or Resilient Rail Fasteners) and VIB-2 (Low Impact Frogs) would reduce vibration impacts, 14 clusters would still remain impacted in the range of 1 VdB to 5 VdB. Mitigated impacts and impacts remaining after mitigation are shown in Figure 4.7-14 through Figure 4.7-19. According to FTA guidance, there is a strong chance that after mitigation ground-borne vibration levels at the 14 clusters would be below the impact threshold. Vibration impacts at the one cluster exceeding the FTA impact threshold by more than 5 VdB would remain after mitigation. Nonetheless, under NEPA, Alternative 1 impacts would be adverse even after implementation of mitigation. No vibration impacts have been identified at the freight track relocations.

Alternative 2: 7th St/Metro Center to Pioneer Station: Mitigation Measures VIB-1 (Ballast Mat or Resilient Rail Fasteners) and VIB-2 (Low Impact Frogs) would apply to Alternative 2. The underground segment of Alternative 2 would not result in vibration impacts. The remainder of Alternative 2 would follow the same alignment as Alternative 1. As shown in Table 4.7.13, although Mitigation Measures VIB-1 (Ballast Mat or Resilient Rail Fasteners) and VIB-2 (Low Impact Frogs) would reduce vibration impacts, 14 clusters would still remain impacted in the range of 1 VdB to 5 VdB. According to FTA guidance, there is a strong chance that after mitigation, ground-borne vibration levels at the 14 clusters would be below the impact threshold. Vibration impacts at the one cluster exceeding the FTA impact threshold by more than 5 VdB would remain after mitigation. Nonetheless, under NEPA, Alternative 2 impacts would be adverse even after implementation of mitigation. No vibration impacts have been identified at the freight track relocations.

Alternative 3: Slauson/A Line (Blue) to Pioneer Station: Mitigation Measures VIB-1 (Ballast Mat or Resilient Rail Fasteners) and VIB-2 (Low Impact Frogs) would apply to Alternative 3. No underground portion is proposed and, therefore, no vibration impacts related to underground LRT pass-by would occur. Vibration impacts would be reduced overall due to the shortened length of the alignment. Alternative 3 would affect vibration clusters 41 through 233. As shown in Table 4.7.13, although Mitigation Measures VIB-1 (Ballast Mat or Resilient Rail Fasteners) and VIB-2 (Low Impact Frogs) would reduce vibration impacts, 13 clusters would still be impacted by LRT vibration in the range of 1 VdB to 5 VdB. According to FTA guidance, there is a strong chance that after mitigation, ground-borne vibration levels at these 13 clusters would be below the impact threshold. Nonetheless, under NEPA, Alternative 3 impacts would be adverse even after implementation of mitigation. No vibration impacts have been identified at the freight track relocations.

Table 4.7.13. Mitigated LRT Vibration

Cluster No.	Alternative	Land Use	Near Track Distance (feet)	Speed (mph)	Predicted GBV Level, VdB	Mitigation Measure	Predicted Mitigated GBV Level, VdB	FTA GBV Impact Criteria, VdB[1]	Residual Impact?[2]
V7	1, 2	SFR/MFR	6	35	79	Resilient DF Rail Fasteners	74	72	Yes
V31	1, 2	SFR/MFR	40	55	80[3]	Resilient DF Rail Fasteners and Low Impact Frog	69	72	No
V33	1, 2	SFR/MFR	40	55	78[3]	Resilient DF Rail Fasteners and Low Impact Frog	68	72	No
V34	1, 2	SFR/MFR	110	55	74[3]	Resilient DF Rail Fasteners and Low Impact Frog	65	72	No
V37	1, 2	SFR/MFR	40	55	73	Resilient DF Rail Fasteners	68	72	No
V48	1, 2, 3	SFR	55	35	73	Ballast Mat	65	72	No
V53	1, 2, 3	SFR/MFR	40	35	75	Ballast Mat	67	72	No
V56	1, 2, 3	SFR/MFR	55	35	73	Ballast Mat	65	72	No
V58	1, 2, 3	MFR	55	35	73	Ballast Mat	65	72	No
V59	1, 2, 3	SFR/MFR	50	35	74	Ballast Mat	66	72	No
V62	1, 2, 3	SFR/MFR	110	35	74[3]	Ballast Mat and Low Impact Frog	60	72	No
V63	1, 2, 3	SFR/MFR	50	35	81[3]	Ballast Mat and Low Impact Frog	65	72	No
V66	1, 2, 3	SFR/MFR	40	35	75	Ballast Mat	67	72	No
V67	1, 2, 3	SFR/MFR	50	35	74	Ballast Mat	66	72	No
V68	1, 2, 3	SFR/MFR	50	35	74	Ballast Mat	66	72	No
V69	1, 2, 3	SFR/MFR	45	35	75	Ballast Mat	67	72	No
V72	1, 2, 3	SFR	50	35	74	Ballast Mat	66	72	No
V81	1, 2, 3	SFR	20	55	92[3]	Ballast Mat and Low Impact Frog	74	72	Yes

Cluster No.	Alternative	Land Use	Near Track Distance (feet)	Speed (mph)	Predicted GBV Level, VdB	Mitigation Measure	Predicted Mitigated GBV Level, VdB	FTA GBV Impact Criteria, VdB[1]	Residual Impact?[2]
V82	1, 2, 3	SFR	90	55	77	Ballast Mat	69	72	No
V84	1, 2, 3	SFR/MFR	35	50	79	Ballast Mat	71	72	No
V86	1, 2, 3	SFR/MFR	25	50	80	Ballast Mat	72	72	No
V88	1, 2, 3	SFR	25	55	81	Ballast Mat	73	72	Yes
V89	1, 2, 3	SFR	30	40	78	Ballast Mat	70	72	No
V94	1, 2, 3	SFR/MFR	55	45	75	Ballast Mat	67	72	No
V96	1, 2, 3	SFR	80	55	73	Ballast Mat	65	72	No
V99	1, 2, 3	SFR	60	55	75	Ballast Mat	67	72	No
V101	1, 2, 3	SFR	80	55	73	Ballast Mat	65	72	No
V102	1, 2, 3	SFR	50	55	77	Ballast Mat	69	72	No
V103	1, 2, 3	SFR	85	55	73	Ballast Mat	65	72	No
V105	1, 2, 3	SFR	80	55	73	Ballast Mat	65	72	No
V108	1, 2, 3	SFR	65	55	75	Ballast Mat	67	72	No
V110	1, 2, 3	SFR	75	55	74	Ballast Mat	66	72	No
V112	1, 2, 3	SFR	70	55	74[3]	Ballast Mat and Low Impact Frog	66	72	No
V113	1, 2, 3	SFR	80	55	73[3]	Ballast Mat and Low Impact Frog	65	72	No
V114	1, 2, 3	SFR	75	55	74[3]	Ballast Mat and Low Impact Frog	66	72	No
V115	1, 2, 3	SFR	140	55	75[3]	Ballast Mat and Low Impact Frog	60	72	No
V116	1, 2, 3	SFR/MFR	80	55	80[3]	Ballast Mat and Low Impact Frog	65	72	No
V117	1, 2, 3	MFR	75	55	74	Ballast Mat	66	72	No
V119	1, 2, 3	Mobile Homes	85	55	73	Ballast Mat	65	72	No
V127	1, 2, 3, 4	SFR	60	55	75	Ballast Mat	67	72	No

Cluster No.	Alternative	Land Use	Near Track Distance (feet)	Speed (mph)	Predicted GBV Level, VdB	Mitigation Measure	Predicted Mitigated GBV Level, VdB	FTA GBV Impact Criteria, VdB[1]	Residual Impact?[2]
V128	1, 2, 3, 4	SFR	25	55	81	Ballast Mat	73	72	Yes
V129	1, 2, 3, 4	SFR	15	55	84	Ballast Mat	76	72	Yes
V130	1, 2, 3, 4	SFR	24	55	81	Ballast Mat	73	72	Yes
V131	1, 2, 3, 4	SFR	20	55	82	Resilient DF Rail Fasteners	77	72	Yes
V132	1, 2, 3, 4	SFR	34	55	79	Ballast Mat	71	72	No
V133	1, 2, 3, 4	SFR	20	55	82	Ballast Mat	74	72	Yes
V134	1, 2, 3, 4	SFR	20	55	82	Ballast Mat	74	72	Yes
V135	1, 2, 3, 4	SFR	25	55	81	Ballast Mat	73	72	Yes
V140	1, 2, 3, 4	SFR	70	55	74	Ballast Mat	66	72	No
V141	1, 2, 3, 4	SFR	60	55	75	Ballast Mat	67	72	No
V142	1, 2, 3, 4	SFR	72	55	74	Ballast Mat	66	72	No
V144	1, 2, 3, 4	SFR	66	55	75	Ballast Mat	67	72	No
V149	1, 2, 3, 4	SFR	125	55	75[3]	Ballast Mat and Low Impact Frog	61	72	No
V152	1, 2, 3, 4	SFR	20	55	82	Ballast Mat	74	72	Yes
V153	1, 2, 3, 4	SFR	33	55	84[3]	Ballast Mat and Low Impact Frog	71	72	No
V154	1, 2, 3, 4	SFR	31	55	90[3]	Ballast Mat and Low Impact Frog	72	72	No
V155	1, 2, 3, 4	SFR	50	55	77[3]	Ballast Mat and Low Impact Frog	69	72	No
V157	1, 2, 3, 4	Mobile Homes	70	55	74	Ballast Mat	66	72	No
V158	1, 2, 3, 4	SFR	66	55	75	Ballast Mat	67	72	No
V160	1, 2, 3, 4	SFR	70	55	74	Ballast Mat	66	72	No
V162	1, 2, 3, 4	SFR	65	55	75	Ballast Mat	67	72	No
V163	1, 2, 3, 4	SFR	75	55	74	Ballast Mat	66	72	No

Cluster No.	Alternative	Land Use	Near Track Distance (feet)	Speed (mph)	Predicted GBV Level, VdB	Mitigation Measure	Predicted Mitigated GBV Level, VdB	FTA GBV Impact Criteria, VdB[1]	Residual Impact?[2]
V165	1, 2, 3, 4	MFR	80	55	73	Ballast Mat	65	72	No
V166	1, 2, 3, 4	MFR	65	55	75	Ballast Mat	67	72	No
V171	1, 2, 3, 4	SFR	60	55	75	Ballast Mat	67	72	No
V173	1, 2, 3, 4	SFR	117	55	76[3]	Ballast Mat and Low Impact Frog	62	72	No
V174	1, 2, 3, 4	Aztec Mobile Home	25	55	91[3]	Ballast Mat and Low Impact Frog	73	72	Yes
V175	1, 2, 3, 4	SFR	120	55	76[3]	Ballast Mat and Low Impact Frog	62	72	No
V180	1, 2, 3, 4	MFR	25	55	81	Ballast Mat	73	72	Yes
V181	1, 2, 3, 4	MFR	60	55	75	Ballast Mat	67	72	No
V187	1, 2, 3, 4	SFR/MFR	40	55	78	Ballast Mat	70	72	No
V189	1, 2, 3, 4	SFR	25	55	81[3]	Ballast Mat and Low Impact Frog	73	72	Yes
V192	1, 2, 3, 4	SFR	60	55	84[3]	Ballast Mat and Low Impact Frog	67	72	No
V193	1, 2, 3, 4	SFR	50	55	86[3]	Ballast Mat and Low Impact Frog	67	72	No
V194	1, 2, 3, 4	SFR	30	55	90[3]	Ballast Mat and Low Impact Frog	72	72	No
V195	1, 2, 3, 4	SFR	45	55	78[3]	Ballast Mat and Low Impact Frog	70	72	No
V197	1, 2, 3, 4	SFR	58	55	76[3]	Ballast Mat and Low Impact Frog	68	72	No
V199	1, 2, 3, 4	SFR	65	55	75	Ballast Mat	67	72	No
V202	1, 2, 3, 4	SFR	65	55	75	Ballast Mat	67	72	No
V204	1, 2, 3, 4	SFR	50	55	77	Ballast Mat	69	72	No
V205	1, 2, 3, 4	SFR	60	55	75	Ballast Mat	67	72	No
V206	1, 2, 3, 4	SFR	45	55	77	Ballast Mat	69	72	No
V207	1, 2, 3, 4	SFR	40	55	78	Ballast Mat	70	72	No
V210	1, 2, 3, 4	SFR	60	55	75	Ballast Mat	67	72	No

Cluster No.	Alternative	Land Use	Near Track Distance (feet)	Speed (mph)	Predicted GBV Level, VdB	Mitigation Measure	Predicted Mitigated GBV Level, VdB	FTA GBV Impact Criteria, VdB[1]	Residual Impact?[2]
V211	1, 2, 3, 4	SFR	40	55	78	Ballast Mat	70	72	No
V212	1, 2, 3, 4	SFR	50	55	77	Ballast Mat	69	72	No
V213	1, 2, 3, 4	SFR	80	55	73	Ballast Mat	65	72	No
V214	1, 2, 3, 4	SFR	50	55	77	Ballast Mat	69	72	No
V215	1, 2, 3, 4	SFR	78	55	73	Ballast Mat	65	72	No
V216	1, 2, 3, 4	SFR	40	55	78	Ballast Mat	70	72	No
V217	1, 2, 3, 4	SFR	56	55	76	Ballast Mat	69	72	No
V218	1, 2, 3, 4	SFR	50	55	77	Ballast Mat	68	72	No
V219	1, 2, 3, 4	SFR	39	55	79	Ballast Mat	70	72	No
V221	1, 2, 3, 4	SFR/MFR	64	55	81[3]	Ballast Mat and Low Impact Frog	67	72	No
V222	1, 2, 3, 4	SFR/MFR	42	55	83[3]	Ballast Mat and Low Impact Frog	70	72	No
V223	1, 2, 3, 4	SFR	45	45	81[3]	Ballast Mat and Low Impact Frog	68	72	No
V225	1, 2, 3, 4	SFR/MFR	80	55	73	Ballast Mat	65	72	No
V226	1, 2, 3, 4	SFR/MFR	58	55	76	Ballast Mat	68	72	No
V228	1, 2, 3, 4	SFR	80	45	79	Ballast Mat	71	72	No
V230	1, 2, 3, 4	SFR	52	45	84[3]	Ballast Mat and Low Impact Frog	67	72	No
V232	1, 2, 3, 4	SFR	50	45	85[3]	Ballast Mat and Low Impact Frog	67	72	No
V233	1, 2, 3, 4	SFR	57	55	76[3]	Ballast Mat and Low Impact Frog	68	72	No

Source: Prepared for Metro in 2021

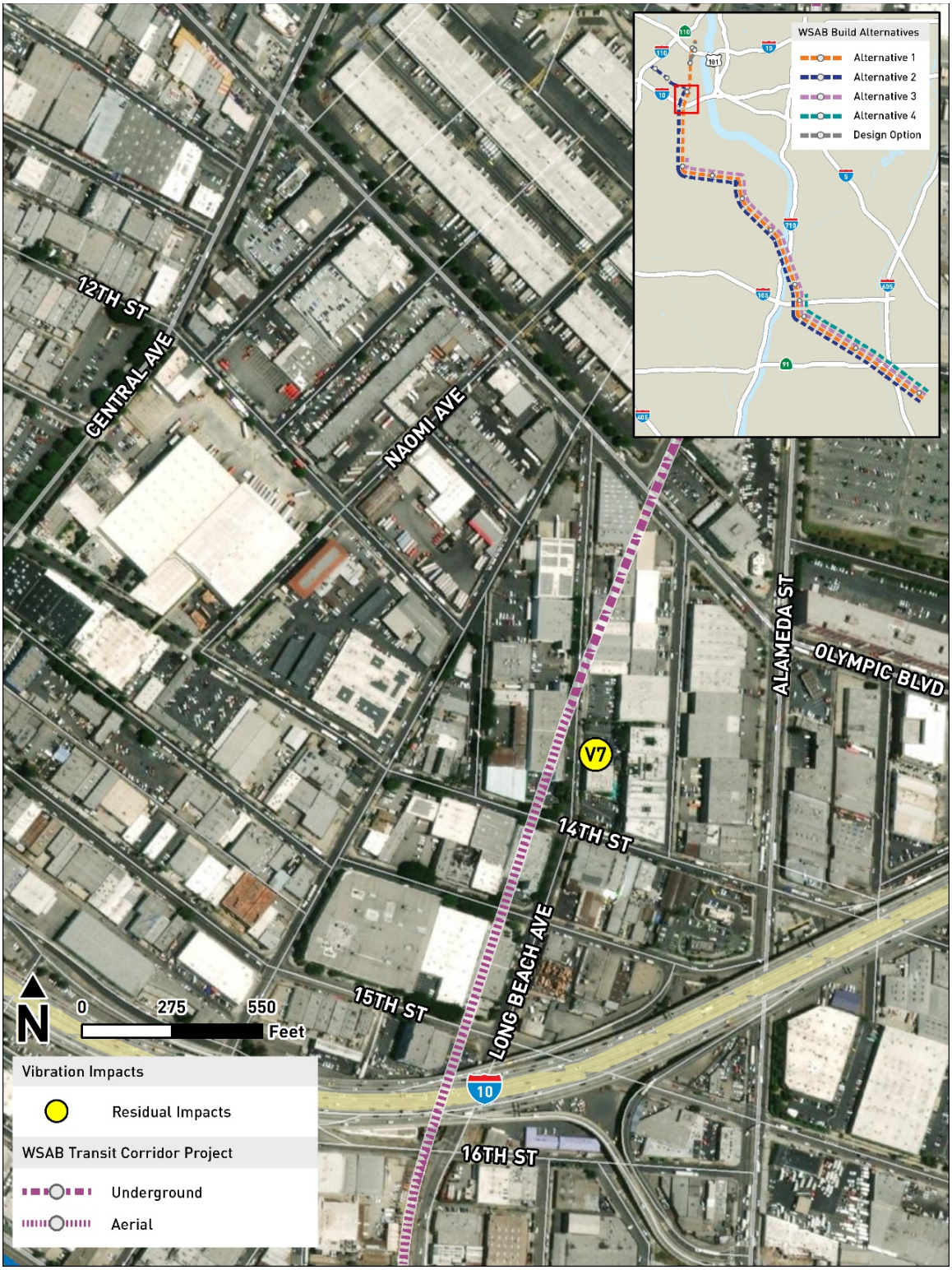
Notes: [1] A vibration level is considered to exceed the impact criteria if its meets or exceeds the threshold.

[2] Residual impacts are those impacts remaining after including the benefits of mitigation.

[3] Predicted GBV at these locations include the added vibration from turnouts and crossovers.

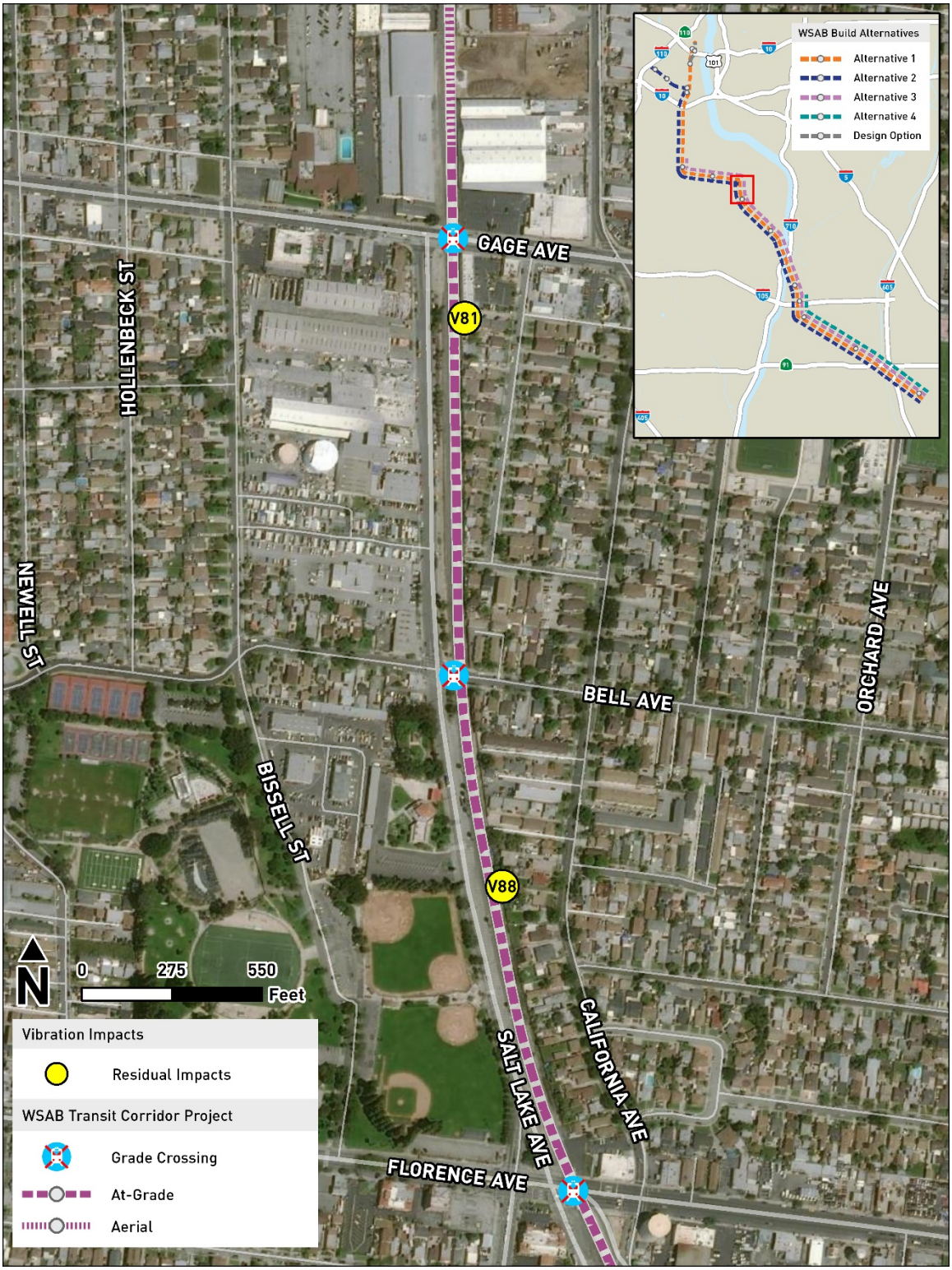
DF = direct fixation; FTA = Federal Transit Administration; GBV = ground-borne vibration; LRT = light rail transit; mph = miles per hour; MFR = multifamily residential; SFR = single-family residential; VdB = vibration decibels

Figure 4.7-14. Vibration Impacts Remaining After Mitigation (Southeast Los Angeles)



Source: Prepared for Metro in 2020

Figure 4.7-15. Vibration Impacts Remaining After Mitigation (City of Huntington Park to City of Bell)



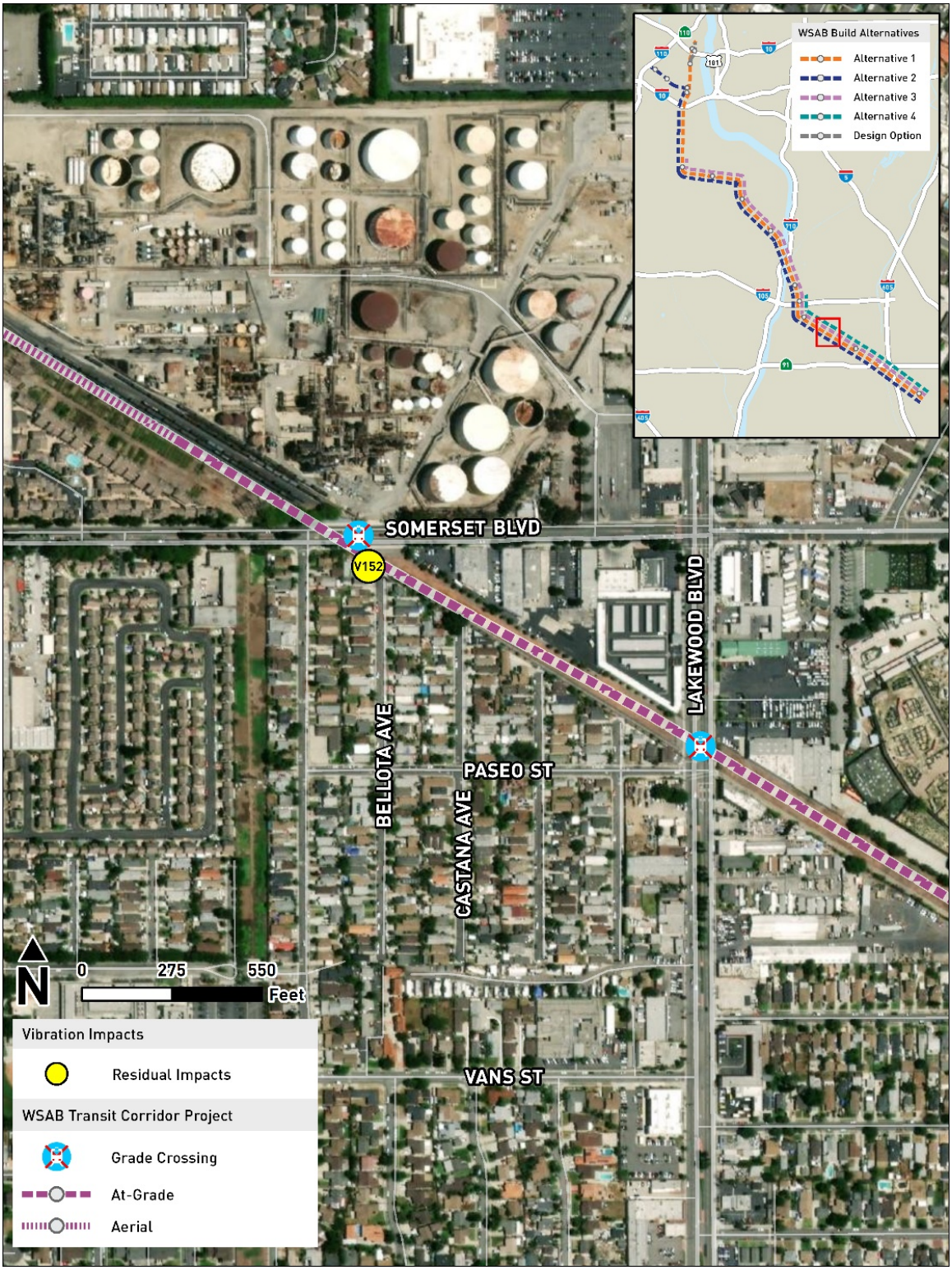
Source: Prepared for Metro in 2020

Figure 4.7-16. Vibration Impacts Remaining After Mitigation (City of Paramount)



Source: Prepared for Metro in 2020

Figure 4.7-17. Vibration Impacts Remaining After Mitigation (City of Paramount to City of Bellflower)



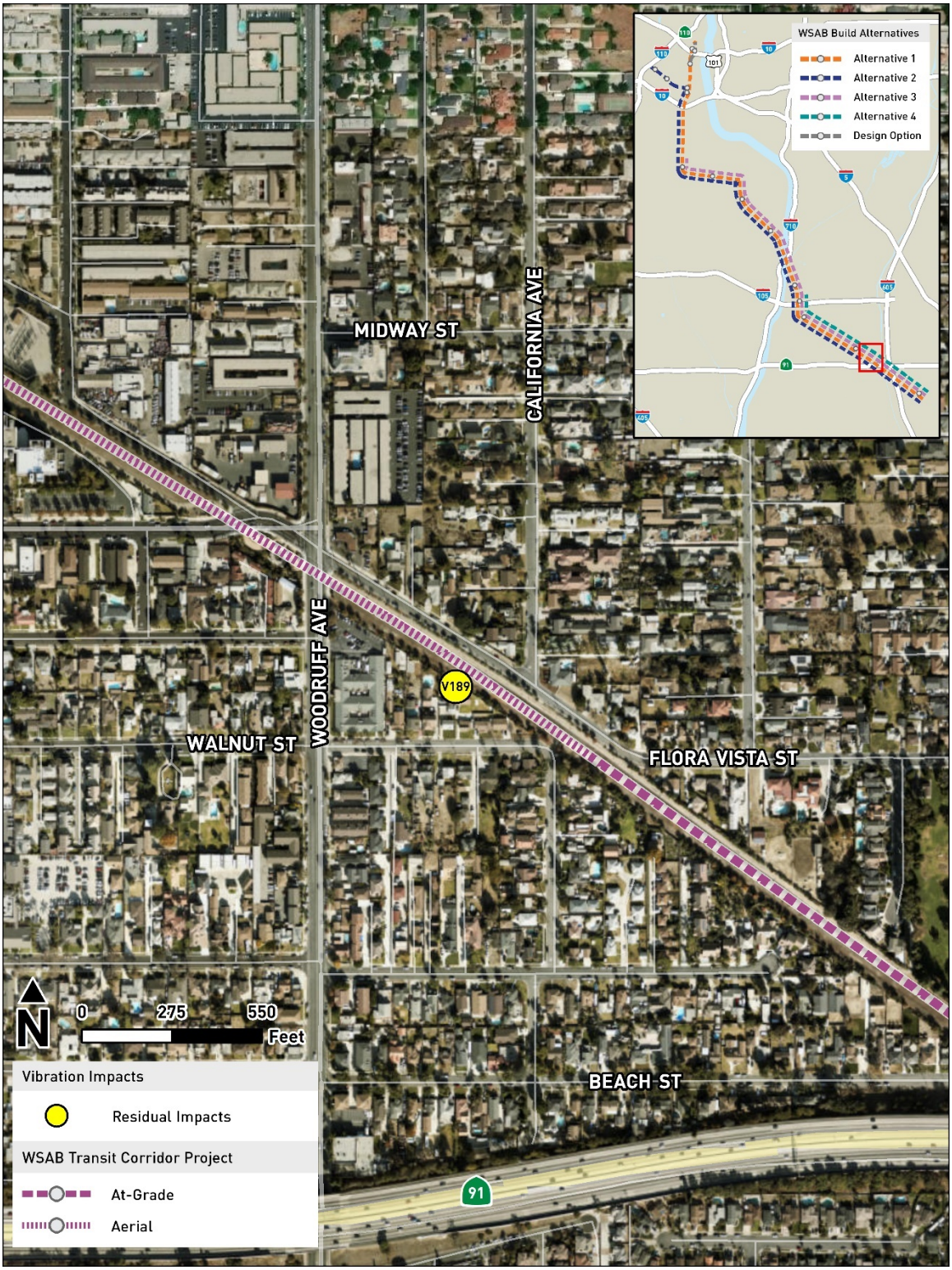
Source: Prepared for Metro in 2020

Figure 4.7-18. Vibration Impacts Remaining After Mitigation (City of Bellflower)



Source: Prepared for Metro in 2020

Figure 4.7-19. Vibration Impacts Remaining After Mitigation (City of Bellflower to City of Cerritos)



Source: Prepared for Metro in 2020

Alternative 4: I-105/C Line (Green) to Pioneer Station: Mitigation Measures VIB-1 (Ballast Mat or Resilient Rail Fasteners) and VIB-2 (Low Impact Frogs) would apply to Alternative 4. No underground portion is proposed and, therefore, no vibration impacts related to underground LRT pass-by would occur. Vibration impacts would be reduced overall due to the shortened length of the alignment. Alternative 4 would affect vibration clusters 125 through 233. As shown in Table 4.7.13, although Mitigation Measures VIB-1 (Ballast Mat or Resilient Rail Fasteners) and VIB-2 (Low Impact Frogs) would reduce vibration impacts, 11 clusters would still be impacted by LRT vibration in the range of 1 VdB to 5 VdB. According to FTA guidance, there is a strong chance that after mitigation, ground-borne vibration levels at these 11 clusters would be below the impact threshold. Nonetheless, under NEPA, Alternative 4 impacts would be adverse even after implementation of mitigation. No vibration impacts have been identified at the freight track relocations.

4.7.5 California Environmental Quality Act Determination

4.7.5.1 Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established by FTA or in the local general plans or noise ordinances?

For the purposes of this analysis, moderate and severe impacts under FTA's noise criteria are considered significant impacts under CEQA.

No Project Alternative

Under the No Project Alternative, existing noise sources such as industrial areas along the project alignment, occasional aircraft flyovers, and the movement of trains along existing railroads would remain the dominant noise sources in the project area. No project-related operational noise impacts would occur. Therefore, impacts would be less than significant, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

LRT: The subterranean portion of Alternative 1 would not generate pass-by noise audible to surface receptors. Noise sources associated with at-grade and aerial LRT include steel wheels rolling on steel rails (wheel/rail noise), propulsion motors, air conditioning, and other auxiliary equipment on the vehicles. Sensitive uses would be exposed to a combination of noise sources, including LRT pass-by noise, audible warnings noise (crossing signal bells), wheel squeal noise, and special trackwork noise. Throughout the project area, Category 2 clusters would experience 76 moderate impacts and 171 severe impacts. Ten Category 3 clusters would experience moderate impacts and two would experience severe impacts. Therefore, without mitigation, impacts related to LRT noise would be significant.

Regarding health effects of noise, it is unlikely for LRT noise to result in noise-induced hearing loss, as this is an occupational hazard related to working over long periods of time in high noise environments. FTA defines moderate impacts as those having the potential to result in measurable annoyance in a community and severe impacts as those causing a high level of community annoyance. LRT noise could increase stress and the potential for stress-related diseases at affected sensitive uses. This applies for other areas that would result in noise impacts.

Ancillary Facilities: Five moderate impacts and two severe impacts would occur as a result of ancillary facility noise. Therefore, without mitigation, impacts related to ancillary facility noise would be potentially significant.

Parking Facilities: No impacts would occur related to parking facility noise. Therefore, without mitigation, impacts related to parking facility noise would be less than significant.

Freight Track Relocation: Relocation of existing freight tracks would be required south of the project alignment within the La Habra Branch ROW, to the west of the project alignment within the San Pedro Subdivision ROW, and to the north of the project alignment within Metro-owned PEROW to accommodate the Build Alternative alignments and maintain existing operations along the ROW where the proposed LRT tracks would overlap. Section 4.7.3.2 discusses the freight train noise and relocation of freight tracks associated with implementation of Alternative 1. The freight tracks would be relocated closer to sensitive receivers at two locations. At the first location, there would be an approximately 20-foot shift of the centerline of the freight tracks to the south of the La Habra Branch ROW along Randolph Street. The other location would be near the I-105 freeway, where the centerline of the freight tracks would shift approximately 15 feet. Residences along Facade Avenue and near Rosecrans Avenue would be affected by the relocated freight tracks.

Freight train noise at both of these locations have been added to the LRT noise. Under Alternative 1, 30 Category 2 clusters would experience moderate impacts and 24 would experience severe impacts. Five Category 3 clusters would experience moderate impacts and two would experience severe impacts. Category 3 clusters along Randolph Street are unlikely to regularly experience impacts due to a combination of freight and LRT noise. This is because Category 3 uses are daytime uses and would not typically be open when the freight is traversing Randolph Street at night. Therefore, without mitigation, impacts related to relocated freight track noise would be potentially significant.

Mitigation Measures: Mitigation Measure NOI-1 (Soundwalls), NOI-2 (Low Impact Frogs), NOI-3 (Wheel Squeal Noise Monitoring), NOI-4 (Crossing Signal Bells), NOI-5 (Gate-Down-Bell-Stop Variance), NOI-6 (TPSS Noise Reduction, and NOI-7 (Freight Track Relocation Soundwalls).

Impacts Remaining After Mitigation: Mitigation Measures NOI-1 (Soundwalls), NOI-2 (Low Impact Frogs), and NOI-3 (Wheel Squeal Noise Monitoring) would reduce the number and severity of operational noise impacts. Mitigation Measure NOI-4 (Crossing Signal Bells) and NOI-5 (Gate-Down-Bell-Stop Variance) may result in additional reductions in impacts but would require CPUC approval before implementation. After implementation of mitigation measures related to LRT noise, 103 moderate impacts and 60 severe impacts would remain at Category 2 clusters. Seven moderate impacts would remain at Category 3 clusters. Regarding relocated freight track noise, 33 moderate impacts and 9 severe impacts would remain at Category 2 clusters after implementation of Mitigation Measures NOI-1 (Soundwalls), NOI-2 (Low Impact Frogs), NOI-3 (Wheel Squeal Noise Monitoring) and NOI-7 (Freight Track Relocation Soundwalls). Four moderate impacts and two severe impacts would remain at Category 3 clusters. Regarding ancillary facility noise, implementation of Mitigation Measure NOI-6 (TPSS Noise Reduction) would reduce TPSS noise levels. However, at this stage in design, various TPSS noise-reduction methods may or may not be completely effective due to design constraints for individual TPSS locations, which will be determined as part of final

design. Therefore, five moderate and two severe ancillary facility impacts could remain. Impacts related to Alternative 1 would remain significant and unavoidable with mitigation.

Alternative 2: 7th St/Metro Center to Pioneer Station

LRT: The subterranean portion of Alternative 2 would not generate pass-by noise audible to surface receptors. Alternative 2 would follow the same alignment for at-grade and aerial segments. LRT pass-by noise impacts related to Alternative 2 would be largely the same as Alternative 1. However, under Alternative 2, headways would be decreased to 2.5 minutes during one hour of each weekday peak period between the 7th Street/Metro Center Station and the Slauson/A Line Station. Alternative 2 would result in 72 moderate impacts and 176 severe impacts at Category 2 clusters. Impacts at Category 3 clusters would remain the same as Alternative 1. Therefore, without mitigation, impacts related to LRT noise would be significant.

Ancillary Facilities: Five moderate impacts and two severe impacts would occur as a result of ancillary facility noise. Therefore, without mitigation, impacts related to ancillary facility noise would be potentially significant.

Parking Facilities: No impacts would occur related to parking facility noise. Therefore, without mitigation, impacts related to parking facility noise would be less than significant.

Freight Track Relocation: Alternative 2 would follow the same alignment as Alternative 1 for at-grade and aerial segments. Freight track relocation noise impacts related to Alternative 2 would be the same as Alternative 1. Therefore, without mitigation, impacts related to relocated freight track noise would be potentially significant.

Mitigation Measures: Mitigation Measure NOI-1 (Soundwalls), NOI-2 (Low Impact Frogs), NOI-3 (Wheel Squeal Noise Monitoring), NOI-4 (Crossing Signal Bells), NOI-5 (Gate-Down-Bell-Stop Variance), NOI-6 (TPSS Noise Reduction, and NOI-7 (Freight Track Relocation Soundwalls).

Impacts Remaining After Mitigation: Alternative 2 would have the same impacts after mitigation as Alternative 1. Impacts related to Alternative 2 would remain significant and unavoidable with mitigation.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

LRT: Alternative 3 would not include a subterranean portion but would follow the same alignment for at-grade and aerial segments starting near the Slauson/A Line Station. Because of the shorter at-grade and aerial segment, noise impacts would be reduced overall compared to Alternatives 1 and 2. The northern tail tracks would end at civil station 645+50, which would reduce speeds and noise levels at clusters 33 through 45 at the northern terminus. Alternative 3 would affect clusters 33 through 347 and would result in moderate impacts at 59 of 289 Category 2 clusters and severe impacts at 153 Category 2 clusters. Ten of 26 Category 3 clusters would experience moderate impacts and two would experience severe impacts. Therefore, without mitigation, impacts related to LRT noise would be significant.

Ancillary Facilities: One moderate impact and two severe impacts would occur as a result of ancillary facility noise. Therefore, without mitigation, impacts related to ancillary facility noise would be potentially significant.

Parking Facilities: No impacts would occur related to parking facility noise. Therefore, without mitigation, impacts related to parking facility noise would be less than significant.

Freight Track Relocation: Freight tracks would be relocated at the same locations as Alternatives 1 and 2. Noise impacts related to freight track relocation would be the same as Alternatives 1 and 2. Therefore, without mitigation, impacts related to relocated freight track noise would be potentially significant.

Mitigation Measures: Mitigation Measure NOI-1 (Soundwalls), NOI-2 (Low Impact Frogs), NOI-3 (Wheel Squeal Noise Monitoring), NOI-4 (Crossing Signal Bells), NOI-5 (Gate-Down-Bell-Stop Variance), NOI-6 (TPSS Noise Reduction, and NOI-7 (Freight Track Relocation Soundwalls).

Impacts Remaining After Mitigation: Mitigation Measures NOI-1 (Soundwalls), NOI-2 (Low Impact Frogs), and NOI-3 (Wheel Squeal Noise Monitoring) would reduce the number and severity of operational noise impacts. Mitigation Measure NOI-4 (Crossing Signal Bells) and NOI-5 (Gate-Down-Bell-Stop Variance) may result in additional reductions in impacts but would require CPUC approval before implementation. Under Alternative 3, 94 moderate impacts and 59 severe impacts would remain at Category 2 clusters after implementation of mitigation measures. Seven moderate impacts would remain at Category 3 clusters. Impacts related to relocated freight track noise would be the same as those identified for Alternatives 1 and 2 after implementation of Mitigation Measures NOI-1 (Soundwalls), NOI-2 (Low Impact Frogs), NOI-3 (Wheel Squeal Noise Monitoring) and NOI-7 (Freight Track Relocation Soundwalls). Regarding ancillary facility noise, implementation of Mitigation Measure NOI-6 (TPSS Noise Reduction) would reduce TPSS noise levels. However, at this stage in design, various TPSS noise-reduction methods may or may not be completely effective due to design constraints for individual TPSS locations that will be determined as part of final design. Therefore, one moderate and two severe ancillary facility impacts could remain. Impacts related to Alternative 3 would remain significant and unavoidable with mitigation.

Alternative 4: I-105/C (Green) Line to Pioneer Station

LRT: Alternative 4 would not include a subterranean portion, but would follow the same alignment for at-grade and aerial segments starting near the I-105/C Line Station. However, noise impacts would be reduced overall due to the shortened length of the alignment. The northern tail tracks would end at civil station 1068+50, which would reduce speeds and noise levels at clusters 181 through 187. Alternative 4 would affect clusters 181 through 347 and would result in moderate impacts at 15 of 149 Category 2 clusters and severe impacts at 117 Category 2 clusters. Six of 18 Category 3 clusters would experience moderate impacts and two would experience severe impacts. Therefore, without mitigation, impacts related to LRT noise would be significant.

Ancillary Facilities: One moderate impact and one severe impact would occur as a result of ancillary facility noise. Therefore, without mitigation, impacts related to facility noise would be potentially significant.

Parking Facilities: No impacts would occur related to parking facility noise. Therefore, without mitigation, impacts related to parking facility noise would be less than significant.

Freight Track Relocation: Alternative 4 would not require the relocation of freight tracks north of civil station 1068+50 near the Main Street grade crossing. Freight track relocation would

therefore only affect clusters 183 to 213. Freight train noise at these locations have been added to the LRT noise. Under Alternative 4, six Category 2 clusters would experience moderate impacts and 15 would experience severe impacts. One Category 3 cluster would experience a moderate impact. Therefore, without mitigation, impacts related to relocated freight track noise would be potentially significant.

Mitigation Measures: Mitigation Measure NOI-1 (Soundwalls), NOI-2 (Low Impact Frogs), NOI-3 (Wheel Squeal Noise Monitoring), NOI-4 (Crossing Signal Bells), NOI-5 (Gate-Down-Bell-Stop Variance), NOI-6 (TPSS Noise Reduction, and NOI-7 (Freight Track Relocation Soundwalls).

Impacts Remaining After Mitigation: Mitigation Measures NOI-1 (Soundwalls), NOI-2 (Low Impact Frogs), and NOI-3 (Wheel Squeal Noise Monitoring) would reduce the number and severity of operational noise impacts. Mitigation Measure NOI-4 (Crossing Signal Bells) and NOI-5 (Gate-Down-Bell-Stop Variance) may result in additional reductions in impacts but would require CPUC approval before implementation. Under Alternative 4, 56 moderate impacts and 44 severe impacts would remain at Category 2 clusters after implementation of mitigation measures. Three moderate impacts would remain at Category 3 clusters. Regarding relocated freight track noise, 13 moderate impacts and 1 severe impact would remain at Category 2 clusters after implementation of Mitigation Measures NOI-1 (Soundwalls), NOI-2 (Low Impact Frogs), NOI-3 (Wheel Squeal Noise Monitoring), and NOI-7 (Freight Track Relocation Soundwalls). One moderate impact would remain at Category 3 clusters. Regarding ancillary facility noise, implementation of Mitigation Measure NOI-6 (TPSS Noise Reduction) would reduce TPSS noise levels. However, at this stage in design, various TPSS noise-reduction methods may or may not be completely effective due to design constraints for individual TPSS locations that will be determined as part of final design. Therefore, one moderate and one severe ancillary facility impacts could remain. Impacts related to Alternative 4 would remain significant and unavoidable with mitigation.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: With implementation of Design Options 1 2, noise related to underground LRT would not be readily transmitted to surface-level receivers. Design Options 1 and 2 would not result in additional operational noise impacts beyond those described for Alternative 1. Therefore, operational noise impacts related to the design options would be less than significant, and no mitigation measures are required.

Maintenance and Storage Facilities

Paramount MSF Site Option and Bellflower MSF Site Option: Noise levels related to MSF noise sources were modeled at the 18 sensitive use clusters near the Paramount MSF site option and the 57 sensitive use clusters near the Bellflower MSF site option. The modeling results indicated noise levels would not exceed the FTA noise impact criteria at nearby sensitive uses. The Paramount and Bellflower MSF site options would not result in impacts. Therefore, impacts related to noise at the MSF site options would be less than significant and no mitigation measures are required.

4.7.5.2 Would the Project result in generation of excessive groundborne vibration or groundborne noise levels?

Exceedance of the FTA Vibration Impact Criteria would be considered excessive GBV and GBN.

No Project Alternative

Under the No Project Alternative, existing sources of ground-borne vibration, including trucks traveling along roadways, construction using heavy equipment, and active freight lines within the corridor, would remain the dominant GBV and GBN sources in the project area. No project-related operational vibration impacts would occur. Therefore, impacts would be less than significant, and no mitigation measures are required.

Alternative 1: Los Angeles Union Station to Pioneer Station

LRT Pass-By: As described in Section 4.7.3.2, one vibration Category 2 cluster would experience GBV and GBN impacts from underground LRT pass-by vibration and 101 vibration Category 2 clusters would experience impacts from at-grade and aerial LRT pass-by vibration. None of the Category 3 clusters would experience impacts. Therefore, without mitigation, impacts related to LRT pass-by vibration would be potentially significant.

Freight Track Relocation: Alternative 1 would not require significant changes to the freight track alignment that would result in impacts at sensitive land uses. No new sources of train vibration would be added to the existing freight tracks. The realignment of the freight tracks along Facade Avenue would move freight tracks closer to residences. The vibration level associated with freight trains at the new location would be 77 VdB at occupied building structures along Facade Avenue. The FTA impact criterion for residential properties exposed to infrequent vibration events is 80 VdB. Projected freight train vibration would not exceed the impact criterion. Therefore, impacts related to freight track relocation vibration would be less than significant, and no mitigation measures are required.

Mitigation Measures: Mitigation Measures VIB-1 (Ballast Mat or Resilient Rail Fasteners) and VIB-2 (Low Impact Frogs).

Impacts Remaining After Mitigation: Mitigation Measures VIB-1 (Ballast Mat or Resilient Rail Fasteners) and VIB-2 (Low Impact Frogs) would reduce LRT pass-by vibration impacts. However, 14 impacts would remain along the alignment after mitigation in the range of 1 VdB to 5 VdB. In accordance with FTA guidance, there is a strong chance that actual ground-borne vibration levels at these 14 locations would be below the impact threshold with mitigation. A FTA Detailed Vibration Assessment would be conducted during final design and may show that vibration impacts would not occur and control measures are not needed. Based on currently available information, impacts would be significant even after implementation of mitigation. Therefore, impacts related to LRT pass-by vibration may be significant and unavoidable.

Alternative 2: 7th St/Metro Center to Pioneer Station

LRT Pass-By: As described in Section 4.7.3.3, no vibration Category 2 clusters would experience GBV and GBN impacts from underground LRT pass-by vibration. Similar to Alternative 1, 101 vibration Category 2 clusters would experience impacts from at-grade and aerial LRT pass-by vibration. None of the Category 3 clusters would experience impacts.

Therefore, without mitigation, impacts related to LRT pass-by vibration would be potentially significant.

Freight Track Relocation: The evaluation of vibration effects related to the freight track relocation under Alternative 1 is also applicable to Alternative 2 because both alternatives would have the same effect on freight tracks. Projected freight train vibration under Alternative 2 would not exceed the impact criterion. Therefore, impacts related to freight track relocation vibration would be less than significant, and no mitigation measures are required.

Mitigation Measures: Mitigation Measures VIB-1 (Ballast Mat or Resilient Rail Fasteners) and VIB-2 (Low Impact Frogs).

Impacts Remaining After Mitigation: Mitigation Measures VIB-1 (Ballast Mat or Resilient Rail Fasteners) and VIB-2 (Low Impact Frogs) would reduce LRT pass-by vibration impacts. Similar to Alternative 1, 14 impacts in the range of 1 VdB to 5 VdB would remain along the alignment after mitigation. In accordance with FTA guidance, there is a strong chance that actual ground-borne vibration levels at these 14 locations would be below the impact threshold with mitigation. A FTA Detailed Vibration Assessment would be conducted during final design and may show that vibration impacts would not occur and control measures are not needed. Based on currently available information, impacts would be significant even after implementation of mitigation. Therefore, impacts related to LRT pass-by vibration may be significant and unavoidable.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

LRT Pass-By: Alterative 3 would be located at-grade or aerial and therefore no vibration impacts related to underground LRT-pass-by would occur. Vibration impacts would be reduced overall due to the shortened length of the alignment compared to Alternatives 1 and 2. As described in Section 4.7.3.4, 96 vibration Category 2 clusters would experience impacts from LRT pass-by vibration. None of the Category 3 clusters would experience impacts. Therefore, without mitigation, impacts related to LRT pass-by vibration would be potentially significant.

Freight Track Relocation: The evaluation of vibration effects related to the freight track relocation under Alternatives 1 and 2 is also applicable to Alternative 3 because all three alternatives would have the same effect on freight tracks. Projected freight train vibration would not exceed the impact criterion for Alternative 3. Therefore, impacts related to freight track relocation vibration would be less than significant, and no mitigation measures are required.

Mitigation Measures: Mitigation Measures VIB-1 (Ballast Mat or Resilient Rail Fasteners) and VIB-2 (Low Impact Frogs).

Impacts Remaining After Mitigation: Mitigation Measures VIB-1 (Ballast Mat or Resilient Rail Fasteners) and VIB-2 (Low Impact Frogs) would reduce LRT pass-by vibration impacts. Similar to Alternatives 1 and 2, 13 impacts in the range of 1 VdB to 5 VdB would remain along the alignment after mitigation. In accordance with FTA guidance, there is a strong chance that actual ground-borne vibration levels at these locations would be below the impact threshold with mitigation. A FTA Detailed Vibration Assessment would be conducted during final design and may show that vibration impacts would not occur and control measures are not needed. Based on currently available information, impacts would be significant even after implementation of mitigation. Therefore, impacts related to LRT pass-by vibration may be significant and unavoidable.

Alternative 4: I-105/C (Green) Line to Pioneer Station

LRT Pass-By: Alternative 4 would be located at-grade or aerial and therefore no vibration impacts related to underground LRT-pass-by would occur. Vibration impacts would be reduced overall due to the shortened length of the alignment compared to Alternatives 1, 2, and 3. As described in Section 4.7.3.5, 62 vibration Category 2 clusters would experience impacts from LRT pass-by vibration. None of the Category 3 clusters would experience impacts. Therefore, without mitigation, impacts related to LRT pass-by vibration would be potentially significant.

Freight Track Relocation: Alternative 4 would not require significant changes to the freight track alignment that would result in impacts at sensitive land uses. No new sources of train vibration would be added to the existing freight tracks. Realignment of the freight tracks along Facade Avenue would move freight tracks closer to residences. The vibration level associated with freight trains at the new location would be 77 VdB at occupied building structures along Facade Avenue. The FTA impact criterion for acceptable levels at the interior of residential properties exposed to infrequent vibration events is 80 VdB. Projected freight train vibration would not exceed the impact criterion. Therefore, impacts related to freight track relocation vibration would be less than significant, and no mitigation measures are required.

Mitigation Measures: Mitigation Measures VIB-1 (Ballast Mat or Resilient Rail Fasteners) and VIB-2 (Low Impact Frogs).

Impacts Remaining After Mitigation: Mitigation Measures VIB-1 (Ballast Mat or Resilient Rail Fasteners) and VIB-2 (Low Impact Frogs) would reduce LRT pass-by vibration impacts. However, 11 impacts in the range of 1 VdB to 5 VdB would remain along the alignment after mitigation. In accordance with FTA guidance, there is a strong chance that actual ground-borne vibration levels at these locations would be below the impact threshold with mitigation. A FTA Detailed Vibration Assessment would be conducted during final design and may show that vibration impacts would not occur and control measures are not needed. Based on currently available information, impacts would be significant even after implementation of mitigation. Therefore, impacts related to LRT pass-by vibration may be significant and unavoidable.

Design Options—Alternative 1

Design Option 1: LAUS at MWD: GBV and GBN levels were modeled at each cluster along the underground segment for Design Option 1. No clusters would experience levels that are predicted to equal or exceed the FTA impact criteria. Design Option 1 would not include additional impacts beyond those described for Alternative 1. Therefore, operational vibration impacts related to Design Option 1 would be less than significant and mitigation would not be required.

Design Option 2: Add Little Tokyo Station: Predicted vibration levels would not change with the addition of the Little Tokyo Station. Design Option 2 would not include additional impacts beyond those described for Alternative 1. Therefore, operational vibration impacts related to Design Option 2 would be less than significant and mitigation would not be required.

Maintenance and Storage Facility

Bellflower MSF Site Option and Paramount MSF Site Option: As described in Section 4.7.3.7, no impacts would occur related to vibration at the Bellflower or Paramount MSF site option. Therefore, impacts would be less than significant and no mitigation would be required.

4.7.5.3 For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No public airports or private airstrips are located within 2 miles of the project area. Therefore, no impacts related to airport noise would occur and mitigation would not be required.

4.8 Ecosystems/Biological Resources

This section summarizes the potential adverse effects and impacts on existing biological resources for the No Build and Build Alternatives. The Affected Area for the purposes of evaluating the potential effects/impacts to biological resources (bio) is defined as 100 feet on both sides of the alignment and around the proposed station areas, as well as MSF sites, TPSS sites, and parking facilities. The Affected Area for bio is sufficient to characterize the existing setting and to evaluate potential effects/impacts to biological resources. Due to the highly urbanized setting, biological resources in the Affected Area for bio are limited. The Affected Area for bio supports urban landscaping and ruderal/ornamental vegetation. Wildlife resources are limited to those species adapted to highly urbanized environments. Additional information on biological resources is provided in the *West Santa Ana Branch Transit Corridor Project Final Biological Resources Impact Analysis Report* (Metro 2021q) (Appendix N).

4.8.1 Regulatory Setting and Methodology

4.8.1.1 Regulatory Setting

Agencies with the regulatory responsibility for protection of biological resources and the regulations they enforce within the Affected Area for bio include the following:

- United States Army Corps of Engineers (USACE): Wetlands and other waters of the United States (Section 404 of the Clean Water Act [CWA], Section 408 of the Rivers and Harbors Appropriation Act of 1899, Executive Order 11990)
- United States Fish and Wildlife Service (USFWS): Federally listed species and migratory birds (Federal Endangered Species Act of 1973 [ESA], Migratory Bird Treaty Act [MBTA], Bald and Golden Eagle Protection Act of 1940)
- California Department of Fish and Wildlife (CDFW) (formerly California Department of Fish and Game): Riparian areas and other waters of the state, state-listed species (California Endangered Species Act [CESA], California Fish and Game Code Sections 3503, 3503.5, and 3511, Native Plant Protection Act [NPPA])
- Regional Water Quality Control Board (RWQCB): Waters of the state (CWA Sections 401, 402, and 303(d), Porter-Cologne Water Quality Control Act)

Refer to Section 4.11.1 – Regulatory Setting and Methodology in the Water Resources section of this Draft EIS/EIR, Chapter 2, Section 2.5.7 –Anticipated Permits, Discretionary Actions, and Agency Approvals of this Draft EIS/EIR, and Section 3 – Regulatory Framework of the Biological Resources Impact Analysis Report (Appendix N) for additional information regarding regulatory approvals and the project regulatory setting.

4.8.1.2 Methodology

Literature Reviews

A literature review was conducted to characterize the nature and extent of biological resources within the corridor. The literature review included an evaluation of current and historical aerial photographs, including the use of Google Earth. The California Natural Diversity Data Base (CNDDB) (CDFW 2017a), Biogeographic Information and Observation System (CDFW 2017b), the USFWS Critical Habitat Portal (USFWS 2017b), and the Information Planning and Conservation online system (USFWS 2017a) were reviewed to determine if special-status wildlife, plant, or vegetation communities were previously recorded on or near the project alignment.

Additionally, a 5-mile radius CNDDB search was used to determine a preliminary list of special-status species with the potential to occur within the Affected Area for bio, which was then evaluated based on the habitat requirements of the species, existing conditions within the Affected Area for bio, and occurrence details of the species records. The Affected Area is defined as 100 feet on both sides of the alignment and around the proposed station areas, as well as maintenance and storage facilities, traction power substation (TPSS) sites, and parking facilities.

For purposes of the jurisdictional delineation, aerial photographs of all potential jurisdictional waters within the corridor; regional and site-specific topographic maps; the Soil Survey, Los Angeles County, California, Southeastern Part (United States Department of Agriculture [USDA], Natural Resources Conservation Service [NRCS] 1973); and other available background information were reviewed to better characterize the nature and extent of potentially jurisdictional waters and wetlands. The *National Wetlands Inventory* (USFWS 2020) and the *National Hydrography Dataset* (United States Geological Survey 2020) were reviewed to determine if any wetlands or other waters had been previously documented and mapped within the Affected Area for bio. The *National Hydric Soils List by State: California* (USDA NRCS 2020b) was also reviewed to determine if any soil map units mapped in the site were classified as hydric.

Other resources included the California Native Plant Society Online Inventory of Rare, Threatened, and Endangered Plants of California (California Native Plant Society 2017), CDFW Special Animals List (CDFW 2017c), and CDFW Special Vascular Plants, Bryophytes, and Lichens List (CDFW 2017d).

Field Reconnaissance Survey

A field reconnaissance survey of the Affected Area for bio was completed between 10 a.m. and 4 p.m. on May 11, 2017. The purpose of the survey was to document existing biological conditions within the Affected Area for bio, including plant and wildlife species, vegetation communities, jurisdictional waters and wetlands, and the potential for the presence of special-status species and/or habitats. The biologists conducted the survey along the route primarily by car; however, where the route crossed drainages, a detailed examination was conducted via pedestrian survey. Where portions of the Affected Area for bio were inaccessible (e.g., private property), the biologists visually inspected those areas with binoculars (power rating of 10 x 40). Weather conditions during the survey included an average temperature of 70 degrees Fahrenheit, winds between 3 and 5 miles per hour, and zero percent cloud cover.

An additional field reconnaissance survey was conducted on July 24, 2020, during which all potential jurisdictional waters within the Affected Area for bio were delineated. This survey is further described in the Jurisdictional Waters section.

Vegetation Classification

All vegetation communities observed within the accessible portions of the Affected Area for bio were surveyed by vehicle and on foot using binoculars and aerial photography interpretation as necessary. Vegetation communities were classified using *A Manual of California Vegetation* (Sawyer et. al. 2009), where appropriate.

Flora

All plant species observed in the Affected Area for bio were noted, and plants that could not be identified in the field were identified later using taxonomic keys and reference materials (Jepson Flora Project 2017, Hatch 2007). The reconnaissance survey included a directed search for special-status plants that would have been apparent at the time of the survey. Floral nomenclature for native and non-native plants follows Baldwin et al. (2012) as updated by The Jepson Online Interchange (University of California, Berkeley 2014). The approximate number of street trees within the project footprint in the Southern Section was estimated based on engineering plans overlaid on aerial imagery of the Affected Area for bio.

Fauna

Animal species observed directly or detected from calls, tracks, scat, nests, or other signs were documented. The detection of wildlife species was limited by seasonal and temporal factors. The survey was conducted during the spring; therefore, potentially occurring winter migrants may not have been observed. Because the survey was performed during the day, identification of nocturnal animals was limited to remnant signs (e.g., scat, tracks), if present on-site. Zoological nomenclature for birds is in accordance with the American Ornithologists' Union Checklist (2017); for mammals, Wilson and Reeder (2005); and for amphibians and reptiles, Crother (2012).

Jurisdictional Waters

The reconnaissance-level field survey also evaluated the Affected Area for bio for the presence of aquatic features potentially subject to the jurisdiction of the USACE, RWQCB, and CDFW. Such aquatic features are referred to generally as "jurisdictional resources." The reconnaissance survey was based solely on visual inspection of the Affected Area for bio, and a formal jurisdictional delineation of waters and wetlands was not conducted.

An additional reconnaissance-level survey was performed on July 24, 2020, during which all potentially jurisdictional features identified within the Affected Area for bio were inspected to record existing conditions and determine jurisdictional limits.

Drainage features, width measurements, and wetland sample points were mapped using a Trimble® GeoXT GPS unit and recent aerial photography. Width measurements for USACE jurisdiction were determined based on the lateral extent of the Ordinary High Water Mark (OHWM). RWQCB jurisdiction was determined in accordance with the previously listed methodologies to identify waters of the U.S. The procedures of State Water Resources Control Board's (SWRCB) *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (SWRCB 2019) were applied, and the Affected Area for bio was reviewed for features that may have fallen outside federal jurisdiction due to lack of connectivity or insufficient flow. CDFW jurisdiction was delineated in accordance with Section 1602(a) of the California Fish and Game Code and measured laterally from bank to bank at the top of the channel or to the outer drip-line of associated riparian vegetation, if present.

One OHWM data sheet and one wetland sample point were completed at a representative location within the Affected Area for bio of each crossing to determine the presence/absence of wetland indicators, such as hydrophytic vegetation, hydric soils, and wetland hydrology. Soil test pits were not conducted because the Affected Area for bio consists of concrete-lined channels devoid of soils. Initial coordination with the USACE was not conducted prior to the delineation. The preliminary jurisdictional delineation request was submitted to the USACE on November 5, 2020, for its review and approval. In a letter dated February 9, 2021, the USACE responded to the preliminary jurisdictional delineation request submitted for this study on November 5, 2020. Consistent with that request and the findings presented herein, the USACE preliminarily determined that waters of the U.S. may be present in the three locations in the Affected Area for bio (at the Los Angeles, Rio Hondo, and San Gabriel River crossings).

Impact Analysis

Potential biological effects of the Project were evaluated by examining existing biological conditions along and surrounding the proposed alignments, stations, maintenance and storage facilities, TPSS sites, and parking facilities. This analysis considered potential impacts on special-status plant and wildlife species or aquatic resources subject to USACE jurisdiction, and whether the Project would conflict with applicable biological plans, policies, or regulations. General indicators of significance, based on guidelines or criteria in the National Environmental Policy Act, include the following:

- Potential modification or destruction of habitat, movement corridors, or breeding, feeding, and sheltering areas for endangered, threatened, rare, or other special-status species
- Potential measurable degradation of protected habitats, sensitive vegetation communities, wetlands, or other habitat areas identified in plans, policies, or regulations
- Potential loss of a substantial number of any species that could affect the abundance or diversity of that species beyond the level of normal variability
- Potential indirect impacts, both temporary and permanent, from excessive noise that elicits a negative response and avoidance behavior

The California Environmental Quality Act thresholds of significance are presented in Section 4.8.5.

4.8.2 Affected Environment/Existing Conditions

4.8.2.1 Topography and Soils

The Affected Area for bio is located in the Los Angeles Basin, which is an oval-shaped, alluvial plain spanning approximately 40 miles northwest to southeast. The Los Angeles Basin is bordered by the Santa Monica Mountains on the north, the Puente Hills to the east, the Pacific Ocean to the west, and the Santa Ana Mountains to the south. The topography of the Affected Area for bio is generally flat and includes urban/developed lands and roads and channelized drainages. Elevation ranges from 78 feet to 294 feet above mean sea level. All proposed alignment sections are within previously developed areas, such as public right-of-way and industrial, commercial, and residential areas.

Urban/Developed Lands

Urban/developed lands include areas that have been developed with structures, streets, sidewalks, or other hardscape elements or otherwise physically altered to an extent that native

vegetation is no longer supported. Urban/developed lands are characterized by permanent or semi-permanent structures, pavement or hardscape, and landscaped areas that often require irrigation. Areas that have been physically disturbed (by previous human activity) and are no longer recognizable as a native or naturalized vegetation association, but continue to retain a soil substrate, may also be considered urban/developed lands.

Specifically, areas identified as urban/developed lands within the Affected Area for bio include paved roads and associated landscaping. Landscaping incorporates both native and non-native species including, but not limited to, coast live oak (*Quercus agrifolia*), various other oaks (*Quercus* spp.), California black walnut (*Juglans californica*), gum trees (*Eucalyptus globulus, E. camaldulensis, E.* spp.), Peruvian pepper (*Schinus molle*), tree of Heaven (*Ailanthus altissima*), juniper (*Juniperus* spp.), various pines (*Pinus* spp.), persimmon (*Diospyros* sp.), Canary Island date palm (*Phoenix canariensis*), Mexican fan palm (*Washingtonia robusta*), queen palm (*Syagrus romanzoffiana*) and various other palms (*Phoenix* spp., *Washingtonia* spp.), elderberry (*Sambucus nigra*), coast myoporum (*Myoporum laetum*), Callery pear (*Pyrus calleryana*), black locust (*Robinia pseudoacacia*), lemon (*Citrus limon*), various ornamental figs (*Ficus* spp.), bird of paradise (*Stelitzia reginae*), bottlebrush (*Callistemon* sp.), and oleander (*Nerium oleander*).

Drainages

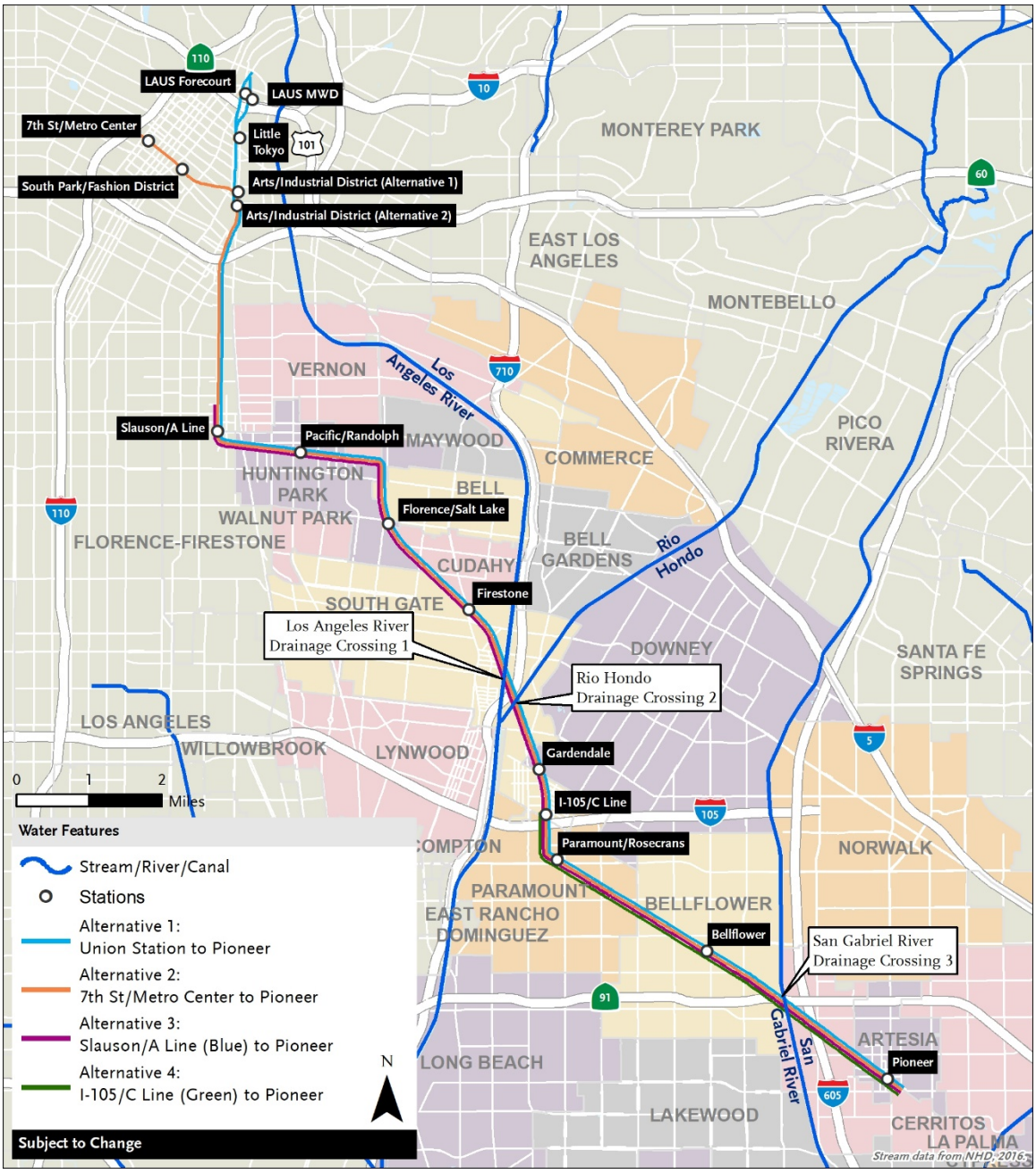
The Affected Area for bio includes three drainages within the watershed of the Los Angeles River (Figure 4.8-1). The proposed alignment for Alternatives 1, 2, and 2 would cross the Los Angeles River and the Rio Hondo Channel (a tributary to the Los Angeles River) near I-710, and all four Build Alternatives would cross the San Gabriel River at SR 91 in the City of Bellflower. The streambeds at the proposed crossings are entirely channelized and consist of concrete with scattered ruderal and emergent wetland plant species, such as spikerush (*Eleocharis* sp.), within seams in the concrete. However, the vegetation does not constitute an intact wetland vegetation community due to the extremely sparse distribution. In addition, the proposed alignment would cross numerous storm drain systems. However, these storm drains consist primarily of belowground concrete pipes. The proposed alignment would not cross any soft-bottomed drainage channels with a natural substrate.

General Wildlife

The Affected Area for bio and surrounding areas provide habitat suitable for wildlife species that commonly occur in urban areas within Southern California. The identified wildlife species are common in the highly urban, developed areas, and none of these species are special-status. For details of the wildlife species encountered, refer to the Biological Resources Impact Analysis Report (Appendix N).

The Los Angeles River, Rio Hondo Channel, and San Gabriel River are all highly channelized and provide limited vegetated riparian habitat for wildlife. However, several bird species associated with aquatic environments find suitable foraging habitat along the banks of streams or drainages with slow-moving water. Several of these species were observed during the reconnaissance survey, primarily at the Los Angeles River and Rio Hondo Channel crossings, and included great blue heron (*Ardea herodias*), snowy egret (*Egretta thula*), mallards (*Anas platyrhynchos*), black-necked stilt (*Himantopus mexicanus*), western gull (*Larus occidentalis*), and killdeer (*Charadrius vociferous*).

Figure 4.8-1. Drainage Locations



Source: Imagery and base map provided by ESRI and its licensors ©2017. Project data from WSP and Metro 2020; stream data from National Hydrography Dataset 2016. Subject to change.

The elevated structures spanning the drainages (i.e., railroad trellises over the Los Angeles River and Rio Hondo Channel and the SR-91 bridge over the San Gabriel River) create adequate nesting habitat for several avian species. An American kestrel (*Falco sparverius*), northern rough-winged swallows (*Stelgidopteryx serripennis*), and white-throated swifts (*Aeronautes saxatalis*) were observed exhibiting nesting behavior under the SR-91 bridge over the San Gabriel River during the reconnaissance survey. Barn swallows (*Hirundo rustica*) were observed over the Los Angeles River at the SR-91 bridge crossing.

4.8.2.2 Special-Status Biological Resources

This section discusses special-status biological resources observed within the Affected Area for bio during the field survey and evaluates the potential for the Affected Area for bio to support other special-status resources based on existing conditions. The potential for each special-status species to occur in the Affected Area for bio was evaluated according to the following criteria:

- *Not Expected*. Habitat on and adjacent to the site is clearly unsuitable for the species' requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).
- *Low Potential*. Few of the habitat components meeting the species' requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.
- *Moderate Potential*. Some of the habitat components meeting the species' requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.
- *High Potential*. All of the habitat components meeting the species' requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.
- *Present*. The species was observed on the site or has been recorded (e.g., CNDDB, other reports) on the site within the last five years.

Special-Status Species

The CNDDB identified 23 special-status plant species and 18 special-status wildlife species within a 5-mile radius of the Affected Area for bio. Table 4.1 in the Biological Resources Impact Analysis Report (Appendix N) provides the species name, status, habitat requirements for all special-status species identified within a 5-mile radius of the Affected Area, and their potential to occur within the Affected Area for bio.

Special-Status Plant Species: During the site survey on May 11, 2017, no rare or sensitive plant species were observed within the Affected Area for bio, with the exception of Southern California black walnut (California Rare Plant Rank 4.2), which is a planted street tree. No other special-status plant species are expected to occur based on the existing development and disturbances and a lack of suitable habitat.

Special-Status Wildlife Species: During the field assessment on May 11, 2017, no special-status wildlife species were observed or otherwise detected, although some species (i.e., great blue heron) are considered sensitive when nesting. While individuals were observed, habitat capable of supporting heron rookeries is not present within the Affected Area for bio; therefore, nesting great blue heron are not expected in the Affected Area. Special-status wildlife species typically have very specific habitat requirements that may include, but are not limited to, vegetation communities, elevation levels and topography, and availability of primary constituent elements (i.e., space for individual and population growth, breeding, foraging, and shelter). As the Affected Area for bio consists of mostly developed rights-of-way and associated landscaping and street/community trees, most of the special-status wildlife species listed in Table 4.1 in the Biological Resources Impact Analysis Report (Appendix N) are not expected to occur due to lack of suitable habitat.

The portions of the Affected Area for bio that cross the aforementioned drainages may provide temporary migratory and foraging territory for reptile species that inhabit slow-moving, intermittent streams and seasonal wetlands. The western pond turtle (*Emys marmorata*) has a low potential to occur based on prior development, existing disturbances, and poor habitat quality within the drainages.

Habitat with the potential to support protected nesting birds, including raptor species, is present within the Affected Area for bio. The typical nesting season for raptors occurs from January 1 to May 31. The reconnaissance survey resulted in no observations of existing raptor nests.

Limited low-quality roosting habitat is available for western mastiff bat (*Eumops perotis californicus*), primarily in high buildings in downtown Los Angeles, as well as the existing bridges crossing the Los Angeles River, Rio Hondo Channel, and San Gabriel River. The portions of the Affected Area for bio that cross the aforementioned drainages may provide temporary movement corridors for mammals. However, due to the highly developed nature of the surrounding upland, it is unlikely that mammals utilize the channelized drainages. The remainder of the Affected Area for bio consists of highly developed urban areas that are unsuitable to wildlife as movement corridors.

Special-Status Vegetation Communities

One special-status vegetation community, the walnut forest (G1/S1.1), has been mapped 3 miles north of the Affected Area for bio. Multiple California black walnut trees were observed within the Affected Area for bio; however, these individuals are planted street trees and do not constitute a walnut forest community.

Jurisdictional Waters

The Affected Area for bio is located within the western edge of the Los Angeles River watershed. The watershed encompasses and is shaped by the path of the Los Angeles River, which flows from its headwaters in the Simi Hills and Santa Susana Mountains eastward to the northern corner of Griffith Park. From Griffith Park, the channel continues southward through the Glendale Narrows before it flows across the coastal plain and into the Pacific Ocean via San Pedro Bay near Long Beach. Based on the findings of the jurisdictional delineation conducted for this study, the Los Angeles, Rio Hondo, and San Gabriel Rivers are subject to USACE, RWQCB, and CDFW jurisdiction. All three drainages contain an OHWM and bed, bank, and channel features, although riparian vegetation is absent. No wetlands are present due to the absence of soils and the extremely limited distribution of vegetation. These drainages are classified as USACE non-wetland waters. No isolated waters of the state are present.

As discussed previously, the Build Alternatives would cross up to three drainages (Figure 4.8-1):

- Drainage Crossing 1: Alternatives 1, 2, and 3 would cross the Los Angeles River between the southern end of Wood Avenue and I-710 in the City of Lynwood. Within the Affected Area for bio, the Los Angeles River contains approximately 3.31 acres of waters subject to the jurisdiction of the USACE and RWQCB (Figure 4.8-2). Because the Los Angeles River is a Traditional Navigable Water and a tributary to the Pacific Ocean, it is subject to the jurisdiction of USACE under Section 404 of the CWA and Section 10 of the Rivers and Harbors Act. Within the Affected Area for bio, the Los Angeles River contains approximately 4.78 acres of non-riparian streambed subject to the jurisdiction of CDFW. This represents the furthest extent of jurisdictional area within the river. The river's measured bank-to-bank width ranged from 320 feet to 345 feet.
- Drainage Crossing 2: Alternatives 1, 2, and 3 would cross the Rio Hondo Channel, a tributary to the Los Angeles River, between I-710 and Ruchti Road in the City of Lynwood. Within the Affected Area for bio, the Rio Hondo contains approximately 1.63 acres of waters subject to the jurisdiction of the USACE and RWQCB (Figure 4.8-3). Because the Rio Hondo regularly contributes surface flow to the Los Angeles River—a Traditional Navigable Water tributary to the Pacific Ocean—it is subject to the jurisdiction of USACE under Section 404 of the CWA.
- Drainage Crossing 3: All four Build Alternatives would cross the San Gabriel River at SR-91 in the City of Bellflower. Within the Affected Area for bio, the San Gabriel River contains approximately 0.86 acre of waters subject to the jurisdiction of the USACE and RWQCB (Figure 4.8-4). Because the San Gabriel River regularly contributes surface flow to the Pacific Ocean in a typical year, it is subject to the jurisdiction of USACE under Section 404 of the CWA.

Wildlife Movements

The Project would be located within highly developed urban areas; therefore, it is unlikely that wildlife utilizes the immediate area for regional movement. Furthermore, the CDFW does not include any mapped California Essential Habitat Connectivity areas within the Affected Area for bio nor does it contain any Missing Linkages as identified by the South Coast Wildlands Network.

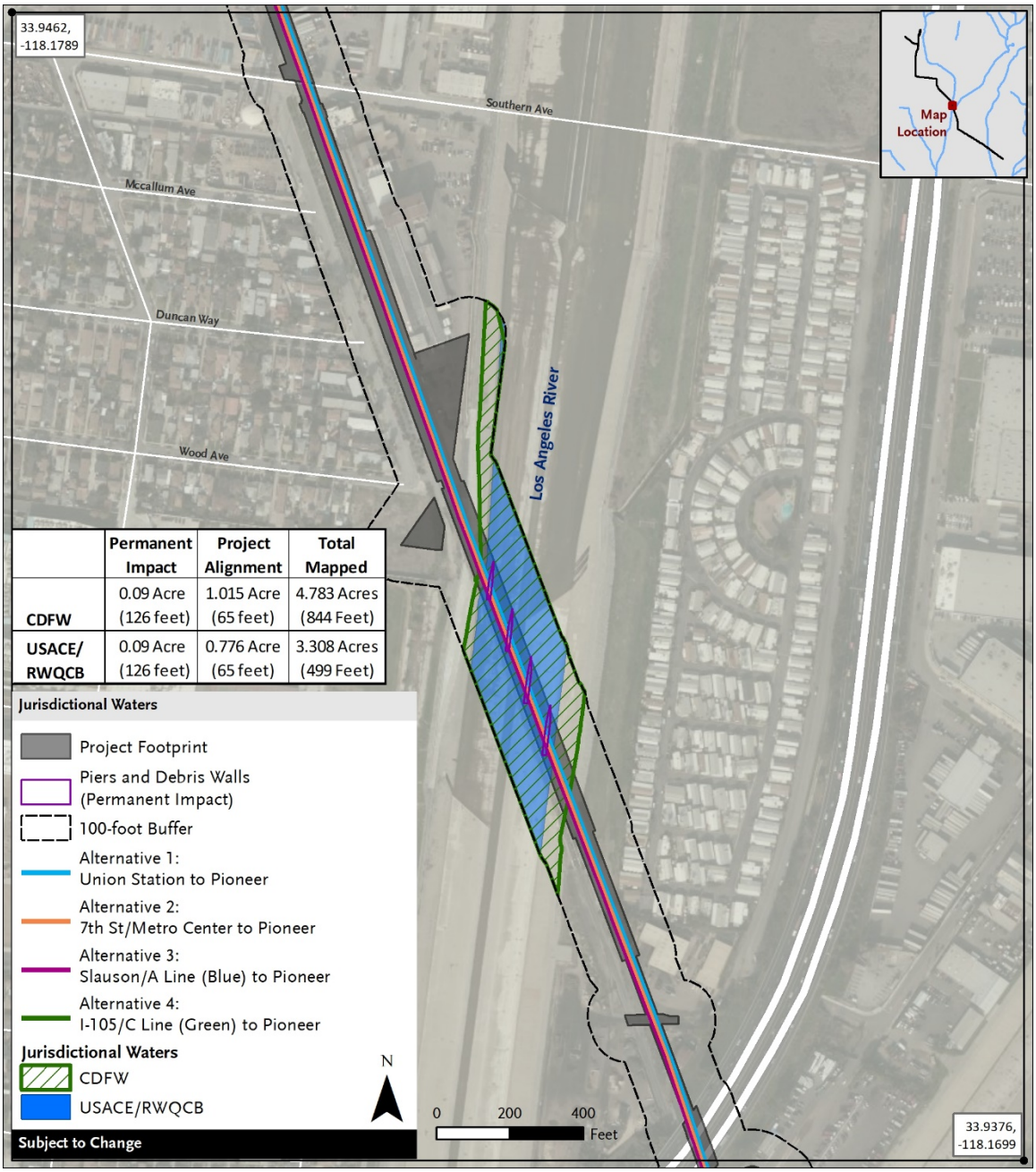
Resources Protected by Local Policies and Ordinances

Approximately 110 street trees protected by the Cities of Los Angeles, Huntington Park, Bell, South Gate, Downey, Bellflower, and Cerritos are present within the Affected Area for bio.

Conservation Plans

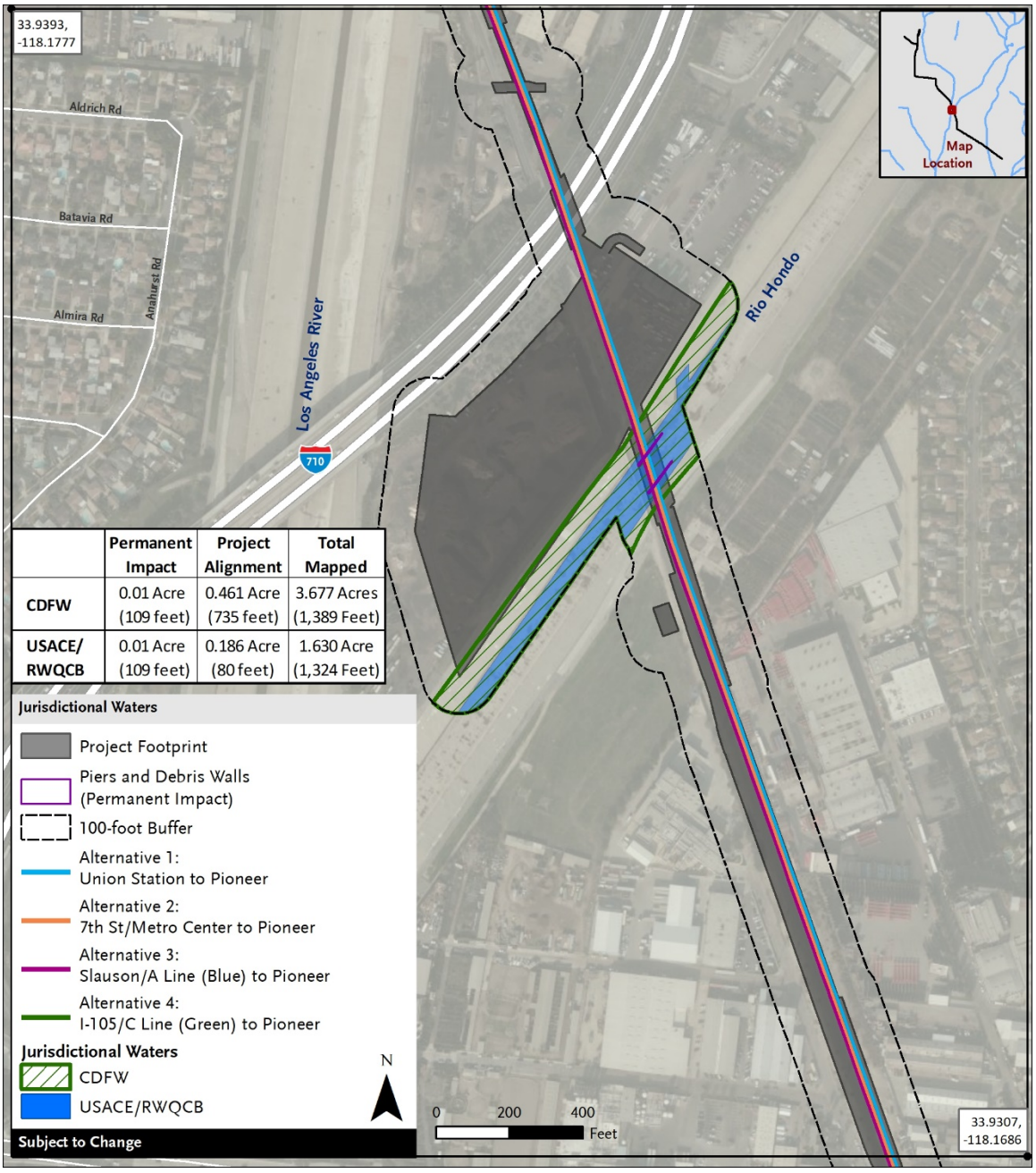
The Affected Area for bio is not identified as a Biological Resource Area or Significant Ecological Area by the City of Los Angeles, LA County, or any other jurisdictions traversed by the Affected Area. In addition, the Affected Area for bio is highly urbanized and not within or proximate to any native wildlife corridors, native wildlife nursery sites, critical habitat, land trust, Habitat Conservation Plan, or any other regional planning areas, as identified by the City of Los Angeles or any other local, regional, state, or federal agency.

Figure 4.8-2. Drainage Crossing 1 Jurisdictional Delineation



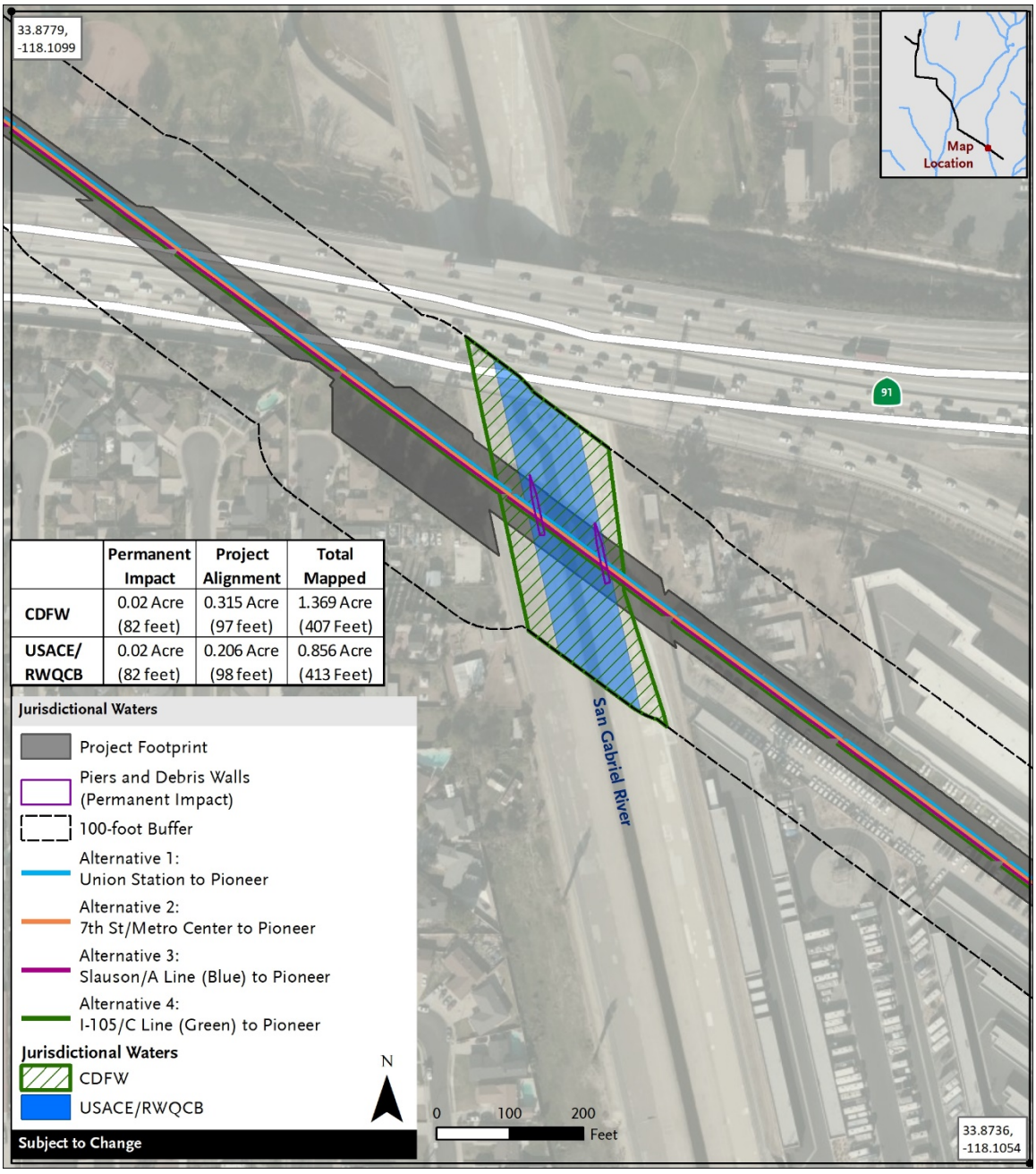
Source: Prepared for Metro in 2020

Figure 4.8-3. Drainage Crossing 2 Jurisdictional Delineation



Source: Prepared for Metro in 2020

Figure 4.8-4. Drainage Crossing 3 Jurisdictional Delineation



Source: Prepared for Metro in 2020

4.8.3 Environmental Consequences/Environmental Impacts

4.8.3.1 No Build Alternative

Under the No Build Alternative, the Build Alternative would not be developed. However, several infrastructure and transportation-related projects would be implemented and built in the vicinity of the project alignment. Projects in the No Build Alternative would undergo environmental analyses to determine if the projects would result in physical impacts to jurisdictional resources or protected trees. It is anticipated that mitigation would be identified and implemented as needed by the individual projects. Therefore, no adverse impacts related to biological resources would occur under the No Build Alternative.

4.8.3.2 Build Alternatives

As Alternatives 1, 2, 3, and 4 are substantially similar in regard to existing biological conditions (i.e., urban, disturbed), the potential effects and consequences were analyzed for the Project as a whole. The analysis presented below concludes that operation of the Project would result in no adverse effects related to special-status species, jurisdictional waters, and protected trees. However, potential effects associated with the Project are greater under Alternatives 1 and 2 due to their overall length (19.3 miles as opposed to 14.8 miles under Alternative 3 and 6.6 miles under Alternative 4). Alternative 4 poses the least potential effect as it would be the shortest and includes one river crossing as opposed to three (Alternatives 1, 2, and 3 include three river crossings).

Special-Status Species

The Project would be located in a heavily developed/disturbed area that does not support any plant species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS[4]. Therefore, operation of the Project would not result in adverse direct or indirect impacts on any candidate, sensitive, or special-status plant species identified in such plans, policies, or regulations.

Certain special-status wildlife species may be present, however. The western mastiff bat, a CDFW Species of Special Concern, may use high buildings or bridges within the Affected Area for bio as roosting habitat, specifically buildings in downtown Los Angeles and existing bridges crossing the Los Angeles River, Rio Hondo Channel, and San Gabriel River. Additionally, nesting bird habitat is present throughout the Affected Area for bio, including within proposed station areas, the Paramount and Bellflower maintenance and storage facilities, TPSS sites, and parking facilities. Nesting bird species are protected by the Migratory Bird Treaty Act and the California Fish and Game Code. Increased noise or increased human presence in the Affected Area for bio may result in adverse effects to special-status wildlife. However, the Project is located in a heavily developed and disturbed area, and as such, operation of the Project is not expected to present a new or unusual use within the area; therefore, it would be unlikely to affect wildlife species if present. Under NEPA, operation of the Project would result in no adverse effects related to special-status species and mitigation is not required.

[4] In a meeting held on September 12, 2018, with representatives from the USFWS, Metro and FTA and in follow-up email correspondence, a representative from the USFWS expressed no concerns with the project alignment in regard to the special status species list.

Jurisdictional Waters

Based on the jurisdictional delineation conducted for this study, three crossings of jurisdictional water resources (i.e., the Los Angeles, Rio Hondo, and San Gabriel Rivers) occur within the Affected Area for bio. None of these crossings contain intact riverine or wetland vegetation. The project would span over these resources and there would be no disturbance to the bed, banks, and any associated vegetation, or discharge of fill material into the features. Under NEPA, operation of the Project would result in no adverse effects related to jurisdictional water resources and mitigation is not required.

Protected Trees

Operation of the Project would result in no adverse effect related to protected trees within the Affected Area for bio and mitigation is not required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: These components are substantially similar to the rest of the Affected Area for bio in regard to existing biological conditions (i.e., urban, disturbed). Additionally, these components are underground, and operation of these design options would not result in impacts to biological resources. Therefore, the impact conclusions from the Build Alternatives are applicable to Design Options 1 (MWD) and 2.

Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option: The Paramount and Bellflower MSF site options are substantially similar to the rest of the Affected Area for bio in regard to existing biological conditions (i.e., urban, disturbed). Therefore, the impact conclusions from the Build Alternatives are applicable and operation of the Paramount and Bellflower MSF site options would not result in impacts to biological resources.

4.8.4 Project Measures and Mitigation Measures

No biological impacts are anticipated as a result of project operation. Therefore, project and mitigation measures are not required.

4.8.5 California Environmental Quality Act Determination

Environmental impacts were analyzed for operation of the Project as a whole, inclusive of Alternatives 1, 2, 3, and 4; Design Options 1(MWD) and 2; and the Bellflower and Paramount MSF site options, because the urban nature of the Affected Area for bio is generally consistent throughout the extent of the Project.

4.8.5.1 Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or United States Fish and Wildlife Service?

No Project Alternative

Under the No Project Alternative, the Project would not be constructed and no new infrastructure would be built within the Affected Area for bio. The environmental setting

would remain in current conditions. Therefore, under the No Project Alternative, there would be no direct or indirect impacts to special-status species as a result of the Project.

Build Alternatives, Design Options, and MSF Site Options

The Project is located in a heavily developed/disturbed area, and as such, operation of the Project is not expected to present a new or unusual use within the area. As a result, the Project would be unlikely to affect wildlife species should they be present. Therefore, direct and indirect effects to special-status species as a result of project operation would be less than significant, and mitigation would not be required.

4.8.5.2 Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or United States Fish and Wildlife Service?

No Project Alternative

As noted above, under the No Project Alternative, the environmental setting would remain in current conditions. Therefore, under the No Project Alternative, there would be no impact on riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS and no impacts would occur as a result of the Project.

Build Alternatives, Design Options, and MSF Site Options

The Project is located in a highly developed, urban area, and no quality habitat that would support native riparian plant or wildlife species is present. Plant communities are considered sensitive biological resources if they have limited distributions, have high wildlife value, include sensitive species, or are particularly susceptible to disturbance. CDFW ranks sensitive communities as "threatened" or "very threatened" and keeps records of their occurrences in CNDDB. Similar to special-status plant and wildlife species, vegetation alliances are ranked 1 through 5 based on NatureServe's (2010) methodology, with those alliances ranked with a scale of global (G) or state/providence (S) as 1 through 3 considered sensitive. The vegetation that is present throughout the Affected Area for bio is ruderal or ornamental in nature. Therefore, impacts to sensitive natural communities would not occur as a result of Project operation. There would be no impact, and mitigation would not be required.

4.8.5.3 Would the Project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, and coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No Project Alternative

Under the No Project Alternative, the Project would not be constructed, and the environmental setting would remain in current conditions. Therefore, under the No Project Alternative, there would be no impact on state or federally protected wetlands through direct removal, filling, hydrological interruption, or other means and no impacts would occur as a result of the Project.

Build Alternatives, Design Options, and MSF Site Options

Operation of the Project would not result in impacts to state or federally protected wetlands. Therefore, no impacts would occur, and mitigation would not be required.

4.8.5.4 Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

No Project Alternative

The Project would not be constructed under the No Project Alternative; the environmental setting would remain in current conditions. Under the No Project Alternative, there would be no interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites and no impacts would occur as a result of the Project.

Build Alternatives, Design Options, and MSF Site Options

Operation of the Project would not interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites, as the Project is located within developed, urban areas. As a result, it is unlikely that wildlife utilizes the immediate area for regional movement. Furthermore, CDFW does not identify any mapped California Essential Habitat Connectivity areas within the Affected Area, nor does the Affected Area for bio contain any Missing Linkages, as identified by the South Coast Wildlands Network. Therefore, no impacts would occur, and mitigation measures would not be required.

4.8.5.5 Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No Project Alternative

The Project would not be constructed under the No Project Alternative and the environmental setting would remain in current conditions. Under the No Project Alternative, there would not be conflicts with any local policies or ordinances protecting biological resources and no impacts would occur.

Build Alternatives, Design Options, and MSF Site Options

Operation of the Project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. Therefore, no impacts would occur, and mitigation would not be required.

4.8.5.6 Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Project Alternative

Under the No Project Alternative, the Project would not be constructed and the environmental setting would remain in current conditions. Under the No Project Alternative, there would not be conflicts with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state Habitat Conservation Plan and no impacts would occur.

Build Alternatives, Design Options, and MSF Site Options

Operation of the Project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state Habitat Conservation Plan. Therefore, no impacts would occur, and mitigation would not be required.

4.9 Geotechnical, Subsurface, and Seismic

This section summarizes the current applicable regulatory setting, existing conditions, and potentially significant impacts associated with the geotechnical, subsurface, and seismic conditions that underlie the WSAB Transit Corridor. Information in this section is based on the *West Santa Ana Branch Transit Corridor Project Final Geotechnical, Subsurface, and Seismic Impact Analysis Report* (Metro 2021e), attached as Appendix O of this Draft EIS/EIR. This section also includes discussions of the environmental effects associated with naturally occurring oil and gas hazards in Sections 4.9.3.3 (operation) and 4.19.3.9 (construction).

4.9.1 Regulatory Setting and Methodology

4.9.1.1 Regulatory Setting

Federal

There are no federal policies or regulations directly applicable to the Project's geology and soils analysis.

State and Local

Alquist-Priolo Earthquake Fault Zoning Act: The California legislation protecting the population of California from the effects of fault-line ground-surface rupture is the Alquist-Priolo Earthquake Fault Zoning Act (Public Resources Code 2621 et seq.). This legislation was enacted in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. In accordance with this act, the State Geologist established regulatory zones, called "earthquake fault zones," around the surface traces of active faults and published maps showing these zones. The Alquist-Priolo Act (California Geological Survey [CGS] 2018) is the state's principal guidance to prevent the construction of habitable structures on the surface trace of active earthquake faults. The Alquist-Priolo Act only addresses the hazard of surface fault rupture and does not consider other earthquake hazards.

Seismic Hazards Mapping Act: The California Seismic Hazards Mapping Act (Public Resources Code 2690-2699.6) became effective in 1991 to identify and map seismic hazard zones for the purpose of assisting cities and counties in preparing the safety elements of their general plans and to encourage land use management policies and regulations that reduce seismic hazards. The recognized hazards include strong ground shaking, liquefaction, landslides, and other ground failure. The Act has resulted in the preparation of maps delineating liquefaction and earthquake-induced landslide Zones of Required Investigation.

Surface Mining and Reclamation Act: The State Surface Mining and Reclamation Act (Public Resources Code 2710 et seq.) became effective in 1975 to establish policy for the reclamation of mined lands and the conduct of surface mining operations.

California Building Code: In addition to the preceding state acts, California regulations protecting the public from geo-seismic hazards are contained in the 2016 CCR Title 24, Part 2 California Building Code (CBC). For surface structures, other than guideways and bridges, the MRDC require conformance with the LA County Building Code, which is based on the CBC. The CBC dictates the requirements for design of structures and includes requirements to perform site-specific geotechnical investigations and prepare design reports in accordance with the CBC-specified methodologies. These investigations and reports would be conducted in concert with and during the final design stage of the Project and would address the

hazards (for surface structures other than guideways and bridges) discussed in this section of this Draft EIS/EIR.

California Division of Occupational Safety and Health (Cal/OSHA): Construction activities included with the Build Alternatives are subject to occupational safety standards for excavation, shoring, and trenching as specified in Cal/OSHA regulations (CCR, Title 8). This includes the Cal/OSHA normal ventilation requirements for underground work areas (including tunnels), which includes the following:

- Fresh air must be supplied to all underground work areas in sufficient amounts to prevent any dangerous or harmful accumulation of dusts, fumes, mists, vapors, or gases. If natural ventilation does not provide the necessary air quality through sufficient air volume and air flow, the employer must provide mechanical ventilation such that each employee working underground has at least 200 cubic feet of fresh air per minute.
- When performing work that is likely to produce dust, fumes, mists, vapors, or gases, the linear velocity of air flow in the tunnel bore, shafts, and all other underground work areas must be at least 30 feet per minute. When such operations are complete, the ventilation systems must exhaust smoke and fumes to the outside atmosphere before resuming work. When drilling rock or concrete, dust control measures such as wet drilling, vacuum collectors, and water mix spray systems must be used to maintain dust levels within limits set in Code of Federal Regulations 1926.55, which includes gases, vapors, fumes, dusts, and mists.

Los Angeles County Metropolitan Transportation Authority: The MRDC establish the design criteria for Metro's transit projects, including aboveground and belowground features of LRT projects. Section 5 (Structural/Geotechnical) of the MRDC states the following:

> The criteria and codes specified herein shall govern all matters pertaining to the design of Los Angeles County Metropolitan Transportation Authority (Metro) owned facilities including bridges, aerial guideways, cut-and-cover subway structures, tunnels, passenger stations, earth-retaining structures, surface buildings, miscellaneous structures such as culverts, sound walls, and equipment enclosures, and other non-structural and operationally critical components and facilities supported on or inside Metro structures. These criteria also establish the design parameters for temporary structures. The main reference document controlling the seismic design of Metro facilities under these criteria is Section 5 Appendix, Metro Supplemental Seismic Design Criteria.

The MRDC provide guidance on the procedures and methods to be used during design of structures. Section 5 of the MRDC also provides detailed design requirements that address the geologic conditions and hazards discussed in this section. Specifically, MRDC Section 5.6 (Geotechnical) provides geotechnical design requirements, including subsurface investigation and laboratory testing, geotechnical reporting, temporary excavations, and detailed foundation design requirements that would address the hazards discussed in this section.

All new structures must be designed to resist the earthquake forces and ground displacement stipulated in the criteria. The MRDC Section 5 Appendix (Metro Supplemental Seismic Design Criteria) dictates the required seismic performance criteria for structures. For structures other than aboveground and belowground guideways and bridges, such as

buildings and some retaining walls, the MRDC require conformance with the LA County Building Code, which is based on the CBC. For bridges and aerial structures, the MRDC require mandatory conformance with the latest version of the Caltrans Bridge Design Specifications, Caltrans Seismic Design Criteria (Caltrans 2017), and American Association of State Highway and Transportation Officials Load and Resistance Factor Design Bridge Design Specifications or the American Railway Engineering and Maintenance-of-Way Association (AREMA) specifications, as applicable, depending on the location of the structure. Retaining walls subject to LRT loading will also be designed in conformance with the American Association of State Highway Transportation Officials (AASHTO) with Caltrans Amendments, per MRDC Section 5.1.3.C.5. Underground structures would be designed to conform with Metro design specifications for underground guideways and structures.

The Metro Supplemental Seismic Design Criteria (Metro 2017g) would be used during the final design stage of the Project to provide seismic design recommendations for the Build Alternatives. In concert with these recommendations, Metro has a two-level design approach for both aerial and underground structures:

1. The operating design earthquake (ODE), defined as an earthquake event likely to occur only once during the design life, where structures are designed to respond without significant structural damage. The ODE has a 150-year average return period.
2. The maximum design earthquake (MDE), defined as an earthquake event with a low probability of occurring during the design life, where structures are designed to respond with repairable damage and to maintain life safety. The MDE has a 2,500-year average return period.

The Metro Supplemental Seismic Design Criteria also require the following:

- Bridges, aerial, and underground structures would be designed in accordance with the Metro MDE, which has a 2,500-year average return period.
- Surface structures not covered by the Caltrans seismic design criteria would be designed in accordance with the LA CBC, which uses the Maximum Considered Earthquake, with a 2,500-year average return period.
- Bridges supporting railroad loads would be designed in accordance with the requirements of the applicable railroad, or in accordance with AREMA standards in lieu of specific railroad requirements. The average return period for AREMA-owned facilities varies, depending on the structure importance classification, and ranges from a 50- to 2,400-year average return period.

If a structure is governed by more than one set of seismic design criteria and a conflict exists, the most critical set of requirements would apply to the design.

When tunneling is included in a project, Metro mandates that the Tunnel Advisory Panel (TAP) review designs with respect to subsurface gas and other tunneling-related hazards. The members of the TAP have extensive experience with tunneling projects in the Los Angeles Basin and seek to verify that the requirements of the MRDC are successfully implemented.

City of Los Angeles

Methane Ordinance: In 2004, the City of Los Angeles adopted the City of Los Angeles Methane Ordinance (No. 175790), which requires compliance with the Methane Mitigation

Standards outlined in the Methane Seepage Regulations (Division 71, Section 91 7101 to 91 7109), and as directed and approved by the Los Angeles Department of Building and Safety (LADBS) and Los Angeles Fire Department. The ordinance outlines the general methane requirements for mitigation; testing, maintenance, and service of gas detection and mechanical ventilation systems; emergency procedures; application of Methane Seepage Regulations to locations or areas outside the methane zone and methane buffer zone boundaries; and additional remedial measures (General, Abandoned Oil Wells).

Additionally, the City of Los Angeles Department of Public Work's Bureau of Engineering has mapped potential methane zones and methane buffer zones where additional assessment is required. Specifically, the City of Los Angeles Municipal Code requires projects located within a methane zone or methane buffer zone to comply with the city's Methane Mitigation Standards as amended by Ordinance 175790 (LADBS 2004a).

Department of Building and Safety: The Methane Mitigation Standards require that an initial assessment for methane and hydrogen sulfide (H_2S) be completed in accordance with LADBS guidelines where the Affected Area for geotechnical, subsurface, and seismic resources (hereafter referred to as the geotech Affected Area) passes through oil fields, methane zones, and/or methane buffer zones. The initial assessment shall be conducted in accordance with 2014 LADBS Site Testing Standards for Methane (LADBS 2014).

Municipal Code: The City of Los Angeles Municipal Code, Chapter IX, Building Regulations, Article 1, Division 71, Methane Seepage Regulations (City of Los Angeles 2004), requires construction projects located within a methane zone or methane buffer zone to comply with the city's Methane Mitigation Standards to control methane intrusion emanating from geologic formations. Mitigation requirements are determined according to the actual methane levels and pressures detected in the subsurface at a site. Mitigation measures can include both active and passive ventilation systems to verify the exchange of air, gas barriers (membranes around basements and foundations), and sensors in interior spaces to monitor the presence of gas and its pressure.

4.9.1.2 Methodology

The geotech Affected Area is defined as the area within 250 feet of the Build Alternative alignments, including the proposed traction power substations, stations, and MSF site options. The 250-foot buffer extends out from the alternative alignment anticipated area of work/disturbance, including the MSF site options, Design Options 1 (MWD) and 2 (Add Little Tokyo Station), temporary (construction) areas, and permanent areas. Considering that the geotech Affected Area is relatively flat, the 250-foot width would cover potential impacts from the project upon the geology and soils of the area. Existing geologic and geotechnical data were reviewed to assess the geotech Affected Area for known geologic hazards and identify potential impacts. If stations or structures are proposed within or directly adjacent to known geologic hazard areas, the potential for an impact has been identified and assessed. Consistent with the requirements summarized in Section 4.9.1.1, additional geotechnical investigations would be performed during preliminary engineering and final design for the selected alternative to verify conditions.

To satisfy CEQA requirements, geology and soils impacts are analyzed in accordance with Appendix G of the *CEQA Guidelines*, identified in Section 4.9.5. Part (f) of the Geology and Soils portion of the CEQA Appendix G Checklist is addressed in Section 4.14.5.3, Paleontological Resources.

4.9.2 Affected Environment/Existing Conditions

4.9.2.1 Regional Geologic Setting

The geotech Affected Area is located within the Los Angeles Basin portion of the Peninsular Ranges geomorphic province of California. The Peninsular Ranges province is characterized by a series of northwest-trending mountains, valleys, and faults, all of which generally parallel the San Andreas Fault system. The Los Angeles Basin is a structural trough overlying bedrock formations between the Western Continental Shelf and the San Gabriel Mountains. Near the central part of the basin, this structural trough has been filled with nearly 30,000 feet of marine and alluvial deposits of the Quaternary (up to 2.6 million years old) and Tertiary (2.6 to 65 million year old) age (Yerkes et al. 1965). These Quaternary and Tertiary units are underlain by Cretaceous-age (65 to 145 million year old) crystalline bedrock. The geology of the geotech Affected Area is shown on Figure 4.9-1; given the scale of the figure, the limits of the geotech Affected Area are not illustrated.

4.9.2.2 Physiography and Topography

The geotech Affected Area is on a gently sloping (relatively flat) alluvial surface (composed of sediment deposited by a river, such as the inactive Los Angeles and San Gabriel River floodplains) within the Los Angeles Basin. Elevations along the geotech Affected Area vary from approximately 280 feet above mean sea level (msl) on the north end to 40 feet msl on the southeast end (United States Geological Survey [USGS] 1964a, 1964b, 1965, 1966a, and 1966b). Overall, the geotech Affected Area slopes toward the south and southwest.

The geotech Affected Area is transected by the concrete-lined Los Angeles River and Rio Hondo channels just west and east, respectively, of I-710, and the concrete-lined San Gabriel River channel just west of I-605 (Figure 4.9-1).

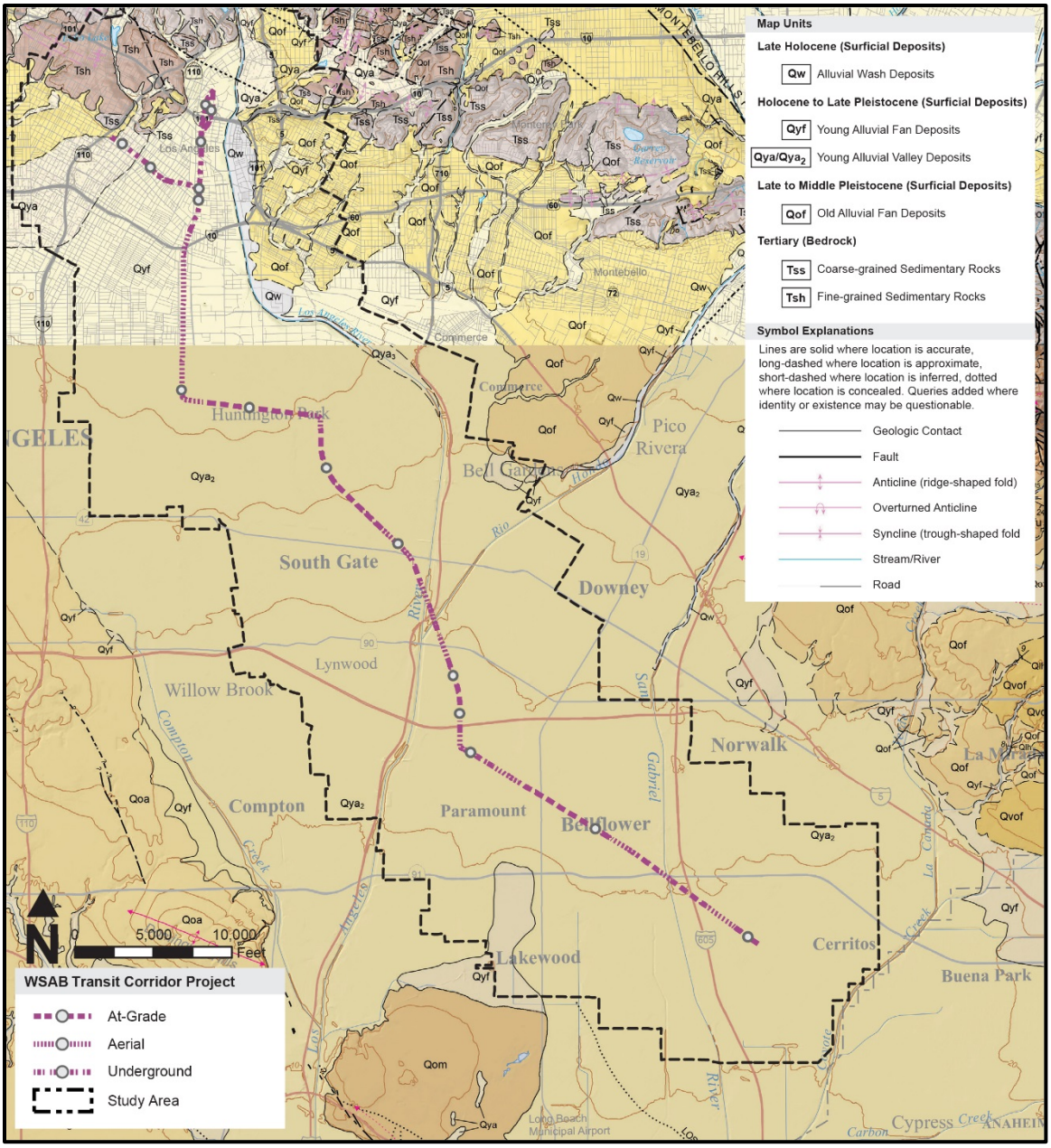
4.9.2.3 Stratigraphy

The following subsections summarize the geotech Affected Area geologic units. In addition to the mapped geologic units present in the geotech Affected Area (Figure 4.9-1), artificial fill soils overlie the alluvial deposits locally.

Artificial Fill Soil

Within the geotech Affected Area, artificial fill soils have been placed during the construction of some past projects to generally raise the grade (ground level) at a site or to replace soils that were considered detrimental to a proposed development. Based on information available from the Regional Connector project, artificial fill soils 5 to 20 feet deep are present along the Regional Connector alignment (Metro 2012a). The Regional Connector is a Metro project that has endpoints that overlap with the geotech Affected Area. The Regional Connector extends from a new underground Little Tokyo/Arts District Station to the existing 7th Street/Metro Center Station. Fills of similar thickness may be present throughout the geotech Affected Area, although local areas may be underlain by thicker fills. The composition of the fill soils is variable, depending on the source.

Figure 4.9-1. Geologic Map



Sources: Prepared by Jacobs in 2020 (based on information from Bedrossian et al. 2012; Saucedo et al. 2016)

Alluvial Soil

Various alluvial soil units (alluvial wash deposits [Qw], young alluvial fan deposits [Qyf], young alluvial valley deposits [Qya/Qya2], and old alluvial fan deposits [Qof], as shown on Figure 4.9-1) are present in the geotech Affected Area. These geologic units are similar in nature and generally consist of unconsolidated interbedded lenses and/or discontinuous layers of fine-grained sediment (silt and clay) and coarse-grained sediment (sand, gravel, cobbles, and boulders). Cobbles and boulders may be present locally within the geotech Affected Area. Within the downtown Los Angeles area's alluvial soils, cobbles, and boulders (3-foot-diameter and larger) are widespread but not uniformly distributed.

Sedimentary Bedrock

The approximate depth to the alluvial soil/bedrock contact varies within the downtown Los Angeles area. South of Randolph Street, bedrock would not be encountered as the alluvial sediments are expected to be present to depths greater than 1,000 feet below ground surface (bgs) (Yerkes et al. 1965).

Fernando Formation bedrock, a sedimentary unit generally consisting of soft, gray to black, vaguely bedded, claystone and siltstone, is present in the downtown Los Angeles area. Scattered hard concretions and thin hard layers occur within this unit. The depth to bedrock in the downtown Los Angeles portion of the geotech Affected Area varies from approximately 20 feet bgs to over 1,000 feet bgs. The Fernando Formation is represented by symbols Tss and Tsh on Figure 4.9-1.

4.9.2.4 Surface Water and Groundwater

Surface Water

The Project is transected (from west to east) by the concrete-lined Los Angeles River, Rio Hondo channel, and San Gabriel River. The geotech Affected Area drains by sheet flow to these major drainages or to secondary drainages, which all ultimately drain into the Pacific Ocean.

Groundwater

In the downtown Los Angeles portion of the geotech Affected Area, groundwater was reported at approximately 40 feet bgs in 2002 near U.S. Highway 101 (US 101) (Metro 2002); 20 feet bgs in 1993 (Law/Crandall 1994) at Union Station; 40 feet bgs in 2013 at the Regional Connector 1st/Central Avenue Station (Metro 2013c); and 30 feet bgs in 1983 and 2013 at the 7th Street/Metro Center Station) (Converse 1983; Metro 2013c). Caltrans as-built log of test boring sheets indicate that groundwater levels varied from 5 feet bgs in the 1950s at I-710 and the Los Angeles River, 40 feet bgs in the 1980s at I-105 and the Union Pacific Railroad crossing, and 20 feet bgs in the 1960s at I-605 and Artesia Boulevard.

The bedrock units that could impact the geotech Affected Area generally do not have a fixed groundwater table. However, the bedrock can hold and transport groundwater in the form of seepages present within local sandstone beds as well as fault and/or fracture zones. Based on experience with the underground excavation projects in the downtown Los Angeles area, such as the Metro Regional Connector, B (Red) Line, and D (Purple) Line, it is known that substantial amounts of groundwater inflows can be expected locally in alluvial deposits where situated below groundwater.

4.9.2.5 Faulting and Seismicity

General Setting

The Southern California region is seismically active because of the influence of several earthquake fault systems resulting from interaction between the Pacific and North American crustal plates. An active fault is defined by the Alquist-Priolo Earthquake Fault Zone Act as a sufficiently active and well-defined fault that has exhibited surface displacement within the last approximately 12,000 years. A potentially active fault is defined by the Alquist-Priolo Earthquake Fault Zone Act as a fault with a history of movement between approximately 12,000 and 1.6 million years ago. Some faults may be active but do not actually rupture the

ground surface; these faults are termed blind thrust faults. Hazards associated with active faults include fault-induced ground rupture, co-seismic deformation, and ground shaking.

No known active faults capable of ground rupture are mapped within the geotech Affected Area for the Build Alternatives and MSF site options, and the Project is not located in an Alquist-Priolo Earthquake Fault Zone (CGS 2016a through 2016e). Two active blind thrust fault systems underlie the geotech Affected Area. These fault systems do not extend to the ground surface and are not considered capable of ground rupture during an earthquake. However, movements along these faults do generate earthquakes, and surficial ground deformation (gentle folding of the ground surface) has been documented due to activity along some blind thrust faults. Known active and potentially active faults that are mapped within 5 miles of the geotech Affected Area are summarized in Table 4.9.1 and are described below. Nearby active and potentially active faults are shown on Figure 4.9-2.

Table 4.9.1. Summary of Nearby Active and Potentially Active Faults

Fault Name	Fault Type	Slip Rate[1] (millimeters per year)	Maximum Moment Magnitude[2] (M_{max})	Closest Distance to Geotech Affected Area (miles)[3]
Lower Elysian Park Fault	Blind thrust	0.1	6.7	0
Puente Hills Fault – Los Angeles Section	Blind thrust	0.9	6.9	0
Upper Elysian Park Fault	Blind thrust	1.9	6.6	0.8
Puente Hills Fault – Santa Fe Springs Section	Blind thrust	0.9	6.6	0.8
Los Alamitos Fault	Uncertain	Uncertain	Uncertain	2.6
Puente Hills Fault – Coyote Hills Springs Section	Blind thrust	0.9	6.8	3.1
Raymond Fault	Left-lateral[4] with reverse	2	6.7	4.5
Hollywood Fault	Left-lateral with reverse	0.9	6.6	4.7

Source: Caltrans 2017

Notes: [1] Slip rate is the estimated and averaged distance the fault moves on an annual basis.

[2] Maximum moment magnitude (M_{max}) is a scale used to measure earthquake magnitude. Moment magnitude measures the total energy released during an earthquake. This physical quantity is proportional to the fault slip multiplied by the area that the fault plane slips.

[3] Blind thrust faults: distance tabulated is the vertical projection of the blind thrust fault to the surface. Other faults: USGS and CGS 2006; see Figure 4.9-2.

[4] A left-lateral means that when standing perpendicular to the fault line, one side moves to the left relative to the other side. Reverse indicates that when the fault ruptures, one side is forced upward relative to the other side.

Figure 4.9-2. Fault Location Map



Sources: Prepared by Jacobs in 2020 (based on information from Caltrans 2017; USGS and CGS 2006)
Note: Fault locations are approximate. A Historic fault is a fault that has ruptured in the last 150 years. A Holocene-Latest Pleistocene fault is a fault that has ruptured in the last 15,000 years. A Late Quaternary fault is a fault that has ruptured in the last 130,000 years.

Nearby Active Faults

Surface Faults: The closest active faults capable of ground rupture near the geotech Affected Area are the Raymond Fault, approximately 4.5 miles north of the geotech Affected Area, and the Hollywood Fault, approximately 4.7 miles north of the geotech Affected Area (Figure 4.9-2). The geographic boundary between these two faults is the Los Angeles River.

One potentially active fault is located near the geotech Affected Area, the Los Alamitos Fault, which is mapped approximately 2.6 miles southwest of the geotech Affected Area in the vicinity of the San Gabriel River (USGS and CGS 2006). The exact location, slip rate, and potential earthquake magnitude have not been established specifically for the Los Alamitos Fault as it is a relatively new fault that is currently being studied. Yeats and Verdugo (2010) theorize that the Los Alamitos Fault is related to the Los Angeles Segment of the Puente Hills Blind Thrust Fault (PHBT) and the Newport-Inglewood Fault Zone, which is mapped farther southwest from the Los Alamitos Fault, as shown on Figure 4.9-2. The Southern California Earthquake Data Center indicates that the Los Alamitos Fault may be a part of the larger Compton-Los Alamitos Fault, located south of the Project.

Blind Thrust Faults and the Coyote Pass Escarpment

The geotech Affected Area is underlain by the active Upper Elysian Park Blind Thrust Fault (EPBT) and PHBT (Shaw and Suppe 1996; Shaw et al. 2002). These blind thrust faults are not included in an Alquist-Priolo Earthquake Fault Zone and are not considered capable of ground rupture; however, there is potential for co-seismic deformation (gentle folding of the ground surface) to occur in the geotech Affected Area in the downtown Los Angeles area related to the Coyote Pass escarpment of the EPBT (Oskin et al. 2000).

The location of the Coyote Pass escarpment in the vicinity of the geotech Affected Area is approximate because the escarpment in this area has been eroded away by the Los Angeles River. Based on the Coyote Pass escarpment studies conducted for the Regional Connector project (AMEC 2013), the Coyote Pass escarpment crosses North Alameda Street between Temple Street on the north and 4th Street on the south. The location of the escarpment in the geotech Affected Area was projected from this area at North Alameda Street to the west, where topographic expression of the feature is evident near SR 110. Based on this projection, the Coyote Pass escarpment continues westerly from North Alameda Street to an approximate location between 4th Street (on the north) and 9th Street (on the south) along Flower Street. The projected location of the escarpment is shown on Figure 4.9-3.

The projection of the PHBT Los Angeles Section to the ground surface intersects the geotech Affected Area for Alternatives 1, 2, and 3 in the general vicinity of Florence Avenue (Bergen et al. 2017 and Rollins et al., 2018). Because the PHBT is a much deeper feature than the EPBT (the EPBT is situated atop the PHBT (Shaw et al., 2002) and may merge with it at depth), direct evidence for surface expression (deformation) (such as the Coyote Pass Escarpment for the EPBT) has not been noted for the PHBT in the Los Angeles Basin. As an example, the 1987 Whittier Narrows Earthquake occurred on the PHBT, and rupture of the PHBT did not break the ground surface (Hauksson et. al. 1988). The PHBT fault does not penetrate Quaternary-aged sediments in the LA Basin; the fault tip is buried by the sediment, which is very broadly folded as a result of the fault (Rollins et al. 2018).

Figure 4.9-3. Escarpments



Sources: WSP 2019; Oskin 2000; Sieh 1997; AMEC 2013
Note: Escarpment locations are not exact and are a graphic representation of a broad area.

The EPBT and PHBT are considered in the seismic (ground shaking) design for the Build Alternatives. These faults and all other known active faults in the region are considered when developing the parameters that would be used during design of the project structures (see Section 4.9.1.1 for details on the required design criteria).

4.9.2.6 Seismic Hazards

Seismic Shaking

The geotech Affected Area is located within the seismically active region of Southern California and may be subject to seismic ground shaking over time. During an earthquake, seismic waves are produced that extend in all directions from the fault rupture. Seismic waves can produce strong ground shaking that is typically strongest near the fault and attenuates as waves move away from

the source. The severity of ground shaking is a function of the magnitude of the fault rupture; the distance from the fault to the geotech Affected Area; and the type, thickness, and condition of the underlying geologic materials in an area. Areas underlain by unconsolidated recent alluvium or fill (such as those anticipated in the geotech Affected Area) may amplify the strength and duration of strong ground motion. Significant seismic shaking can result in structural damage and potentially structural collapse. Preliminary seismic analysis was conducted for the geotech Affected Area using the USGS seismic design maps (American Society of Civil Engineers 2019). These maps consider the effects of a potential earthquake on all the known faults in the region.

Considering the conceptual level of the Project, the MDE (see Section 4.9.1.1) is used to provide a general frame of reference for the ground accelerations (the severity of ground shaking) that would be used in the design of the Project. USGS parameter PGA_M is the peak ground acceleration (PGA) corrected for site effects (i.e., subsurface conditions). The PGA is an estimate of the maximum ground shaking a site can experience over a specified period of time. The period of time considered is termed the average return period. The average return period is dictated by the MRDC, as discussed in Section 4.9.1.1. Based on available subsurface data from historic borings, soils within the upper 100 feet of the geotech Affected Area can be generally classified as Site Class D for this conceptual level of study. Using the 2017 USGS Seismic Design Maps, PGA_M varies along the geotech Affected Area, ranging from 0.94g (g = acceleration due to gravity) near the northern end (near US-101) to 0.72g near the southern end (near Pioneer Station). The actual PGA that would be used during the final design stage of the project structures would be developed as the Project designs progress, and would use the Site Class developed as a result of the geotechnical field investigation that would be performed for the Project.

Liquefaction

Soil liquefaction occurs in the upper 50 to 75 feet bgs when saturated, loose soils lose their strength because of excess pore water pressure caused by earthquake ground shaking. The space between the soil particles is completely filled with water, which exerts pressure on the soil particles, thereby influencing how tightly the soil particles are pressed together. Prior to an earthquake, the water pressure is static depending on the depth below the groundwater table; however, the shaking caused by an earthquake can increase the pore water pressure to a point where the soil loses strength and ground deformation can occur.

The primary factors affecting the possibility of liquefaction in a soil deposit are the intensity and duration of the earthquake shaking, the soil type, the relative density of the soil, the pressures of material above the soil, and the depth to groundwater. The types of soils most susceptible to liquefaction are clean, loose, uniformly graded, fine-grained sands; non-plastic silts that are saturated; and silty sands. When liquefaction occurs, the strength of the soil decreases and the ability of the soil to support structures is reduced. The potential impacts of liquefaction may include settlement of the ground surface, additional forces pushing down on foundation piles as a result of soil settlement above the liquefied layers, lateral spreading (similar to a landslide), and reduction of the shear strength of the liquefied soil, resulting in reduced load-carrying capacity. Liquefied soils can also exert additional dynamic pressures on retaining walls, which can cause them to tilt or slide.

Liquefaction-induced ground failure has historically been a major cause of earthquake damage in Southern California. As shown on Figure 4.9-4, portions of the geotech Affected Area in the downtown Los Angeles area, and the entire geotech Affected Area from the Huntington Park area to the Artesia area, are located in a Liquefaction Zone of Required Investigation. Liquefaction Zones of Required Investigation are areas that have historically experienced liquefaction, or areas where conditions favorable to liquefaction exist, as described above. The Seismic Hazards Mapping Act requires a detailed liquefaction evaluation when improvements are proposed within a CGS-delineated Zone of Required Investigation.

Seismically Induced Landslides

The potential for seismically induced landslides (landslides that are triggered by an earthquake) depends on the steepness of the slope, strength and structure of the soil/rock, groundwater depth and extent, and level of ground shaking. The geotech Affected Area is relatively flat and no significant slopes are present. The geotech Affected Area is not located in an Earthquake-induced Landslide Zone of Required Investigation, as shown on Figure 4.9-4.

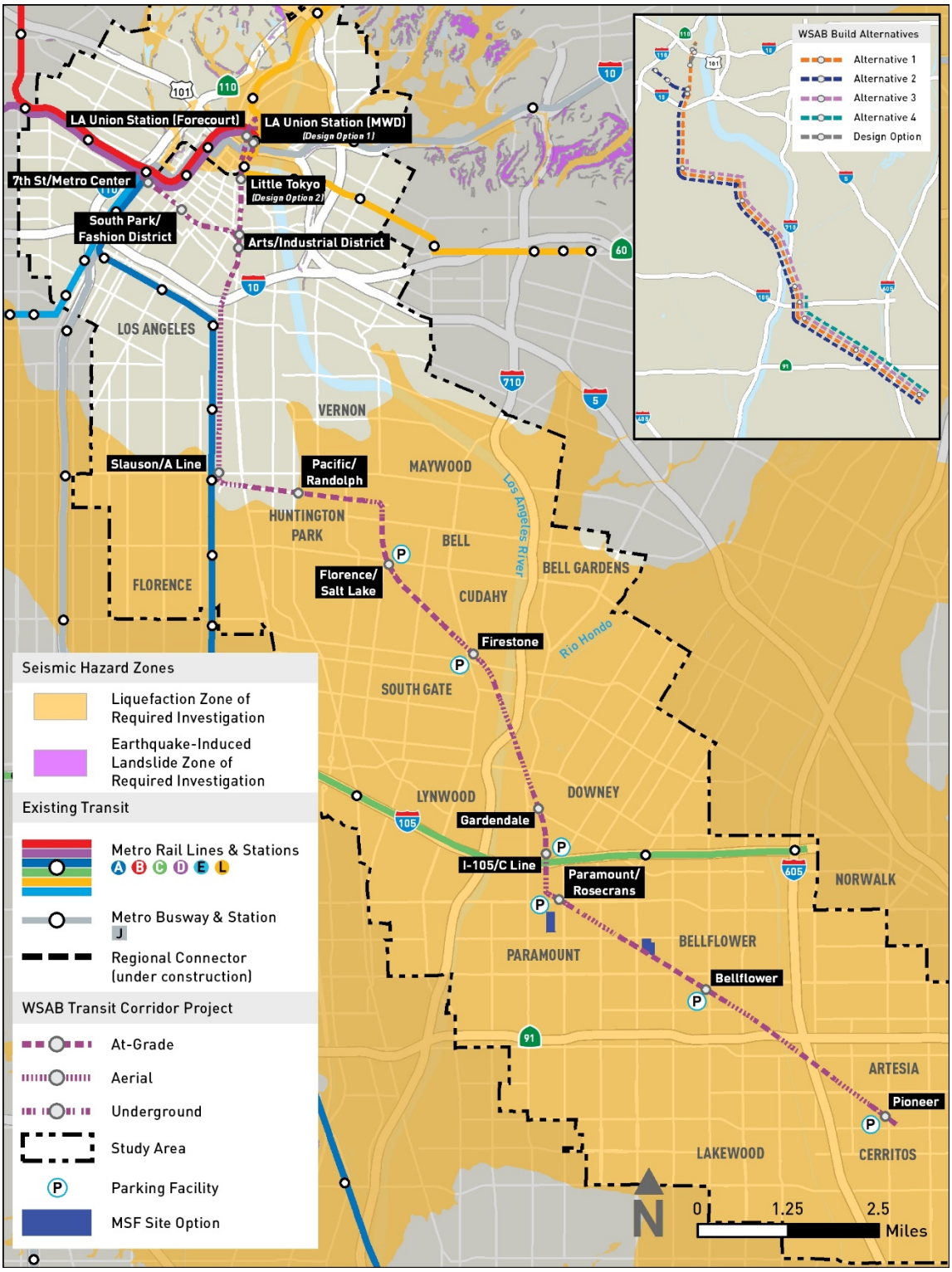
Seismically Induced Settlement

Loose, unsaturated granular soils are susceptible to settlement during an earthquake as the earthquake shaking causes the soil grains to rearrange and densify. This settlement can result in structural distress as the ground settles. Seismically induced settlement occurs primarily within loose to moderately dense sandy soils due to volume reduction during or shortly after an earthquake event. The artificial fill soils present along the alignment are expected to be undocumented and could include these loose soils. In addition, a portion of the alluvial soils along the alignment is anticipated to be loose to medium dense. Within the entire geotech Affected Area, unsaturated (above the groundwater table), undocumented fill soils and granular alluvial soils in the upper 50 to 75 feet bgs are potentially susceptible to seismically induced settlement.

Seismically Induced Inundation

Seismically induced inundation can occur when an earthquake causes catastrophic failure of a water-retaining structure such as a reservoir, dam, or levee, and subsequent flooding occurs due to the release of water from the structure. Based on a review of state inundation maps, floodwaters resulting from dam inundation are not expected to affect tunnel portals or underground stations included with Alternatives 1 and 2, including Design Options 1 and 2. The proposed portal and underground station locations are outside of the dam inundation areas identified by the California Dam Breach Inundation Maps produced by the California Department of Water Resources (DWR). The portals and underground stations for Alternatives 1 and 2 (including with Design Options 1 and 2) are within the City of Los Angeles. According to the 2017 City of Los Angeles Local Hazard Mitigation Plan, the probability of dam failure is low in today's regulatory environment (City of Los Angeles 2017b).

Figure 4.9-4. Seismic Hazard Zones Map



Sources: Prepared by Jacobs in 2021 (based on information from CGS 2016a through 2016e)

Tsunamis and Seiches

Tsunamis are waves typically generated offshore or within large, open bodies of water, primarily during an earthquake that occurs underwater, or by an underwater landslide. Seiches are waves generated within a large, closed body of water and can also be caused by an earthquake that occurs underwater, by an underwater landslide, or by ground shaking as a result of more distant earthquakes. At its closest point to the Project, the Pacific Ocean is more than 8 miles to the southwest. There are no closed bodies of water within or adjacent to the geotech Affected Area. Based on the distance between the geotech Affected Area and large bodies of water, the risk for tsunami or seiche in the geotech Affected Area is negligible.

4.9.2.7 Non-seismic Hazards

Potential non-seismic geologic hazards may exist within the geotech Affected Area, as summarized in the following subsections.

Slope Stability

The stability of a slope depends on the inclination, geology and geologic structure, soil and rock strength, and ground and surface water conditions within the slope. The geotech Affected Area is relatively flat and no significant slopes are present.

Expansive Soils

Expansive soils are clay-rich soils that swell and shrink with wetting and drying. The shrink-swell capacity of expansive soils can result in differential movement below or adjacent to a structure. This differential movement can result in significant damage to pavements, as well as foundations and associated structures. Clay-rich soils may exist locally within alluvial soils present in the geotech Affected Area. In addition, bedrock units also can exhibit expansive properties due to the clay content within the bedrock; this includes the Fernando Formation bedrock present within the shallow subsurface in the downtown Los Angeles area.

Ground Settlement and Collapsible Soils

Near the surface, ground settlement can occur when new loads are added to soil, or when a change in water levels results in a decrease in pore water pressures within compressible soils. Collapsible soils consist predominantly of sand- and silt-size particles arranged in a loose "honeycomb" structure. This loose structure is held together by small amounts of water-softening cementing agents, such as clay or calcium carbonate. When the soil becomes wet, these cementing agents soften and the honeycomb structure collapses and generates ground settlement. The entire geotech Affected Area is underlain by alluvial soils, as shown on Figure 4.9-1. The alluvial soils may be prone to collapse/settlement, which can result in differential movement beneath foundations, potentially causing structural distress.

Regional Subsidence

Regional subsidence results from the withdrawal of groundwater and/or hydrocarbons from the subsurface. DWR (2014) estimated the potential for future land subsidence within the geotech Affected Area to be low because groundwater withdrawal is restricted and managed, and, where performed, is compensated for by reinjection of water in volumes similar to what is withdrawn. Regional subsidence is not considered to be a significant hazard in the geotech Affected Area.

Naturally Occurring Oil and Gas

Naturally occurring oil and gas are present in the geotech Affected Area. As detailed in Section 4.10.2.5 of the Hazards and Hazardous Materials Section, portions of the Alternative 1 alignment (including Design Options 1 and 2) and Alternative 2 alignment are located upon the Union Station Oil Field (abandoned) and Los Angeles Oil Field. In addition, and as detailed in Section 4.10.2.5 of the Hazards and Hazardous Materials Section, oil and gas wells exist in the geotech Affected Area for Alternatives 1, 2, and 3. Oil and gas wells have not been identified in the geotech Affected Area for Alternative 4, Design Options 1 and 2, or the Paramount and Bellflower MSF site options.

Methane is a naturally occurring gas associated with the decomposition of organic materials. Methane gas is common in oil and gas fields and often occurs with H_2S gas. H_2S is produced by anaerobic decomposition of any type of organic or inorganic mater that contains sulfur.

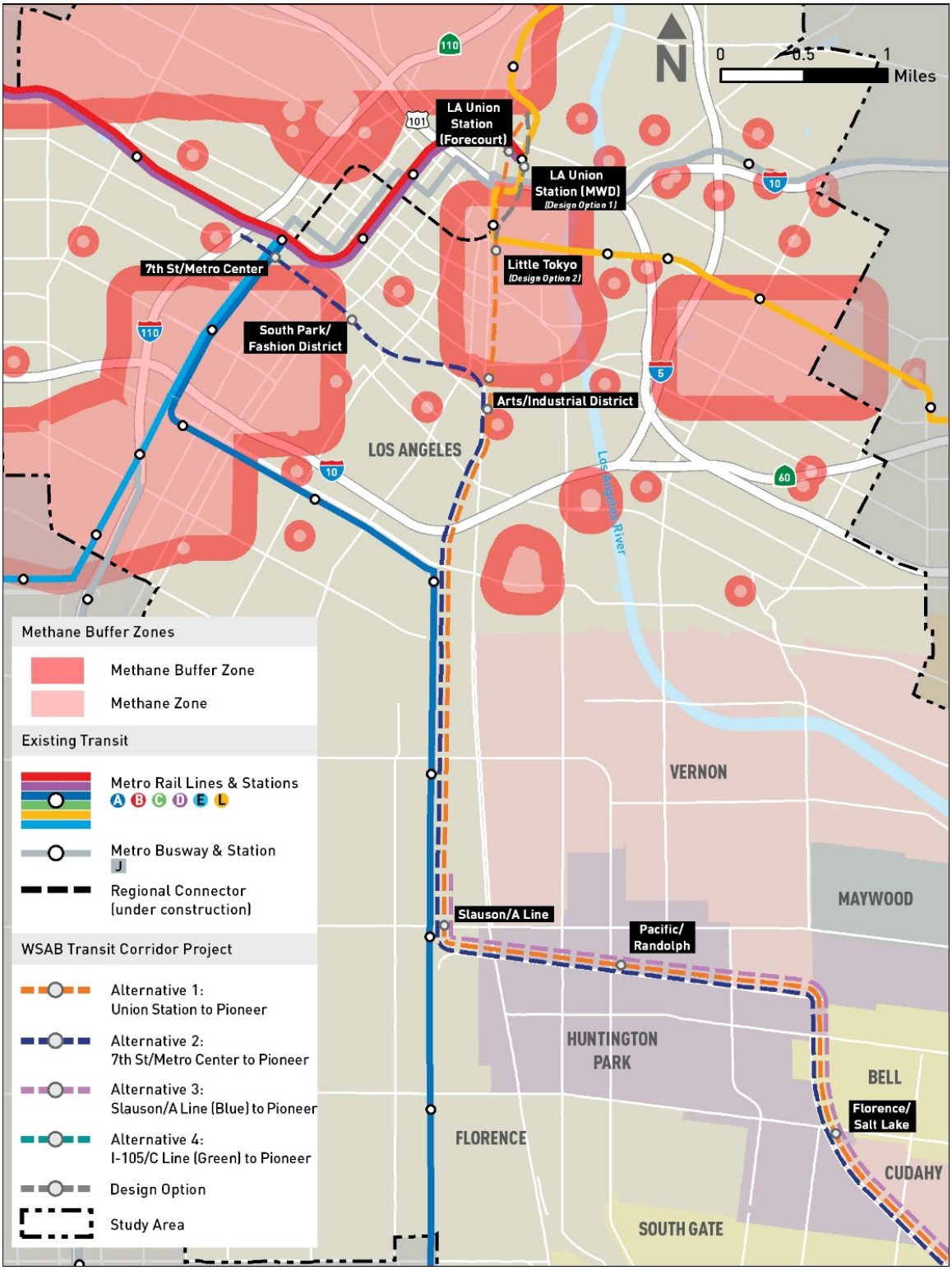
Methane and H_2S can also occur in a dissolved state in groundwater. Methane and H_2S are considered hazardous gases because of their explosive properties. H_2S is also highly toxic when inhaled and typically has a strong rotten-egg-like odor at lower, non-toxic levels. Methane and H_2S can be present in soil and/or groundwater. These gases can seep into tunnels and other excavations through soil and also through discontinuities (fractures, faults, etc.) in bedrock.

The City of Los Angeles Department of Public Works Bureau of Engineering mapped potential methane zones and methane buffer zones, and most recently updated its map in 2004, as shown with respect to the Build Alternative's geotech Affected Area, on Figure 4.9-5. Portions of the Alternative 1 and 2 (including Design Options 1 and 2) geotech Affected Area are located within a methane zone or methane buffer zone designated by the City of Los Angeles (2004). These methane zones and methane buffer zones have been established where there is a potential for naturally occurring methane to create a hazard to life and property.

Methane gas is explosive when its concentration is between 5 and 15 percent at atmospheric oxygen levels, but it is not toxic. Five and 15 percent are known as the lower and upper explosive limits, respectively. At higher percentages in air, it can be an asphyxiant because it displaces oxygen. Under normal atmospheric conditions, the oxygen content in air is approximately 21 percent by volume. If the oxygen content is reduced below 19.5 percent by volume through displacement by other gases, the air is oxygen-deficient according to U.S. Occupational Safety and Health Administration guidelines. Methane (density approximately 0.72 gram per liter at atmospheric pressure) is lighter than air and tends to rise through the ground and dissipate. Methane is moderately soluble in water. A total weighted average exposure of 1,000 ppm (0.1 percent) is included in the American Conference of Governmental Industrial Hygienists' (ACGIH) recommended practices (ACGIH 2001a). Peak values are allowed to be higher than 1,000 ppm, but a weighted average exposure of 1,000 ppm is used to prevent adverse health hazards for prolonged exposure.

H2S is potentially explosive at concentrations between 4 and 46 percent, and it is highly corrosive. H2S (density approximately 1.54 grams per liter at atmospheric pressure) is heavier than air. As such, at very high concentrations, H2S can accumulate within depressions or just above the groundwater table in the subsurface. It is highly soluble in water. According to the ACGIH (2001b), H2S gas has an exposure limit or threshold limit value (TLV)-time weighted average of 10 ppm for continuous exposure and 15 ppm for TLV-short-term exposure limit.

Figure 4.9-5. Methane and Methane Buffer Zones Map



Source: Prepared by Jacobs in 2020 (based on City of Los Angeles 2004)

This TLV-short-term exposure limit is the concentration to which it is believed that workers can be exposed continuously for a short period of time without suffering from irritation, chronic or irreversible tissue damage, or narcosis to a degree that would increase the likelihood of accidental injury, impair self-rescue ability, or materially reduce work efficiency, and provided that the daily exposure limit is not exceeded. A short-term exposure limit is defined as a 15-minute total weighted average exposure that should not be exceeded at any time during a workday. Cal/OSHA has these same exposure limits. The characteristic rotten-egg-like odor of H_2S is perceptible to most people at concentrations at or below approximately 1 ppm.

The following text is from the geotechnical baseline report prepared for the Regional Connector (Metro 2013c); similar conditions can be expected within the geotech Affected Area for Alternatives 1 and 2, including Design Options 1 and 2:

> Methane and hydrogen sulfide gases are anticipated to be encountered during the tunnel drive and the open cut excavations. These gases are expected to exist and seep through pore spaces and discontinuities, and would be generated from off-gassing of groundwater that flows into the excavation. Also, the excavated material exposed to the underground environment will emit these gases during handling and hauling. The concentration, pressure, and volume of these gases are expected to be sufficiently low that the inflow and off-gassing of these gases can be mitigated within the open cut, crossover cavern, crosspassage, and bored tunnel excavations through adequate ventilation, proper shotcrete application, and pressurized-face TBM [tunnel boring machine] tunneling with a precast concrete segmental tunnel lining as described in the Project Requirements. The underground work has been classified as "potentially gassy" by Cal/OSHA.

As indicated previously, naturally occurring oil and gas are present in the downtown Los Angeles area, as indicated by the methane zones and methane buffer zones (Figure 4.9-5). In addition, H_2S and petroliferous odors were reported during the geotechnical investigation for the Metro L (Gold) Line LRT bridge over US 101 (Metro 2002). Methane concentration levels detected along the Union Station to Civic Center portion of the Metro B/D (Red/Purple) Line alignment were less than 5 percent by volume (Metro 2011c). Methane concentration levels detected along the Fifth/Hill to Metro Center portion of the Metro B/D (Red/Purple) Line alignment were more than 50 percent by volume (Metro 2011c).

Radon gas is produced by the decay of uranium, which may be naturally present at varying levels in soil and rock. Once present, the gas moves through the ground and may enter structures through utility corridors, openings or cracks in foundations, and construction joints. Because radon gas is very dense, it may accumulate in basements or crawl spaces. Radon exposure has been linked to lung cancer. The USEPA action level for radon is above 4.0 picocuries per liter of air (pCi/l). The USEPA has mapped Los Angeles County as a Zone 2 radon area, which is defined as an area with a general indoor radon potential of between 2.0 and 4.0 pCi/l (USEPA 2019); thus, radon is not anticipated to be present at harmful concentrations in the geotech Affected Area.

No methane zones or methane buffer zones have been established south of the downtown Los Angeles area. As detailed in Section 4.10.2.5 in the Hazards and Hazardous Materials Section, oil and gas wells also exist in the geotech Affected Area of Alternative 3. Oil and gas wells have not been identified in the geotech Affected Area for Alternative 4, Design Options 1 and 2, or the Paramount and Bellflower MSF site options.

4.9.2.8 Mineral Resources

The geotech Affected Area is situated atop alluvial soils, some of which could likely be used as construction aggregate. However, considering the highly urbanized nature of the geotech Affected Area, mining of these materials is not economically viable. There are no viable mineral resources in the geotech Affected Area.

4.9.3 Environmental Consequences/Environmental Impacts

4.9.3.1 No Build Alternative

Under the No Build Alternative, regional and local projects would continue to be built. These projects would be designed and operated to established standards, and adherence to these criteria and standards would minimize geologic and geotechnical-related impacts and avoid adverse effects.

4.9.3.2 Build Alternatives—Common Impacts

The following subsection presents the environmental impacts and consequences that are common among Alternatives 1, 2, 3, and 4. Section 4.9.3.3 presents the environmental impacts and consequences that are alternative-specific.

Seismic Shaking and Fault-induced Ground Rupture

As discussed in Section 4.9.2.5, no known active faults capable of ground rupture are mapped within the geotech Affected Area, and the Project is not located in an Alquist-Priolo Earthquake Fault Zone, in accordance with Division of Mines and Geology Special Publication 42 (CGS 2016a through 2016e). The closest active faults capable of ground rupture near the geotech Affected Area are the Raymond Fault, approximately 4.5 miles north of the geotech Affected Area, and the Hollywood Fault, approximately 4.7 miles north of the geotech Affected Area. Considering that no known active faults capable of ground rupture are mapped in the geotech Affected Area, there is no potential for ground rupture from known active faulting for the Build Alternatives. However, there is the potential for co-seismic deformation (gentle folding of the ground surface) to occur in the geotech Affected Area for Alternatives 1 and 2 related to the Coyote Pass escarpment of the EPBT. The impacts of co-seismic deformation are discussed in Section 4.9.3.3.

Because the geotech Affected Area is within the seismically active region of Southern California, operation of the Build Alternatives could subject people and structures to moderate to strong seismic ground shaking, which could result in human injury or death, or damage to structures. Project Measure GEO PM-1 (Geotechnical Design [Operation]), described in Section 4.9.4.1, would include development of site-specific design parameters to account for the seismic ground shaking. The intensity of ground shaking at a given location depends primarily upon the earthquake magnitude, the distance from the source, and the site response characteristics. As indicated in Section 4.9.2.6, the conceptual PGA varies along the geotech Affected Area, ranging from 0.94g near the northern end (near US-101) to 0.72g near the southern end (near Pioneer Station) for the MDE. The estimated levels of ground shaking are integral parameters considered during the geotechnical and structural designs of the Project.

As mandated by Project Measure GEO PM-1 (Geotechnical Design [Operation]), the Build Alternatives would be designed in accordance with the MRDC design standards (or equivalent), discussed in Section 4.9.1.1. Structures included with the Project would be

designed to perform in accordance with the MDE and ODE thresholds indicated in Section 4.9.1.1. As also described in Section 4.9.1.1, the design criteria (MRDC, Caltrans Seismic Design Criteria, or the LA County Building Code/CBC, or equivalent) dictate the average return period that would be used in the design. The average return period is directly correlated to the predicted intensity of shaking that a project would experience (the longer the return period, the greater intensity). Above-grade, at-grade, and below-grade structures would be designed and would perform in accordance with the thresholds for seismicity indicated in Section 4.9.1.1. By implementing the mandatory design requirements indicated in Section 4.9.1.1, structures included as part of the Project would be designed and constructed to withstand the estimated seismic ground shaking and resulting ground loads and deformations (per MRDC requirements, or equivalent). Under NEPA, impacts from the Build Alternatives would be minimized; adverse effects would be avoided; and no mitigation measures would be required.

Liquefaction/Seismically Induced Settlement

As discussed in Section 4.9.2.6 and shown on Figure 4.9-4, the alignments for Alternative 1, 2, and 3, from the Huntington Park area south, and all of the Alternative 4 alignment, are located in a Liquefaction Zone of Required Investigation. In addition, the Alternative 1 alignment, generally north of the Little Tokyo area, is also located in a Liquefaction Zone of Required Investigation. This means that these areas have historically experienced liquefaction or have conditions favorable for liquefaction. In addition, the alluvial soils above the groundwater table within the geotech Affected Area of Alternatives 1, 2, 3, and 4 are susceptible to seismically induced settlement. As such, operation of the Build Alternatives could subject people and structures to the effects of liquefaction or seismically induced settlement, which could result in human injury or death, or damage to structures.

Project Measure GEO PM-1 (Geotechnical Design [Operation]) requires that the Build Alternatives be designed in accordance with design standards, including standards specific to liquefaction and seismic settlement, such as the MRDC Section 5, Structural; Metro's Supplemental Seismic Design Criteria (2017g); and the California Seismic Hazards Mapping Act. These design standards (included in GEO PM-1) dictate that during final design, a geotechnical investigation would be conducted for the selected alternative. The investigation would also be in accordance with Metro's comprehensive geologic/geotechnical field investigation program that is currently being developed (Metro 2020c) and would include a detailed evaluation of these hazards. The design-level geotechnical investigations would provide information pertaining to the depths and areal extents of liquefaction and an estimate of the anticipated ground deformation associated with liquefaction, lateral spread, and seismically induced settlement.

During the design process, if it is determined that these hazards could result in an unacceptable soil or structural response (to be defined during final design, depending on the type of structure), the following ground improvements could be implemented consistent with the design standards provided in Section 4.9.1.1: dynamic compaction, stone columns, jet grouting, cement deep-soil mixing, and compaction grouting. Such ground improvements would reduce the potential for deformation to acceptable levels (to be determined during final design, depending on the type of structure). In lieu of ground improvements, structures and foundations would be designed to tolerate the estimated displacement. Structures included with the Project would be designed to perform in accordance with the MDE and ODE thresholds indicated in Section 4.9.1.1.

Project design plans would incorporate the design requirements mandated by Project Measure GEO PM-1 (Geotechnical Design [Operation]) and described in Section 4.9.1.1. Under NEPA, by implementing these mandatory design requirements, impacts from the Build Alternatives would be minimized, adverse effects would be avoided, and mitigation would not be required.

Seismically Induced Inundation

Seismically induced inundation can occur when an earthquake causes catastrophic failure of a water-retaining structure, such as a reservoir, dam, or levee, and subsequent flooding occurs from the release of water from the structure. Based on review of state inundation maps, floodwaters resulting from dam inundation are not expected to affect tunnel portals or underground stations included with the Build Alternatives. The proposed portal and underground station locations are outside of the dam inundation areas identified by the California Dam Breach Inundation Maps produced by DWR (2019c). The portals and underground stations associated with Alternatives 1 and 2, including Design Options 1 and 2, are within the City of Los Angeles. According to the 2017 City of Los Angeles Local Hazard Mitigation Plan, the probability of dam failure is low in today's regulatory environment (City of Los Angeles 2017b). For the at-grade elements included in Alternatives 1, 2, 3, and 4, if seismically induced inundation occurred, the inundation would be short-lived and the water would be drained by the existing drainage system and future WSAB drainage improvements. For any of the Build Alternatives, modifications to local storm drain systems would be required to discharge runoff from the project alignment. New drainage pipes under at-grade track would collect stormwater to earthen or concrete drainage swales running parallel to the track, which would discharge to the existing local stormwater infrastructure. Drainage systems within the portions of elevated track and near tunnel portals would similarly collect and discharge stormwater. Therefore, under NEPA, impacts from the Build Alternatives would be minimized, adverse effects would be avoided, and mitigation would not be required.

Expansive Soils

As discussed in Section 4.9.2.7, clay-rich soils may exist locally within alluvial soils present in the geotech Affected Area. In addition, bedrock units can exhibit expansive properties because of the clay content within the bedrock; this includes the Fernando Formation bedrock present within the shallow subsurface in the downtown Los Angeles area. The placement of structures on expansive soil could result in structural distress. As such, operation of the above-grade and at-grade structures associated with the Build Alternatives could subject people and structures to the effects of expansive soils, which could result in damage to structures.

As part of Project Measure GEO PM-1 (Geotechnical Design [Operation]), the Build Alternatives would be designed and constructed in accordance with the recommendations to be included in the detailed geotechnical final design report. Expansive soil remediation could include soil removal and replacement, chemical treatment, or structural enhancements. Therefore, under NEPA, impacts from the Build Alternatives related to expansive soils would be minimized, adverse effects would be avoided, and mitigation would not be required.

Ground Settlement and Collapsible Soils

As discussed in Section 4.9.2.7, the alluvial soils along the geotech Affected Area for the Build Alternatives may be prone to collapse or settlement, which can result in differential

movement beneath foundations potentially causing distress to above-grade and at-grade structures. As such, operation of the above-grade and at-grade structures associated with the Build Alternatives could subject people and structures to the effects of ground settlement, which could result in damage to structures.

Detrimental ground settlement from new structures or earth loads is typically alleviated by removal and replacement of the settlement-prone or collapse-prone soils. Implementation of ground improvement methods (similar to those indicated for liquefaction) and structural support systems would also minimize the potential for impacts related to collapse or settlement.

As part of Project Measure GEO PM-1 (Geotechnical Design [Operation]), the Build Alternatives would be designed in accordance with the recommendations to be included in the detailed geotechnical advance design report. Recommendations specific to detrimental ground settlement from new structures or earth loads would be provided, based on site-specific geotechnical investigation. Therefore, under NEPA, impacts from the Build Alternatives related to settlement-prone or collapse-prone soils would be minimized; adverse effects would be avoided; and mitigation would not be required.

Naturally Occurring Oil and Gas

As discussed in Section 4.19.3.9, Construction Impacts, foundation excavations for viaducts or other support structures may encounter hazardous gases resulting in a construction hazard. Viaducts and other support structures would be included as part of Alternatives 1, 2, 3, or 4. Subterranean structures are not included as part of Alternatives 3 and 4, and there are no oil or gas fields in their respective geotech Affected Areas. Therefore, under NEPA, naturally occurring oil and gas hazards are not anticipated to be a concern during operation of Alternatives 3 and 4, or the at- or above-grade portions of Alternatives 1 and 2; there would be no adverse effects; and mitigation would not be required.

See Sections 4.9.3.3 and 4.19.3.9 regarding the naturally occurring oil and gas hazard as applicable to the operation and construction, respectively, of Alternatives 1 and 2.

4.9.3.3 Build Alternative Specific Impacts

The following subsections present the environmental impacts and consequences that are not common to all Build Alternatives.

Co-seismic Deformation

The Coyote Pass escarpment transects the downtown Los Angeles area (including the Alternative 1 and 2 alignments) in the subsurface. The Coyote Pass escarpment is a feature created by co-seismic deformation related to movement of the Upper EPBT. This deformation (gentle folding) could result in damage to aerial structures, tunnels, subterranean stations, or at-grade stations included as part of Alternatives 1 and 2. The Coyote Pass escarpment trends roughly east-west and transects the alignments of Design Options 1 and 2 of Alternative 1, and the northwestern portion of Alternative 2. The Coyote Pass escarpment does not cross the Alternative 3 or 4 alignments.

Based on the available data, the Coyote Pass escarpment likely crosses North Alameda Street between Temple Street on the north and 4th Street on the south. The location of the escarpment in the geotech Affected Area was projected from this area at North Alameda Street to the west,

where topographic expression of the feature is evident near SR-110. Based on this projection, the Coyote Pass escarpment continues westerly from North Alameda Street to an approximate location between 4th Street (on the north) and 9th Street (on the south) along Flower Street.

Operation of the stations, tunnels, and other design features associated with Alternatives 1 and 2 could subject people and structures to the effects of co-seismic deformation, which could result in human injury or death, or damage to structures.

As part of Project Measure GEO PM-1 (Geotechnical Design [Operation]), the design of either Alternative 1 or 2 would consider the effects of EPBT and associated uplift of the Coyote Pass escarpment in general accordance with MRDC Section 5, Revision 12 (dated November 20, 2017), page 5A-35. The MRDC state that "for blind thrust faults in the vicinity of underground structures, it may be necessary to estimate surface uplift, as in the case of the Eastside Coyote Escarpment." There is a potential for ground deformation to occur from the folding of the Coyote Hills escarpment, which, if it extended beneath an underground station or tunnel, could have an impact on the station's structure and tunnel lining. Ground conditions would be verified during the final design phase if Alternative 1 or 2 is the selected alternative, and the stations' structures and tunnel lining would be designed to accommodate the estimated deformation along the escarpment, where needed.

The two-level seismic design approach (based on the MDE and ODE requirements of the MRDC) would be used to estimate the amount of deformation to be assumed during final design. As described in Section 4.9.1.1, the design approach (MRDC, Caltrans Seismic Design Criteria, or the LA County Building Code/CBC, or equivalent) dictates the average return period that would be used in the design. The average return period is directly correlated to the amount of deformation to be assumed in the design of structures that cross the escarpment (the longer the return period, the greater the amount of deformation). Above-grade, at-grade, and below-grade structures would perform in accordance with the MDE and ODE thresholds indicated in Section 4.9.1.1.

Therefore, as mandated by Project Measure GEO PM-1 (Geotechnical Design [Operation]), Alternatives 1 and 2 would be designed, constructed, and operated according to the analysis described above and the design standards provided in Section 4.9.1.1. Therefore, under NEPA, the potential for co-seismic deformation impacts from Alternatives 1 and 2 would be minimized consistent with established standards; no adverse effects would occur and mitigation would not be required.

Naturally Occurring Subsurface Gas

Naturally occurring methane vapor and H_2S gases could impact the operation of tunnels and stations within Alternative 1 (including Design Options 1 and 2) and Alternative 2. Alternatives 3 and 4 do not include tunnels or underground stations and there are no oil or gas fields in their respective geotech Affected Areas. Therefore, naturally occurring oil and gas hazards are not anticipated to be a concern during operation of Alternatives 3 and 4.

If subsurface gases were to accumulate within the Alternative 1 (including Design Options 1 and 2) and Alternative 2 tunnels or stations, this would pose a potential fire/explosion hazard during operation. Additionally, accumulation of methane gas could replace oxygen in the breathing zone, and accumulation of H_2S would be highly toxic when inhaled at high concentrations, thus creating a health hazard during operation. Metro has extensively studied methane and H_2S characteristics with respect to its effects on the operation of its rail facilities

within Los Angeles County, as methane and H_2S are present in the ground surrounding the following projects: existing Metro B (Red) Line; existing and planned Metro D (Purple) Line; and the underground portion of the Metro L (Gold) Line Eastside Extension. For over 35 years, Metro has been developing documentation and methods for reducing or eliminating hazardous conditions for its facilities that are under construction or already in operation. This documentation includes the following:

- Alerting Report on Tunneling Liners, Metro 1984—Tunnel construction methods, lining methods, and ventilation requirements for the then proposed 1983 alignment of the Metro B (Red) Line tunnels (along Wilshire Boulevard and Fairfax Avenue)
- Congressionally Ordered Reengineering Study, Metro, 1985—Established methane conditions along alternative alignments and led to the realignment of the then proposed Metro B (Red) Line into its current alignment

Additionally, Metro designed a procedure for a "two-pass" tunnel lining system (i.e., two tunnel linings that are constructed in sequence, with the second lining being constructed within the first lining). This approach includes a high-density polyethylene water and gas barrier within the tunnel construction.

Metro also prepared a study to locate and monitor gas-bearing geologic formations for the Mid-City area. This study determined the extent of the gas reservoirs, examined methods of treatment for pre-tunneling and tunneling timeframes, and recommended tunnel and station configurations to avoid the most gaseous areas. In addition, Metro implemented a double-gasketed tunnel liner that can flex enough to protect rail tunnels from gas intrusion before, during, and after an earthquake. Along with this system, Metro continuously monitors for gaseous environments in its tunnels and has emergency ventilation in all its tunnel facilities in addition to the standard tunnel ventilation.

As described previously, because Alternative 1 passes through an area characterized by an abandoned oil field (Union Station Oil Field)/methane zones and Alternative 2 is located adjacent to an oil field (Los Angeles Oil Field) and is within a methane zone, gaseous conditions may be encountered in both Alternatives 1 and 2. Metro has specified design measures to address the gassy environments, which include the following:

- Construct subterranean walls with waterproof and vapor-proof membranes to fulfill requirements of the City of Los Angeles methane regulations, as enforced by the LADBS
- Design tunnels and stations to provide a redundant protection system against gas intrusion hazards, such as those described in the City of Los Angeles Municipal Code, Chapter IX, Building Regulations, Article 1, Division 71, Methane Seepage Regulations

Additionally, as the project proceeds through the development process, comprehensive geologic, geotechnical, and environmental investigations would be conducted and design-level documents would be prepared for the selected alternative. These design-level reports would verify and document the hazardous subsurface conditions in the project area and support the design recommendations in compliance with the applicable regulations and standards for hazardous substances, geologic, and geotechnical conditions and hazards.

In compliance with these regulations, specific requirements for the Project would be determined according to the actual methane levels and pressures observed onsite. The identified specific requirements would then be incorporated into the design of the Project.

Further factors that would reduce the risk of gas exposure and intrusion into the project structures during operation are as follows:

- Gases would be purged from the tunnels simply by the air movement caused by the action of trains running through the tunnels.
- During non-revenue operations, air velocity would be maintained at a minimum of 100 feet per minute, per Metro's Design Criteria. This air velocity is the minimum that the ventilation system must achieve to direct gases toward the nearest point of extraction and prevent hazardous gases from accumulating during the hours when the trains are not operating. Additional ventilation is also employed during revenue operations.

In addition, gas and waterproofing systems would be included in the design of the tunnels. In accordance with Project Measure GEO PM-2 (Oil and Gas Zones [Operation]), described in Section 4.9.4.1, the design would be specific to methane levels and pressures measured along the geotech Affected Area. Many of the following systems are currently being used for the Metro D (Purple) Line extension (Metro 2017g) and would be considered, as needed, for Alternative 1 or 2:

- Specially designed precast concrete liners used for the primary tunnel lining for ground support and water and gas barrier would be designed with the possibility of adding a secondary liner as needed if leakage occurs at some future time.
- Lining may include thicker segments to protect against corrosion and wider gaskets may be used to increase the performance of the gasket seals.
- Reduced permeability tunnel segment concrete—the segments may include steel fibers or other types of fiber reinforcement for denser concrete as well as coatings.
- Double-gasket design to provide a second seal for a more redundant system. This also facilitates post-installation repair of leaks (if needed) by grouting the areas between the gaskets.
- Segment Insert Materials—use of non-corrosive plastics, for example plastic dowels, at segment circumferential joints.
- Rapid repair methods, such as preinstalled grout tubes within waterproofing systems.
- Compartmentalized water and gas-proofing membranes would be used in station structures so that leakage, if it occurs, can be isolated and readily repaired using preinstalled grout tubes.
- Other methods for gas and waterproofing may also be added if identified during the advancement of design.

Because the planned tunnels in Alternatives 1 and 2 would be ventilated spaces with vapor barriers preventing communication of gases between the interior and exterior of the tunnel, the presence of the tunnel would not influence the gases already present within the ground. Considering the above-described design enhancements that would be implemented, and that the tunnel is relatively small when compared with the underground gassy area, the tunnel would not change long-term flow patterns of water and gas in the subsurface. Tunnels also would not provide new pathways for gas transmission, as the tunnel construction methodology would use grout along its length such that the space around the tunnel would be sealed by the grout. The final presence of the constructed tunnel would then have no impact on the long-term migration of gases to the ground surface during operation.

Hazardous subsurface gases are likely present in the vicinity of the Build Alternative tunnels. Accumulation of hazardous surface gases within these tunnels during operation would pose a risk of fire/explosion and a health risk from toxic gas exposure. Project Measure GEO PM-2 (Oil and Gas Zones [Operation]) would be implemented to identify, reduce, and minimize potential impacts to operators and the public during operation. However, due to the broad-spectrum nature of the project design features included as part of Alternatives 1 and 2, under NEPA, the adverse effects would be minimized but would not be completely eliminated. Therefore, Mitigation Measures GEO-1 (Hazardous Gas [Operation]), GEO-2 (Structural Design), GEO-3 (Gas Monitoring [Operation]) and GEO-4 (Tunnel Advisory Panel), described in Section 4.9.4.2, would be implemented to further reduce these adverse effects during operation. With implementation of these measures for Alternatives 1 and 2, no adverse effects related to potential hazardous subsurface gases would occur during operation.

4.9.3.4 Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: The evaluation for the Alternative 1 design options considered seismic shaking and ground rupture, liquefaction/seismically induced settlement, seismically induced inundation, co-seismic deformation, expansive soils, ground settlement and collapsible soils, and naturally occurring oil and gas. The design options and Alternative 1 have substantially similar geologic settings and potential geotechnical operational impacts and effect determinations. The conclusions provided for Alternative 1 in Sections 4.9.3.2 and 4.9.3.3 are also applicable to the design options. Under NEPA, with implementation of the measures indicated in Sections 4.9.3.2 and 4.9.3.3, no adverse effects would occur during operation of either Design Option 1 or 2.

4.9.3.5 Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: In addition to train storage tracks, which are similar to those included as part of the Build Alternatives, the selected MSF would include a number of building structures. As with the Build Alternatives, the MSF would be subject to the prescribed standards, requirements, and guidance related to the design of the proposed building structures, including the requirements of the CBC, or equivalent. The MSF site options and Alternative 4 have substantially similar geologic settings and potential geotechnical operational impacts and effect determinations. The risks and effects related to seismic shaking and ground rupture, liquefaction/seismically induced settlement and inundation, expansive soils, ground settlement, and collapsible soils at the MSF sites would be substantially similar to those effects identified for Alternative 4.

As part of Project Measure GEO PM-1 (Geotechnical Design [Operation]), the Build Alternatives, including the MSF site options, would be designed in accordance with the recommendations to be included in the detailed geotechnical design report. Recommendations addressing seismic shaking and ground rupture, liquefaction/seismically induced settlement and inundation, expansive soils, ground settlement, and collapsible soils would be provided, based on site-specific geotechnical investigation. Therefore, under NEPA, the Paramount or Bellflower MSF site option impacts related to these hazards would be minimized; adverse effects would be avoided; and mitigation would not be required.

4.9.4 Project Measures and Mitigation Measures

As discussed in Section 4.9.3.2 and 4.9.3.3, potential impacts associated with the design and operation of the Build Alternatives, design options, and MSF sites would be minimized

through compliance with established design standards discussed in Section 4.9.1 and implemented through Project Measures GEO PM-1 (Geotechnical Design [Operation]) and GEO PM-2 (Oil and Gas Zones [Operation]) and Mitigation Measures GEO-1 (Hazardous Gas [Operation]), GEO-2 (Structural Design), GEO-3 (Gas Monitoring [Operation]), and GEO-4 (Tunnel Advisory Panel). Project Measure GEO PM-1 is applicable to all of the Build Alternatives, design options, and MSF site options. Project Measure GEO PM-2 and Mitigation Measures GEO-1 through GEO-4 are specific to Build Alternatives 1 and 2.

4.9.4.1 Project Measures

Metro would verify that the following project measures (which were developed in accordance with the design requirements summarized in Section 4.9.1) are implemented to reduce geologic-, soil-, and seismicity-related impacts. These project measures are required and are considered part of the Project:

GEO PM-1: Geotechnical Design (Operation)

A number of geotechnical design reports are required for the Project, as detailed in the MRDC, Section 5.6, Geotechnical Investigations, Analysis and Design. Section 5.6 of the MRDC provides detailed requirements for planning and conducting a geotechnical investigation, geotechnical design methodologies, and reporting. In addition, and as referenced in the MRDC, Caltrans and the County of Los Angeles Building Code have their own design requirements for bridges and aerial structures (Caltrans) and building structures (County of Los Angeles) that are also required.

In accordance with the MRDC, geotechnical report recommendations would be incorporated into the project plans and specifications. These recommendations would be a product of final design and would address the subsurface hazards identified in this report. Without these report recommendations, the project plans and specifications would not be approved, and the Project would not be allowed to advance into the final design stage or ultimately into construction. As a part of the WSAB conceptual engineering phase, Metro has developed a comprehensive geotechnical field investigation and laboratory testing program (Metro 2020c) and is in the process of implementing the program. Findings from that program would be used to verify the information presented in the Final EIS/EIR.

GEO PM-2: Oil and Gas Zones (Operation)

The primary protection for hazardous gases during system operations would be provided by physical barriers, which may include gasketed tunnel liner systems and gas-proofing membranes. Tunnels, stations, and appurtenant facilities would be designed in accordance with the City of Los Angeles Municipal Code, Chapter IX, Building Regulations, Article 1, Division 71, Methane Seepage Regulations, as amended by the City of Los Angeles Methane Ordinance (No. 175790). Design requirements would be specific to verified methane levels and pressures measured along the geotech Affected Area and would be incorporated into the design and construction. The requirements would include constructing subterranean walls with waterproof and vapor-proof membranes and designing the tunnels and stations to provide a redundant protection system against gas intrusion hazards.

Gases would be purged from the tunnels simply by the air movement caused by the action of trains running through the tunnels. During non-revenue operations, air velocity would be maintained mechanically at a minimum of 100 feet per minute, per Metro's Design Criteria. This air velocity is the minimum that the ventilation system must achieve to direct gases

toward the nearest point of extraction and prevent hazardous gases from accumulating during the hours when trains are not operating. Additional mechanical ventilation would also be employed during revenue operations.

Metro has extensively studied methane and H_2S impacts on tunnel projects throughout Los Angeles and has developed methods for reducing or eliminating hazardous conditions in its facilities while in operation (Metro 2017g). Prior to construction, Metro would require contractors to complete an assessment for methane and H_2S in accordance with LADBS *Site Testing Standards for Methane* (LADBS 2014) guidelines where the geotech Affected Area passes through oil fields, methane zones, and/or methane buffer zones. The assessment would determine where hazardous gases are present and at what quantities. In areas where elevated gases are detected, soil gas probes would be installed to monitor for methane, H_2S, oxygen, and carbon dioxide before, during, and after tunneling.

4.9.4.2 Mitigation Measures

GEO-1 Hazardous Gas (Operation)

Metro would install gas monitoring and detection systems with alarms, as well as ventilation equipment to dissipate gas to safe levels according to Metro's current design criteria for operation, as included as part of Mitigation Measure GEO-2 (Structural Design). Measures to monitor and control hazardous subsurface gas would include, but are not limited to, the following for both tunnel and station operation:

- High-volume ventilation systems with back-up power sources
- Gas detection systems with alarms
- Emergency ventilation triggered by the gas detection systems
- Automatic equipment shut-off
- Maintenance and operations personnel training
- Gas detection instrumentation set to send alarms to activate ventilation systems and evacuate structures as follows: methane gas—minor alarm at 10 percent of the lower explosive limit (LEL) (activate ventilation) and major alarm at 20 percent of the LEL (evacuation of area)
- H_2S —Minor alarm at 8 ppm and major alarm at 10 ppm

GEO-2 Structural Design

Protection from hazardous gases during project operation is provided by physical barriers, including tunnel liner membranes and station liner membranes, that reduce gas from migrating into an occupied space. The acceptable levels of gas migration during operation are based on OSHA and MRDC requirements, or equivalents.

Designs to reduce gas and groundwater intrusion in tunnels would also be used where appropriate, including:

- Additional barriers
- Compartmentalized barriers to facilitate leak sealing
- Flexible sealants, such as poly-rubber gels, along with high-density polyethylene-type materials
- Secondary station walls to provide additional barriers
- Active ventilation systems

The evaluations for station and tunnel construction materials would include laboratory testing during development of the system and material selection. The testing programs would review:

- Segment leakage: Pressurized gasket seal testing before, during, and after seismic movements, including various gasket materials and varying gasket profiles.
- Gasket material properties: Effective product life testing and resistance testing to deterioration when subjected to man-made and natural contaminants, including methane/H_2S gases, asphaltic materials, and other typical and potentially damaging construction materials.
- Various high-density polyethylene products, including poly-rubber gels currently used in ground containing methane in other cities, would be considered and tested/utilized as appropriate/needed.

Alternative methods for field testing of high-density polyethylene joints would be examined to provide additional quality control during installation.

Metro's gas-proofing leakage criteria mandate that all underground structures be designed to prevent the ingress from the ground of soil, water, hydrocarbons, and gas with no dripping water or visible signs of hydrocarbons. During operation of underground structures, no detectable methane or H_2S gas above 2.5 percent of the LEL for methane or 1.5 ppm for H_2S shall be detectable at an air velocity of 60 feet/min.

GEO-3 Gas Monitoring (Operation)

In accordance with MRDC requirements or equivalent, during operation of the Project, monitoring and recording of hazardous gas levels would be required to protect the public in areas of known or suspected gassy soil conditions. The hazardous gas levels in the operating environment would be continuously monitored and recorded. During operation, if gas levels increase (trigger levels are included as part of Mitigation Measure GEO-1 [Hazardous Gas [Operation]] and GEO-2 [Structural Design]) and pose risk to life, alarms would be triggered and the area would be evacuated immediately. After evacuation, procedures would be in place instructing personnel on how to safely proceed if elevated levels are detected.

GEO-4 Tunnel Advisory Panel

As was done for other recent Metro projects, the Metro TAP will review designs with respect to subsurface gas hazards in the areas of identified higher risk: (i.e., the Alternative 1 and Alternative 2 tunnel and station areas within mapped methane zones and methane buffer zones). The advisory panel consists of highly qualified tunnel design experts who will provide guidance on hazardous gases, gas intrusion, and ground contaminant effects on underground structures.

4.9.5 California Environmental Quality Act Determination

To satisfy CEQA requirements, geology and soils operational impacts have been analyzed in accordance with Appendix G of the *CEQA Guidelines*. The CEQA determinations presented below are based on the existing conditions described in Section 4.9.2 of this Draft EIS/EIR and the environmental impacts analysis presented in Section 4.9.3.

CEQA is only concerned with the effects of a project on the environment, not the effects of the environment on the Project (California Building Industry Association v. Bay Area Air

Quality Management District [2015] 62 Cal. 4th 369). For informational purposes, however, the following subsections analyze the potential impacts of developing the Project within the seismically active region of Southern California. The following analysis also considers whether the Project might exacerbate geological, seismic, and related hazards (see state CEQA Guidelines, CCR Title 14 §15126.2(a)). The analysis is based on the questions presented in Appendix G of the *CEQA Guidelines*.

The CEQA determinations for naturally occurring gases as they relate to the operation and construction of the project alternatives, including environmental and health impacts, are discussed in Hazardous Materials Sections 4.10.5 and 4.19.10, respectively.

4.9.5.1 Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?

No Project Alternative

Under the No Project Alternative, the geotech Affected Area would remain unchanged. There would be no impact to the geology (including faulting) and soils in the geotech Affected Area. Therefore, the operational-related impacts for the No Project Alternative would be less than significant, and no mitigation measures would be required.

Alternative 1: Los Angeles Union Station to Pioneer Station and Alternative 2: 7th Street/Metro Center to Pioneer Station

Alternatives 1 and 2 could experience impacts associated with a known earthquake fault. The geotech Affected Area is not located within an Earthquake Fault Zone established by the State of California Alquist-Priolo Earthquake Fault Zoning Act (CGS Special Publication 42). However, Alternatives 1 and 2 could experience significant impacts associated with co-seismic deformation along the Coyote Pass escarpment.

As indicated in Section 4.9.3.3 and as mandated by Project Measure GEO PM -1 (Geotechnical Design [Operation] [Section 4.9.4.1]), the Project would be designed to accommodate the anticipated levels of ground deformation associated with a design seismic event, and structures would perform in accordance with the MRDC MDE and ODE thresholds discussed in Section 4.9.1. As such, operation of Alternatives 1 and 2 would not result in potentially significant impacts, including the risk of loss, injury, or death, from rupture of a known earthquake fault. Therefore, impacts related to rupture along a known earthquake fault and co-seismic deformation would be less than significant with design and construction performed per applicable design criteria. Mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Alternative 3 is not underlain by a known active fault capable of ground rupture and is not located within an Earthquake Fault Zone established by the State of California Alquist-Priolo Earthquake Fault Zoning Act (CGS Special Publication 42). As such, operation of Alternative 3 would not result in potentially significant impacts, including the risk of loss, injury, or death, from ground rupture of a known earthquake fault. There would be no impacts related to ground rupture along a known active earthquake fault, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

As with Alternative 3, Alternative 4 is not underlain by a known active fault capable of ground rupture and is not located within an Earthquake Fault Zone. As such, operation of Alternative 4 would not result in potentially significant impacts, including the risk of loss, injury, or death, from ground rupture of a known earthquake fault. There would be no impacts related to ground rupture along a known active earthquake fault, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: MWD and Design Option 2: Add Little Tokyo Station: The Design Option 1 and 2 locations and proposed improvements are substantially similar, and the determination provided above for Alternative 1 is applicable to either Design Option 1 or 2. Impacts related to rupture along a known earthquake fault and co-seismic deformation would be less than significant with design and construction performed per the applicable design criteria mandated by Project Measure GEO PM-1 (Geotechnical Design [Operation] [Section 4.9.4.1]). Mitigation would not be required.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: The Paramount and Bellflower MSF site option locations and proposed improvements are substantially similar, and the determination provided above for Alternative 4 is applicable to either MSF site. There would be no impacts, and no mitigation measures would be required.

4.9.5.2 Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

No Project Alternative

Under the No Project Alternative, there would be no impact related to strong seismic ground shaking in the geotech Affected Area. Therefore, the operational-related impacts for the No Project Alternative would be less than significant, and no mitigation measures would be required.

Alternative 1: Los Angeles Union Station to Pioneer Station and Alternative 2: 7th Street/Metro Center to Pioneer Station

As discussed in Section 4.9.3.2, Alternatives 1 and 2 could be exposed to strong seismic ground shaking. However, as discussed in Section 4.9.1, and as mandated by Project Measure GEO PM-1 (Geotechnical Design [Operation] [Section 4.9.4.1]), Alternatives 1 and 2 would be designed to accommodate the anticipated levels of ground shaking associated with a design seismic event, and structures would perform in accordance with the MRDC MDE and ODE thresholds.

The potential to experience substantial seismic ground shaking is a common hazard for every project in Southern California, and the hazard cannot be avoided. Structures (aerial, at-grade, and underground) have been and continue to be successfully designed and constructed based on mandatory design criteria. Experience in California and worldwide shows that bored tunnels generally perform well during earthquake ground shaking, typically suffering less damage than surface structures. Because they are embedded in the ground, they move with the ground, and thus their motion is not magnified by the pendulum effect that occurs when an aboveground structure is shaken by an earthquake (Hashash et al. 2001). Considering the

seismic design requirements mandated by Project Measure GEO PM-1 (Geotechnical Design [Operation]), operation of Alternatives 1 and 2 would not result in substantial adverse effects, including the risk of loss, injury, or death, related to seismic shaking.

Operation of Alternatives 1 and 2 would not have an adverse effect on the geologic environment. The design features being considered are not uncommon for the Los Angeles region and would not exacerbate existing geologic conditions related to seismic shaking. Therefore, impacts related to seismic shaking would be less than significant with design and construction performed in accordance with applicable design criteria, and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Alternative 3 would incorporate the same structures as Alternatives 1 and 2, with the exception of underground structures. Alternative 3 would have the same potential for exposure to strong seismic ground shaking as Alternatives 1 and 2. However, as discussed in Section 4.9.1, and as mandated by Project Measure GEO PM-1 (Geotechnical Design [Operation] [Section 4.9.4.1]), Alternative 3 would be designed to accommodate the anticipated levels of ground shaking associated with a design seismic event, and structures would perform in accordance with the MRDC MDE and ODE thresholds.

Therefore, impacts related to seismic shaking would be less than significant with design and construction performed in accordance with applicable design criteria, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Alternative 4 would incorporate the same structures as Alternative 3. Alternative 4 would have the same potential for exposure to strong seismic ground shaking as Alternatives 1, 2, and 3. However, as discussed in Section 4.9.1, and as mandated by Project Measure GEO PM-1 (Geotechnical Design [Operation] [Section 4.9.4.1]), Alternative 4 would be designed to accommodate the anticipated levels of ground shaking associated with a design seismic event, and structures would perform in accordance with the MRDC MDE and ODE thresholds.

Therefore, impacts related to seismic shaking would be less than significant with design and construction performed in accordance with applicable design criteria, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: The Design Option 1 and 2 locations and proposed improvements are substantially similar, and the determination provided above for Alternative 1 is applicable to either Design Option 1 or 2. Impacts related to seismic shaking would be less than significant with design and construction performed per applicable design criteria as mandated by Project Measure GEO PM-1 (Geotechnical Design [Operation] [Section 4.9.4.1]), and mitigation would not be required.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: The Paramount and Bellflower MSF site option locations and proposed improvements are substantially similar, and the determination

provided above for Alternative 4 is applicable to either MSF site. Impacts related to seismic shaking would be less than significant with design and construction performed per applicable design criteria as mandated by Project Measure GEO PM-1 (Geotechnical Design [Operation] [Section 4.9.4.1]), and mitigation would not be required.

4.9.5.3 Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving Seismic-related ground failure, including liquefaction?

No Project Alternative

Under the No Project Alternative, there would be no impact to the geology and soils (including seismic-related ground failure and liquefaction potential) in the geotech Affected Area. Therefore, the operational-related impacts for the No Project Alternative would be less than significant, and no mitigation measures would be required.

Alternative 1: Los Angeles Union Station to Pioneer Station and Alternative 2: 7th Street/Metro Center to Pioneer Station

As discussed in Section 4.9.3.2, Alternatives 1 and 2 could be exposed to seismic-related ground failure, including liquefaction, lateral spreading, and seismically induced settlement. However, as discussed in Section 4.9.1, and as mandated by Project Measure GEO PM-1 (Geotechnical Design [Operation] [Section 4.9.4.1]), Alternatives 1 and 2 would be designed to accommodate the anticipated levels of deformation associated with a design seismic event, and structures would perform in accordance with the MRDC MDE and ODE thresholds discussed in Section 4.9.1.

The seismic-related ground failure hazard is a well-known hazard in Southern California and structures (aerial, at-grade, and underground) have been and continue to be successfully designed and constructed based on the referenced mandatory design criteria. Where warranted by site-specific subsurface conditions identified during the final design stage, design enhancements (e.g., ground improvements or structural enhancements) can reduce potentially significant impacts to levels within the acceptable limits for the structure (to be determined during final design). Considering the seismic design requirements mandated by Project Measure GEO PM-1 (Geotechnical Design [Operation]), operation of Alternatives 1 and 2 would not result in substantial adverse effects, including the risk of loss, injury, or death related to seismic-related ground failure, including liquefaction. Operation of Alternatives 1 and 2 would not have an adverse effect on the geologic environment. The design features being considered are not uncommon for the Los Angeles region and would not exacerbate existing geologic conditions related to seismic-related ground failure. Therefore, impacts would be less than significant with design and construction performed in accordance with applicable design criteria, and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Alternative 3 would have the same potential exposure to seismic-related ground failure, including liquefaction, lateral spreading, and seismically induced settlement, as Alternatives 1 and 2. Similar to Alternatives 1 and 2, Alternative 3 would be designed to accommodate the anticipated levels of deformation associated with a design seismic event, and structures would perform in accordance with the MRDC MDE and ODE thresholds. Project Measure GEO PM-1 (Geotechnical Design [Operation] [Section 4.9.4.1]) would apply to this alternative.

Therefore, impacts would be less than significant with design and construction performed in accordance with applicable design criteria, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Alternative 4 would have the same potential exposure to seismic-related ground failure, including liquefaction, lateral spreading, and seismically induced settlement, as with Alternatives 1, 2, and 3. Similar to Alternatives 1, 2, and 3, Alternative 4 would be designed to accommodate the anticipated levels of deformation associated with a design seismic event, and structures would perform in accordance with the MRDC MDE and ODE thresholds. Project Measure GEO PM-1 (Geotechnical Design [Operation] [Section 4.9.4.1]) would apply to this alternative. Therefore, impacts would be less than significant with design and construction performed in accordance with applicable design criteria, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: The Design Option 1 and 2 locations and proposed improvements are substantially similar and the determination provided above for Alternative 1 is applicable to either Design Option 1 or 2. Impacts related to seismic-related ground failure would be less than significant with design and operation performed per applicable design criteria as mandated by Project Measure GEO PM-1 (Geotechnical Design [Operation] [Section 4.9.4.1]), and mitigation would not be required.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: The Bellflower and Paramount MSF site option locations and proposed improvements are substantially similar, and the determination provided above for Alternative 4 is applicable to either MSF site. Impacts related to seismic-related ground failure would be less than significant with design and operation performed per applicable design criteria as mandated by Project Measure GEO PM-1 (Geotechnical Design [Operation]) [Section 4.9.4.1]), and no mitigation measures would be required.

4.9.5.4 Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

No Project Alternative

Under the No Project Alternative, there would be no impact to the geology (including landslides) and soils in the geotech Affected Area. Therefore, the operational-related impacts for the No Project Alternative would be less than significant, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station and Alternative 2: 7th Street/Metro Center to Pioneer Station

The landscape within the geotech Affected Area for Alternatives 1 and 2 is relatively flat, and no landslides have been mapped in the vicinity of the geotech Affected Areas. Natural landslides are not considered a hazard to the Project. Operation of Alternatives 1 and 2 would not have a potentially significant impact on the geologic environment. The design features being considered are not uncommon for the Los Angeles region and would not exacerbate existing geologic conditions. Therefore, impacts would be less than significant, and mitigation would not be required. Temporary excavations, which could introduce the potential for

construction-related landslides, are discussed in Section 4.19.3.9 (Geology and Soils Construction Impacts).

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

The landscape within the geotech Affected Area for Alternative 3 is the same as Alternatives 1 and 2, and operation of Alternative 3 would not have a potentially significant impact on the geologic environment. Therefore, impacts would be less than significant, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

The landscape within the geotech Affected Area for Alternative 4 is the same as Alternatives 1, 2, and 3, and operation of Alternative 4 would not have a potentially significant impact on the geologic environment. Therefore, impacts would be less than significant, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: The Design Options 1 and 2 locations and proposed improvements are substantially similar, and the determination provided above for Alternative 1 is applicable to either Design Option 1 or 2. Therefore, impacts would be less than significant, and mitigation would not be required.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: The Paramount and Bellflower MSF site option locations and proposed improvements are substantially similar, and the determination provided above for Alternative 4 is applicable to either MSF site. Therefore, impacts would be less than significant, and mitigation would not be required.

4.9.5.5 Result in substantial soil erosion or the loss of topsoil?

No Project Alternative

Under the No Project Alternative, there would be no impact to the geology and soils (including loss and erosion) in the geotech Affected Area. Therefore, the operational-related impacts for the No Project Alternative would be less than significant, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station and Alternative 2: 7th Street/Metro Center to Pioneer Station

Alternatives 1 and 2 are located in an urban setting and the topsoil layer in most of the geotech Affected Area has been disturbed or concealed by previous human activities. The potential impacts would involve the loss of topsoil as an agricultural resource and loss of an erosional barrier. Post-construction operation of the Project would not result in ground-surface disturbance, site clearance, excavation, or grading that would otherwise create the potential for soil erosion to occur. Alternatives 1 and 2 would operate on designed and constructed facilities implemented in accordance with state and local guidelines regarding erosion. Additionally, a required Stormwater Pollution Prevention Plan and Water Quality Control Plan would be in place as part of operation, among other regulatory requirements, as detailed in Section 4.11.1.1 in the Water Resources Section.

The geotech Affected Area is not used for agricultural purposes and the topsoil layer has already been disturbed or concealed by previous human activities. Considering the design requirements associated with erosion and mandatory best management practices detailed in Section 4.11.1.1 in the Water Resources Section, operation of Alternatives 1 and 2 would not result in substantial soil erosion or loss of topsoil. Therefore, impacts would be less than significant with design and construction performed per applicable design criteria, and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

As with Alternatives 1 and 2, Alternative 3 is located in an urban setting and the topsoil layer in most of the geotech Affected Area has been disturbed or concealed by previous human activities. Alternative 3 would have the same potential impacts as Alternatives 1 and 2. Considering the design requirements associated with erosion and mandatory best management practices detailed in Section 4.11.1.1 in the Water Resources Section, operation of Alternative 3 would not result in substantial soil erosion or loss of topsoil. Therefore, impacts would be less than significant with design and construction performed per applicable design criteria, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

As with Alternatives 1, 2, and 3, Alternative 4 is located in an urban setting and the topsoil layer in most of the geotech Affected Area has been disturbed or concealed by previous human activities. Alternative 4 would have the same potential impacts as Alternatives 1, 2, and 3. The potential impacts would involve the loss of topsoil as an agricultural resource and loss of an erosional barrier.

Considering the design requirements associated with erosion and mandatory best management practices detailed in Section 4.11.1.1 in the Water Resources Section, operation of Alternative 4 would not result in substantial soil erosion or loss of topsoil. Therefore, impacts would be less than significant with design and construction performed per applicable design criteria, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: The Design Option 1 and 2 locations and proposed improvements are substantially similar and the determination provided above for Alternative 1 is applicable to either Design Option 1 or 2. Design Option 1 or 2 would not result in substantial soil erosion or loss of topsoil and impacts would be less than significant with design and operation performed per applicable design criteria, including those identified in Section 4.11.1.1 in the Water Resources Section, and mitigation would not be required.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: The Paramount and Bellflower MSF site option locations and proposed improvements are substantially similar, and the determination provided above for Alternative 4 is applicable to either MSF site. Impacts related to substantial soil erosion or loss of topsoil would be less than significant with design and operation performed per applicable design criteria, including those identified in Section 4.11.1.1 in the Water Resources Section, and mitigation would not be required.

4.9.5.6 Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

No Project Alternative

Under the No Project Alternative, there would be no impact to the geology and soils that would affect the potential for these hazards in the geotech Affected Area. Therefore, the operational-related impacts for the No Project Alternative would be less than significant, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station and Alternative 2: 7th Street/Metro Center to Pioneer Station

Operational analysis and impact determinations for Alternatives 1 and 2 related to liquefaction, lateral spreading, and landslides are provided in Section 4.9.3.2. See Section 4.9.5.3 regarding the CEQA determination for ground failure (including liquefaction and lateral spreading), and Section 4.9.5.4 for the landslide hazard determination.

The geotech Affected Area for Alternatives 1 and 2 may be prone to collapse or settlement, which can result in differential movement beneath foundations potentially causing distress to above-grade and at-grade structures. As such, operation of the above- and at-grade structures associated with Alternatives 1 and 2 could subject people and structures to the effects of ground settlement, which could result in damage to structures.

Detrimental ground settlement from new structures or earth loads is typically alleviated by removal and replacement of the settlement/collapse-prone soils. Additionally, implementation of ground improvement methods (similar to those indicated for liquefaction) and structural support systems would minimize the potential for impacts related to collapse or settlement. As part of Project Measure GEO PM-1 (Geotechnical Design [Operation] [Section 4.9.4.1]), Alternatives 1 and 2 would be designed in accordance with the mandatory design requirements of the MRDC or equivalent, including design criteria identified in the design reports from site-specific geotechnical investigations. The recommendations that would be provided with those requirements and considered in the final design stage of the Project would specifically address detrimental ground settlement from new structures or earth loads. Based on the analysis presented above, operation of Alternatives 1 and 2 would not result in potentially significant impacts related to the risk of settlement or collapsible soil. Therefore, impacts related to settlement or collapsible soil would be less than significant with design and construction performed per applicable design criteria, and no mitigation measures would be required.

Regional subsidence results from the withdrawal of groundwater and/or hydrocarbons from the subsurface. DWR (2014) estimated the potential for future land subsidence within the geotech Affected Area to be low because groundwater withdrawal is restricted and managed, and, where performed, it is compensated for by reinjection of water in volumes similar to what is withdrawn. Potential impacts related to regional subsidence would be a less than significant hazard to the Project, and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Operational analysis and impact determinations for Alternative 3 related to liquefaction, lateral spreading, and landslides are similar to Alternatives 1 and 2. Therefore, the impact conclusion for Alternatives 1 and 2 are applicable to Alternative 3. Potential impacts related to

regional subsidence would be a less than significant hazard to the Project, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Operational analysis and impact determinations for Alternative 4 related to liquefaction, lateral spreading, and landslides are similar to Alternatives 1, 2, and 3. Therefore, the impact conclusion for Alternatives 1, 2, and 3 are applicable to Alternative 3. Potential impacts related to regional subsidence would be a less than significant hazard to the Project, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 1: Add Little Tokyo Station: The Design Option 1 and 2 locations and proposed improvements are substantially similar, and the determination provided above for Alternative 1 is applicable to either Design Option 1 or 2. Impacts related to collapse, settlement, and subsidence would be less than significant with design and operation performed per applicable design criteria mandated by Project Measure GEO PM-1 (Geotechnical Design [Operation] [Section 4.9.4.1]), and mitigation would not be required.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: The Paramount and Bellflower MSF site option locations and proposed improvements are substantially similar, and the determination provided above for Alternative 4 is applicable to either MSF site. Impacts related to collapse, settlement, and subsidence would be less than significant with design and operation performed per applicable design criteria mandated by Project Measure GEO PM-1 (Geotechnical Design [Operation] [Section 4.9.4.1), and mitigation would not be required.

4.9.5.7 Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

No Project Alternative

Under the No Project Alternative, there would be no impact to the geology and soils (including expansive soil potential) in the geotech Affected Area. Therefore, the operational-related impacts for the No Project Alternative would be less than significant, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station and Alternative 2: 7th Street/Metro Center to Pioneer Station

As discussed in Section 4.9.3.2, clay-rich soils may exist locally within alluvial soils present in the geotech Affected Area. In addition, bedrock units also can exhibit expansive properties due to the clay content within the bedrock; this includes the Fernando Formation bedrock present within the shallow subsurface of the northern portion of Alternative 1 and the northwestern portion of Alternative 2. The placement of structures on expansive soil could result in structural distress. Therefore, operation of the at-grade, above-grade, and below-grade structures associated with Alternatives 1 and 2 would potentially subject people and structures to the effects of expansive soils, which could result in damage to structures.

As mandated by Project Measure GEO PM-1 (Geotechnical Design [Operation] [Section 4.9.4.1]), structures to be constructed as part of Alternatives 1 and 2 would be designed and constructed in accordance with MRDC and CBC standards (the UBC is no longer applicable)

or equivalent (see Section 4.9.1) specific to expansive soils. These required design standards would yield structures that would tolerate the effects of expansive soil, or the expansive soils would be remediated. Expansive soil remediation could include soil removal and replacement, chemical treatment, or structural enhancements.

As part of Project Measure GEO PM-1 (Geotechnical Design [Operation]), Alternatives 1 and 2 would be designed in accordance with the recommendations to be included in the detailed geotechnical design reports. Considering the mandatory design requirements associated with expansive soils, operation of Alternatives 1 and 2 would not result in significant impacts, including the risk of loss, injury, or death related to expansive soils. Therefore, impacts related to expansive soils would be less than significant with design and construction performed per applicable design criteria, and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Operation of the at-grade and above-grade structures associated with Alternative 3 would potentially subject people and structures to the effects of expansive soils, which could result in damage to structures. As with Alternatives 1 and 2, Alternative 3 would incorporate Project Measure GEO PM-1 (Geotechnical Design [Operation] [Section 4.9.4.1]) and would be designed in accordance with MRDC and CBC standards (or equivalent) specific to expansive soils.

Alternative 3 would not result in significant impacts, including the risk of loss, injury, or death related to expansive soils. Therefore, impacts related to expansive soils would be less than significant with design and construction performed per applicable design criteria, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Operation of the at-grade and above-grade structures associated with Alternative 4 would potentially subject people and structures to the effects of expansive soils, which could result in damage to structures. As with Alternatives 1, 2, and 3, Alternative 4 would incorporate Project Measure GEO PM-1 (Geotechnical Design [Operation] [Section 4.9.4.1]) and would be designed in accordance with MRDC and CBC standards (or equivalent) specific to expansive soils.

Alternative 4 would not result in significant impacts, including the risk of loss, injury, or death related to expansive soils. Therefore, impacts related to expansive soils would be less than significant with design and construction performed per applicable design criteria, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: The Design Option 1 and 2 locations and proposed improvements are substantially similar, and the determination provided above for Alternative 1 is applicable to either Design Option 1 or 2. Impacts related to expansive soils would be less than significant with design and operation performed per applicable design criteria mandated by Project Measure GEO PM-1 (Geotechnical Design [Operation] [Section 4.9.4.1]), and mitigation would not be required.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: The Bellflower and Paramount MSF site option locations and proposed improvements are substantially similar, and the determination provided above for Alternative 4 is applicable to either MSF site. Impacts related to expansive

soils would be less than significant with design and operation performed per applicable design criteria mandated by Project Measure GEO PM-1 (Geotechnical Design [Operation] [Section 4.9.4.1]), and mitigation would not be required.

4.9.5.8 Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

No Project Alternative

The geotech Affected Area for the No Project Alternative is in a highly urbanized area served by existing municipal sewage systems. Therefore, the operational-related impacts for the No Project Alternative would be less than significant, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station and Alternative 2: 7th Street/Metro Center to Pioneer Station

Alternatives 1 and 2 are located in a highly urbanized area served by existing municipal sewage systems. The use of septic tanks or alternative wastewater systems is not anticipated under Alternatives 1 and 2. Therefore, Alternatives 1 and 2 would not expose people or structures to significant impacts involving the adequacy of soils to support septic tanks or alternative waste disposal systems. No impacts would occur, and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Alternative 3 is located in a highly urbanized area served by existing municipal sewage systems. The use of septic tanks or alternative wastewater systems is not anticipated under Alternative 3. Therefore, Alternative 3 would not expose people or structures to significant impacts involving the adequacy of soils to support septic tanks or alternative waste disposal systems. No impacts would occur, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Alternative 4 is located in a highly urbanized area served by existing municipal sewage systems. The use of septic tanks or alternative wastewater systems is not anticipated under Alternative 4. Therefore, Alternative 4 would not expose people or structures to significant impacts involving the adequacy of soils to support septic tanks or alternative waste disposal systems. No impacts would occur, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: The Design Option 1 and 2 locations and proposed improvements are substantially similar and are located in a highly urbanized area served by existing municipal sewage systems. The use of septic tanks or alternative wastewater systems is not anticipated for either design option. Therefore, Design Options 1 or 2 would not expose people or structures to significant impacts involving the adequacy of soils to support septic tanks or alternative waste disposal systems. No impacts would occur, and mitigation would not be required.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: The Paramount and Bellflower MSF site option locations and proposed improvements are substantially similar and are located in a highly urbanized area served by existing municipal sewage systems. The use of septic tanks or

alternative wastewater systems is not anticipated for either MSF. Therefore, the Bellflower MSF or Paramount MSF would not expose people or structures to significant impacts involving the adequacy of soils to support septic tanks or alternative waste disposal systems. No impacts would occur, and mitigation would not be required.

4.9.5.9 Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

For determination, see Section 4.14, Paleontological Resources.

4.10 Hazards and Hazardous Materials

This section describes existing hazards and hazardous materials (hazmat) in the Affected Area for hazards and hazmat. This section also summarizes the potential adverse effects under NEPA and significant impacts under CEQA through the introduction of hazardous materials or the mobilization of hazardous materials under the No Build Alternative and from operation of the four Build Alternatives, Design Options 1 and 2, and the Paramount and Bellflower MSF site options.

A review of the State of California, Los Angeles County Fire Hazard Severity Zone and CalFire Local Responsibility Area Maps indicates that the Affected Area for hazards and hazmat is characterized as an urban area. It would therefore not be subject to effects from wildland fire and, as such, wildland fire effects are not discussed further in this section. Additionally, there are no airports located within 2 miles of the Affected Area for hazards and hazmat. Therefore, effects related to airports are not discussed further in this section.

Refer to Section 4.18, Safety and Security, of this Draft EIS/EIR for an analysis of effects on adopted emergency response plans and emergency evacuation plans from operation of the Project. Refer to Section 4.9, Geotechnical, Subsurface, and Seismic, for an analysis of geologic hazards, hazardous subsurface gases, soils, and seismic risks from operation of the Project. Information in this section is based on the *West Santa Ana Branch Transit Corridor Project Final Hazardous Materials Impact Analysis Report* (Metro 2021p), attached as Appendix S to this Draft EIS/EIR, and the *West Santa Ana Branch Transit Corridor Project Final Geotechnical, Subsurface, and Seismic Impact Analysis Report* (Metro 2021e) (Appendix O).

4.10.1 Regulatory Setting and Methodology

4.10.1.1 Regulatory Setting

Hazards and hazardous materials are regulated at the federal, state, and local/regional levels. The following agencies and organizations have published guidelines or requirements for evaluation of methane and H_2S in the subsurface: USEPA, the city and county of Los Angeles, ASTM International, and California Department of Toxic Substances Control (DTSC). Additionally, city and county general plans that cover portions of the Affected Area for hazards and hazmat include hazardous material policies and emergency response plans. A summary of applicable laws and regulations is included below. For a comprehensive discussion of applicable regional and local plans and regulations related to hazards and hazardous materials, refer to Section 3 of the Hazardous Materials Impact Analysis Report (Appendix S).

Federal

The Resource Conservation and Recovery Act (RCRA) (42 U.S.C. Section 6901 et seq.) regulates the identification, generation, transportation, storage, treatment, and disposal of solid and hazardous materials and hazardous wastes through comprehensive "cradle to grave" tracking requirements.

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. Section 9601 et seq.) provides broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. This act established the National Priorities List of contaminated sites and the Superfund cleanup program. CERCLA establishes requirements for abandoned hazardous waste sites and provides for liability of persons responsible for releases of hazardous waste at these sites.

The Superfund Amendments and Reauthorization Act (SARA) amends CERCLA and increases state involvement by requiring Superfund actions to consider state environmental laws and regulations. SARA also established a regulatory program for underground storage tanks (UST) and the Emergency Planning and Community Right-to-Know Act.

The Clean Air Act (42 U.S.C. Section 7401 et seq.) protects the public from exposure to airborne contaminants that are known to be hazardous to human health. Under the Clean Air Act, the USEPA 2019 established National Emissions Standards for Hazardous Air Pollutants, which includes asbestos.

The Clean Water Act (CWA) (Section 402[p]) (33 U.S.C. Section 1342[p]) regulates discharges and spills of pollutants, including hazardous materials, to surface waters and groundwater.

The Safe Drinking Water Act (42 U.S.C. Section 300[f] et seq.) regulates discharges of pollutants to underground aquifers and establishes standards for drinking water quality.

The Toxic Substances Control Act (15 U.S.C. Section 2601 et seq.) regulates manufacturing, inventory, and disposition of industrial chemicals, including hazardous materials. It addresses the production, importation, use, and disposal of specific chemicals, including polychlorinated biphenyls (PCBs), asbestos-containing materials (ACM), and lead-based paint (LBP).

The Hazardous Materials Transportation Act (49 U.S.C. Section 5101 et seq. and 49 CFR Parts 101, 106, 107, and 171-180) regulates the transport of hazardous materials by motor vehicles, rail, marine vessels, and aircraft.

The Hazardous Materials Transportation Uniform Safety Act (Public Law 101–615) regulates the safe transport of hazardous materials in intrastate, interstate, and foreign commerce. The statute includes provisions to encourage uniformity between different state and local highway routing regulations, to develop criteria for the issuance of federal permits to motor carriers of hazardous materials, and to regulate the transport of radioactive materials.

The Occupational Safety and Health Act of 1970 requires training handlers of hazardous materials, notifying employees who work in the vicinity of hazardous materials, acquiring Safety Data Sheets that describe the proper use of hazardous materials, and training employees to remediate any accidental releases of hazardous materials. It also regulates lead and asbestos as it relates to employee safety to reduce potential exposure. Additionally, it

requires contractors conducting LBP and ACM surveys and removal to be certified by the U.S. Occupational Safety and Health Administration (OSHA).

U.S. Presidential Executive Order 12088, issued in 1978, requires federal agencies to take necessary actions to prevent, control, and abate environmental pollution from federal facilities and activities under control by federal agencies.

State

California's hazardous waste regulations are similar to federal law, but more stringent in their application. Similar to RCRA, the Hazardous Waste Control Law (Cal. Health and Safety Code, Section 25100 et seq.) empowers the DTSC to administer the state's hazardous waste program and implement the federal program in California, including UST regulation. The DTSC additionally compiles and maintains a list of potentially contaminated sites located throughout the state in accordance with the Cortese Statute (California Government Code, Section 65962.5). While the DTSC has the primary responsibility for enforcement and implementation of hazardous waste control laws in the state, the responsibility is shared with other agencies, including the State Water Resources Control Board, the Los Angeles Regional Water Quality Control Board (LARWQCB), and county and city governments.

The Department of Conservation's Geologic Energy Management Division (CalGEM, formerly the Division of Oil, Gas, and Geothermal Resources or DOGGR) is responsible for implementing Section 3208.1 of the Public Resources Code (PRC). As a result, CalGEM developed the Construction Site Well Review Program to assist local permitting agencies to identify and review the status of oil/gas wells located near or beneath proposed structures (CalGEM 2020).

Regional and Local

The Affected Area for hazards and hazmat is located within Los Angeles County and extends through portions of the following cities: Los Angeles, Vernon, Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, Cerritos, Artesia, and the unincorporated community of Florence-Firestone. The Los Angeles County Department of Public Works (LACDPW) is a Certified Unified Program Agency (CUPA) and a participating agency to the Los Angeles County CUPA, managed by the Los Angeles County Fire Department, Health Hazardous Materials Division. The LACDPW Environmental Programs Division permits and inspects USTs in the unincorporated areas of Los Angeles County and 77 cities, including Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, Cerritos, and Artesia. The City of Vernon Health Department and the City of Los Angeles Fire Department manage their own CUPAs for USTs in their jurisdiction.

As discussed in detail in Section 4.9, Geotechnical, Subsurface, and Seismic, the City of Los Angeles maintains a Methane Ordinance (175790) that requires projects located within a methane zone or methane buffer zone comply with the Methane Mitigation Standard as outlined in the Methane Seepage Regulations (Division 71, Section 91-7101 to 91-7109), and as directed and approved by the Los Angeles Department of Building and Safety (LADBS) and the Los Angeles Fire Department (LADBS approach).

4.10.1.2 Methodology

Pursuant to NEPA regulations (40 CFR 1500–1508), project effects are evaluated based on the potentially affected environment. The effectiveness of measures to avoid, minimize, and/or mitigate effects is considered in making significance determinations under NEPA.

To satisfy CEQA requirements, hazardous-related impacts are analyzed in accordance with Appendix G of the *CEQA Guidelines*, identified in Section4.10.5.

The assessment is based on the environmental conditions in the Affected Area for hazards and hazmat and on applicable laws and regulations related to hazards and hazardous materials issues (summarized in Section 4.10.1.1). The term "environmental condition" refers to potential or existing site conditions that may present environmental health and safety concerns during operation of the Project. For the purpose of the assessment, the Affected Area for hazards and hazmat encompasses a 200-foot radius surrounding the project footprint. The project footprint includes the proposed alignments and appurtenant structures, including stations, MSF site options, and parking facilities. This area is sufficiently representative of the existing hazards and hazardous materials conditions that have the potential to result in impacts/effects due to the Project. Therefore, this area provides an accurate basis for the assessment of the potential for the introduction or mobilization of hazardous materials that have the potential to result from the Project.

The California PRC § 21151.4 requires projects located within 0.25 mile of a school to discuss potential effects with the appropriate school district if a project could reasonably be anticipated to emit hazardous air emissions, or handle an extremely hazardous substance or a mixture containing extremely hazardous substances in a quantity equal to or greater than the state threshold quantity specified pursuant to subdivision (j) of Section 25532 of the Health and Safety Code. This analysis therefore identifies educational facilities within 0.25 mile of the Project that could be affected by its construction and/or operation. For the purposes of the analysis presented herein related to educational facilities, the Affected Area for hazards and hazmat is 0.25 mile (Affected Area for hazards and hazmat [educational facilities]). Similarly, due to the requirements of CCR Title 27, for the purpose of the analysis presented herein related to landfills, the Affected Area for hazards and hazmat is also 0.25 mile (Affected Area for hazards and hazmat [landfills]).

The methodology for the assessment of existing environmental concerns (or environmental conditions) sites follows portions of ASTM International 1528-14 Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (ASTM 2014) and the Caltrans *Environmental Handbook,* "Chapter 10 – Hazardous Materials, Hazardous Waste, and Contamination" (Caltrans 2014).

Hazardous wastes and substances (materials) are defined by the California Department of Industrial Relations as follows.

A hazardous substance is:

> "any substance designated or listed under A. through D. below, exposure to which results or may result in adverse effects on the health or safety of employees:
>
> A. Any substance defined under Section 103(14) of CERCLA or under Sections 25316 and 25317 of the California Health and Safety Code;
> B. Any biological agent and other disease-causing agent which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any person, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions

(including malfunctions in reproduction) or physical deformations in such persons or their offspring;
C. Any substance listed by the U.S. Department of Transportation and regulated as hazardous materials under 49 CFR 172.101 and appendices; and
D. Hazardous waste as herein defined." (California Department of Industrial Relations [DIR], 2018).

A hazardous waste is a waste or combination of wastes as defined in:

A. 40 CFR 261.3, or regulated as hazardous waste in California pursuant to Chapter 6.5, Division 20, California Health and Safety Code
B. Those substances defined as hazardous wastes in 49 CFR 171.8 (DIR 2018)

Within urban environments, hazardous materials including petroleum products from gasoline and automotive service stations, cleaning solvents from dry cleaning operations, and various other hazardous materials at manufacturing and storage properties are the most prevalent. Methane and H_2S gas may be naturally present in the soil and are also considered hazardous materials.

Known environmental concern sites are properties with known releases of hazardous materials to soil, groundwater, surface water, and/or soil vapor. These releases may be open or closed site release cases with local, regional, or state agencies such as the LACDPW, the Los Angeles City Fire Department, the LARWQCB, and/or the DTSC. Both open and closed release sites may have residual impacts remaining in soil, ground or surface water, and/or soil vapor. Known environmental concern sites are considered high-risk sites likely requiring hazardous material management and special design features and/or long-term monitoring.

Potential environmental concern sites include properties with known storage, handling, and use of hazardous materials, for example those currently occupied by gasoline service stations, dry cleaning facilities, manufacturing and industrial sites, oil fields/wells, aboveground storage tank sites, and electrical substations. Potential environmental concern sites are considered medium risk sites that require some environmental testing prior to construction to verify extent and nature of the site and possibly hazardous material management during construction; however, long-term monitoring is not expected.

Historical environmental concern sites include properties that may have formerly stored, handled, and used hazardous materials. They additionally include properties that may have residual impacts from past uses; there is typically limited information available about such properties. Historical environmental concern sites are considered low-risk sites that may require environmental assessment or testing prior to construction and/or may require hazardous material management during construction.

The following are the key steps to identifying potential or existing environmental concerns that may present environmental health and safety concerns in the Affected Area for hazards and hazmat:

- Review regulatory databases: Review of federal, state, local, and tribal environmental database records of known or potentially hazardous waste sites, and sites currently under investigation for environmental violations in the Affected Area for hazards and hazmat. The database reports identify sites with documented use, storage, or release of hazardous materials or petroleum products (see Appendix C of the Hazardous

Materials Impact Analysis Report for a complete list of queried databases and all sites identified within the 0.125-mile search radius of the alignment centerline).

- Review historical environmental records: Review and interpret available historical aerial photographs and Sanborn Fire Insurance Maps for evidence of previous site activities and development that would suggest the potential presence of hazardous substances in the Affected Area for hazards and hazmat.
- Perform site reconnaissance: Perform a windshield site reconnaissance of the Affected Area for hazards and hazmat from public rights-of-way to identify existing land uses and features that appear to have hazardous waste issues or visible indications of contamination.
- Apply ranking criteria: Rank environmental concern sites located in the Affected Area for hazards and hazmat based on its potential to result in adverse effects. Environmental concern sites were categorically ranked (known, potential, and/or historical environmental concern sites) in decreasing order of severity.

4.10.2 Affected Environment and Existing Conditions

4.10.2.1 Environmental Concern Sites Identified in Historical Aerial Photographs and Sanborn Fire Insurance Maps

A review of historical aerial photographs and maps indicate the presence of various commercial and industrial facilities of environmental concern including but not limited to the following in the Affected Area for hazards and hazmat: auto repair shops, gasoline service stations, and dry cleaners. Also depicted are rail lines and spurs within and in areas adjoining the Affected Area for hazards and hazmat that date back as far as 1894. Parcels identified with historical site uses of concern were added to the list of environmental concerns as sites of historical environmental concern in Appendix B of the Hazardous Materials Impact Analysis Report (Appendix S).

4.10.2.2 Environmental Concern Sites Identified in Regulatory Databases

Environmental database report listings were reviewed to identify the presence of environmental concern sites in the Affected Area for hazards and hazmat and to determine if present environmental concern sites are likely to result in adverse effects. The criteria used to evaluate the potential for adverse effects are described in Section 4.10.1.2. The database reports identified the following: historically contaminated properties, businesses that use, generate, or dispose of hazardous materials or petroleum products in their operations, and active contaminated release sites currently under assessment and/or remediation. Identified environmental concern sites are included in Appendix B and Appendix G of the Hazardous Materials Impact Analysis Report (Appendix S).

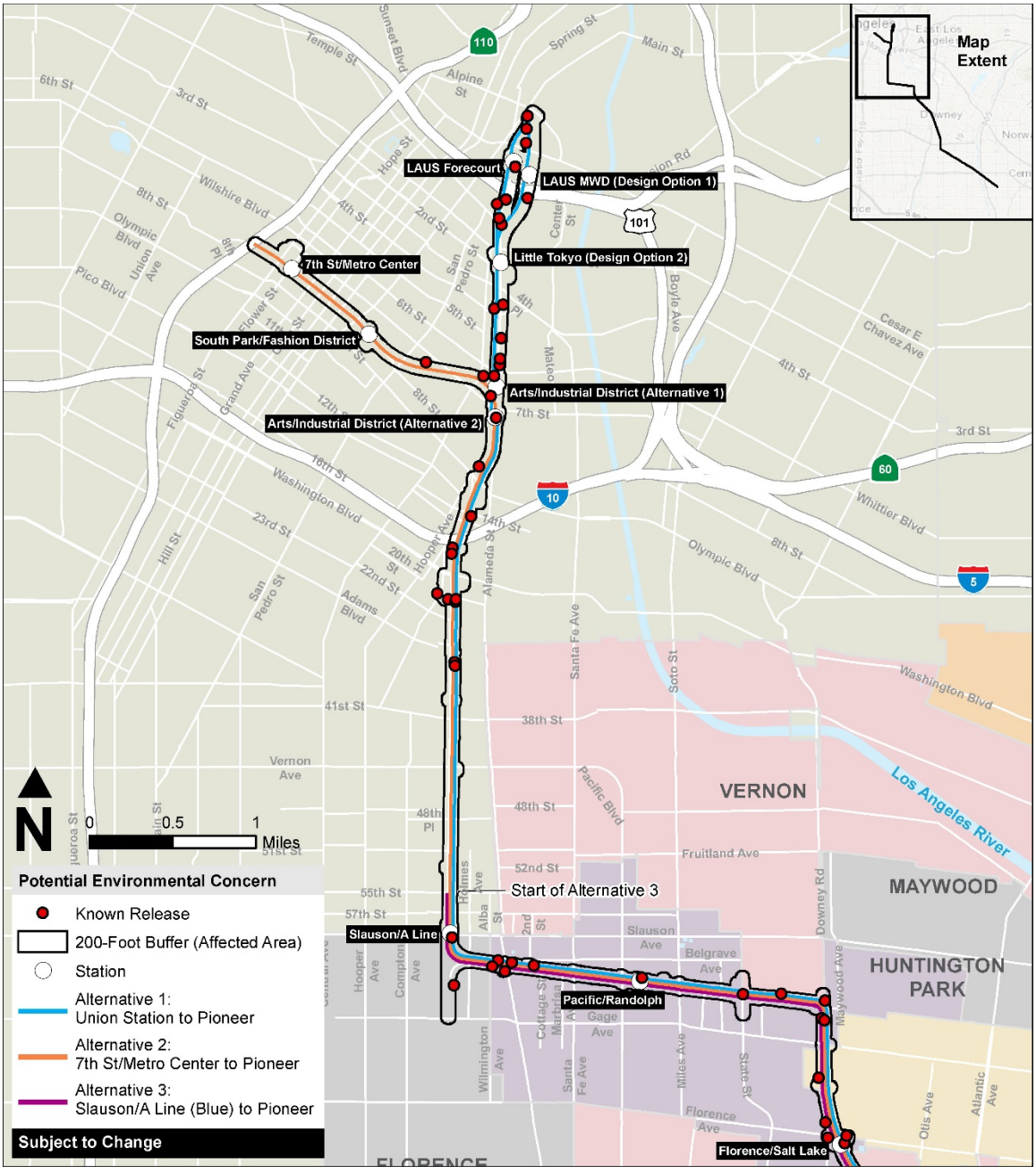
The total number of environmental concern sites (including known, potential, and historical) located in the Affected Area for hazards and hazmat are listed in Table 4.10.1. Additionally, Figure 4.10-1 through Figure 4.10-3 identify properties where releases of hazardous materials to soil, groundwater, surface water, and/or soil vapor are known to have occurred. These properties are considered high-risk sites that would likely require hazardous material management and special design features and/or long-term monitoring.

Table 4.10.1. Summary of Environmental Concern Sites in Affected Area for Hazards and Hazmat[1]

Environmental Concern Category	Alternative 1 (Forecourt)	Alternative 2	Alternative 3	Alternative 4	Design Option 1 Only	Design Option 2 Only	Paramount MSF Option Only	Bellflower MSF Option Only	Types of Regulatory Government Agency Listings
Known Environmental Concern (number of sites)	85	72	58	14	1	0	6	0	Known Release Sites (confirmed release sites)
Potential Environmental Concern (number of sites)	123	127	80	27	4	1	3	0	Potential Release Sites and Large Quantity Generators of Hazardous Materials and Storage Facilities
Historical Environmental Concern (number of sites)	411	435	160	38	18	0	0	3	Sites with Historical Use of Hazardous Materials
Total Environmental Concerns (number of sites)	**619**	**634**	**298**	**79**	**23**	**1**	**9**	**3**	**Known, Potential, and Historical**

Source: Metro 2021p
Notes: [1] Many parcels have more than one listing and were tallied once according to their highest risk level
MSF = maintenance and storage facility

Figure 4.10-1 Known Environmental Concern Sites (from Los Angeles Union Station to City of Huntington Park)



Source: Prepared on behalf of Metro in 2020

Figure 4.10-2 Known Environmental Concern Sites (from Florence-Firestone to City of South Gate)



Source: Prepared on behalf of Metro in 2020

Figure 4.10-3 Known Environmental Concern Sites (from City of South Gate to City of Artesia)



Source: Prepared on behalf of Metro in 2020

Groundwater Contamination

A list of environmental concern sites within the Affected Area for hazards and hazmat is included in Appendix B and Appendix G of the Hazardous Materials Impact Analysis Report (Appendix S). The total numbers of environmental concern sites with contaminated groundwater located in the Affected Area for hazards and hazmat are as follows:

- Alternative 1 – 30 sites
- Alternative 2 – 27 sites
- Alternative 3 – 22 sites
- Alternative 4 – 8 sites
- Design Option 1 (MWD) – 1 site[5]
- Design Option 2 (Little Tokyo) – 0 sites
- Paramount MSF site option – 4 sites
- Bellflower MSF site option – 0 sites

Landfills

Municipal waste landfills have the potential to release methane gas that may present a health and/or explosion risk. Four current or former solid waste landfills were identified within the Affected Area for hazards and hazmat (landfills) of Alternatives 1, 2, and 3: Wilmington Avenue Dump, Huntington Park City Dump, Caltrans South Gate, and South Gate Rod and Gun Club (former landfill). Methane gas was not detected at Wilmington Avenue Dump, Huntington Park City Dump, or Caltrans South Gate. However, it remains unclear whether soil vapor testing for methane or other constituents has been completed at the South Gate Rod and Gun Club. Soil contamination from metals, organochlorine pesticides, petroleum hydrocarbons, semi-volatile organics, and toluene is a concern at the South Gate Rod and Gun Club site due to the following health risks associated with the known or potential contaminants:

- Methane gas is non-toxic, odorless, colorless, explosive, flammable, and acts as an asphyxiant by displacing oxygen in the atmosphere.
- Ingestion, inhalation, and dermal exposure to petroleum hydrocarbons could result in various cancers, birth defects, and/or other reproductive harm (Prop 65 2020).
- Inhalation and/or ingestion of organochlorine pesticides could cause thyroid, bladder, liver, kidney, and/or central nervous system damage, and possibly cancer (Delaware Health and Social Services [DHSS] 2020).
- Inhalation, ingestion, and/or dermal exposure to various metals can cause kidney, and blood damage as well as central nervous system, gastrointestinal system, reproductive system, and/or cardiovascular system health effects (Diagnose 2020).
- Inhalation, ingestion, and absorption of semi-volatile organic compounds may cause allergies, asthma, endocrine and thyroid disruption, reproductive toxicity, and fetal and child development delays (USEPA 2016).
- Inhalation of toluene could cause central nervous system damage and chronic exposure may cause hearing and color vision loss, or brain damage (Agency for Toxic Substances and Disease Registry [ATSDR] 2020c).

[5] This number represents the total number of environmental concern sites with contaminated groundwater in the Affected Area for hazards and hazmat of Design Option 1 (MWD) only. The total number of sites in the Affected Area for hazards and hazmat of Alternative 1 with Design Option 1 (MWD) is 29.

4.10.2.3 General Hazardous Materials Conditions

In addition to the current railroad corridor ROW, existing land uses in the Affected Area for hazards and hazmat include industrial, commercial, retail, and residential uses. The general hazardous material conditions described below are likely to be encountered in one or more locations in the Affected Area for hazards and hazmat.

Lead-Based Paint

LBP is recognized as a potential health risk due to the known toxic effects of lead exposure on the central nervous system, blood stream, and other vital organs such as the kidney. Lead exposure occurs primarily through the ingestion of LBP. LBP was banned for residential and consumer use in 1978, and lead solder used in plumbing was banned in 1988. The use of LBP is still allowed for industrial purposes. LBP may be present on or in buildings and structures in the Affected Area for hazards and hazmat.

The risk of lead toxicity in LBP varies according to the condition of the paint and the year of its application. Structures built before 1978 are likely to contain elevated concentrations of LBP. Structures of concern in the Affected Area for hazards and hazmat include residences painted prior to 1977 and other structures that include painted surfaces (such as barns, sheds, commercial buildings, warehouses, industrial structures, equipment utility sheds, bridges, and roads that feature yellow thermoplastic or yellow painted traffic stripes and pavement markings). Additionally, weathering and routine maintenance of paint on buildings may have contaminated nearby soils with lead.

Aerially Deposited Lead

Aerially deposited lead (ADL) was historically deposited by cars burning leaded gasoline and is often found in the soil adjacent to highways and roads. Elevated concentrations of ADL may be present along existing roadways, including those throughout the Affected Area for hazards and hazmat. If ADL is ingested into the body, it can cause damage to the nervous system and/or blood cells. As identified in the Hazards and Hazardous Materials Impact Analysis Report (Appendix S), soil along highways in the Affected Area for hazards and hazmat may contain concentrations of lead exceeding state regulatory thresholds, and any waste generated from the disturbance of soil in these locations may be regulated as a hazardous waste. Soil and grade crossings within the Affected Area for hazards and hazmat are likely to be contaminated with ADL due to the proximity of several highways including, but not limited to, the following:

- Santa Ana Freeway (US-101)
- Santa Monica Freeway (I-10)
- Long Beach Freeway (I-710)
- Pasadena Freeway (I-110)
- Glenn Anderson Freeway (I-105)
- San Gabriel River Freeway (I-605)
- Artesia Freeway (SR-91)

In addition, multiple county and city roads have existed for decades in areas adjacent to the alternative alignments in the Affected Area for hazards and hazmat, including, but not limited to, the following:

- Alameda Street
- Long Beach Avenue
- Pacific Boulevard
- Randolph Street
- Salt Lake Avenue
- N. Vignes Street

Asbestos-Containing Material

The inhalation of asbestos fibers can lead to various cancer and non-cancer diseases such as asbestosis, pleural disease, lung cancer, mesothelioma, and various other cancers (larynx, ovary, pharynx, stomach, and colorectum) (ATSDR 2020d). In December 1977, the United States Consumer Product Safety Commission restricted the use of ACMs, including patching compounds and artificial fireplace ash products. A review of historic-period aerial photographs indicates that many structures in the Affected Area for hazards and hazmat were constructed prior to 1989. Therefore, it is likely that ACMs are present in a majority of those structures, including residential, commercial, and industrial structures, throughout the Affected Area for hazards and hazmat.

Common Railroad Corridor Contaminants

The following railroad lines and spurs currently traverse the Affected Area for hazards and hazmat:

- Wilmington Branch ROW from south of Washington Boulevard to Slauson Avenue
- La Habra Branch ROW located along Randolph Street from Slauson Avenue to Salt Lake Avenue
- San Pedro Subdivision from Randolph Street to Rosecrans Avenue
- PEROW from Rosecrans Avenue to South Street

In addition to those that remain, the industrial areas in the Affected Area for hazards and hazmat formerly included many additional railroad lines and spurs. Contaminants common in railway corridors include petroleum hydrocarbons, naphthalene, pesticides and herbicides, polycyclic aromatic hydrocarbons (PAHs), and heavy metals, including arsenic and lead. Unused and abandoned railroad ties may also remain onsite and would require special handling and disposal. The following health effects are associated with these common railroad-associated contaminants if ingestion, inhalation, and/or dermal exposure were to occur:

- Various cancers, birth defects, and/or other reproductive harm (ATSDR 2020a; California Office of Environmental Health Hazard Assessment 2020)
- Cataracts or retinal hemorrhage, as well as reproductive and developmental effects (USEPA 2020)
- Thyroid, bladder, liver, kidney, and/or central nervous system damage (DHSS 2020)
- Dermal skin irritations, allergic reactions and nervous system disorders (Healthfully 2020)
- Increased risk for diabetes and high blood pressure (Centers for Disease Control and Prevention [CDC] 2020a)
- Kidney, blood, and nervous system damage (CDC 2020b)

Hazardous Material Pipeline Utility Corridor Contaminants

The Affected Area for hazards and hazmat includes urban areas and associated utilities, such as crude oil, natural gas, and hydrocarbon product pipelines. Ingestion, inhalation, and dermal exposure to petroleum hydrocarbons could result in various cancers, birth defects, and/or other reproductive harm (Prop 65 2020). Utility-related contaminants that may be present in environmental media within the Affected Area for hazards and hazmat include petroleum hydrocarbons, volatile organic compounds, and metals.

Pesticides and Agricultural Use

A review of historical-period aerial photographs indicates that most of the parcels in the Affected Area for hazards and hazmat were developed prior to 1948. However, prior to the presence of current development, the Affected Area for hazards and hazmat may have been subject to regular applications of fertilizers, pesticides, or other chemicals for maintenance in support of former agricultural use. Although there are currently no agricultural properties located in the Affected Area for hazards and hazmat, it is possible that agricultural chemicals were formerly used, stored, and/or mixed in or adjacent to the Affected Area for hazards and hazmat, and that chemical residues from such historical agricultural activities may be present in environmental media. Inhalation and/or ingestion of organochlorine pesticides could cause thyroid, bladder, liver, kidney, and/or central nervous system damage, and possibly cancer (DHSS 2020). Herbicides affect human health through dermal exposure, ingestion, or inhalation, which may result in dermal skin irritations or allergic reactions, various cancers, and nervous system disorders (Healthfully 2020).

Polychlorinated Biphenyls

PCBs may be encountered in fluorescent lighting ballasts, transformers, elevators, electrical substations, vehicle service lifts, and other areas where hydraulic equipment was used historically. During the site reconnaissance, pad and pole-mounted transformers, and stationary and mobile hydraulic equipment were observed at multiple locations in the Affected Area for hazards and hazmat. Inhalation, ingestion, and dermal exposure to PCBs may cause health effects such as acne-like skin conditions in adults and neurobehavioral and immunological changes in children (ATSDR 2020b).

Structures in the Affected Area for hazards and hazmat were not accessible during the site reconnaissance, and no information regarding the age of lighting ballasts in these buildings or disposal of ballasts was available for analysis for this study. While some or many of the ballasts in buildings within the Affected Area for hazards and hazmat may contain PCBs, the potential effects associated with PCBs were not assessed, but were assumed to be present due to the lack of available data regarding their presence.

4.10.2.4 Educational Facilities in Proximity to Hazardous Materials

Educational facilities located within the Affected Area for hazards and hazmat (educational facilities) are identified in Table 4.5 and Figures 4-3 through Figure 4-5 of the Hazardous Materials Impact Analysis Report (Appendix S). The total number of educational facilities located in the Affected Area for hazards and hazmat (educational facilities) of Alternatives 1,

2, 3, and 4, Design Options 1 (MWD) and 2 (Little Tokyo), and the Paramount and Bellflower MSF site options are as follows:

- Alternative 1 – 53 educational facilities
- Alternative 2 – 56 educational facilities
- Alternative 3 – 37 educational facilities
- Alternative 4 – 17 educational facilities
- Design Option 1 (MWD) – 2 educational facilities[6]
- Design Option 2 (Little Tokyo) – 4 educational facilities[7]
- Paramount MSF site option – 4 educational facilities
- Bellflower MSF site option – 2 educational facilities

Individuals who may be particularly sensitive to hazardous materials exposure (toddlers, children, teens, and young adult) are the primary users of educational facilities. Therefore, additional protective regulations apply to projects that may use or disturb potentially hazardous materials near or at schools.

4.10.2.5 Oil and Gas Wells, Fields, and Hazardous Subsurface Gases

Figure 4.10-4 depicts the abandoned oil/gas wells and the methane zones and buffer zones in the Affected Area for hazards and hazmat. Areas within and around oil wells and fields, methane zones, and buffer zones may contain naturally occurring methane and/or H_2S gases. The total number of abandoned oil/gas wells located within the Affected Area for hazards and hazmat are as follows:

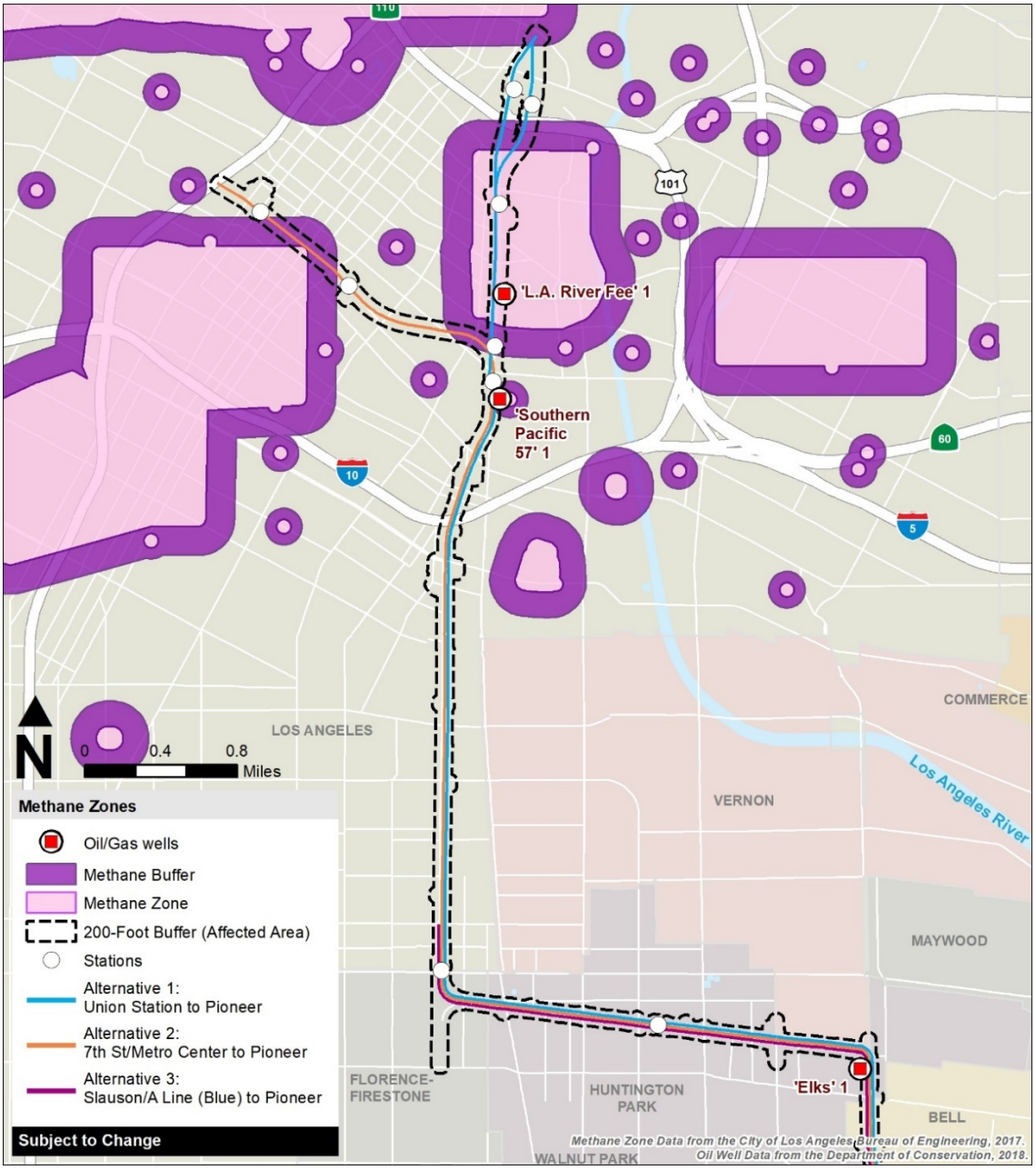
- Alternative 1 – 3 oil/gas wells ('LA River Fee' 1, 'Southern Pacific 57' 1, and 'Elks' 1)
- Alternative 2 – 2 oil/gas wells ('Southern Pacific 57' 1 and 'Elks' 1)
- Alternative 3 – 1 oil/gas well ('Elks' 1)
- Alternative 4 – 0 oil/gas wells
- Design Option 1 (MWD) – 0 oil/gas wells
- Design Option 2 (Little Tokyo) – 0 oil/gas wells
- Paramount MSF site option – 0 oil/gas wells
- Bellflower MSF site option – 0 oil/gas wells

The Affected Area for hazards and hazmat passes through CalGEM District 1 in Los Angeles County, which includes thousands of active and abandoned oil and gas wells (DOGGR 2017). Portions of the Affected Area for hazards and hazmat of Alternatives 1 and 2 include oil fields—for example, the Los Angeles and Union Station Oil Fields, Methane Zones, and Methane Buffer Zones.

[6] This number represents the total number of educational facilities in the Affected Area for hazards and hazardous materials (educational facilities) of Design Option 1 (MWD). These educational facilities are also in the hazards and hazardous materials of Alternative 1.

[7] This number represents the total number of educational facilities in the Affected Area for hazards and hazardous materials (educational facilities) of Design Option 2 (Little Tokyo). Three of these educational facilities are also in the hazards and hazardous materials of Alternative 1.

Figure 4.10-4. Abandoned Oil/Gas Wells and Methane Zones and Buffer Zones



Source: Metro 2021p

Common issues associated with oil field and methane zone properties include the presence of operating wells and/or pipelines, release of methane and/or H_2S gas, oil seepage, contaminated soils and groundwater, leaking oil/gas wells, and abandoned wells not plugged and abandoned to current standards. Both methane and H_2S can seep from the surrounding soils, fractures, and/or faults in the deep bedrock, and into existing buildings, basements, manholes, utility vaults, sewer lines, open trenches, excavations, and tunnels where they may accumulate and create hazardous conditions. Further information regarding the characteristics of subsurface gas is included below with additional information in Section 4.9, Geotechnical, Subsurface, and Seismic.

Subsurface Gas Characteristics

Hydrogen Sulfide Gas: H_2S is a poisonous, corrosive, and flammable colorless gas. It is an irritant and chemical asphyxiant that may be highly toxic when inhaled. It is heavier than air and may accumulate within depressed areas, such as at the bottom of poorly ventilated spaces. Although it is soluble in water, it can accumulate below ground in addition to above the groundwater table. Air and H_2S mixtures can be explosive and, when ignited, burn to produce other gases such as sulfur dioxide, a toxic vapor or gas. The explosive range of H_2S in air is at concentrations between 4.5 and 45.5 percent (OSHA 2019a). The health exposure limits associated with H_2S gas are as follows:

- OSHA recommends a limit of 10 ppm time weighted average (TWA) for construction projects (OSHA 2019b).
- The ACGIH recommends a threshold limit value (TLV) of 1 ppm as an 8-hour TWA and a short-term exposure limit (STEL) of 5 ppm (OSHA 2019a).
- The OSHA permissible exposure limits (PEL) are 10 ppm (8-hour TWA), 15 ppm (STEL), and 50 ppm (ceiling limit) (OSHA 2019b).
- TWAs describe the average exposure concentration over a set period, specifically a standard 8-hour shift, based upon a 40-hour workweek. TLVs refer to airborne concentrations of chemical substances and represent conditions under which it is believed that nearly all workers may be repeatedly exposed, day after day, over a working lifetime, without adverse effects (OSHA 2019c).
- STELs refer to the maximum exposure allowed during a 15-minute period (OSHA 2019a) and ceiling limits refer to the maximum exposure limit, which cannot be exceeded for any length of time.

Radon Gas: Radon gas is produced by the decay of uranium, which may be naturally present at varying levels in soil and rock. Once present, the gas moves through the ground and may enter structures through utility corridors, openings or cracks in foundations, and construction joints. Radon gas is very dense and may accumulate in basements or crawl spaces. Radon exposure has been linked to lung cancer. The USEPA action level for radon is above 4.0 pCi/l of air. The USEPA has mapped Los Angeles County as a Zone 2 radon area, which is defined as an area with a general indoor radon potential of between 2.0 and 4.0 pCi/l (USEPA 2019). Radon is not anticipated to be present at harmful concentrations in the Affected Area for hazards and hazmat and is therefore not discussed further in this section.

Methane Gas: Both methane and H_2S gas are commonly present in landfills and oil/gas fields. Methane gas is non-toxic, odorless, colorless, explosive, flammable, and acts as an asphyxiant by displacing oxygen in the atmosphere. Unlike H_2S, methane is lighter than air and may spread easily within work areas associated with the Build Alternatives. Symptoms of methane exposure could occur when methane is present in oxygen-deficient environments, such as when oxygen is below 19.5 percent by volume due to displacement by methane or other gases (Airgas 2019).

The flammable limits for methane range from 5 to 14 percent when within regular atmospheric oxygen levels (around 19.5 to 21 percent by volume). These percentages are known as the lower explosive limit (LEL; 5 percent) and upper explosive limits (UEL; 14 percent). The 2019 Safety Data Sheet for methane indicates that there are no specific exposure limits for methane; however, oxygen levels should be maintained above 19.5 percent by volume (Airgas 2019).

In addition, the current California Title 8 Regulations (DIR 2019) indicate that the following tunnel safety conditions should be monitored:

- "(a) A concentration of 20 percent of the LEL of flammable gas has been detected not less than 12 inches (304.8 millimeters) from any surface in any open workings with normal ventilation.
- (b) A concentration of 20 percent of LEL petroleum vapors has been detected not less than three inches from any surface in any open workings with normal ventilation.
- (c) A notice of the classification and any special orders, rules, special conditions, or regulations to be used shall be prominently posted at the tunnel job site, and all personnel shall be informed of the classification.
- (d) The Division shall classify or reclassify any tunnel as gassy or extra hazardous if the preliminary investigation or past experience indicates that any gas or petroleum vapors in hazardous concentrations is likely to be encountered in such tunnel or if the tunnel is connected to a gassy or extra hazardous excavation and may expose employees to a reasonable likelihood of danger.
- (e) For the purpose of reclassification and to ensure a proper application of classification, the Division shall be notified immediately if a gas or petroleum vapor exceeds any one of the individual classification limits described in subsection (b) above. No underground works shall advance until reclassification has been made."

OSHA does not currently have a PEL for methane; however, the National Institute of Occupational Safety and Health reportedly recommends 1,000 ppm (0.1 percent) as a maximum safe methane concentration for workers during an eight-hour period (Agri-Facts 2004).

As of the date of this report, there have been no comprehensive methane soil vapor investigations completed within the Affected Area for hazards and hazmat. However, methane and H_2S are expected to be present in the soil vapor within the Affected Area for hazards and hazmat of Alternatives 1 and 2. As with other Metro projects, Metro has defined "elevated" gas conditions as areas where gas monitoring readings have shown methane levels greater than 5 percent (corresponding to the LEL) or H_2S levels above 5 ppm (corresponding to the ACGIH STEL). Due to constraints associated with testing and measuring soil gas concentrations in the Affected Area for hazards and hazmat for all of the Build Alternatives, soil gas concentrations in the Affected Area for hazards and hazmat have not yet been tested or measured; however, they would be tested and measured in the Affected Area for hazards and hazmat of the chosen alternative prior to construction. For the purposes of the current analysis, it is assumed that some measured concentrations would be over the thresholds. Metro will employ a LADBS approach to verify and evaluate methane and H_2S gas concentrations in the sub-surface. Specifically, soil gas investigations would be performed along the alignment during final design to verify conditions, and following review of the data, specific requirements would be designed and implemented as appropriate for the methane and H_2S concentrations present.

4.10.3 Environmental Consequences and Environmental Impacts

4.10.3.1 No Build Alternative

Under the No Build Alternative, regional and local projects designed and operated to established regulations and standards related to hazardous materials and hazards would continue to be built. Therefore, adverse effects are not anticipated. However, under the No Build Alternative, the remediation of pre-existing contaminated areas that would take place

under the Build Alternatives would not occur. Therefore, under the No Build Alternative, there would be no potential long-term benefits related to the remediation of pre-existing contaminated soils.

4.10.3.2 Alternative 1: Los Angeles Union Station to Pioneer Station

Environmental Concern Sites

Known, Potential, and Historical Concern Sites: There are 619 known, potential, and historical environmental concern sites in the Affected Area for hazards and hazmat of Alternative 1. These sites, summarized in Table 4.10.1 and detailed in Appendix B of the Hazardous Materials Impact Analysis Report [Appendix S]), are as follows:

- 85 known release sites (30 with contaminated groundwater)
- 123 potential environmental concern sites
- 411 historical environmental concern sites

Soil disturbance would not occur during the operation of Alternative 1 and disturbance of soil, soil vapor, and groundwater at environmental concern sites is therefore not expected. Contaminants associated with environmental concern sites would not be encountered during the operation of Alternative 1. Under NEPA, the operation of Alternative 1 would result in no adverse effects related to environmental concern sites.

Landfills: One former landfill (South Gate Rod and Gun Club) with potential soil vapor concerns is located in the Affected Area for hazards and hazmat (landfills) of Alterative 1, within a proposed laydown yard. Should methane or other gases be present at the landfill and accumulate near the Project, a health and explosion hazard may exist in the Affected Area for hazards and hazmat of Alternative 1 during operation.

Methane gas is anticipated in the Affected Area for hazards and hazmat of Alternative 1. Therefore, sampling to verify the presence of methane and other gases would be conducted to support the advancement of project design. If sampling determines that subsurface methane or other gases are present, design of the Project would include the installation of gas monitoring and detection systems with alarms, as well as ventilation equipment to dissipate gas to safe levels according to Metro's current design criteria for operation, as described in Mitigation Measure GEO-1 (Hazardous Gas [Operations]). With implementation of GEO-1 (Hazardous Gas [Operations]), operation of Alternative 1 would result in no adverse effects related to potential landfill gases.

Groundwater Contamination: Thirty sites with known groundwater contamination are present within the Affected Area for hazards and hazmat of Alternative 1. Long-term groundwater monitoring or dewatering may be necessary during operation of Alternative 1. In locations that would require monitoring or dewatering where groundwater has been contaminated by hazardous materials, ongoing management or treatment would be required and an adverse effect would occur. In locations where long-term contaminated groundwater dewatering is necessary, Project Measure HAZ PM-2 (Disposal of Groundwater [Operation]), which requires LARWQCB consultation and permit compliance, would be implemented. With implementation of HAZ PM-2 (Disposal of Groundwater [Operation]), operation of Alternative 1 would result in no adverse effects related to groundwater contamination or dewatering.

General Hazardous Material Conditions

LBP, ADL, Asbestos/ACM, Railroad, Pipelines, Agriculture, PCBs: Operation of Alternative 1 would not utilize or encounter LBP, ACM, common railroad corridor or hazardous material pipeline utility corridor contaminants, pesticides from agricultural use, ADL, or PCBs. These contaminants are all associated with demolition activities and/or soil disturbance, which would not occur during operation of Alternative 1. Operation of Alternative 1 would not include the use of hazardous materials or wastes for maintenance and operational purposes. Therefore, operation of Alternative 1 would result in no adverse effects related to the above-listed hazardous materials.

If future maintenance that requires soil disturbance is necessary during project operation, residual contamination may be encountered during soil disturbing activities. If residual contamination is encountered during operation, an adverse effect could occur. In the event that soil disturbance is necessary during operation, Project Measures HAZ PM-1 (Handling, Storage, and Transport of Hazardous Materials or Wastes [Operation]) and HAZ PM-3 (Contaminated Soil, Soil Vapor, and Groundwater [Operation]) would be implemented to avoid and minimize the exposure of work crews and the general public to potentially contaminated soil. With implementation of HAZ PM-1 (Handling, Storage, and Transport of Hazardous Materials or Wastes [Operation]) and HAZ PM-3 (Contaminated Soil, Soil Vapor, and Groundwater [Operation]), operation of Alternative 1 would result in no adverse effects related to potentially contaminated soil.

Educational Facilities

There are 53 educational facilities located within the Affected Area for hazards and hazmat (educational facilities) of Alternative 1. Hazardous materials in quantities equal to or greater than the state threshold quantity specified pursuant to subdivision (j) of Section 25532 of the Health and Safety Code (Section 4.10.1.2) would not be used during operation of Alternative 1. Additionally, operation of Alternative 1 is not expected to create hazardous air emissions within the Affected Area for hazards and hazmat (educational facilities) of Alternative 1. Under NEPA, operation of Alternative 1 would result in no adverse effects related to educational facilities.

Oil and Gas Wells, Fields, and Hazardous Subsurface Gases

In addition to this section of the Draft EIS/EIR, subsurface gases are described and analyzed in the Geotechnical, Subsurface, and Seismic Section (Section 4.9.2.7 under the heading "Naturally Occurring Oil and Gas," and Section 4.9.3.3 under the heading "Naturally Occurring Subsurface Gas.")

Three abandoned oil wells have been identified within the Affected Area for hazards and hazmat (outside the project footprint) of Alternative 1. Additionally, unidentified abandoned oil wells may be present throughout the Affected Area for hazards and hazmat of Alternative 1. Operation of Alternative 1 has the potential to result in adverse effects associated with known and unidentified abandoned wells. Although the three known oil/gas wells in the Affected Area for hazards and hazmat are reportedly abandoned, they may not have been abandoned to current CCR standards. Therefore, the accidental release of subsurface gas could occur as a result of damage to wells caused by project-related vibration.

In addition to abandoned oil/gas wells, hazardous subsurface gases are assumed to be present in the vicinity of the underground stations and tunnels and venting systems

proposed under Alternative 1. If subsurface gases accumulate within tunnels, a potential fire and/or explosion hazard would be posed during operation of Alternative 1. Additionally, accumulation of methane gas could displace oxygen in the breathing zone and accumulation of H_2S would be highly toxic when inhaled at high concentrations, creating a health hazard during operation. Design-level reports would be prepared to document subsurface conditions along the alignment, stations, and project features. Section 4.9, Geotechnical, Subsurface, and Seismic (under the heading "Naturally Occurring Subsurface Gas") provides additional detail on factors that would reduce the risk of gas exposure and intrusion into project structures during operation.

The abandonment of known and undocumented oil/gas wells to current standards would occur during construction and is therefore discussed in Section 4.19.10.2, Construction. Following early detection and proper abandonment (as outlined by Mitigation Measure HAZ-1 [Oil and Gas Wells in Tunnel Areas] and Project Measure HAZ PM-8 [Oil Well Abandonment]), the presence of abandoned oil/gas wells in the Project's footprint and within 100 feet of the Project's footprint during operation of Alternative 1 would not represent a hazard.

Metro has extensively studied methane and H_2S characteristics with respect to their effects on the operation of its rail facilities within Los Angeles County (as described in Section 4.9, Geotechnical, Subsurface, and Seismic, Section 4.9.3.3, under the heading "Naturally Occurring Subsurface Gas"). The following project measures incorporate Metro-specified design measures to address gaseous environments and are required as part of the Project: GEO PM-1 (Geotechnical Design [Operation]), GEO PM-2 (Oil and Gas Zones [Operation]).

Although underground structures would be designed to prevent accumulation of gases, there remains a potential for adverse effects due to the accumulation of hazardous surface gases to occur during operation. The following project measures would also be implemented to identify and reduce potential effects to operators and the public: HAZ PM-1 (Handling, Storage, and Transport of Hazardous Materials or Wastes [Operation]), HAZ PM-3 (Contaminated Soil, Soil Vapor, and Groundwater [Operation]), GEO PM-1 (Geotechnical Design [Operation]), and GEO PM-2 (Oil and Gas Zones [Operation]).

In addition to the project measures noted above, the following mitigation measures would be implemented to prevent an accumulation of methane and further reduce adverse effects: GEO-1 (Hazardous Gas [Operation]), GEO-2 (Structural Design), and GEO-3 (Gas Monitoring [Operation]) and GEO-4 (Tunnel Advisory Panel). With implementation of the project measures and mitigation measures noted above, operation of Alternative 1 would result in no adverse effects related to known or unidentified abandoned wells, hazardous materials, or hazardous subsurface gases.

4.10.3.3 Alternative 2: 7th Street/Metro Center to Pioneer Station

Environmental Concern Sites

Known, Potential, and Historical Concern Sites: There are 634 known, potential, and historical environmental concern sites within the Affected Area for hazards and hazmat of Alternative 2:

- 72 known release sites (27 with contaminated groundwater)
- 127 potential environmental concern sites
- 435 historical environmental concern sites

Disturbance of soil, soil vapor, and groundwater at environmental concern sites is not expected during operation of Alternative 2. Environmental concern site contaminants would therefore not be encountered during operation of Alternative 2. Under NEPA, the operation of Alternative 2 would result in no adverse effects related to environmental concern sites. Due to the consistency in environmental conditions related to environmental concern sites and the proposed length and design of Alternative 2, the potential for effects associated with operation of Alternatives 1 and 2 are generally commensurate.

Landfills: One former landfill (South Gate Rod and Gun Club) with potential soil vapor concerns is located in the Affected Area for hazards and hazmat (landfills) of Alternative 2. As the Affected Area for hazards and hazmat of Alternatives 1 and 2 include the same former landfill, potential effects associated with landfill gases are consistent under these alternatives and the evaluation for Alternative 1 related to methane or other gas accumulation and Mitigation Measure GEO-1 (Hazardous Gas [Operation]) are applicable to Alternative 2. With implementation of GEO-1 (Hazardous Gas [Operation]), operation of Alternative 2 would result in no adverse effects related to landfill gases.

Groundwater Contamination: There are 27 sites with known groundwater contaminants present within the Affected Area for hazards and hazmat of Alternative 2. Although this represents a decrease of three sites when compared to the Affected Area for hazards and hazmat of Alternative 1, the number of sites and design of the Project under these alternatives are generally consistent. Therefore, Alternatives 1 and 2 are commensurate in their potential for effects related to groundwater contamination. The evaluation for Alternative 1 related to groundwater contamination and Project Measure HAZ PM-2 (Disposal of Groundwater [Operation]) are applicable to Alternative 2. With implementation of HAZ PM-2 (Disposal of Groundwater [Operation]), operation of Alternative 2 would result in no adverse effects related to groundwater contamination or dewatering.

General Hazardous Material Conditions

LBP, ADL, Asbestos, Railroad, Pipelines, Agriculture, PCBs: The environmental conditions and potential for effects related to the above-listed hazardous materials are consistent across Alternatives 1, 2, 3, and 4. Therefore, the evaluation for Alternative 1 related to LBP, ADL, Asbestos, Railroad, Pipelines, Agriculture, and PCBs and Project Measures HAZ PM-1 (Handling, Storage, and Transport of Hazardous Materials or Wastes [Operation]) and HAZ PM-3 (Contaminated Soil, Soil Vapor, and Groundwater [Operation]) are applicable to Alternative 2. With implementation of these measures, operation of Alternative 2 would result in no adverse effects related to LBP, ADL, Asbestos, Railroad, Pipelines, Agriculture, and PCBs.

Educational Facilities

There are 56 educational facilities located within the Affected Area for hazards and hazmat (educational facilities) of Alternative 2. Because Alternatives 1 and 2 cover the same area for most of their length, potential effects to educational facilities as a result of operation are generally consistent between these alternatives. Potential effects to educational facilities are less under Alternatives 3 and 4 because of their shorter length and fewer number of educational facilities within their Affected Area for hazards and hazmat.

The evaluation for Alternative 1 related to hazardous air emissions or extremely hazardous substances or mixtures is applicable to Alternative 2. There are no anticipated emissions or

use of extremely hazardous substances or mixtures within the Affected Area for hazards and hazmat (educational facilities) under Alternative 2. Under NEPA, operation of Alternative 2 would result in no adverse effects related to educational facilities.

Oil and Gas Wells, Fields, and Hazardous Subsurface Gases

Alternative 2 would traverse an area characterized by an abandoned oil field and methane zones, and three abandoned oil wells have been identified within the Affected Area for hazards and hazmat of Alternative 2. Potential effects associated with oil wells and hazardous subsurface gases are generally consistent across Alternatives 1 and 2 and are less under Alternatives 3 and 4, which do not traverse an area where abandoned oil fields and methane zones are present. Due to their consistency in the existing environment related to oil and gas wells, fields, and hazardous subsurface gases, the evaluation for Alternative 1 related to the presence of oil/gas wells and hazardous subsurface gases in the Affected Area for hazards and hazmat of Alternative 1 and the project and mitigation measures are applicable to Alternative 2.

The following project and mitigation measures would be implemented to minimize risks associated with oil wells and methane gas: Mitigation Measures HAZ-1 (Oil and Gas Wells in Tunnel Areas), GEO-1 (Hazardous Gas [Operation]), GEO-2 (Structural Design), and GEO-3 (Gas Monitoring [Operation]) and GEO-4 (Tunnel Advisory Panel), and Project Measures HAZ PM-1 (Handling, Storage, and Transport of Hazardous Materials or Wastes [Operation]), HAZ PM-3 (Contaminated Soil, Soil Vapor, and Groundwater [Operation]), GEO PM-1 (Geotechnical Design [Operation]), and GEO PM-2 (Oil and Gas Zones [Operation]). With implementation of these project and mitigation measures, effects would be minimized, and operation of Alternative 2 would result in no adverse effects related to oil fields and hazardous subsurface gases.

4.10.3.4 Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Environmental Concern Sites

Known, Potential, and Historical Concern Sites: There are 298 known, potential, and historical environmental concern sites within the Affected Area for hazards and hazmat of Alternative 3:

- 58 known release sites (22 with contaminated groundwater)
- 80 potential environmental concern sites
- 160 historical environmental concern sites

As the number of environmental concern sites is significantly less under Alternative 3 when compared with Alternatives 1 and 2, the potential for effects related to environmental concern sites is less under Alternative 3 than Alternatives 1 and 2. Disturbance of soil, soil vapor, and groundwater at environmental concern sites is not expected during operation of Alternative 3. Therefore, contaminated soil, soil vapor, and/or groundwater at known environmental concern sites would not be encountered during operation of Alternative 3 and operation of Alternative 3 would result in no adverse effects related to environmental concern sites.

Landfills: One former landfill (South Gate Rod and Gun Club) with potential soil vapor concerns is located in the Affected Area for hazards and hazmat (landfills) of Alternative 3. The Affected Area for hazards and hazmat of Alternatives 1, 2, and 3 include the same former landfill. Therefore, potential effects associated with landfill gases are consistent under these alternatives and the evaluation for Alternative 3 related to methane or other gas accumulation and Mitigation Measure GEO-1 (Hazardous Gas [Operation]) are also

applicable to Alternative 3. With implementation of this mitigation measure, operation of Alternative 3 would result in no adverse effects related to landfill gas accumulation.

Groundwater Contamination: There are 22 sites with known groundwater contaminants within the Affected Area for hazards and hazmat of Alternative 3. There are no planned tunnels in Alternative 3. Because Alternative 3 does not include tunnels, the necessity for long-term groundwater dewatering and the associated potential effects are limited when compared to Alternatives 1 and 2. Despite the lack of tunnels, portions of Alternative 3 may require long-term groundwater dewatering, and the evaluation for Alternative 1 related to groundwater contamination and Project Measure HAZ PM-2 (Disposal of Groundwater [Operation]) are applicable to Alternative 3. With implementation of HAZ PM-2 (Disposal of Groundwater [Operation]), operation of Alternative 3 would result in no adverse effects related to groundwater contamination or dewatering.

General Hazardous Material Conditions

LBP, ADL, Asbestos/ACM, Railroad, Pipelines, Agriculture, PCBs: The environmental conditions related to the above-listed hazardous materials are consistent across Alternatives 1, 2, 3, and 4. As Alternative 3 is significantly shorter than Alternatives 1 and 2, the potential for effects to occur is less than under this alternative due to a decreased risk of encountering contaminated soil or groundwater. Despite decreased risk, the evaluation for Alternative 1 related to LBP, ADL, Asbestos, Railroad, Pipelines, Agriculture, and PCBs, and Project Measures HAZ PM-1 (Handling, Storage, and Transport of Hazardous Materials or Wastes [Operation]) and HAZ PM-3 (Contaminated Soil, Soil Vapor, and Groundwater [Operation]) are applicable to Alternative 3. With implementation of these measures, operation of Alternative 3 would result in no adverse effects related to LBP, ADL, Asbestos, Railroad, Pipelines, Agriculture, and PCBs.

Educational Facilities

There are 37 educational facilities located in the Affected Area for hazards and hazmat (educational facilities) of Alternative 3. Potential effects to educational facilities are generally consistent across Alternatives 1, 2, 3, and 4. Therefore, the evaluation for Alternative 1 related to hazardous air emissions or extremely hazardous substances or mixtures is also applicable to Alternative 3. Because there are no anticipated emissions or use of extremely hazardous substances or mixtures within 0.25 mile of educational facilities, operation of Alternative 3 would result in no adverse effects related to educational facilities.

Oil and Gas Wells, Fields, and Hazardous Subsurface Gases

Alternative 3 does not traverse an area with an abandoned oil field or methane zone. Therefore, the potential for effects associated with oil fields and hazardous subsurface gases resulting from operation of Alternative 3 is less than under Alternatives 1 and 2. There is, however, one abandoned oil well located in the Affected Area for hazards and hazmat of Alternative 3. Therefore, the evaluation for Alternative 1 related to the presence of known and undocumented oil/gas wells not plugged and abandoned to current standards, remains applicable to Alternative 3. The presence of abandoned oil/gas wells in the Affected Area for hazards and hazmat during operation of Alternative 3 would result in no adverse effects related to oil and gas wells. As Alternative 3 would not pass through an area characterized by abandoned oil fields and methane zones, gaseous conditions are not anticipated, and operation of Alternative 3 would result in no adverse effects related to oil fields and hazardous subsurface gases.

4.10.3.5 Alternative 4: 1-105/C (Green) Line to Pioneer Station

Environmental Concern Sites

Known, Potential, and Historical Concern Sites: There are 79 known, potential, and historical environmental concern sites within the Affected Area for hazards and hazmat of Alternative 4:

- 14 known release sites (8 with contaminated groundwater)
- 27 potential environmental concern sites
- 38 historical environmental concern sites

As Alternative 4 includes the least number of environmental concern sites, operation of Alternative 4 has the least potential (of the four alternatives) for effects associated with environmental concern sites. The disturbance of soil, soil vapor, and groundwater at environmental concern sites is not expected during operation of Alternative 4. Therefore, contaminants associated with environmental concern sites would not be encountered during operation. As a result, operation of Alternative 4 would result in no adverse effects related to environmental concern sites.

Landfills: There are no landfills with soil vapor concerns located within 0.25 mile of the Affected Area for hazards and hazmat (landfills) of Alternative 4. Therefore, operation of Alternative 4 would result in no adverse effects related to landfill gases. The Affected Area for hazards and hazmat of Alternatives 1, 2, and 3 all include 1 former landfill whereas the Affected Area for hazards and hazmat of Alternative 4 includes no former or current landfills. Therefore, potential effects related to landfill gases under Alternative 4 are less than under Alternatives 1, 2, and 3

Groundwater Contamination: There are eight sites with known groundwater contamination present in the Affected Area for hazards and hazmat of Alternative 4. Although there are no planned tunnels in Alternative 4, portions of the Project may be placed in locations where long-term groundwater dewatering is necessary; however, the potential for effects related to groundwater contamination or dewatering are limited when compared to Alternatives 1 and 2. Despite reduced potential for effects, the evaluation for Alternative 1 related to groundwater contamination and Project Measure HAZ PM-2 (Disposal of Groundwater [Operation]) are applicable to Alternative 4. With implementation of HAZ PM-2 (Disposal of Groundwater [Operation]), operation of Alternative 4 would result in no adverse effects related to groundwater contamination or dewatering.

General Hazardous Material Conditions

LBP, ADL, Asbestos/ACM, Railroad, Pipelines, Agriculture, PCBs: The environmental conditions and therefore the potential for effects related to the above-listed hazardous materials are consistent across Alternatives 1, 2, 3, and 4. However, due to its shorter length and lack of proposed tunnels, the potential for effects related to LBP, ADL, Asbestos/ACM, railroad, pipelines agriculture and PCBs is less under Alternative 4 than under Alternatives 1, 2, and 3.

The evaluation for Alternative 1 related to LBP, ADL, Asbestos, Railroad, Pipelines, Agriculture, and PCBs and Project Measures HAZ PM-1 (Handling, Storage, and Transport of Hazardous Materials or Wastes [Operation]) and HAZ PM-3 (Contaminated Soil, Soil Vapor, and Groundwater [Operation]) remains applicable to Alternative 4. With

implementation of these measures, operation of Alternative 4 would result in no adverse effects related to LBP, ADL, Asbestos, Railroad, Pipelines, Agriculture, and PCBs.

Educational Facilities

There are 17 educational facilities located the Affected Area for hazards and hazmat (educational facilities) of Alternative 4. Potential effects to educational facilities are generally consistent across Alternatives 1, 2, 3, and 4. Therefore, the evaluation for Alternative 1 related to hazardous air emissions or extremely hazardous substances or mixtures is applicable to Alternative 4. Under NEPA, operation of Alternative 4 would result in no adverse effects related to educational facilities.

Oil and Gas Wells, Fields, and Hazardous Subsurface Gases

Alternative 4 does not traverse an area with an abandoned oil field or methane zone. Therefore, the potential for effects associated with oil fields and hazardous subsurface gases are significantly less under Alternative 4 (similar to Alternative 3) than Alternatives 1 and 2. There are no known abandoned oil/gas wells within the Affected Area for hazards and hazmat of Alternative 4. However, unidentified abandoned oil/gas wells may be present. Following proper abandonment, the presence of abandoned oil/gas wells in the Affected Area for hazards and hazmat during operation of Alternative 4 would not result in adverse effects related to oil and gas wells. As Alternative 4 would not pass through an area characterized by abandoned oil fields and methane zones, gaseous conditions are not anticipated. Under NEPA, the operation of Alternative 4 would result in no adverse effects related to oil fields and hazardous subsurface gases.

4.10.3.6 Design Options—Alternative 1

Design Option 1: LAUS at MWD

Based on review of Design Option 1 (MWD) and analysis of the existing environment, potential effects associated with operation of this design option would be similar to Alternative 1, as described in Section 4.10.3.2. However, specifically, the Affected Area for hazards and hazmat of Design Option 1 (MWD) contains the following:

- 23 environmental concern sites (one with known contaminated groundwater)
- No landfills
- two educational facilities
- one hazardous material pipeline
- Design Option 1 (MWD) is in an abandoned oil field, methane zone, or methane buffer zone

The potential for effects resulting from construction of Alternative 1 with Design Option 1 (MWD) is generally consistent with those that would result from Alternative 1 without Design Option 1 (MWD). Given the consistency of the existing environment of the hazards and hazmat Affected Area of Design Option 1 (MWD) and Alternative 1, the assessment, project and mitigation measures, and impact conclusions presented in Section 4.10.3.2 are also applicable to Design Option 1 (MWD). With implementation of the following project and mitigation measures, Design Option 1 (MWD) would result in no adverse effects related to environmental concern sites, landfill gases, groundwater contamination, LBP, ADL, Asbestos/ACM, Railroad, Pipelines, Agriculture, PCBs, educational facilities, oil/gas wells, fields, and hazardous subsurface gases: Mitigation Measures HAZ-1 (Oil and Gas Wells in

Tunnel Areas), GEO-1 (Hazardous Gas [Operation]), GEO-2 (Structural Design), GEO-3 (Gas Monitoring [Operation]) and GEO-4 (Tunnel Advisory Panel) and Project Measures: HAZ PM-1 (Handling, Storage, and Transport of Hazardous Materials or Wastes [Operation]), HAZ PM-2 (Disposal of Groundwater [Operation]), HAZ PM-3 (Contaminated Soil, Soil Vapor, and Groundwater [Operation]), GEO PM-1 (Geotechnical Design [Operation]), GEO PM-2 (Oil and Gas Zones [Operation]).

Design Option 2: Add Little Tokyo Station

The potential effects associated with operation of Alternative 1 with Design Option 2 are generally consistent with those associated with Alternative 1 without Design Option 2. The existing environment of the Affected Area for hazards and hazmat of Design Option 2 is consistent with Alternative 1. However, specifically, the Affected Area for hazards and hazmat of Design Option 2 contains the following:

- One environmental concern site (which does not have known contaminated groundwater)
- No landfills
- Four educational facilities
- One hazardous material pipeline
- Design Option 2 is in an abandoned oil field, methane zone, and methane buffer zone

Given the consistency of the existing environment of the hazards and hazmat Affected Area of Design Option 2 and Alternative 1, the assessment, project and mitigation measures, and impact conclusions presented in Section 4.10.3.2 are also applicable to Design Option 2. With implementation of the following project and mitigation measures, Design Option 2 would result in no adverse effects related to environmental concern sites, landfills, groundwater contamination, general hazardous material conditions, educational facilities, oil/gas wells, fields, and hazardous subsurface gases: Mitigation Measures HAZ-1 (Oil and Gas Wells in Tunnel Areas), GEO-1 (Hazardous Gas [Operation]) and GEO-2 (Structural Design), GEO-3 (Gas Monitoring [Operation]) and GEO-4 (Tunnel Advisory Panel), and Project Measures: HAZ PM-1 (Handling, Storage, and Transport of Hazardous Materials or Wastes [Operation]), HAZ PM-2 (Disposal of Groundwater [Operation]), HAZ PM-3 (Contaminated Soil, Soil Vapor, and Groundwater [Operation]), GEO PM-1 (Geotechnical Design [Operation]), GEO PM-2 (Oil and Gas Zones [Operation]).

4.10.3.7 Maintenance and Storage Facility

Paramount MSF Site Option

Environmental Concern Sites

Known, Potential, and Historical Concern Sites: There are nine environmental concern sites within the Affected Area for hazards and hazmat of the Paramount MSF site option, including six known release sites (four with contaminated groundwater) and three potential environmental concern sites (refer to Appendix B in the Hazardous Materials Impact Analysis Report [Appendix S] and Table 4.10.1). Disturbance of soil, soil vapor, and groundwater at known and potential environmental concern sites is not expected during operation of the Paramount MSF site option. Therefore, environmental concern site contaminants would not be encountered during operation of the Paramount MSF site option.

Under NEPA, operation of the Paramount MSF site option would result in no adverse effects related to environmental concern sites.

Landfills: There are no landfills within 0.25 mile of the Paramount MSF site option. Under NEPA, operation of the Paramount MSF site option would result in no adverse effects related to landfill gases.

Groundwater Contamination: Four sites with known groundwater contaminants are present in the Affected Area for hazards and hazmat of the Paramount MSF site option. Portions of the Project associated with the Paramount MSF site option may be placed in locations where long-term groundwater dewatering is necessary. Therefore, the evaluation for Alternative 1, including project measures, would apply to the Paramount MSF site option if groundwater dewatering is required during operation. With implementation of Project Measure HAZ PM-2 (Disposal of Groundwater [Operation]), operation of the Paramount MSF site option would result in no adverse effects related to groundwater contamination or dewatering.

General Hazardous Material Conditions

LBP, ADL, Asbestos/ACM, Railroad, Pipelines, Agriculture, PCBs: Operation of the Paramount MSF site option would not utilize or encounter LBP, ACM, common railroad corridor contaminants, pesticides from agricultural use, ADL, or PCBs. Additionally, although there are four hazardous material pipelines in the Affected Area for hazards and hazmat of the Paramount MSF site option, the pipelines are underground and would not be affected by the aboveground operation of the Paramount MSF site option. Under NEPA, operation of the Paramount MSF site option would result in no adverse effects related to general hazardous material conditions, including hazardous material underground pipelines.

Educational Facilities

There are four educational facilities located within the Affected Area for hazards and hazmat (educational facilities) of the Paramount MSF site option, of which two are immediately adjacent to the Paramount MSF site option. Operation of the maintenance facilities would not emit hazardous air emissions. Mixtures containing extremely hazardous substances would not be used in quantities equal to or greater than the state threshold quantity specified pursuant to subdivision (j) of Section 25532 of the Health and Safety Code. Additionally, Project Measure HAZ PM-1 (Handling, Storage, and Transport of Hazardous Materials or Wastes [Operation]) would be implemented to manage hazardous materials appropriately during operation. With implementation of this measure, operation of the Paramount MSF site option would result in no adverse effects related to educational facilities.

Oil and Gas Wells and Fields, and Hazardous Subsurface Gases

There are no abandoned oil fields, methane zones, or oil/gas wells within the Affected Area for hazards and hazmat of the Paramount MSF site option. Therefore, gaseous conditions and wells are not anticipated. Under NEPA, operation of the Paramount MSF site option would result in no adverse effects related to oil/gas wells, oil fields, and hazardous subsurface gases.

Bellflower MSF Site Option

Environmental Concern Sites

Known, Potential, and Historical Concern Sites: There are three environmental concern sites, all of which are historical environmental concern sites, within the Affected Area for hazards and hazmat of the Bellflower MSF site option. The Affected Area for hazards and hazmat of the Bellflower MSF site option includes fewer environmental concern sites than the Paramount MSF site option. Therefore, the potential for effects related to environmental concern sites is less under the Bellflower MSF site option than the Paramount MSF site option. Disturbance of soil, soil vapor, and groundwater at known and potential environmental concern sites is not expected during operation. Therefore, known and potential environmental concern site contaminants would not be encountered during operation of the Bellflower MSF site option. Under NEPA, operation of the Bellflower MSF site option would result in no adverse effects related to environmental concern sites.

Landfills: No landfills are present within 0.25 mile of the Bellflower MSF site option. Therefore, consistent with the Paramount MSF site option, operation of the Bellflower MSF site option would result in no adverse effects related to landfill gases.

Groundwater Contamination: There are no known groundwater contaminants present within 0.25 mile of the Bellflower MSF site option. Therefore, operation of the Bellflower MSF site option would result in no adverse effects related to groundwater contaminants or dewatering. As the Paramount MSF site option includes four sites with known groundwater contaminants, the potential for effects related to groundwater contamination is greater under the Paramount MSF site option.

General Hazardous Material Conditions

LBP, ADL, Asbestos/ACM, Railroad, Pipelines, Agriculture, PCBs: Operation of the Bellflower MSF site option would not utilize or encounter LBP, ACM, common railroad corridor contaminants, pesticides from agricultural use, ADL, or PCBs. Although there are two hazardous material pipelines in the Affected Area for hazards and hazmat of the Bellflower MSF site option, the pipelines are underground and would not be affected by the aboveground operation of the Bellflower MSF site option. The potential for effects related to LBP, ADL, Asbestos/ACM, railroad, pipelines, agriculture, and PCBs are generally consistent between the Paramount and Bellflower MSF site options. Under NEPA, operation of the Bellflower MSF site option would result in no adverse effects related to general hazardous material conditions, including hazardous material underground pipelines.

Educational Facilities

Two educational facilities are located within the Affected Area for hazards and hazmat (educational facilities) of the Bellflower MSF site option. As this is two fewer than the Paramount MSF site option, the potential for effects to educational facilities associated with the Bellflower MSF site option is less when compared with the Bellflower MSF site option. However, potential effects are consistent among the MSF site options, and the evaluation for the Paramount MSF site option, including implementation of mandatory Project Measure HAZ PM-1 (Handling, Storage, and Transport of Hazardous Materials or Wastes [Operation]), is applicable to the Bellflower MSF site option. With implementation of this project measure, operation of the Bellflower MSF site option would result in no adverse effects related to educational facilities.

Oil and Gas Wells, Fields, and Hazardous Subsurface Gases

The Bellflower MSF site option is not within an area characterized by abandoned oil fields, methane zones, or oil/gas wells. Therefore, gaseous conditions and wells are not anticipated, and operation of the Bellflower MSF site option would result in no adverse effects related to oil/gas wells, oil fields, and hazardous subsurface gases. The potential for effects associated with oil/gas wells, fields, and hazardous subsurface gases are consistent between the Paramount and Bellflower MSF site options.

4.10.4 Project Measures and Mitigation Measures

4.10.4.1 Project Measures

The following project measures have been identified to reduce potential adverse operational effects of the Build Alternatives.

HAZ PM-1 Handling, Storage, and Transport of Hazardous Materials or Wastes (Operation)

During operation of Alternatives 1, 2, 3 and 4, hazardous materials may be temporarily stored, handled, or transported along the alignment, including in the underground train tunnel and underground station areas, and at the MSF. As required by Metro, the operator would provide an industrial waste management plan and/or waste and hazardous materials management plan, such as a plan defined in Title 19 CCR or a Spill Prevention, Control, and Countermeasure Plan prior to the start of revenue service. This plan would identify the responsible parties and outline procedures for hazardous waste and hazardous materials handling, storage, and transport during operation of the Project. The plan would be prepared to Metro Contractor specifications, submitted to Metro, prior to operation, and would be implemented during operation. The plan would:

- Comply with prescribed best management practices (BMPs) to prevent hazardous material releases and cleanup of any hazardous material releases that occur
- Comply with the State Water Resources Control Board (SWRCB) Construction CWA Section 402 General Permit conditions and requirements for transport, labeling, containment, cover, and other BMPs for storage of hazardous materials (SWRCB 2017)

Ground-disturbing activities could occur along the Project if trenches or other soil disturbing activities are needed to maintain or replace the rails or underground rail features or utilities. If ground-disturbing activities occur during operation and undocumented hazardous materials are identified, the operator would comply with the plan identified above for known contaminant sources and applicable federal and state regulations, such as RCRA, CERCLA, the Hazardous Materials Release Response Plans and Inventory Law, and the Hazardous Waste Control Act.

HAZ PM-2 Disposal of Groundwater (Operation)

If disposal of contaminated groundwater is required during operation of Alternatives 1, 2, 3, and 4, (decontamination water, purge water, dewatering, or underground structures [groundwater leakage into the final structure]) is necessary, the LARWQCB would be consulted and the Project would comply with permits as required by the LARWQCB. LARWQCB may require that an individual National Pollutant Discharge Elimination System

(NPDES) permit and/or waste discharge requirements (WDR) be obtained for dewatering and discharge activities. Additionally, the following agencies will be contacted as needed:

- City of Los Angeles Sanitation would be notified if contaminated groundwater will be discharged to the sewer system.
- City of Vernon Health and Environmental Control Department would be contacted if contaminated groundwater will be discharged to the stormwater system.
- County of Los Angeles Department of Public Health would be contacted if contaminated groundwater is encountered during dewatering within the boundaries of the following cities: Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, Cerritos, Artesia, and the unincorporated community of Florence-Firestone.

The groundwater discharge and disposal requirements vary by agency, location, concentration, and contaminants of concern and are therefore developed in consultation with the agencies and the project proponent.

HAZ PM-3 Contaminated Soil, Soil Vapor, and Groundwater (Operation)

Prior to the start of project operation of Alternatives 1, 2, 3, and 4, the operator would retain a qualified environmental consultant to prepare a Soil Management Plan, Soil Vapor Management Plan, Soil Reuse Management Plan, and Groundwater Management Plan or a combined Soil, Soil Vapor, Soil Reuse, and Groundwater Management Plan to address the possibility of encountering contaminated soil, soil vapor, and groundwater during project operation. These plans would be completed to Metro's contractor specifications and submitted to Metro prior to operation and any ground-disturbing activities for the Project.

Depending on the overall design of the Project, contaminated soil, soil vapor, and/or groundwater may be encountered during normal operation of the Project (dewatering or soil vapor venting) or during repairs and maintenance along the alignment that involve disturbance of soil, soil vapor, or groundwater (trenching, potholing, and utility repairs).

The Soil and Soil Vapor Management Plans must establish provisions per Metro's contractor specifications for the disturbance of contaminated materials (known and undocumented). Proper management and disposition of contaminated soils and gases would be determined in consultation with appropriate regulatory agencies and in accordance with applicable federal and/or state guidance (USEPA, DTSC, RWQCB, and other local agencies).

The Soil Reuse Management Plan must establish provisions per Metro's contractor specifications for the reuse of contaminated known or undocumented soils. Proper management and disposition of contaminated soils would be determined in consultation with appropriate regulatory agencies and in accordance with applicable federal and/or state guidance (USEPA, DTSC, RWQCB, and other local agencies).

The Groundwater Management Plan must establish provisions per Metro's contractor specifications for encountering and managing contaminated groundwater (known and undocumented). Proper disposal of contaminated groundwater would be determined in consultation with appropriate regulatory agencies and in accordance with applicable federal and/or state guidance (USEPA, DTSC, RWQCB, and other local agencies).

Where open or closed regulatory release cases are already managed by a regulatory agency (e.g., USEPA, DTSC, RWQCB) and Metro's operation involves plans to alter the use of the

site and/or disturb contaminated soil and/or groundwater onsite, Metro would notify the regulatory agency of the planned land use changes prior to ground-disturbing activities at the location of the open or closed regulatory release site. The regulatory agency would determine the level of investigation and/or remediation (performance standards) necessary on a case by case basis. A closure or no further action determination letter from the regulatory agency would be obtained when investigation and/or remediation is complete.

4.10.4.2 Mitigation Measures

There are no hazardous material mitigation measures required during operation of the Build Alternatives, including design options and MSF site options. The following four geotechnical mitigation measures, which are described in Section 4.9.4.2 of the Geotechnical, Subsurface, and Seismic Section, are applicable to subsurface gases:

- GEO-1 Hazardous Gas (Operation)
- GEO-2 Structural Design
- GEO-3 Gas Monitoring (Operation)
- GEO-4 Tunnel Advisory Panel

Mitigation Measure GEO-1 is applicable to Alternatives 1, 2, and 3. Mitigation Measures GEO-3 and GEO-4 are specific to Alternatives 1 and 2.

4.10.5 California Environmental Quality Act Determination – Operation

The hazards and hazardous materials CEQA determinations included in the following sections are based on the existing conditions presented in Section 4.10.2, the environmental impacts analysis presented in Section 4.10.3, and the project measures and mitigation measures identified in Sections 4.10.4.1 and Section 4.9.4 of the Geotechnical, Subsurface, and Seismic Section.

4.10.5.1 Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

No Project Alternative

Under the No Project Alternative, there would be no change to the Affected Area for hazards and hazmat. Therefore, the No Project Alternative would not result in significant impacts and mitigation would not be required. However, pre-existing contaminated areas that would be remediated under the Build Alternatives (which is a residual benefit of project implementation) would also not occur. Therefore, the No Project Alternative would not provide the potential long-term site remediation benefits of the proposed project.

Alternatives 1, 2, 3 and 4

Operation of Alternatives 1, 2, 3, and 4 would not result in the routine transport, use, or disposal of hazardous materials or wastes. Therefore, impacts related to the routine transport, use, or disposal of hazardous materials during operation of Alternatives 1, 2, 3, and 4 would be less than significant.

If long-term groundwater monitoring or future maintenance of the Project requires soil disturbance during operation, potentially significant impacts may occur. However, required Project Measures HAZ PM-1 (Handling, Storage, and Transport of Hazardous Materials or Wastes [Operation], HAZ PM-2 (Disposal of Groundwater [Operation], and HAZ PM-3

(Contaminated Soil, Soil Vapor, and Groundwater [Operation]) would result in the appropriate management of hazardous materials, affected groundwater, and contaminated soil during operation. With implementation of these project measures, potential significant hazards to the public or the environment through the routine transport, use, or disposal of hazardous materials during operation of Alternatives 1, 2, 3, and 4 would be less than significant.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: The analysis presented for Alternative 1, including project measures, would also apply to Design Options 1 and 2; therefore, impacts would be less than significant.

Maintenance and Storage Facility

Paramount MSF Site Option: Operation of the Paramount MSF site option may involve storage of hazardous materials and wastes for maintaining and repairing rail equipment. Hazardous materials and wastes and storage equipment could include wash racks and storage tanks for fuel, lubricants, used oils, paints, coatings, and various solvents. However, operation of the MSF is not expected to include the use of extremely hazardous materials.

Past known site uses in the southern portion of the proposed MSF site option include hazardous materials usage and waste generation. The northern portion is currently occupied by a swap meet/drive-in that uses small amounts of household hazardous materials and typically does not generate large quantities of hazardous materials or wastes. Based on the location of the proposed facility within an area characterized by existing commercial, industrial, and educational uses, the public and the environment would be exposed to an increase in the use, storage, transport, or handling of hazardous materials in the vicinity due to operation of the Paramount MSF site option.

Compliance with existing federal regulations pertaining to hazardous material handling, transport, and disposal and required by Project Measure HAZ PM-1 (Handling, Storage, and Transport of Hazardous Materials or Wastes [Operation]) would manage hazardous materials appropriately during operation. With implementation of this project measure, hazards potentially significant to the public or the environment through the routine transport, use, or disposal of hazardous materials during operation of the Paramount MSF site option would be less than significant.

Bellflower MSF Site Option: Operation of the Bellflower MSF site option is not expected to include the use of extremely hazardous materials. However, operation of the facility may involve the storage of hazardous materials and wastes for maintaining and repairing rail (similar to the Paramount MSF site option). The proposed location of the Bellflower MSF site option is currently occupied by a paintball and airsoft park, which does not generate large quantities of hazardous materials or wastes. Therefore, the public and environment would be exposed to an increase in the use, storage, transport, and/or handling of hazardous materials due to operation of the Bellflower MSF site option (similar to the Paramount MSF site option).

Compliance with existing regulations pertaining to hazardous material handling, transport, and disposal and required by Project Measure HAZ PM-1 (Handling, Storage, and Transport of Hazardous Materials or Wastes [Operation]) would manage hazardous materials appropriately during operation. With implementation of this project measure, potential significant hazards to the public or environment through the routine transport, use, or

disposal of hazardous materials during operation of the Bellflower MSF site option would be less than significant.

4.10.5.2 Would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

No Project Alternative

The No Project Alternative would not result in impacts related to the release of hazardous materials into the environment because no new operational activities are proposed that would alter existing conditions.

Alternatives 1 and 2

Operation of Alternatives 1 and 2 would not involve the transport, storage, use, or disposal of hazardous materials in quantities greater than needed to support standard operations, and impacts would not occur. If future maintenance involving soil disturbance is necessary during operation of the Project, residual contamination present in onsite soils may create a significant hazard to the public or environment due to reasonably foreseeable upset and accident conditions involving the release of hazardous materials during soil disturbance; this would be considered potentially significant. Additionally, tunnels proposed as part of the Project would be operated in areas with gaseous soil conditions. If a train accident were to cause a release of subsurface gases to a tunnel, it may create a significant hazard to the public or environment due to reasonably foreseeable upset and accident conditions involving the release of hazardous materials; this would also be considered potentially significant.

Although tunnel venting and the storage, handling, and transportation of hazardous materials would be subject to existing federal regulations, the following project measures would also be implemented: HAZ PM-1 (Handling, Storage, and Transport of Hazardous Materials or Wastes [Operation]), HAZ PM-3 (Contaminated Soil, Soil Vapor, and Groundwater [Operation]), and GEO PM-2 (Oil Fields, Methane Zones, and Methane Buffer Zones [Operation]). While impacts would be reduced due to implementation of these project measures, they would remain potentially significant and the following mitigation measures would be required: GEO-1 (Hazardous Gas [Operation]), GEO-2 (Structural Design), and GEO-3 (Gas Monitoring [Operation]) and GEO-4 (Tunnel Advisory Panel). With implementation of the project and mitigation measures noted above, potential impacts resulting from operation of Alternatives 1 and 2 would be less than significant.

Mitigation Measures: GEO-1 (Hazardous Gas [Operation]), GEO-2 (Structural Design), GEO-3 (Gas Monitoring [Operation]) and GEO-4 (Tunnel Advisory Panel) would be required. Implementation of these mitigation measures would mandate the design of an adequate ventilation system to dilute and transport gases out of tunnels during operation, reduce emission impacts to educational facilities and the public, provide guidelines for managing contaminated soil, soil vapor, and groundwater, and provide emergency response procedures.

Impacts Remaining After Mitigation: Less than significant.

Alternatives 3 and 4

Operation of Alternatives 3 and 4 would not result in impacts from reasonably foreseeable upset and accident conditions. Under these alternatives, the Project does not include underground tunnels or features. Because underground tunnels or features are not included,

operation of Alternatives 3 and 4 would not involve continuous air monitoring or venting and impacts would not occur.

If future maintenance involving soil disturbance is necessary during operation of Alternatives 3 and 4, residual contamination present in onsite soils may create a significant hazard to the public or environment due to reasonably foreseeable upset and accident conditions involving the release of hazardous materials during soil disturbance; this would be considered potentially significant.

In the event that soil disturbance is necessary during operation, Project Measures HAZ PM-1 (Handling, Storage, and Transport of Hazardous Materials or Wastes [Operation]) and HAZ PM-3 (Contaminated Soil, Soil Vapor, and Groundwater [Operation]) would be implemented to identify and reduce potential contaminated soil disturbance impacts. With implementation of HAZ PM-1 (Handling, Storage, and Transport of Hazardous Materials or Wastes [Operation]) and HAZ PM-3 (Contaminated Soil, Soil Vapor, and Groundwater [Operation]), impacts would be less than significant, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Operation of Design Options 1 and 2 would result in impacts similar to those described above for Alternative 1. The evaluation, project measures, and mitigation measures identified for Alternative 1 related to reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment are also applicable to Design Options 1 and 2. With implementation of Project Measures HAZ PM-1 (Handling, Storage, and Transport of Hazardous Materials or Wastes [Operation]), HAZ PM-3 (Contaminated Soil, Soil Vapor, and Groundwater [Operation]), and GEO PM-2 (Oil and Gas Zones [Operation]) and Mitigation Measures GEO-1 (Hazardous Gas [Operation]), GEO-2 (Structural Design), GEO-3 (Gas Monitoring [Operation])and GEO-4 (Tunnel Advisory Panel), potential significant hazards related to reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment would be less than significant during operation of Design Options 1 and 2.

Mitigation Measures: GEO-1 (Hazardous Gas [Operation]), GEO-2 (Structural Design), GEO-3 (Gas Monitoring [Operation]) and GEO-4 (Tunnel Advisory Panel) would be required. Implementation of these measures would mandate the design of an adequate ventilation system to dilute and transport gases out of tunnels during operation, reduce emission impacts to educational facilities and the public, provide guidelines for managing contaminated soil, soil vapor, and groundwater, and provide emergency response procedures.

Impacts Remaining After Mitigation: Less than significant.

Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option: Operation of the Paramount and Bellflower MSF site options is not expected to include the use of extremely hazardous materials. However, operation of the site options may involve storage of hazardous materials and wastes for maintaining and repairing rail equipment. Hazardous materials and wastes and storage equipment may include wash racks and storage tanks for fuel, lubricants, used oils, paints, coatings, and various solvents, which would likely be classified as hazardous substances or materials and wastes. Misuse of the hazardous materials or unintended releases of the hazardous materials may result in personnel or public exposure to hazardous materials.

Therefore, the use of hazardous materials onsite may create a significant hazard to the public or the environment due to reasonably foreseeable upset and accident conditions involving the release of hazardous materials; these risks would be considered potentially significant.

The storage, handling, and transportation of hazardous materials at the Paramount and Bellflower MSF site options would be subject to existing federal regulations pertaining to hazardous material handling, transport, and disposal, as required by Project Measure HAZ PM-1 (Handling, Storage, and Transport of Hazardous Materials or Wastes [Operation]). Implementation of HAZ PM-1 (Handling, Storage, and Transport of Hazardous Materials or Wastes [Operation]) would minimize the risk of exposure of the public or environment during operation of either MSF site option. Risks would be less than significant, and mitigation would not be required.

4.10.5.3 Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No Project Alternative

Under the No Project Alternative, the Project would not be implemented. Therefore, no direct impacts associated with hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school would occur. However, the benefit of remediating sites with pre-existing hazardous conditions as a result of the Project would also not occur. Therefore, the No Project Alternative would provide no potential long-term site remediation benefits.

Alternatives 1 and 2

Operation of Alternatives 1 and 2 would not result in hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school during operation. There are 53 educational facilities located within the Affected Area for hazards and hazmat (educational facilities), 10 of which are within the Affected Area for hazards and hazmat (educational facilities) of the Alternative 1 tunnel. There are 56 educational facilities within the Affected Area for hazards and hazmat of Alternative 2, 18 of which are in the Affected Area for hazards and hazmat (educational facilities) of the Alternative 2 tunnel. Metro does not anticipate the handling of hazardous or acutely hazardous materials, substances, or waste during operation of Alternatives 1 and 2. Therefore, impacts would be less than significant.

Additionally, although methane and H_2S gases would be present in the soils surrounding the tunnels, per Metro's contractor specifications, tunnels would be designed and constructed to include passive venting to the atmosphere and prevent gaseous intrusion into the tunnels during operation. As there would be no hazardous air emissions during operation, impacts would be less than significant.

Alternatives 3 and 4

Operation of Alternatives 3 and 4 would not result in hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste within the Affected Area for hazards and hazmat (educational facilities) during operation (similar to Alternative 1). There are 37 educational facilities located within the Affected Area for hazards and hazmat (educational facilities) of Alternative 3 and 17 educational facilities located within the

Affected Area for hazards and hazmat (educational facilities) of Alternative 4. There are no tunnels planned for Alternatives 3 and 4 and Metro does not anticipate emitting hazardous materials or handling of hazardous or acutely hazardous materials, substances, or waste during operation of Alternatives 3 and 4. Therefore, impacts would be less than significant.

Design Options—Alternative 1

Design Option 1: LAUS at MWD: Operation of Design Option 1 (MWD) would not result in hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school during operation (similar to Alternative 1). There are 2 educational facilities located within the Affected Area for hazards and hazmat (educational facilities) of Design Option 1 (MWD), both of which are present within the Affected Area for hazards and hazmat (educational facilities) of the Design Option 1 (MWD) tunnel.

Metro has indicated that they do not anticipate the handling of hazardous or acutely hazardous materials, substances, or waste during operation of Design Option 1 (MWD). Therefore, impacts would be less than significant. Additionally, although methane and H_2S gases would be present in the soils surrounding the tunnels, per Metro's contractor specifications the tunnels would be designed and constructed in a manner that would include passive venting to the atmosphere and prevent gaseous intrusion into the tunnels during operation. Since there would be no hazardous air emissions during operation, impacts would be less than significant (similar to Alternative 1).

Design Option 2: Add Little Tokyo Station: Operation of Design Option 2 would not result in hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school during operation (similar to Alternative 1). There are four educational facilities located within the Affected Area for hazards and hazmat (educational facilities) of Design Option 2, all of which are within the Affected Area for hazards and hazmat (educational facilities) of the Design Option 2 tunnels. Metro does not anticipate the handling of hazardous or acutely hazardous materials, substances, or waste during the operation of Design Option 2. Therefore, impacts would be less than significant (similar to Alternative 1).

Additionally, although methane and H_2S gases would be present in the soils surrounding the tunnels, per Metro's contractor specifications tunnels would be designed and constructed to include passive venting to the atmosphere and prevent gaseous intrusion into the tunnels during operation. This would result in no hazardous air emissions during operation and impacts would be less than significant.

Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option: Two educational facilities are located within the Affected Area for hazards and hazmat (educational facilities) of the Paramount MSF site option, two of which are immediately adjacent to the Paramount MSF site option. Three of these educational facilities are also located within the Affected Area for hazards and hazmat (educational facilities) of Alternatives 1, 2, 3, and 4. Two educational facilities are located within the Affected Area for hazards and hazmat (educational facilities) of the Bellflower MSF site option, both of which are within the Affected Area for hazards and hazmat (educational facilities) of Alternatives 1, 2, 3, and 4.

Operation of the Paramount and Bellflower MSF site option is not expected to include the use of extremely hazardous materials. Metro has indicated that the use of cleaners and degreasers that could contain small amounts of hazardous or acutely hazardous materials, substances, or wastes may occur during operation of the Paramount and Bellflower MSF site options. However, off-the-shelf products would be used and exposure outside the facility would be unlikely.

Operation of the Paramount and Bellflower MSF site options would involve handling limited quantities of mixtures containing small amounts of hazardous or acutely hazardous materials, substances, or wastes during operation within one-quarter mile of an existing or proposed school. Therefore, potentially significant impacts are present. Project Measure HAZ PM-1 (Handling, Storage, and Transport of Hazardous Materials or Wastes [Operation]) would be implemented in situations where educational facilities are located within 0.25 mile of either MSF to manage hazardous materials appropriately during operation. With implementation of HAZ PM-1 (Handling, Storage, and Transport of Hazardous Materials or Wastes [Operation]), impacts would be less than significant.

4.10.5.4 Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

No Project Alternative

No changes would occur to the Affected Area for hazards and hazmat under the No Project Alternative. Therefore, impacts would be less than significant.

Alternatives 1, 2, and 3

Three hazardous materials sites compiled pursuant to Government Code Section 65962.5 (Cortese sites) are located in or partially in the Affected Area for hazards and hazmat of Alternatives 1, 2, and 3. Although these alternatives would not operate within a Cortese site, operation of the Project would occur on other regulatory-listed sites, including a landfill, with hazardous material impacts in the soil, soil vapor, and/or groundwater. Affected soil, soil vapor, and groundwater associated with these release sites may be present beneath the Project; however, operation of the Project would not disturb the soil, soil vapor, or groundwater. As a result, impacts would be less than significant, and mitigation would not be required.

Alternative 4

No Cortese sites are located in or partially in the Affected Area for hazards and hazmat of Alternative 4. However, operation of Alternative 4 would occur on other sites with soil, soil vapor, and contaminated groundwater. Although affected soil, soil vapor, and groundwater associated with these release sites may be present beneath the Project, operation of the Project would not involve disturbance of the soil; thus, impacts would be less than significant, and mitigation would not be required (similar to Alternative 1).

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Neither of the design options would be constructed directly within a Cortese site. However, operation of the design options would occur on other regulatory-listed sites with hazardous material impacts in the soil, soil vapor, and/or groundwater. Although contaminated soil, soil vapor, and groundwater associated with these release sites may be present beneath the Project, operation of the Project

would not disturb the soil, soil vapor, or groundwater. Impacts would therefore be less than significant and mitigation would not be required (similar to Alternative 1).

Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option: Neither MSF would be constructed directly within a Cortese site. However, operation of the MSFs would occur on historical concern sites and other regulatory-listed sites with hazardous material impacts in the soil, soil vapor, and/or groundwater. Although contaminated soil, soil vapor, and groundwater associated with these release sites may be present beneath the Paramount and Bellflower MSF site options, operation of the Paramount and Bellflower MSF site options would not disturb soil, soil vapor, or groundwater. Impacts would therefore be less than significant and mitigation would not be required (similar to Alternative 1).

4.10.5.5 For a Project located within an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project area?

No airport hazards would occur under the No Project Alternative. There are no airports located within 2 miles of Alternatives 1, 2, 3, and 4, Design Options 1 and 2, or the Paramount or Bellflower MSF site option. Therefore, no impact related to safety hazards at airports would occur from operation of the Project.

4.10.5.6 Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The CEQA determinations for this threshold are discussed in Section 4.18.5, Safety and Security, of this Draft EIS/EIR and Section 6.1 of *the West Santa Ana Branch Transit Corridor Project Final Safety and Security Impact Analysis Report* (Metro 2021c) (Appendix F).

4.10.5.7 Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

No wildland fire hazards would occur under the No Project Alternative. No wildlands are located in the vicinity of Alternatives 1, 2, 3, and 4, Design Options 1 and 2, or the Paramount or Bellflower MSF site options. Therefore, no impact would occur from operation of the Project.

4.11 Water Resources

This section summarizes the current applicable regulatory setting, existing conditions, and potential impacts to water resources from the Build Alternatives, including design options and MSF site options. Specifically, this section discusses hydrology and surface waters, water quality, floodplains, and groundwater. Additional information on water resources is provided in the *West Santa Ana Branch Transit Corridor Project Final Water Resources Impact Analysis Report* (Metro 2021d), included as Appendix T to this Draft EIS/EIR.

4.11.1 Regulatory Setting and Methodology

4.11.1.1 Regulatory Setting

The following subsections summarize the regulatory context under which water resources are managed at the federal, state, regional, and local levels, and the statutes (ordinances, policies, and codes) that provide regulatory structure.

Federal

The following federal regulations are applicable to the Project:

- **Clean Water Act (CWA) (U.S.C. Title 33, Section 1251 et seq.):**
  - **Section 404:** The USACE has jurisdiction over all Waters of the U.S., which include navigable waters and traditionally navigable waters as defined in Title 33, Part 328.3(a) of the Code of Federal Regulations. Under the CWA Section 404, the USACE regulates the discharge of dredged or fill materials (including from construction activities) into Waters of the U.S.; the Waters of the U.S. potentially affected by the Project are the Los Angeles River, the Rio Hondo Channel, and the San Gabriel River.
  - **Section 303(d):** The USEPA has authority under the CWA to implement water pollution control programs. In California, this authority is delegated to the SWRCB. Section 303(d) requires states to develop a list of water-quality-impaired water bodies and to implement total maximum daily loads (TMDLs) for certain pollutants in order to meet water quality standards.
- **Rivers and Harbors Act of 1899 (33 U.S.C. 403 and 408):** The USACE has jurisdiction over flood protection systems under Section 14 of the Rivers and Harbors Act (33 U.S.C. Sections 403 and 408). Construction and operation of the Build Alternatives in the Los Angeles River, the Rio Hondo Channel, or the San Gabriel River channel would require review and approval by the USACE through a Section 408 permit.
- **Executive Orders 11988 and 13690: Floodplain Management:** All federal agencies must avoid (to the extent possible) long- and short-term adverse effects associated with the occupancy or modification of floodplains. The Executive Orders establish an eight-step process that agencies should carry out as part of the decision-making process on projects with the potential to impact floodplains. Engineer Regulation 1165-2-26 describes how the USACE implements Executive Order 11988 to: avoid development in a floodplain unless it is the only practicable alternative; reduce the hazard and risk associated with flooding; minimize the impacts of floods on human health, safety, and welfare; and restore the beneficial values of floodplains. Executive

Order 13690 amends Executive Order 11988 to establish a federal flood risk management standard and a process for soliciting and considering stakeholder input.

- **National Flood Insurance Act (42 U.S.C. 4001 et seq.)**: The Federal Emergency Management Agency (FEMA) issues flood zone maps on a countywide level. 44 CFR 59-65 set the National Flood Insurance Program (NFIP) floodplain management building requirements delineating policies for development in floodplains. Among other provisions, applicable aspects of the NFIP regulations state that if the area of construction is located within a regulatory floodway, as delineated on the Flood Insurance Rate Map, any development must not increase base flood elevation levels. The term "development" means any man-made change to improved or unimproved real estate, including, but not limited to, buildings, other structures, dredging, filling, grading, paving, excavation or drilling operations, and storage of equipment or materials. A hydrologic and hydraulic analysis must be performed prior to the start of development and must demonstrate that the development would not cause any rise in base flood levels.
- **Fish and Wildlife Coordination Act:** The Fish and Wildlife Coordination Act requires federal agencies to consult with the U.S. Fish and Wildlife Service and, in some instances, with the National Oceanic and Atmospheric Administration, National Marine Fisheries Service, and with state fish and wildlife resource agencies (such as the CDFW) before undertaking or approving water projects that would control or modify surface water. Consultation provides equal consideration to the wildlife concerns amidst the development of water resource projects and are coordinated with the features of these projects. Federal agencies are required to fully consider these agencies' recommendations in project reports and to include measures to reduce impacts on fish and wildlife in project plans.

State

The SWRCB and the nine RWQCBs are responsible for the protection of water quality in the state. The SWRCB establishes statewide policies and regulations mandated by federal and state water quality statutes and regulations.

Projects resulting in water discharges, whether to land or water, are subject to Section 13263 of the California Water Code. Through the mandates of this section, dischargers are required to comply with WDRs as developed by the RWQCB. The Project could produce stormwater and other discharges during construction and operation, and therefore would be regulated by the SWRCB and the LARWQCB. The Project would also be subject to additional state regulations related to water resources, including:

- **CWA Section 401:** The SWRCB has jurisdiction over all Waters of the U.S. within California, including the Los Angeles River, the Rio Hondo Channel, and the San Gabriel River. Under CWA Section 401, the SWRCB must issue a 401 Water Quality Certification to achieve compliance with state water quality standards for any activity resulting in a discharge to a water body, including the placement of structures in the rivers and/or spreading basins in the Affected Area.
- **Section 402 (NPDES)**: Through delegated jurisdiction under the CWA, the SWRCB regulates point-source discharges to Waters of the U.S. under the NPDES. Regulated discharges also include diffuse sources of discharge caused by general construction activities covering an area greater than 1 acre, and stormwater discharges in municipal separate storm sewer systems (MS4s) in which runoff is carried through a developed conveyance system to specific discharge locations. The SWRCB issues both

a construction general permit for protection of water quality from stormwater discharges during construction activities, and an industrial general permit for protection of water quality from stormwater discharges during industrial activities. Under construction and operation of the Build Alternatives, Metro would be responsible for compliance with both of these NPDES permits.

- **Porter-Cologne Water Quality Control Act**: The Act authorizes the SWRCB to adopt, review, and revise policies for all waters of the state (including both surface and groundwater); regulates discharges to surface water and groundwater; and directs the RWQCBs to develop regional basin plans.
- **CDFW Code Section 1602:** The CDFW has jurisdiction over ephemeral, intermittent, and perennial waterways, including natural lakes and man-made reservoirs. CDFW's jurisdiction can also extend over the habitats adjacent to waterways. Under Section 1602, CDFW must be notified of any activity that substantially diverts or obstructs a waterway; changes or uses material from the bed, channel, or bank of a waterway; or deposits or disposes of debris, waste, or other material containing ground pavement where it may pass into any waterway. Notification of CDFW (through a Lake or Streambed Alteration Agreement) would be required prior to the start of construction.
- **State Antidegradation Policy**: This policy is enforced by the SWRCB to maintain high-quality waters in California. The policy requires that any activity that produces or may produce a waste or increased volume or concentration of waste and that discharges or proposes to discharge into high-quality waters will be required to meet WDRs to control the discharge and to avoid any pollution or nuisance from occurring.
- **Construction General NPDES Permit (CGP)**: This permit is enforced by the SWRCB to minimize impacts to stormwater during construction. The CGP requirements apply to any construction project that either results in the disturbance of at least 1 acre of land or is part of a larger common development plan. Additionally, the CGP is required for related construction or demolition activities, including clearing, grading, grubbing, or excavation, or any other activity that results in greater than 1 acre of land disturbance.
- **Industrial General NPDES Permit (IGP)**: This permit is enforced by the SWRCB to minimize impacts to stormwater from industrial activities. The Project would be subject to the regulations of the IGP because it is a transportation facility with vehicle maintenance shops and equipment cleaning operations. The Local and Suburban Transit (4111) Standard Industrial Classification Code is applicable to the Project and regulated by the IGP. The IGP requires preparation of an industrial stormwater pollution prevention plan (SWPPP) and a monitoring plan for industrial facilities, including vehicle maintenance facilities associated with transportation operations.
- **Seismic Regulations**: Under jurisdiction of the California Department of Conservation, Geological Survey, the Alquist-Priolo Earthquake Fault Zoning Act and the Seismic Hazards Mapping Act regulate the construction and protection of structures used for human occupancy on the surface trace of active faults and on nonsurface active fault ruptures, respectively. State seismic regulations relate to water quality due to potential hazards related to dam failure and inundation caused by earthquake-induced ground shaking or a seiche event, erosion, improper siting and/or design, and rapidly rising floodwaters during heavy storm events.
- **Sustainable Groundwater Management Act (SGMA):** This is enforced by the California DWR for the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results

(DWR 2019a). SGMA requires governments and water agencies of high- and medium-priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. SGMA empowers local agencies to form groundwater sustainability agencies (GSAs) to manage basins sustainably and requires those GSAs to adopt groundwater sustainability plans for crucial groundwater basins in California (DWR 2019b). Water Code Section 10720.8 identifies adjudicated areas in SGMA, which have an existing defined entity administering the adjudication. Under SGMA, adjudicated portions of basins are exempt from developing a Groundwater Sustainability Plan and forming a GSA. However, the entities administering the adjudications are subject to submitting annual reports. The Central Groundwater Basin lies beneath the project site. It is adjudicated and managed by the Water Replenishment District of Southern California (WRD).

Regional

The LARWQCB has jurisdiction over stormwater and urban runoff discharges from 84 incorporated cities within the Los Angeles County Flood Control District (LACFCD), including the cities in the Affected Area for water resources. This Project is expected to incur construction-related discharges to various downstream water bodies. Therefore, construction and operation of the Build Alternatives would be regulated by:

- LA County MS4 Permit (LARWQCB Order No. R4-2012-0175 as amended by SWRCB Order No. WQ 2015-0075, LARWQCB Order No. R4-2012-0175-A01, NPDES Permit No. CAS004001, and LA County MS4 NPDES permit). This permit regulates the LACFCD, the County of Los Angeles, and 84 incorporated cities within the LACFCD (including the cities in the Affected Area for water resources) for discharges of stormwater and urban runoff from MS4s, also called storm drainage systems. The LA County MS4 NPDES permit requires new development and redevelopment projects to have post-construction controls to manage pollutants, pollutant loads, and runoff volume emanating from the project site.
- LARWQCB Order No. R4-2013-0095 (NPDES No. CAG994004), Waste Discharge Requirements for Discharges of Groundwater from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties (Construction Dewatering Permit) is required for discharges to surface water from dewatering activities.
- LARWQCB Order No. 93-010, Waste Discharge Requirements for Specified Discharges to Groundwater in the Santa Clara River and Los Angeles River Basins covers construction dewatering and dust control application. The WDR requires that wastewater be analyzed prior to being discharged to determine if it contains pollutants in excess of the applicable Basin Plan Water Quality Objectives. Additionally, any wastewater that might be encountered and subsequently discharged to groundwater will need to comply with applicable water quality standards.
- LARWQCB Order No. 91-93, Waste Discharge Requirements for Discharge of Non-Hazardous Contaminated Soils and Other Wastes in Los Angeles River and Santa Clara River Basins protects waters of the state from contamination due to disposal of soils containing moderate concentrations of petroleum hydrocarbons, heavy metals, and other wastes.
- *Water Quality Control Plan, Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (LARWQCB 1995). This plan sets forth the regulatory water quality standards for surface waters and groundwater within the region.

In addition to the regional regulations set forth by the LARWQCB, various local ordinances and policies regulate construction and operational stormwater discharges, and/or project design impacts to water resources. The Project would also be subject to the following LA County plans and policies:

- LA County *General Plan* (LA County 2015)
- LA County Code (LA County 1998)
- *A Common Thread Rediscovered – San Gabriel River Corridor Master Plan* (LACDPW 2006) and the *Los Angeles River Master Plan* (LACDPW et al. 1996)
- General Management Water Use and Conservation Policy Statement (Metro 2009b)

Local

The Project traverses 12 local jurisdictions: the Cities of Los Angeles, Vernon, Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, Artesia, and Cerritos, and the unincorporated Florence-Firestone community of LA County. As such, the Project would be subject to the applicable general plan policies and municipal code ordinances within each jurisdiction (see Table 3.1 in the Water Resources Impact Analysis Report [Appendix T]). These plans and regulations set out policies and guidelines pertaining to water use, water quality, and floodplains. Some local approvals may be required; however, no specific permits are required by city codes and regulations.

4.11.1.2 Methodology

The methodology for the evaluation of impacts to water resources involves an analysis of existing data related to hydrology, flooding, drainage, and water quality, and an assessment of whether the Project would substantially degrade surface water or groundwater quality; alter drainage patterns in a manner that would cause flooding, erosion, or siltation; result in exposure of people and/or property to water-related hazards; or otherwise conflict with applicable laws related to hydrology and water quality. The Affected Area for water resources includes the area within 500 feet of the construction footprint. Impact significance, according to CEQA, is determined by comparing project impacts to the CEQA Appendix G thresholds, as summarized in Section 4.11.5.

Permanent impacts to water resources are evaluated by estimating the conversion of pervious to impervious surfaces. Conversion of pervious to impervious areas decreases infiltration, which increases the concentration and total pollutant load in stormwater runoff by increasing runoff volume and peak flow rates. Impacts to water quality from rail operations can be quantified based on the length of track because the track operations areas generate and discharge these pollutants in stormwater as nonpoint source pollution. As pollution generation rates caused by operations are generally similar along the Project's guideway alignment, the length of track is therefore a useful way to evaluate and compare Build Alternatives for their magnitude, quality, and location of potential water quality impacts. Construction impacts to water resources are evaluated by estimating the total disturbance area during project construction. Construction would involve ground disturbance (e.g., excavation, stockpiling, and grading) that would expose bare soils to stormwater and could lead to erosion and sedimentation. The results of the construction analysis are included in Section 4.19.3.11, Construction Impacts, Mitigation Measures, and CEQA Determination, of this Draft EIS/EIR.

4.11.2 Affected Environment/Existing Conditions

4.11.2.1 Hydrology and Surface Water Bodies

The water resources Affected Area for the Build Alternatives would be located within the watersheds of the Los Angeles River, the San Gabriel River, and Ballona Creek, along with the watersheds of their major tributaries, including the Rio Hondo Channel, Compton Creek, the Los Cerritos Channel, and Coyote Creek. The proposed alignments for Alternatives 1, 2, and 3 would cross the Los Angeles River, the Rio Hondo Channel, and the San Gabriel River at existing railroad bridge crossings. Alternative 4 would cross the San Gabriel River only.

The Build Alternatives are located within the coastal plain of LA County, which is generally flat with mild slopes draining south to southwest toward the ocean. The storm drainage system that exists today generally mirrors the historic locations of rivers and tributaries in the watersheds. Many of the original natural drainages have been engineered to serve as storm drainage for the LACDPW (LACDPW 2006). Land in the Affected Area for water resources is urbanized and largely covered with impervious surfaces associated with areas of asphalt, concrete, buildings, and other land uses that concentrate storm runoff. The Build Alternatives are primarily along major roadway arterials or rail corridors with existing drainage infrastructure. Figure 4.11-1 shows the location of major flood-control channel crossings, including the Los Angeles River, the Rio Hondo Channel, and the San Gabriel River. Throughout the Affected Area for water resources, stormwater and other surface water runoff is conveyed to municipal storm drains that eventually drain to the surface waters, as shown on Figure 4.11-2 and Figure 4.11-3.

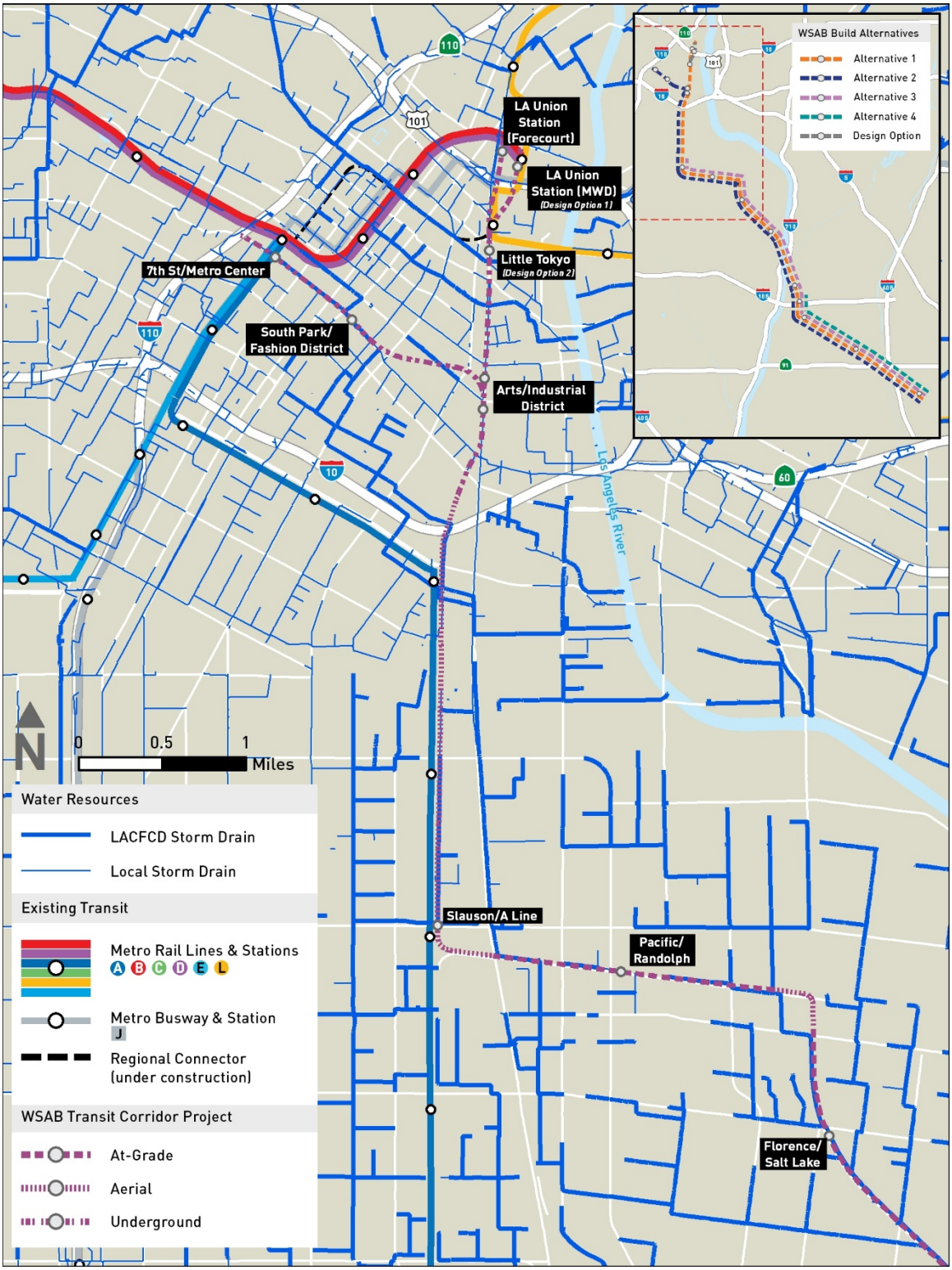
Ownership and maintenance of the storm drainage infrastructure varies among the local jurisdiction, LACFCD, and the California Department of Transportation. Although USACE and LACFCD share jurisdiction over the Los Angeles River and the San Gabriel River, locations of all potential river crossings are within LACFCD jurisdiction.

Figure 4.11-1. Hydrology and Surface Water Bodies



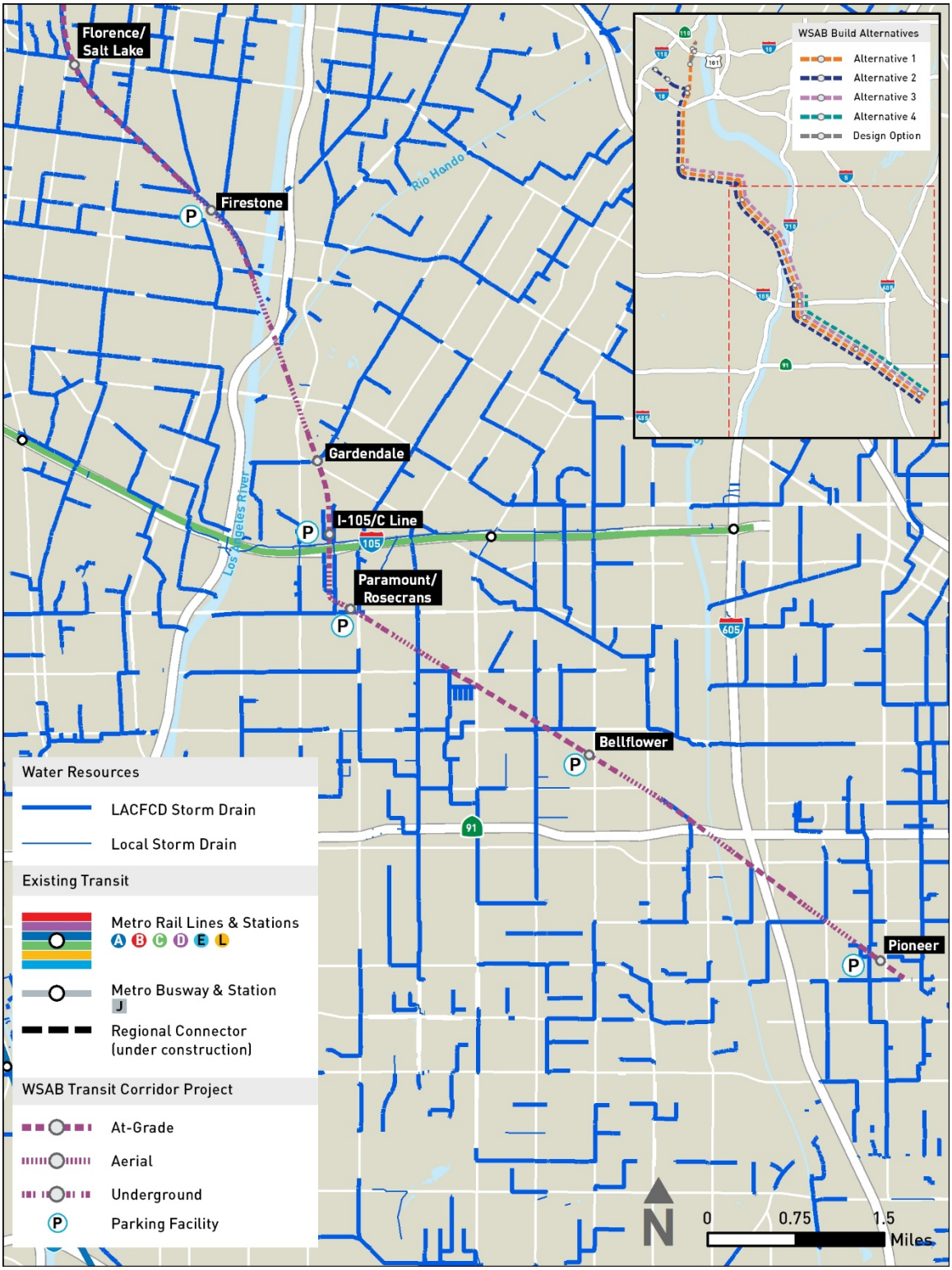
Source: Metro 2021d

Figure 4.11-2. Regional Storm Drain System (1 of 2)



Source: Metro 2021d

Figure 4.11-3. Regional Storm Drain System (2 of 2)



Source: Metro 2021d

4.11.2.2 Water Quality

The LARWQCB Basin Plan designates beneficial uses for surface and groundwater in the Los Angeles Basin area for both the Los Angeles and San Gabriel River Watersheds. Table 4.11.1 lists the beneficial uses identified for the surface waters within the Affected Area for water resources.

Table 4.11.1. Beneficial Uses of Surface Water in the Affected Area

Surface Water Body	Beneficial Uses[1]
Los Angeles River Reach 2 (Carson St to Rio Hondo Confluence)	Municipal and Domestic Supply (potential), Industrial Service Supply (potential), Groundwater Recharge, Warm Freshwater Habitat, and Wildlife Habitat (potential)
Ballona Creek Reach 1 (above National Blvd)	Municipal and Domestic Supply (potential), Warm Freshwater Habitat (potential), Wildlife Habitat
Compton Creek	Municipal and Domestic Supply (potential), Groundwater Recharge, Warm Freshwater Habitat, Wildlife Habitat, Wetland Habitat
Rio Hondo Reach 1 (Los Angeles River confluence to Santa Ana Freeway)	Municipal and Domestic Supply (potential), Groundwater Recharge (intermittent), Warm Freshwater Habitat (potential) and Wildlife Habitat (intermittent)
Los Cerritos Channel	Municipal and Domestic Supply (potential), Warm Freshwater Habitat (intermittent), Wildlife Habitat
San Gabriel River Reach 1 (San Gabriel River Estuary to Firestone Blvd)	Municipal and Domestic Supply (potential), Warm Freshwater Habitat and Wildlife Habitat (potential)
Coyote Creek	Municipal and Domestic Supply (potential), Industrial Service Supply (potential), Industrial Process Supply (potential), Warm Freshwater Habitat, Wildlife Habitat (potential), and Rare, Threatened or Endangered Species
Inland Surface Waters	Beneficial uses of inland surface waters generally include Water Contact Recreation and Warm Freshwater Habitat, Cold Freshwater Habitat, Inland Saline Water Habitat, or Commercial and Sport Fishing. In addition, inland waters are usually designated as Industrial Service Supply, Industrial Process Supply, Non-contact Water Recreation, and Wildlife Habitat, and are sometimes designated as Preservation of Biological Habitats and Rare, Threatened, or Endangered Species

Source: LARWQCB 2011
Note: [1] Beneficial uses are existing unless noted as "potential."

Water bodies not meeting the beneficial uses of state water quality standards are placed on the Section 303(d) List of Water Quality Limited Segments, and states are required to develop TMDLs for the pollutants causing the impairment. Table 4.11.2 lists the pollutants causing impairments in the surface water bodies within the Affected Area for water resources. The Build Alternatives are a redevelopment within these watersheds and are therefore subject to the TMDL standards.

Table 4.11.2. Section 303(d) List of Impaired Waters in the Affected Area

Water Body	Impairment	Source of Impairment	TMDL Completion Date
Los Angeles River Reach 2 (Carson St to Rio Hondo confluence)	Ammonia	Point and Nonpoint Sources	2004
	Indicator bacteria	Source Unknown	2012
	Copper	Source Unknown	2005
	Lead	Point and Nonpoint Sources	2005
	Nutrients (algae)	Point and Nonpoint Sources	2004
	Oil	Natural Sources	2019
	Trash	Nonpoint Source, Surface Runoff, Urban Runoff/Storm Sewers	2008
Ballona Creek	Copper	Source Unknown	2005
	Cyanide	Source Unknown	2019
	Indicator bacteria	Point and Nonpoint Sources	2007
	Lead	Source Unknown	2005
	Toxicity	Source Unknown	2005
	Trash	Source Unknown	2001
	Viruses (enteric)	Point and Nonpoint Sources	2007
	Zinc	Source Unknown	2005
Compton Creek	Benthic community effects	Source Unknown	2021
	Copper	Source Unknown	2008
	Indicator bacteria	Source Unknown	2009
	Lead	Source Unknown	2005
	Trash	Nonpoint Source	2008
	Zinc	Source Unknown	2008
	pH	Point and Nonpoint Sources	2004
Rio Hondo Reach 1 (Los Angeles River confluence to Santa Ana Freeway)	Indicator bacteria	Source Unknown	2012
	Copper	Source Unknown	2005
	Lead	Point and Nonpoint Source	2005
	Toxicity	Source Unknown	2021
	Zinc	Point and Nonpoint Source	2005
	pH	Point and Nonpoint Source	2004
	Trash	Nonpoint Source, Surface Runoff, Urban Runoff/Storm Sewers	2008

Water Body	Impairment	Source of Impairment	TMDL Completion Date
Los Cerritos Channel	Ammonia	Source Unknown	2015
	Bis (2-ethylhexyl) phthalate	Source Unknown	2019
	Copper	Source Unknown	2019
	Indicator bacteria	Source Unknown	2019
	Lead	Source Unknown	2019
	Trash	Source Unknown	2019
	Zinc	Source Unknown	2019
	pH	Source Unknown	2021
San Gabriel River Reach 1 (San Gabriel River Estuary to Firestone Boulevard)	Temperature, water	Source Unknown	2027
	pH	Source Unknown	2009
Coyote Creek	Indicator Bacteria	Source Unknown	2016
	Iron	Source Unknown	2027
	Malathion	Source Unknown	2027
	Toxicity	Source Unknown	2008
	pH	Source Unknown	2019

Source: SWRCB 2016
Note: TMDL = total maximum daily load

4.11.2.3 Floodplains

LA County is subject to a wide range of flood hazards, including floods caused by intense storms, earthquakes, and failure of man-made structures. Los Angeles and nearby cities are located in a relatively flat alluvial plain, about 30 miles wide, lying on uplift terraces surrounded by mountain ranges. FEMA Flood Insurance Rate Maps identify areas in LA County and surrounding cities that would be subject to flooding during 100-year and 500-year storm events.

Figure 4.11-4 presents the FEMA-established 100-year flood zones for the Los Angeles River, the Rio Hondo Channel, the San Gabriel River, and Coyote Creek, which are each contained within their engineered banks. Although the Affected Area for water resources is tributary to Ballona Creek, the creek and associated flood zones are not within the Affected Area. Approximately half of the Affected Area for water resources is located within larger flood zones designated by FEMA Flood Insurance Rate Maps as "Zone X," which are characterized as "areas of 0.2 percent annual chance of flood; areas of 1 percent annual chance of flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1 percent annual chance of flood." Dams, debris basins, and spreading grounds are considered integral flood-control infrastructure. Debris basins are used to capture the sediment, gravel, boulders, and vegetative debris that are washed out of the canyons during storms. Spreading grounds are areas located adjacent to river channels or within soft-bottom channels to permit water to percolate into groundwater basins for later pumping. There are no dams, debris basins, or spreading grounds within the Affected Area for water resources.

Figure 4.11-4. FEMA Flood Zones in Affected Area and Major Flood-Control Facilities



Source: Metro 2021d

4.11.2.4 Groundwater

This section presents the evaluation of groundwater as a water resource (groundwater supply and quality). The evaluation of groundwater contamination is presented in the *West Santa Ana Branch Transit Corridor Project Final Hazardous Materials Impact Analysis Report* (Metro 2021p), included as Appendix S to this Draft EIS/EIR, and Section 4.10, Hazards and Hazardous Materials, of this Draft EIS/EIR.

The Central Basin is a groundwater reservoir that underlies the Affected Area for water resources, as shown in Figure 4.11-5. The Central Basin is a subbasin of the Los Angeles Coastal Plain Groundwater Basins, which are incorporated into the Coastal Plain Hydrographic Subunit. The Central Basin, one of the most important basins in the hydrographic subunit, directly underlies the Affected Area for water resources. The basin is an unconfined aquifer with soils that allow water to percolate through the basin (LACDPW 2006).

Historical over-pumping of the Central Basin caused overdraft, seawater intrusion, and other groundwater management problems related to supply and quality. Adjudication of the basins in the early 1960s set a limit on allowable groundwater extractions in order to control the over-pumping (WRD 2019). Under SGMA, adjudicated portions of basins are exempt from developing a Groundwater Sustainability Plan and forming a GSA. However, WRD is required to submit annual reports to confirm proper resource management. LACDPW, the WRD, and the U.S. Geological Survey conduct regional groundwater quality monitoring in the Central Basin. Groundwater is recharged within the Central Basin at the Rio Hondo Coastal Basin Spreading Grounds, the San Gabriel Coastal Spreading Grounds, and the Dominguez Gap Spreading Grounds. Groundwater quality information for the Central Basin is included in Section 4.4 of the Water Resources Impact Analysis Report (Appendix T).

4.11.3 Environmental Consequences/Environmental Impacts

4.11.3.1 Project Design Features

Within existing rivers, the Build Alternatives would require construction activities (e.g., demolition and removal of built features, excavation, water flow diversions) and introduction of new or modified features (bridge abutments and columns) that could have direct and indirect water quality impacts. As a result, the Build Alternatives would be required to obtain various mandatory permits prior to construction, as described in Section 4.9.1.1 in the Geotechnical, Subsurface, and Seismic Section and Section 2.5.7 in the Alternatives Considered/Project Description Chapter. Therefore, the design features summarized below are considered to be part of the Build Alternatives, and Metro will confirm that these design features are implemented to avoid and minimize impacts to water quality and water resources.

Figure 4.11-5. Groundwater Basins and Facilities



Source: Metro 2021d

The *West Santa Ana Branch Transit Corridor Project Environmental Study, Sustainability Stormwater Study – Revision 1* (Metro 2020a) was developed to evaluate the feasibility of capturing and managing stormwater and associated pollutants, prioritize projects for future implementation, and identify stormwater-related sustainability features and strategies along the project alignment to support Metro sustainability goals and to comply with stormwater quality regulations. The study provides recommendations for site design and low impact development (LID) stormwater BMP implementation locations along the project alignment. These BMPs would maintain pre-development flow volumes, peak flow rates, and times of concentration, and would avoid and minimize adverse effects to water quality and water resources. These recommendations will be included in the final construction contract as applicable to the Build Alternatives:

- **Stations:** General recommendations for LID BMPs at underground station entrances, at-grade, and aerial stations include bioretention/biofiltration planters for canopy, roof, platform runoff; impervious area disconnection (direction impervious sheet flow to landscape areas); and permeable pavement.
- **Station Parking:** LID BMP implementation recommendations at station parking facilities include the following: grade parking facilities to perimeter landscaping areas, design and construct zero-height curb or curb cuts to direct parking area sheet flow runoff into landscaping and biofiltration areas, bioretention/biofiltration within the perimeter (or interior) landscape areas, and other LID features, such as tree wells and permeable pavement.
- **MSF:** Recommended LID BMPs for the MSF site options include biofiltration and capture and reuse. Roof rainfall runoff could be collected from the buildings, treated, and stored for use for the wash facilities; however, the feasibility of this is based on anticipated water demand/usage.
- **Aerial Crossings:** LID BMP implementation recommendations for aerial crossings consist of lined bioretention/biofiltration with underdrain between columns beneath viaducts and lined bioretention/biofiltration with underdrain adjacent to crossing/bridge abutments.
- **At-grade Track:** Stormwater sustainability including water quality treatment options along the at-grade tracks is typically limited because of the undesirability of infiltration and vegetation limitations in these areas. However, ballasted track can be considered self-treating areas based upon research conducted by the Colorado Department of Transportation (2012).

During final design, the LID BMP recommendations would be validated. Where infiltration BMPs are proposed, site-specific geotechnical investigations would be conducted to verify feasibility of installing the BMPs.

In addition to the LID BMPs recommended by the Sustainability Stormwater Study (Metro 2020a), the following design features would be applicable to the Build Alternatives:

- To comply with the LA County MS4 NPDES permit and LA County Standard Urban Stormwater Management Plan (LACDPW 2000b), the Build Alternatives would develop a site-specific LID plan that would implement LID design standards such as incorporating structural and nonstructural treatment controls and hydromodification controls. Other LID design standards would include the following:

  - Not exceed the estimated pre-development rate for developments where the increased peak stormwater discharge rate would result in increased potential for downstream erosion
  - Conserve natural areas and minimize the extent of disturbed areas
  - Minimize stormwater pollutants of concern
  - Protect slopes and channels
  - Provide storm drain system stenciling and signage
  - Properly design outdoor material storage areas
  - Properly design trash storage areas
  - Provide proof of ongoing BMP maintenance
  - Design standards for structural or treatment control BMPs
  - Implement pollutant source reduction measures
  - Design and construct appropriate onsite stormwater management facilities to control peak flow rates and volumes and to capture and treat runoff prior to discharge, especially for pollutant-generating surfaces such as station parking areas, access roads, new local street improvements, reconstructed interchanges, and new or relocated roads and highways
  - Use LID techniques to retain runoff onsite and to reduce offsite runoff, to the extent practical; consider the use of constructed wetland systems, biofiltration and bioretention systems, wet ponds, organic mulch layers, planting soil beds, and vegetated systems (biofilters), such as vegetated swales and grass filter strips
  - Locate all constructed stormwater BMPs outside of natural water bodies and streams
  - Use portions of the maintenance site for onsite infiltration of runoff, if feasible, or for stormwater detention, if not feasible

- Construct the tunnel and underground stations to preclude groundwater intrusion into the tunnel using a technique similar to that used for the Metro L (Gold) Line tunnels in Boyle Heights. This technique consists of installing a precast concrete lining with rubber gaskets between the tunnel segments to prevent water and gas leakage into the tunnel and stations.
- Use tunnel drainage systems to intercept groundwater, stormwater, and tunnel wash water. Treat water to meet municipal standards before it is pumped and discharged to the local storm drain system.
- Comply with the IGP. The IGP requires preparation and implementation of an industrial SWPPP, which would identify BMPs to reduce or prevent industrial pollutants in stormwater and authorized nonstormwater discharges. The industrial SWPPP also requires implementation of a monitoring implementation plan and annual comprehensive facility compliance evaluation to assess BMP performance. The industrial SWPPP would include site-specific measures such as:

  - Implement nonstructural source-control BMPs, including good housekeeping, preventative maintenance, spill prevention and response, material handling and storage, waste handling and recycling, employee training, inspections, record keeping and internal reporting, and quality assurance
  - Construct berms, ditches, or simple curbing to prevent run-on and divert runoff water from around the industrial activity area

  - Provide cover over materials, chemicals, and pollutant sources to prevent contact with stormwater and unauthorized nonstormwater discharges; where possible, move outdoor operations indoors
  - Provide secondary containment around storage tanks and other areas to collect any leaks or spills
  - Develop a Spill Prevention, Control and Countermeasures Plan
  - Designate equipment wash areas
  - Comply with hazardous materials laws and regulations, including hazardous materials inventory and emergency response planning, risk planning and accident prevention, employee hazard communication, public notification of potential exposure to specific chemicals, and proper storage of hazardous materials

- Establish track elevation to prevent saturation and infiltration of stormwater into the subballast. During the design storm, maintain 2 feet of freeboard between the subballast and the water surface elevation.
- Minimize impacts to existing flood-control channels. Design and orient bridge piers to be parallel to the water flow direction.
- Maintain bridge deck low chord elevations to be higher than the existing Union Pacific Railroad rail crossings over the Los Angeles River, the Rio Hondo Channel, and the San Gabriel River.
- Conduct engineering analysis of channel hydraulics during detailed final design to evaluate impacts to channel water surface elevation and available freeboard.

4.11.3.2 No Build Alternative

Under the No Build Alternative, the Build Alternative would not be developed. However, several infrastructure and transportation-related projects would be implemented and built in the vicinity of the project alignment. These projects could have impacts to hydrology and surface water bodies, water quality, floodplains, and groundwater. Planned projects would be subject to separate environmental analyses to evaluate potential impacts. Implementation of these projects, including operations and maintenance, would be subject to the regulatory standards, conditions, and permitting requirements discussed in Section 4.9.1.1 in the Geotechnical, Subsurface, and Seismic Section, as applicable to the Build Alternatives. Compliance with these standards would minimize impacts, and residual impacts are expected to be minor. Therefore, no adverse effects to hydrology and surface water bodies, water quality, floodplains, or groundwater are anticipated from the No Build Alternative.

4.11.3.3 Alternative 1: Los Angeles Union Station to Pioneer Station

Hydrology and Surface Water Bodies

Alternative 1 would convert existing pervious areas to impervious area within the Affected Area for water resources. Specifically, increases in impervious surfaces would result from the alignment guideway, stations, parking facilities, local street improvements, MSF, TPSS facilities. Conversion of pervious to impervious area decreases infiltration, which increases runoff volumes and peak flow rates, and changes the timing of the peak flows. Development within the already urbanized corridor would also affect existing drainage systems, including local storm drains and regional flood-control facilities. The project features and BMPs referenced in Section 4.11.3.1 include site design and LID stormwater BMPs that would maintain pre-development flow volumes, peak flow rates, and times of concentration. These BMPs would avoid and minimze adverse effects to the project area. Therefore, Alternative 1 would not result in adverse effects to hydrology and water bodies.

As shown in Table 4.11.3, Alternative 1 would result in conversion of 14.7 acres from pervious area to impervious area, with a total disturbance area of 202.3 acres. Pervious areas that would be converted include unpaved areas within the railroad rights-of-way and presently unpaved parcels that would be developed for other supporting rail facilities. In some areas, existing impervious surface would be removed and replaced by pervious surface such as landscaping or ballast track. For example, within Huntington Park the existing freight track would be relocated west by up to 30 feet to accommodate new LRT tracks. This shift to the west would require replacement of existing paved parking with ballast track. By comparison, 32 percent of the Los Angeles River Watershed (169,800 acres), 40 percent of the Ballona Creek Watershed (33,300 acres), and 29 percent of the San Gabriel River Watershed (118,800 acres) are estimated to be impervious based on assumptions of land use type (LARWQCB 2017a; LACDPW 2017a; Weston Solutions, Inc. 2005).

Table 4.11.3. Change in Impervious Area—Build Alternatives

Alternative	Component	Watershed	Total Disturbed Area[1] (acres)	Existing Impervious Area[2] (acres)	Proposed Impervious Area[3] (acres)	New Impervious Area[4] (acres)
1	Rail/Stations	Los Angeles River, Ballona Creek, San Gabriel River	199.7	34.6	48.2	13.6
	TPSS Facilities	Los Angeles River, San Gabriel River	2.6	1.5	2.6	1.1
	Total	Los Angeles River, Ballona Creek, San Gabriel River	202.3	36.1	50.8	14.7
2	Rail/Stations	Los Angeles River, Ballona Creek, San Gabriel River	199.6	35.0	48.5	13.5
	TPSS Facilities	Los Angeles River, San Gabriel River	3.6	2.2	3.6	1.4
	Total	Los Angeles River, Ballona Creek, San Gabriel River	203.2	37.2	52.1	14.9
3	Rail/Stations	Los Angeles River, San Gabriel River	180.7	25.6	33.0	7.4
	TPSS Facilities	Los Angeles River, San Gabriel River	2.3	1.4	2.3	0.9
	Total	Los Angeles River, San Gabriel River	183.0	27.0	35.3	8.3

Alternative	Component	Watershed	Total Disturbed Area[1] (acres)	Existing Impervious Area[2] (acres)	Proposed Impervious Area[3] (acres)	New Impervious Area[4] (acres)
4	Rail/Stations	Los Angeles River, San Gabriel River	83.0	9.4	12.3	2.9
	TPSS Facilities	Los Angeles River, San Gabriel River	0.8	0.3	0.8	0.5
	Total	Los Angeles River, San Gabriel River	83.8	9.7	13.1	3.4

Source: Metro 2021d
Notes: [1] Total Disturbed Area is the area of disturbed soil generated by the Build Alternatives.
[2] Existing Impervious Area is the pre-construction impervious surfaces that exist within the project right of way.
[3] Proposed Impervious Area is the area consisting of replaced impervious surfaces and new impervious surfaces within the project right of way.
[4] New Impervious Area is the conversion of existing pervious (unpaved) areas to impervious area (e.g., the difference between Existing Impervious Area and Proposed Impervious Area = New Impervious Area).
TPSS = traction power substation

As stated previously, Alternative 1 would be located in a highly urbanized area and along major roadways and rail corridors, which are predominantly paved surfaces or highly compacted unpaved areas with reduced infiltrative capacity. The increase in impervious area resulting from Alternative 1 (14.7 acres) would affect approximately 0.005 percent of the overall watershed area (320,800 acres total) and, therefore, would cause a negligible overall decrease in infiltrative capacity in these watersheds. As such, Alternative 1 would not result in adverse effects to hydrology.

Alternative 1 would cross several LA County, local, and regional storm drainage facilities, which are shown on Figure 4.11-2 and Figure 4.11-3. A list of affected LACFCD regional storm drainage systems for each of the Build Alternatives is provided in Section 5 of the Water Resources Impact Analysis Report (Appendix T).

Modifications to local storm drain systems would be required to discharge runoff from the alignment. New drainage pipes under at-grade track would collect stormwater to earthen or concrete drainage swales running parallel to the track. Drainage systems within the portions of aerial track and near tunnel portals would collect and discharge stormwater to the existing local stormwater infrastructure. These modifications are required and are not expected to adversely affect existing storm drains because the Build Alternatives would not substantially alter the existing drainage patterns.

To minimize impacts to hydrology and water bodies, Alternative 1 would include implementing the applicable design features discussed in Section 4.11.3.1 and would maintain pre-development hydrology characteristics. Alternative 1 would comply with the post-construction and hydromodification requirements of the LA County MS4 NPDES permit, as discussed in Section 3 of the Water Resources Impact Analysis Report (Appendix T). New or modified storm drainage systems would be designed to meet local and regional standards. Under NEPA, Alternative 1 would not result in adverse effects to hydrology and surface water bodies and mitigation would not be required.

Water Quality

Alternative 1 would result in new impervious areas that could increase the concentration and total load of pollutants in stormwater runoff. As indicated in Table 4.11.3, Alternative 1 would result in conversion of 14.7 acres from pervious area to impervious area. Conversion of pervious to impervious area decreases infiltration, which increases the concentration and total pollutant load in stormwater runoff. Because Alternative 1 would be located in a highly urbanized area and along major roadways and rail corridors, and the new impervious surfaces would be distributed across the corridor, the new impervious area would represent a negligible overall increase in total impervious area with respect to the watersheds and the corresponding potential for increases in pollutant loads in stormwater runoff. Implementation of Alternative 1 would be subject to the regulatory standards, conditions, and permitting requirements described in Section 4.9.1.1 in the Geotechnical, Subsurface, and Seismic Section (e.g., CWA and NPDES permit requirements). Project design features described in Section 4.11.3.1 would be implemented to address potential effects and minimize direct impacts to water quality. Under NEPA, Alternative 1 would not result in adverse effects to water quality in the Affected Area for water resources and mitigation would not be required.

Rail Operations: Rail operations would contribute pollutants in concentrations and amounts that are typical for transportation facilities, including total suspended solids, metals, oil and grease, and debris. As discussed in Section 4.11.1.2, impacts to water quality from rail operations can be generally quantified by length of track. Table 4.11.4 summarizes the length of each type of rail alignment (aerial, at-grade, and below-grade). Because Alternative 1 would be located in a highly urbanized area and along existing major roadways and rail corridors, the character and concentration of pollutants in runoff would be similar to existing conditions. Impacts to groundwater from below-grade track are described under the heading "Groundwater." The design features described in Section 4.11.3.1 would be implemented to minimize direct water quality impacts from rail operations. Under NEPA, Alternative 1 would not result in adverse effects to water quality from rail operations.

Table 4.11.4. Aerial, At-Grade, and Underground Track Lengths—Build Alternatives

Alternative	Length of Aerial Track (miles)	Length of At-Grade Track (miles)	Length of Tunnel (miles)
Alternative 1	4.7	12.3	2.3
Alternative 2	4.7	12.3	2.3
Alternative 3	2.6	12.2	N/A
Alternative 4	1.0	5.6	N/A

Source: Metro 2021d
Note: N/A = not applicable

Stations, Parking Facilities, and Local Street Improvements: Development of stations, parking facilities, and local street improvements could result in water quality impacts due to the new impervious surfaces that would be developed. Conversion of pervious to impervious area decreases infiltration, which increases the concentration and total pollutant load in stormwater runoff. In addition to new impervious surfaces, stations, street improvements, and parking facilities would increase vehicle and pedestrian traffic, which is expected to increase loads for pollutants associated with transportation facilities, such as heavy metals,

nutrients, pesticides, sediments, trash and debris, oxygen-demanding substances, and oil and grease (California Stormwater Quality Association [CASQA] 2003). However, the design features described in Section 4.11.3.1 would be implemented to minimize direct water quality impacts resulting from stations, parking facilities, and local street improvements. Under NEPA, Alternative 1 would not result in adverse effects to water quality from stations, parking facilities, and local street improvements.

Traction Power Substations: TPSS sites would result in water quality impacts due to associated new impervious surfaces. Conversion of pervious to impervious area decreases infiltration, which increases the concentration and total pollutant load in stormwater runoff. In addition to new impervious surfaces, TPSS operations and maintenance are expected to increase loads for pollutants associated with industrial activities, such as sediment, nutrients, trash, metals, oil and grease, and organics (CASQA 2003). However, the design features described in Section 4.11.3.1 would be implemented to address and minimize direct impacts to water quality associated with TPSS facilities. Under NEPA, Alternative 1 would not result in adverse effects to water quality from TPSSs.

Floodplains

Alternative 1 would cross three major flood-control channels, each with FEMA-established floodplains: the Los Angeles River, the Rio Hondo Channel, and the San Gabriel River. Historic floodplains are protected from these rivers by levees and engineered channels constructed by the USACE. The FEMA-delineated 100-year floodplains are contained within the banks of the flood-control channels for all three water bodies. Alternative 1 would be designed in compliance with Executive Orders 11988 and 13690. Tracks and structures associated with Alternative 1 would be built above the existing river channel walls or levees. Alternative 1 would not encroach along the length of the river or result in incompatible development within the floodplain. Therefore, impacts would be minimized, and Alternative 1 would not result in adverse effects to floodplains.

The Alternative 1 alignment would cross the Los Angeles River, the Rio Hondo Channel, and the San Gabriel River, and a majority of the southern part of the alignment is located within Flood Zone X. Operation of Alternative 1 would generally be outside the flood-control channels and, therefore, protected from flooding except during extreme events.

For each river crossing, a location hydraulic study was prepared to evaluate the bridge structure's effects on the hydraulic conditions within the river channel and to estimate the change in water surface elevations within the channel. The location hydraulic studies are included as appendices to the Water Resources Impact Analysis Report (Appendix T). The new bridge structures in the Los Angeles River and the Rio Hondo Channel would be constructed in the floodplain north of the existing bridges. To limit impacts to floodwaters and the existing flood-control channels, aerial LRT structures would be elevated above existing levees. Because the bridge piers would be built in the channel, they would be subject to flooding. The impact to water surface elevation in each river channel would be less than 1 foot, and flood flows would continue to be fully contained within the channel (Metro 2017a; 2017b).

The new bridge structure in the San Gabriel River would be constructed in the floodplain to replace the existing bridge. To limit impacts to floodwaters and the existing flood-control channel, aerial LRT structures would be elevated above the existing channel walls. Because the bridge piers would be built in the channel, they would be subject to flooding. Due to the hydraulic conditions in the channel, the impact to water surface elevation would reduce the

water surface in the channel near the project site, and flood flows would continue to be fully contained within the channel (Metro 2017e).

Alternative 1 would not have a longitudinal encroachment into the floodplain or impact beneficial floodplain values. Alternative 1 would not increase flooding risk by supporting incompatible development within the floodplain. Furthermore, compliance with local and federal floodplain regulations would avoid and minimize impacts to the flood-control facilities. Under NEPA, Alternative 1 would not result in adverse effects to floodplains and mitigation would not be required.

Groundwater

This section presents the evaluation of groundwater as a water resource (groundwater supply and quality). Evaluation of groundwater contamination is presented in the Hazardous Materials Impact Analysis Report (Appendix S).

Alternative 1 would increase the impervious area, thereby decreasing groundwater recharge. As Table 4.11.3 shows, Alternative 1 would convert 14.7 acres from pervious area to new impervious area. This represents a 0.008 percent increase in the impervious area in the watershed, which would cause a negligible impact to groundwater recharge. In comparison, 32 percent of the Los Angeles River Watershed (168,800 acres) and 29 percent of the San Gabriel River Watershed (118,800 acres) are estimated to be impervious based on assumptions of land use type (LARWQCB 2017b; LACDPW 2017b; Weston Solutions, Inc. 2005). Groundwater recharge within the Central Basin is primarily from spreading grounds and over land surfaces. By comparison, the entire basin is 177,000 acres (DWR 2004). Because Alternative 1 is in a highly urbanized area and along existing major roadways and rail corridors, the new impervious area would represent a negligible overall increase in total impervious area with respect to the watersheds and the corresponding groundwater recharge areas. To minimize the impacts of new impervious area, Alternative 1 would comply with the post-construction and hydromodification requirements of the LA County MS4 NPDES permit, as discussed in Section 3.3 of the Water Resources Impact Analysis Report (Appendix T) and would implement the design features discussed in Section 4.11.3.1. These design features include LID treatment controls, such as landscaping, to help offset the loss of permeable surfaces. Furthermore, most recharge to the groundwater supply in LA County comes from large, natural stream systems or constructed groundwater recharge basins, which would be minimally affected by the Project. Therefore, Alternative 1 impacts to groundwater resources would be minimized and would not result in adverse effects to groundwater.

A total of 2.3 miles of tunnel would be built under Alternative 1. These tunnels are expected to be built below the groundwater table and could provide a direct path for groundwater exfiltration. Construction and operation of the tunnels could also provide a path for contaminants to enter groundwater, for example by exposing soil and groundwater to construction-related contaminants. These impacts are discussed in detail in Section 4.19.3.11 (construction-related water resources section). To avoid and minimize direct and indirect impacts to groundwater, the tunnel and underground stations would be constructed to preclude groundwater intrusion into the tunnel using a technique similar to that used for the Metro L (Gold) Line tunnels in Boyle Heights. This technique consists of installing a precast concrete lining with rubber gaskets between the tunnel segments to prevent water and gas leakage into the tunnel and stations. In the unlikely event that groundwater accumulates in tunnels during operation, the water would be pumped out and treated to meet municipal

standards before being discharged to the local sewer system. Under NEPA, Alternative 1 would not result in adverse effects to groundwater and mitigation would not be required. An evaluation of groundwater with respect to geotechnical impacts is presented in the *West Santa Ana Branch Transit Corridor Project Final Geotechnical, Subsurface, and Seismic Impact Analysis Report* (Metro 2021e), included as Appendix O to this Draft EIS/EIR, and Section 4.9, Geotechnical, Subsurface, and Seismic, of this Draft EIS/EIR.

4.11.3.4 Alternative 2: 7th Street/Metro Center to Pioneer Station

Alternative 2 would have impacts similar to the impacts identified for Alternative 1 in regard to water quality, floodplains, and groundwater, as described in Section 4.11.3.3. The following section describes Alternative 2 impacts relative to Alternative 1.

Hydrology and Surface Water Bodies

The overall hydrology and surface water body impacts from Alternative 2 would be similar to Alternative 1 because the project footprint and total disturbed areas are similar. As summarized in Table 4.11.3, the Alternative 2 total disturbed area is 203.2 acres, with a total of 14.9 acres that would be converted from pervious area to impervious area due to construction of pavement, rooftops, and other hard surfaces. The increase in impervious area resulting from Alternative 2 would affect approximately 0.005 percent of the overall watershed area (320,800 acres total) and, therefore, would cause a negligible overall decrease in infiltrative capacity in these watersheds.

Alternative 2 would cross several LA County, local, and regional storm drainage facilities (Figure 4.11-2 and Figure 4.11-3). A list of affected LACFCD regional storm drainage systems for each of the Build Alternatives is provided in Section 5 of the Water Resources Impact Analysis Report (Appendix T).

As described in Section 4.11.3.3, project impacts to hydrology and surface water bodies would be avoided or minimized through implementation of the design features described in Section 4.11.3.1; these same features would be implemented for Alternative 2. Under NEPA, Alternative 2 would not result in adverse effects to hydrology and surface water bodies, and mitigation would not be required.

Water Quality

The overall water quality impacts from Alternative 2 would be similar to Alternative 1 because the project footprint and total disturbed areas are similar. As summarized in Table 4.11.3, the total disturbed area for Alternative 2 is 203.2 acres. A total of 14.9 acres would be converted from pervious area to impervious area due to construction of pavement, rooftops, and other hard surfaces. As discussed in Section 4.11.1.2, impacts to water quality from rail operations can be generally quantified by length of track because the track operations areas collect pollutants and could discharge them in stormwater as nonpoint source pollution. As discussed in Section 4.11.3.3, the length of track is a useful way to compare Build Alternatives for their magnitude, quality, and location of potential water quality impacts. Table 4.11.4 summarizes the length of each type of rail alignment (aerial, at-grade, and below-grade). As described in Section 4.11.3.3, project impacts to water quality would be avoided or minimized because Alternative 2 would implement the same design features described in Section 4.11.3.1. Under NEPA, Alternative 2 would not result in adverse effects to water quality and mitigation would not be required.

Floodplains

The potential for floodplain impacts from the Alternative 2 facilities is similar to Alternative 1, as described in Section 4.11.3.3, because Alternative 2 would require the same crossings at the Los Angeles River, Rio Hondo, and San Gabriel River. As described in Section 4.11.3.3, project impacts would be avoided or minimized with implementation of the design features described in Section 4.11.3.1; these same features would be implemented with Alternative 2. Under NEPA, Alternative 2 would not result in adverse effects to floodplains and mitigation would not be required.

Groundwater

The potential for groundwater impacts from the Alternative 2 facilities is similar to Alternative 1, as described in Section 4.11.3.3, because the project footprint and total disturbed areas are similar. As summarized in Table 4.11.3, the total disturbed area of Alternative 2 is 203.2 acres. A total of 14.9 acres would be converted from pervious area to impervious area due to construction of pavement, rooftops, and other hard surfaces.

In the Central Basin, the Alternative 2 facilities are the same as Alternative 1 (see Section 4.11.3.3 and Figure 4.11-1). Therefore, impacts to groundwater would be similar to those at the same facilities for Alternative 1. As described in Section 4.11.3.3, groundwater impacts would be avoided or minimized through implementation of the design features described in Section 4.11.3.1; these same features would be implemented for Alternative 2. Under NEPA, Alternative 2 would not result in adverse effects to groundwater and mitigation would not be required.

4.11.3.5 Alternative 3: Slauson/A (Blue) Line to Pioneer Station

While Alternative 3 would have a shorter alignment and fewer stations than Alternative 1, Alternative 3 would be substantially similar to the impacts identified for Alternative 1 in regard to water quality, floodplains, and groundwater, as described in Section 4.11.3.3. The following sections describe Alternative 3 impacts relative to Alternative 1.

Hydrology and Surface Water Bodies

The overall hydrology and surface water body impacts from Alternative 3 would be reduced compared to Alternative 1 because the project footprint and total disturbed areas are smaller. As summarized in Table 4.11.3, the Alternative 3 total disturbed area is 183 acres, with a total of 8.3 acres that would be converted from pervious area to impervious area due to construction of pavement, rooftops, and other hard surfaces. The increase in impervious area resulting from Alternative 3 would affect approximately 0.003 percent of the overall watershed area (320,800 acres total) and, therefore, would cause a negligible overall decrease in infiltrative capacity in these watersheds.

Alternative 3 would cross several LA County, local, and regional storm drainage facilities, which are shown on Figure 4.11-2 and Figure 4.11-3. A list of affected LACFCD regional storm drainage systems for each of the Build Alternatives is provided in Section 5 of the Water Resources Impact Analysis Report (Appendix T).

In the Los Angeles River and San Gabriel River Watersheds, Alternative 3 facilities would be the same as Alternative 1. Therefore, impacts in this watershed would be similar to those at the same facilities for Alternative 1 (see Section 4.11.3.3). In the Los Angeles River Watershed, the Alternative 3 footprint is smaller; therefore, impacts would be reduced

(Figure 4.11-1). As described in Section 4.11.3.3, project impacts to hydrology and surface water bodies would be avoided or minimized through implementation of the design features described in Section 4.11.3.1; these same features would be implemented for Alternative 3. Under NEPA, Alternative 3 would not result in adverse effects to hydrology and surface water bodies and mitigation would not be required.

Water Quality

The overall water quality impacts from Alternative 3 would be reduced compared to Alternative 1 because the project footprint and total disturbed areas are smaller, and the alignment is shorter. As summarized in Table 4.11.3, the total disturbed area for Alternative 3 is 183 acres. A total of 8.3 acres would be converted from pervious area to impervious area due to construction of pavement, rooftops, and other hard surfaces. As discussed in Section 4.11.1.2, impacts to water quality from rail operations can be generally quantified by length of track. Table 4.11.4 summarizes the length of each type of rail alignment (aerial, at-grade, and below-grade).

In the Los Angeles and San Gabriel River Watersheds, the Alternative 3 facilities would be the same as Alternative 1. Therefore, impacts to water quality in this watershed would be similar to those at the same facilities for Alternative 1 (see Section 4.11.3.3). In the Los Angeles River Watershed, the Alternative 3 footprint is smaller; therefore, water quality impacts would be reduced (Figure 4.11-1). As described in Section 4.11.3.3, project impacts to water quality would be avoided or minimized through implementation of the design features described in Section 4.11.3.1; these same features would be implemented for Alternative 3. Under NEPA, Alternative 3 would not result in adverse effects to water quality and mitigation would not be required.

Floodplains

The potential for floodplain impacts from the Alternative 3 facilities is similar to Alternative 1, as described in Section 4.11.3.3, because Alternative 3 would require the same crossings at the Los Angeles River, Rio Hondo, and San Gabriel River. As described in Section 4.11.3.3, project impacts would be avoided or minimized through implementation of the design features described in Section 4.11.3.1; these same features would be implemented for Alternative 3. Under NEPA, Alternative 3 would not result in adverse effects to floodplains and mitigation would not be required.

Groundwater

The potential for groundwater impacts from the Alternative 3 facilities is similar to Alternative 1, as described in Section 4.11.3.3. The level of groundwater impacts would be less than Alternative 1 because the project footprint and total disturbed areas are smaller and there are no tunnel sections. As summarized in Table 4.11.3, the Alternative 3 total disturbed area is 183 acres. A total of 8.3 acres would be converted from pervious area to impervious area due to construction of pavement, rooftops, and other hard surfaces.

In the Central Basin, the Alternative 3 facilities are the same as Alternative 1 (see Section 4.11.3.3 and Figure 4.11-1). Therefore, impacts to groundwater would be similar to those at the same facilities for Alternative 1. As described in Section 4.11.3.3, all groundwater impacts from Alternative 3 would be avoided or minimized through implementation of the design features described in Section 4.11.3.1; these same features would be implemented for

Alternative 3. Under NEPA, Alternative 3 would not result in adverse effects to groundwater and mitigation would not be required.

4.11.3.6 Alternative 4: I-105/C (Green) Line to Pioneer Station

While Alternative 4 would result in a shorter alignment and fewer stations than Alternative 1, Alternative 4 would be similar to Alternative 1 in regard to water quality, floodplains, and groundwater, as described in Section 4.11.3.3. The following section describes Alternative 4 impacts as related to Alternative 1.

Hydrology and Surface Water Bodies

The potential for hydrology and surface water body impacts from the Alternative 4 facilities is similar to Alternative 1, as described in Section 4.11.3.3. The level of impacts would be less than Alternative 1 because the project footprint and total disturbed areas are smaller. As summarized in Table 4.11.3, the Alternative 4 total disturbed area is 83.8 acres with a total of 3.4 acres that would be converted from impervious area to pervious area based on the construction of pavement, rooftops, and other hard surfaces. The increase in impervious area resulting from Alternative 4 (3.4 acres) would affect approximately 0.001 percent of the overall watershed area (320,800 acres total) and, therefore, would cause a negligible overall decrease in infiltrative capacity in these watersheds.

Alternative 4 would cross several LA County, local, and regional storm drainage facilities, which are shown on Figure 4.11-2 and Figure 4.11-3. A list of affected LACFCD regional storm drainage systems for each of the Build Alternatives is provided in Section 5 of the Water Resources Impact Analysis Report (Appendix T).

In the Los Angeles River and San Gabriel River Watersheds, the Alternative 4 facilities are the same as Alternative 1 (see Section 4.11.3.3 and Figure 4.11-1). Therefore, impacts to hydrology and surface water bodies in this watershed would be similar to those at the same facilities for Alternative 1. Within the Los Angeles River Watershed, the Alternative 4 footprint is considerably smaller (see Figure 4.11-1); therefore, impacts would be reduced. As described in Section 4.11.3.3, hydrology and surface water body impacts from Alternative 4 would be avoided or minimized through implementation of the design features described in Section 4.11.3.1; these same features would be implemented for Alternative 4. Under NEPA, Alternative 4 would not result in adverse effects to hydrology and surface water bodies and mitigation would not be required.

Water Quality

The potential for water quality impacts from the Alternative 4 facilities is similar to Alternative 1, as described in Section 4.11.3.3. The level of water quality impacts would be less than Alternatives 1, 2, and 3 because the project footprint and total disturbed areas are smaller and the alignment is shorter. As summarized in Table 4.11.3, the total disturbed area for Alternative 4 is 83.8 acres. When compared with the existing impervious surface area, 3.4 acres would be converted from impervious area to pervious area based on the construction of pavement, rooftops, and other hard surfaces. Impacts to water quality from rail operations can be generally quantified by length of track. Table 4.11.4 summarizes the length of each type of rail alignment (aerial, at-grade, and below-grade).

In the Los Angeles and San Gabriel River Watersheds, the Alternative 4 facilities are the same as Alternative 1 (see Section 4.11.3.3 and Figure 4.11-1). Therefore, impacts to water quality in this watershed would be similar to those at the same facilities for Alternative 1 within the watershed. Within the Los Angeles River Watershed, the Alternative 4 footprint is considerably smaller; therefore, impacts to water quality would be reduced. As described in Section 4.11.3.3, project impacts to water quality would be avoided or minimized through implementation of the design features described in Section 4.11.3.1; these same features would be implemented for Alternative 4. Under NEPA, Alternative 4 would not result in adverse effects to water quality and mitigation would not be required.

Floodplains

The potential for floodplain impacts from the Alternative 4 facilities is similar to Alternative 1, as described in Section 4.11.3.3. The level of floodplain impacts would be less than Alternative 1 because the project footprint and total disturbed areas are smaller.

In the San Gabriel Watershed, the Alternative 4 facilities are the same as Alternative 1 (see Section 4.11.3.3 and Figure 4.11-1). Therefore, impacts to the San Gabriel River floodplain would be similar to those at the same facilities for Alternative 1 within the watershed. Alternative 4 would not cross the Rio Hondo or the Los Angeles River; therefore, Alternative 4 would not affect these floodplains. As described in Section 4.11.3.3, project impacts would be avoided or minimized through implementation of the design features described in Section 4.11.3.1; these same features would be implemented for Alternative 4. Under NEPA, Alternative 4 would not result in adverse effects to floodplains and mitigation would not be required.

Groundwater

The potential for groundwater impacts from the Alternative 4 facilities is similar to Alternative 1, as described in Section 4.11.3.3. The level of groundwater impacts would be less than Alternative 1 because the project footprint and total disturbed areas are smaller and there are no tunnel sections. As summarized in Table 4.11.3, the total disturbed area for Alternative 4 is 83.8 acres. When compared with the existing impervious surface area, 3.4 acres would be converted from impervious area to pervious area based on the construction of pavement, rooftops, and other hard surfaces.

In the Central Basin, the Alternative 4 facilities are the same as Alternative 1 (see Section 4.11.3.3 and Figure 4.11-1). Therefore, impacts to groundwater would be similar to those at the same facilities for Alternative 1. As described in Section 4.11.3.3, groundwater impacts from Alternative 4 would be avoided or minimized through implementation of the design features described in Section 4.11.3.1; these same features would be implemented for Alternative 4. Under NEPA, Alternative 4 would not result in adverse effects to groundwater and mitigation would not be required.

4.11.3.7 Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station

Hydrology and Surface Water Bodies: Design Options 1 and 2 are substantially similar to Alternative 1 in regard to water resources conditions, potential impacts, and effect determinations. Therefore, conclusions provided for Alternative 1 are also applicable to the design options. Under NEPA, Design Options 1 and 2 would not result in adverse effects to hydrology and surface water bodies.

Water Quality: Design Options 1 and 2 would be substantially similar to Alternative 1 in regard to effects to water quality. Therefore, the conclusions provided for Alternative 1 are also applicable to the design options. Under NEPA, Design Options 1 and 2 would not result in adverse effects to water quality.

Floodplains: Design Options 1 and 2 are outside of the regulatory floodplains. Under NEPA, they would not generate floodplain impacts, and no adverse effects would occur.

Groundwater: Design Options 1 and 2 are substantially similar to Alternative 1 in regard to groundwater conditions, potential impacts, and effect determinations. Therefore, the conclusions provided for Alternative 1 are also applicable to the design options. Under NEPA, Design Options 1 and 2 would not result in adverse effects to groundwater.

4.11.3.8 Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options

Hydrology and Surface Water Bodies: The potential for hydrology and surface water body impacts from the Paramount and Bellflower MSF site options would be due to changes in impervious surface. While the MSFs are not immediately adjacent to surface waters, the Paramount MSF is located in the Los Angeles River Watershed and the Bellflower MSF is located in the Los Cerritos Channel Subwatershed of the San Gabriel River Watershed. The change in impervious area related to the MSFs is provided in Table 4.11.5. To minimize impacts to hydrology and water bodies from MSFs, the Build Alternatives would implement the design features discussed in Section 4.11.3.1 and would maintain pre-development hydrology characteristics. The Build Alternatives would comply with the post-construction and hydromodification requirements of the LA County MS4 NPDES permit, as discussed in Section 3 of the Water Resources Impact Analysis Report (Appendix T). New or modified storm drainage systems would be designed to meet local and regional standards. Under NEPA, no adverse effects to hydrology and surface water bodies from the MSF would occur, regardless of facility location.

Table 4.11.5. Maintenance and Storage Facility Change in Impervious Area

Component	Watershed	Total Disturbed Area (acres)	Existing Impervious Area (acres)	Proposed Impervious Area (acres)	New Impervious Area[1] (acres)
Bellflower MSF	Los Angeles River, Ballona Creek, San Gabriel River	21.5	8.8	21.5	12.7
Paramount MSF	Los Angeles River, San Gabriel River	22.2	20.9	22.2	1.3

Source: Metro 2021d
Notes: [1] New Impervious Area is the conversion of existing pervious (unpaved) areas to impervious area.
MSF = maintenance and storage facility

Water Quality: Development of an MSF at the Bellflower or Paramount site option would result in water quality impacts due to the new impervious surfaces required. Conversion of pervious to impervious area decreases infiltration, which increases the concentration and total pollutant load in stormwater runoff. In addition to new impervious surfaces, the maintenance and storage activities are expected to increase pollutant loads for pollutants

associated with industrial activities, such as sediment, nutrients, trash, metals, oil and grease, pesticides, and organics (CASQA 2003). However, design features discussed in Section 4.11.3.1 would be implemented to minimize direct impacts to water quality associated with MSFs. Under NEPA, the Paramount and Bellflower MSF site options would not result in adverse effects related to water quality.

Floodplains: Potential MSFs at Bellflower or Paramount are located outside of the 100-year flood zone. Under NEPA, the Paramount and Bellflower MSF site options would not result in adverse effects related to floodplains.

Groundwater: The Bellflower and Paramount MSF site options are outside of groundwater recharge areas. Under NEPA, no adverse effects to these groundwater recharge facilities would occur as a result of either MSF site option.

4.11.4 Project Measures and Mitigation Measures

With implementation of the design features described in Section 4.11.3.1, operation and maintenance of the Build Alternatives would not result in adverse effects to water resources; therefore, additional project and mitigation measures are not required.

4.11.5 California Environmental Quality Act Determination

4.11.5.1 Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

No Project Alternative

Under the No Project Alternative, implementation of the Build Alternatives would not be introduced into the Affected Area for water resources, and no changes or impacts consistent with the Build Alternatives would occur. Therefore, there would be no impacts to surface or groundwater quality and mitigation would not be required.

Build Alternatives, Design Options, and Maintenance and Storage Facilities

As described in Section 4.11.3, the Build Alternatives would result in new impervious areas that could increase the concentration and total load of pollutants in stormwater runoff. Additionally, rail operations would contribute pollutants in concentrations and amounts that are typical for transportation facilities, including total suspended solids, metals, oil and grease, and debris. Impacts to water quality from rail operations can be generally quantified by length of track. As described in Section 4.11.3, the Build Alternatives would be subject to the LA County MS4 NPDES permit and IGP during the operational phase. The MS4 NPDES permit requires implementation of site design, source control, and treatment control BMPs to the maximum extent practical. The IGP requires preparation of an industrial SWPPP and a monitoring plan for industrial facilities, including vehicle maintenance facilities associated with transportation operations. With implementation of the design features described in Section 4.11.3.1, the Build Alternatives would not result in adverse effects to water quality; therefore, mitigation would not be required.

4.11.5.2 Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

No Project Alternative

Under the No Project Alternative, the Build Alternatives would not be introduced and no changes to groundwater resources consistent with the Build Alternatives would occur within the Affected Area for water resources. Therefore, there would be no impacts to groundwater recharge and mitigation would not be required.

Build Alternatives, Design Option, and Maintenance and Storage Facilities

The Build Alternatives would result in 3.4 to 14.9 acres of new impervious area, as shown in Table 4.11.3 depending on the alternative, within the Central Basin. In addition, the Bellflower and Paramount MSF site options would result in 12.7 and 1.3 acres of new impervious area within the Central Basin, respectively, as shown in Table 4.11.5. Groundwater recharge within the Central Basin is primarily from spreading grounds and over land surfaces. In comparison, the entire basin is 177,000 acres (DWR 2004). Spreading grounds are located along the Los Angeles River, the Rio Hondo Channel, and the San Gabriel River. The Rio Hondo Coastal Basin Spreading Grounds are 3.5 miles northeast of the Rio Hondo Channel crossing. The Dominguez Gap Spreading Grounds are approximately 6 miles south of the Los Angeles River crossing. The San Gabriel Coastal Basin Spreading Grounds are approximately 5 miles north of the San Gabriel River crossing. These facilities are outside of the Affected Area for water resources; therefore, no significant impacts to these groundwater recharge facilities from the Build Alternatives would occur. Direct precipitation on the basin within the Affected Area for water resources is not a major source of groundwater recharge. However, groundwater recharge could be impeded if a substantial amount of pervious area were converted to impervious surfaces. The increase in impervious surfaces within the Affected Area for water resources would be a negligible fraction of the entire aquifer area and would not impact the spreading grounds; therefore, it would not significantly affect groundwater recharge.

To minimize the impacts of new impervious area, the Project would comply with the post-construction and hydromodification requirements of the LA County MS4 NPDES permit, as discussed in Section 3.3 of the Water Resources Impact Analysis Report (Appendix T) and would implement the design features discussed in Section 4.11.3.1. These design features include LID treatment controls, such as landscaping, to help offset the loss of permeable surfaces. Furthermore, most recharge to the groundwater supply in LA County comes from large, natural stream systems or constructed groundwater recharge basins, which would be minimally affected by the Project. Therefore, impacts to groundwater resources would be minimized and the Build Alternatives would not result in adverse effects to groundwater.

With implementation of the Build Alternative design features described in Section 4.11.3.1, operations of the Build Alternatives, MSF, and design options would not substantially degrade groundwater quality, substantially interfere with groundwater recharge, or deplete groundwater resources. Therefore, the impacts would be less than significant, and mitigation would not be required.

Further, as discussed in Section 4.10.3 in the Hazards and Hazardous Materials Section of this Draft EIS/EIR, sites with known groundwater contamination are present within the Affected Area for water resources of Alternatives 1, 2, 3, and 4, Design Options 1 and 2, and the Paramount MSF site option. Depending on the alternative selected for implementation and the final design of the Project, it may be necessary to implement long-term groundwater monitoring or dewatering during operation. For example, tunnels may be placed in locations where long-term groundwater dewatering is necessary to prevent tunnel flooding. If this location also corresponds to a known groundwater release site, the dewatering activity would also need to include the handling of contaminated groundwater. If long-term groundwater monitoring or dewatering is necessary at a location where groundwater has been contaminated by hazardous materials, groundwater dewatering would affect operation of the Project by requiring ongoing management or treatment. This would be an adverse effect during operation.

Should long-term contaminated groundwater dewatering be necessary, HAZ PM-2 (Disposal of Groundwater [Operation]) would be implemented. This measure requires LARWQCB consultation and permit compliance, which may include water disposal to the sanitary sewer or the proper onsite management of contaminated groundwater and disposal or recycling of contaminated groundwater offsite at appropriate waste management facilities. With implementation of this project measure, no adverse effects related to groundwater monitoring or dewatering would occur during operation.

4.11.5.3 Substantially alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation onsite or offsite?

No Project Alternative

Under the No Project Alternative, the Build Alternatives would not be introduced and no changes consistent with the Build Alternatives would occur within the Affected Area for water resources. Therefore, there would be no impacts to drainage patterns in a manner that would result in substantial erosion or siltation, and mitigation would not be required.

Build Alternatives, Design Options, and Maintenance and Storage Facilities

The Build Alternatives would require site grading. While there would be an overall increase in impervious surfaces, the increase would not substantially alter drainage patterns. Storm drains would be modified as needed, but the existing topography would be retained and the existing storm drainage systems preserved as much as possible. Therefore, the existing drainage pattern of the site and its surroundings would not be changed in a manner that would result in significant erosion or siltation onsite or offsite. Implementation of the Build Alternatives would not substantially increase runoff that could contribute to exceedance of the capacity of stormwater drainage systems. With implementation of the design features described in Section 4.11.3.1, the Build Alternatives would not affect drainage patterns in a manner that would result in substantial erosion or siltation. Therefore, the impact would be less than significant, and mitigation would not be required.

4.11.5.4 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?

No Project Alternative

Under the No Project Alternative, the Build Alternatives would not be introduced and no changes consistent with the Build Alternatives would occur within the Affected Area for water resources. Therefore, there would be no impacts to drainage patterns in a manner that would result in flooding, and mitigation would not be required.

Build Alternatives, Design Options, and Maintenance and Storage Facilities

The Build Alternatives would require site grading and an overall increase in impervious surfaces. Storm drains would be modified as needed, and existing storm drainage systems would be preserved as much as possible for use during project operation. The existing topography within the area would be retained and drainage patterns would be preserved as much as possible. To minimize the impacts of new impervious area, the Build Alternatives would implement the design features discussed in Section 4.11.3.1 and would maintain pre-development hydrology characteristics. The Build Alternatives would comply with the post-construction and hydromodification requirements of the LA County MS4 NPDES permit, as discussed in Section 3 of the Water Resources Impact Analysis Report (Appendix T). New or modified storm drainage systems would be designed to meet local and regional standards. Therefore, the Build Alternatives would not substantially increase the rate or amount of runoff from the project site that could cause flooding on- or offsite; impacts would be less than significant, and mitigation would not be required.

4.11.5.5 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

No Project Alternative

Under the No Project Alternative, the Build Alternatives would not be introduced, and no changes consistent with the Build Alternatives would occur within the Affected Area for water resources. Therefore, there would be no impacts to drainage patterns in a manner that would contribute to exceedance of the capacity of the stormwater drainage systems or that would provide substantial additional sources of polluted runoff; therefore, mitigation would not be required.

Build Alternatives, Design Options, and Maintenance and Storage Facilities

The Build Alternatives would not substantially alter drainage patterns or stream courses or substantially increase runoff that would contribute to exceedance of the capacity of stormwater drainage systems, as described in Section 4.11.3. The Build Alternatives would also not provide additional sources of polluted runoff. With implementation of the design features described in Section 4.11.3.1, the Build Alternatives would not result in adverse effects related to stormwater runoff. Therefore, this impact would be less than significant, and mitigation would not be required.

4.11.5.6 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through addition of impervious surfaces, in a manner which would impede or redirect flood flows?

No Project Alternative

Under the No Project Alternative, the Build Alternatives would not be introduced, and no changes consistent with the Build Alternatives would occur within the Affected Area for water resources. Therefore, there would be no impacts to drainage patterns in a manner that would impede or redirect flood flows, and mitigation would not be required.

Build Alternatives, Design Options, and Maintenance and Storage Facilities

The Build Alternatives would cross three major flood-control channels, each with FEMA-established floodplains: the Los Angeles River, the Rio Hondo Channel, and the San Gabriel River. New bridges with piers or columns would be constructed within each of these flood-control channels. While each crossing would result in some change to the water surface elevation in each channel, changes to the water surface elevation at each river crossing are anticipated to be minor.

The floodplains are protected by existing levees or channel walls. The Project would not alter the ability of the channel to convey 100-year flows, and there would be negligible change to the floodplain extents. In addition, tracks and aerial structures associated with the Build Alternatives would be built above the existing river channel walls or levees. Therefore, floodplain impacts would be minimized to the greatest extent practicable.

Long-term indirect impacts to floodplains would be unlikely as a result of the Build Alternatives because the floodplains are protected by levees and the surrounding areas are already urbanized.

With implementation of the design features described in Section 4.11.3.1, the Build Alternatives are not expected to impede or redirect flood flows; impacts would be less than significant; and mitigation is not required.

4.11.5.7 In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

No Project Alternative

Under the No Project Alternative, the Build Alternatives would not be introduced, and no changes consistent with the Build Alternatives would occur within the Affected Area for water resources. Therefore, there would be no impacts on flood, tsunami, or seiche zones that would increase the risk of pollution due to inundation, and mitigation would not be required.

Build Alternatives, Design Options, and Maintenance and Storage Facilities

Alternatives 1, 2, and 3 would construct new bridges across the Los Angeles River and the Rio Hondo Channel, while all four Build Alternatives would construct new bridges at the San Gabriel River. New bridge deck structures would be built above the existing river channel walls or levees, with new bridge piers or columns built within the channels. Location hydraulic studies were prepared to evaluate the Build Alternatives' impacts to each river (Metro 2017a; 2017b; and 2017e). The new bridges would raise the water surface elevation within the channel; however, the Build Alternatives would not alter the ability of the channel to convey the 100-year flows and there would be a negligible change to the floodplain extents.

Therefore, the Build Alternatives are not at risk to release pollutants due to project inundation and impacts would be less than significant. Additionally, the project alignment would be located more than 20 miles from the ocean and, therefore, would not be within areas potentially affected by seiches or tsunamis. As a result, impacts associated with these events would not occur. The Build Alternatives would not result in adverse effects related to pollutant releases due to inundation; therefore, impacts would be less than significant and mitigation would not be required.

4.11.5.8 Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

No Project Alternative

Under the No Project Alternative, the Build Alternatives would not be introduced, and no changes consistent with the Build Alternatives would occur within the Affected Area for water resources. Therefore, there would be no impacts to implementation of a water quality control plan or sustainable groundwater management plan, and mitigation measures would not be required.

Build Alternatives, Design Options, and Maintenance and Storage Facilities

Operation and maintenance activities of the Build Alternatives, MSF, and Design Options 1 and 2 could increase pollutant discharges to stormwater and/or groundwater that are typical for rail facilities (e.g., oils and grease, metals, solvents, pesticides). The Build Alternatives would be subject to the IGP and the LA County MS4 NPDES permit during the operational phase and the CGP during the construction phase, each pursuant to the Los Angeles Basin Plan. The MS4 NPDES permit requires implementation of site design, source control, and treatment control BMPs to the maximum extent practical. The stormwater IGP (Order No. 2014-0057-DWQ) requires preparation of an industrial SWPPP and a monitoring plan for industrial facilities, including the MSF. Compliance with these permits would be required by the LARWQCB as a condition of approval of the Section 401 Water Quality Certification or as conditions of various NPDES permits prior to implementation. Further, all phases of construction would be subject to the CGP. The Build Alternatives are located within the Central Basin, which is an adjudicated basin and, therefore, not required to develop a groundwater management plan. The Central Basin is actively managed by WRD and subject to annual reporting for monitoring of groundwater levels and quality to confirm proper resource management. Therefore, the Build Alternatives would not obstruct implementation of a water quality control plan or sustainable groundwater management plan; impacts would be less than significant; and mitigation would not be required.

4.12 Energy

This section summarizes the energy consumption under existing conditions and the 2042 future year No Build and Build Alternatives, including design options and MSF site options, and the potential adverse effects and impacts on energy resources. Information in this section is based on the *West Santa Ana Branch Transit Corridor Project Final Energy Impact Analysis Report* (Metro 2021h) (Appendix U).

4.12.1 Regulatory Setting and Methodology

4.12.1.1 Regulatory Setting

Federal

Council on Environmental Quality (CEQ) (40 CFR § 1502.16 Environmental Consequences): CEQ regulations § 1502.16 outlines the discussion of environmental consequences and the scientific and analytical basis for comparing alternatives within an EIS under NEPA. 40 CFR § 1502.16(a)(6) states that discussions of environmental consequences in an EIS when comparing alternatives shall include energy requirements and conservation potential of various alternatives and mitigation measures.

Executive Order 13834: Established goals for energy efficiency improvements.

Energy Policy Act of 2005: The Energy Policy Act promotes alternative fuels and advanced vehicles' production and use. This Act amends existing regulations, including fuel economy testing procedures and Energy Policy Act of 1992 requirements for federal, state, and alternative fuel provider fleets.

Energy Independence and Security Act of 2007: This Act consists of provisions to increase energy efficiency and the availability of renewable energy through the Corporate Average Fuel Economy and the Renewable Fuels Standard.

State

EO B-30-15: EO B-30-15 established state GHG emission targets to reduce GHG emissions 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050.

California Code of Regulations, Energy Efficiency Standards: Energy consumption of new buildings in California is regulated by State Building Energy Efficiency Standards contained in the California Code of Regulations, Title 24, Part 2, Chapter 2-53. Title 24 applies to all new construction of both residential and nonresidential buildings, and regulates energy consumed for heating, cooling, ventilation, water heating, and lighting.

California Transportation Plan: This statewide, long-range transportation plan defines performance-based goals, policies, and strategies to achieve an integrated, multimodal transportation system. Strategies to achieve maximum feasible emissions reductions include alternative fuels, new vehicle technology, and tailpipe emissions reductions.

Assembly Bill 1493: AB 1493 amended the Clean Car Standards (Chapter 200, Statutes of 2002) that require reductions in GHG emissions in new passenger vehicles from 2009 through 2016. The Advanced Clean Cars program extends AB 1493 for model years 2017 to 2025. This program promotes clean fuel technologies (i.e., plug-in hybrids, battery electric vehicles, compressed natural gas vehicles, hydrogen powered vehicles), reduces smog, and provides fuel cost savings.

Senate Bill 743: SB 743 encourages land use and transportation planning decisions and investments to reduce VMT that contribute to GHG emissions, as required by AB 32. SB 743 requires the Office of Planning Research to develop revisions to the *CEQA Guidelines* and establish criteria to determine the significance of transportation impacts of projects within transit priority areas.

SB 350: SB 350 established a 2030 GHG reduction target of 40 percent below 1990 levels and sets targets for energy efficiency and renewable electricity, among other actions aimed at reducing GHG emissions across the energy and transportation sectors.

SB 375: SB 375 addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. SB 375 required the CARB to adopt regional GHG reduction targets for the automobile and light-truck sector for 2020 and 2035, and task regional metropolitan planning organizations with the preparation of sustainable communities strategies within their regional transportation plans. The SCAG 2016-2040 RTP/SCS (SCAG 2016a) includes a commitment to reduce emissions from transportation sources to comply with SB 375. The *2016-2040 RTP/SCS* states that the region will meet or exceed the SB 375 per capita targets, lowering regional per capita GHG emissions to 8 percent below 2005 per capita emissions levels by 2020, 18 percent below by 2035, and 22 percent below by 2040.

SB X1-2 and SB 250: SB X1-2 requires all California utilities to generate 33 percent of their electricity from renewables by 2020. SB 250 requires retail seller and publicly owned utilities to procure 50 percent of their electricity from eligible renewable energy resources by 2030.

Regional and Local

Metro Energy Conservation and Management Plan (ECMP) (Metro 2011a): The ECMP complements Metro's 2007 *Energy and Sustainability Policy* (Metro 2007), focusing on electricity for rail vehicle propulsion, electricity, and natural gas for rail and bus facility purposes, and the application of renewable energy.

Additional applicable regional and local plans, policies, and regulations regarding energy include the SCAG 2016-2040 RTP/SCS (SCAG 2016a), the *Metro Energy and Sustainability Policy* (Metro 2007), the *Metro Climate Action and Adaptation Plan* (Metro 2019a), the *Metro Sustainable Rail Plan* (Metro 2013b), the *Metro Moving Beyond Sustainability Strategic Plan 2020* (Metro 2020f), and the *Los Angeles Department of Water and Power Strategic Long-Term Resource Plan* (LADWP 2017).

4.12.1.2 Methodology

The assessment of potential energy impacts associated with the Project considers the Affected Area for energy to be the geographic region served by the energy resource suppliers for electricity and natural gas: the LADWP and Southern California Edison (SCE) service areas for electricity and the Southern California Gas Company (SoCalGas) service area for natural gas. The transportation fuels analysis for regional on-road vehicle travel considers the SCAG region to be the Affected Area for energy.

The operational analysis considers direct energy consumption from electricity used to power the transit system and operations at the MSF, as well as indirect energy consumption resulting from changes in overall regional on-road VMT. Energy resource expenditures that were quantified for each analytical scenario include: direct electricity consumption associated

with rail vehicle propulsion and track and station operations; direct electricity and natural gas consumption associated with MSF operations; direct fossil fuel consumption associated with MSF operations vehicle trips; indirect electricity associated with the provision of water resources at the MSF; and indirect changes in regional transportation fuels consumption spurred by displaced vehicle trips from transit ridership.

Table 4.12.1 presents a summary of the annual LRT operating miles for the project corridor under each alternative and the corresponding regional VMT on the roadway network that were used to estimate direct rail propulsion and facility operations electricity consumption and indirect transportation fuels consumption, respectively. The LRT miles displayed include anticipated annual LRT miles traveled during revenue service hours when the system would be transporting passengers and accounts for a 5 percent buffer adjustment for miles traveled when trains are out of service.

Table 4.12.1. Countywide Vehicle Miles Traveled and Project Corridor LRT Revenue Miles

	Condition/Alternative	Regional Roadway VMT (annual, millions)	LRT Miles (annual)
CEQA Existing Baseline Year 201	Existing	160,746	N/A
	Existing + Alternative 1	160,671	2,109,180
	Existing + Alternative 2	160,672	2,120,399
	Existing + Alternative 3	160,734	1,604,323
	Existing + Alternative 4	160,721	706,800
	Existing + Design Option 1	160,664	2,109,180
	Existing + Design Option 2	160,670	2,109,180
NEPA/CEQA Future Baseline Year 2042 [1]	No Build Alternative	210,396	N/A
	Alternative 1	210,261	2,109,180
	Alternative 2	210,266	2,120,399
	Alternative 3	210,372	1,604,323
	Alternative 4	210,351	706,800
	Design Option 1	210,245	2,109,180
	Design Option 2	210,258	2,109,180

Source: Metro 2021j
Notes: [1] *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority* (2013) 57 Cal.4th 439 held that use of dual baselines is appropriate under CEQA provided that one is the existing baseline. The CEQA analysis utilizes the Existing Baseline Year 2017 and a Future Baseline Year 2042.
A 5 percent buffer was added to revenue LRT car mile estimates to account for out-of-service miles.
CEQA = California Environmental Quality Act; LRT = light rail transit; N/A = Not Applicable; NEPA = National Environmental Policy Act; VMT = vehicle miles traveled

Energy intensity factors obtained from the *2017 Metro Energy and Resource Report* (Metro 2017c) were used to estimate direct LRT and station operation electricity consumption for the No Build, Build Alternatives, and Design Options. Energy intensity factors relate energy inputs (British thermal units (BTUs) consumed) to resulting output (miles traveled). Across its system, Metro estimates that for every mile of LRT travel, approximately 6,635 BTUs (7

megajoules) of electricity is consumed. This energy intensity factor was applied to the LRT miles presented in Table 4.12.1 to estimate annual LRT propulsion energy consumption.

For the purposes of this analysis, energy intensity related to on-road vehicle travel is defined as the ratio of energy inputs to the useful outputs from that process (e.g., gallons of fuel per passenger-mile). The CARB EMFAC2017 mobile source emissions model provides estimates of gallons of gasoline or diesel fuel burned per mile traveled for a given year, vehicle fleet mix, and speed. Generally, traffic in the Affected Area for energy is assumed to be approximately 7 percent trucks based on the Metro regional model. Annual indirect on-road vehicle travel fuel consumption was estimated using the annual VMT data organized by speed bins of 5-mph increments and the corresponding EMFAC2017 fuel consumption factors for the on-road vehicle fleet traveling at the designated speeds. The annual roadway network VMT energy consumption was estimated using the fuel energy content factors derived by the Alternative Fuels Data Center (United States Department of Energy 2014): approximately 118,223 BTU per gallon gasoline and approximately 133,489 BTU per gallon diesel.

In addition to direct electricity associated with project corridor rail propulsion and facility operations and indirect changes to regional on-road transportation fuels consumption, the assessment of potential impacts related to energy consumption analyzed direct and indirect energy associated with operation of the MSF. The California Emissions Estimator Model (CalEEMod, version 2016.3.2) is the preferred land use development emissions model for use in California. CalEEMod was used to estimate direct electricity and natural gas consumption associated with MSF operations, direct transportation fuels consumption associated with MSF vehicle trips, and indirect electricity consumption associated with water conveyance to and from the MSF.

4.12.2 Affected Environment/Existing Conditions

4.12.2.1 State

California consumes more energy than any other state except Texas but ranks 49th among the 50 states and the District of Columbia for energy consumption per person (SCAG 2016a). Current annual energy consumption in California (including transportation) is approximately 7,830 trillion BTUs, or approximately 8.0 percent of the nation's energy consumption. California's energy consumption comprises 17.7 percent residential sector uses, 18.9 percent commercial sector uses, 23.7 percent industrial sector uses, and 39.8 percent transportation sector uses. Natural gas and gasoline are the most consumed resources and account for 28.7 percent and 21.9 percent of all statewide energy consumption, respectively.

4.12.2.2 Regional

Transportation accounts for approximately 59 percent of all energy use in SCAQMD jurisdiction, followed by residential energy consumption at 17 percent (SCAQMD 2017). According to the SCAG 2016-2040 RTP/SCS, approximately 417.7 million miles per day were traveled in 2016 and approximately 453.8 million miles per day are expected to be traveled under the 2040 plan conditions (SCAG 2016a). This would result in an overall increase in transportation energy use within the SCAG region due to fuel combustion from on-road vehicles. A reduction in VMT due to the implementation of alternative modes of transportation could reduce energy use within the region.

4.12.2.3 Local

Metro's contribution to regional energy consumption includes on-road vehicle fuel use (primarily compressed natural gas) and electricity for rail vehicle propulsion and maintenance and administrative facility operation. The *2017 Energy and Resource Report* (Metro 2017c) examined Metro energy use for the 2016 calendar year. Table 4.12.2 presents the Metro system energy consumption by end use between 2012 and 2016. In total, rail propulsion resulted in the consumption of approximately 207,921,473 kilowatt hours (kWh) of energy in the year 2016.

Table 4.12.2. Metro Energy Consumption

End Use	2012	2013	2014	2015	2016
Vehicle Fuel (GGE)	42,490,623	43,930,100	44,710,242	43,995,037	42,995,037
Rail Propulsion (kWh)	199,093,552	229,866,746	210,937,940	198,921,473	207,921,473
Facility Energy (kWh)	97,500,044	90,099,301	94,144,097	116,146,856	119,148,856

Source: Metro 2017
Note: GGE = gasoline gallon equivalent; kWh = kilowatt hours

Electricity consumed by project facilities would be provided by LADWP and SCE, and natural gas consumed at the MSF would be provided by SoCalGas.

LADWP: LADWP serves an area covering 465 square miles that includes over 4 million residents and 1.4 million power customers. As of 2016, energy sources consisted of 29 percent natural gas, 29 percent renewable sources, 19 percent coal, 9 percent nuclear, 6 percent unspecified sources, and 3 percent hydroelectric resources. Total daily generation capacity is over 7,880 megawatts (LADWP 2016). According to California Energy Commission (CEC) data, LADWP customers consumed a total of approximately 25,135,339 megawatt hours of electricity in 2016. Metro's 2016 systemwide electricity consumption was equivalent to approximately 1.3 percent of total annual LADWP consumption.

SCE: SCE serves an area of 50,000 square miles, including 15 million people, 180 incorporated cities, and 15 counties. In 2015, SCE delivered more than 87 billion kWh of electricity to its service area (SCE 2018). In 2016, SCE energy sources consisted of 41 percent unspecified sources, 28 percent renewable sources, 19 percent natural gas, 6 percent hydroelectric, and 6 percent nuclear (CEC 2017). According to CEC data, SCE customers consumed approximately 102,319,743 megawatt hours of electricity in 2016. Metro's 2016 systemwide electricity consumption was equivalent to approximately 0.3 percent of total annual SCE consumption.

SoCalGas: SoCalGas is the primary provider of natural gas to the Southern California region. In 2016, SoCalGas customers consumed approximately 7,258,720,922 Therms of natural gas energy according to the CEC database. Metro 2016 operations consumed approximately 1,005,242 Therms of natural gas through facilities and approximately 48,281,943 Therms of natural gas through the bus fleet. Total annual Metro natural gas consumption represents less than 1 percent of SoCalGas customers.

4.12.3 Environmental Consequences/Environmental Impacts

4.12.3.1 No Build Alternative

The No Build Alternative includes planned infrastructure and transportation-related projects but would exclude the facilities and infrastructure of the Build Alternatives that would increase energy consumption or require energy infrastructure to meet project demands. Energy use for the No Build Alternative is best represented in terms of transportation energy and regional VMT. The No Build Alternative includes general population growth that would lead to increased vehicle use and energy consumption. The No Build Alternative VMT also accounts for the existing transit system and related future projects, including projects affecting the regional transportation system (e.g., highway widening). Annual VMT in the region would increase from approximately 463 million VMT (2018) to approximately 606 million VMT (2042) (Metro 2021h). However, as alternative-fueled passenger vehicles (e.g., electric and natural gas) are added to the fleet and fuel efficiency improves, aggregate average fleetwide fuel consumption per mile traveled for cars would decline.

CARB EMFAC2017 mobile source emissions model provides fuel consumption factors based on vehicle type, year, and speed. Table 4.12.3 shows energy use for the existing condition and the No Build Alternative based on regional on-road VMT. The No Build Alternative would result in 11.0 percent less transportation energy use than the existing condition and would not introduce additional energy consumption in 2042. Under NEPA, the No Build Alternative would not result in adverse effects related to operational energy consumption.

Table 4.12.3. No Build Alternative Operational Energy Consumption Based on VMT

Existing (2017) (annual MMBTU)	No Build Alternative (2042) (annual MMBTU)	Percent Change
907,145,388	807,680,340	-11.0%

Source: Metro 2021h
Note: MMBTU = million British thermal units; VMT = vehicle miles traveled

4.12.3.2 Alternative 1: Los Angeles Union Station to Pioneer Station

Alternative 1 would directly result in the consumption of energy related to the LRT propulsion systems, lighting and accessory equipment at station platforms, and operation of the MSF (i.e., electricity and natural gas). Alternative 1 consists of 19.3 miles of alignment and includes 11 stations. Electricity would be provided to the LRT line by TPSS units and to stations by traditional distribution connection facilities (e.g., power poles, underground wires, and transmission lines). Alternative 1 would indirectly change regional energy consumption through changes in regional VMT. As shown in Table 4.12.4, Alternative 1 would reduce annual regional energy consumption from the No Build Alternative by 626,621 million BTU (MMBTU) (0.08 percent net reduction). The reduction in regional energy consumption represents a conservation potential of 626,621 MMBTU annually relative to the No Build Alternative, and the reduction is consistent with objectives of regional planning strategies to reduce reliance on fossil fuels and non-renewable resources. Although implementation of Alternative 1 would involve construction of power poles, transmission lines, and connections to the existing grid, it would not require the expansion of existing generation facilities and would not interfere with LADWP and SCE efforts to augment renewable energy supply. Under NEPA, Alternative 1 would not result in an adverse effect related to operational energy consumption.

Table 4.12.4. Operational Energy Consumption under the Build Alternatives (2042)

Component	Annual Energy Consumption (in MMBTU)						
	No Build	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Design Option 1	Design Option 2
Roadway VMT	807,680,340	807,032,073	807,143,051	807,539,033	807,548,369	806,997,571	807,040,451
LRT/Station energy	-	13,994	14,068	10,644	4,689	13,994	13,994
MSF[1]	-	7,652	7,652	7,652	7,652	7,652	7,652
Total Energy	**807,680,340**	**807,053,719**	**807,164,771**	**807,557,329**	**807,560,710**	**807,019,217**	**807,062,097**
Change from No Build Alternative	**-**	**(626,621)**	**(515,569)**	**(123,011)**	**(119,630)**	**(661,123)**	**(618,243)**
Percent Change from No Build	**-**	**(0.08%)**	**(0.06%)**	**(0.02%)**	**(0.01%)**	**(0.08%)**	**(0.08%)**

Source: Metro 2021h
Notes: [1] The Paramount MSF site option would consume approximately 7,652 MMBTU annually, and the Bellflower MSF site option would consume approximately 6,912 MMBTU annually. For simplicity, the higher MSF energy consumption associated with the Paramount MSF site option is shown.
LRT = light rail transit; MMBTU = million British thermal units; MSF = maintenance and storage facility; VMT = vehicle miles traveled; ( ) = decrease/reduction

4.12.3.3 Alternative 2: 7th Street/Metro Center to Pioneer Station

The direct and indirect consumption of energy for Alternative 2 would be the same as Alternative 1. Alternative 2 consists of 19.3 miles of alignment and includes 12 stations. As shown in Table 4.12.4, Alternative 2 would reduce regional energy consumption from the No Build Alternative by 515,569 MMBTU (0.06 percent net reduction). The reduction in regional energy consumption represents a conservation potential of 515,569 MMBTU annually relative to the No Build Alternative, and the reduction is consistent with objectives of regional planning strategies to reduce reliance on fossil fuels and non-renewable resources. Although implementation of Alternative 2 would involve construction of power poles, transmission lines, and connections to the existing grid, it would not require the expansion of existing generation facilities and would not interfere with LADWP and SCE efforts to augment renewable energy supply. Under NEPA, Alternative 2 would not result in an adverse effect related to operational energy consumption.

4.12.3.4 Alternative 3: Slauson/A (Blue) Line to Pioneer Station

The direct and indirect consumption of energy for Alternative 3 would be the same as the other Build Alternatives. Alternative 3 consists of 14.8 miles of alignment and includes 9 stations. The shorter alignment would result in less VMT reduction from the No Build Alternative relative to Alternatives 1 and 2 and would also require less energy to operate the LRT corridor and stations. As shown in Table 4.12.4, Alternative 3 would reduce annual regional energy consumption from the No Build Alternative by 123,011 MMBTU (0.02 percent net reduction). The reduction in regional energy consumption represents a conservation potential of 123,011 MMBTU annually relative to the No Build Alternative, and the reduction is consistent with objectives of regional planning strategies to reduce reliance on fossil fuels and non-renewable resources. Although implementation of Alternative 3 would involve construction of power poles, transmission lines, and connections to the existing grid, it would not require the expansion of existing generation facilities and would not interfere with LADWP and SCE efforts to augment renewable energy supply. Under NEPA, Alternative 3 would not result in an adverse effect related to operational energy consumption.

4.12.3.5 Alternative 4: I-105/C (Green) Line to Pioneer Station

The direct and indirect consumption of energy for Alternative 4 would be the same as the other Build Alternatives. Alternative 4 consists of 6.6 miles of alignment and includes four stations. Similar to Alternative 3, the shorter alignment would result in less VMT reduction from the No Build Alternative and would also require less energy to operate the LRT and stations. As shown in Table 4.12.4, Alternative 4 would reduce annual regional energy consumption from the No Build Alternative by 119,630 MMBTU (0.01 percent net reduction). The reduction in regional energy consumption represents a conservation potential of 119,630 MMBTU annually relative to the No Build Alternative, and the reduction is consistent with objectives of regional planning strategies to reduce reliance on fossil fuels and non-renewable resources. Although implementation of Alternative 4 would involve construction of power poles, transmission lines, and connections to the existing grid, it would not require the expansion of existing generation facilities and would not interfere with LADWP and SCE efforts to augment renewable energy supply. Under NEPA, Alternative 4 would not result in an adverse effect related to operational energy consumption.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 1: (Add Little Tokyo Station

As shown in Table 4.12.4, compared to the No Build Alternative, Design Option 1 would reduce regional energy consumption from the No Build Alternative by 661,123 MMBTU (0.08 percent net reduction). Design Option 2 would reduce regional energy consumption from the No Build Alternative by 618,243 MMBTU (0.08 percent net reduction). The reductions in regional energy consumption for Design Options 1 and 2 represent annual conservation potentials of 661,123 MMBTU and 618,243 MMBTU relative to the No Build Alternative in 2042, respectively. The estimated reductions in regional energy consumption are consistent with objectives of regional planning strategies to reduce reliance on fossil fuels and non-renewable resources. Although implementation of the design options would involve construction of power poles, transmission lines, and connections to the existing grid, it would not require the expansion of existing generation facilities and would not interfere with LADWP and SCE efforts to augment renewable energy supply. Under NEPA, Design Options 1 and 2 would not result in an adverse effect related to operational energy consumption.

Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option

The Paramount and Bellflower MSF site options would be designed per the Metro Rail Design Criteria, constructed in compliance with mandatory Title 24 and the California Green Building Standards Code (CALGreen) requirements, and would achieve a minimum Silver rating under the Leadership in Energy and Environmental Design (LEED) certification, as specified in the ECMP.

The MSF site options would result in the consumption of fuels and electricity from the operation of facility equipment and vehicle trips to and from the site. As the MSF site option is a component of the Build Alternatives, energy consumption is accounted for in the overall analysis of the Build Alternatives. As shown in Table 4.12.4, it is estimated that the Paramount MSF site option would use approximately 7,652 MMBTU per year, and the Bellflower MSF site option would use approximately 6,912 MMBTU per year. The MSF site options would contribute to a net energy reduction by contributing to implementation of the LRT and the associated VMT reductions. The Paramount and Bellflower MSF site options would not constitute a wasteful, inefficient, or unnecessary consumption of energy. Under NEPA, the Paramount and Bellflower MSF site options would not result in an adverse effect related to operational energy consumption.

4.12.4 Project Measures and Mitigation Measures

No project or mitigation measures for energy effects would be required.

4.12.5 California Environmental Quality Act Determination

4.12.5.1 Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?

No Project Alternative

The No Project Alternative would not include the operation of any project-related facilities or infrastructure. Existing energy consumption of Metro facilities would remain unchanged. As of 2017, the Metro system comprised 129 million revenue miles consuming approximately 55.6 megajoules of energy per revenue mile, for a total of 7,172 million megajoules. On-road

vehicle fuel consumption accounts for approximately 80 percent of the systemwide energy use, and electricity for rail propulsion represents approximately 12 percent. Approximately 30 percent of Metro's electricity is generated by renewable sources. The No Project Alternative would not interfere with Metro's commitments to improving energy efficiency or expanding its alternative energy infrastructure, and would not create a wasteful, inefficient, or unnecessary consumption of energy resources. Therefore, a significant impact would not occur, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

As described in Section 4.12.3.2 and shown in Table 4.12.4, Alternative 1 would reduce regional energy consumption from the No Build Alternative by 626,621 MMBTU in 2042 (a 0.08 percent net reduction). An additional analysis of the Existing + Alternative 1 scenario was completed to satisfy CEQA requirements. As shown in Table 4.12.5, Existing + Alternative 1 conditions would result in 156,597 MMBTU more energy consumption (a 0.02 percent increase) than Existing conditions. This increase would be negligible in the context of Metro systemwide annual energy consumption. Alternative 1 would not constitute a wasteful, inefficient, or unnecessary consumption of energy during project operation. Therefore, impacts would be less than significant, and mitigation would not be required.

Alternative 2: 7th Street/Metro Center to Pioneer Station

As described in Section 4.12.3.3 and shown in Table 4.12.4, Alternative 2 would result in less energy use than the No Build Alternative (0.06 percent net decrease) as a result of decreased regional VMT and associated fuel use. As shown in Table 4.12.5, Existing + Alternative 2 conditions would result in 487,042 less MMBTU (an approximately 0.05 percent net reduction) than Existing conditions. Alternative 2 would not constitute a wasteful, inefficient, or unnecessary consumption of energy during project operation. Therefore, impacts would be less than significant, and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

As described in Section 4.12.3.4 and shown in Table 4.12.4, Alternative 3 would result in less energy use than the No Build Alternative (0.02 percent net decrease) as a result of decreased regional VMT and associated fuel use. As shown in Table 4.12.5, Existing + Alternative 3 conditions would result in 147,833 less MMBTU (a 0.02 percent net reduction) than Existing conditions. Alternative 3 would not constitute a wasteful, inefficient, or unnecessary consumption of energy during project operation. Therefore, impacts would be less than significant, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

As described in Section 4.12.3.4 and shown in Table 4.12.4, Alternative 4 would result in less energy use than the No Build Alternative (0.01 percent net decrease) as a result of decreased regional VMT and associated fuel use. As shown in Table 4.12.5, Existing + Alternative 4 conditions would result in 98,425 less MMBTU (a 0.01 percent net reduction) than Existing conditions. Thus, Alternative 4 would not constitute a wasteful, inefficient, or unnecessary consumption of energy during project operation. Therefore, impacts would be less than significant, and mitigation would not be required.

Table 4.12.5. Operational Energy Consumption under Existing + Project Scenario

Component	Annual MMBTU (in MMBTU)						
	Existing	Existing + Alternative 1	Existing + Alternative 2	Existing + Alternative 3	Existing + Alternative 4	Existing + Design Option 1	Existing + Design Option 2
Regional VMT	907,145,388	907,280,339	906,636,626	906,979,259	907,034,622	906,441,037	906,723,046
LRT System	-	13,994	14,068	10,644	4,689	13,994	13,994
MSF[1]	-	7,652	7,652	7,652	7,652	7,652	7,652
Total Energy	**907,145,388**	**907,301,985**	**906,658,346**	**906,997,555**	**907,046,963**	**906,462,683**	**906,744,692**
Change Relative to Existing	**-**	**156,597**	**(487,042)**	**(147,833)**	**(98,425)**	**(682,705)**	**(400,696)**
Percent Change Relative to Existing	**-**	**0.02%**	**(0.05%)**	**(0.02%)**	**(0.01%)**	**(0.08%)**	**(0.04%)**

Source: Metro 2021h
Notes: [1] The Paramount MSF site option would consume approximately 7,652 MMBTU annually and the Bellflower MSF site option would consume approximately 6,912 MMBTU annually. For simplicity, the higher MSF site option estimate is shown.
LRT = light rail transit; MMBTU = million British thermal units; MSF = maintenance and storage facility; VMT = vehicle miles traveled; ( ) = decrease/reduction

Design Options—Alternative 1

Design Option 1: LAUS at MWD: As described in Section 4.12.3.4 and shown in Table 4.12.4, Alternative 1 with Design Option 1 would result in less energy use than the No Build Alternative (0.08 percent net reduction) as a result of decreased regional VMT and associated fuel use. As shown in Table 4.12.5, Existing + Design Option 1 conditions would result in 682,705 less MMBTU (a 0.08 percent net reduction) than Existing conditions. Design Option 1 would not constitute a wasteful, inefficient, or unnecessary consumption of energy during project operation. Therefore, impacts would be less than significant, and mitigation would not be required.

Design Option 2: Add Little Tokyo Station: As described in Section 4.12.3.4 and shown in Table 4.12.4, Alternative 1 with Design Option 2 would result in less energy use than the No Build Alternative (0.04 percent net reduction) as a result of decreased regional VMT and associated fuel use. As shown in Table 4.12.5, Existing + Design Option 2 conditions would result in 400,696 less MMBTU (0.04 percent net reduction) than Existing conditions. Design Option 2 would not constitute a wasteful, inefficient, or unnecessary consumption of energy during project operation. Therefore, impacts would be less than significant, and mitigation would not be required.

Maintenance and Storage Facility

Paramount MSF Site Option: Operation of the Paramount MSF site option would result in the consumption of fuels and electricity from operation and vehicle trips and is a component of the Build Alternatives in which energy consumption is accounted for in the overall analysis of the Build Alternatives. As shown in Table 4.12.5, the Paramount MSF site option would use approximately 7,652 MMBTU per year, and the Bellflower MSF site option would use approximately 6,912 MMBTU per year. The MSF site options would contribute to a net energy reduction by contributing to implementation of the LRT and the associated VMT reductions. The Paramount MSF site option and Bellflower MSF site option would not constitute a wasteful, inefficient, or unnecessary consumption of energy. Therefore, the Paramount MSF site option and Bellflower MSF site option would not result in an adverse effect related to operational energy; impacts would be less than significant; and mitigation would not be required.

4.12.5.2 Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Project Alternative

The No Project Alternative would not include operation of any project-related facilities or infrastructure. As of 2017, approximately 30 percent of Metro's electricity is generated by renewable sources, and the seven Metro-owned solar installations around the greater Los Angeles area generated a total of 2,670 megawatt hours. Metro has a goal of 50 percent renewable energy use by 2030. Additionally, Metro operates 11 LEED-certified buildings representing nearly 2 million square feet of floor area. The No Project Alternative would not interfere with Metro's commitments to improving energy efficiency or expanding its alternative energy infrastructure; however, it would do the least of all the alternatives to support regional and local conservation plans in reducing VMT. Impacts would be less than significant, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

No state, regional, or local energy conservation plans promote increased passenger vehicles on the roadway network in place of mass transit. Alternative 1 would be consistent with the applicable regional and local conservation plans. Energy used for Alternative 1 operations would not be considered a wasteful or inefficient use of energy as mass transit and reduced VMT are key components of relevant energy conservation plans. Therefore, impacts would be less than significant, and mitigation would not be required.

Alternative 2: 7th Street/Metro Center to Pioneer Station

Similar to Alternative 1, Alternative 2 would be consistent with applicable regional and local conservation plans, and energy used for operation would not be considered a wasteful or inefficient use of energy. Therefore, impacts would be less than significant, and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Similar to Alternatives 1 and 2, Alternative 3 would be consistent with applicable regional and local conservation plans, and energy used for operation would not be considered a wasteful or inefficient use of energy. Therefore, impacts would be less than significant, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Similar to Alternatives 1, 2, and 3, Alternative 4 would be consistent with applicable regional and local conservation plans, and energy used for operation would not be considered a wasteful or inefficient use of energy. Therefore, impacts would be less than significant, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Design Options 1 and 2 would be consistent with applicable regional and local conservation plans, and energy use for operation of Design Options 1 and 2 would not be considered a wasteful or inefficient use of energy as mass transit and reduced VMT are key components of relevant energy conservation plans. Therefore, impacts would be less than significant, and mitigation would not be required.

Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option: The Paramount and Bellflower MSF site options are components of the Build Alternatives and would be consistent with the applicable regional and local conservation plans by contributing to implementation of a Build Alternative. Therefore, impacts would be less than significant and mitigation would not be required.

4.13 Electromagnetic Fields

This section summarizes the analysis of electromagnetic field (EMF) effects. EMF results from electromagnetic emissions, which is energy in the form of photons. Human-made EMF and associated electromagnetic interference (EMI) is produced when electric current travels through a circuit. The dominant source of EMF for LRT is the direct current (DC) electric traction system that powers the trains. Information in this section is based on the *West Santa Ana Branch Transit Corridor Project Final Electromagnetic Field Impact Potential Memorandum* (Metro 2021v) (Appendix V).

EMF has electrical and magnetic field components. The electric fields result from the strength of the electric charge (voltage). Magnetic fields result from the motion of the charge (current). Electric field strength is measured in units of volts per meter and is greater the higher the voltage. Magnetic field strength is measured in milligauss (mG).

4.13.1 Regulatory Setting and Methodology

4.13.1.1 Regulatory Setting

The federal government and State of California have not established regulatory limits for EMF exposure. The FTA has released *Guidance on the Prevention and Mitigation of Environmental, Health, and Safety Impacts of Electromagnetic Fields and Radiation for Electric Transit Systems* (FTA 2008). Regarding health effects, compliance with referenced consensus standards and guidelines is encouraged. The most relevant standard is "C95.6: IEEE [Institute of Electrical and Electronics Engineers] Standard for Safety Levels with Respect to Human Exposure to Electromagnetic Fields, 0-3 [kilohertz] kHz" (IEEE 2002). The C95.6 Standard establishes maximum permissible exposure (MPE) levels to protect the general public that vary by frequency. The MPE levels for frequencies between 1 and 20 Hertz (Hz) (where the majority of EMF from light rail vehicles is generated) ranges from 1,180,000 mG at static to 9,040 mG at 20 Hz. To avoid EMI with sensitive equipment, project-generated EMI should be below equipment-specific sensitivity thresholds.

4.13.1.2 Methodology

To evaluate potential effects on human health, EMF that would be generated by the Project was compared to the C95.6: IEEE Standard for Safety Levels with Respect to Human Exposure to Electromagnetic Fields, 0-3 kHz (IEEE 2002). The C95.6 Standard establishes MPE levels to protect the general public that vary by frequency. The MPE levels for frequencies between 1 and 20 Hz (where the majority of EMF from light rail vehicles is generated) ranges from 1,180,000 mG at static to 9,040 mG at 20 Hz. The MPE levels decrease to 2,290 mG at 3 kHz.

For EMF, an Affected Area of 1,000 feet from the project alignment was reviewed for land uses that could have highly EMI-sensitive medical or scientific equipment. At 1,000 feet, EMI would be below sensitivity levels for highly sensitive equipment. Health centers were contacted to determine if they have magnetic resonance imaging (MRI) equipment.

4.13.2 Affected Environment/Existing Conditions

The Earth's background magnetic field varies around an average of about 500 mG (National Institute of Environmental Health Sciences 2002). Examples of magnetic field intensities from human activities include the following (Federal Railroad Administration 2006):

- Overhead power transmission line: 10 to 100 mG directly under transmission lines and less than 10 mG under lateral lines
- Household appliances: 8 to 165 mG (at a distance of 1 foot)
- Rail vehicle (electrically powered): 400 mG (at 43 inches from the vehicle floor) to 1,500 mG (at the vehicle floor level)

Natural and human-generated EMF encompass a broad frequency spectrum. In the United States, the electric power system operates at 60 Hz, or cycles per second, meaning that the field reverses its direction 60 times per second. Radio and other communications operate at much higher frequencies; many are in the range of 500,000 to 3 billion Hz.

High-voltage transmission lines currently cross the corridor in downtown LA near 6th Street (345 kV); alongside the proposed alignment in Huntington Park on Randolph Street (345 kV at approximately 50 feet away) with three direct crossings (345 kV) and Salt Lake Avenue (345 kV at approximately 75 feet away) with three direct crossings (345 kV); crossing the corridor in South Gate near Rayo Avenue (345 kV), the LA River (345 kV), and the Rio Hondo (345 kV); alongside the alignment in Paramount between Arthur Avenue and Somerset Boulevard (345 kV at approximately 125 feet away) (345 kV) and crossing the corridor at Downey Avenue (345 kV); crossing the corridor in Bellflower at Woodruff Avenue (345 kV); and crossing the corridor in Cerritos near the San Gabriel River (345 kV) and Studebaker Road (345 kV). Twenty-two educational, technology, and medical facilities were identified within the Affected Area for EMF. None of the facilities use highly EMI-sensitive equipment.

4.13.3 Environmental Consequences/Environmental Impacts

4.13.3.1 No Build Alternative

There would be no project-created EMF for the No Build Alternative. Current natural and human-generated EMF in the corridor would continue. Other projects with substantial transmission or demand for electricity could generate EMF, which would be reviewed through their own environmental processes and mitigation would be identified as needed.

4.13.3.2 Build Alternatives

The dominant source of EMF for LRT is the DC electric traction system that powers the trains. The DC voltage on the overhead supply wires (i.e., contact wire and messenger) produces a static electric field between the supply wires and ground, and the flow of currents—as trains draw power via pantographs—produces transient magnetic fields as the train travels along the alignment. EMF levels near rail transit decrease rapidly from approximately 100 mG at 30 feet from the tracks to less than 1 mG at 300 feet. There are no conclusive findings regarding the health effects of low-level EMF typical of electrically powered rail vehicles. For all Build Alternatives, magnetic fields from the planned DC traction system for the Project would be short-duration disturbances and low-frequency (< 60 Hz). EMF levels produced by LRT vehicles would be below the C95.6 MPE across the range of frequencies.

Highly sensitive equipment in research, manufacturing, or medical facilities could be affected by EMF levels as low as 0.5 mG. Medical, higher education, research, and industrial land uses within the 1,000-foot Affected Area for EMF were reviewed to assess whether they have research electron microscopes or medical MRI equipment. Neither the Bellflower Health Center nor Angeles Community Health has such equipment. All other facilities were eliminated based on the nature of their operations. Because no facilities with EMF-sensitive equipment were found within 1,000 feet of any Build Alternative, the Project would not affect EMF-sensitive equipment operations.

4.13.3.3 Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station

No highly sensitive equipment was identified in the vicinity of Design Options 1 or 2; therefore, the Design Options would not affect EMF-sensitive equipment operations.

4.13.3.4 Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option

No highly sensitive equipment was identified in the vicinity of the maintenance and storage facility site options; therefore, the maintenance and storage facility would not affect EMF-sensitive equipment operations.

4.13.4 Project Measures and Mitigation Measures

No project measures or mitigation measures for EMF effects would be required.

4.13.5 California Environmental Quality Act Determination

With regard to health impacts and in accordance with CEQA Guideline Section 15145, the known information regarding EMF and health impacts has been summarized without reaching a conclusion of significance. A statement or conclusion of CEQA significance for EMF health impacts would be speculative. With regard to sensitive equipment, there are no universal thresholds. Because no facilities with EMF-sensitive equipment were found within 1,000 feet of the Project, the Project would not affect EMF-sensitive equipment operations.

4.14 Historic, Archaeological, and Paleontological Resources

This section presents a summary of the Section 106 analyses for built environment and archaeological historic properties, the NEPA analysis for paleontological resources, and the CEQA analyses for the historic built environment, archaeological historical resources, and paleontological resources that were performed for the Project. Section 106, NEPA, and CEQA analyses for these disciplines may be found in the following reports:

- *West Santa Ana Branch Transit Corridor Project Final Cultural Resources Survey Report–Rev 1* (Metro 2020d) (Appendix W)
- *West Santa Ana Branch Transit Corridor Project Revised Preliminary Cultural Resources Effects Report* (Metro 2021u) (Appendix X)
- *West Santa Ana Branch Transit Corridor Project Final Paleontological Resources Impacts Analysis Report* (Metro 2021y) (Appendix Y)

Tribal Cultural Resources are addressed independently in Section 4.15 of this Draft EIS/EIR.

4.14.1 Regulatory Setting and Methodology

This section summarizes the regulatory context that governs built, archaeological, and paleontological resources. The regulations included directly relate to the analysis presented in this section. For a full summary of all applicable regulations, please see the above cited reports.

4.14.1.1 Regulatory Setting

Historic and Archaeological Resources

Federal

Built environment and archaeological historic properties are considered during federal undertakings chiefly under Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended) through one of its implementing regulations, 36 CFR 800 (Protection of Historic Properties).

National Historic Preservation Act

The NHPA (as amended) (54 U.S.C. § 300101 through § 320303) is the cornerstone of the federal cultural resources preservation program, as it sets forth the policy and procedures regarding built environment and archaeological historic properties. It requires federal agencies to consider the effects of their undertakings, such as construction projects, on historic properties and properties that an Indian Tribe regards as having religious and/or cultural importance (i.e., Traditional Cultural Properties). Direct effects to historic properties are defined as those that come from an undertaking at the same time and place with no intervening cause. Indirect effects to historic properties are those caused by the undertaking that are later in time or farther removed in distance but are still reasonably foreseeable (Advisory Council on Historic Preservation 2019).

Historic properties are defined as any prehistoric or historic districts, sites, buildings, structures, or objects that are included in or eligible for inclusion in the National Register of Historic Places (NRHP). To be eligible for inclusion in the NRHP, properties must be significant in American (including federal, state, and/or local) history, architecture, archaeology, engineering, or culture, and generally must be at least 50 years old. Historic properties must also possess integrity of location, design, setting, materials, workmanship, feeling, or association, and meet at least one of the following criteria (36 CFR Part 60.4):

A) Are associated with events that have made a significant contribution to the broad patterns of our history
B) Are associated with the lives of persons significant in our past
C) Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction
D) Have yielded, or may be likely to yield, information important in prehistory or history

Section 106 of the NHPA (54 U.S.C. § 306108) requires federal agencies to afford the Advisory Council on Historic Preservation, acting through the State Historic Preservation Office (SHPO) or the Tribal Historic Preservation Office, a reasonable opportunity to comment on the effects of an undertaking. It does so through consultation, the goal of which is to identify historic properties potentially affected by the undertaking, assess the

undertaking's effects on the historic properties, and seek ways to avoid or minimize, or mitigate adverse effects on historic properties.

State

The protection of historical resources, including built environment and archaeological, in California is primarily addressed through the regulatory measures of CEQA, presented below.

California Environmental Quality Act

CEQA (PRC § 21000 et seq.), requires evaluation of proposed projects that may cause significant effects on historical resources. Under CEQA, "historical resources" must be identified; expected impacts must be analyzed; and mitigation must be identified and implemented, where necessary.

The CEQA Guidelines define a "historical resource" as:

1. A resource listed in or determined to be eligible by the State Historical Resources Commission for listing in the California Register of Historical Resources (CRHR) (PRC Section 5024.1, Title 14 CCR, § 4850 et seq.).
2. A resource included in a local register of historical resources, as defined in section 5020.1(k) of the PRC or identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the PRC, shall be presumed to be historically or culturally significant.
3. Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be a historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. (*CEQA Guidelines*, § 15064.5(a).)

CEQA equates a "substantial adverse change" in the historic significance of a resource with a significant effect on the environment (PRC Section 21084.1). A "substantial adverse change" in the significance of a historical resource is defined by the *CEQA Guidelines* as "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired" (*CEQA Guidelines*, § 15064.5(b)). The significance of a historical resource is materially impaired when the project demolishes or materially alters the physical characteristics of the resource that qualifies the resource as historic. If the project's effects on historic properties meet any CEQA impact conditions, mitigation measures are recommended for avoidance, to minimize impacts, or to provide balanced compensation for adverse effects. Generally, a project that follows the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings or the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings shall be considered mitigated to a less than significant impact on the historical resource (*CEQA Guidelines*, § 15064.5(b)(3)).

The CRHR was established under California PRC Section 5024.1 to serve as an authoritative guide to the state's significant historic and archaeological resources. A resource is considered historically significant if it meets the criteria for listing in the CRHR (PRC Section 5024.1, Title 14 CCR, § 4852). For a property to be considered eligible for listing in the CRHR, it

must be found to be significant under at least one of the following four criteria by the State Historical Resources Commission:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage
2. Is associated with the lives of persons important in our past
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values
4. Has yielded, or may be likely to yield, information important in prehistory or history

In addition to possessing one of the above characteristics, to be eligible for listing in the CRHR resources must retain "substantial" integrity to their period of significance. The seven aspects or qualities of integrity are the same as those applied to NRHP-eligible properties: location, design, setting, materials, workmanship, feeling, and association.

The CRHR also includes properties that:

- Have been determined eligible for listing in, or are listed in, the NRHP
- Are registered State Historical Landmark No. 770 and all consecutively numbered landmarks above Number 770
- Are points of historical interest that have been reviewed and recommended to the State Historical Resources Commission for listing
- Are City- and County-designated landmarks or districts

Historic districts are a concentration of historic buildings, structures, objects, or sites within precise boundaries that share a common historical, cultural, or architectural background. Individual resources in a historic district may lack individual significance but be considered a contributor to the significance of the historic district.

Local

For the purposes of CEQA, resources eligible for or listed in the CRHR are, by definition, "historical resources." Resources included in a local register of historical resources or deemed significant and also designated at the local level (i.e., given a California Historical Resources Status Code 3 through 5 in a survey meeting the California Office of Historic Preservation requirement), are presumed to be historically or culturally significant for purposes of CEQA. The Project traverses several municipalities that maintain local registers of historical resources and the analysis presented here within considered effects/impacts to locally eligible resources. For a description of each of the registers and their eligibility criteria, refer to the Cultural Resources Effects Report.

Paleontological Resources

Federal

Federal protection for scientifically significant paleontological resources applies to projects if any construction or other related project impacts occur on federally owned or managed lands, involve the crossing of state lines, or are federally funded. The federal protections described below may apply to paleontological resources in the Affected Area.

NEPA of 1969, as amended (Public Law [P.L.] 91-190, 42 U.S.C. 4321- 4347, January 1, 1970, as amended by P.L. 94-52, July 3, 1975; P.L. 94-83, August 9, 1975; and P.L. 97-258 Section 4(b), September 13, 1982), recognizes the continuing responsibility of the federal government to "preserve important historic, cultural, and natural aspects of our national heritage" (Section 101 [42 U.S.C. Section 4321], No. 382).

The Paleontological Resources Preservation Act, enacted as a result of the passage of the Omnibus Public Lands Management Act of 2009, P.L. 111-011, Title VI, Subtitle D, Paleontological Resources Preservation sets forth regulations and provisions pertaining to paleontological resources on all federally administered lands.

State

The protection of paleontological resources in California is addressed through the regulatory compliance of CEQA.

California Environmental Quality Act

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

Local

The Cities of Vernon, Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, and Bellflower do not have any ordinances or policies relating to paleontological resources. The Los Angeles County 2035 General Plan and the Conservation Element of the City of Los Angeles General Plan (2011b) both include policies aimed at the protection of paleontological resources. Further explanation of these policies is included in the Paleontological Resources Impacts Analysis Report.

4.14.1.2 Methodology

Historic and Archaeological Resources

Area of Potential Effects

The Area of Potential Effects (APE) was established through consultation among the lead federal agency, which is the FTA; the lead CEQA agency, which is Metro; and SHPO in accordance with 36 CFR 800.16(d), which defines an APE as:

> The geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

The APE has been delineated to encompass areas that may be directly or indirectly affected by the Project, including temporary and permanent effects and potential visual, noise, vibration, and/or ground settlement effects that may result from construction or implementation of the Project.

The direct or archaeological APE encompasses the alignment ROWs, as well as all associated elements where construction would occur, including stations, laydown yards, maintenance facilities, and parking lots. In the underground portion of the Project, the direct APE encompasses the street or parcels directly above the tunnel areas, as well as any other areas with related ground disturbance. For the at-grade portion of the Project, the direct APE includes the width of the existing railroad ROW. For the aerial portion of the Project, the direct APE encompasses the width of the proposed ROW. The direct APE additionally includes areas with potential direct ground disturbance, accounting for temporary (construction) and permanent project elements, including but not limited to, the following: whole or partial parcel acquisitions, train control, TPSS sites, ventilation structures, and MSF options. The extent of the direct APE is defined by the direct temporary and permanent disturbance associated with construction and operation of the typical project elements listed above. The vertical extent of the APE varies with the depth of ground disturbance and tunneling and areas where the alignment may be aerial. It roughly extends approximately 115 feet below the existing ground surface and approximately 90 feet above the existing ground surface.

The architectural APE includes all areas that may be subject to potential direct and indirect effects, including visual, noise, vibration, and/or ground settlement that may result from construction or implementation of the Project. It is broadly defined as the direct APE and a one parcel buffer out from the direct APE in all areas where the Project is underground or aerial. In areas where the proposed alignment would be at-grade, within existing railroad or Metro ROWs, the architectural APE encompasses the same area as the direct APE. This is because the introduction of a rail system in areas where rail systems functioned historically would not have an increased potential to cause indirect effects to historic properties. In areas where the proposed alignment is underground, aerial, or outside existing railroad ROW, the architectural APE extends horizontally to the first row of adjacent parcels and vertically as described above. The direct and the architectural APE are identified in blue and red, respectively, in Figure 4.14-1.

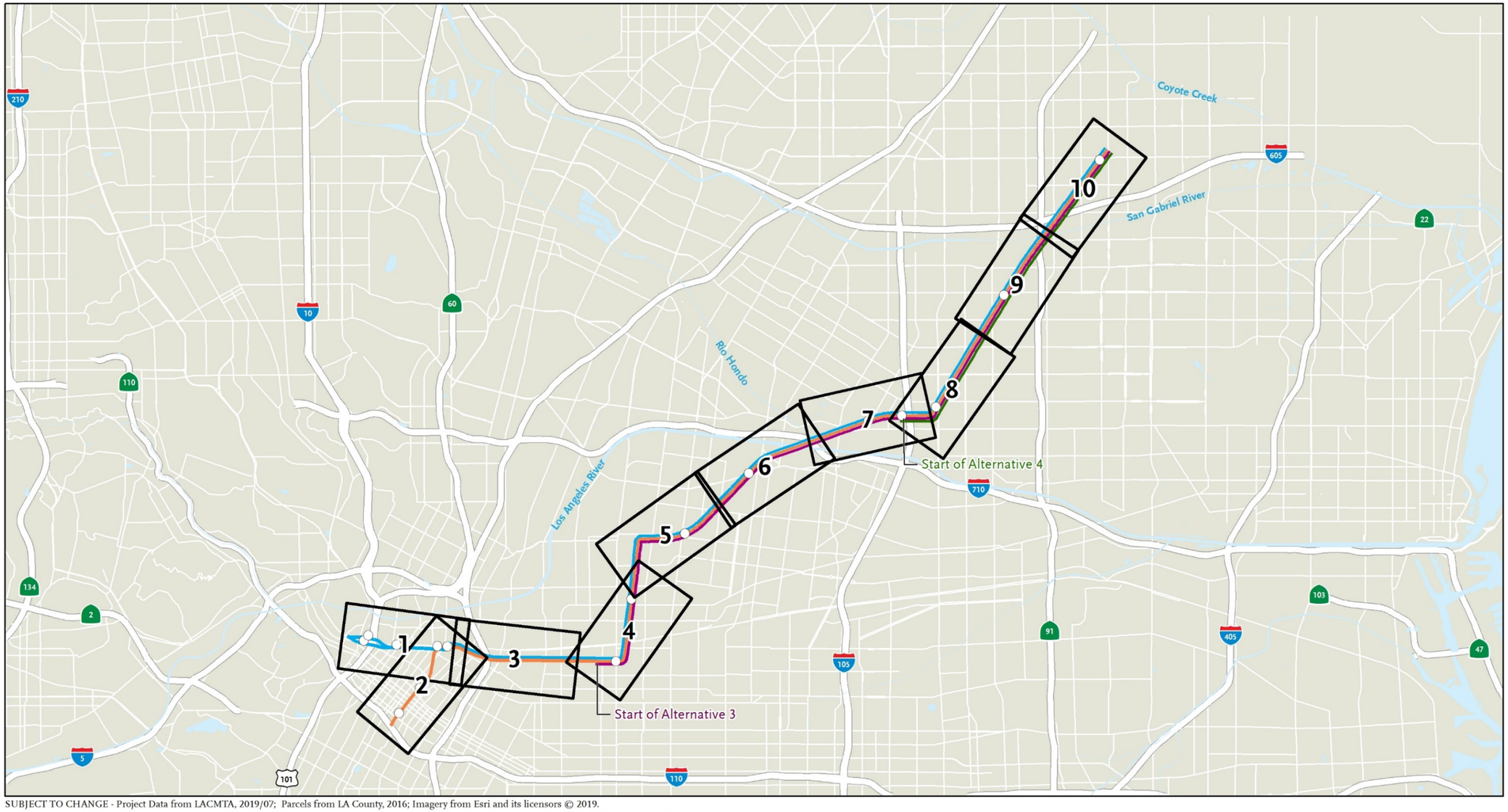
Effects/Impacts Criteria

Federal Criteria

The analysis of potential effects on historic and archaeological resources is based on the Criteria of Adverse Effects, defined in 36 CFR 800 as: "alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register" (36 CFR 800.16[i]). The criteria of adverse effect are included below for reference.

> An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative. (36 CFR 800.5[a][1]).

Figure 4.14-1. Direct and Architectural APE and Built Environment Results



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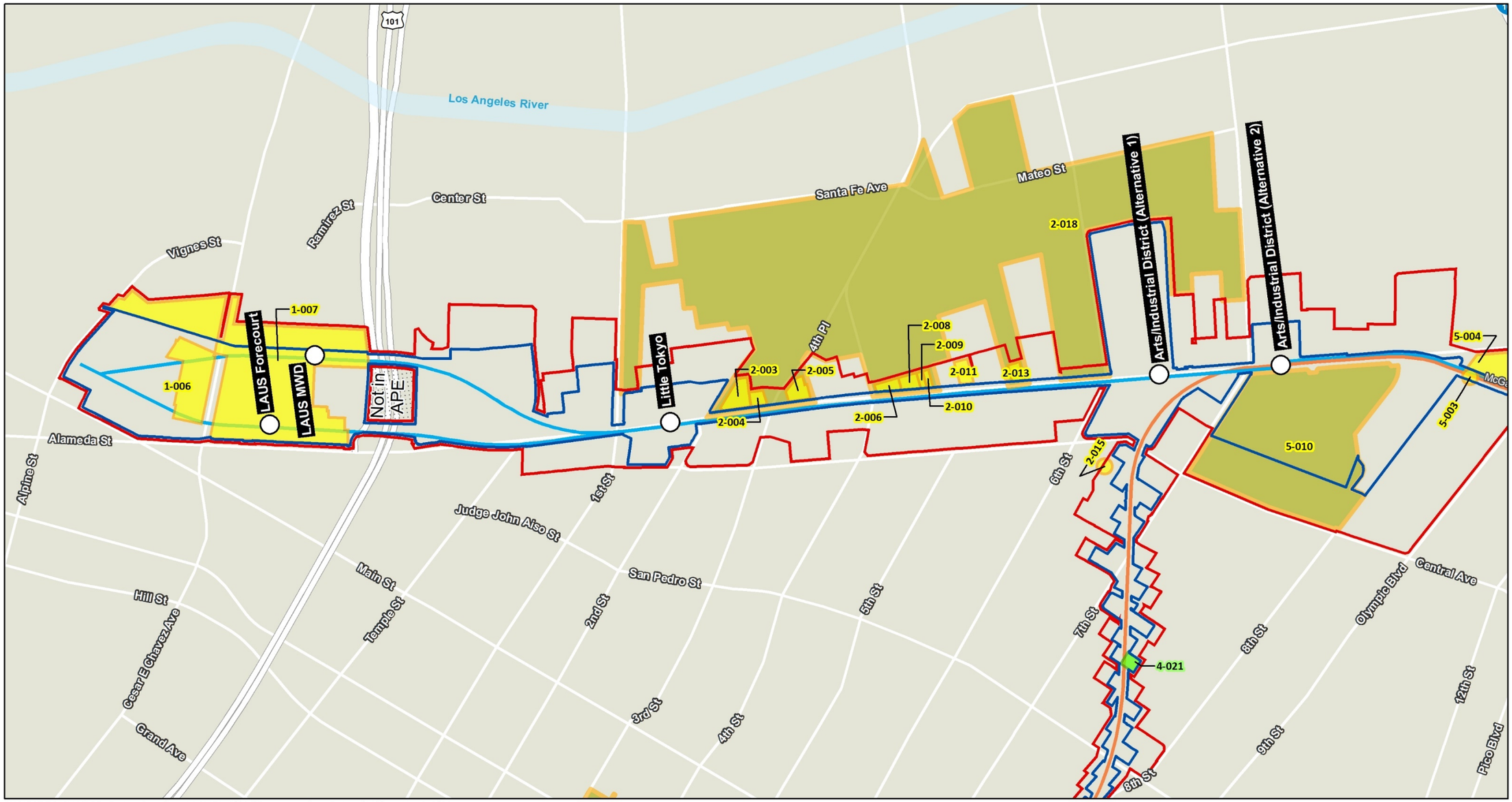
Sheet Index

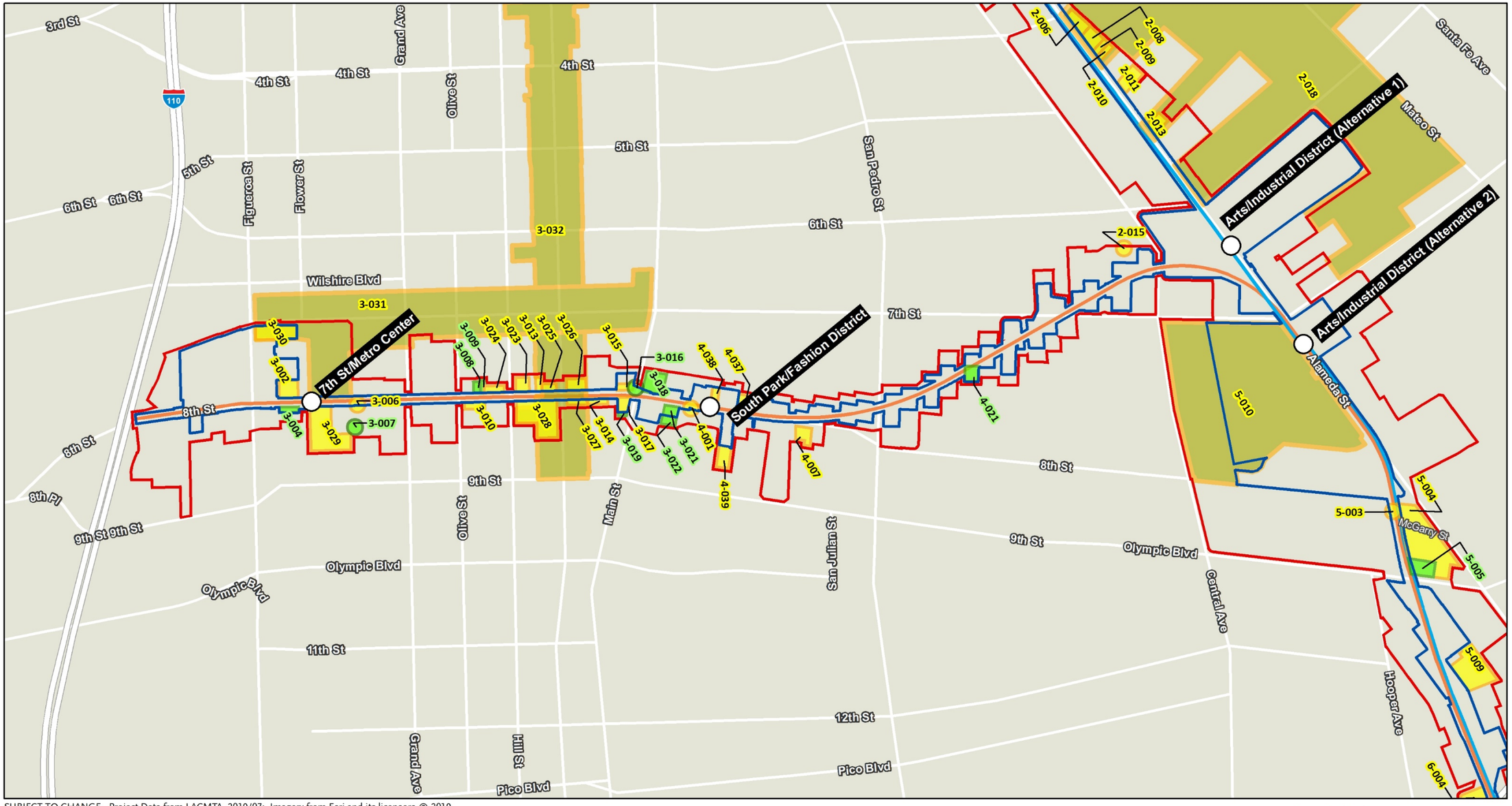
West Santa Ana Branch (WSAB) Proposed

- Stations
- Alternative 1: Union Station to Pioneer
- Alternative 2: 7th St/Metro Center to Pioneer
- Alternative 3: Slauson/A Line (Blue) to Pioneer
- Alternative 4: I-105/C Line (Green) to Pioneer

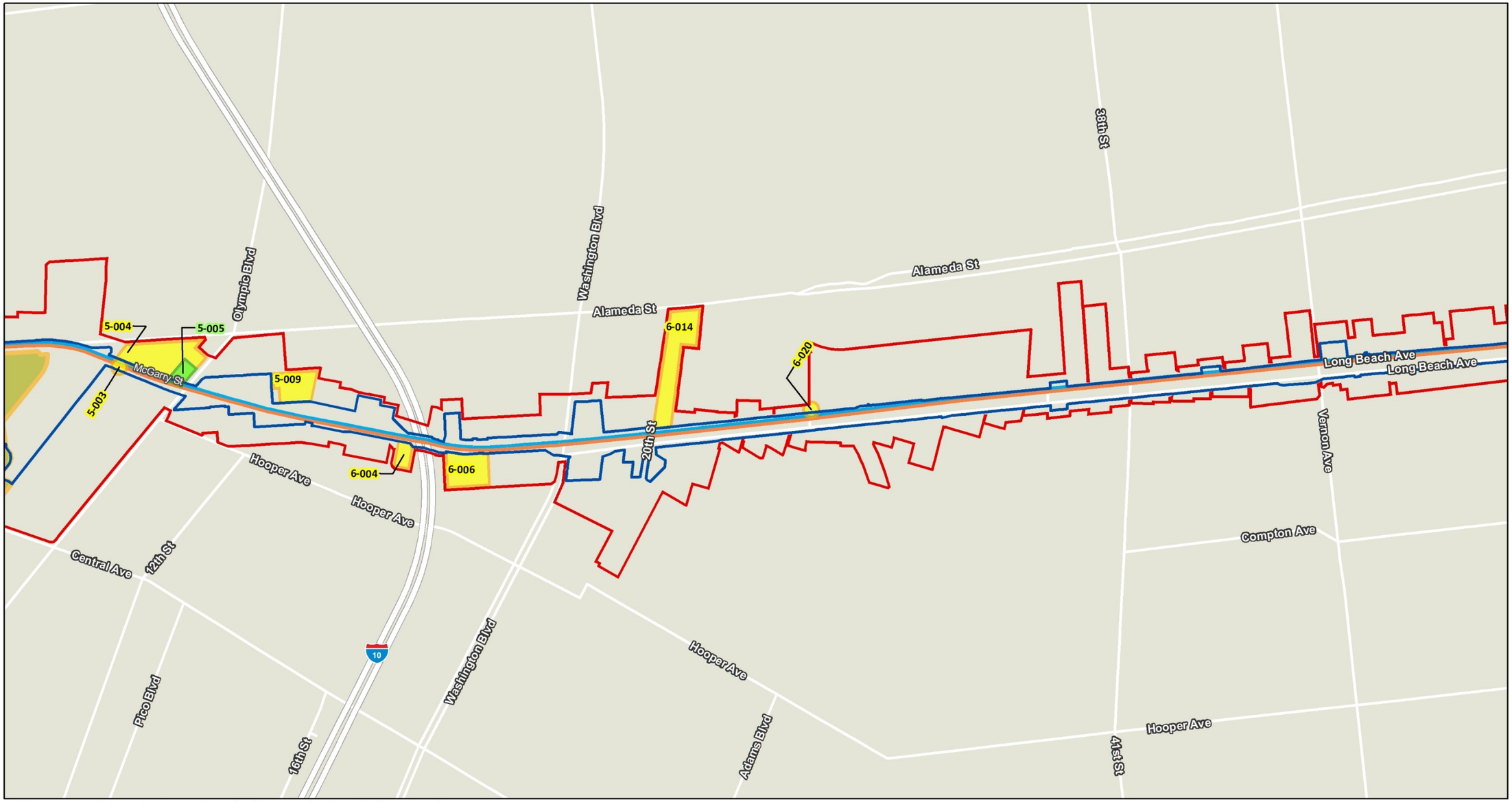
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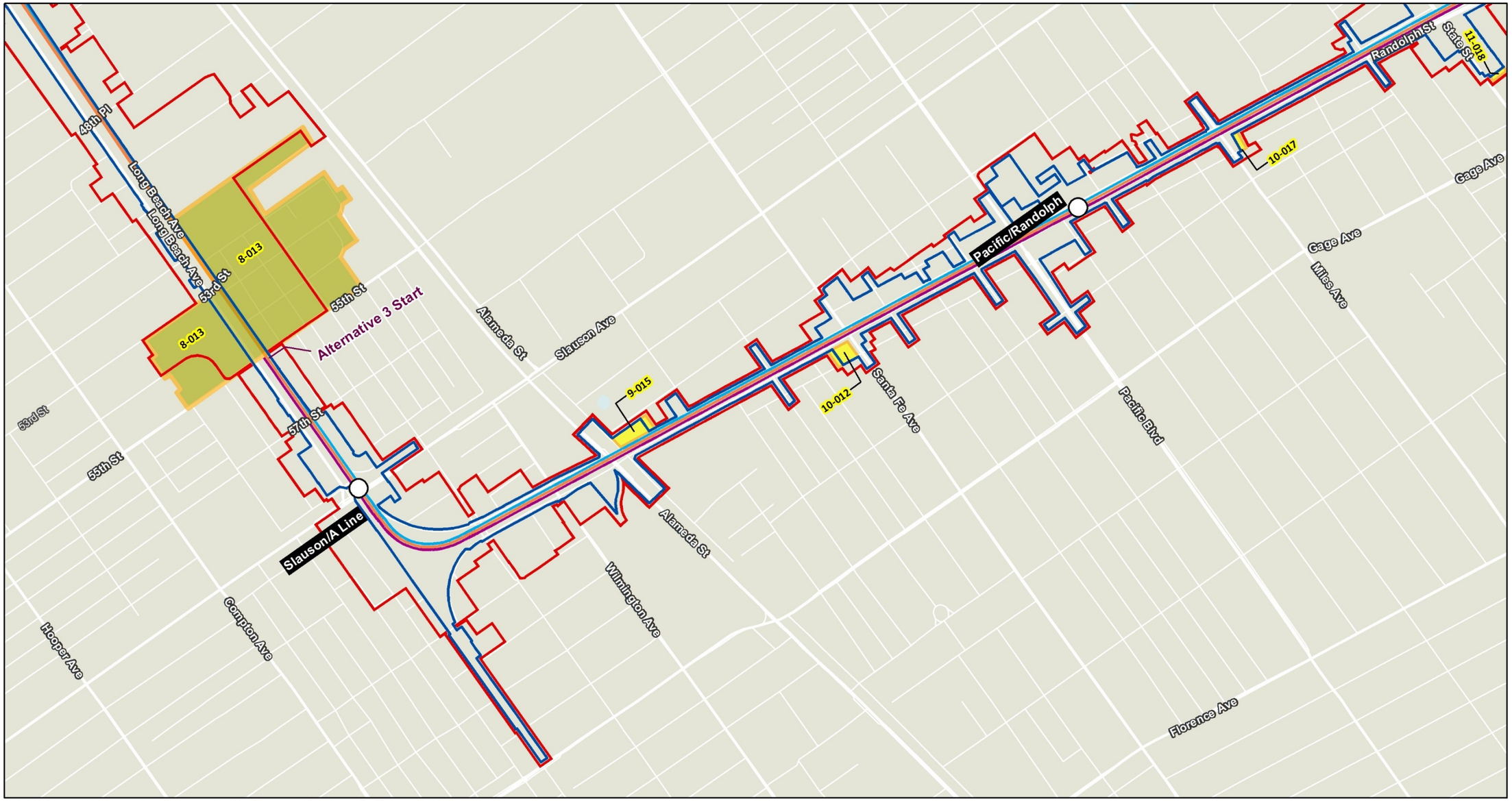
0 0.5 1 1.5 Miles


Los Angeles River
101
Vignes St
Ramirez St
Center St
Santa Fe Ave
Mateo St
Arts/Industrial District (Alternative 1)
Arts/Industrial District (Alternative 2)
2-018
1-007
LAUS Forecourt
LAUS MWD
1-006
Not in APE
Little Tokyo
4th Pl
2-003
2-005
2-004
2-008
2-009
2-011
2-013
2-006
2-010
5-004
5-003
5-010
2-015
Alameda St
Alpine St
1st St
6th St
Judge John Aiso St
Main St
San Pedro St
Hill St
Temple St
2nd St
5th St
7th St
Olympic Blvd
Central Ave
Cesar E Chavez Ave
Grand Ave
3rd St
4th St
8th St
9th St
12th St
Pico Blvd
4-021
SUBJECT TO CHANGE - Project Data from LACMTA, 2019/07; Imagery from Esri and its licensors © 2019.
Direct APE
Architectural APE
Station
Alternative 1: Union Station to Pioneer
Alternative 2: 7th St/Metro Center to Pioneer
Properties Listed, Determined or Assumed Eligible for Listing in the NRHP (Historic Properties)
Properties Listed or Eligible for State and/or Local Listing (Historical Resources)
Historic District Listed, Determined or Assumed Eligible for Listing in the NRHP
N
0
400
800
Feet
Sheet 1 of 10
1
2
3



SUBJECT TO CHANGE - Project Data from LACMTA, 2019/07; Imagery from Esri and its licensors © 2019.


5-004
5-005
5-003
5-009
6-004
6-006
6-014
6-020
McGarry St
Olympic Blvd
Washington Blvd
Alameda St
Alameda St
38th St
20th St
Long Beach Ave
Long Beach Ave
Vernon Ave
Hooper Ave
Hooper Ave
Central Ave
12th St
Pico Blvd
16th St
Washington Blvd
Hooper Ave
Adams Blvd
41st St
Hooper Ave
Compton Ave
10
SUBJECT TO CHANGE - Project Data from LACMTA, 2019/07; Imagery from Esri and its licensors © 2019.
Direct APE
Architectural APE
Alternative 1: Union Station to Pioneer
Alternative 2: 7th St/Metro Center to Pioneer
Properties Listed, Determined or Assumed Eligible for Listing in the NRHP (Historic Properties)
Properties Listed or Eligible for State and/or Local Listing (Historical Resources)
Historic District Listed, Determined or Assumed Eligible for Listing in the NRHP
N
0
400
800
Feet
Sheet 3 of 10
1
2
3
4



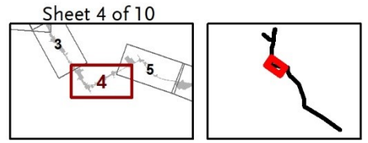
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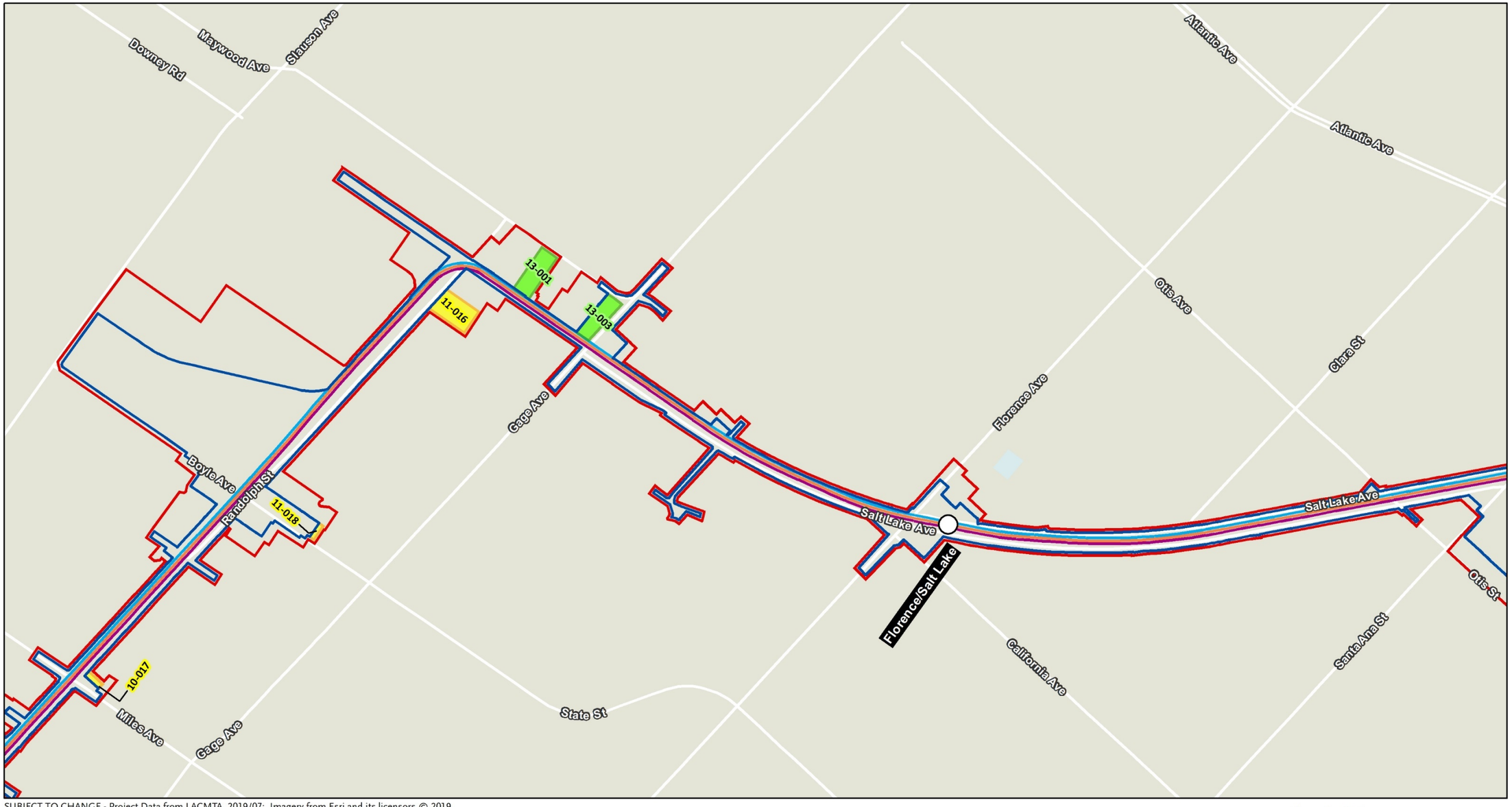
- Direct APE
- Architectural APE
- Station
- Alternative 1: Union Station to Pioneer
- Alternative 2: 7th St/Metro Center to Pioneer
- Alternative 3: Slauson/A Line (Blue) to Pioneer
- Properties Listed and/or Eligible for Listing in the NRHP
- Historic District Listed, Determined, Eligible or Assumed Eligible for Listing in the NRHP

N

0 400 800 Feet

Sheet 4 of 10



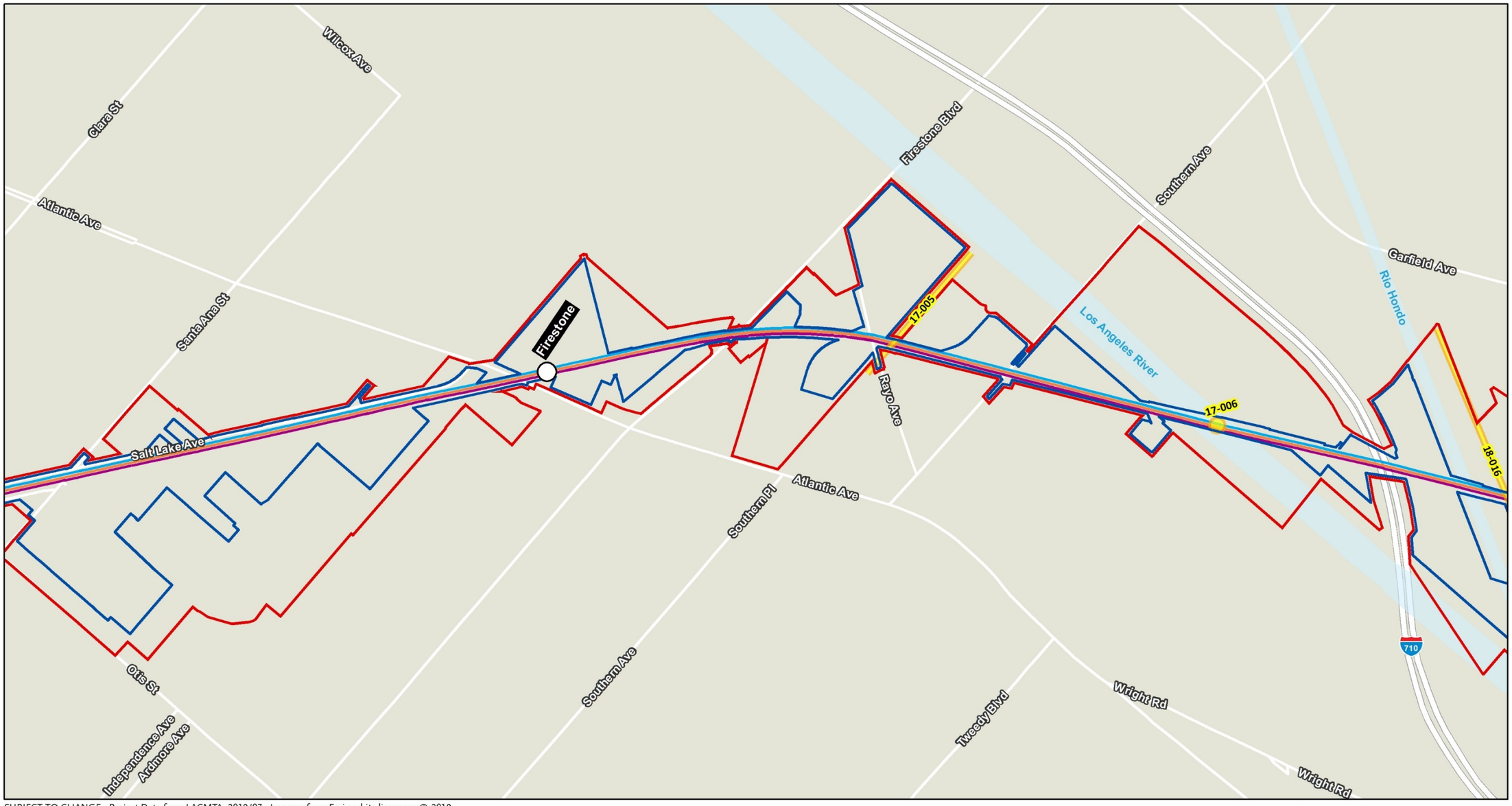


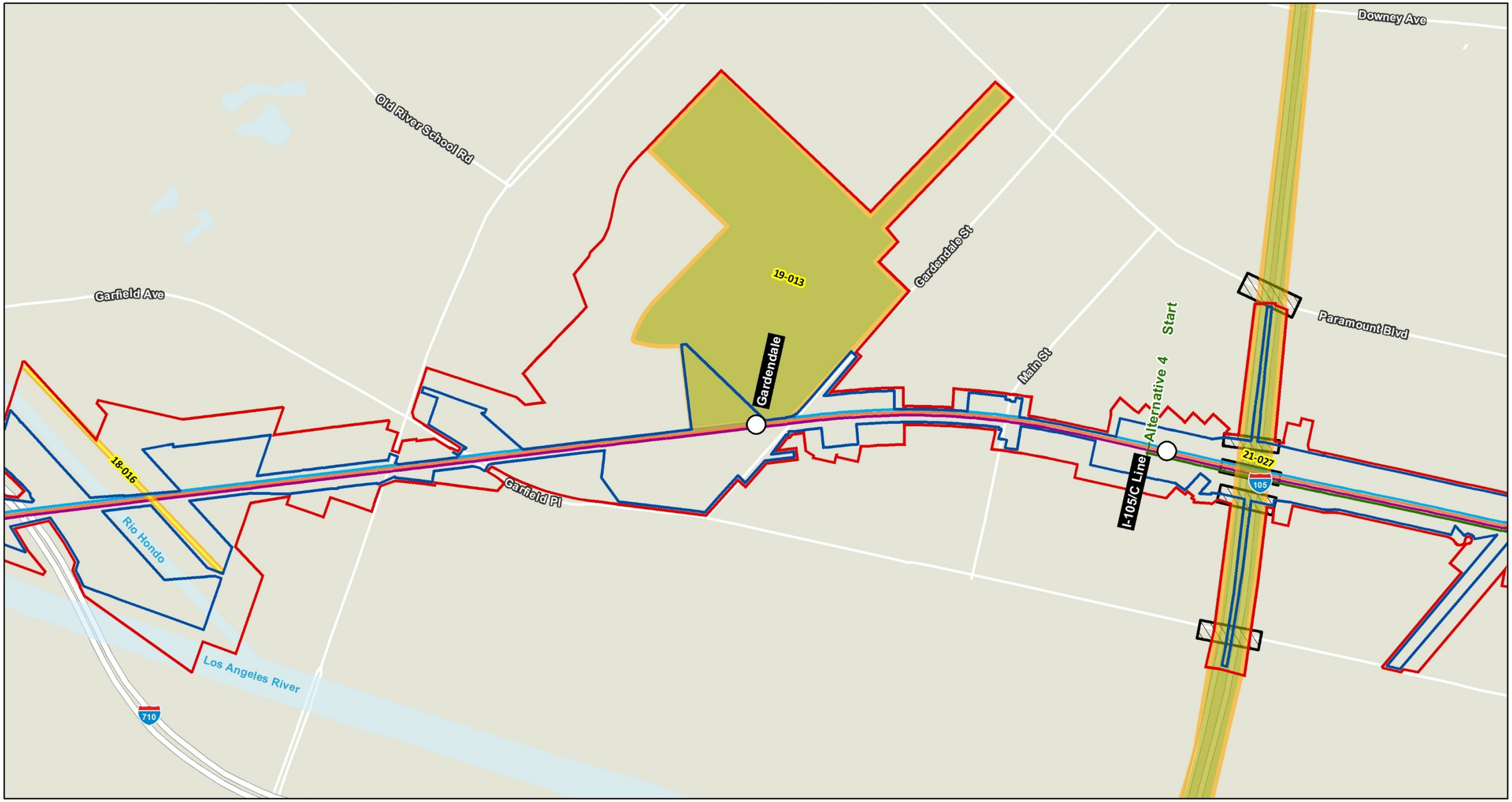
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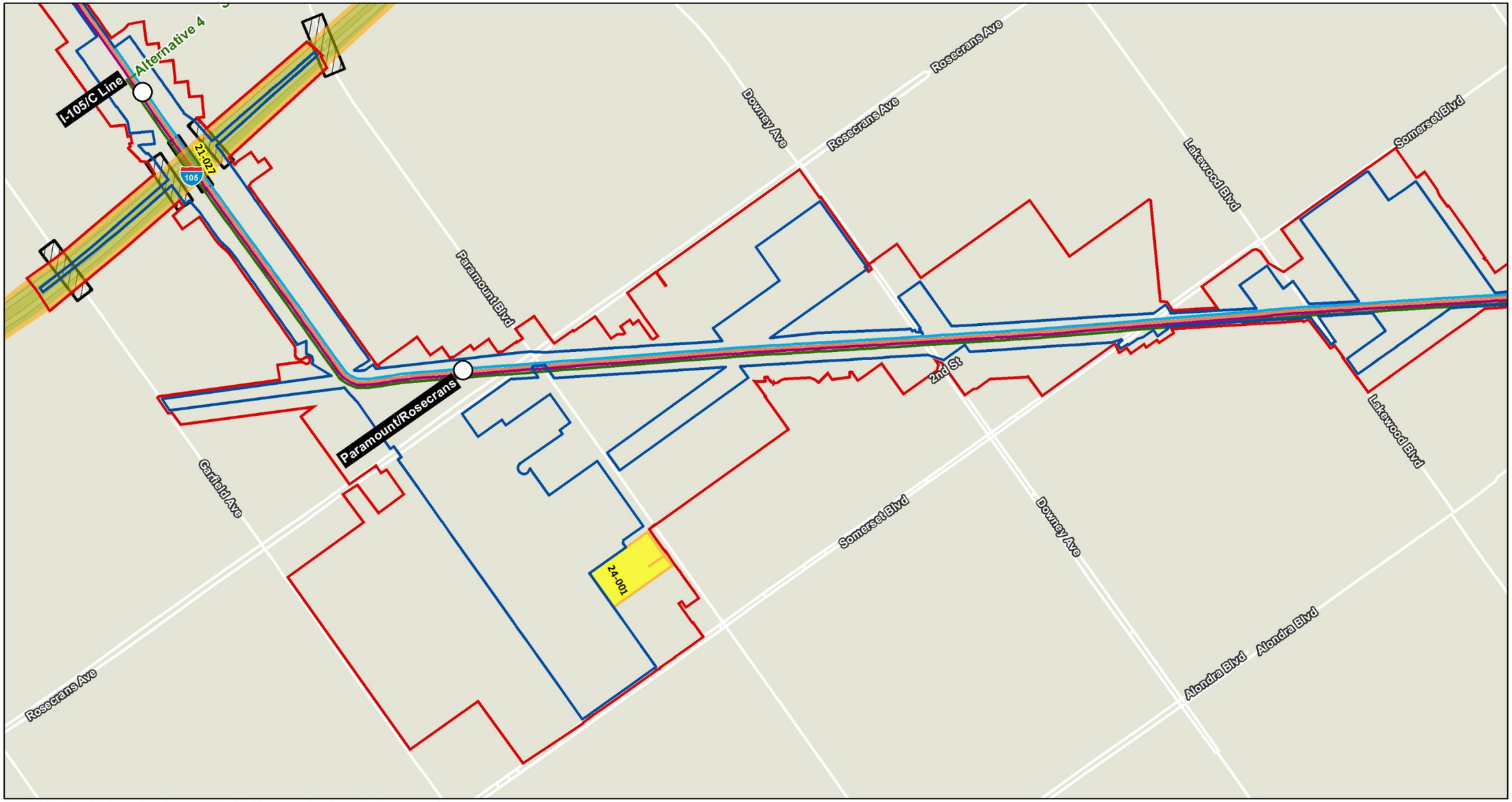
- Direct APE
- Architectural APE
- Station
- Alternative 1: Union Station to Pioneer
- Alternative 2: 7th St/Metro Center to Pioneer
- Alternative 3: Slauson/A Line (Blue) to Pioneer
- Properties Listed, Determined or Assumed Eligible for Listing in the NRHP (Historic Properties)
- Properties Listed or Eligible for State and/or Local Listing (Historical Resources)

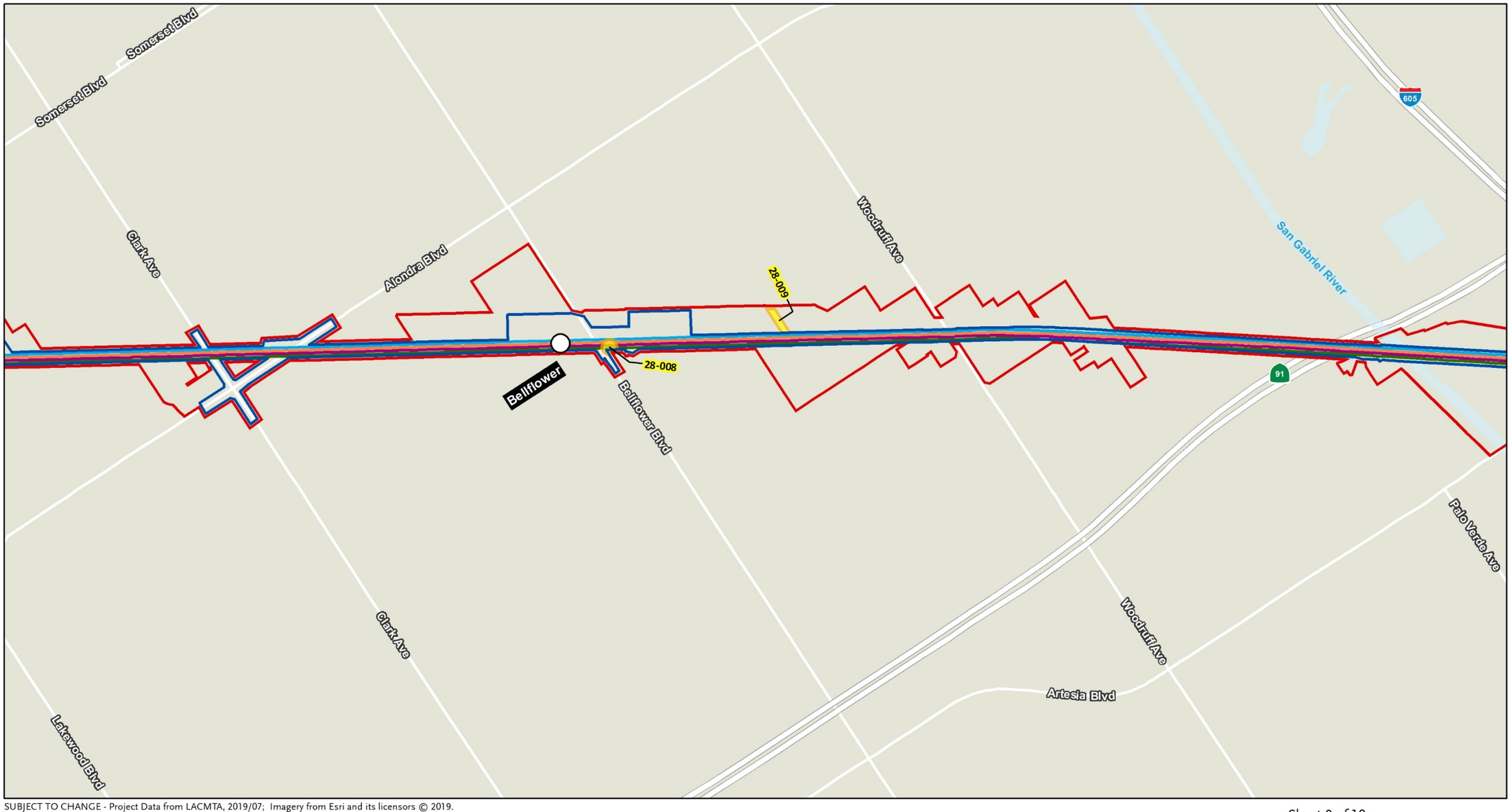
0 400 800 Feet

Sheet 5 of 10


Wilcox Ave
Clara St
Atlantic Ave
Santa Ana St
Firestone
Salt Lake Ave
Firestone Blvd
Rayo Ave
17-005
Southern Ave
Garfield Ave
Rio Hondo
Los Angeles River
17-006
18-016
Atlantic Ave
Southern Pl
Southern Ave
Otis St
Independence Ave
Ardmore Ave
Tweedy Blvd
Wright Rd
Wright Rd
710
SUBJECT TO CHANGE - Project Data from LACMTA, 2019/07; Imagery from Esri and its licensors © 2019.
Direct APE
Architectural APE
Station
Alternative 1: Union Station to Pioneer
Alternative 2: 7th St/Metro Center to Pioneer
Alternative 3: Slauson/A Line (Blue) to Pioneer
Properties Listed, Determined or Assumed Eligible for Listing in the NRHP (Historic Properties)
0 400 800
Feet
Sheet 6 of 10
5
6
7


Old River School Rd
Garfield Ave
19-013
Gardendale St
Gardendale
Main St
Start
Alternative 4
Downey Ave
Paramount Blvd
21-027
105
I-105/C Line
18-016
Garfield Pl
Rio Hondo
Los Angeles River
710
SUBJECT TO CHANGE - Project Data from LACMTA, 2019/07; Imagery from Esri and its licensors © 2019.
Direct APE
Architectural APE
Station
Alternative 1: Union Station to Pioneer
Alternative 2: 7th St/Metro Center to Pioneer
Alternative 3: Slauson/A Line (Blue) to Pioneer
Alternative 4: I-105/C Line (Green) to Pioneer
Properties Listed, Determined or Assumed Eligible for Listing in the NRHP (Historic Properties)
Historic District Listed, Determined or Assumed Eligible for Listing in the NRHP
Contributing Bridges to the Century Freeway-Transitway Historic District
0 400 800
Feet
Sheet 7 of 10
6
7
8
9
1


I-105/C Line
Alternative 4
21-027
105
Paramount/Rosecrans
24-001
Rosecrans Ave
Rosecrans Ave
Rosecrans Ave
Downey Ave
Downey Ave
Paramount Blvd
Garfield Ave
Somerset Blvd
Somerset Blvd
Lakewood Blvd
Lakewood Blvd
2nd St
Alondra Blvd
Alondra Blvd
SUBJECT TO CHANGE - Project Data from LACMTA, 2019/07; Imagery from Esri and its licensors © 2019.
Direct APE
Architectural APE
Station
Alternative 1: Union Station to Pioneer
Alternative 2: 7th St/Metro Center to Pioneer
Alternative 3: Slauson/A Line (Blue) to Pioneer
Alternative 4: I-105/C Line (Green) to Pioneer
Properties Listed, Determined or Assumed Eligible for Listing in the NRHP (Historic Properties)
Historic District Listed, Determined or Assumed Eligible for Listing in the NRHP
Contributing Bridges to the Century Freeway-Transitway Historic District
N
0
400
800
Feet
Sheet 8 of 10
6
7
8
9



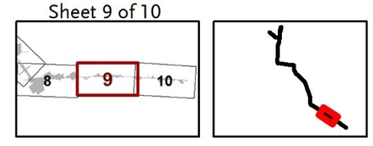
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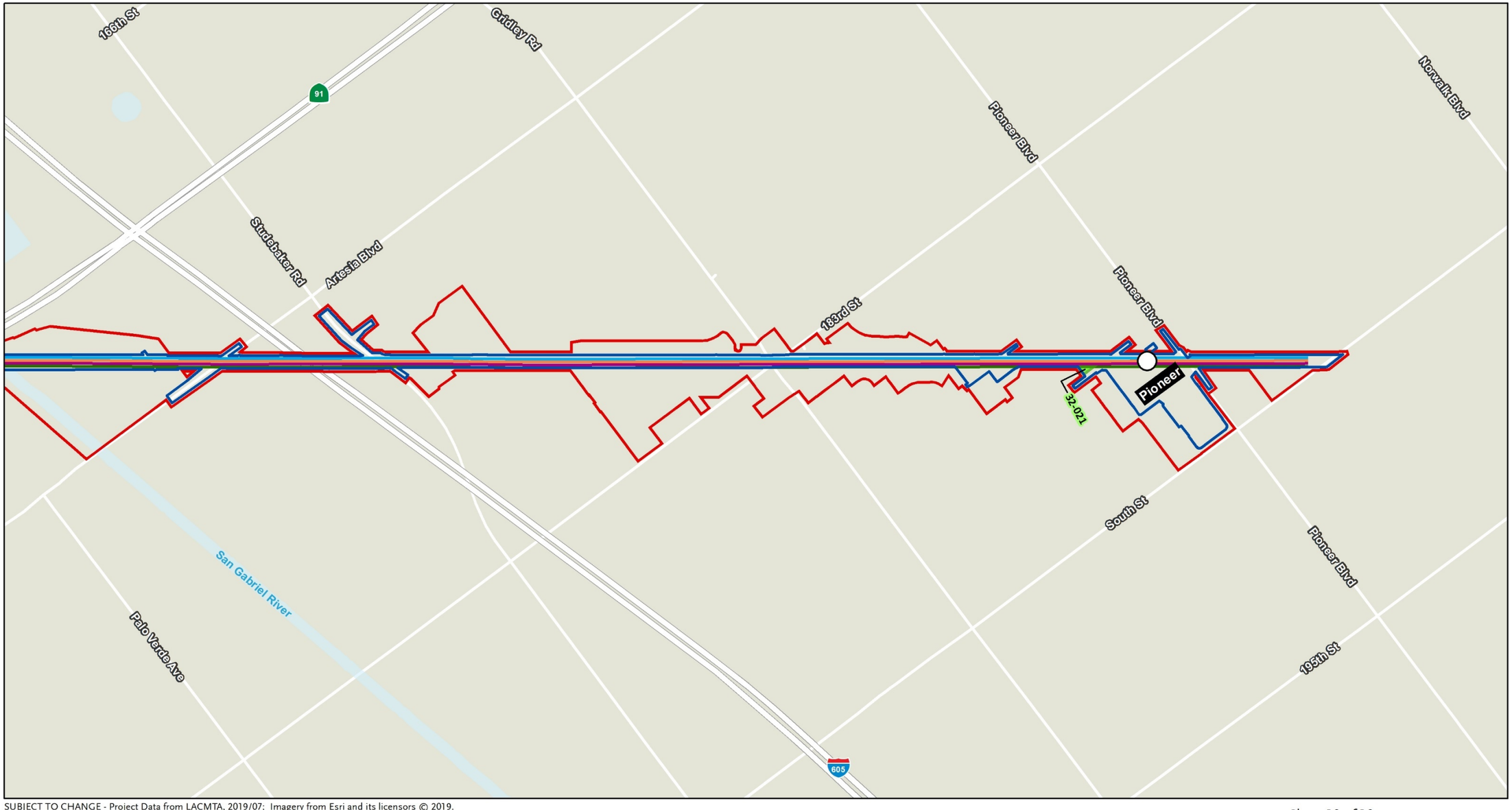
- Direct APE
- Architectural APE
- Station
- Alternative 1: Union Station to Pioneer
- Alternative 2: 7th St/Metro Center to Pioneer
- Alternative 3: Slauson/A Line (Blue) to Pioneer
- Alternative 4: I-105/C Line (Green) to Pioneer
- Properties Listed, Determined or Assumed Eligible for Listing in the NRHP (Historic Properties)

N

0 400 800 Feet

Sheet 9 of 10




166th St
Gridley Rd
91
Norwalk Blvd
Pioneer Blvd
Studebaker Rd
Artesia Blvd
133rd St
Pioneer Blvd
Pioneer
32-021
South St
Pioneer Blvd
San Gabriel River
Palo Verde Ave
195th St
605
SUBJECT TO CHANGE - Project Data from LACMTA, 2019/07; Imagery from Esri and its licensors © 2019.
Direct APE
Architectural APE
Station
Alternative 1: Union Station to Pioneer
Alternative 2: 7th St/Metro Center to Pioneer
Alternative 3: Slauson/A Line (Blue) to Pioneer
Alternative 4: I-105/C Line (Green) to Pioneer
Properties Listed or Eligible for State and/or Local Listing (Historical Resources)
N
0
400
800
Feet
Sheet 10 of 10
9
10

According to 36 CFR 800.5[a][2], examples of an adverse effect on historic properties include, but are not limited to, the following:

(i) Physical destruction of or damage to all or part of the property;
(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's standards for the treatment of historic properties (36 CFR part 68) and applicable guidelines;
(iii) Removal of the property from its historic location;
(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
(v) Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;
(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

When the effects of the proposed undertaking do not meet the criteria of adverse effect, then a finding of no adverse effect may be proposed (36 CFR 800.5[b]). If an adverse effect is found, the agency shall act pursuant to 36 CFR 800.6 (36 CFR 800.5[d][2]) to resolve the adverse effect by developing and evaluating alternatives or modifications to the undertaking that "could avoid, minimize or mitigate adverse effects on historic properties" (36 CFR 800.6[a]).

State Criteria

The analysis of potential impacts on historic and archaeological resources is based on *CEQA Guidelines* Appendix G Criteria. According to these criteria, adverse impacts to cultural resources would be considered significant if the proposed project would:

- Cause a substantial adverse change in the significance of a historical resource as defined in CCR Section 15064.5 (defined as listed or determined eligible for a state or local register, or any building, structure, or object that is determined to be historically significant to California history)
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to CCR Section 15064.5 or a unique archaeological resource as defined in PRC 21083.2[g]
- Disturb any human remains, including those interred outside of formal cemeteries

Section 15064.5 of the *CEQA Guidelines* provides that, in general, a resource not listed on state or local registers of historical resources shall be considered by the lead agency to be historically significant if the resource meets the criteria for listing on the CRHR. This section also provides standards for determining what constitutes a "substantial adverse change" that must be considered a significant impact on archaeological or historical resources. For example, a "substantial adverse change" in the significance of a historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired" (*CEQA Guidelines*, 14 CCR §15064.5 [b][1]).

Types of Effects/Impacts

As stated above, Section 106 defines an effect, including both direct and indirect, as an "alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register [of Historic Places]." In assessing effects, Section 106 states that an adverse effect occurs when "…an undertaking may alter, directly or indirectly, any of the characteristics of a historic property…" Similarly, CEQA defines a significant impact to a historical resource as one that may cause a substantial adverse change in the significance of a historical resource (§ 21084.1). CEQA defines a substantial adverse change as the "…physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired" (15064.5).

This study considered both direct and indirect effects to historic properties/historical resources. Physical impacts to historic properties/historical resources primarily include their alteration or modification. In addition to physical effects/impacts, those such as noise, vibration, and visual effects/impacts were considered, as they too have the capability to adversely affect historic properties and significantly impact historical resources. The thresholds and methods for evaluating noise, vibration, and visual effects/impacts on historic properties/historical resources are further described in the following sections.

Noise Effect/Impacts

FTA has not established noise thresholds to determine the level of noise that would constitute an adverse effect/significant impact to historic properties/historical resources. Further, what constitutes a noise impact under NEPA may or may not be applicable or equivalent to effects on historic properties under Section 106 or significant impacts to historical resources under CEQA. Under Section 106, an adverse noise effect would occur if it were to alter the characteristics of a historic property that make it eligible for inclusion in the NRHP or if it were to diminish a historic property's ability to convey historic significance. Similarly, under CEQA, a significant noise impact would occur if it were to result in the substantial adverse change in the significance of a historical resource.

The potential noise effects/impacts associated with the Project were evaluated and presented in the *West Santa Ana Branch Transit Corridor Project Final Noise and Vibration Impact Analysis Report* (Metro 2021c), included as Appendix M to this Draft EIS/EIR. However, an adverse effect/significant impact as assessed in the Noise and Vibration Impact Report does not necessarily imply an adverse effect/significant impact to a historic property/historical resource for the purposes of Section 106 or CEQA. In the analysis presented in the Revised Preliminary Cultural Resources Effects Report (Appendix X) potential noise effects/impacts to historic properties were considered adverse/significant if they would introduce noise that would alter the character of a historic property's use that contributes to its historic significance or diminish the integrity of its significant historic features. If the significant features or integrity of a historic property would be altered as a result of noise associated with the Project, an adverse effect/significant impact would occur.

Vibration Effects/Impacts

Groundborne vibration generated by construction equipment or project operation has the potential to result in damage to historic properties/historical resources. Physical damage to a historic property/historical resource may alter its characteristics such that it is no longer eligible for inclusion in the NRHP or that its ability to convey its historic significance is

diminished. Physical damage may also constitute the substantial adverse change in the significance of a historical resource if the resource or its surroundings are physically altered. Depending on the nature and extent, physical damage to historic properties/historical resources due to vibration may constitute an adverse effect under Section 106 and a significant impact under CEQA.

Potential vibration effects/impacts of the Project were evaluated and presented in the Noise and Vibration Impact Report (Appendix M). That study applied a damage risk criterion of 0.20 in/sec (PPV) to all historic buildings in the APE. A damage risk criteria of 0.20 PPV is protective of all but the most fragile buildings. The study indicated that there are no historic properties in the APE where 0.20 PPV would be exceeded (Section 5 of the Noise and Vibration Impact Report [Appendix M]) during project construction. Additionally, groundborne vibration levels associated with project operation would be well below architectural or structural damage risk criteria. For the purposes of the analysis presented in the Cultural Resources Effects Report (Appendix X) and summarized in this section, potential vibration effects/impacts that do not have the potential to result in damage to historic properties/historical resources were considered not adverse or significant.

Visual Effects/Impacts

The Project has the potential to result in adverse visual effects/impacts to historic properties/historical resources. Adverse visual effects under Section 106 are those that diminish a historic property's integrity, negatively affecting its ability to convey historic significance and hence compromising its eligibility for historic designation. Similarly, under CEQA, visual changes to a historical resource have the ability to result in substantial adverse change in the significance of that resource. Examples of such potential effects/impacts include the introduction of elements into the setting of a property and the alteration of the viewsheds to and from a historic property/historical resource.

Determining why a property is significant and understanding what characteristics make it so are essential to assessing visual effects/impacts. For the purposes of the analysis presented in this study, the existing relationship of a historic property/historical resource to its current setting and the reason for its significance and character-defining features were first identified. The setting of a historic property/historical resource may or may not contribute to its significance and, therefore, the visibility of the Project from a given historic property/historical resource may or may not result in an adverse effect/significant impact. Visual effects/impacts were analyzed for their ability to diminish a property/resource's integrity of setting, if in fact setting is essential in a given property's ability to convey significance.

Paleontological Resources

Affected Area

The Affected Area for paleontological resources includes the ground surface and subsurface within the proposed alignments, stations, MSF site options, TPSS sites, and parking facilities where ground disturbance associated with the Project may occur. This Affected Area corresponds to the area where potential effects/impacts may occur as a result of the Project.

The Affected Area for paleontological resources lies in the northwestern portion of the Peninsular Ranges geomorphic province, one of 11 major provinces in the state (CGS 2002). The Peninsular Ranges province is characterized by its northwest-trending valleys and faults that branch from the San Andreas fault zone (CGS 2002). The Peninsular Ranges consist of rocks from the Paleozoic

(approximately 542 million to 251 million years ago [mya]) to late Cenozoic (approximately 65.5 mya to the present), including a large Jurassic (approximately 199.6 to 145.5 mya) to Cretaceous (approximately 145.5 to 65.5 mya) batholith that intrudes an older Triassic (approximately 251 and 199.6 mya) metasedimentary sequence (Kennedy et al. 2007). The batholith is predominately composed of tonalite, gabbro, and granodiorite, and granite plutonic igneous rock (Todd et al. 2003). The Affected Area for paleontological resources is located on the wedge-shaped central block of the Los Angeles Basin where Cretaceous to Holocene (approximately 11,477 years ago [ya] to the present) sedimentary rocks unconformably overlie crystalline basement rocks (Roffers and Bedrossian 2010; Saucedo et al. 2007, 2016; Yerkes et al. 1965). The Los Angeles Basin is a structural basin that contains sediments that range in thickness from just a few feet to as much as 31,000 feet in some places (Yerkes et al. 1965). Throughout the basin, Quaternary sediments are mapped at the surface (Roffers and Bedrossian 2010; Saucedo et al. 2007, 2016).

The Affected Area for paleontological resources includes one geologic unit mapped at the surface. Quaternary younger alluvium, unit 2 (Qya_2; Campbell et al. 2014; Saucedo et al. 2016). This alluvial unit is composed of Holocene sediments at the surface. In the subsurface, the Holocene alluvial deposits overlie older late Pleistocene (approximately 126,000 to 11,477 ya) sediments at a depth as shallow as 5 feet bgs (McLeod 2017, 2018). This unit is therefore considered to have high paleontological sensitivity at depths at or below 5 feet.

Fossil Localities

Paleontologists normally distinguish invertebrate from vertebrate fossil localities (as opposed to the archaeological term "site") as each typically requires a different research approach. Invertebrate localities, especially when they comprise microscopic species such as diatoms, foraminifera, and radiolarians, but also when they include larger shelly marine fauna (e.g., clams), can require extensive bulk sediment sampling and processing. In addition, invertebrate fossils normally occur in marine lithologies, can be widespread and abundant, and are often well preserved. They tend to contain fewer separate hard parts subject to loss or destruction after death. In contrast, vertebrate fossils can be marine or nonmarine in origin, comprise large and/or small taxa (e.g., whales to rodents) that are locally distributed, numerically scarce (i.e., few individuals), and be poorly preserved. They tend to contain hundreds of separate hard parts (skeletal elements) that are easily lost or destroyed after death.

4.14.2 Affected Environment/Existing Conditions

A summary of the built environment and archaeological historic properties and historical resources in the APE and the sensitivity of the Affected Area for paleontological resources is included below.

4.14.2.1 Built Environment Historic Properties and Historical Resources

The built environment existing conditions of the APE are presented in detail in the Cultural Resources Survey Report. The study presented in the Cultural Resources Survey Report included the delineation of the APE (described in Section 4.14.1.2 and displayed in Figure 4.14-1), archaeological and built environment field surveys, archival and background research inclusive of a California Historical Resources Information System records search, Assembly Bill 52 and Section 106 consultation, and the documentation and evaluation of 454 properties for historic designation.

A detailed APE map, that identifies all properties recorded and evaluated as part of the study is included as Appendix A of the Cultural Resources Survey Report. The APE map may additionally be cross referenced with Appendix E of the Cultural Resources Survey Report,

which includes a table that lists all of the properties evaluated for the study, along with their associated finding. Of the 454 properties documented and evaluated as part of the study, 386 were recommended ineligible for historic designation. The study additionally identified 229 properties that were found to no longer retain integrity sufficient to warrant consideration for NRHP or CRHR eligibility. Properties exempted from formal evaluation are documented in Appendix H of the Cultural Resources Survey Report.

Built Environment Historic Properties

Identified in yellow in Figure 4.14-1 and listed in Table 4.14.2, the Cultural Resources Survey Report identified 54 properties in the APE that are listed, determined, or assumed eligible for listing in the NRHP. Table 4.14.1 identifies the number of built environment historic properties located in each of the four project alternatives. As properties listed in, determined, or assumed eligible for listing in the NRHP, they are considered historic properties for the purposes of Section 106 and historical resources under CEQA.

Table 4.14.1. Built Environment Historic Properties/Historical Resources by Alternative

Alternative	Built Environment Historic Properties/Historical Resources
Alternative 1	33
Alternative 2	42
Alternative 3	14
Alternative 4	4

Source: Metro 2020d; Metro 2021u

Of the 54 built environment historic properties in the architectural APE, 38 are a single assessor's parcel; a majority of these parcels include one building. One of these historic properties is a structure (Union Pacific Los Angeles River Rail Bridge/Map Reference Number [MRN] 17-006) and five are non-parcel resources consisting of five individual structures (MRNs 2-015, 3-006, 4-001, 5-003, 6-020), which are air raid sirens sited in the public ROW. Ten of the 54 built environment historic properties in the architectural APE are comprised of more than one assessor's parcel; many of these include multiple buildings that function as a single property spanning multiple parcels. Two of these 10 resources are composed of a group of related structures, the Los Angeles Department of Water and Power Boulder Dam to Los Angeles 287.5 kilovolt Transmission Line and the Southern California Edison Long Beach to Laguna Bell Transmission Line (MRNs 17-005 and 18-016).

Several of the 54 historic properties in the architectural APE are contributing resources to historic districts. Eight historic properties in the APE (MRN 2-003, 2-004, 2-005, 2-006, 2-008, 2-009, 2-010, 2-013) are contributors to the potential Downtown Los Angeles Industrial Historic District (MRN 2-018) and one historic property in the APE (MRN 3-030) is a contributor to the potential 7th Street Commercial Historic District (MRN 3-031). The evaluation of the boundaries and significance of these two potential large historic districts was outside the scope of this study, as most parcels that may comprise these districts are outside of the APE for the Project. However, to adequately address potential effects/impacts, the potential Downtown Los Angeles Industrial Historic District and the potential 7th Street Commercial Historic District were assumed eligible for the NRHP for the purposes of this study.

Table 4.14.2. Historic Properties/Historical Resources in the APE

Map Reference No./Property Address or Name	Alternative	Eligibility Criteria (NRHP/CRHR/Local)[1]	Section 106 Finding	CEQA Finding
1-006/900 N. Alameda St.	1	A/1, C/3	No adverse effect	No impact to historical resources
1-007/Los Angeles Union Station	1/ Design Option 1 (MWD)	C/3	No adverse effect	Alt 1: Potentially significant; less than significant impact with mitigation incorporated (CR-6) Design Option 1 (MWD): Less than significant impact to historical resources
2-003/216 S. Alameda St.	1	C/3/3 District: A/1/1	No effect	No impact to historical resources
2-004/701 E. 3rd St.	1	District: A/1/1	No effect	No impact to historical resources
2-005/312 S. Alameda St.	1	District: A/1/1	No effect	No impact to historical resources
2-006/400 S. Alameda St.	1	District: A/1/1	No effect	No impact to historical resources
2-008/422, 426, 430 S. Alameda St.	1	District: A/1/1	No effect	No impact to historical resources
2-009/436 S. Alameda St.	1	District: A/1/1	No effect	No impact to historical resources
2-010/440 S. Alameda St.	1	District: A/1/1	No effect	No impact to historical resources
2-011/500 S. Alameda St.	1	A/1/1, C/3/3	No effect	No impact to historical resources
2-013/542 S. Alameda St.	1	C/3/3 District: A/1/1	No effect	No impact to historical resources
2-015/Air Raid Siren No. 65	2	A/1/1, C/3/3	No effect	No impact to historical resources
3-002/757 S. Flower St.	2	A/1/1, C/3/3	No adverse effect	No impact to historical resources
3-004/801 S. Flower St.	2	3/3	Not applicable (801 S Flower is not a historic property)	Potentially significant; less than significant impact with mitigation incorporated (CR-6)
3-006/Air Raid Siren No. 5	2	A/1/1, C/3/3	No effect	No impact to historical resources
3-007/S. Hope St. Streetlights	2	1/3	Not applicable (S. Hope St. Streetlights is not a historic property)	No impact to historical resources

Map Reference No./Property Address or Name	Alternative	Eligibility Criteria (NRHP/CRHR/Local)[1]	Section 106 Finding	CEQA Finding
3-008/423 W. 8th St.	2	1/1, 3/3	Not applicable (423 W. 8th St. is not a historic property)	No impact to historical resources
3-009/419½ W. 8th St.	2	3/1, 3	Not applicable (419½ W. 8th St. is not a historic property)	No impact to historical resources
3-010/416 W. 8th St.	2	C/3/3	No adverse effect	No impact to historical resources
3-013/313 W. 8th St.	2	A/1/1	No adverse effect	No impact to historical resources
3-014/801 S. Spring St.	2	C/3/3	No adverse effect	No impact to historical resources
3-015/756 S. Spring St.	2	C/3/1, 3	No adverse effect	No impact to historical resources
3-016/S. Main St. Streetlights	2	1, 3 (local)	Not applicable (S. Main St. Streetlights is not a historic property)	No impact to historical resources
3-017/810 S. Spring St.	2	C/3/3	No adverse effect	No impact to historical resources
3-018/752 S. Main St.	2	1/1, 3/3	Not applicable (752 S. Main St. is not a historic property)	Impact to historical resources
3-019/812 S. Spring St.	2	3 (local)	Not applicable (812 S. Spring St. is not a historic property)	No impact to historical resources
3-021/801 S. Los Angeles St.	2	1/1, 3/3	Not applicable (801 S. Los Angeles St.is not a historic property)	No impact to historical resources
3-022/809 S. Los Angeles St.	2	3/3	Not applicable (809 S. Los Angeles St. is not a historic property)	No impact to historical resources
3-023/760 S. Hill St.	2	A/1/1, C/3/3	No adverse effect	No impact to historical resources
3-024/403 W. 8th St.	2	C/3/3	No adverse effect	No impact to historical resources
3-025/301 W. 8th St.	2	District: A/1, C/3	No adverse effect	No impact to historical resources
3-026/756 S. Broadway	2	C/3/1,2,3 District: A/1, C/3	No adverse effect	No impact to historical resources
3-027/800 S. Broadway	2	1, 3 (local) District: A/1, C/3	No adverse effect	No impact to historical resources

Map Reference No./Property Address or Name	Alternative	Eligibility Criteria (NRHP/CRHR/Local)[1]	Section 106 Finding	CEQA Finding
3-028/801 S. Broadway	2	1,3 (local) District: A/1, C/3	No adverse effect	No impact to historical resources
3-029/810-830 S. Flower St.	2	A/1/1, C/3/3	No adverse effect	No impact to historical resources
3-030/800 W. 7th St.	2	C/3 District: A/1/1, C/3/3	No adverse effect	Potentially significant; less than significant impact with mitigation incorporated (CR-6)
4-001/Air Raid Siren No. 10	2	A/1/1, C/3/3	No adverse effect	No impact to historical resources
4-007/508 E. 8th St.	2	C/3/3	No effect	No impact to historical resources
4-021/740-746 Towne Ave.	2	1/1	Not applicable (740-746 Towne Ave. is not a historic property)	No impact to historical resources
4-037/315 E. 8th St.	2	B/2/2, C/3/3	No effect	No impact to historical resources
4-038/217 E. 8th St.	2	C/3/2, 3	No adverse effect	No impact to historical resources
4-039/840 S. Santee St.	2	A/1/1, C/3/3	No adverse effect	No impact to historical resources
5-003/Air Raid Siren No. 189	1/2	A/1/1, C/3/3	No effect	No impact to historical resources
5-004/1753 E. Olympic Blvd.	1/2	C/3/3	No adverse effect	No impact to historical resources
5-005/1731 E. Olympic Blvd.	1/2	C/3	Not applicable (1731 E. Olympic Blvd. is not a historic property)	No impact to historical resources
5-009/1250 Long Beach Ave.	1/2	C/3/3	No adverse effect	No impact to historical resources
5-010/Los Angeles Union Terminal District	1/2	A/1, C/3	Alt 1: No adverse effect Alt 2: No adverse effect	Alt 1: No impact to historical resources Alt 2: Potentially significant; less than significant impact with mitigation incorporated (CR-6)
6-004/1608 East 15th St.	1/2	C/3/3	No adverse effect	No impact to historical resources
6-006/1600 Compton Ave.	1/2	C/3/3	No adverse effect	No impact to historical resources
6-014/2001 South Alameda St.	1/2	C/3/3	No adverse effect	No impact to historical resources

Map Reference No./Property Address or Name	Alternative	Eligibility Criteria (NRHP/CRHR/Local)[1]	Section 106 Finding	CEQA Finding
6-020/Air Raid Siren No. 70	1/2	A/1/1, C/3/3	No adverse effect	Impact to historical resources
8-013/ Pueblo Del Rio Public Housing Complex Historic District (portion of)	1/2	A/1/1, C/3/3	No adverse effect	No impact to historical resources
9-015/1978 Belgrave Ave.	1/2/3	C/3/3	No adverse effect	No impact to historical resources
10-012/6101 Santa Fe Ave.	1/2/3	C/3/3	No adverse effect	No impact to historical resources
10-017/2860 Randolph St.	1/2/3	C/3/3	No adverse effect	No impact to historical resources
11-016/So. Cal. Edison Randolph Substation	1/2/3	C/3/3	No adverse effect	No impact to historical resources
11-018/6300-6302 State St.	1/2/3	C/3/3	No adverse effect	No impact to historical resources
13-001/6231 Maywood Ave.	1/2/3	3/3	Not applicable (6231 Maywood Ave. is not a historic property)	No impact to historical resources
13-003/3477 East Gage Ave.	1/2/3	3/3	Not applicable (3477 East Gage Ave. is not a historic property)	No impact to historical resources
17-005/LADWP Boulder Dam-Los Angeles 287.5 kV Transmission Line	1/2/3	A/1, C/3	No adverse effect	No impact to historical resources
17-006/Union Pacific Los Angeles River Rail Bridge	1/2/3	C/3/E	No adverse effect	No impact to historical resources
18-016/ So. Cal. Edison Long Beach to Laguna Bell Transmission Line (portion of)	1/2/3	A/1, C/3	No adverse effect	No impact to historical resources
19-013/Rancho Los Amigos Medical Center Historic District (portion of)	1/2/3	A/1	No adverse effect	No impact to historical resources

Map Reference No./Property Address or Name	Alternative	Eligibility Criteria (NRHP/CRHR/Local)[1]	Section 106 Finding	CEQA Finding
21-027/I-105-Century Freeway-Transitway Historic District (portion of)	1/2/3/4	A/1, C/3	No adverse effect	Less than significant impact to historical resources
24-001/14813-14819 Paramount Blvd.	1/2/3/4	C/3	No adverse effect	No impact to historical resources
28-008/Bellflower Pacific Electric Railway Depot	1/2/3/4	A/1, C/3	No adverse effect	No impact to historical resources
28-009/10040 Flora Vista St.	1/2/3/4	C/3	No adverse effect	No impact to historical resources
32-021/18644 Alburtis Ave.	1/2/3/4	3 (local)	Not applicable (18644 Alburtis Ave. is not a historic property)	No impact to historical resources

Source: Metro 2021u

Notes: APE = Area of Potential Effects; CEQA = California Environmental Policy Act; CRHR = California Register of Historical Resources: kV = kilovolt; NRHP = National Register of Historic Places

[1] Eligibility criteria are presented with NRHP criterion first, followed by CRHR criterion and then local criterion (for example: A/1/1); see the Regulatory Setting and Methodology (Section 4.14.1) of this Chapter and/or the Cultural Resources Effects Report for further description of NRHP, CRHR, and applicable local eligibility criteria.

Four of the historic properties in the APE (MRN 3-024, 3-026, 3-027, 3-028) are contributors to the NRHP/CRHR-listed Broadway Theater and Commercial Historic District (MRN 3-032). Two of the historic properties in the APE comprise large portions of listed/determined eligible historic districts; these are Pueblo del Rio Public Housing Complex Historic District (MRN 8-013) and the I-105/Century Freeway-Transitway Historic District (MRN 21-027). The Los Angeles Union Terminal Buildings Historic District (5-010) and the Rancho Los Amigos Medical Center Historic District (19-013) are entirely within the APE.

Built Environment Historical Resources

As noted above, all of the historic properties in the APE are also historical resources for the purposes of CEQA. Identified in Figure 4.14-1 in green and listed in Table 4.14.3, the architectural APE additionally includes 14 properties that are ineligible for listing in the NRHP but eligible for the CRHR and/or local designation. Table 4.14.4 identifies the number of built environment historical resources located in each for the four project alternatives. As properties only eligible for listing in the CRHR and/or for local designation, they are considered historical resources for the purposes of CEQA and are not historic properties under Section 106 of the NHPA.

Table 4.14.3. Archaeological Historic Properties/Historical Resources by Alternative

Alternative	Archaeological Historic Properties/Historical Resources Located in Associated APE
Alternative 1	8
Alternative 2*	1
Alternative 3*	1
Alternative 4	0

Source: Metro 2020d; Metro 2021u
Notes: * = The archaeological historic property located in this alternative is a linear resource also located in Alternative 1.
APE = Area of Potential Effects

Table 4.14.4. Built Environment Historical Resources by Alternative

Alternative	Additional Built Environment Historical Resources	Total Built Environment Historical Resources
Alternative 1	4	37
Alternative 2	14	56
Alternative 3	3	17
Alternative 4	1	5

Source: Metro 2020d; Metro 2021u

Of these 14 historical resources, 11 are composed of a single assessor's parcel on which one building is sited. One of the resources, 740-7406 Towne Avenue (MRN 4-021), is comprised of two assessor's parcels on which two buildings are sited. Two of the resources are non-parcel resources (MRN 3-007 and 3-016) consisting of light standards sited in the public ROW. One of the resources, 18644 Alburtis Avenue (MRN 32-021), is a contributor to the Artesia Historic District, a locally eligible historic district.

4.14.2.2 Archaeological Historic Properties/Historical Resources

Eight previously identified archaeological historic properties/historical resources in the direct APE (Primary Number [P]-19-001575, P-19-002849, P-19-003181, P-19-003588, P-19-003862, P-19-004171, P-19-004201, P-19-004202) were identified by the Cultural Resources Survey Report. During the archaeological survey performed for the study, ground visibility was poor (less than 10 percent) throughout the direct APE due to its developed nature, including the presence of rail track and ballast, buildings and structures, pavement, and/or landscaping. No archaeological resources were identified on the surface in the direct APE during the survey. All of the previously identified archaeological historic properties/historical resources are located in developed areas that contain no exposed ground surface, and they were encountered during ground-disturbing construction activities associated with previously conducted projects. Noted in Table 4.14.3, all eight of the archaeological historic properties/historical resources in the APE are located in the direct APE for Alternative 1. One of the archaeological historic properties/historical resources, a linear resource, is also located in the APE for Alternatives 2 and 3. No identified archaeological historic properties/historical resources are located in the APE for Alternative 4. Brief descriptions of each of the archaeological historic properties/historical resources in the APE are provided in Table 4.14.5.

Table 4.14.5. Archaeological Historic Properties/Historical Resources in the APE

Primary Number	Alternative	Description	Eligibility Status/ Eligibility Criteria (NRHP/CRHR)	Section 106 Finding	CEQA Finding
P-19-002849	1/2/3	Linear resource; historic-period utility line; recorded approx. 17-inches below grade	Presumed eligible for NRHP and CRHR-D/4*	Potential adverse effect	Potentially significant impact; less than significant with mitigation incorporated (CR-1 and CR-2)
P-19-003181	1	Historic-period concrete foundation and associated artifact scatter; recorded portion is below buildings and pavement	Presumed eligible for NRHP and CRHR-D/4	Potential adverse effect	Potentially significant impact; less than significant with mitigation incorporated (CR-1 and CR-2)
P-19-003588	1	Historic-period brick foundations and associated deposit of artifacts; recorded below grade within 1 foot	Presumed eligible for NRHP and CRHR-D/4	No adverse effect	Less than significant impact to historical resources

Primary Number	Alternative	Description	Eligibility Status/ Eligibility Criteria (NRHP/CRHR)	Section 106 Finding	CEQA Finding
P-19-003862	1	Historic-period, single-layer brick alignment; recorded approx. 2.0 to 2.5 feet below grade	Presumed eligible for NRHP and CRHR-D/4	No adverse effect	Less than significant impact to historical resources
P-19-004171	1/Design Option 2	Historic-period features and refuse deposits; site extends at least 7 feet below grade	Presumed eligible for NRHP and CRHR-D/4	Alternative 1: No adverse effect Design Option 2: Potential adverse effect	Alternative 1: Less than significant impact to historical resources Design Option 2: Potentially significant impact; less than significant with mitigation incorporated (CR-1 and CR-2)
P-19-004201	1	Five historic-period features; potentially present below current urban landscape	Presumed eligible for NRHP and CRHR-D/4	No adverse effect	No impact to historical resources
P-19-004202	1	Historic-period features associated with railroad; recorded approx. 7 feet below grade	Presumed eligible for NRHP and CRHR-D/4	Potential adverse effect	Potentially significant impact; less than significant with mitigation incorporated (CR-1 and CR-2)
P-19-001575	1	Multicomponent historic and prehistoric site; recorded below developed portions of LAUS property	Determined eligible for NRHP; listed in CRHR-D/4	Potential adverse effect	Potentially significant impact; less than significant with mitigation incorporated (CR-1 and CR-2)

Source: Metro 2020d; Metro 2021u
Notes: APE = Area of Potential Effects; CEQA = California Environmental Quality Act; CRHR = California Register of Historical Resources; LAUS = Los Angeles Union Station; NRHP = National Register of Historic Resources
*= Eligibility criteria are presented with NRHP Criterion first, followed by CRHR Criterion; see the Regulatory Setting and Methodology (Section 4.14.1) of this Chapter for further description of NRHP and CRHR eligibility criteria.

As noted above, the APE is developed and includes a variety of hardscaping and structures, thereby limiting ground surface visibility and access to archaeological historic properties/historical resources for study. Testing of properties/resources prior to the selection of an alternative is infeasible given the cost and effort necessary to conduct testing, such as an Extended Phase I or Phase II study. Under the existing conditions, testing efforts would require the removal of hardscaping and developments (e.g., roads and structures) potentially causing a significant disruption to needed infrastructure and commerce. As such, testing to assess the existing conditions of resources within the APE was not feasible. An archaeological survey of the direct APE was conducted for the Project. However, the eight sites known to have previously existed are located below modern development, and the survey did not identify any archaeological resources on the surface in the direct APE during the survey. Therefore, the analysis presented in the Cultural Resources Survey Report is based on existing documentation from efforts occurring during previous developments. While it is assumed that they remain, it is likely that previously recorded resources may have been removed during previous development and may no longer be extant.

4.14.2.3 Paleontological Resources

The paleontological records search conducted for this study indicates the Natural History Museum of Los Angeles County (NHMLAC) does not have any fossil localities that lie directly within the Affected Area for paleontological resources, but they do have vertebrate localities nearby from the same sedimentary deposits that occur in the subsurface below the Affected Area (McLeod 2017, 2018). Twenty-one previously recorded vertebrate fossil localities have been identified within Quaternary (approximately 1.806 ± 0.005 mya) older alluvium near the Affected Area. Most of the localities were identified in areas mapped at the ground surface as Quaternary younger (Holocene) alluvium, where age of the Quaternary sediments increases with depth. Depth of discovery within these localities varies between 5 feet to over 40 feet. At least one locality (LACM 3347) was recorded at less than 2 feet bgs in Quaternary older alluvium mapped at ground surface. Combined, these localities have yielded several specimens of mammoth, ground sloth, saber-toothed cat, dire wolf, horse, camel, deer, antelope, rabbit, rodent, reptile, salamander, turkey, shark, and bony fish.

Two additional localities have been previously recorded near the Affected Area for paleontological resources from older sedimentary units that may occur at depth below the Quaternary alluvium mapped in downtown Los Angeles near Alternatives 1 and 2. These localities produced vertebrate fossil specimens from the Miocene (approximately 23.03 to 5.33 mya) Puente Formation and Pliocene (approximately 5.33 to 1.81 mya) Fernando Formation, including specimens of at least 10 different taxa of bony fish. Depth of discovery within these localities is not provided.

NHMLAC fossil collections records for the Affected Area for paleontological resources accord with the scientific record of abundant and diverse vertebrate fauna previously identified within similar Pleistocene (approximately 1,806,000 to 11,477 ya) sediments in Southern California (Agenbroad 2003; Bell et al. 2004; Brattstrom and Sturn 1959; Koch et al. 2004; Jefferson 1985, 1991; Maguire and Holroyd 2016; Merriam 1911; Reynolds et al. 1991; Savage et al. 1954; Scott and Cox 2008; Springer et al. 2009; Steadman 1980; Tomiya et al. 2011; Wilkerson et al. 2011; Winters 1954). Based on depth of previous fossil discoveries in the area (McLeod 2017, 2018), the Quaternary younger (Holocene) alluvium mapped at the surface of the Affected Area is underlain by older Quaternary (Pleistocene) fossil-bearing alluvium at

depths as shallow as 5 feet bgs. The entire Affected Area is thus considered to have high paleontological sensitivity at depths at or below 5 feet.

4.14.3 Environmental Consequences/Environmental Impacts

The following section presents a summary of the analysis of effects for the No Build Alternative and operation of Build Alternatives (i.e., 1, 2, 3, and 4), including Design Options 1 and 2, and the Paramount and Bellflower MSF site options.

4.14.3.1 Built Environment Historic Properties

For the purposes of Section 106 and as detailed below, this section describes the preliminary determinations of effect to built environment historic properties that would result from operation of the Project. After circulation of the Draft EIS/EIR and consideration of public comments, the SHPO would be consulted. Following concurrence from the SHPO, preliminary determinations would become final determinations.

No Build Alternative

Under the No Build Alternative, the Project would not be constructed. The existing transportation network would remain, and planned transportation improvements that have been committed to and identified in Metro's constrained 2009 LRTP (Metro 2009a) and the SCAG RTP/SCS (SCAG 2016a), as well as additional projects funded by Measure M that would be completed by 2042, would be implemented. Under the No Built Alternative, the environmental setting would remain in current conditions, with the addition of currently planned and funded projects. Therefore, there would be no effect to built environment historic properties as a result of the No Build Alternative.

Build Alternatives, Design Options, and MSF Site Options

This subsection presents the potential effects common among Alternatives 1, 2, 3, 4; Design Options 1 and 2; and the Paramount and Bellflower MSF site options. Potential operational effects to built environment historic properties in the APE are those directly related to operation of the Project (Alternatives 1, 2, 3, 4; Design Options 1 and 2; and the Paramount and Bellflower MSF site options). These potential effects include noise and vibration effects, visual effects, and property acquisitions and easements. The study presented in the Cultural Resources Effects Report (Appendix X) and summarized in the following subsections indicates that operation of the Built Alternatives, design options, and MSF site options would result in no adverse effect to built environment historic properties.

Potential noise and vibration effects related to operation of the Project were evaluated and presented in the Noise and Vibration Impact Analysis Report (Appendix M) prepared for the Project and summarized in Section 4.7, Noise and Vibration, of this Draft EIS/EIR. In relation to built environment historic properties, noise and vibration would have an adverse effect if they were to alter any of the characteristics of a historic property that qualify it for inclusion in the NRHP. Operational noise and/or vibration levels associated with the Project would not result in physical damage to any of the historic properties in the APE. The APE traverses an urbanized environment and operational noise and/or vibration associated with the Project would not change the character of use or diminish the integrity of any of the significant features of historic properties in the APE. Operational noise and/or vibration associated with the Project would not alter the characteristics of any of the historic properties

in the APE that qualify them for inclusion in the NRHP and therefore would result in no adverse effects.

Operation of the Project would require structures and equipment that would add new visual elements to the existing urban landscape that comprises the APE. Visual elements that would be introduced due to operation of the Project include station entrances, catenary poles and wires, aerial rail structures, TPSSs, and sound walls. These new features would be contemporary in design and therefore would be differentiated from historic-period features. However, as the entire APE is within an already urban setting, the new features would be in keeping with the existing setting and would not change the character of a historic property's use or the physical features within their setting that contribute to their historic significance. New features would not block significant views to or from historic properties in the APE. The introduction of new visual elements such as those noted above as a result of operation of the Project would not diminish the integrity of any built environment historic properties in the APE and therefore would result in no adverse effect.

The potential effects discussed above are generally consistent among Alternatives 1, 2, 3, and 4; Design Options 1 and 2; and the Paramount and Bellflower MSF site options. Therefore, they are not discussed in detail in the subsections below. The following subsections discuss the potential effects of project operation that are unique to Alternatives 1, 2, 3, and 4; Design Options 1 and 2; and the Paramount and Bellflower MSF site options.

Alternative 1: Los Angeles Union Station to Pioneer Station

There are 33 built environment historic properties located in the APE for Alternative 1. As indicated in the Cultural Resources Effects Report (Appendix X) prepared for the Project, operation of Alternative 1 would result in no adverse effect to built environment historic properties. As noted previously, potential noise, vibration, and visual effects due to the introduction of project features associated with operation of Alternative 1 would not alter any of the characteristics of the historic properties in the APE that qualify them for inclusion in the NRHP or the physical features within their setting that contribute to their significance.

Many of the historic properties in the northern portion of Alternative 1 require a permanent (partial) easement for the operation of the rail tunnel proposed under this alternative. However, the tunnel would not change the character of use or alter the significant historic features of any of the historic properties in the APE. The tunnel would be significantly below grade and would not result in visual change to any of the historic properties in the APE or their settings.

There are two built environment historic properties in the APE for Alternative 1 that would be physically altered by its operation: LAUS/MRN 1-007 and I-105/Century Freeway-Transitway Historic District/MRN 21-027. Under Alterative 1, a station entrance would be constructed within the boundaries of LAUS. Although alteration would occur within the boundaries of LAUS, the main terminal building, the district's primary contributing feature, would not be altered by operation of Alternative 1. The proposed station entrance would be sited 65 feet from the LAUS main terminal building. Additionally, the proposed station entrance would be modest in scale and massing when compared to that of the LAUS property as a whole. To further reduce potential effects, the proposed station entrance would be designed in conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties (SOI Standards). The addition and operation of a station entrance within the boundaries of LAUS would not change the character of the property's transportation-related use or physical features that contribute to its significance. Alternative 1 would not

diminish the integrity of the significant historic features of LAUS and no adverse effect would occur.

In addition to LAUS, operation of Alternative 1 would result in the physical alteration of a small portion of the I-105/Century Freeway-Transitway Historic District. Proposed modifications to the district under Alternative 1 include: the demolition and reconstruction of three contributing bridges, construction of an additional bridge (LRT bridge) to accommodate the Alternative 1 alignment, realignment of approximately 2,500 feet of C-Line track and I-105 traffic lanes, and the introduction of an infill station and associated elements of vertical circulation.

The extant bridges (to be demolished and replaced under Alternative 1) were constructed in 1988 with contemporary materials and design. They are 3 of the 118 bridges that are contributing to the district (less than 3 percent). While the bridges are identified as contributing features, they are not individually eligible and are not noteworthy for their architectural style or design. Additionally, they are not identified (by Caltrans in its condition assessment report for the district) as one of the district's most significant features. Although the (replacement) Century Boulevard underpass may be up to 35 feet wider than the current Century Boulevard underpass, replacement bridges would be generally consistent in their scale and massing with existing bridges.

Alternative 1 would add an additional bridge within the boundaries of the district. However, the LRT bridge would be sited immediately adjacent to the (replacement) Century Boulevard Bridge and these bridges would be unified in their scale and massing, which would result in their presentation almost as a single structure. As such, despite replacement of three bridges and the addition of the LRT bridge, the rhythm, spacing, and general location of bridges within the district would not be altered by Alternative 1.

The C Line and I-105 traffic lanes run the length of the district (18.1 miles). Although they are proposed for realignment under Alternative 1, realignment would alter a maximum of 2,500 feet (less than 3 percent) of C-Line track and I-105 lanes. The C Line track and I-105 lane realignment would not alter the district's transportation function or result in major changes to physical features within the property's setting that contribute to its historic significance.

Alternative 1 would introduce an infill station and associated elements of vertical circulation within the district. However, the addition of the infill C-Line Station in the center of the I-105 is consistent with the overall form and function of the district as an intermodal transit system. The historic district includes 10 other light rail stations within its boundaries. The proposed infill station would be consistent in its placement (in the center of the median) and function with other stations throughout the district. While the new infill station would be consistent with existing stations in terms of location and accessibility features, it would also differentiate itself in its design; other stations in the district are Post-Modern inspired. The infill station would feature a more contemporary design.

Operation of Alternative 1 would not result in damage to the I-105/Century Freeway-Transitway Historic District. While demolition would occur within the district, demolished features would be replaced in a manner consistent with those currently extant. None of the alterations proposed within the district would alter the character of use of the district. As an intermodal freeway, the proposed additions are consistent with the historic and current use of the district. Operation of Alternative 1 would not change the character of physical features within the property's setting that contribute to its historic significance. Despite the alterations

proposed under Alternative 1, the district overall would retain integrity of location, setting, design, materials, workmanship, feeling and association. Under NEPA, operation of Alternative 1 would result in no adverse effect to built environment historic properties.

Alternative 2: 7th Street/Metro Center to Pioneer Station

There are 42 built environment historic properties located in the APE for Alternative 2. As indicated in the Cultural Resources Effects Report (Appendix X) prepared for the Project, operation of Alternative 2 would result in no adverse effects to built environment historic properties. As the APE for Alternative 2 includes nine more historic properties than the APE for Alternative 1, the potential for effects to built environment historic properties to occur is greater under Alternative 2 than under Alternative 1.

The analysis related to potential noise, vibration, and visual effects resulting from project features presented above is applicable to Alternative 2. Additionally, three built environment historic properties in the APE for Alternative 2 would be physically altered by its operation: LA Union Terminal/MRN 5-010, the Barker Brothers Building/MRN 3-030, and I-105/ Century Freeway-Transitway Historic District/21-027. One of the historic properties that would be physically altered by the operation of Alternative 2 (I-105/Century Freeway-Transitway Historic District) is also in the APE for Alternative 1 and would be consistently altered under both alternatives. Therefore, the analysis related the I-105/Century Freeway-Transitway Historic District presented above is applicable to Alternative 2.

Additionally, under Alternative 2, a station entrance would be constructed within the boundaries of the LA Union Terminal, and a pedestrian tunnel would be constructed in the basement of the Barker Brothers Building. The proposed station entrance and pedestrian tunnel noted above would not change the character of use of the LA Union Terminal, the Barker Brothers Building, or any of the historic properties in the APE. These elements would be designed in conformance with the SOI Standards and they would not diminish the integrity of the significant historic features of properties in the APE. Therefore, adverse effects would be avoided.

Many of the historic properties in the northern portion of Alternative 2 require a permanent (partial) easement for the operation of the rail tunnel proposed under this alternative. However, the tunnel would not change the character of use or alter the significant historic features of any of the historic properties in the APE. The tunnel would be significantly below grade and would not result in visual change to any of the historic properties in the APE or their settings. Under NEPA, the operation of Alternative 2 would result in no adverse effect to built environment historic properties.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

There are 14 built environment historic properties located in the APE for Alternative 3. As indicated in the Cultural Resources Effects Report (Appendix X) prepared for the Project and summarized above, operation of Alternative 3 would result in no adverse effect to built environment historic properties. The APE for Alternative 3 includes 19 fewer historic properties than the APE for Alternative 1 and 29 fewer historic properties than the APE for Alternative 2. Therefore, potential effects to built environment historic properties are significantly less under Alternative 3 than Alternatives 1 and 2.

The analysis related to potential noise, vibration, and visual operational effects resulting from project features presented above is applicable to Alternative 3. Additionally, there is one historic

property in the APE for Alternative 3 that would be physically altered by its operation: I-105/Century Freeway-Transitway Historic District/21-027. This historic property is also in Alternatives 1 and 2. As proposed modifications to the I-105/Century Freeway-Transitway Historic District under Alternative 3 would be consistent with those proposed under Alternatives 1 and 2, the analysis presented above for Alternative 1 is applicable to Alternative 3.

A majority of the historic properties in the APE for Alternative 3 would not require easements. However, a minimal number of sliver acquisitions are necessary. Sliver acquisitions are small-scale acquisitions that may be necessary to accommodate operation of Alternative 3. These easements would not result in damage to or change the character of use or physical features of any of the historic properties in the APE that contribute to their significance. Under NEPA, operation of Alternative 3 would result in no adverse effect to built environment historic properties.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Four built environment historic properties are located in the APE for Alternative 4. As indicated in the Cultural Resources Effects Report (Appendix X) prepared for the Project, operation of Alternative 4 would result in no adverse effect to built environment historic properties. The APE for Alternative 4 includes 29 fewer historic properties than the APE for Alternative 1, 39 fewer historic properties than the APE for Alternative 2, and 11 fewer historic properties than the APE for Alternative 3. Therefore, the potential for effects to built environment properties is least under Alternative 4.

The analysis related to potential noise, vibration, and visual operational effects resulting from project features presented above is applicable to Alternative 4. There are no historic properties in the APE for Alternative 4 that require permanent easements. Consistent with Alternative 3, one historic property in the APE for Alternative 4 would be directly altered physically by its operation: the I-105/Century Freeway-Transitway Historic District/21-027. This historic property is also in Alternatives 1, 2, and 3. As modifications to the I-105/ Century Freeway-Transitway Historic District under Alternative 4 would be consistent with those proposed under Alternatives 1, 2, and 3, the analysis presented above for Alternative 1 is applicable to Alternative 4. Under NEPA, operation of Alternative 4 would result in no adverse effect to historic properties.

Design Options—Alternative 1

Design Option 1: LAUS at MWD: The potential for effects as a result of operation of Design Option 1 (MWD) and Alternative 1 are generally consistent, and there is not an increased potential for effects to built environment historic properties resulting from operation of Alternative 1 with Design Option 1 (MWD) when compared to Alternative 1 without Design Option 1 (MWD).

The analysis related to potential noise, vibration, and visual operational effects resulting from project features presented above is applicable to Design Option 1 (MWD). Additionally, operation of Design Option 1 (MWD) would require a permanent, partial underground easement below LAUS/MRN 1-007. However, the addition of the tunnel would not diminish the integrity of the LAUS property because it would be located significantly below grade and therefore would not result in any visual alteration to the property. In addition to the underground easement, permanent above-grade ventilation grating would be added to LAUS under Design Option 1 (MWD). Ventilation grating would be installed flush with the existing

paved surfaces on the property and would not detract from or significantly alter the property's already urban environment.

Project operations would not change the use or alter the historic characteristics of any of the extant built environment historic properties, including LAUS, in a manner that would diminish their integrity of location, design, setting, materials, workmanship, feeling, or association. Existing built environment historic properties would continue to convey their significance. Under NEPA, operation of Design Option 1 (MWD) would result in no adverse effect to built environment historic properties.

Design Option 2: Add Little Tokyo Station: The potential for effects as a result of operation of Design Option 2 and Alternative 1 are generally consistent, and there is not an increased potential for effects to built environment historic properties resulting from operation of Alternative 1 with Design Option 2 when compared to Alternative 1 without Design Option 2.

No built environment historic properties are located in the immediate vicinity of the proposed Little Tokyo Station, which would be constructed below grade under Design Option 2. 216 South Alameda Street/MRN 2-003, the historic property most proximately located to the proposed station, is approximately 140 feet from the Little Tokyo Station southern underground station access. However, the station entrance would be visually blocked from 216 South Alameda Street by MRN 2-002 and physically separated from it by East Second Street and no effects would result. Under NEPA, operation of Design Option 2 would result in no effect to built environment historic properties.

Maintenance and Storage Facility

Paramount MSF Site Option: Permanent acquisitions and/or easements may be required for operation of the Paramount MSF site option. However, no permanent acquisitions and/or easements of built environment historic properties are proposed. No built environment historic properties are located within the proposed construction footprint of the Paramount MSF site option. However, the Paramount MSF site option is located 450 feet west of (to the rear) of one historic property: Our Lady of the Rosary Church/MRN 24-001.

The eligibility of Our Lady of the Rosary Church is related to its architecture, which would not be altered by operation of the Paramount MSF site option. The property on which Our Lady of the Rosary Church is located would not be physically altered by operation of the Paramount MSF site option. However, the Paramount MSF site option would introduce new visual elements to the vicinity of the historic property. New elements would not significantly alter the visual character and quality of the area or reduce the property's integrity. The property on which the Paramount MSF site option is proposed is currently occupied with mixed commercial and industrial use and a variety of buildings and structures that include a large-scale abandoned industrial site. Therefore, the Paramount MSF would not further alter the existing visual character and setting of Our Lady of the Rosary Church. Operation of the Paramount MSF would result in no adverse effect to built environment historic properties.

Bellflower MSF Site Option: Permanent acquisitions and/or easements may be required for operation of the Bellflower MSF site option. However, no permanent acquisitions and/or easements of built environment historic properties are proposed. No built environment historic properties are located in the vicinity of the proposed Bellflower MSF site option. The closest historic property is Our Lady of the Rosary Church/MRN 24-001, which is approximately 1-mile northwest of the proposed Bellflower MSF. Operation of the Bellflower

MSF would therefore result in no effect to built environment historic properties. When comparing the potential for effects to built environment historic properties associated with operation of the Paramount and Bellflower MSF site options, operation of the Paramount MSF has a greater potential for effects due to the presence of one as opposed to zero historic properties in its vicinity.

4.14.3.2 Archaeological Historic Properties

As detailed below, FTA for the purposes of Section 106 has made the following preliminary determinations that are based on the analysis presented in the Cultural Resources Effects Report (Appendix X) prepared for the Project. Operation of Alternatives 1, 2, 3, and 4; Design Options 1 and 2; and the Paramount and Bellflower MSF site options would result in no effect to archaeological historic properties.

No Build Alternative

Under the No Build Alternative, the Project would not be constructed. The existing transportation network would remain and planned transportation improvements that have been committed to and identified in the constrained 2009 LRTP and SCAG's RTP/SCS, as well as additional projects funded by Measure M that would be completed by 2042, would be implemented. Under the No Build Alternative, no new ground disturbance would result from operation of the Project because the Project would not be constructed, and the environmental setting would remain in current conditions (with the addition of currently planned and funded projects). As there would be no ground disturbance under the No Build Alternative, no effect to known or unanticipated archaeological resources would occur.

Build Alternatives

Under the Build Alternatives there would be minimal, if any, ground disturbance associated with the ongoing maintenance and operation of the Project. Additionally, noise, vibration, and visual effects associated with the ongoing maintenance and operation of the Project are not expected to affect archaeological resources under the Build Alternatives. Therefore, there would be no effect to archaeological historic properties as a result of operation of the Build Alternatives. The potential for effects to archaeological historic properties is greatest under Alternative 1 due to its length and number of archaeological historic properties present within its APE. The potential for effects to archaeological historic properties is less under Alternatives 2, with one known archaeological historic property in its APE, than under Alternative 1. The potential for effects to archaeological historic properties is less under Alternative 3, also with one known archaeological historic property it its APE but with a significantly reduced alignment proposed, than under Alternative 2. The potential for effects to archaeological historic properties is least under Alternative 4, which is the shortest alternative with no known archaeological historic properties in its APE.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Similar to the Build Alternatives, there would be minimal, if any, ground disturbance associated with the ongoing maintenance and operation of Design Options 1 and 2. Additionally, noise, vibration, and visual effects associated with ongoing maintenance and operation of the Project are not expected to affect archaeological resources under Design Options 1 and 2. Therefore, there would be no effect to archaeological historic properties as a result of operation of Design Options 1 and 2. The potential for effects to archaeological historic

properties are consistent between Alternative 1 without Design Options 1 and/or 2 and Alternative 1 with Design Options 1 and/or 2.

Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option: No ground-disturbing activities are proposed at the Paramount or Bellflower MSF site options during operation phase of the Project. Therefore, there would be no effect to archaeological historic properties associated with operation of either MSF site option. The potential for effects to archaeological historic properties are consistent between the Paramount and Bellflower MSF site options.

4.14.3.3 Paleontological Resources

No Build Alternative

Under the No Build Alternative, the Project would not be constructed. The existing transportation network would remain and planned transportation improvements that have been committed to and identified in the constrained 2009 LRTP and SCAG's RTP/SCS, as well as additional projects funded by Measure M that would be completed by 2042, would be implemented. Under the No Build Alternative, no new ground disturbance would result from operation of the Project because the Project would not be constructed, and the environmental setting would remain in current conditions (with the addition of currently planned and funded projects). The No Build Alternative would result in no effect to paleontological resources.

Build Alternatives

Under NEPA, direct and indirect adverse effects to paleontological resources due to ongoing maintenance and operations under the project alternatives (i.e., Alternatives 1, 2, 3, and 4) would be negligible because there would be minimal, if any, ground disturbance during operation of the Project. As a result, there would be no adverse effect to paleontological resources during operation of the Project. As the entire Affected Area for paleontological resources is considered to have the same paleontological sensitivity (high at depths at or below 5 feet), potential effects to paleontological resources associated with operation of the Build Alternatives is consistent among Alternatives 1, 2, 3, and 4. However, as Alternatives 1 and 2 are significantly longer than Alternatives 3, and 4, the potential for effects is greater under these alternatives. Given its length, the potential for effects to paleontological resources as a result of project operation is least under Alternative 4.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Neither Design Option 1 or 2 would require ground disturbance during operation. Therefore, no adverse effect to paleontological resources would occur as a result of operation of either design option. As noted above, the entire Affected Area for paleontological resources is considered to have a consistent paleontological sensitivity (high at depths at or below 5 feet). Therefore, potential effects to paleontological resources associated with operation of Design Option 1 and 2 are consistent with one another and do not present increased potential for effects when compared to Alternative 1 without Design Option 1 or 2.

Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option: No ground-disturbing activities are proposed at the Paramount or Bellflower MSF site options during operation of the

Project. Therefore, there would be no adverse effect to paleontological resources resulting from operation of either MSF site option. The potential for effects to paleontological resources is consistent between the Paramount and Bellflower MSF site options.

4.14.4 Project Measures and Mitigation Measures

As presented in the analysis in the prior sections, operation of Alternatives 1, 2, 3, and 4; Design Options 1 and 2; and the Paramount and Bellflower MSF site options would result in no effect to archaeological historic properties and no adverse effect to paleontological resources. No project measures or mitigation measures are required. Implementation of Mitigation Measure CR-6 (Historic Design Review) is required to reduce potential adverse effects to built environment historic properties related to the operation of Alternative 1 and 2.

CR-6 – Historic Design Review

Project elements with the potential to affect the significance of a historic property or historical resource would be designed in conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Rehabilitating Historic Properties. Designs would preserve the character-defining features of the historic property; would avoid minimizing aspects of integrity; and would avoid damaging or destroying materials, features, or finishes that convey significance. Proposed designs would be reviewed by a historic preservation professional that meets the Secretary of the Interior's Professional Qualification Standards for Architectural History, History, or Architecture, and construction activities would require on-site periodic construction monitoring by a historic preservation consultant.

4.14.5 California Environmental Quality Act Determination

The following section summarizes the analysis of impacts for the No Project Alternative and operation of the Build Alternatives (i.e., Alternatives 1, 2, 3, and 4), including the design options and maintenance and storage facility site options.

4.14.5.1 Historic Built Resources

Would the Project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

No Project Alternative

Under the No Project Alternative, the Project would not be constructed; no new infrastructure would be built within the APE; and the existing freight tracks within the rail ROWs would remain. Under the No Project Alternative, the environmental setting would remain in current conditions. Therefore, the No Project Alternative would result in no impact to built environment historical resources, and mitigation would not be required.

Build Alternatives, Design Options, and MSF Site Options

This subsection presents the potential impacts common among Alternatives 1, 2, 3, and 4; Design Options 1 and 2; and the Paramount and Bellflower MSF site options. The study presented in the Cultural Resources Effects Report (Appendix X), and summarized in the following subsections, indicates that operation of the Project would not result in significant impacts to historical resources.

Potential noise and vibration impacts related to operation of the Project were evaluated and presented in the Noise and Vibration Impact Analysis Report (Appendix M) and summarized in Section 4.7, Noise and Vibration, of this Draft EIS/EIR. Consistent with the effects analysis presented above in relation to historical resources, noise and vibration impacts were analyzed based on their potential to significantly impact historical resources. Operational noise and/or vibration associated with the Project would not diminish the integrity of any of the historical resources in the APE and therefore would result in less than significant impacts to built environment historical resources.

Operation of the Project would require structures and equipment that would add new visual elements to the existing urban landscape, including station entrances, catenary poles and wires, aerial rail structures, TPSSs, and sound walls. However, consistent with the effects analysis presented above, the introduction of project-associated features would not materially impair or reduce the integrity of any of the built environment historical resources in the APE.

The potentially significant impacts discussed above are generally consistent among Alternatives 1, 2, 3, and 4; Design Options 1 and 2; and the Paramount and Bellflower MSF site options. Therefore, they are not discussed in detail in the alternative-specific subsections below. The subsections that follow discuss the potentially significant impacts of project operation that are unique to Alternatives 1, 2, 3, and 4; Design Options 1 and 2; and the Paramount and Bellflower MSF site options.

Alternative 1: Los Angeles Union Station to Pioneer Station

There are 37 built environment historical resources located in the APE for Alternative 1. As indicated in the Cultural Resources Effects Report (Appendix X) prepared for the Project, operation of Alternative 1 would result in less than significant impacts to built environment historical resources with mitigation incorporated (Mitigation Measure CR-6 [Historic Design Review]). As noted in the section above, potential noise, vibration, and visual impacts due to the introduction of project features associated with operation of Alternative 1 would not diminish the integrity of any of the historical resources in the APE.

Many historical resources in the northern portion of Alternative 1 require a permanent (partial) easement for the operation of the rail tunnel proposed under this alternative. However, the addition of the tunnel would not diminish the integrity of any of the historical resources in the APE. The tunnel would be located significantly below grade and, therefore, would not result in visual impacts.

Two built environment historical resources in the APE for Alternative 1 would be physically altered by its operation: LAUS/MRN 1-007 and I-105/Century Freeway-Transitway Historic District/MRN 21-027. Proposed modifications to LAUS and the I-105/Century Freeway-Transitway Historic District are described in detail for Alternative 1 in Section 4.14.3.1.

As required by Mitigation Measure CR-6 (Historic Design Review), the proposed station entrance within the boundaries of LAUS would be designed in conformance with the SOI Standards, thereby resulting in less than significant impacts. Despite the alterations proposed to the I-105/Century Freeway-Transitway Historic District under Alternative 1, following implementation, the district would retain integrity of location, setting, design, materials, workmanship, feeling, and association, and impacts would be less than significant.

Without mitigation, operation of Alternative 1 may result in significant impacts to built environment historical resources. However, with mitigation, operation of Alternative 1 would result in less than significant impacts to built environment historical resources.

Mitigation Measures: Mitigation Measure CR-6 (Historic Design Review)

Impacts Remaining After Mitigation: Less than significant.

Alternative 2: 7th Street/Metro Center to Pioneer Station

There are 56 built environment historical resources located in the APE for Alternative 2. As indicated in the Cultural Resources Effects Report (Appendix X) prepared for the Project, operation of Alternative 2 would result in less than significant impacts to built environment historical resources with mitigation incorporated (Mitigation Measure CR-6 [Historic Design Review]). As the APE for Alternative 2 includes 19 more historical resources than the APE for Alternative 1, the potential for impacts to built environment historic properties is greater under Alternative 2 than under Alternative 1.

As noted previously, potential noise, vibration, and visual impacts due to the introduction of project features associated with operation of Alternative 2 would diminish the integrity of any of the historical resources in the APE. Many historical resources in the northern portion of Alternative 2 require a permanent (partial) easement for the operation of the rail tunnel proposed under this alternative. However, the addition of the tunnel would not diminish the integrity of any of the historical resources in the APE. The tunnel would be located significantly below grade and, therefore, would not result in any visual impacts.

Four historical resources in the APE for Alternative 2 would be physically altered by its operation: LA Union Terminal/MRN 5-010, the Barker Brothers Building/MRN 3-030, 801, South Flower Street/MRN 3-004, and the I-105/Century Freeway-Transitway Historic District/MRN 21-027. One of the historic properties that would be physically altered by the operation of Alternative 2 (I-105/Century Freeway-Transitway Historic District) is also in the APE for Alternative 1 and would be similarly altered under both alternatives. Despite the alterations proposed to the I-105/Century Freeway-Transitway Historic District under Alternative 2, following implementation, the district would retain integrity of location, setting, design, materials, workmanship, feeling, and association, and impacts would be less than significant.

Additionally, under Alternative 2, station entrances would be constructed within the boundaries of the LA Union Terminal and 801 South Flower Street, and a pedestrian tunnel would be constructed in the basement of the Barker Brothers Building. The proposed station entrances and pedestrian tunnel noted above would not change the character of use of these historical resources, nor would they introduce elements that would diminish the integrity of the historical resources in the APE. As required by Mitigation Measure CR-6 (Historic Design Review), these elements would be designed in conformance with the SOI Standards, thereby resulting in less than significant impacts.

Without mitigation, operation of Alternative 2 may result in significant impacts to built environment historical resources. However, with mitigation incorporated, operation of Alternative 2 would result in less than significant impacts to built environment historical resources.

Mitigation Measures: Mitigation Measure CR-6 (Historic Design Review)

Impacts Remaining After Mitigation: Less than significant.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

There are 17 built environment historical resources located in the APE for Alternative 3. As indicated in the Cultural Resources Effects Report (Appendix X) prepared for the Project, operation of Alternative 3 would result in less than significant impacts to built environment historical resources. The APE for Alternative 3 includes 20 fewer historical resources than the APE for Alternative 1 and 39 fewer historical resources than the APE for Alternative 2. Therefore, potential impacts to built environment historic properties are significantly less under Alternative 3 than Alternatives 1 and 2.

The analysis related to potential noise, vibration, and visual operational impacts resulting from project features presented above is applicable to Alternative 3. A majority of the historical resources in the APE for Alternative 3 require no easements; a limited number of sliver acquisitions are necessary. However, these would be minimal and would not diminish the integrity of any of the historical resources in the APE.

One historical resource in the APE for Alternative 3 would be physically altered by its operation: I-105/Century Freeway-Transitway Historic District/21-027. This historical resource is also in the APE for Alternatives 1 and 2, and modifications to the Century Freeway-Transitway Historic District under Alternative 3 would be consistent with those previously described. Despite the alterations proposed to the I-105/Century Freeway-Transitway Historic District under Alternative 3, following implementation, the district would retain integrity of location, setting, design, materials, workmanship, feeling, and association, and impacts would be less than significant. No additional built environment historical resources in the APE for Alternative 3 would be directly altered physically by its operation.

Operation of Alternative 3 would result in less than significant impacts to historical resources, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

There are five built environment historical resources located in the APE for Alternative 4. As indicated in the Cultural Resources Effects Report (Appendix X) prepared for the Project, operation of Alternative 4 would result in less than significant impacts to built environment historical resources. The APE for Alternative 4 includes 32 fewer historical resources than the APE for Alternative 1, 51 fewer historic properties than the APE for Alternative 2, and 12 fewer historical resources than the APE for Alternative 3. Therefore, the potential for impacts to built environment historical resources is significantly less under Alternative 4.

The analysis related to potential noise, vibration, and visual operational impacts resulting from the project features presented above is applicable to Alternative 4. There are no historical resources in the APE for Alternative 4 that require permanent easements. One historical resource property in the APE for Alternative 4 would be directly altered physically by its operation: the I-105/Century Freeway-Transitway Historic District/21-027. This historic property is also in Alternatives 1, 2, and 3, and modifications to the Century Freeway-Transitway Historic District under Alternative 4 would be consistent with those previously described. Despite the alterations proposed to the I-105/Century Freeway-Transitway Historic District under Alternative 4, following implementation, the district would retain integrity of

location, setting, design, materials, workmanship, feeling, and association, and impacts would be less than significant. No additional built environment historical resources in the APE for Alternative 3 would be directly altered physically by its operation. Operation of Alternative 4 would result in less than significant impacts to historical resources, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD: The potential for impacts as a result of operation of Design Option 1 (MWD) and Alternative 1 are generally consistent, and there is not an increased potential for operational impacts to built environment historical resources resulting from Alternative 1 with Design Option 1 (MWD) when compared to Alternative 1 without Design Option 1 (MWD).

The analysis related to potential noise, vibration, and visual operational effects resulting from project features presented above is applicable to Design Option 1 (MWD). Additionally, operation of Design Option 1 (MWD) would require a permanent, partial underground easement below LAUS. However, the addition of the tunnel would not diminish the property's integrity because it would be located significantly below grade and would not result in a visual impact. Additionally, permanent above-grade ventilation grating would be added to LAUS under Design Option 1 (MWD). However, ventilation grating installed on the historic property would be flush with the existing paved surfaces and would not detract from or significantly alter the already urban environment.

Project operations would not change the use or alter the historic characteristics of any extant built environment historical resources in the APE, including LAUS, in a manner that would diminish their integrity of location, design, setting, materials, workmanship, feeling, or association. Existing built environment historical resources would continue to convey their significance.

Operation of Design Option 1 (MWD)would result in a less than significant impact to built environment historical resources, and mitigation would not be required.

Design Option 2: Add Little Tokyo Station: The potential for impacts as a result of operation of Design Option 2 and Alternative 1 are generally consistent, and there is not an increased potential for impacts to built environment historical resources resulting from operation of Alternative 1 with Design Option 2 when compared to Alternative 1 without Design Option 2.

The analysis related to potential noise, vibration, and visual operational impacts resulting from project features presented above is applicable to Design Option 2. There are no easements of historical resources necessary under Design Option 2. No built environment historical resources are in the immediate vicinity of Little Tokyo Station, which would be constructed below grade under Design Option 2. 216 South Alameda Street/MRN 2-003 is approximately 140 feet from the Little Tokyo Station southern underground station access. The station entrance would be visually blocked from the historical resource by MRN 2-002. It would also be physically separated from that proposed station entrance by MRN 2-002, in addition to East 2nd Street. Operation of Design Option 2 would therefore result in no impact to built environment historical resources, and mitigation would not be required. Operation of Design Option 2 would result in no impact to built environment historical resources, and mitigation would not be required.

Maintenance and Storage Facility

Paramount MSF Site Option: The analysis related to potential noise, vibration, and visual operational impacts resulting from project features presented above is applicable to the Paramount MSF site option. Permanent acquisitions and/or easements may be required for operation of the Paramount MSF site option. However, no permanent acquisitions and/or easements of built environment historical resources are proposed. No built environment historical resources are in the direct project footprint associated with the Paramount MSF site option. However, the proposed Paramount MSF is located directly to the west (rear) of one historical resource (Our Lady of the Rosary Church/MRN 24-001). The resource's eligibility is related to its architecture, which would not be altered by operation of the Paramount MSF site option. While it would introduce new visual elements to the vicinity of this historic property, new elements would not significantly alter the visual character and quality of the area, which may be characterized as urban, or reduce the property's integrity. Operation of the Paramount MSF would result in a less than significant impact to historical resources, and mitigation would not be required.

Bellflower MSF Site Option: The analysis related to potential noise, vibration, and visual operational impacts resulting from project features presented above is applicable to the Bellflower MSF site option. Permanent acquisitions and/or easements may be required for operation of the Bellflower MSF site option. However, no permanent acquisitions and/or easements of built environment historical resources are proposed. No built environment historical resources are located in the vicinity of the proposed Bellflower MSF site option. The closest historical resource proper is Our Lady of the Rosary Church/MRN 24-001, located approximately 1-mile northwest of the Bellflower MSF site option. Operation of the Bellflower MSF would result in no impact to built environment historical resources, and mitigation would not be required.

When comparing the potential impacts to built environment historical resources associated with operation of the Paramount and Bellflower MSF site options, operation of the Paramount MSF has a greater potential for effects due to the presence of one as opposed to zero historical resources in its vicinity.

4.14.5.2 Archaeological Resources

Would the Project cause a substantial adverse change in the significance of an archaeological resource as defined in Section 15064.5?

No Project Alternative

Under the No Project Alternative, the Project would not be constructed, and no new infrastructure would be built within the direct APE. No ground disturbance would occur under the No Project Alternative. Therefore, no impact to known or unanticipated archaeological resources would occur as a result of the No Project Alternative, and mitigation would not be required.

Build Alternatives

Under Alternatives 1, 2, 3, and 4, potential physical impacts related to operation of the Project would be negligible because there would be minimal, if any, ground disturbance associated with the ongoing maintenance and operation of the Project under these alternatives. Other impacts such as noise, vibration, and visual associated with the ongoing maintenance and operation of the Project are not expected to affect archaeological

resources. Therefore, there would be no impact to archaeological resources as a result of operation of Alternatives 1, 2, 3, and 4, and mitigation would not be required.

The potential for impacts to archaeological historical resources is greatest under Alternative 1 due to its length and number of archaeological historical resources present within its APE. The potential for impacts to archaeological historical resource is less under Alternatives 2 and 3 (both have one known archaeological historical resource in their APE) than under Alternative 1 and is least under Alternative 4 (the shortest alternative with no known archaeological historical resources in its APE).

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: There would be minimal, if any, ground disturbance as a result of operation of Design Options 1 and 2. Therefore, no impacts would occur, and mitigation would not be required. The potential for impacts to archaeological historical resources is consistent between Alternative 1 without Design Option 1 and/or 2 and Alternative 1 with Design Option 1 and/or 2.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: No ground-disturbing activities are proposed at the Paramount or Bellflower MSF site options during the operation phase of the Project. Therefore, there would be no impact to archaeological resources during operation of either MSF, and mitigation would not be required. The potential for impacts to archaeological historical resources is consistent among the Paramount and Bellflower MSF site options.

Would the Project disturb any human remains, including those interred outside of dedicated cemeteries?

No Project Alternative

Under the No Project Alternative, the Project would not be constructed, and no new infrastructure would be built within the direct APE. No ground disturbance would occur under the No Project Alternative. Therefore, no impact to human remains would occur as a result of the No Project Alternative. and mitigation would not be required.

Build Alternatives

Under Alternatives 1, 2, 3, and 4, potential physical impacts related to operation of the Project would be negligible because there would be minimal, if any, ground disturbance associated with the ongoing maintenance and operation of the Project under these alternatives. Other impacts such as noise, vibration, and visual associated with the ongoing maintenance and operation of the Project are not expected to impact interred human remains. Therefore, there would be no impact to human remains as a result of operation of Alternatives 1, 2, 3, and 4, and mitigation would not be required.

The potential for impacts to human remains is greatest under Alternative 1 due to its length. The potential for impacts to human remains is less under Alternatives 2 and 3 than under Alternative 1 and is least under Alternative 4, which has the shortest alignment.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: There would be minimal, if any, ground disturbance as a result of operation of Design Options 1 and 2.

Therefore, no impact to human remains would occur, and mitigation would not be required. The potential for impacts to human remains is consistent between Alternative 1 without Design Options 1 and/or 2 and Alternative 1 with Design Options 1 and/or 2.

Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option: No ground-disturbing activities are proposed at the Paramount or Bellflower MSF site options during operation of the Project. Therefore, there would be no impact to human remains during operation of either MSF, and mitigation would not be required. The potential for impacts to human remains is consistent between the Paramount and Bellflower MSF site options.

4.14.5.3 Paleontological Resources

Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

No Project Alternative

Under the No Project Alternative, the Build Alternatives would not be constructed and the environmental setting would remain in current conditions. Therefore, no impact to paleontological resources would result, and mitigation would not be required.

Build Alternatives

Direct impacts to paleontological resources due to ongoing maintenance and operation under Alternatives 1, 2, 3, and 4 would be negligible because there would be minimal, if any, ground disturbance during operation of the Project under these alternatives. Therefore, the Build Alternatives would result in no impact to paleontological resources, and mitigation would not be required.

As the entire Affected Area for paleontological resources is considered to have the same paleontological sensitivity (high at depths at or below 5 feet), potential impacts to paleontological resources associated with project operation is consistent among Alternatives 1, 2, 3, and 4. However, as Alternatives 1 and 2 are significantly longer than Alternatives 3, and 4, the potential for impacts is greater under these alternatives. Given its length, the potential for impacts to paleontological resources as a result of project operation is least under Alternative 4.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Direct impacts to paleontological resources due to ongoing maintenance and operation of Design Options 1 and 2 would be negligible because there would be minimal, if any, ground disturbance during operation of either design option. Therefore, operation of Design Options 1 and 2 would result in no impacts to paleontological resources, and mitigation would not be required. As noted above, the entire Affected Area for paleontological resources is considered to have a consistent paleontological sensitivity (high at depths at or below 5 feet). Therefore, potential impacts to paleontological resources associated with operation of Design Options 1 and 2 are consistent with one another and do not present increased potential for impacts when compared to Alternative 1 without Design Options 1 or 2.

Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option: No ground-disturbing activities are proposed at the MSF site options during operation of the Project. Therefore, there would be no impacts to paleontological resources during operation of either MSF and mitigation would not be required. The potential for impacts to paleontological resources is consistent between the Paramount and Bellflower MSF site options.

4.15 Tribal Cultural Resources

This section summarizes the consultation conducted in compliance with Section 106 of the NHPA and the Native American notification and consultation efforts performed for compliance with AB 52. AB 52 consultation efforts resulted in the identification of one Tribal Cultural Resource (TCR) and the Section 106 consultation identified no known or potential Native American Traditional Cultural Properties (TCP) in the Affected Area. The potential adverse effects and significant impacts on TCP and TCRs were analyzed under existing conditions and the No Build Alternative, and from construction and operation of the four Build Alternatives, including design options and MSF site options.

For the purposes of this analysis, the Affected Area for tribal cultural resources corresponds to the direct APE established for the Project, with which the SHPO concurred on May 29, 2019 (see Section 4.14, Historic, Archaeological, and Paleontological Resources). Information in this section is based on the *West Santa Ana Branch Transit Corridor Project Final Traditional Cultural Properties and Tribal Cultural Resources Impact Analysis Report* (Metro 2021b), included as Appendix Z to this Draft EIS/EIR.

4.15.1 Regulatory Setting and Methodology

4.15.1.1 Regulatory Setting

Federal

Federal protection for Native American resources applies to projects if any construction or other related project impacts occur on federally owned or managed lands, involve the crossing of state lines, or are federally funded. The following federal protections may apply to Native American cultural resources in the Affected Area for tribal cultural resources:

- NEPA, as amended (P.L. 91-190, 42 U.S.C. 4321- 4347, January 1, 1970, as amended by P.L. 94-52, July 3, 1975; P.L. 94-83, August 9, 1975; and P.L. 97-258 Section 4(b), September 13, 1982). NEPA recognizes the continuing responsibility of the federal government to "preserve important historic, cultural, and natural aspects of our national heritage" (Section 101 [42 U.S.C. Section 4321], No. 382).
- NHPA of 1966 (16 U.S.C. 470 et seq.) is the cornerstone of the current federal cultural resources preservation program. NHPA proclaims that the historical and cultural foundations of the nation should be preserved as a living part of our community life in order to give a sense of orientation to the American people. NHPA expanded the policy enunciated by the Historic Sites Act to encompass resources meeting the NRHP criteria for state and local historical significance, in addition to national significance, thus providing the basis for an expanded NRHP maintained by the Secretary of the Interior. The main purpose of NHPA is to protect "historic properties," defined as any prehistoric or historic districts, sites, buildings, structures, or objects included or eligible for inclusion in the NRHP. Properties of traditional religious and cultural importance to Native Americans are also considered under

Section 101 (d)(6)(A) of the NHPA, and Section 106 36 CFR 800.3-800.10. To be determined eligible for the NRHP, properties must be significant in American history, architecture, archaeology, engineering, or culture, and generally must be at least 50 years old. Historic properties may also include TCPs, which consist of physical properties or places (e.g., district, site, building, structure, or object) that are significant because of their association with the cultural practices, traditions, beliefs, lifeways, arts, crafts, or social institutions of a living community (Parker and King 1998). All historic properties must also possess integrity of location, design, setting, materials, workmanship, feeling, or association, and meet at least one of the following criteria set forth in the NRHP regulations (36 CFR Part 60):

A) Are associated with events that have made a significant contribution to the broad patterns of our history
B) Are associated with the lives of persons significant in our past
C) Embody the distinctive characteristics of a type, period, or method of installation, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction
D) Have yielded, or may be likely to yield, information important in prehistory or history

State

AB 52 and CEQA are relevant state regulations that are applicable to Native American cultural resources in the Affected Area for tribal cultural resources. With the enactment of AB 52, the 1970 CEQA (PRC Section 5024) was expanded to include TCRs as a new resource category. AB 52 establishes that "a project with an effect that may cause a substantial adverse change in the significance of a TCR is a project that may have a significant effect on the environment" (PRC Section 21084.2). It further states that the lead agency shall establish measures to avoid impacts that would alter the significant characteristics of a TCR, when feasible (PRC Section 21084.3). PRC Section 21074 (a)(1)(A) and (B) defines TCRs as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe," and meets either of the following criteria:

a. Listed or eligible for listing in the CRHR, or in a local register of historical resources as defined in PRC Section 5020.1(k)
b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe

In recognition of California Native American tribal sovereignty and the unique relationship of California local governments and public agencies with California Native American tribal governments and with respect to the interests and roles of project proponents, it is the intent of AB 52 to accomplish all of the following:

(1) Recognize that California Native American prehistoric, historic, archaeological, cultural, and sacred places are essential elements in tribal cultural traditions, heritages, and identities

(2) Establish a new category of resources in CEQA called "Tribal Cultural Resources" or TCRs that considers the tribal cultural values in addition to the scientific and archaeological values when determining impacts and mitigation
(3) Establish examples of mitigation measures for TCRs that uphold the existing mitigation preference for historical and archaeological resources of preservation in place, if feasible
(4) Recognize that California Native American tribes may have expertise with regard to their tribal history and practices, which concern the TCRs with which they are traditionally and culturally affiliated (Because CEQA calls for a sufficient degree of analysis, tribal knowledge about the land and TCRs at issue should be included in environmental assessments for projects that may have a significant impact on those resources)
(5) In recognition of their governmental status, establish a meaningful consultation process between California Native American tribal governments and lead agencies, respecting the interests and roles of all California Native American tribes and project proponents, and the level of required confidentiality concerning TCRs, early in the CEQA environmental review process, so that TCRs can be identified, and culturally appropriate mitigation and mitigation monitoring programs can be considered by the decision-making body of the lead agency
(6) Recognize the unique history of California Native American tribes and uphold existing rights of all California Native American tribes to participate in, and contribute their knowledge to, the environmental review process pursuant to CEQA
(7) Ensure that local and tribal governments, public agencies, and project proponents have information available, early in CEQA environmental review process, for purposes of identifying and addressing potential adverse impacts to TCRs and to reduce the potential for delay and conflicts in the environmental review process
(8) Enable California Native American tribes to manage and accept conveyances of, and act as caretakers of, TCRs
(9) Establish that a substantial adverse change to a TCR has a significant effect on the environment

AB 52 also establishes a formal consultation process for California tribes regarding those resources. The consultation process must be completed before a CEQA document can be certified. AB 52 requires that lead agencies "begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project." Native American tribes to be included in the process are those that have requested notice of projects proposed in the jurisdiction of the lead agency.

4.15.1.2 Methodology

South Central Coastal Information Center Record Search

A California Historical Resources Information System search was conducted for the Project Corridor on April 17, 2017, at the South Central Coastal Information Center (SCCIC), California State University, Fullerton. Following changes to the project alignment in 2018, a supplemental records search was conducted on August 28, 2018. The searches were performed to identify previously conducted cultural resource studies and previously recorded cultural resources within a 0.5-mile radius of the project alignment. Resulting from a request received through the Native American consultation performed for this Project (summarized below), an additional records search was conducted in December 2019 to expand the records search radius from 0.5 to 1 mile. The searches included a review of the NRHP, the State Historic Property Data Files, California Historical Landmarks, California Points of Historic

Interest, California Office of Historic Preservation Archaeological Determinations of Eligibility, and the California Department of Transportation State and Local Bridge Surveys in addition to available historic U.S. Geological Survey 7.5- and 15-minute quadrangle maps.

Native American Heritage Commission Sacred Lands File Search

Native American consultation was initiated for this Project on June 23, 2017. As part of the process of identifying cultural resources within or near the APE, Rincon contacted the Native American Heritage Commission (NAHC) via email and requested a review of the Sacred Lands File (SLF). Rincon was emailed the results from the NAHC on July 27, 2017. Following changes to the project alignment, Rincon emailed a supplemental SLF request to the NAHC on August 30, 2018, with a response received from the second search on September 11, 2018. Responses received from the NAHC are included in Appendix A of the Traditional Cultural Properties and Tribal Cultural Resources Impact Analysis Report prepared for the Project.

Both SLF searches resulted in positive results with the NAHC noting that sites have been located within the Los Angeles quadrangle of the APE that may be impacted by the Project. The NAHC recommended that the Gabrieleño Band of Mission Indians – Kizh Nation be contacted to obtain additional information regarding these sites. The NAHC also provided lists of groups or individuals who may have additional information regarding cultural resources that may exist within the APE; these groups are as follows:

- Anthony Morales, Chairperson, Gabrieleño/Tongva San Gabriel Band of Mission Indians
- Andrew Salas, Chairperson, Gabrieleño Band of Mission Indians – Kizh Nation
- Sandonne Goad, Chairperson, Gabrieliño/Tongva Nation
- Robert Dorame, Chairperson, Gabrieliño-Tongva Indians of California Tribal Council
- Charles Alvarez, Gabrieliño-Tongva Tribe
- Linda Candelaria, Chairperson, Gabrieliño-Tongva Tribe
- Matias Belardes, Chairperson, Juaneño Band of Mission Indians Acjachemen Nation – Belardes
- Joyce Perry, Tribal Manager, Juaneño Band of Mission Indians Acjachemen Nation – Belardes

All correspondence associated with the Native American consultation efforts are included in Appendix A of the Final Traditional Cultural Properties and Tribal Cultural Resources Impact Analysis Report.

Assembly Bill 52 Consultation

Metro obtained a tribal consultation list for Los Angeles County from the NAHC on July 25, 2017. The list included the following contacts:

- Andrew Salas, Chairperson, Gabrieleño Band of Mission Indians – Kizh Nation
- Anthony Morales, Chairperson, Gabrieleño/Tongva San Gabriel Band of Mission Indians
- Sandonne Goad, Chairperson, Gabrieliño/Tongva Nation
- Robert Dorame, Chairperson, Gabrieliño-Tongva Indians of California Tribal Council
- Charles Alvarez, Gabrieliño-Tongva Tribe
- Matias Belardes, Chairperson, Juaneño Band of Mission Indians Acjachemen Nation – Belardes

The two contact lists provided by the NAHC as part of the SLF searches on July 27, 2017, and September 11, 2018, included the following additional individuals not on the AB 52 list:

- Linda Candelaria, Gabrieliño-Tongva Tribe
- Joyce Perry, Juaneño Band of Mission Indians

Pursuant to the requirements of AB 52, on October 16, 2018, Metro, acting as the lead CEQA agency, sent project notification letters to all eight of the above-listed Native American contacts (inclusive of those two not on the Los Angeles County consultation list but included on the list provided by the NAHC as part of the SLF search). The letters provided a description of the Project, the project location, and the lead agency contact information.

Metro received no requests for AB 52 consultation from seven of the eight Native American groups that were contacted via mail. In an email dated November 14, 2018, the Gabrieleño Band of Mission Indians – Kizh Nation (Kizh Nation) stated that if any ground disturbance was to occur for the Project, their tribal government would like to be consulted. The Kizh Nation also sent a letter to Metro personnel dated November 30, 2018, formally requesting AB 52 consultation for the Project. A summary of the consultation that occurred between Metro and the Kizh Nation is included below and is documented in Appendix B, Section 2 of the Final Traditional Cultural Properties and Tribal Cultural Resources Impact Analysis Report. No specific TCRs were identified during the consultation effort described below. However, it is assumed that P-19-1575 (CA-LAN-1575/H), located near LAUS in Alternative 1, is a TCR for the purposes of this Project, as it contains a Native American cemetery and is listed in the CRHR.

Metro initiated AB 52 consultation with the Kizh Nation via teleconference on November 16, 2018. During the meeting, Kizh Nation representatives discussed TCRs located within the vicinity of the project alignment. Following the teleconference, the Kizh Nation sent a follow-up email to Metro that included a historic map showing the general locations of some of the TCRs overlaid against a Google Earth map.

Metro and the Kizh Nation participated in a second teleconference meeting to discuss more specific information about TCRs along the alignment on January 24, 2019. During the meeting, Kizh Nation representatives (Andrew Salas and Matthew Teutimez) stated the area is culturally sensitive and noted that some of the project corridor follows or intersects major Native American trade routes. Tribal representatives referred to the Kirkman-Harriman Map (Kirkman 1937), which depicts the approximate location of these trade routes. Mr. Salas noted that human remains may be located along these trails. Because of the ancestral trade routes found in this area, the tribe considers the project corridor to be part of a cultural landscape. Given the length of the project corridor, Metro requested that the Kizh Nation provide more specific information on those portions of the alignment that they consider to be particularly sensitive for TCRs. Metro also requested a copy of any mitigation language the tribe would like to provide to reduce project impacts.

Metro sent a follow-up email to the Kizh Nation on March 11, 2019, requesting that the tribe provide additional maps or mitigation language to be included in the environmental document. In this correspondence, Metro requested a response from the tribe by March 13, 2019. Metro also made follow-up calls to the Kizh Nation and left voicemail messages. No response was received from these outreach efforts.

On April 15, 2019, Metro sent a letter to the tribe again requesting additional maps and mitigation language. The letter stated that this information should be provided to Metro by

May 16, 2019, to continue the AB 52 consultation process. The Kizh Nation emailed Metro with proposed mitigation language on April 22, 2019.

On July 19, 2019, Metro sent a letter to the tribe that summarized the project mitigation measures that were developed, taking into consideration the various aspects of the Kizh Nation's proposed mitigation measures that relate to TCRs. On August 8, 2019, the Kizh Nation replied via email that they had reviewed the proposed mitigation measures outlined in the letter sent July 19, 2019, and that the Kizh Nation concurred with the proposed measures and that the consultation process for the Project was formally concluded.

All of the information summarized above in relation to AB 52 consultation is included in Appendix B of the Final Traditional Cultural Properties and Tribal Cultural Resources Impact Analysis Report.

Section 106 Consultation

On December 21, 2018, the FTA sent Section 106 consultation letters to the following Native American contacts:

- Andrew Salas, Chairperson, Kizh Nation
- Anthony Morales, Chairperson, Gabrieleño/Tongva San Gabriel Band of Mission Indians
- Sandonne Goad, Chairperson, Gabrieliño/Tongva Nation
- Robert Dorame, Chairperson, Gabrieliño-Tongva Indians of California Tribal Council
- Charles Alvarez, Councilmember, Gabrieliño-Tongva
- Linda Candelaria, Chairperson, Gabrieleño/Tongva Tribe
- Matias Belardes, Chairperson, Juaneño Band of Mission Indians Acjachemen Nation – Belardes
- Joyce Perry, Juaneño Band of Mission Indians

The letter invited the Native American groups to participate in the Section 106 consultation process and included information on the identification of prehistoric sites, and sacred and/or TCPs in the APE. The FTA requested that the tribes review the information contained in the letter and provide any additional information or comments they may have within 30 days of receiving the letter. Follow-up phone calls were conducted on January 29, 2019, for all contacts with phone numbers on file at the NAHC.

Responses were received from the Kizh Nation, Adrian Morales of the Gabrieleño/Tongva San Gabriel Band of Mission Indians, and Robert Dorame, Chairperson for the Gabrieleño Tongva Indians of California Tribal Council.

- On January 3, 2019, the Kizh Nation sent an email to the FTA requesting Section 106 consultation for the Project. On behalf of FTA, on March 11 and 12, 2020, telephone calls were placed, and an email sent to follow up on this request. Following telephone and email correspondence, on March 13, 2020, Andrew Salas, Chairperson for the Kizh Nation, agreed in an email that the mitigation developed for the purposes of AB 52 would be acceptable for the purposes of Section 106. Consultation between the Kizh Nation and FTA was thus concluded.
- On February 11, 2019, Adrian Morales of the Gabrieleño/Tongva San Gabriel Band of Mission Indians emailed a response also requesting Section 106 consultation. Mr. Morales requested that the SCCIC record searches and all other informational data

source be inclusive of a 1.0-mile radius search. In response to this request, the SCCIC record search was updated to 1.0-mile accordingly.

- Robert Dorame, Chairperson for the Gabrieleño Tongva Indians of California Tribal Council, discussed the Project with FTA staff on January 29, 2019. At that time, he stated he would respond to the request by email. Despite email follow up by FTA, further response was not received, and consultation between the Gabrieleño Tongva Indians of California and FTA was concluded.

The Section 106 consultation summarized above resulted in the identification of zero TCPs. Details of the Section 106 consultation summarized above is included in Appendix C of the Final Traditional Cultural Properties and Tribal Cultural Resources Impact Analysis Report.

4.15.2 Affected Environment/Existing Conditions

The following is a discussion of the affected environment based on general corridor-wide conditions.

4.15.2.1 Ethnographic Setting

The Affected Area for tribal cultural resources is in the traditional territory of the Native American group known as the Tongva, Gabrieliño, or Kizh. The Tongva territory included a large area in and around Los Angeles County, as well as the southern Channel Islands and coastlines from Aliso Creek in the south to Topanga Creek in the north. The Tongva territory was bordered by several different Native American groups, including the Serrano to the north and northeast, the Tataviam to the north, the Chumash to the northwest, the Cahuilla to the east, and the Luiseño and Juaneño to the south and southeast.

The Tongva language belongs to the Takic branch of the Uto-Aztecan language family. Tongva society was organized along patrilineal non-localized clans, a common Takic pattern. Each clan had a ceremonial leader and contained several lineages. The Tongva established permanent villages and smaller satellite camps throughout their territory. Tongva subsistence was oriented around acorns supplemented by the roots, leaves, seeds, and fruits of a wide variety of plants and animals. The Tongva lived in circular domed structures made up of thatched tule covering a frame of wooden poles usually of willow.

4.15.2.2 SCCIC Record Search Results

The SCCIC record search identified nine prehistoric sites or sites with prehistoric components within one mile of the APE; of those, two, described below, are within the direct APE. Located in Alternative 1, much of P-19-001575 lies underneath extant buildings associated with Union Station and was originally recorded as a historic archaeological site consisting of artifacts, architectural remains, and other cultural features associated with the nineteenth and twentieth century Chinatown. Subsequent investigations at the site resulted in the discovery and documentation of a Native American cemetery consisting of 14 interments and 5 cremations (Goldberg et al., 1999). As part of the Link Union Station Project (Metro 2019c), P-19-001575 was determined eligible with SHPO concurrence for listing on the NRHP under Criterion D and the CRHR under Criterion 4. P-19-003889 has been previously recommended ineligible for listing on the CRHR (Game et al., 2007); for the purposes of this study, the site is assumed to be ineligible for listing on the NRHP.

P-19-003889 is a multicomponent site lying east of Long Beach Avenue in both Alternatives 1 and 2. The site is primarily composed of a historic refuse scatter dating to the early twentieth century. The prehistoric component of the site contains a single chert core. Two basalt pestles were identified at the site, but they appear to represent modern tejolotes. Phase II

testing at the site by Game et al. (2007) found that P-19-003889 is a highly disturbed surface scatter with little evidence of subsurface deposits or features. Based on these findings, Game et al. (2007) recommended the site as ineligible for listing on the CRHR. For the purposes of this analysis, the site is assumed to be ineligible for listing on the NRHP.

4.15.2.3 NAHC SLF Search Results

Searches of the SLF by the NAHC indicate that Native American sites are located in the Study Area. The NAHC requested that the Kizh Nation be contacted to obtain additional information regarding these sites. Documents related to the SLF searches and NAHC responses are included in Appendix A of the Traditional Cultural Properties and Tribal Cultural Resources Impact Analysis Report.

4.15.2.4 AB 52 Consultation Results

As part of the AB 52 consultation process, the Kizh Nation provided information on Native American cultural resources located within the Affected Area for tribal cultural resources. No specific TCRs were identified during these consultation efforts. However, it is assumed that P-19-1575 (CA-LAN-1575/H), located near LAUS in the Northern Section (Alternative 1), is a TCR for the purposes of this Project as it contains a Native American cemetery and is eligible for listing on the CRHR.

As previously discussed in Section 4.15.1.2, tribal representatives indicated that historic maps depict several trade routes that intersect or appear to be located in the vicinity of the Affected Area for tribal cultural resources. No archaeological evidence of these trade routes has been documented within the project corridor and the precise location of these routes is unknown. Tribal representatives note that there is a potential to encounter human remains in these areas adjacent to the reported trade routes. They also indicated the presence of waterways and bodies of water that were high attractants to prehistoric Native American groups residing in the area. Because of their use by Native Americans, these areas have a higher-than-average potential for encountering unanticipated TCRs (i.e., Native American artifacts and human remains) during ground-disturbing activities.

4.15.2.5 Section 106 Consultation Results

The Section 106 consultation performed for this study did not identify any known or potential Native American TCPs. The results of the Section 106 consultation, as they pertain to identified and potential locations of archaeological sites are discussed in the *West Santa Ana Branch Transit Corridor Project Final Cultural Resources Survey Report – Rev 1* (Metro 2020d), attached as Appendix W to this Draft EIS/EIR, and the *West Santa Ana Branch Transit Corridor Project Revised Preliminary Cultural Resources Effects Report* (Metro 2021u), attached as Appendix X to this Draft EIS/EIR.

4.15.3 Environmental Consequences/Environmental Impacts

4.15.3.1 No Build Alternative

Under the No Build Alternative, no new infrastructure would be built within the Affected Area for tribal cultural resources with the exception of the following: projects currently under construction, projects funded for construction, environmentally cleared, planned to be in operation by 2042, and identified in the constrained Metro 2009 LRTP (Metro 2009a) and the SCAG 2016-2040 RTP/SCS (SCAG 2016a), as well as additional projects funded by Measure M.

Under the No Build Alternative, the environmental setting would remain in its current condition and no ground disturbance would occur. No physical alteration of known or unanticipated TCPs would take place under the No Built Alternative. The No Build Alterative would result no effects to known or unanticipated TCPs.

4.15.3.2 Alternative 1: Los Angeles Union Station to Pioneer Station

No TCPs have been identified in Alternative 1. Therefore, the operation of Alternative 1 would result in no effects to known TCPs. Additionally, the operation of Alternative 1 would result in no direct effects to unknown TCPs because there would be minimal, if any, ground disturbance associated with the Project's ongoing maintenance and operation under this Alternative. Indirect effects (e.g., noise, vibration, or visual impacts) associated with the ongoing maintenance and operation of Alternative 1 are not expected to affect subsurface archaeological resources, including unanticipated TCPs. Under NEPA, the operation of Alternative 1 would result in no effects to known or unanticipated TCPs.

4.15.3.3 Alternative 2: 7th Street/Metro Center to Pioneer Station

No TCPs have been identified in Alternative 2. Therefore, the operation of Alternative 2 would result in no effects to known TCPs. Additionally, the operation of Alternative 2, would result in no direct effects to unknown TCPs because there would be minimal, if any, ground disturbance associated with the Project's ongoing maintenance and operation under this Alternative. Indirect effects (e.g., noise, vibration, or visual impacts) associated with the ongoing maintenance and operation of Alternative 2 are not expected to affect subsurface archaeological resources, including unanticipated TCPs. Due to consistency in project design and existing environmental conditions related to TCPs, the potential for effects to TCPs is consistent between Alternatives 1 and 2. Under NEPA, the operation of Alternative 2 would result in no effects to known or unanticipated TCPs.

4.15.3.4 Alternative 3: Slauson/A (Blue) Line to Pioneer Station

No TCPs have been identified in Alternative 3. Therefore, the operation of Alternative 3 would result in no effects to known TCPs. Additionally, the operation of Alternative 3 would result in no direct effects to unknown TCPs because there would be minimal, if any, ground disturbance associated with the Project's ongoing maintenance and operation under this Alternative. Indirect effects (e.g., noise, vibration, or visual impacts) associated with the ongoing maintenance and operation of Alternative 3 are not expected to affect subsurface archaeological resources, including unanticipated TCPs. Under NEPA, the operation of Alternative 3 would result in no effects to known or unanticipated TCPs. The potential for effects to TCPs resulting from operation of Alternative 3 is less than Alternatives 1 and 2 due to this alternative's significantly reduced length.

4.15.3.5 Alternative 4: I-105/C (Green) Line to Pioneer Station

No TCPs have been identified in Alternative 4. Therefore, the operation of Alternative 4 would result in no effects to known TCPs. Additionally, the operation of Alternative 4 would result in no direct effects to unknown TCPs because there would be minimal, if any, ground disturbance associated with the Project's ongoing maintenance and operation under this Alternative. Indirect effects (e.g., noise, vibration, or visual impacts) associated with the ongoing maintenance and operation of Alternative 4 are not expected to affect subsurface archaeological resources, including unanticipated TCPs. Under NEPA, the operation of Alternative 4 would result in no effects to known or unanticipated TCPs. The potential for effects to TCPs resulting from operation of Alternative 4 is least among the Build Alternatives due to its reduced length.

4.15.3.6 Design Options—Alternative 1

Design Option 1: LAUS at MWD

No TCPs have been identified in the APE associated with Design Option 1 (MWD), which would relocate the LAUS Terminus Station east of the MWD building. The operation of Design Option 1 (MWD) would therefore result in no effects to known TCPs. Similar to Alternatives 1 through 4, direct and indirect effects to unanticipated TCPs due to ongoing maintenance and operations associated with Design Option 1 (MWD) would be negligible because minimal, if any, ground disturbance would occur. Under NEPA, operation of Design Option 1 (MWD) would result in no effects to known or unanticipated TCPs. The potential for effects to TCPs is consistent between Alternative 1 with and without Design Option 1 (MWD).

Design Option 2: Add Little Tokyo Station

No TCPs have been identified in Design Option 2, which would construct the Little Tokyo Station. Therefore, the operation of Design Option 2 would result in no effects to known TCPs. Similar to Alternatives 1 through 4, direct and indirect effects to unanticipated TCPs due to ongoing maintenance and operations associated with Design Option 2 would be negligible because minimal, if any, ground disturbance would occur. Under NEPA, operation of Design Option 2 would result in no effects to known or unanticipated TCPs. The potential for effects to TCPs is consistent between Alternative 1 with and without Design Option 2.

4.15.3.7 Maintenance and Storage Facility

Paramount MSF Site Option

No TCPs have been identified in the APE associated with the Paramount MSF site option. Therefore, the operation of the Paramount MSF site option would result in no effects to known TCPs. No ground-disturbing activities are proposed at the Paramount MSF site option during the operation phase of the Project. As a result, there would be no direct or indirect effects to known or unanticipated TCPs resulting from operation of the Paramount MSF site option.

Bellflower MSF Site Option

No TCPs have been identified in the APE associated with the Bellflower MSF site option. Therefore, the operation of the Bellflower MSF site option would result in no effects to known TCPs. No ground-disturbing activities are proposed at the Bellflower MSF site option during the operation phase of the Project. As a result, there would be no direct or indirect effects to known or unanticipated TCPs resulting from operation of the Bellflower MSF site option. The potential for effects to TCPs is consistent between the Paramount and the Bellflower MSF site options.

4.15.4 Project Measures and Mitigation Measures

Operation of Alternatives 1, 2, 3, and 4; Design Options 1 and 2; and the Paramount and Bellflower MSF site options would result in no direct or indirect effects to known or unanticipated TCPs and no project or mitigation measures are required.

4.15.5 California Environmental Quality Act Determination

4.15.5.1 Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

a) Listed or eligible for listing in the California Register of Historical Resources, or a local register of historical resources as defined in Public Resources Code section 5020.1(k), or

b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subsection (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

No Project Alternative

Under the No Project Alternative, no new infrastructure would be built within the Affected Area for tribal cultural resources. The environmental setting would remain in its current condition and no ground disturbance would occur. No physical alteration of known or unanticipated TCRs would take place. The No Project Alterative would result no impacts to known or unanticipated TCRs, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

One presumed TCR has been identified in Alternative 1 (P-19-001575). The operation of Alternative 1, would result in no direct impacts to known or unknown TCRs because there would be minimal, if any, ground disturbance associated with the Project's ongoing maintenance and operation under this Alternative. Additionally, indirect impacts (e.g., noise, vibration, or visual impacts) associated with the ongoing maintenance and operation of Alternative 1 are not expected to impact subsurface archaeological resources, including unanticipated TCRs. The operation of Alternative 1 would result in no impacts to known or unanticipated TCRs, and mitigation would not be required.

Alternative 2: 7th Street/Metro Center to Pioneer Station

No TCRs have been identified in Alternative 2. Therefore, the operation of Alternative 2 would result in no impacts to known TCRs. The operation of Alternative 2 would result in no direct impacts to unknown TCRs because there would be minimal, if any, ground disturbance associated with the Project's ongoing maintenance and operation under this Alternative. Indirect effects (e.g., noise, vibration, or visual impacts) associated with the ongoing maintenance and operation of Alternative 2 are not expected to impact subsurface archaeological resources, including unanticipated TCRs. The operation of Alternative 2 would result in no impacts to known or unanticipated TCRs, and mitigation would not be required. The potential for impacts to known TCRs is less under Alternative 2 than Alternative 1 due to the presence of one as opposed to zero TCRs. The potential for effects to unanticipated TCRs is consistent between Alternatives 1 and 2.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

No TCRs have been identified in Alternative 3. Therefore, the operation of Alternative 3 would result in no impacts to known TCRs. The operation of Alternative 3 would additionally result in no direct impacts to unknown TCRs because there would be minimal, if any, ground disturbance associated with the Project's ongoing maintenance and operation under this Alternative. Indirect

impacts (e.g., noise, vibration, or visual impacts) associated with the ongoing maintenance and operation of Alternative 3 are not expected to impact subsurface archaeological resources, including unanticipated TCRs. The operation of Alternative 3 would result in no impacts to known or unanticipated TCRs, and mitigation would not be required. Consistent with Alternative 2, the potential for impacts to known TCRs is less under Alternative 3 than Alternative 1 due to the presence of one as opposed to zero TCRs. The potential for impacts to unanticipated TCRs is less under Alternative 3 when compared with Alternatives 1 and 2 due primarily to the reduced length of the alignment under this alternative.

Alternative 4: I-105/C (Green) Line to Pioneer Station

No TCRs have been identified in Alternative 4. Therefore, the operation of Alternative 4 would result in no impacts to known TCRs. The operation of Alternative 4 would additionally result in no direct impacts to unknown TCRs because there would be minimal, if any, ground disturbance associated with the Project's ongoing maintenance and operation under this Alternative. Indirect impacts (e.g., noise, vibration, or visual impacts) associated with the ongoing maintenance and operation of Alternative 4 are not expected to impact subsurface archaeological resources, including unanticipated TCRs. The operation of Alternative 4 would result in no impacts to known or unanticipated TCRs, and mitigation would not be required.

Consistent with Alternatives 2 and 3, the potential for impacts to known TCRs is less under Alternative 4 than Alternative 1 due to the presence of one as opposed to zero TCRs. The potential for impacts to unanticipated TCRs is less under Alternative 4 when compared with Alternatives 1, 2, and 3 due primarily to the reduced length of the alignment under this alternative.

Design Options—Alternative 1

Design Option 1: LAUS at MWD: One presumed TCR (P-19-001575) has been identified in Design Option 1 (MWD), which would relocate the LAUS Terminus Station east of the MWD building. Similar to Alternatives 1 through 4, direct and indirect impacts to known and unanticipated TCRs due to ongoing maintenance and operations associated with Design Option 1 (MWD) would be negligible because minimal, if any, ground disturbance would occur. Operation of Design Option 1 (MWD) would result in no effects to known or unanticipated TCRs, and mitigation would not be required. The potential for effects to TCRs is consistent between Alternative 1 with and without Design Option 1 (MWD).

Design Option 2: Add Little Tokyo Station: No TCRs have been identified in Design Option 2, which would construct the Little Tokyo Station. Therefore, the operation of Design Option 2 would result in no impacts to known TCRs. Similar to Alternatives 1 through 4, direct and indirect impacts to unanticipated TCRs due to ongoing maintenance and operations associated with Design Option 2 would be negligible because minimal, if any, ground disturbance would occur. Operation of Design Option 2 would result in no impacts to known or unanticipated TCRs, and mitigation would not be required. The potential for effects to TCRs is consistent between Alternative 1 with and without Design Option 2.

Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option: No TCRs have been identified in the APE associated with the Paramount MSF or Bellflower MSF site options. Therefore, the operation of the MSF site options would result in no impacts to known TCRs. No ground-disturbing activities are proposed at the MSF site options during the operation phase of the Project. As a result, there would be no direct or indirect impacts to known or unanticipated

TCRs resulting from operation of the Paramount and Bellflower MSF site options, and mitigation would not be required. The potential for effects to TCRs is consistent between the Paramount and Bellflower MSF site options.

4.16 Parklands and Community Facilities

This section summarizes the potential adverse effects and impacts on parklands and community facilities for the No Build and Build Alternatives. Information in this section is based on the *West Santa Ana Branch Transit Corridor Project Final Parklands and Community Facilities Impact Analysis Report* (Metro 2021k), attached as Appendix AA to this Draft EIS/EIR. A detailed analysis of Section 4(f) of the U.S. Department of Transportation Act and Section 6(f) of the Land and Water Conservation Fund Act are discussed in the *West Santa Ana Branch Transit Corridor Project Section 4(f) and Section 6(f) Impact Analysis Report* (Metro 2021), attached as Appendix BB to this Draft EIS/EIR, and in Chapter 5 of this Draft EIS/EIR.

4.16.1 Regulatory Setting and Methodology

4.16.1.1 Regulatory Setting

Federal and state plans and policies applicable to parklands and community facilities include the U.S. Department of Transportation Act of 1966, Land and Water Conservation Fund Act of 1965, Uniform Fire Code, California Public Park Preservation Act of 1971, California Code of Regulations Title 24, and California Education Code. Local plans and policies applicable to parklands and community facilities include the general plans and community plans for the Cities of Los Angeles, Vernon, Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, Artesia, and Cerritos, and the unincorporated Florence-Firestone community of LA County.

The project alignment would extend through several jurisdictions with bicycle networks. The following adopted bicycle master plans have been identified in the affected jurisdictions: *County of Los Angeles Bicycle Master Plan 2012* (LA County 2012b), *City of Los Angeles 2010 Bicycle Plan* (City of Los Angeles 2011), *City of Huntington Park Bicycle Transportation Master Plan* (City of Huntington Park 2014), *City of South Gate Bicycle Transportation Plan* (City of South Gate 2012), *City of Bell Bicycle Master Plan* (City of Bell 2016), and the *Bellflower-Paramount Active Transportation Plan* (City of Bellflower and City of Paramount 2019).

4.16.1.2 Methodology

For the purposes of evaluating parklands and community facilities impacts, the Affected Area for parklands is defined as 0.25 mile on both sides of the proposed alignment and around the stations, parking facilities, MSF site options, and TPSS sites to identify the context of the surrounding area. The impact analysis for parklands and community facilities is focused on the parklands and community facilities located adjacent to (approximately 50 feet) the Build Alternatives as direct impacts are anticipated to affect these facilities; while indirect impacts could occur to facilities in the greater Affected Area.

For the NEPA analysis, potential adverse effects would occur if the Build Alternatives (including the design options) and MSF site options would result in direct or indirect impacts to parklands and community facilities. Direct impacts are defined as impacts involving physical acquisition, displacement, visual alteration, or relocation of parkland or a community facility. Indirect impacts are defined as changes to visual quality and pedestrian or vehicular access. Direct impacts to parklands and community facilities would only occur if such properties are located directly adjacent to or within the Build Alternatives facilities as these adjacent areas have been identified

to be the area of potential impact. Indirect impacts would most likely occur to facilities located in proximity to the Build Alternatives.

To satisfy CEQA requirements, impacts to parkland and recreation facilities are analyzed in accordance with Appendix G of the *CEQA Guidelines,* identified in Section 4.16.5.

4.16.2 Affected Environment/Existing Conditions

4.16.2.1 Parklands and Recreational Facilities

Within the Affected Area for parklands, 25 parkland and recreation facilities have been identified, totaling approximately 168 acres (Table 4.16.1). Specifically, there are 24 parklands and recreational facilities totaling approximately 165 acres identified under Alternative 1, 24 facilities totaling approximately 167 acres under Alternative 2, 19 facilities totaling 157 acres under Alternative 3, and 11 facilities totaling approximately 106 acres under Alternative 4. Each identified parkland is owned and managed by the local government jurisdictions. National parks, state parks, or wildlife refuges are not located in the Affected Area for parklands. In addition, five public schools that provide recreational resources that are open to the public are also identified.

Table 4.16.1. Parklands and Recreational Facilities Identified within 0.25-Mile of Build Alternatives

	Alternative	Facility	Total Size (acres)	Amenities	Distance to Build Alternatives[1]
Park and Recreational Facilities	**1**	**Los Angeles Plaza Park (Father Sierra Park)** 125 Paseo de la Plaza, Los Angeles	0.5	Open area with plaza	530 ft from (LAUS)
		Art District Dog Park 1004 E. 4th St, Los Angeles	<0.1	Dog park	1,160 ft
		Arts District Park 501 Hewitt St, Los Angeles	0.5	Children's play area, picnic area	780 ft
	2	**Grand Hope Park** 919 S. Grand Ave, Los Angeles	2.5	Urban park with playground and grass lawns amid mosaic-adorned clock tower	680 ft 920 ft from 7th Street/Metro Center Station
		6th & Gladys Street Park 808 E. 6th St, Los Angeles	0.3	Unstaffed park with picnic tables, half-court basketball, and outdoor exercise equipment	830 ft

	Alternative	Facility	Total Size (acres)	Amenities	Distance to Build Alternatives[1]
	1 and 2	**Fred Roberts Recreation Center** 4700 S. Honduras St, Los Angeles	2.5	Barbecue pits, basketball courts (lighted/outdoor), children play area, community room, picnic tables, volleyball courts (lighted), kitchen, outdoor fitness equipment, synthetic soccer field (unlighted), on-site parking	60 ft
		Ross Snyder Recreation Center 1501 E. 41st St, Los Angeles	6.7	Baseball diamond (lighted), basketball courts (lighted/indoor), basketball courts (lighted/outdoor), children play area, picnic tables, seasonal pool (outdoor/unheated), soccer field (lighted), synthetic field, tennis courts (lighted), two baseball diamonds (lighted), beach volleyball courts (unlighted), on-site parking	1,050 ft
	1, 2 and 3	**Slauson Multipurpose Center** 5306 S. Compton Ave, Los Angeles	3.6	Auditorium, baseball diamond (lighted), basketball courts (lighted/indoor), children play area, community room, computer lab, kitchen, multipurpose room, outdoor fitness equipment, stage, football field (lighted), on-site parking	730 ft
		Pueblo del Rio Recreation Center 5350 Alba St, Los Angeles	0.5	Children's play area	1,040 ft

	Alternative	Facility	Total Size (acres)	Amenities	Distance to Build Alternatives[1]
		Augustus F. Hawkins Natural Park 5790 Compton Ave, Los Angeles	8.5	Picnic tables, amphitheater, gardening boxes, walking paths, restroom(s), wetlands, nature museum hall, rental space, on-site parking	680 ft; 780 ft from Slauson/A Line Station
		Raul R. Perez Memorial Park 6208 Alameda St, Huntington Park	4.5	Community building, indoor fitness room, large room and kitchen, grass sports field (lighted), outdoor basketball courts (lighted), children's playground, walking trail, outdoor gym, on-site parking	200 ft
		Salt Lake Park 3401 E. Florence Ave, Huntington Park	23.0	Recreation center, gymnasium, grass soccer field, synthetic grass soccer field, baseball diamonds, batting cages, skate park, tennis courts, weight room, picnic areas, barbecues, children's playgrounds, concession stand, meetings rooms, on-site parking	70 ft; 480 ft from Florence/Salt Lake Station
		Lugo Park 7801 Otis Ave, Cudahy	4.4	Youth center, fitness center, gazebo with barbecues, tot-lot synthetic grass soccer field, on-site parking	200 ft
		Circle Park 10129 Garfield Ave, South Gate	4.0	Children playground, open grass area, baseball diamond, on-site parking	1,050 ft
	1, 2, 3, and 4	**Hollydale Community Center** 12221 Industrial Ave, South Gate	2.2	Basketball court, community center, playground	20 ft

	Alternative	Facility	Total Size (acres)	Amenities	Distance to Build Alternatives[1]
		Paramount Park 14400 Paramount Blvd, Paramount	21.9	Playgrounds, handball courts (lighted), baseball diamonds (lighted), basketball court (lighted), picnic shelters/barbecues, gymnasium, walking path, restrooms, pool, on-site parking	10 ft; 700 ft from Paramount/ Rosecrans Station; 720 ft from Paramount MSF site option
		Village Skate Park 7718 Somerset Blvd, Paramount	0.3	Skate park, lighted basketball court, picnic area, playground	510 ft from Paramount MSF site option
		Pirate Park 16559 Bellflower Blvd, Bellflower	<0.1	Pirate-themed children's playground, on-site parking	510 ft 790 ft from Bellflower Station
		Simms Park 16614 Clark Ave, Bellflower	12.6	Auditorium, multipurpose rooms, picnic shelter, lighted softball fields, basketball court, playground, barbeque braziers, fitness center and trail, on-site parking	970 ft
		Ruth R. Caruthers Park 10500 E. Flora Visa St, Bellflower	20.0	Baseball/softball fields (lighted), batting cages, skate park, game room, picnic areas, wading pool, playgrounds, lighted tennis courts, lighted basketball court, lighted volleyball courts, lighted handball courts, tetherball courts, fitness center, 2-mile fitness course, equestrian path, barbecues, 2.5-mile bike trail, on-site parking	50 ft
		Bellflower Skate Park 10500 E. Flora Visa St, Bellflower	0.2	Skate park, on-site parking	760 ft

	Alternative	Facility	Total Size (acres)	Amenities	Distance to Build Alternatives[1]
		Flora Vista Dog Park 9203 Flora Vista St, Bellflower	0.6	Dog park, on-site parking	Adjacent to Bellflower MSF site option
		Iron Wood Nine Golf Course 16449 Piuma Ave, Cerritos	26.6	Golf course and driving range, on-site parking	670 ft
		Rosewood Park 17715 Eric Ave, Cerritos	6.0	Basketball court, sand area with playground equipment, picnic shelters, barbecues, multipurpose field, on-site parking	60 ft
		Artesia Park 1870 Clarkdale Ave, Artesia	14.5	Banquet space, baseball/softball diamond, basketball court, meeting rooms, picnic areas, picnic shelters, children's playground, restrooms, soccer field, tennis court, on-site parking	270 ft 1,060 ft from Pioneer Station
School Facilities [2]	**1, 2, 3**	**Lillian Street Elementary School** 5909 Lillian St, Los Angeles	2.8	Playground, asphalt play areas include track, tennis court, four-square, basketball and other ball courts, and miscellaneous play space	90 ft
		San Antonio Elementary School 6222 State St, Huntington Park	2.2	Asphalt play areas include track, tennis court, basketball and other ball courts, and miscellaneous play space	120 ft
		Legacy High School Complex 5225 Tweedy Blvd, South Gate	7.3	Baseball field, open field, tennis courts	120 ft
	1, 2, 3 and 4	**Paramount High School** 14429 Downey Ave, Paramount	15.8	Baseball field, open field space, tennis courts, basketball courts, football field	60 ft

	Alternative	Facility	Total Size (acres)	Amenities	Distance to Build Alternatives[1]
		Paramount Park Elementary/ Middle School 14608 Paramount Blvd, Paramount	7.5	Playfield	100 ft

Source: Metro 2021k
Notes: ft = feet
[1] Distance is measured from the nearest point of the project alignment, station, or MSF to the recreational facility.
[2] Recreational facilities at the school facilities listed in the table are open for public use during non-school hours.

4.16.2.2 Bike Facilities

Using Caltrans' *Highway Design Manual* (2016c), bicycle facilities are classified as Class I, II, III, and IV. Class I bikeways provide a completely separated right-of-way for the exclusive use of bicycles and pedestrians. Class II bike lanes are typically striped lanes for one-way bike travel on a street or highway. Class III bike paths are signed shared roadways (sharrows) that provide shared use with pedestrians or motor vehicle traffic. Class IV bikeways are protected bike lanes that are physically separated from the vehicle travel lane by more than the white stripe. Separation may be accomplished with grade separation, flexible bollards, or permanent barriers. Table 4.16.2 summarizes the bike facilities identified within 0.25 mile of the Build Alternatives.

Table 4.16.2. Bike Facilities Identified within 0.25-Mile of Build Alternatives

Facility Name/Location	Total Length	On-site Parking	Location to Build Alternatives
City of LA Citywide Bikeway System Citywide Los Angeles	593 miles	No	Citywide with Class I, II, III, and IV bike lanes
Los Angeles River Bike Path Along Los Angeles River	20 miles	No	Class I; Crosses under the alignment at the Los Angeles River
Rio Hondo Bike Path City of South Gate	16.8 miles	No	Class I; Crosses under the alignment at the Rio Hondo
Paramount Bike Trail City of Paramount	2.3 miles	No	Class I; Parallels the alignment with segments within the LADWP utilities corridor and Metro-owned right-of-way from the Los Angeles River to Lakewood Blvd
Bellflower Bike Trail City of Bellflower	2.7 miles	No	Class I; Parallels the alignment within the Metro-owned right-of-way between Somerset Boulevard to just north of the SR-91 freeway
San Gabriel River Mid-Trail Along San Gabriel River	28 miles	No	Class I; Crosses under the alignment at the San Gabriel River

Source: Metro 2021k
Note: LADWP = Los Angeles Department of Water and Power

4.16.2.3 Community Facilities

Community facilities identified within the Affected Area for parklands include schools, places of worship, emergency services, government offices, health services, museums, library facilities, and other social services (i.e., cemetery, adult care, social assistance). Table 4.16.3 summarizes the community facilities identified within 0.25 mile of the Build Alternatives.

Table 4.16.3. Community Facilities Identified within 0.25-Mile of Build Alternatives

Community Facility[1]	Alternative 1	Alternative 2	Alternative 3	Alternative 4
School Facility	45	49	34	15
Places of Worship	57	47	41	25
Emergency Services Facility	9	8	7	3
Government Offices	33	18	12	5
Health Services	12	11	7	5
Museum	17	6	2	2
Library Facility	3	3	3	3
Other Social Services (i.e., community centers, cemetery, adult care, social assistance)	23	29	10	5
Total	**199**	**171**	**116**	**63**

Source: Metro 2021k
Note: [1] Distance to the resource facility is measured from the nearest point of the project alignment, station, or MSF.

A total of 235 community facilities are identified within the parklands Affected Area for the Build Alternatives. Specifically, 199 community facilities are within the parklands Affected Area for Alternative 1, 171 for Alternative 2, 117 for Alternative 3, and 63 for Alternative 4.[8] Eleven community facilities are identified within 0.25 mile of the Paramount MSF site option. Three community facilities are located within 0.25 mile of the Bellflower MSF site option. Figure 4.16-1 through Figure 4.16-6 identify the approximate locations of the parklands, community facilities, and bike facilities located within 0.25 mile of the Build Alternatives.

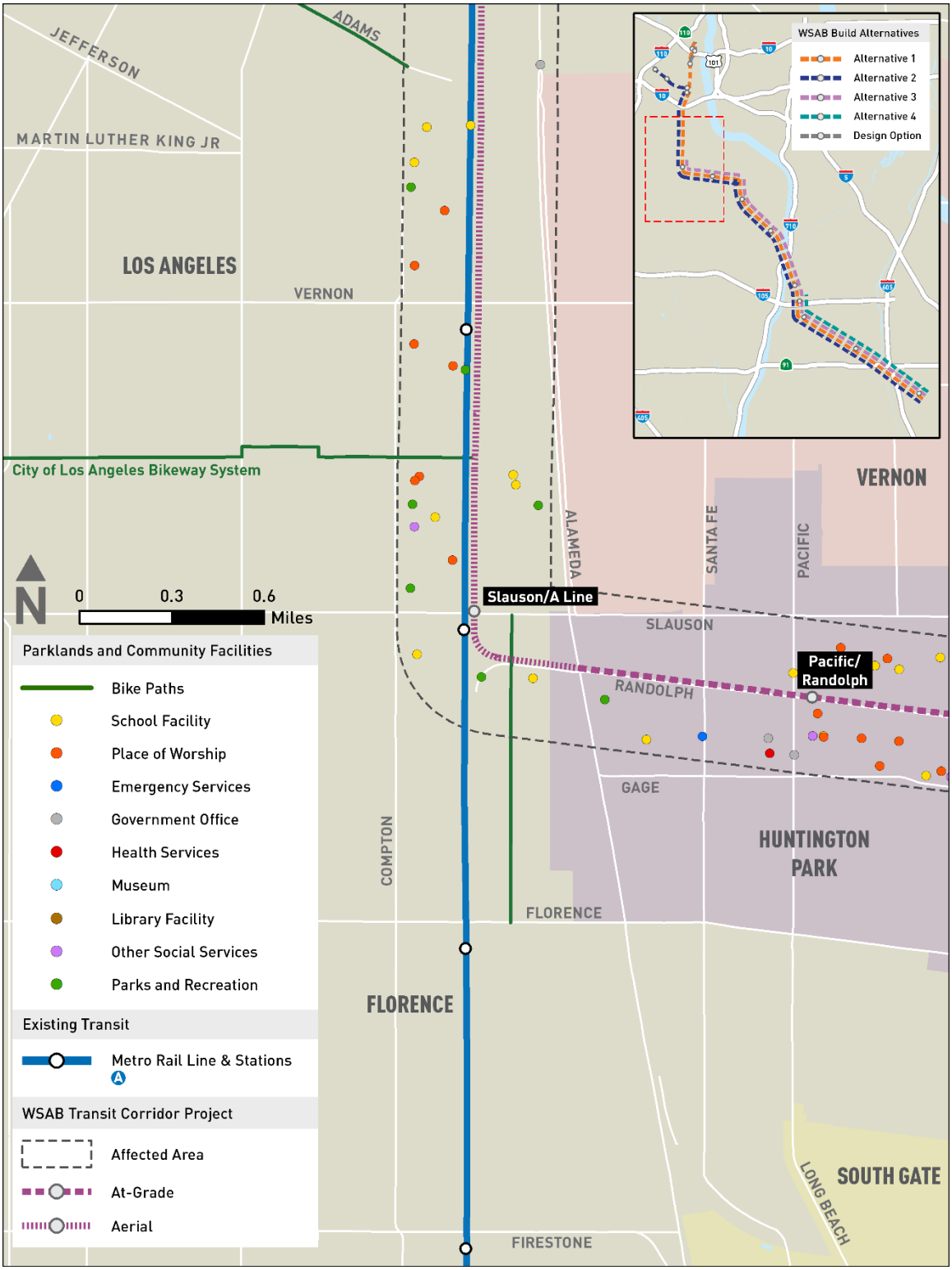
[8] Facilities are not mutually exclusive to each Alternative, and individual facilities may be present in the Affected Area of multiple Alternatives.

Figure 4.16-1. Parkland, Bike Facilities, and Community Facilities within 0.25-Mile of the Build Alternatives (Los Angeles Union Station to 38th Street, Los Angeles)



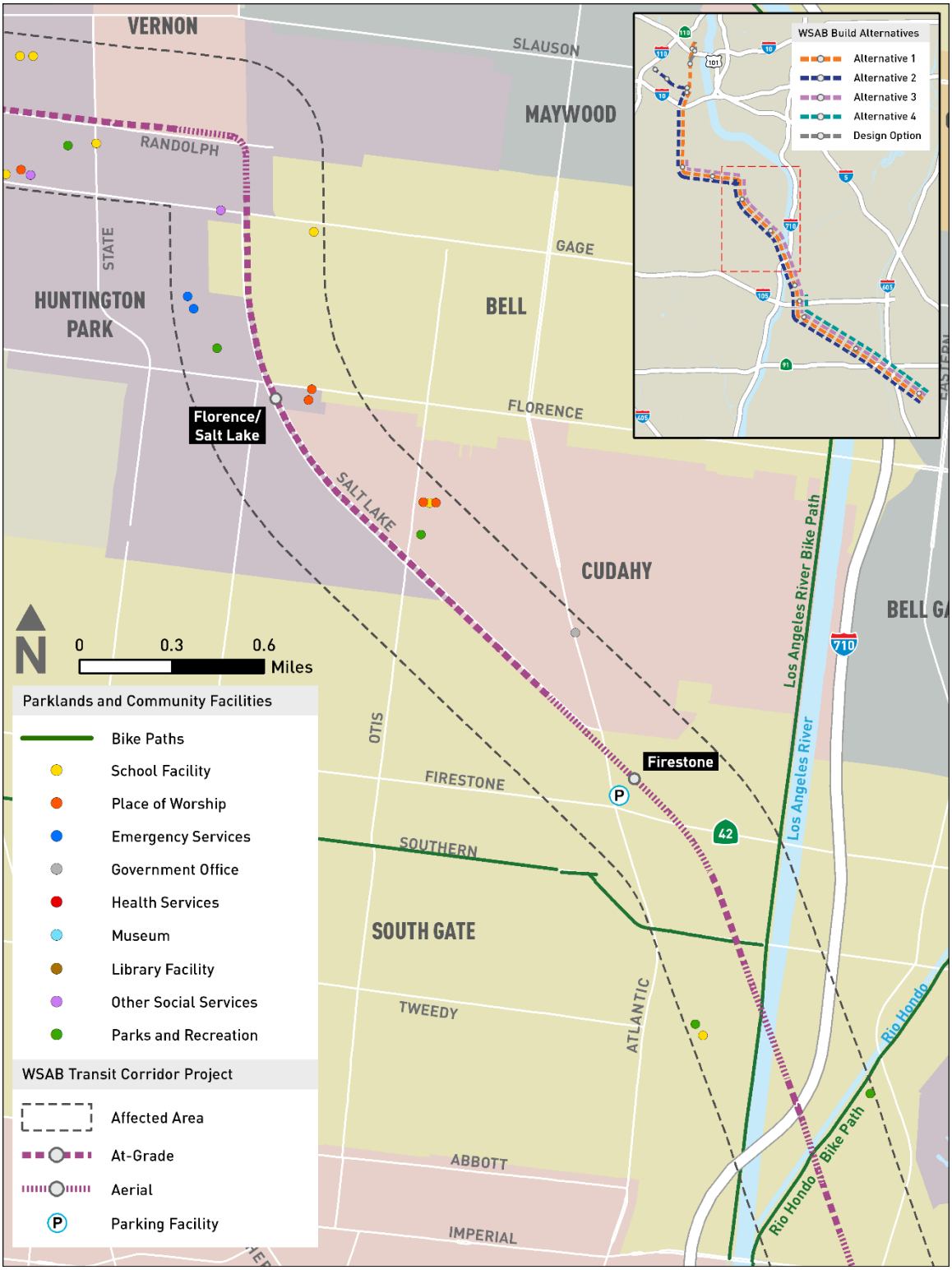
Source: Metro 2021k

Figure 4.16-2. Parkland, Bike Facilities, and Community Facilities within 0.25-Mile of the Build Alternatives (38th Street, Los Angeles to Pacific/Randolph Station)



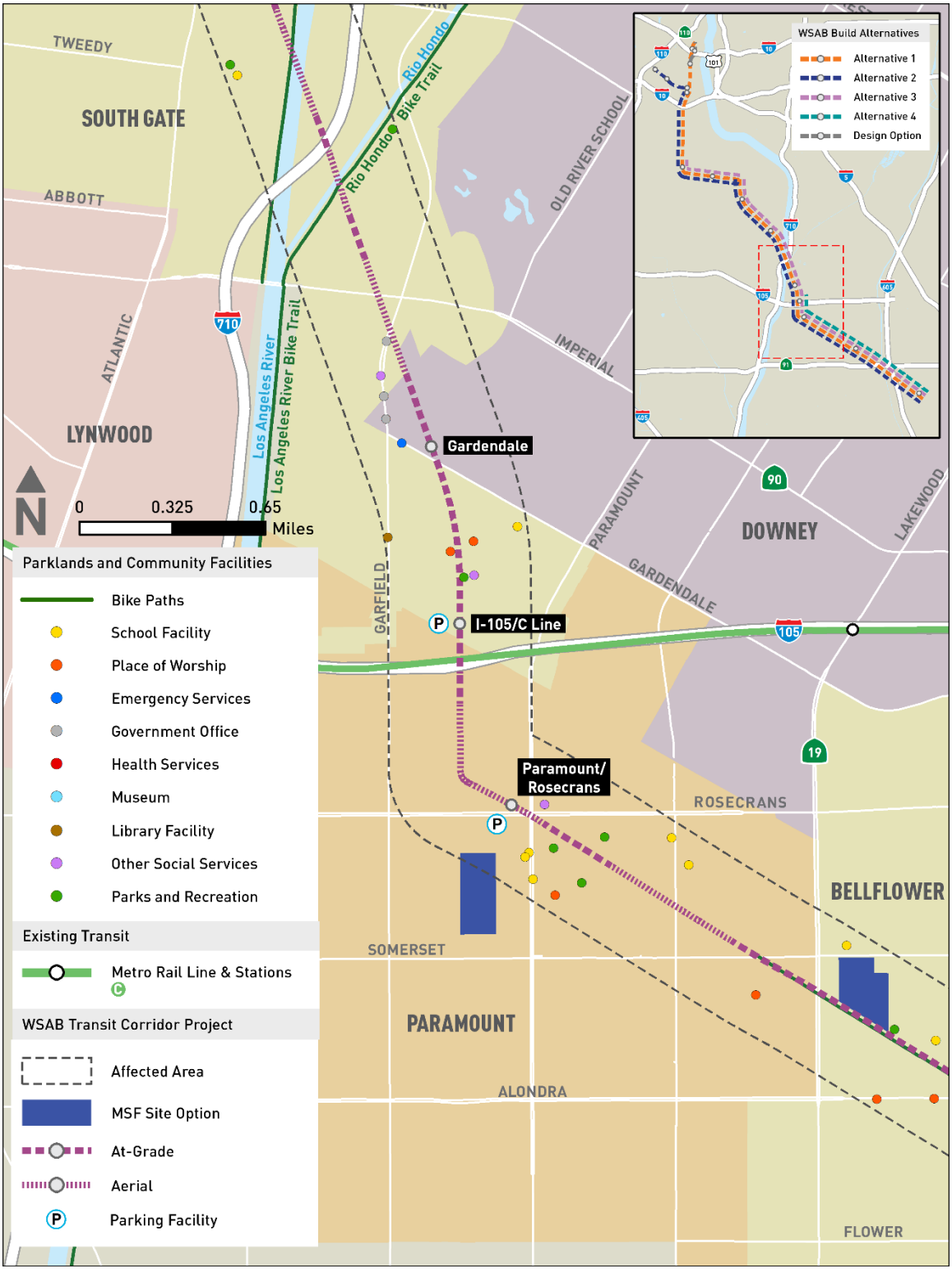
Source: Metro 2021k

Figure 4.16-3. Parkland, Bike Facilities, and Community Facilities within 0.25-miles of the Build Alternatives (Pacific/Randolph Station to Imperial Highway, South Gate)



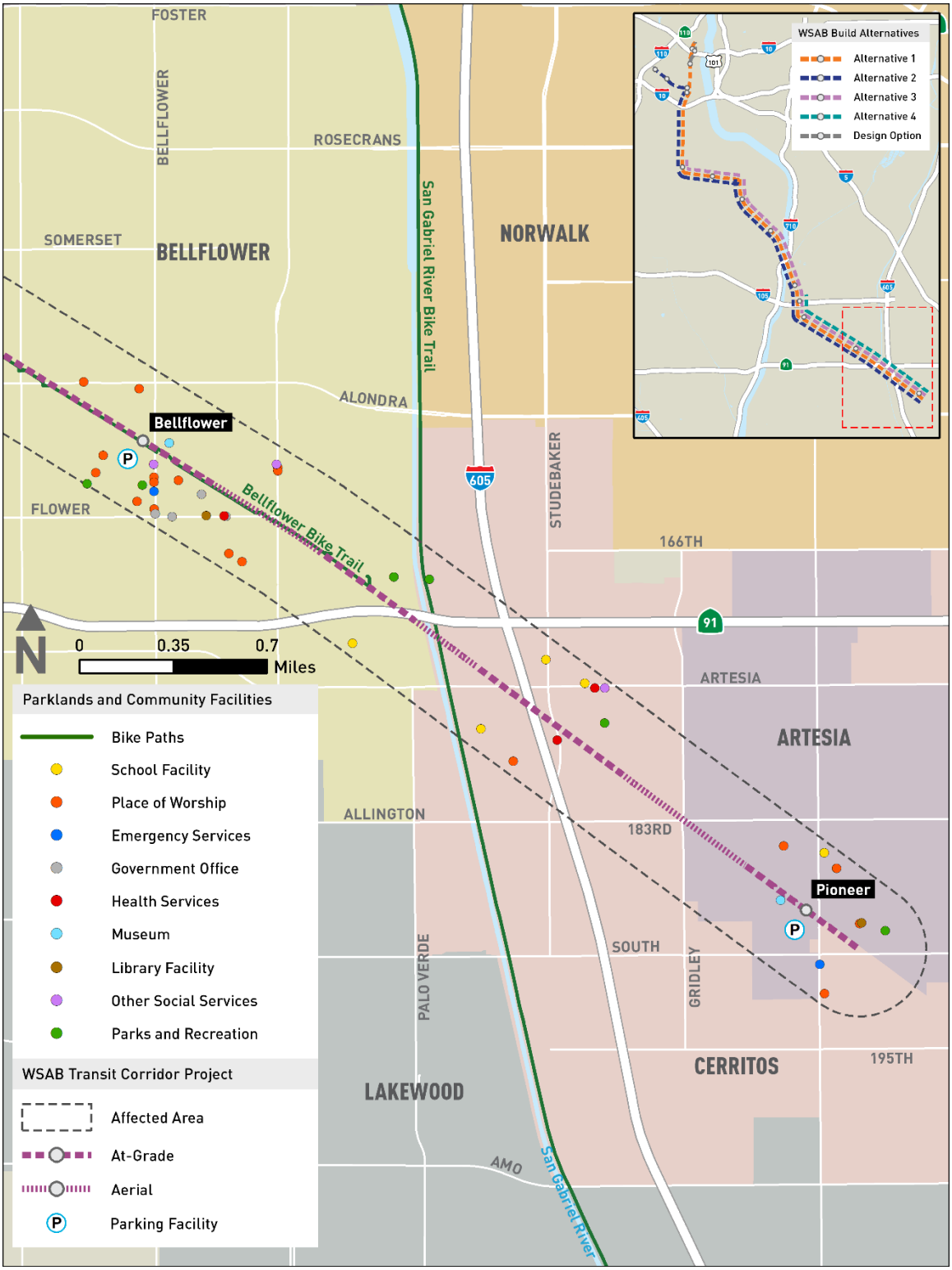
Source: Metro 2021k

Figure 4.16-4. Parkland, Bike Facilities, and Community Facilities within 0.25-Mile of the Build Alternatives (Imperial Highway, South Gate to Alondra Boulevard, Bellflower)



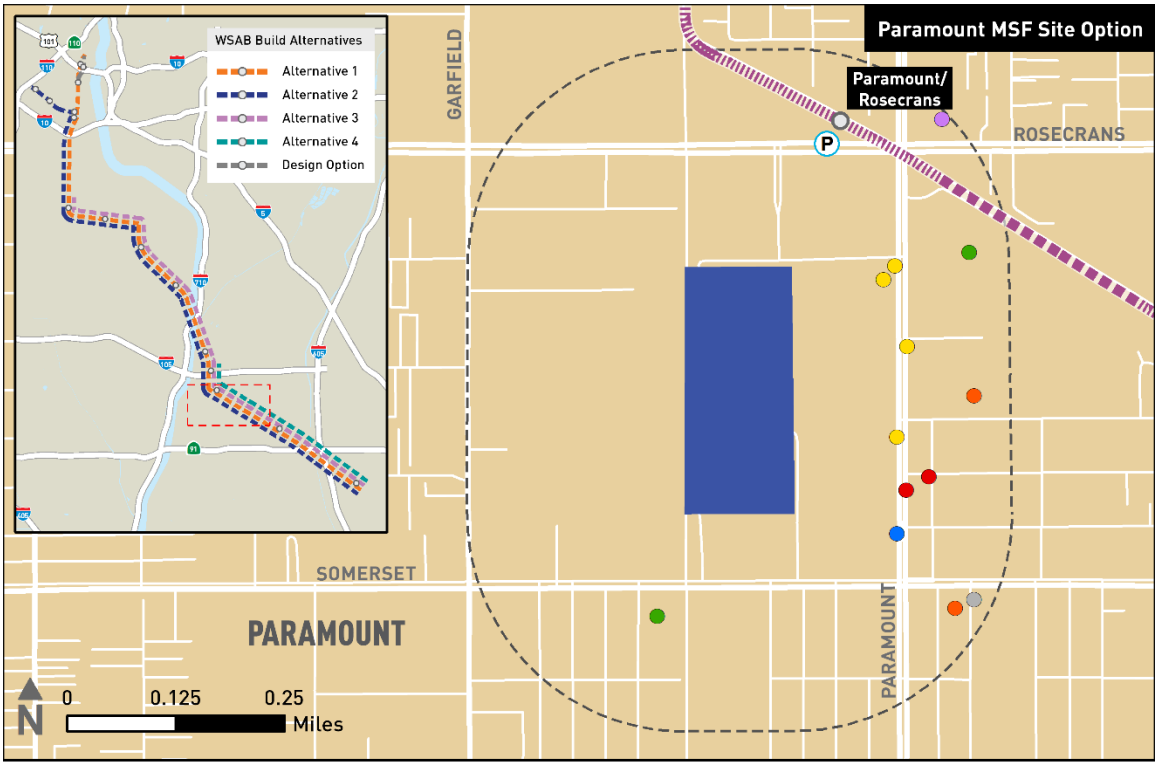
Source: Metro 2021k

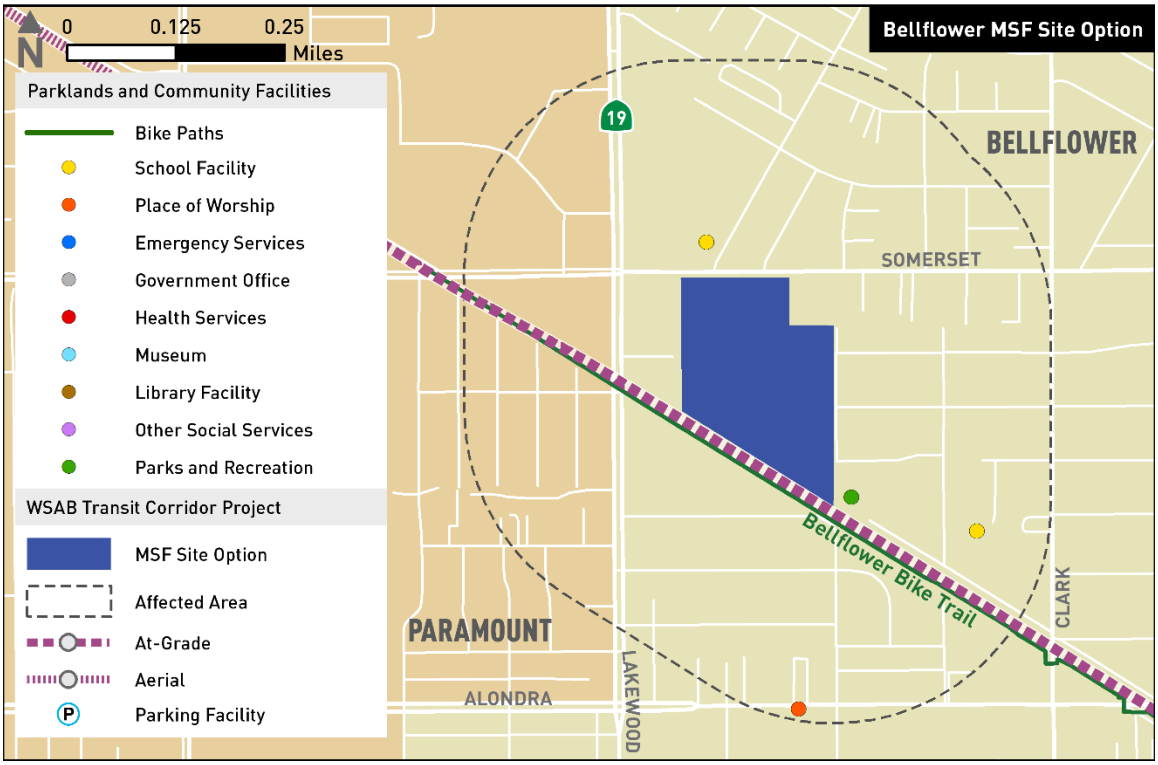
Figure 4.16-5. Parkland, Bike Facilities, and Community Facilities within 0.25-Mile of the Build Alternatives (Alondra Boulevard, Bellflower to South Street, Artesia)



Source: Metro 2021k

Figure 4.16-6. Parkland, Bike Facilities, and Community Facilities within 0.25-Mile of the MSF Site Options





Source: Metro 2021k

4.16.3 Environmental Consequences/Environmental Impacts

4.16.3.1 No Build Alternative

Under the No Build Alternative, projects identified in the Southern California Association of Governments *2016-2040 Regional Transportation Plan/Sustainable Communities Strategy*, Metro's 2009 *Long Range Transportation Plan*, and Measure M, as well as local projects, would continue to be built, which may result in adverse effects to parklands, bike facilities, or community facilities. Under NEPA, the No Build Alternative is not expected to result in adverse effects related to parklands, bike facilities, or community facilities.

4.16.3.2 Alternative 1: Los Angeles Union Station to Pioneer Station

Parklands

Acquisition: Alternative 1 would be located within street ROWs and rail ROWs, or within acquired properties, and not on or through parklands and recreational facilities. Proposed TPSS sites and structures, as well as proposed parking facilities would be located on properties currently developed with surface parking lots, commercial uses, industrial uses, or that are vacant and abutting the proposed alignment. TPSS sites would be located underground for underground segments of the alignment. No property acquisitions for Alternative 1 are required at or around the identified parkland and recreational facilities that would result in displacements or relocation of these facilities.

Paramount Park's northern boundary is separated from the proposed alignment by a 110-foot LADWP-owned utility right-of-way. In addition to this utility right-of-way, a 40-foot-wide strip owned by Metro is leased to the City of Paramount and designated for "[p]arking and landscaping for Paramount Park only, and no other uses." Exhibit E to the lease states that "there is a possibility that the West Santa Ana Branch will be selected as a rail connector with Orange County. If such a decision is made, Metro will probably require the return of the entire right-of-way adjacent to Paramount Park." Per 23 Code of Federal Regulations 774.11(h), the property was reserved in the lease agreement for future transportation use while functioning temporarily to support park use.[9]

Alternative 1 would require a partial property acquisition of the LADWP utility right-of-way to accommodate the track alignment, Paramount Bike Trail, and a permanent aerial easement on public ROW at the corner of Paramount Boulevard and Rosecrans Avenue, and along the northern boundary of Paramount Park. The primary use of the LADWP utility right-of-way is not for recreational uses and would not directly affect the function of Paramount Park or the Paramount Bike Trail. Alternative 1 would require termination of the lease agreement between Metro and the City of Paramount for the 40-foot-wide section of the Metro-owned ROW currently used for parking and landscaping by Paramount Park. The reversion of the leased parking area does not require property acquisition within the Paramount Park boundary. Park recreational facilities and buildings would not be disturbed, and the general function of Paramount Park would remain unchanged. Property acquisitions would comply with all applicable federal and state requirements, including the Federal Uniform Relocation Assistance and Real Property Acquisition Act of 1971 and the California Relocation Act (see *West Santa Ana Branch Transit Corridor Project Displacements and Acquisitions Impact Analysis*

[9] License Agreement A000604 acknowledges that the return of the entire ROW adjacent to Paramount Park is a possibility for the WSAB rail connector project.

Report [Metro 2021m], attached as Appendix H to this Draft EIS/EIR). Alternative 1 would not result in an adverse effect related to displacement or acquisition of a park.

Parking: Off-site parking at Salt Lake Park and on-site parking at Paramount Park would be affected. Approximately 114 off-site parking spaces located within the San Pedro Subdivision ROW along the northbound side of Salt Lake Avenue between Bell Avenue and Florence Avenue are currently used by Salt Lake Park visitors. Alternative 1 would require the removal/relocation of the off-site parking spaces; however, removal of the parking spaces would not result in an adverse effect related to parking or use of Salt Lake Park because other parking would remain available. The Salt Lake Park on-site parking lot along Salt Lake Avenue with approximately 58 parking spots and the 7 off-site parking spaces along the eastbound side of Salt Lake Avenue between Bell Avenue and Florence Avenue would not be affected. Street parking along Florence Avenue and Bissell Street in addition to other on-site and off-site parking around Salt Lake Park would remain unaffected. The general function of Salt Lake Park would not be impacted. Alternative 1 would require termination of the lease agreement between Metro and the City of Paramount for the 40-foot-wide section of the Metro-owned ROW to accommodate the at-grade alignment and aerial easement. The area is currently used for parking and landscaping by Paramount Park. Alternative 1 would affect approximately 20 (of over 300) on-site parking spaces on the northern portion of Paramount Park. However, the remaining approximately 280 on-site parking spots would be maintained to the extent feasible and off-site parking on Paramount Boulevard would not be affected. Park and recreational facilities and buildings would not be disturbed, and the general function of Paramount Park would remain unchanged. Under NEPA, Alternative 1 would not result in an adverse effect related to park parking.

Access: Alternative 1 would not obstruct vehicle or pedestrian access to and from the parklands and recreational facilities in the Affected Area for parklands. General access to the surrounding parks would be increased by providing new transit stations nearby park and recreational facilities. Furthermore, partial acquisition of the adjacent LADWP utility right-of-way and reversion of the leased parking in Paramount Park would not adversely affect existing vehicle and pedestrian access to the park, and access from Paramount Boulevard to Paramount Park would not be impacted. In addition to existing safety barriers, Alternative 1 would include additional safety barriers as necessary throughout the proposed alignment and in station areas for safety and to hinder illegal track crossings. Pedestrian and vehicular access to parklands and recreational facilities would be maintained at intersections and not impeded. Under NEPA, Alternative 1 would not result in an adverse effect related to park access.

Bike Facilities

The existing and planned bike paths identified along Alternative 1 would help achieve Metro's First and Last Mile objectives for transit-oriented communities and provide connectivity to the station areas and surrounding communities. Street improvements as part of Alternative 1 (e.g., grade separations, signaling) would also be implemented using the Metro Rail Design Criteria or equivalent as design guidance to keep bike facilities accessible.

Bike facilities within 0.25-mile of the alignment of Alternative 1 include the Class I, II, III, and IV bikeways of the City of LA Bikeway System, Los Angeles River Bike Path, Rio Hondo Bike Path, Paramount Bike Trail, Bellflower Bike Trail, San Gabriel River Mid-Trail, and bikeways maintained by the County of Los Angeles (Figure 4.16-1 through Figure 4.16-5). A portion of the alignment would be aerial and cross above the Los Angeles River Bike Path

and the Rio Hondo Bike Path in the City of South Gate via new bridges that span the river channels, and also cross over the San Gabriel River Mid-Trail via the existing rail ROW bridge. As such, access to and from these bike paths would not be affected.

Alternative 1 would be adjacent to the Paramount Bike Trail and Bellflower Bike Trail, located parallel along and partially within the PEROW. Operation of Alternative 1 within segments of the PEROW extending south from the intersection of Rosecrans Avenue and Paramount Boulevard to Lakewood Boulevard may not have sufficient room to accommodate the project alignment and operate the Paramount Bike Trail safely, which may require a realignment of the Paramount Bike Trail. Specifically, the Paramount Bike Trail segment between Somerset Boulevard and Lakewood Boulevard is located within the PEROW and would require a removal of an approximately 930-foot-long segment of the existing Paramount Bike Trail to accommodate the track alignment. Alternative 1 would install tracks along the southwest side of the PEROW along this segment requiring the realignment of this segment of the existing bike trail to the north side of the PEROW. The relocation of this segment of the Paramount Bike Trail would require users of the bike trail to cross the railroad tracks at Lakewood Boulevard to access the bike trail across the street. Although segments of the Paramount Bike Trail would be realigned, the bike trail would remain operational and continue to be used by the community, and access to and from the bike path would not be affected. This segment of the existing bike trail is located at the end of the Paramount Bike Trail and access to and from these bike paths would not be affected.

Additionally, Alternative 1 would require realignment of the Bellflower Bike Trail segment east of Bellflower Boulevard on the north side of the PEROW and relocation of a bus stop to accommodate the Bellflower Station platform and tracks. Although segments of the bike trails would be realigned, the bike trail would remain within the PEROW; the function of the bike trail would be maintained; and access to and from the bike path would not be affected. The bike trail and bus stop would continue to be available for use by the community. Implementation of Mitigation Measure LU-1 (Consistency with Bike Plans) as discussed in Section 4.1.4 of the Land Use Section would be effective to demonstrate that modifications to the bicycle facilities would maintain continuity with other segments of the Paramount Bike Trail and Bellflower Bike Trail. Therefore, with the implementation of mitigation, Alternative 1 would not result in an adverse effect related to access to existing bike facilities.

Alternative 1 could preempt future development and implementation of the planned Class 1 bicycle path along Salt Lake Avenue and the Class I bicycle path north of Rayo Avenue and south of the Los Angeles River, identified in the City of Huntington Park Bicycle Transportation Master Plan, City of Cudahy 2040 General Plan, South Gate Bicycle Transportation Plan, and the City of Bell Bicycle Master Plan. However, while planned, the bike facilities are unfunded and not scheduled for implementation. Therefore, they are remote and speculative.

Under Mitigation Measure LU-1 (Consistency with Bike Plans), as described in Section 4.1.4 of the Land Use Section, Metro would continue to coordinate with jurisdictions and local agencies to minimize the preemption of future development, goals, and plans within each jurisdiction. As part of this effort, Metro, as appropriate, would support preparation of amended language for each affected bicycle plan demonstrating that planned bicycle facilities could still achieve an individual city's mobility and connectivity goals. However, because the process to amend bike plans is a local process, including public participation, the ultimate outcome and resolution of plan elements cannot be predicted. Additional discussion on the Build Alternatives and bicycle paths as it relates to land use planning may be found in Section 4.1.3.

Community Facilities

Acquisition: Table 4.16.4 summarizes effects to community facilities along the Alternative 1 alignment. Property acquisitions would be required for permanent underground easements for tunneling; to accommodate aerial columns and structures, grade separations and track alignment; TPSS sites and structures; and parking facilities. Permanent underground easements for tunneling would be required but would not affect aboveground uses or include areas with recreational use. Other proposed TPSS sites, ancillary structures, and parking facilities would be located on properties currently developed with surface parking lots, commercial uses, industrial uses, or that are vacant and abut the proposed alignment. Proposed parking facilities for the Build Alternatives would not be located on properties with community facilities. Partial property acquisitions would not disturb existing buildings or change or impact the functionality of the community facilities. Under NEPA, Alternative 1 would not result in an adverse effect related to the functionality of the community facilities.

Parking: Partial property acquisitions would not affect on-site or street parking for community facilities. Under NEPA, Alternative 1 would not result in an adverse effect related to community facility parking.

Access: Alternative 1 would be underground, aerial, or at-grade in the street ROW, rail ROW, or within acquired properties and would not affect vehicle or pedestrian access to community facilities during operation. Access points to the affected community facilities would not be changed or impacted, and accessibility to community facilities to the nearest station areas would be enhanced. Partial property acquisitions would avoid impacting access points to community facilities, and pedestrian and vehicular access to community facilities would be maintained and not impeded. Under NEPA, Alternative 1 would not result in an adverse effect related to community facility access.

Table 4.16.4 Effects to Community Facilities Located within 0.25 Mile of Build Alternatives

Build Alternatives	Facility Name	Type of Acquisition	Loss of Supporting Street Parking	Affects Vehicle Access	Affects Pedestrian Access
1	**Japanese American National Museum** 369 E. 1st St, Los Angeles	Partial acquisition; permanent underground easement	No	No	No
1, 2, 3	**Community of Faith Bible Church** 12025 Industrial Ave, Huntington Park	Partial acquisition; grade crossing; southwestern corner of the property	No	No	No
1, 2, 3	**San Antonio Elementary School** 6222 State St, Huntington Park	Partial acquisition; grade crossing; edge of the property closest to the public sidewalks	No	No	No

Source: Metro 2021k
Note: TPSS = traction power substation

4.16.3.3 Alternative 2: 7th Street/Metro Center to Pioneer Station

Parklands

Acquisition: Similar to Alternative 1, Alternative 2 would not be located on or through parklands and recreational facilities and would result in the same partial property acquisition of a LADWP utility right-of-way along Paramount Park. Property acquisitions would comply with all applicable federal and state requirements, including the Uniform Relocation Assistance, Real Property Acquisition Act of 1971, and the California Relocation Act. Under NEPA, Alternative 2 would not result in an adverse effect related to displacement or acquisition of a park.

Parking: Parking impacts resulting from Alternative 2 would be the same as Alternative 1. As discussed for Alternative 1 in Section 4.16.3.2, removal of the off-site parking spaces used by Salt Lake Park visitors and on-site parking in Paramount Park would not result in an adverse effect as adequate parking would still be available. The general function of Salt Lake Park and Paramount Park would not be impacted. Under NEPA, Alternative 2 would not result in an adverse effect related to park parking.

Access: Similar to Alternative 1, pedestrian and vehicular access to parklands and recreational facilities would be maintained at intersections and not impeded. Accessibility to parklands and recreational facilities may be improved by having a nearby transit station. Existing and proposed safety barriers along the proposed alignment hinder illegal track crossings, but do not limit park access at legal locations. Under NEPA, Alternative 2 would not result in an adverse effect related to park access.

Bike Facilities

Alternative 2 includes the same bike paths as Alternative 1 and would result in the same changes to the Paramount Bike Trail and Bellflower Bike Trail. Realignment of segments of the Paramount Bike Trail and Bellflower Bike Trail would not result in adverse physical effects or prevent access to existing bike facilities. Mitigation Measure LU-1 (Consistency with Bike Plans) would be implemented to maintain connectivity. Alternative 2 could preempt future development and implementation of the planned Class 1 bicycle path along Salt Lake Avenue and the Class I bicycle path north of Rayo Avenue and south of the Los Angeles River, identified in the City of Huntington Park Bicycle Transportation Master Plan, City of Cudahy 2040 General Plan, South Gate Bicycle Transportation Plan, and the City of Bell Bicycle Master Plan. However, while planned, the bike facilities are unfunded and not scheduled for implementation. Therefore, they are remote and speculative.

Under Mitigation Measure LU-1 (Consistency with Bike Plans), as described in Section 4.1.4 of the Land Use Section, Metro would continue to coordinate with jurisdictions and local agencies to minimize the preemption of future development, goals, and plans within each jurisdiction. As part of this effort, Metro, as appropriate, would support preparation of amended language for each affected bicycle plan demonstrating that planned bicycle facilities could still achieve an individual city's mobility and connectivity goals. However, because the process to amend bike plans is a local process, including public participation, the ultimate outcome and resolution of plan elements cannot be predicted. Additional discussion on the Build Alternatives and bicycle paths as it relates to land use planning may be found in Section 4.1.3.

Community Facilities

Acquisition: Partial property acquisitions required for Alternative 2 would be the same as discussed for Alternative 1. Similar to Alternative 1 and shown in Table 4.16.4, Alternative 2 may affect the

Community of Faith Bible Church and San Antonio Elementary School. The partial property acquisitions would not change or impact the functionality of the facilities and the proposed parking facilities would not be located on properties with community facilities. Under NEPA, Alternative 2 would not result in an adverse effect related to the functionality of community facilities.

Parking: Similar to Alternative 1, Alternative 2 would not affect on-site or street parking for community facilities. Under NEPA, Alternative 2 would not result in an adverse effect related to community facility parking.

Access: Similar to Alternative 1, Alternative 2 partial property acquisitions would avoid impacting access points to community facilities, and pedestrian and vehicular access to community facilities would be maintained and not impeded. Under NEPA, Alternative 2 would not result in an adverse effect related to community facility access.

4.16.3.4 Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Parklands

Acquisition: Alternative 3 would have a shorter alignment than Alternatives 1 and 2, would not be located on or through parklands and recreational facilities, and would result in the same partial property acquisition of a LADWP utility right-of-way along Paramount Park. Property acquisitions would comply with all applicable federal and state requirements, including the Uniform Relocation Assistance, Real Property Acquisition Act of 1971, and the California Relocation Act. Under NEPA, Alternative 3 would not result in an adverse effect related to displacement or acquisition of a park.

Parking: Similar to Alternatives 1 and 2, off-site parking used by Salt Lake Park visitors and on-site parking at Paramount Park would be affected. As discussed in Section 4.16.3.2, removal of the parking spaces would not result in an adverse effect as adequate parking would still be available. The general function of Salt Lake Park and Paramount Park would not be impacted. Under NEPA, Alternative 3 would not result in an adverse effect related to park parking.

Access: Similar to Alternatives 1 and 2, pedestrian and vehicular access to parklands and recreational facilities would be maintained at intersections and not impeded. Accessibility to parklands and recreational facilities may be improved by having a nearby transit station. Existing and proposed safety barriers along the proposed alignment would increase safety and hinder illegal track crossings. Under NEPA, Alternative 3 would not result in an adverse effect related to park access.

Bike Facilities

Similar to Alternatives 1 and 2, Alternative 3 includes the same bike paths and would result in the same changes to the Paramount Bike Trail and Bellflower Bike Trail. Realignment of segments of the Paramount Bike Trail and Bellflower Bike Trail would not result in adverse physical effects or prevent access to existing bike facilities. Mitigation Measure LU-1 (Consistency with Bike Plans) would be implemented to maintain connectivity. Alternative 3 could preempt future development and implementation of the planned Class 1 bicycle path along Salt Lake Avenue and the Class I bicycle path north of Rayo Avenue and south of the Los Angeles River, identified in the City of Huntington Park Bicycle Transportation Master Plan, City of Cudahy 2040 General Plan, South Gate Bicycle Transportation Plan, and the City of Bell Bicycle Master Plan. However, while planned, the bike facilities are unfunded and not scheduled for implementation. Therefore, they are remote and speculative.

Under Mitigation Measure LU-1 (Consistency with Bike Plans), as described in Section 4.1.4 of the Land Use Section, Metro would continue to coordinate with jurisdictions and local agencies to minimize the preemption of future development, goals, and plans within each jurisdiction. As part of this effort, Metro, as appropriate, would support preparation of amended language for each affected bicycle plan demonstrating that planned bicycle facilities could still achieve an individual city's mobility and connectivity goals. However, because the process to amend bike plans is a local process, including public participation, the ultimate outcome and resolution of plan elements cannot be predicted. Additional discussion on the Build Alternatives and bicycle paths as it relates to land use planning may be found in Section 4.1.3.

Community Facilities

Acquisition: Partial property acquisitions required for Alternative 3 would be the same as discussed for Alternatives 1 and 2, and may affect the Community of Faith Bible Church and San Antonio Elementary School. The partial property acquisitions would not change or impact the functionality of the facilities and the proposed parking facilities would not be located on properties with community facilities. Under NEPA, Alternative 3 would not result in an adverse effect related to the functionality of community facilities.

Parking: Similar to Alternatives 1 and 2, Alternative 3 would not affect on-site or street parking for community facilities. Under NEPA, Alternative 3 would not result in an adverse effect related to community facility parking.

Access: Similar to Alternatives 1 and 2, partial property acquisitions would avoid impacting access points to community facilities, and pedestrian and vehicular access to community facilities would be maintained and not impeded. Under NEPA, Alternative 3 would not result in an adverse effect related to community facility access.

4.16.3.5 Alternative 4: I-105/C (Green) Line to Pioneer Station

Parklands

Acquisition: Alternative 4 would have a shorter alignment than Alternatives 1, 2, and 3 and would not be located on or through parklands and recreational facilities. Similarly, Alternative 4 would result in the same partial property acquisition of a LADWP utility right-of-way along Paramount Park. Property acquisitions would comply with all applicable federal and state requirements, including the Uniform Relocation Assistance, Real Property Acquisition Act of 1971, and the California Relocation Act. Under NEPA, Alternative 4 would not result in an adverse effect related to displacement or acquisition of a park.

Parking: Alternative 4 would have a shorter alignment than Alternatives 1, 2, and 3, and would not impact parking at Salt Lake Park. Similar to Alternatives 1, 2, and 3, on-site parking at Paramount Park would be affected. However, this would not result in an adverse effect as adequate parking would still be available. The general function of Paramount Park would not be impacted. Under NEPA, Alternative 4 would not result in an adverse effect related to park parking.

Access: Similar to Alternatives 1, 2, and 3, pedestrian and vehicular access to parklands and recreational facilities would be maintained at intersections and not impeded. Instead, accessibility to parklands and recreational facilities may be improved by having a nearby transit station. Existing and proposed safety barriers along the proposed alignment would increase safety and hinder illegal track crossings. Under NEPA, Alternative 4 would not result in an adverse effect related to park access.

Bike Facilities

Similar to Alternatives 1, 2, and 3, Alternative 4 includes the same bike paths and would result in the same changes to the Paramount Bike Trail and Bellflower Bike Trail. Realignment of segments of the Paramount Bike Trail and Bellflower Bike Trail would not result in adverse physical effects or prevent access to existing bike facilities. Mitigation Measure LU-1 (Consistency with Bike Plans) would be implemented to maintain connectivity. Alternative 4 could preempt future development and implementation of the planned Class 1 bicycle path along Salt Lake Avenue and the Class I bicycle path north of Rayo Avenue and south of the Los Angeles River, identified in the City of Huntington Park Bicycle Transportation Master Plan, City of Cudahy 2040 General Plan, South Gate Bicycle Transportation Plan, and the City of Bell Bicycle Master Plan. However, while planned, the bike facilities are unfunded and not scheduled for implementation. Therefore, they are remote and speculative.

Under Mitigation Measure LU-1 (Consistency with Bike Plans), as described in Section 4.1.4 of the Land Use Section, Metro would continue to coordinate with jurisdictions and local agencies to minimize the preemption of future development, goals, and plans within each jurisdiction. As part of this effort, Metro, as appropriate, would support preparation of amended language for each affected bicycle plan demonstrating that planned bicycle facilities could still achieve an individual city's mobility and connectivity goals. However, because the process to amend bike plans is a local process, including public participation, the ultimate outcome and resolution of plan elements cannot be predicted. Additional discussion on the Build Alternatives and bicycle paths as it relates to land use planning may be found in Section 4.1.3.

Community Facilities

Acquisition: Similar to Alternatives 1, 2 and 3, partial property acquisitions would be required for permanent aerial easements, to accommodate grade separations and track alignment, TPSS sites and structures, and parking facilities. The partial property acquisitions would not change or impact the functionality of existing facilities and the proposed parking facilities would not be located on properties with community facilities. Under NEPA, Alternative 4 would not result in an adverse effect related to the functionality of community facilities.

Parking: Alternative 4 would not affect on-site or street parking used by visitors of community facilities. Under NEPA, Alternative 4 would not result in an adverse effect related to community facility parking.

Access: Similar to Alternatives 1, 2 and 3, partial property acquisitions would avoid impacting access points to community facilities, and pedestrian and vehicular access to community facilities would be maintained and not impeded. Under NEPA, Alternative 4 would not result in an adverse effect related to community facility access.

4.16.3.6 Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station

Parklands: Design Options 1 and 2 would be located underground and would not require the acquisition or displacement of parklands and recreational facilities. The nearest parkland would be Los Angeles Plaza Park located approximately 530 feet from Design Option 1. Under NEPA, Design Options 1 and 2 would not result in an adverse effect related to parklands and recreational facilities.

Bike Facilities: Design Options 1 and 2 would be located underground and would not impede or affect access to and from the bikeways. Under NEPA, Design Options 1 and 2 would not result in an adverse effect related to bike facilities.

Community Facilities: Design Options 1 and 2 would not require the acquisition of community facility properties as these design options would be primarily underground. In addition, Design Options 1 and 2 would not affect on- or off-site parking or impede vehicle and pedestrian access used for surrounding community facilities. Under NEPA, Design Options 1 and 2 would not result in an adverse effect related to community facilities.

4.16.3.7 Maintenance and Storage Facility

Paramount MSF Site Option

Parklands: The Paramount MSF site option site is currently developed with the Paramount Swap Meet, Paramount Drive-in Theatre, and parking. No parkland and recreational facilities are located on the site for the Paramount MSF site option with the nearest parkland (Paramount Park) located approximately 719 feet east of the Paramount MSF site option. The Paramount MSF site option would not affect on-site or street parking used by visitors to Paramount Park. Pedestrian and vehicle access to Paramount Park would be maintained and would not be impeded. Under NEPA, the Paramount MSF site option would not result in an adverse effect related to parklands and recreational facilities.

Bike Facilities: No bike paths are located adjacent to or would cross the Paramount MSF site option. Under NEPA, the Paramount MSF site option would not result in an adverse effect related to bike facilities.

Community Facilities: Existing uses on the Paramount MSF site option are not identified as a community facility. The property site would require a full property acquisition. The Paramount MSF site option would not affect on-site or street parking used by the surrounding community facilities. Access to surrounding community facilities would be maintained and vehicle or pedestrian access would not be impeded. Under NEPA, the Paramount MSF site option would not result in an adverse effect related to community facilities.

Bellflower MSF Site Option

Parklands: The Bellflower MSF site option site is city-owned, designated as Open Space by the City of Bellflower, and currently leased by the city for use as a recreational commercial business (Hollywood Sports Park and Bellflower BMX). The recreational commercial business is not a public parkland or recreational facility and acquisition of this property would be required. The City of Bellflower has confirmed that the site currently operates as a commercial business, that the property is not designated as a significant park or recreation area, and is not designated as having an important role in meeting the park and recreation objectives of the city. Metro continues to undergo extensive coordination with the city. Based on this coordination it is anticipated that the city would amend the General Plan so that the MSF facility use would be consistent with an appropriate city land use designation. Under NEPA, the Bellflower MSF site option would not result in adverse effects related to consistency with local land use plans, policies, and regulations.

The nearest parkland is the Flora Vista Dog Park located adjacent to the southeastern edge of the property. The Bellflower MSF site option would not affect on-site or street parking used by visitors to Flora Vista Dog Park. Pedestrian and vehicle access to Flora Vista Dog Park would be maintained and would not be impeded.

Bike Facilities: The Bellflower Bike Trail segment from Lakewood Boulevard south to Clark Avenue is located within the PEROW and south of the proposed Bellflower MSF site option. This segment of the PEROW may not have sufficient room to accommodate the MSF site option lead tracks, LRT tracks, and operate the Bellflower Bike Trail safely. This may require a realignment in this segment of the Bellflower Bike Trail to maintain connectivity with the Paramount Bike Trail west of Lakewood Boulevard and the other segments of the Bellflower Bike Trail. Implementation of Mitigation Measure LU-1 (Consistency with Bike Plans) as discussed in Section 4.1.4 of the Land Use Section would be effective to demonstrate that modifications to the bicycle facilities would maintain continuity with other segments of the Paramount Bike Trail and Bellflower Bike Trail. Thus, as all functions of the MSF would be located within the facility; the lead tracks would be located within the PEROW; the Bellflower MSF site option would not impair the function of the bike trail; and access to and from the bike trail would be maintained. Under NEPA, with implementation of this mitigation measure, the Bellflower MSF site option would not result in an adverse effect related to bike facilities.

Community Facilities: The Bellflower MSF site option is currently used for a recreational commercial business and is not identified as a community facility. The site would require a full property acquisition, which would not affect on-site or street parking used by the surrounding community facilities. Access to surrounding community facilities would be maintained and vehicle or pedestrian access would not be impeded. Under NEPA, the Bellflower MSF site option would not result in an adverse effect related to community facilities.

4.16.4 Project Measures and Mitigation Measures

4.16.4.1 Project Measures

There are no project measures required by law or permit related to parklands and community facilities.

4.16.4.2 Mitigation Measures

Refer to Mitigation Measure LU-1 **(**Consistency with Bike Plans) in Section 4.1.4 of the Land Use Section.

4.16.5 California Environmental Quality Act Determination

4.16.5.1 Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable standards for any park or recreational facility?

No Project Alternative

Under the No Project Alternative, plans for bike paths proposed within or along the rail ROW could be implemented and would not be affected by the Project. These bike paths would enhance and connect with existing active transportation corridors for the cities. The No Project Alternative would not impact off-site or on-site parking used for parklands or governmental facilities and would not result in the need for the expansion of or construction of new parkland or governmental facilities. In addition, the No Project Alternative would not provide greater accessibility to nearby parklands and governmental facilities as the Build Alternatives. Therefore, impacts to parks or recreational facilities and governmental facilities would be less than significant, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Alternative 1 is an infrastructure improvement project in an urban setting that would provide a mode of transportation, accessibility, and connectivity in the surrounding communities. Alternative 1 would not directly create or increase the residential population of the surrounding communities that would result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities. Instead, accessibility to parklands, recreational facilities, and governmental facilities may be improved by having a nearby transit station. Realignment of segments of the Paramount Bike Trail and Bellflower Bike Trail would not result in adverse physical effects or prevent access to bike facilities, and impacts would be less than significant. Nonetheless, Mitigation Measure LU-1 (Consistency with Bike Plans), as described in Section 4.1.4 of the Land Use Section, would be implemented to maintain connectivity and further reduce impacts to a less than significant level as it relates to connectivity.

As discussed in Section 4.16.3.2, Alternative 1 could preempt future development and implementation of the planned Class I bicycle path along Salt Lake Avenue and the planned Class I bicycle path north of Rayo Avenue and south of the Los Angeles River, identified in the *City of Huntington Park Bicycle Transportation Master Plan*, *City of Cudahy 2040 General Plan*, *South Gate Bicycle Transportation Plan*, and *City of Bell Bicycle Master Plan*, and would result in a significant and unavoidable impact. Converting the planned Class I bicycle paths into Class II or Class III bicycle paths is feasible and would maintain the connectivity identified in the bicycle master plans. However, the reclassification of the bike paths is considered an inconsistency with the current bike plans and a significant impact would occur.

Metro continues to coordinate with jurisdictions and local agencies so that Alternative 1 would not preempt future development, goals, and plans within each jurisdiction. Under Mitigation Measure LU-1(Consistency with Bike Plans), as described in Section 4.1.4 of the Land Use Section, Metro would continue to coordinate with jurisdictions and local agencies to minimize the preemption of future development, goals, and plans within each jurisdiction. As part of this effort, Metro, as appropriate, would support preparation of amended language for each affected bicycle plan demonstrating that planned bicycle facilities could still achieve an individual city's mobility and connectivity goals. However, because the process to amend bike plans is a local process, including public participation, the ultimate outcome and resolution of plan elements cannot be predicted. As such, despite Metro's best efforts and coordination and with the implementation of mitigation, Alternative 1 may still preempt future development and the implementation of the planned bike paths and limit access to bicycle facilities. Therefore, even with implementation of mitigation, Alternative 1 would result in a significant and unavoidable impact.

Mitigation Measures: Mitigation Measure LU-1 (Consistency with Bike Plans)

Impacts Remaining After Mitigation: Significant and unavoidable impact.

Alternative 2: 7th Street/Metro Center to Pioneer Station

Similar to Alternative 1, Alternative 2 would not directly create or increase the residential population of the surrounding communities that would result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities and impacts would be less than significant. Nonetheless, Mitigation Measure LU-1 (Consistency with Bike Plans) would be implemented to maintain connectivity of the bike trails and further reduce impacts to a less than significant level.

As discussed in Section 4.16.3.2, Alternative 2 could preempt future development and implementation of the same planned bike paths identified in bicycle master plans for the Cities of Huntington Park, Bell, and South Gate and the City of Cudahy General Plan resulting in a significant and unavoidable impact. Implementation of Mitigation Measure LU-1 (Consistency with Bike Plans), as described in Section 4.1.4 of the Land Use Section, would be required. However, because the process to amend bike plans is a local process, including public participation, the ultimate outcome and resolution of plan elements cannot be predicted. Similar to Alternative 1, Alternative 2 may still preempt future development and implementation of the future bike paths. Therefore, impacts would be significant and unavoidable.

Mitigation Measures: Mitigation Measure LU-1 (Consistency with Bike Plans)

Impacts Remaining After Mitigation: Significant and unavoidable impact.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Similar to Alternatives 1 and 2, Alternative 3 would not directly create or increase the residential population of the surrounding communities that would result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities and impacts would be less than significant. Nonetheless, Mitigation Measure LU-1 (Consistency with Bike Plans) would be implemented to maintain connectivity of the bike trails and further reduce impacts to a less than significant level.

As discussed in Section 4.16.3.2, Alternative 3 could preempt future development and implementation of the same planned bike paths identified in bicycle master plans for the Cities of Huntington Park, Bell, Cudahy, South Gate, and the City of Cudahy General Plan resulting in a significant and unavoidable impact. Implementation of Mitigation Measure LU-1 (Consistency with Bike Plans), as described in Section 4.1.4 of the Land Use Section, would be required. However, because the process to amend bike plans is a local process, including public participation, the ultimate outcome and resolution of plan elements cannot be predicted. Similar to Alternatives 1 and 2, Alternative 3 may still preempt future development and implementation of the future bike paths. Therefore, impacts would be significant and unavoidable.

Mitigation Measures: Mitigation Measure LU-1 (Consistency with Bike Plans)

Impacts Remaining After Mitigation: Significant and unavoidable impact.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Similar to Alternatives 1, 2 and 3, Alternative 4 would not directly create or increase the residential population of the surrounding communities that would result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities and impacts would be less than significant. Nonetheless, Mitigation Measure LU-1 (Consistency with Bike Plans) would be implemented to maintain connectivity of the bike trails and further reduce impacts to a less than significant level.

As discussed in Section 4.16.3.2, Alternative 4 could preempt future development and implementation of the same planned bike path identified in the bicycle master plan for the City of South Gate resulting in a significant and unavoidable impact. Implementation of Mitigation Measure LU-1 (Consistency with Bike Plans), as described in Section 4.1.4 of the Land Use Section, would be required. However, because the process to amend bike plans is a local process, including public participation, the ultimate outcome and resolution of plan elements cannot be predicted. Similar to Alternatives 1, 2, and 3, Alternative 4 may still

preempt future development and implementation of the future bike paths. Therefore, impacts would be significant and unavoidable.

Mitigation Measures: Mitigation Measure LU-1 (Consistency with Bike Plans)

Impacts Remaining After Mitigation: Significant and unavoidable impact.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Design Options 1 and 2 would not directly generate new residential populations that would result in the need for new public recreational facilities or increase the use of existing parks or government facilities. Design Options 1 and 2 would be underground and not affect the functionality of parklands and recreation facilities, bike facilities, and government facilities. Therefore, impacts would be less than significant, and mitigation would not be required.

Maintenance and Storage Facility

Paramount MSF Site Option: The Paramount MSF site option would not result in physical impacts to nearby parks or community facilities and would not generate a new residential population that would increase the need for new recreational facilities. In addition, no parklands and recreation facilities, bike facilities, and government facilities are located adjacent to or would cross the Paramount MSF site option. Therefore, impacts would be less than significant, and mitigation would not be required.

Bellflower MSF Site Option: The Bellflower MSF site option would not result in physical impacts to nearby public parks or community facilities and would not generate a new residential population that would increase the need for new recreational facilities. As discussed in Section 4.16.3.7, the City of Bellflower has confirmed that the site is designated as Open Space and currently leased by the city for use as a recreational commercial business (Hollywood Sports Park and Bellflower BMX). The property is not designated as a significant park or recreation area and is not designated as having an important role in meeting the park and recreation objectives of the city. The land is not a public parkland or recreational facility, or government facility. Based on this coordination it is anticipated that the city would amend the General Plan so that the MSF facility use would be consistent with an appropriate city land use designation.. Therefore, impacts would be less than significant, and mitigation would not be required.

4.16.5.2 Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

No Project Alternative

Under the No Project Alternative, plans for bike paths proposed within or along the rail ROW could be implemented and would not be affected by the Project. These bike paths would enhance and connect with existing active transportation corridors for the cities. The No Project Alternative would not directly increase the use of the existing neighborhood and regional parks, bike facilities, or other recreational facilities and would not accelerate physical deterioration of such facilities. Therefore, impacts would be less than significant, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Alternative 1 would improve accessibility to existing neighborhood parks, recreational facilities, and bike facilities by having a nearby transit station. Alternative 1 would not directly increase the local residential population that could result in an increased use of parklands and other recreational facilities. Instead, improved access to recreational facilities may result in more use by the local and surrounding communities. Occasionally, an increase in parkland and recreational facilities may occur during large community events such as fairs and festivals, in which the city departments would provide adequate services and resources to serve the attendees of these events. However, it is anticipated to be minimal and the potential increase in the use of parklands and recreational facilities is not anticipated to result in the need for construction of new parklands or community facilities.

Existing bike facilities within 0.25-mile of the alignment of Alternative 1 are summarized in Table 4.16.2. The existing Paramount Bike Trail and Bellflower Bike Trail would also need to be reconfigured to accommodate the Project, but changes would not accelerate physical deterioration of the bike facilities and connection would be maintained with the implementation of Mitigation Measure LU-1 (Consistency with Bike Plans). As discussed in Section 4.16.5.1, several planned bike facilities would be required to re-categorized as Class II or Class III bicycle paths to accommodate the Project and to keep the bicycle networks connected within each city. Converting the planned Class I bicycle paths into Class II or Class III bicycle paths is feasible and would maintain the connectivity identified in the bicycle master plans. However, the reclassification of the bike paths is considered an inconsistency with the current bike plans and a significant impact would occur.

Nonetheless, as the Project is a transportation infrastructure project, Alternative 1 would not directly increase the local residential population that may result in increased use on the bike facilities. Greater accessibility to the bike facilities with nearby transit stations could result in increased use by the local and surrounding communities; however, the increased use is not expected to severely impact the infrastructure of the existing bike facilities as all maintenance on the bike facilities would be provided by the local city. Furthermore, the existing and planned bike facilities would be reconfigured with the coordination of each city so the bike facilities would be able to accommodate the Project while meeting city standards. It is anticipated that an increase in use would be minimal and would not result in the need for construction of new bike paths beyond what is already planned in the bike master plans. Therefore, impacts would be less than significant, and mitigation would not be required.

Alternative 2: 7th Street/Metro Center to Pioneer Station

Alternative 2 is a transportation infrastructure project and would not directly increase the local residential population that may result in an increased use of parklands, recreational facilities, and bike facilities. Similar to Alternative 1, Alternative 2 transit stations would improve accessibility to existing neighborhood parks, recreational facilities, and bike facilities that may result in more use at the facilities by the local and surrounding communities. However, the city departments would provide adequate services and resources to maintain the facilities to city standards. An increased use of parklands, recreational facilities, and bike facilities is anticipated to be minimal, would not severely impact the infrastructure of the facilities, and would not result in the need for construction of new parklands or community facilities. Therefore, impacts would be less than significant, and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Similar to Alternatives 1 and 2, Alternative 3 transit stations would improve accessibility to existing neighborhood parks, recreational facilities, and bike facilities that may result in more use at the facilities by the local and surrounding communities. However, this increase is anticipated to be minimal, would not severely impact the infrastructure of the facilities, and would not result in the need for construction of new parklands or community facilities. Therefore, impacts would be less than significant, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Similar to Alternatives 1, 2 and 3, Alternative 4 transit stations would improve accessibility to existing neighborhood parks, recreational facilities, and bike facilities that may result in more use at the facilities by the local and surrounding communities. However, this increase is anticipated to be minimal, would not severely impact the infrastructure of the facilities, and would not result in the need for construction of new parklands or community facilities. Therefore, impacts would be less than significant, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Design Options 1 and 2 would not directly create new residential populations that may increase the use of existing parks, recreational facilities, and bike facilities in the surrounding communities. Although improved access to parks, recreational facilities, and bike facilities may result in more use by the local and surrounding communities, the city departments would provide adequate services and resources to maintain the facilities to city standards. Therefore, impacts would be less than significant, and mitigation would not be required.

Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option: The Paramount and Bellflower MSF site options would not directly create new residential populations that may increase the use of existing parks, recreational facilities, and bike facilities in the surrounding communities. The MSF is a support facility for the Project and would provide maintenance and storage services and would not provide improved access to parks, recreational facilities, and bike facilities that may result in increased use. Therefore, impacts would be less than significant, and mitigation would not be required.

4.16.5.3 Would the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

No Project Alternative

Under the No Project Alternative, plans for bike paths proposed within or along the rail ROW could be implemented and would not be affected by the Project. These bike paths would enhance and connect with existing active transportation corridors for the cities and would undergo individual environmental clearance. Therefore, impacts would be less than significant, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

The Project is a transportation infrastructure project that would provide new transit options to the surrounding community. Alternative 1 does not include the construction of recreational facilities

or require the expansion of existing park facilities. The existing Paramount Bike Trail and Bellflower Bike Trail would be reconfigured to accommodate the Project, and access and connectivity would be maintained with the implementation of Mitigation Measure LU-1 (Consistency with Bike Plans). The modifications would not result in adverse physical effects to the environment. As discussed in Section 4.16.5.1, several planned bike facilities would require re-categorization from Class I to Class II or Class III bicycle paths to accommodate the Project and keep the bicycle networks connected within each city. Converting the planned Class I bicycle paths into Class II or Class III bicycle paths is feasible and would maintain the connectivity identified in the bicycle master plans. However, the reclassification of the bike paths is considered an inconsistency with the current bike plans and a significant impact would occur. Alternative 1 could preempt future development and implementation of the planned Class I bicycle path along Salt Lake Avenue and planned Class I bicycle path north of Rayo Avenue and south of the Los Angeles River, discussed in Section 4.16.3.2.

Metro continues to coordinate with jurisdictions and local agencies so that Alternative 1 would not preempt future development, goals, and plans within each jurisdiction. Under Mitigation Measure LU-1 (Consistency with Bike Plans), as described in Section 4.1.4 of the Land Use Section, Metro would continue to coordinate with jurisdictions and local agencies to minimize the preemption of future development, goals, and plans within each jurisdiction. As part of this effort, Metro, as appropriate, would prepare amended language for each affected bicycle plan demonstrating that planned bicycle facilities could still achieve an individual city's mobility and connectivity goals. However, because the process to amend bike plans is a local process, including public participation, the ultimate outcome and resolution of plan elements cannot be predicted. As such, despite Metro's best efforts and coordination and with the implementation of mitigation, Alternative 1 may still preempt future development and the implementation of the planned bike paths, and limit access to bicycle facilities. Thus, impacts to bike facilities would be significant and unavoidable.

Mitigation Measures: Mitigation Measure LU-1 (Consistency with Bike Plans).

Impacts Remaining After Mitigation: Significant and unavoidable impact.

Alternative 2: 7th Street/Metro Center to Pioneer Station

Similar to Alternative 1, Alternative 2 does not include the construction of recreational facilities or require the expansion of existing park facilities. Alternative 2 would require the same changes to the Paramount Bike Trail and Bellflower Bike Trail as discussed for Alternative 1 and would not result in adverse physical effects or prevent access to the bike facilities with the implementation of Mitigation Measure LU-1 (Consistency with Bike Plans). Alternative 2 would also require changes to existing and planned bike facilities in the Cities of Huntington Park, Bell, Cudahy, and South Gate that could also preempt future development of future bike paths and result in adverse effects to the bicycle facilities. With the implementation of Mitigation Measure LU-1 (Consistency with Bike Plans), as described in Section 4.1.4 of the Land Use Section, Metro, as appropriate, would support preparation of amended language for each affected bicycle plan demonstrating that planned bicycle facilities could still achieve an individual city's mobility and connectivity goals. However, because the process to amend bike plans is a local process, including public participation, the ultimate outcome and resolution of plan elements cannot be predicted. As such, Alternative 2 may result in adverse physical effects, preempt future development and implementation of planned bike paths, and limit access to bicycle facilities. Thus, impacts to bike facilities would be significant and unavoidable.

Mitigation Measures: Mitigation Measure LU-1 (Consistency with Bike Plans).

Impacts Remaining After Mitigation: Significant and unavoidable impact.

Alternative 3: Slauson/A Line (Blue) to Pioneer Station

Alternative 3 does not include the construction of recreational facilities or require the expansion of existing park facilities. Alternative 3 would require the same changes to the Paramount Bike Trail and Bellflower Bike Trail as discussed for Alternatives 1 and 2 and would not result in adverse physical effects or prevent access to the bike facilities with the implementation of Mitigation Measure LU-1 (Consistency with Bike Plans). Alternative 3 would also require changes to existing and planned bike facilities in the Cities of Huntington Park, Bell, Cudahy, and South Gate that could also preempt future development of future bike paths and result in adverse effects to the bicycle facilities. With the implementation of Mitigation Measure LU-1 (Consistency with Bike Plans), as described in Section 4.1.4 of the Land Use Section, Metro, as appropriate, would support preparation of amended language for each affected bicycle plan demonstrating that planned bicycle facilities could still achieve an individual city's mobility and connectivity goals. However, because the process to amend bike plans is a local process, including public participation, the ultimate outcome and resolution of plan elements cannot be predicted. As such,, Alternative 3 may preempt future development and implementation of a bike path, and limit access to bicycle facilities. Thus, impacts to bike facilities would be significant and unavoidable.

Mitigation Measures: Mitigation Measure LU-1 (Consistency with Bike Plans).

Impacts Remaining After Mitigation: Significant and unavoidable impact.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Alternative 4 does not include the construction of recreational facilities or require the expansion of existing park facilities. Alternative 4 would require the same changes to the Paramount Bike Trail and Bellflower Bike Trail as discussed for Alternatives 1, 2, and 3 and would not result in adverse physical effects or prevent access to the bike facilities with the implementation of Mitigation Measure LU-1 (Consistency with Bike Plans). Alternative 4 would also require changes to existing and planned bike facilities in the cities of South Gate, Bellflower, and Paramount that could also preempt future development of future bike paths and result in adverse effects to the bicycle facilities. With the implementation of Mitigation Measure LU-1 (Consistency with Bike Plans), as described in Section 4.1.4 of the Land Use Section, Metro, as appropriate, would support preparation of amended language for each affected bicycle plan demonstrating that planned bicycle facilities could still achieve an individual city's mobility and connectivity goals. However, because the process to amend bike plans is a local process, including public participation, the ultimate outcome and resolution of plan elements cannot be predicted. As such, with implementation of mitigation, Alternative 4 may preempt future development and implementation of a bike path, and limit access to bicycle facilities. Thus, impacts to bike facilities would be significant and unavoidable.

Mitigation Measures: Mitigation Measure LU-1 (Consistency with Bike Plans).

Impacts Remaining After Mitigation: Significant and unavoidable impact.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Design Options 1 and 2 would be an underground station and does not include the construction of

recreational facilities or require the expansion of existing recreational facilities. Therefore, impacts would be less than significant, and mitigation would not be required.

Maintenance and Storage Facility

Paramount MSF Site Option: The Paramount MSF site option is a support facility and would provide maintenance and storage services to the Project. The Paramount MSF site option does not include the construction of recreational facilities or require the expansion of existing recreational facilities. Therefore, impacts would be less than significant.

Bellflower MSF Site Option: The Bellflower MSF site option is a support facility and would provide maintenance and storage services to the Project. The Bellflower MSF site option does not include the construction of recreational facilities or require the expansion of existing recreational facilities. The Bellflower MSF site option site is city-owned, designated as Open Space by the City of Bellflower, and currently leased by the City for use as a recreational commercial business and is not a public parkland or recreational facility.

Changes to the Bellflower Bike Trail segment from Lakewood Boulevard south to Clark Avenue and implementation of Mitigation Measure LU-1 (Consistency with Bike Plans) would maintain access and connection between the bike facilities. Modifications to the bike trail would not result adverse physical effects, and access to and from the community would be maintained; therefore, impacts would be less than significant.

Mitigation Measures: Mitigation Measure LU-1 (Consistency with Bike Plans).

Impacts Remaining After Mitigation: Less than significant.

4.17 Economic and Fiscal Impacts

Operation of the Project would generate economic activity in the Study Area and the greater Los Angeles metropolitan region. During operation, the Project would provide employees, residents, and visitors an additional transportation link to employment and visitor destinations in LA County. Additional information on economic and fiscal impacts is provided in the *West Santa Ana Branch Transit Corridor Project Final Economic and Fiscal Impact Analysis Report* (Metro 2021r), included as Appendix CC of this Draft EIS/EIR.

4.17.1 Regulatory Setting and Methodology

4.17.1.1 Regulatory Setting

While there are no specific laws or executive orders that regulate the topic of economic impacts, the economics analysis used federal, state, and local guidance to prepare this report, as described below.

Federal

The following federal documents provided guidance for conducting the economic and fiscal impact analysis:

- Federal Highway Administration Technical Advisory 6640.8A (1987): This guidance document states that the economic impact analysis should include a discussion of the local and regional impacts of each alternative related to economic development, tax revenue impacts, and employment opportunities. The analysis should also discuss the impacts to local businesses and business districts and the opportunity to minimize or reduce potential impacts.

- Federal Transit Administration, Social and Economic Impacts (2016): Transit projects may have economic impacts that should be included in the environmental documentation process. Impacts discussed may include business displacements, disruptions to business activities, and impacts to the regional economy.
- Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970: The Uniform Relocation Act (Public Law 91-646) provides important protections and assistance for people affected by federally funded projects. This law was enacted by Congress to ensure that people whose real property is acquired, or who move as a result of projects receiving federal funds, will be treated fairly and equitably and will receive assistance in moving from the property they occupy.

State

- CEQA: According to CEQA, economic effects of a project shall not be treated as significant effects on the environment. However, economic effects of the Project may be considered to determine the significance of the physical changes caused by the Project (see *CEQA Guidelines*, § 15064(e)).
- California Relocation Assistance Act: The California Relocation Assistance Act (Government Code § 7260 et seq.) establishes uniform policies to provide for the fair and equitable treatment of people displaced from their homes or businesses as a direct result of state and/or local government projects or programs. This Act requires that comparable replacement housing be made available to displaced persons within a reasonable period of time prior to the displacement.

Local

SCAG defines the regional planning principles for the corridor, while local municipalities define economic policies for specific areas within their jurisdictional boundaries. Refer to the *West Santa Ana Branch Transit Corridor Project Final Land Use Impact Analysis Report* (Metro 2021a), included as Appendix E of this Draft EIS/EIR, for additional information.

4.17.1.2 Methodology

NEPA requires a discussion of economic and fiscal effects. No specific laws or executive orders specify the impact criteria and thresholds of economic impacts. The methodology for the evaluation of impacts to economics involved an analysis of existing data related to population, employment, tax revenues, development, and an assessment of whether the Project would adversely impact the regional economy. The environmental impact analyses presented in this section focus on the economic and fiscal effects of parcel acquisitions that could occur under the various alternatives and resulting loss in tax revenue and jobs. The economic and fiscal analysis also considers the indirect and induced economic effects and benefits due to the expenditure of funds to construct the proposed alternatives. To assess and determine the extent of potential economic effects, demographic, economic, LA County Assessor valuation, property tax, construction cost, and land use data were examined. Operational impacts have the potential to create new jobs and income, impact property values and development, and improve regional mobility and connectivity. Additional information on the methodology used for the economics and fiscal analysis is provided in the Economic and Fiscal Impact Analysis Report (Appendix CC).

Under CEQA, economic changes resulting from a project shall not be treated as having significant effects on the environment unless the economic change(s) are used to determine that the physical change is a significant effect on the environment. If the physical change causes adverse economic effects on people, those adverse effects may be used as a factor in determining whether the change is significant (CEQA § 15064(e)).

4.17.2 Affected Environment/Existing Conditions

The Project is located in one of the country's largest metropolitan areas and passes through or in close proximity to approximately 20 different cities, including the City of Los Angeles. The project alignment traverses up to 12 jurisdictions: the Cities of Los Angeles, Vernon, Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, Artesia, and Cerritos, as well as portions of unincorporated LA County. For economics, the Affected Area is defined as a 0.25-mile area on both sides of the proposed alignment and a 0.50-mile area around the proposed station areas.

When possible, data are presented for the Affected Area for economics, but some economic or fiscal data are presented at the city or regional level when data for the smaller project area were not available or are not appropriate.

4.17.2.1 Population, Housing, and Employment

Table 4.17.1 shows population, housing, and employment data for the Affected Area for economics in the Base Year (2017) and Forecast Year (2042). As shown in the table, population, households, and employment are largest for the longer alignments (Alternatives 1 and 2) and smallest for the shortest alignment (Alternative 4). Densely populated neighborhoods, major employment centers, and other key regional destinations where future growth is forecasted to occur are located in the northern sections of Alternatives 1 and 2. Neighborhoods in Central City Los Angeles, Central City North Los Angeles, and Southeast Los Angeles are expected to experience some of the greatest percentage growth in population and households along the corridor over the analysis period. The higher end of the range in employment reflects the employment centers that would be served in the Downtown Transit Core by Alternative 2. Section 4.1 of the *West Santa Ana Branch Transit Corridor Project Final Communities and Neighborhoods Impact Analysis Report* (Metro 2021n), included as Appendix G of this Draft EIS/EIR, provides additional information.

Table 4.22.2 in Section 4.22 in the Environmental Justice Section of this Draft EIS/EIR provides the percentages of the populations in Study Area jurisdictions that are racial/ethnic minorities and/or are living in poverty. According to the U.S. Census Bureau (2018), employment in the Affected Area for economics is concentrated in the education, health care, and manufacturing sectors, representing 34 percent of all jobs. Other large employers in the area include the retail trade (12 percent); arts, entertainment, recreation, accommodation, and food service (11 percent); and professional services (10 percent). These sectors are strong sources of employment in LA County as a whole, which has a slightly higher percentage of jobs in the education and health care sector and a lower percentage of jobs in manufacturing when compared to the Affected Area for economics. Section 4.1 of the Economic and Fiscal Impact Analysis Report (Appendix CC) provides additional information.

Table 4.17.1. Study Area Population, Housing, and Employment, 2017 and 2042

	Item	Alternative 1: LAUS to Pioneer Station	Alternative 2: 7th Street/Metro Center to Pioneer Station	Alternative 3: Slauson/ A (Blue) Line to Pioneer Station	Alternative 4: I-105/C (Green) Line to Pioneer Station
	Length (miles)	19.3	19.3	14.8	6.6
Population	Year 2017	181,981	185,152	151,111	63,905
	Year 2042	290,901	323,795	240,580	103,624
	Average Annual Growth	1.9%	2.3%	1.9%	2.0%
Households	Year 2017	49,830	59,399	39,338	18,084
	Year 2042	82,933	109,578	63,721	30,006
	Average Annual Growth	2.1%	2.5%	1.9%	2.0%
Employment	Year 2017	95,225	154,207	37,937	18,842
	Year 2042	126,067	192,285	46,430	22,586
	Average Annual Growth	1.1%	0.9%	0.8%	0.7%

Source: Metro 2021n
Note: LAUS = Los Angeles Union Station

4.17.2.2 Local Government Tax Revenues

City and county governments rely on tax revenues to fund general services to their respective communities. The Project could affect property tax and retail sales revenues for jurisdictions in the Affected Area for economics. For the State of California, voter-approved Proposition 13 set the property tax rate at 1 percent of assessed value. The 1 percent is shared by all taxing agencies whose districts include the property location, such as cities, school districts, fire departments/districts, and LA County. All cities in the Affected Area for economics except Cudahy receive a portion of the basic levy to fund government services. The rate varies for each city.

Table 4.17.2 shows tax revenues and the percent of total general fund tax revenues represented by property tax revenues for each city within the proposed corridor in the most recent year available. Property taxes represented 7 to 46 percent of total tax revenue. Approximately 41 percent of all taxes are included as "Other Taxes" in Table 4.17.2; "Other Taxes" may include transient occupancy taxes, utility taxes, business license taxes, and other taxes for which the source is not specified.

Table 4.17.2. Local Government Tax Revenues (2018)

City	Property Taxes	Sales Tax	Other Taxes	Total General Fund Tax Revenue	Property Tax as Percent of Total Tax Revenue
Los Angeles	$2,058,761,000	$557,990,000	$1,891,958,000	$4,508,709,000	46
Vernon	$17,270,355	$7,177,884	$23,974,390	$48,422,629	36
Huntington Park	$1,069,127	$11,686,353	$6,134,065	$18,889,545	6
Bell	$4,411,848	$2,360,400	$4,311,800	$11,084,048	40
Cudahy	$265,030	$1,270,000	$1,097,000	$2,632,030	10
South Gate	$12,314,651	$21,126,054	$4,928,819	$38,369,524	32
Downey	$25,996,994	$25,796,994	$12,218,000	$64,011,988	41
Paramount	$2,265,000	$7,800,000	$6,649,250	$16,714,250	14
Bellflower	$11,032,000	$6,172,000	$7,659,500	$24,863,500	44
Artesia	$2,444,466	$2,695,000	$1,153,381	$6,292,847	39
Cerritos	$3,125,000	$34,577,500	$5,188,900	$42,891,400	7
Total	$2,139,056,655	$674,109,538	$1,965,289,040	$4,778,455,233	45

Sources: City of Artesia 2018; City of Bell 2018b; City of Bellflower 2018; City of Cerritos 2018a; City of Cudahy 2018b; City of Downey 2018; City of Huntington Park 2018; City of Los Angeles 2018a; City of Paramount 2018; City of South Gate 2018; City of Vernon 2018
Note: Revenues reported do not include revenue sources such as license fees, fees for service, interest income, or other miscellaneous non-tax revenues.

4.17.2.3 Existing Land Use

The improved mobility and connectivity provided by stations could be one of many factors that influence new development or redevelopment of vacant or under-utilized properties near the proposed stations. Transportation investment may provide opportunities for TOD. This development may also serve as a catalyst for public and private economic revitalization that could provide economic benefits and enhanced quality of life to communities.

One of the critical components of TOD is supportive policies, including land use policies that encourage economic development around transit stations. These policies incentivize revitalization of underutilized or vacant parcels, encourage new housing near transit centers, support pedestrian and bike facilities, and preserve or expand access to open spaces and recreation. SCAG reports (2012a) that "all jurisdictions within the Project's Study Area have one or more plans guiding future development around proposed stations."

Table 4.1.2 in Section 4.1.2.1 in the Land Use Section of this EIS/EIR provides station location information and surrounding land uses for the Build Alternatives and design options. Additional information on land use policies is provided in the Economic and Fiscal Impact Analysis Report (Appendix CC) and the Communities and Neighborhoods Impact Analysis Report (Appendix G).

Table 4.17-3 provides proposed station location information for Alternatives 1 and 2, including the surrounding land uses currently in place. Design Option 1 would construct a station behind the MWD building and east of LAUS as opposed to the LAUS Forecourt. Design Option 2 would construct a station in the Little Tokyo neighborhood that would provide service to a densely populated area with connection to the Regional Connector.

Table 4.17-3. Existing Land Use Near Proposed Stations

City	Proposed Station	Current Station Area Land Use
Los Angeles	Alternative 1: LAUS Forecourt Alternative 1 or 2: Arts/Industrial District Alternative 2: 7th Street/Metro Center Alternative 1: Design Option 1 (MWD) Alternative 2: Design Option (Little Tokyo 2)	Industrial, commercial, and manufacturing; civic; transit hub; residential; tourist destinations
LA County	Slauson/A Line (adjacent to existing Metro A [Blue] Line Slauson Station)	Industrial, commercial, and residential; civic; open space
Huntington Park	Pacific/Randolph Florence/Salt Lake	Industrial, commercial, and low-scale residential; civic; open spaces
South Gate	Firestone I-105/C Line (adjacent to the proposed Metro C [Green] Line Station)	Industrial; Azalea Shopping Center; residential; high-traffic and train movements
Downey	Gardendale	Health care (Rancho Los Amigos); commercial; residential
Paramount	Paramount/Rosecrans	Residential; adjacent to commercial and civic uses
Bellflower	Bellflower	Neighborhoods; residential; commercial and mixed use
Artesia	Pioneer	Industrial; mixed commercial; residential

Sources: SCAG 2012b; Metro 2015b
Note: I- = Interstate; LA = Los Angeles; LAUS = Los Angeles Union Station

The existing land use near proposed stations for Alternative 3 would be similar to those described in Table 4.17-3 and would be limited to the corridor between the Slauson/A Line Station to the north and the Pioneer Station to the south. Proposed stations for Alternative 4 would be similar to those described in Table 4.17-3 and would be limited to the corridor between the I-105/C Line Station to the north and Pioneer Station to the south.

4.17.3 Environmental Consequences/Environmental Impacts

4.17.3.1 No Build Alternative

The No Build Alternative includes existing transportation networks and transportation improvements that have been committed to and identified in constrained plans of the Metro 2009 LRTP (Metro 2009a) and the SCAG 2016 RTP/SCS (SCAG 2016a). Table 2.2 in Chapter 2 of this Draft EIS/EIR lists the projects anticipated by 2042. Planned projects would be subject to separate environmental analysis to evaluate economic and fiscal impacts. Implementation of these projects, including operations and maintenance, would be subject to regulatory standards, conditions, and permitting requirements. Compliance with these standards would minimize economic impacts. Residual impacts are expected to be minor. Therefore, under NEPA, the No Build Alternative would not result in adverse effects related to economic and fiscal effects.

4.17.3.2 Build Alternatives

This section describes the potential impacts of the Build Alternatives, including the project alignment, design options, and MSFs, with corridor-wide application. The approach to analyze the impacts of the Build Alternatives on the different topics discussed in this section are similar for each alternative and the potential impacts are summarized together. The relative impacts of the Build Alternatives are presented in each topic area. More details about the Build Alternatives' effects on economic and fiscal impacts may be found in the Economics and Fiscal Impacts Analysis Report (Appendix CC). Discussions across the following economic and fiscal elements are evaluated in the following subsections:

- Operational Impacts on Employment
- Long-Term Impacts on Property Values
- Regional Mobility and Connectivity
- Impacts on Local Tax Bases
- Direct Employment Impacts from Displacements

Operational Impacts on Employment

The Project would create long-term jobs and additional earnings as a result of operating and maintenance (O&M) expenditures. The benefits of operating and maintaining the light rail system include providing a range of employment opportunities at living wages. The additional household earnings would result in an increase in positive economic activity to the local economy, both through direct hiring to fill transit jobs and indirectly as these transit workers spend their earnings, thus creating additional consumer demand and jobs to meet that demand.

Annual costs for each alignment were estimated in the *West Santa Ana Branch Transit Corridor Project Final Operating and Maintenance Costs Report* (Metro 2021w), included as Appendix Q of this Draft EIS/EIR, and are shown in Table 4.17-4. Total O&M costs are expected to be nearly the same for Alternatives 1 and 2 at approximately $88 million per year (2020 dollars). Additional estimates were developed for Alternative 2 that include costs associated with operating short-line service during peak travel times to the Slauson/A Line Station that added $5 to $13 million per year. Total wages and benefits are estimated to be 44 to 48 percent of total operating expenses. Wages and benefits from operation of the new alignment would range between $42 and $45 million annually in 2020 dollars, depending on the alternative selected. Alternatives 3 and 4 have shorter alignments with fewer stations. Annual operating expenses are estimated to be $67 million for Alternative 3 and $41 million for Alternative 4.

The overall impact of the additional O&M jobs on the regional economy would depend on the source of funding for the workers. While the Build Alternatives would create new jobs associated with operating and maintaining the new light rail facility, most of the funding would come from state and local sources that are considered economic transfers within the region and would not result in new economic activity. In 2016, Metro received assistance from the federal government in the form of grants to fund approximately 10 percent of total operations (Metro 2017f). It is assumed that Metro would continue to receive similar levels of federal assistance to fund operations of the Project; thus, the additional jobs created through operational activities would have a net benefit on regional economic activity and, under NEPA, the Build Alternatives would not result in adverse effects related to operational employment.

Table 4.17-4. Summary of Economic Impacts during Project Operation

Item	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Operating Expenditure (2020 dollars):	$87,605,512	$100,903,752	$67,482,952	$40,526,831
Percent of New Money[1]	10	10	10	10
Additional Operating Expenditure funded by New Federal Money	$8,760,551	$10,090,375	$6,748,295	$4,052,683
Final-demand Multiplier: Output	2.3162	2.3162	2.3162	2.3162
Final-demand Multiplier: Earnings	0.7502	0.7502	0.7502	0.7502
Final-demand Multiplier: Jobs per $1 Million Spent	27.9529	27.9529	27.9529	27.9529
Regional Impacts: Output	$20,291,189	$23,371,327	$15,630,401	$9,386,825
Regional Impacts: Earnings	$6,572,166	$7,569,799	$5,062,571	$3,040,323
Regional Impacts: Employment (person-year jobs)[2]	245	282	189	113

Source: Bureau of Economic Analysis 2017; Metro 2021w
Notes: [1] Percent of new money is the percent of total operation and maintenance expenses funded through federal funding sources that otherwise would not have been introduced into the regional economy.
[2] A job is defined as one job for one person for one year.
Alternative 2 costs include costs associated with operating short-line service during peak travel times to the Slauson/A Line Station.

To estimate the regional impacts associated with the Project, Regional Input-Output Modeling System (RIMS) II final-demand multipliers from the Bureau of Economic Analysis for the transit and ground transportation industry were applied to the amount of new funding that would be used for operating expenses (Bureau of Economic Analysis 2017). Multipliers for the greater Los Angeles area were used. The results of this analysis are summarized in Table 4.17-4.

The operational spending effects associated with the Project would result in an estimated $9.4 to $23.4 million in overall economic activity per year. The economic activity includes direct and indirect activity. It is estimated that operation-related spending would provide regional economic benefits by generating $3.0 to $7.6 million in additional wages and salaries for households and by creating 113 to 282 person-year jobs for all industries in the region per year. A person-year job is defined as one job for one person for one year. Based on the predicted regional economic benefits from both direct and indirect sources, the potential impacts would be beneficial and, under NEPA, the Build Alternatives would not result in adverse effects related to operational employment.

Long-Term Impacts on Property Values

The Build Alternatives are expected to indirectly lead to new development and/or redevelopment of land surrounding some of the proposed light rail stations, which would likely have the effect of increasing property tax revenues for the affected local jurisdictions. While development is

regulated by the affected jurisdictions and is driven by regional and local economic conditions, light rail lines can advance the timing and increase the intensity of development, within the limits allowed by local zoning, particularly surrounding proposed station areas.

Research on the impacts associated with light rail systems indicates that light rail is one of many factors that can influence development. A study conducted by the U.S. Government Accountability Office (Wise 2014) identified key conditions that support TOD, including the following:

- Market demand for real estate
- Large parcels of land available for development
- Resident support for TOD
- Efficient access to jobs and centers of activity
- Local government support of TOD

Many communities along the Build Alternatives' corridor are subject to local municipal policies that are or will be in place in the future to support TODs. The Build Alternatives would serve residents in a densely populated area located in economic and cultural activity centers, which is expected to attract continued investment in the area. The added investment would likely result in increased property values for businesses and residences near station areas. However, some properties located next to the alignments for the Build Alternatives would likely have some reduction in value because of the nuisance effects associated with the Project. The *West Santa Ana Branch Transit Corridor Project* Final *Noise and Vibration Impact Analysis Report* (Metro 2021j), included as Appendix M of this Draft EIS/EIR, identifies properties that would experience noise impacts. Mitigation measures such as sound walls would help minimize and mitigate some of the impacts. Overall, the potential for increased property values and new development near station areas would likely offset any value reductions and would provide greater benefits to businesses and residences in the Affected Area for economics as well as increased property tax revenues benefiting the local jurisdictions. The net impact would likely be beneficial for the region and, under NEPA, the Build Alternatives would not result in adverse effects related to long-term impacts on property values.

Policies that encourage TOD, such as general plan updates for the Cities of Huntington Park and South Gate, will encourage development near station areas that should increase the property tax base for communities along the corridor. Overall potential impacts to property values are anticipated to have a net benefit to the regional economy. More details about the project effects on property values are provided in the Economic and Fiscal Impact Analysis Report (Appendix CC).

Regional Mobility and Connectivity

Operation of the Build Alternatives would provide a number of economic benefits to businesses, employees, and residents in the area. Each of the design options would have the following beneficial impacts to the regional economy:

- Businesses would benefit from increased access to a broader labor market with a diverse set of skills that is served by the Project.
- Potential employees who are transit-dependent would have access to a larger labor market, which may provide greater economic opportunities.
- Businesses located near stations may experience an increase in retail sales as riders travel to and from the station area.
- Some public transportation passengers may experience a reduction in vehicle ownership costs as they switch from driving to public transportation.

- Some areas may experience a reduction in congestion, which could lead to travel-time savings for businesses and individuals.
- The transit network would have improved connectivity, with more connections to LAUS and the existing Metro A (Blue), B (Red), C (Green), D (Purple), and L (Gold) Lines.
- Future travel demand would be accommodated, including the high number of transit trips made by Study Area residents.
- The densely populated neighborhoods, major employment centers, and other key regional destinations where future growth is forecasted to occur within the Study Area would have improved access.

The Build Alternatives would have impacts on local businesses as local traffic patterns are changed, patronage to new stations is introduced, and the off-street and on-street parking in the corridor changes (the result of reductions from construction and operations, along with focused increases at the five new station parking facilities: Firestone Station, I-105/C Line Station, Paramount/Rosecrans Station, Bellflower Station, and Pioneer Station). Even with the new station parking facilities, these changes introduced by the Build Alternatives could result in a loss of overall parking for some businesses (refer to the *West Santa Ana Branch Transit Corridor Project Final Transportation Impact Analysis Report* [Metro 2021s], included as Appendix D of this Draft EIS/EIR) and could cause impacts to mobility and connectivity. Some businesses may experience a loss in revenue if potential customers are discouraged from patronizing the business because of real or perceived inconvenience. The implementation of Mitigation Measure TRA-22 (Parking Mitigation Program) would reclaim some of the lost parking for customers, which could reduce adverse effects of lost revenue.

Other factors may positively affect business revenues, including increased exposure to customers in and around the station areas or higher visibility along the light rail alignment.

Impacts on Local Tax Bases

For the Build Alternatives, Metro would need to acquire residential and commercial properties, as well as property owned by local cities and other government agencies, within the corridor. Parcels are either full acquisitions, partial acquisitions, temporary construction easements, or public agency right-of-way. Property owned by public agencies is tax exempt and therefore does not generate property tax revenues. More details about the affected properties are provided in the *West Santa Ana Branch Transit Corridor Project Final Displacements and Acquisitions Impact Analysis Report* (Metro 2021m), included as Appendix H of this Draft EIS/EIR).

When referring to the property tax impacts of acquisitions, the term "initial property tax impacts" is used because the extent of the long-term fiscal impact of the system is uncertain. Initially, property taxes would no longer be collected from full or partial acquisitions along the route. As a result, the rates charged remaining taxpayers would increase slightly to recover budgeted funds, or budgets for essential government services would be reduced accordingly.

Table 4.17.5 presents the initial property tax impact estimates by city for the Build Alternatives. The property tax impact presented in this section focuses on the impact to each city's general fund collections. The tax effects of the Build Alternatives are estimated to be a decrease of between approximately 0.0 and 0.5 percent of the budgeted general fund property tax collections in 2018 for affected cities.

Table 4.17.5. Initial Property Tax Impact by City

City	2018 Property Tax Revenue	Initial Property Tax Impacts				Potential Impact to General Fund Revenues			
		Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Los Angeles	$2,058,761,000	$151,134	$190,672	$9,250	$0	0.01%	0.01%	0.00%	0.00%
Vernon	$17,270,355	$26	$26	$26	$0	0.00%	0.00%	0.00%	0.00%
Huntington Park	$1,170,311	$6,642	$6,642	$6,642	$0	0.57%	0.57%	0.57%	0.00%
Bell	$4,411,848	$0	$0	$0	$0	0.00%	0.00%	0.00%	0.00%
Cudahy	$265,030	$0	$0	$0	$0	0.00%	0.00%	0.00%	0.00%
South Gate	$12,314,651	$11,345	$11,345	$11,345	$4,550	0.09%	0.09%	0.09%	0.04%
Downey	$25,996,994	$0	$0	$0	$0	0.00%	0.00%	0.00%	0.00%
Paramount	$2,265,000	$9,289	$9,289	$9,289	$9,289	0.41%	0.41%	0.41%	0.41%
Bellflower	$11,032,000	$2,866	$2,866	$2,866	$2,866	0.03%	0.03%	0.03%	0.03%
Artesia	$2,444,466	$5,364	$5,364	$5,364	$5,364	0.22%	0.22%	0.22%	0.22%
Cerritos	$3,125,000	$0	$0	$0	$0	0.00%	0.00%	0.00%	0.00%

Sources: Metro 2021m; LA County 2019b

Between 7 to 46 percent of the tax revenues collected by affected cities are from property taxes (Table 4.17.2). The remaining revenues come from other tax sources (for example, sales and use, business and occupation, utility, and other). Similar to property tax impacts, the long-run tax impacts to local jurisdictions from these other taxes are uncertain and depend on whether displaced businesses relocate within the same community. Businesses unable or unwilling to relocate within the same community would represent a loss of revenues to the local jurisdiction. These types of losses would be offset to the extent that business activity increases and/or new businesses are attracted to the area. Local jurisdictions are likely to receive substantial sales tax revenues from purchases related to project construction. In addition to funding local jurisdiction programs, total property tax levies include funds collected for consolidated county taxes, fire prevention, libraries, schools, and other services. Based on the Build Alternatives' conceptual designs, the initial property tax impacts from acquisitions are, in all cases, less than 0.5 percent of the total general fund property tax revenues collected by cities in the project alignment.

As discussed in the Long-Term Impacts on Property Values Section, many communities along the corridor have plans for TOD near proposed stations. However, this development would be subject to approval by the city and to all applicable requirements and regulations of the affected city. This would result in new construction, which is added to the jurisdiction's tax base, thus increasing the revenue available to a jurisdiction for essential government services. Thus, the long-term property tax impacts are uncertain but are likely to be lower than the initial property tax impacts. Therefore, under NEPA, the Build Alternatives would not result in adverse effects related to local tax bases. More details about the Build Alternatives' effects on property taxes are provided in the Economic and Fiscal Impact Analysis Report (Appendix CC).

Direct Employment Impacts from Displacements

Table 4.17.6 provides estimates of the numbers of businesses and employees located at properties that would be acquired for the Build Alternatives. The estimates were prepared based on field verification of addresses and business names obtained from the Displacements and Acquisitions Impact Analysis Report (Appendix H). Employment was estimated using employee-per-square-foot ratios for a small number of parcels for which information from the other sources was not available.

Table 4.17.6. Business and Employee Displacement

Alternative	Number of Businesses	Estimated Number of Employees
Alternative 1: LAUS to Pioneer Station	89	601
Alternative 2: 7th Street/Metro Center to Pioneer Station	108	687
Alternative 3: Slauson/A (Blue) Line to Pioneer Station	65	352
Alternative 4: I-105/C (Green) Line to Pioneer Station	18	115
Paramount MSF	5	113
Bellflower MSF	2	75

Source: Metro 2021m
Note: LAUS = Los Angeles Union Station; MSF = maintenance and storage facility

The magnitude of the business displacement impact is described by comparing the number of employees displaced to total employment in the areas surrounding the proposed light rail line in Table 4.17.7. The second and third columns compare 2017 and 2042 employment forecasts for neighborhoods surrounding the Affected Area for economics. The estimates are based on SCAG regional projections. Data for the segments are defined as a collection of traffic analysis zones (TAZ) located within 0.25 mile of the rail line and 0.50 mile of proposed stations. TAZ are the system used in travel demand forecasting. Columns four and five provide the cumulative annual average growth rate for each option and the implied number of employees added from 2017 to 2018, which is an estimate of one year's underlying growth in employment in the project area. The final column represents an estimate of the number of employees at businesses that would be displaced by the Project.

Table 4.17.7. Relative Impact of Displaced Employees

Alternative	2017 Employment	2042 Employment	Cumulative Annual Growth		Employees (Jobs) Displaced
			Percent	Jobs	
Alternative 1: LAUS to Pioneer Station	95,225	126,067	1.1	1,075	601
Alternative 2: 7th Street/Metro Center to Pioneer Station	154,207	192,285	0.9	1,367	687
Alternative 3: Slauson/A (Blue) Line to Pioneer Station	37,937	46,430	0.8	308	352
Alternative 4: I-105/C (Green) Line to Pioneer Station	18,842	22,586	0.7	137	115
Paramount MSF	18,842	22,586	0.7	137	113
Bellflower MSF	18,842	22,586	0.7	137	75

Source: Metro 2021m
Notes: LAUS = Los Angeles Union Station; MSF = maintenance and storage facility

Except for Alternative 3, the projected employment growth from 2017 to 2042 in the Affected Area for economics is expected to be greater than the jobs displaced by the Project. Employees in a variety of industrial businesses represent approximately 40 percent of potentially impacted employment across the Build Alternatives. Other industries that are affected by the Build Alternatives include retail and automotive services. Metro would provide relocation assistance to impacted employers; therefore, it is likely that the displaced jobs would be relocated, not lost.

According to the Displacements and Acquisition Impact Analysis Report (Appendix H) prepared for the Build Alternatives, the supply of currently available replacement sites within a 6-mile radius is sufficient to relocate nearly all displaced businesses. Because the Project would provide relocation assistance to displaced businesses and employees, it is likely that some of the displaced jobs would be relocated, not lost. However, some businesses may find it difficult to relocate to a new neighborhood within the project area and may decide to close or move farther away, resulting in the loss of jobs in the immediate area. The Hollywood Sports Park is one specific business that may have difficulty finding suitable replacement property in the project area. Additionally, some employees may find commuting to a relocated business expensive or inconvenient and decide not to relocate with their place of employment. Some displaced employees may be able to find new jobs through the relocation

effort. Overall, the potential employment impacts from business displacements are not expected to be substantial. The potential for direct and induced employment associated with the Project is also expected to add employment opportunities to the local and regional economy. Therefore, under NEPA, the Build Alternatives would not result in adverse effects related to displaced businesses as a result of the Project.

4.17.3.3 Design Options—Alternative 1

The design options are substantially similar to the Build Alternatives with regard to property values, potential impacts, and effect determinations.

Design Option 1: LAUS at MWD: The Design Option 1 station box would be located behind the MWD building and east of LAUS as opposed to the LAUS Forecourt. Effects from this design option to regional connectivity, property tax revenues, and displacements would be similar to those under Alternative 1.

Design Option 2: Add Little Tokyo Station: Design Option 2 would increase connectivity to the regional transportation system because the alignment would have direct access to the Regional Connector. The potential new development that may occur with TOD would also be realized. Potential impacts to displaced businesses or employees would be similar because the optional station is expected to displace one additional business and no residents. If Little Tokyo Station were constructed, Alternative 1 would have a slightly larger fiscal impact to the City of Los Angeles. The conclusions and effect determinations on property values provided for the Build Alternatives would also be applicable to the design option.

4.17.3.4 Maintenance and Storage Facility

The proposed MSFs in either Bellflower or Paramount would provide additional employment opportunities in the region. The employment estimates discussed above for the Build Alternatives would include new jobs during operations at either of these facilities. The conclusions and effect determinations provided for the Build Alternatives would also be applicable to the MSF site options.

Paramount MSF Site Option

The Paramount MSF site option would require acquisition of a large parcel that is home to the Paramount Swap Meet and the Paramount Drive-In Theatre. A cellular service provider also has a retail store on the site. The initial property tax impacts are estimated to be approximately 0.6 percent of the general fund property tax collections (Table 4.17.8) and are not expected to result in a measurable change to property taxes. Therefore, under NEPA, the Paramount MSF site option would not result in adverse effects related to the local city's tax-based revenues.

Table 4.17.8. Initial Property Tax Impact by Jurisdiction – Paramount MSF

Jurisdiction	2018 Property Tax Revenue	Initial Property Tax Impacts	Potential Impact to General Fund Revenues
Paramount	$2,265,000	$13,069	0.6%

Source: Metro 2021m
Note: MSF = maintenance and storage facility

The Paramount MSF would displace 5 businesses and 113 employees. Because the Project would provide relocation assistance to displaced businesses and employees, it is likely that some of the displaced jobs would be relocated, not lost. However, some businesses such as the swap meet and the drive-in may find it difficult to relocate to a new neighborhood and may decide to close, therefore resulting in the loss of jobs in the immediate area. Overall, the potential employment impacts from business displacements would not be substantial. Therefore, under NEPA, the Paramount MSF site option would not result in adverse effects related to employment in the region.

The Paramount MSF site option would generate lower noise levels than existing conditions (see Table 5.7 in the Noise and Vibration Impact Analysis Report [Appendix M). Therefore, under NEPA, the Paramount MSF site option would not result in adverse effects related to land use types and proximities because nuisance effects that could impact property values are expected to be minimal.

Bellflower MSF Site Option

The Bellflower MSF site option would be on a property owned by the City of Bellflower and leased to the Hollywood Sports Paintball & Airsoft Park and Bellflower BMX. Given that this property is owned by the City of Bellflower, it is exempt from paying property taxes. Therefore, under NEPA, the Bellflower MSF site option would not result in adverse effects related to property tax impacts.

The Bellflower MSF would displace 2 businesses (Hollywood Sports Paintball & Airsoft Park and Bellflower BMX) and approximately 75 employees. Because the Project would provide relocation assistance to displaced businesses and employees, it is likely that some of the displaced jobs would be relocated, not lost. However, some businesses, such as the sports park, may find it difficult to relocate to a new neighborhood and may decide to close, resulting in the loss of jobs in the immediate area. Overall, the potential employment impacts from business displacements would not be substantial. Therefore, under NEPA, the Bellflower MSF site option would not result in adverse effects related to employment in the region.

Land uses surrounding the site include single-family and multifamily residential, industrial and commercial, and recreational. The Bellflower MSF site option would not involve any roadway/intersection closures or turning restrictions that would restrict access to nearby residential communities. There are no noise impacts associated with the MSF. Nuisance impacts related to access restrictions or noise are not expected to result in adverse effects on property values.

4.17.4 Project Measures and Mitigation Measures

No project or mitigation measures would be required for the Build Alternatives, including design options and MSF site options.

4.17.5 California Environmental Quality Act Determination

The CEQA determination presented in the following subsections is based on a comparison of the existing conditions described in Section 4.17.2 and the environmental impacts analysis presented in Section 4.17.3. The following subsections are applicable to the Affected Area for economics, the Build Alternatives, the design options, and the MSF site options.

Under CEQA, economic changes resulting from a project shall not be treated as significant effects on the environment unless the economic change(s) are used to determine that the physical change is a significant effect on the environment. If the physical change causes adverse economic effects on people, those adverse effects may be used as a factor to determine whether the physical change is significant (CEQA § 15064).

While CEQA does not specify economic thresholds to be analyzed, the following questions are presented as relevant economic issues to be considered under *CEQA Guidelines* and to determine if significant impacts would result from implementation of the Build Alternatives.

4.17.5.1 Would the project result in substantial impacts to regional mobility and connectivity?

No Project Alternative

Under the No Project Alternative, the Build Alternatives would be introduced, thereby resulting in no changes to the Affected Area for economics regarding regional mobility and connectivity. Residents, employees, and visitors in the Affected Area for economics would not have the benefit of the interconnected transportation network provided by the Build Alternatives. However, the absence of these potential benefits does not rise to the level of, nor constitute, a significant impact. Therefore, operation-related impacts would be less than significant, and mitigation would not be required.

Build Alternatives

As discussed in Section 4.17.3.2, operation of the Project would have beneficial economic and fiscal impacts by improving transit accessibility and mobility, enhancing regional connectivity, and reducing travel time and costs in the region. These improvements would likely encourage greater economic activity and would benefit businesses and commuting employees. No impacts to regional mobility or connectivity are anticipated.

Alternative 1: Los Angeles Union Station to Pioneer Station

Operation of Alternative 1 would have beneficial economic and fiscal impacts by improving transit accessibility and mobility, enhancing regional connectivity, and reducing travel time and costs in the region. Alternative 1 would provide additional access to LAUS and connections to the larger regional network. This would likely encourage greater economic activity and would benefit businesses and commuting employees. The operation of the Project would also increase employment and tax revenue, which would benefit local and regional economies. Therefore, operation-related impacts would be beneficial, resulting in less than significant impacts, and mitigation would not be required.

Alternative 2: 7th Street/Metro Center to Pioneer Station

Alternative 2 is substantially similar to Alternative 1 in regard to mobility and connectivity impacts associated with new light rail alignment. Alternative 2 would provide improved connections to the downtown employment center but would not connect to LAUS. The conclusions and impact determinations provided for Alternative 1 would also be applicable to Alternative 2. Therefore, operation-related impacts would not occur under Alternative 2, and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Within its geographic limits, Alternative 3 would have similar benefits for regional mobility and connectivity, as described previously; however, the benefits to the region would be less than the benefits under Alternatives 1 and 2 because Alternative 3 would not include as many stations (nine stations) and would not provide additional transit options to densely populated areas in northern Los Angeles neighborhoods, such as the Arts District or Little Tokyo. The exclusion of these three stations would result in less access to the regional labor market for those dependent on transit. However, Alternative 3 would still have a net benefit to regional connectivity, Therefore, operation-related impacts for Alternative 3 would be less than significant, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

The benefits to the region would be less under Alternative 4 than the benefits under the other Build Alternatives because Alternative 4 would not include as many stations (four stations) and would not provide additional transit options to densely populated areas in Los Angeles and other cities to the north, resulting in less access to the regional labor market for those dependent on transit. However, Alternative 4 would still have a net benefit to regional connectivity. Therefore, operation-related impacts for Alternative 4 would be less than significant, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Design Option 1 would have similar impacts as Alternative 1. Design Option 2 would construct a new underground station in Little Tokyo and would increase connectivity to the regional transportation system as the alignment would have direct access to the Regional Connector. Each of the design options would still have a net benefit to regional connectivity. Therefore, operation-related impacts for Design Options 1 and 2 would be less than significant, and mitigation would not be required.

Maintenance and Storage Facility

Neither of the MSF site options are expected to impact regional connectivity or mobility. No mitigation would be required.

4.18 Safety and Security

This section summarizes the existing safety and security measures used by Metro in the Affected Area for safety and security and considers the effects on safety and security from operation of the Project. System safety refers to the prevention of accidents to transit passengers, employees, or others present at or adjacent to Metro transit facilities, which includes stations, tracks, pedestrian walkways, TPSSs, and trains. Security relates to protection of people from intentional acts that could result in injury or harm and protection of property from deliberate acts. This includes crime prevention, law enforcement, and protection against terrorism.

Greater detail on safety and security is provided in the *West Santa Ana Branch Transit Corridor Project Final Safety and Security Impact Analysis Report* (Metro 2021c), included as Appendix F of this Draft EIS/EIR).

4.18.1 Regulatory Setting and Methodology

4.18.1.1 Regulatory Setting

Federal

The following federal regulations regarding safety and security are applicable this Project:

- Public Transportation Agency Safety Plan (49 CFR. Part 673)
- CFR Title 28, Part 36, Americans with Disabilities Act)

State

In California, the CPUC has been identified as the state safety oversight agency. The following CPUC General Orders (GOs) regarding safety and security are applicable to the Project:

- GO 88-B
- GO 164-E
- GO 143-B

Safety and security regulations from the CCR, CBC, and Caltrans are also applicable to this Project.

Regional

Metro is responsible for compliance with all FTA and CPUC regulations governing the safe operation of its transit systems, both for patrons and employees. The following Metro safety and security policies are applicable to this Project:

- Metro Grade Crossing Policy for Light Rail Transit (Metro 2010a)
- Metro Emergency Response Plan Policy (Metro 2010b)
- Metro Rail Design Criteria (Metro 2020h)
- Metro Fire/Life Safety Design Criteria (Metro 2010d)
- Homeless Task Force

In addition to Metro, the LACDPW *Standard Plans Manual* (LACDPW 2000) applies to design improvements within county right-of-way. The *Los Angeles County General Plan 2035* (Los Angeles County Department of Regional Planning 2015) includes policies that affect police and fire services in the Affected Area for emergency service.

Local

The project corridor traverses the following 12 local jurisdictions (listed from north to south):

- Los Angeles
- Vernon
- Huntington Park
- Bell
- Cudahy
- South Gate
- Downey
- Paramount
- Bellflower
- Artesia

- Cerritos
- Unincorporated Florence-Firestone community of Los Angeles County

As such, the Project would also be subject to the applicable General Plan policies and objectives within each jurisdiction (see Table 3.1, General Plan Goals and Policies Relating to Safety and Security, in the Safety and Security Impact Analysis Report [Appendix F]).

4.18.1.2 Methodology

NEPA requires that the federal government use all practicable means for Americans to have safe, healthful, productive, and aesthetically and culturally pleasing surroundings (42 USC 4331(b)(2)). NEPA does not include specific guidance or direction with respect to evaluating alternatives and relative effects of alternatives on public safety and security. The NEPA analysis considers potential adverse environmental impacts, including whether a project or a design option would result in unacceptable safety, security, or operational problems.

Similarly, one aim of CEQA is that the long-term protection of the environment, consistent with the provision of a decent home and suitable living environment for every Californian, shall be the guiding criterion in public decisions. Appendix G of the *CEQA Guidelines* (14 CCR, Section 15000 et seq.), suggests agencies consider whether a project will substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses or whether the project would result in inadequate emergency access. The Appendix G *CEQA Guidelines* are included in Section 4.18.5.

For purposes of the qualitative assessment for safety and security, the Affected Area for emergency response services is defined as the larger Study Area, encompassing the 2-mile buffer along the 19-mile corridor. The Affected Area for safety and security is defined as the area within 100 feet of the Project and its components (e.g., TPSSs). The Affected Area for emergency service was determined based on the service area of hospital, fire, and police services. The Affected Area for safety and security was determined based on safety of users and crime prevention within the immediately adjacent area of the Build Alternatives. The following elements were considered in the qualitative analysis within the Affected Area for safety and security: current safety and security conditions as they relate to pedestrians, bicyclists, LRT passengers and employees; existing emergency services (police, fire, and ambulance); available crime and security statistics; and other relevant data for the Affected Area. For each element within the Affected Area for safety and security, the analysis evaluated compliance with regulations and policies, the existing conditions, and design features and project measures to determine the environmental impacts and mitigation measures.

4.18.2 Affected Environment/Existing Conditions

4.18.2.1 Transit System Safety

For the safety of passengers and the public, Metro operates all transit-related vehicles according to the guidelines established by the CPUC. Regulations established by the CPUC for light rail vehicles (LRVs) include requirements for rearview mirrors, audible warning devices, and grab handles for standing passengers. The CPUC also regulates LRVs' braking, lighting, and operating speeds (GO 143-B). As a result of compliance with these regulations, Metro has a proven track record in safety, with only two derailments for over 120 million vehicle revenue miles since 2008, according to the National Transit Database (2017). Additionally, Metro has established a variety of programs to inform rail users and nonusers alike about proper safety precautions around operating transit vehicles and transit stations.

4.18.2.2 Pedestrian, Bicyclist, and Motorist Safety

The pedestrian circulation system within the Affected Area for safety and security consists of sidewalks, crosswalks, street lighting, and street furniture. The pedestrian circulation system is generally well developed and complete, serving the surrounding land uses. The majority of the intersections are signalized and have crosswalks with pedestrian indicators and push-button activation for pedestrian phases. Most intersections in the Affected Area for safety and security allow pedestrian crossings along all four sides.

Metro is continually working to improve vehicular and pedestrian safety along its current rail lines and has implemented several programs (such as the Rail Safety Orientation Tour Program and the Rail Safety Education Program) to educate rail users and nonusers about safety precautions near transit vehicles and facilities. The latest statistics for accidents between trains/automobiles and trains/pedestrians for Metro's rail lines during the four quarters of Fiscal Year 2020 are presented in Table 4.18.1.

Table 4.18.1. Metro Rail Line Fiscal Year 2020 Train/Vehicle and Train/Pedestrian Accidents

Metro Rail Line	FY20 Q1	FY20 Q2	FY20 Q3	FY20 Q4
A (Blue) Line	2	7	0	0
B/D (Red/Purple) Line	0	0	0	0
C (Green) Line	0	0	0	0
L (Gold) Line	2	1	0	0
E (Expo) Line	4	5	0	0

Source: Metro 2021c
Note: FY = fiscal year; Q = quarter

4.18.2.3 Security

The affected environment with respect to security involves the existing bus and rail system, including stations, vehicles, and ancillary facilities, and the areas in the immediate vicinity of those facilities. Passengers, transit employees, vendors, contractors, and members of the general public who come in contact with the system, as well as transit property and equipment, would be susceptible to the same crimes they might experience in the surrounding neighborhoods. Metro implements internal security features for its bus and rail system, including closed circuit television cameras (CCTV), emergency call boxes, fully lighted station stops, bicycle parking, and transit parking areas. These features, which are on the trains and buses or at the rail stations, are designed to offer security and a sense of personal well-being for patrons and passengers.

4.18.2.4 Freight Railroad

Several subdivisions and branches of existing railroads with active freight operations are within the Affected Area for safety and security; some would share ROW with the Build Alternatives. The FRA defines shared ROW as two or more rail services operating on separate parallel tracks having track centerline separation of less than 30 feet. Separation of 30 feet or less triggers the application of certain FRA safety regulations. The Build Alternatives would

share ROW with freight along the Wilmington Branch, La Habra Branch, San Pedro Subdivision, and PEROW corridors, shown in Figure 3-18 in Chapter 3.

4.18.2.5 Fire Protection

Various fire departments provide fire and emergency response services throughout the Affected Area for emergency service. These fire departments, including the Los Angeles Fire Department, the Los Angeles County Fire Department, Vernon Fire Department, and Downey Fire Department, would provide first response in case of an accident. Figure 4.18-1 shows fire stations within the Affected Area for emergency service. Additional details on the existing fire protection services within the Affected Area for emergency service are provided in the Safety and Security Impact Analysis Report (Appendix F).

4.18.2.6 Police Protection

The Los Angeles County Sheriff's Department (LACSD) Transit Services Bureau (TSB), the Los Angeles Police Department (LAPD), and the Long Beach Police Department (LBPD) provide contract police services to Metro. Deputies provide police services for the heavy rail, light rail, and bus transportation systems throughout Metro's 1,433-square-mile service area. The TSB, LAPD, and LBPD provide security patrols for the Metro LRT system. TSB personnel are also deployed for fare compliance and patrolled security for fixed assets. Figure 4.18-1 shows the locations of police stations within the Affected Area for emergency service. Additional details on the existing police and security services within the Affected Area for emergency service are provided in the Safety and Security Impact Analysis Report (Appendix F).

4.18.2.7 Emergency Medical Services

A number of hospitals currently serves the Affected Area for emergency service. These hospitals are available to assist in the event that emergency medical response services are needed. The locations of the hospitals are shown on Figure 4.18-1. Additional details on the existing emergency medical services within the Affected Area for emergency service are provided in the Safety and Security Impact Analysis Report (Appendix F).

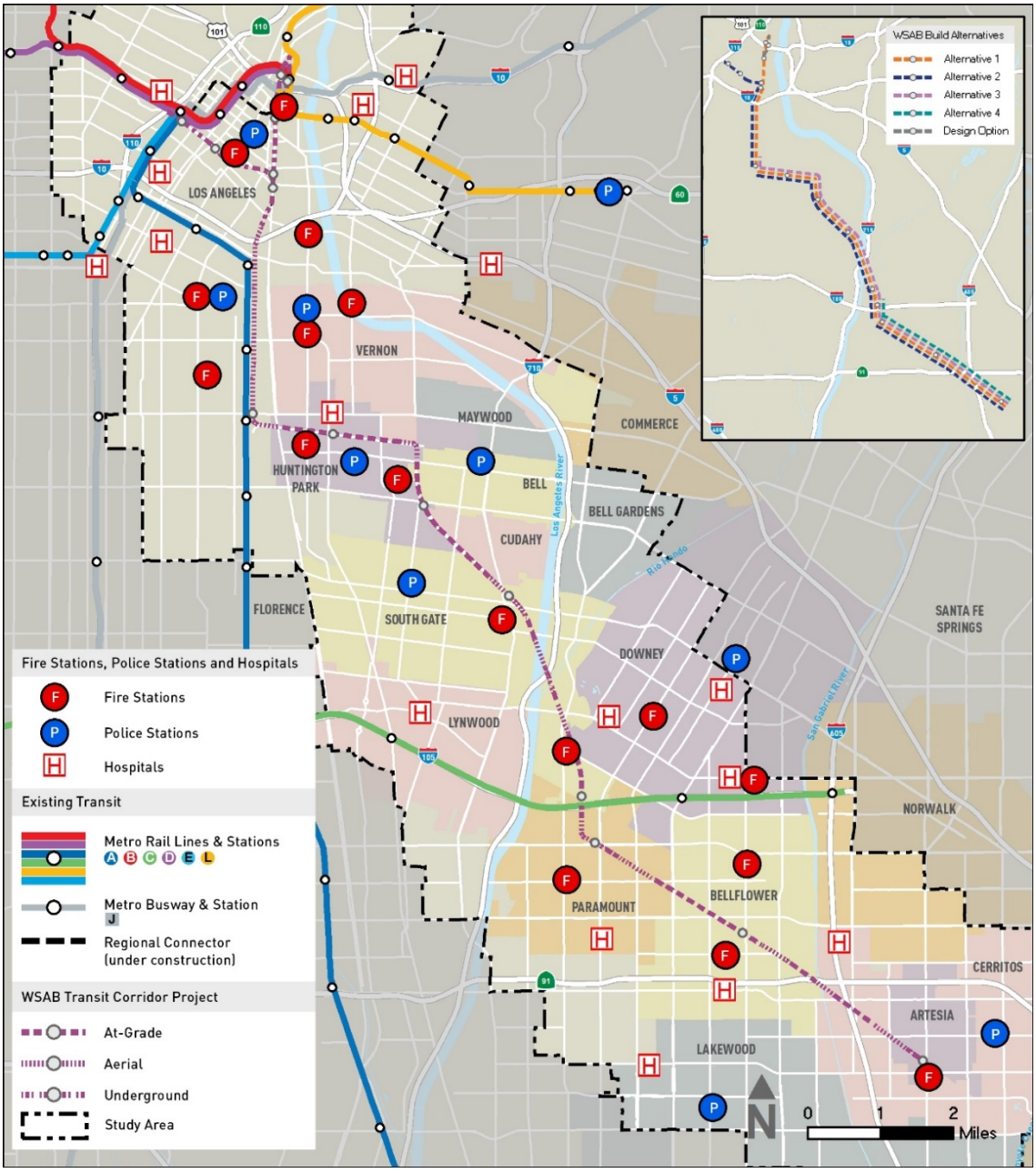
4.18.3 Environmental Consequences/Environmental Impacts

This section summarizes the environmental impacts of the No Build and Build Alternatives as they relate to safety and security and the methodology used to evaluate these impacts. More details about the Build Alternatives' effects on safety and security are included in the Safety and Security Impact Analysis Report (Appendix F).

4.18.3.1 No Build Alternative

As discussed in Chapter 2, Section 2.5.1, No Build Alternative, the No Build Alternative includes capital transportation improvements and/or transit and highway operational enhancements in the Affected Area for both safety and security, as well as emergency services, that are reasonably foreseeable. These include Metro service features that currently exist or projects that have been explicitly committed for buildout by the year 2042. Implementation of these projects, including operations and maintenance, would be subject to the regulatory standards, conditions, and permitting requirements discussed in Section 4.18.1 (e.g., FTA, FRA, CPUC, MRDC; Metro 2020h]). Compliance with these standards would minimize impacts to safety and security. Impacts, if any, are expected to be minor and not adverse. Maintenance and operation of the projects included in the No Build Alternative would be subject to environmental clearance.

Figure 4.18-1. Fire Stations, Police Stations, and Hospitals within the Affected Area for Emergency Service



Source: Metro 2021c

4.18.3.2 Alternative 1: Los Angeles Union Station to Pioneer Station

Transit and Freight System Safety

Transit system safety focuses on identifying, eliminating, and/or controlling safety hazards related to Alternative 1's systems and equipment, including signaling, traction power, overhead catenary system, stations, alignment, track, and communication. The potential for safety hazards such as collisions, service interruption, property damage, injuries, or fatalities may occur as a result of the malfunction or misuse of these systems and equipment.

Alternative 1 would be designed and constructed in accordance with the referenced regulations, standards, and policies identified in Section 4.18.1. All facilities and equipment would be designed to provide for the safety and security of passengers and employees. The following would be implemented to identify and minimize safety hazards during preliminary engineering and final design of Alternative 1:

- Safety and Security Certification Plan
- System Safety Program Plan
- Threat and Vulnerability Assessment (TVA)
- Preliminary Hazards Assessment (PHA)
- Establishment of a Fire/Life Safety Committee to meet with the design team and review fire protection measures and requirements, and other safety hazards

Metro has established operating procedures in the case of a seismic event during operation. Alternative 1 would meet the required structural design standards and building codes to minimize the potential hazards of a seismic event.

With implementation of these plans, assessments, and committee, Alternative 1 would be designed such that there would not be adverse transit system safety impacts during revenue service operations. Alternative 1 would be operated in accordance with Metro system safety plans, policies, and procedures or equivalent, such as: Metro System Safety Program Plan, Metro System Security Plan, Metro Standard and Emergency Operating Procedures, and the Metro Rail Operating Rulebook.

Alternative 1 would operate in 11.4 miles of shared ROW with freight operations along the following corridors:

- Wilmington Branch: Approximately 1.8 miles of shared ROW with freight operations
- La Habra Branch: Approximately 2.3 miles of shared ROW with freight operations
- San Pedro Subdivision: Approximately 6.1 miles of shared ROW with freight operations
- PEROW: Approximately 1.2 miles of shared ROW with freight operations

Both the Wilmington Branch and La Habra Branch are owned and operated by UPRR. The San Pedro Subdivision is owned by the Ports of Los Angeles and Long Beach and operated by UPRR. The PEROW is owned by Metro, but a short segment between the San Pedro Subdivision and Somerset Boulevard along the PEROW is operated by BNSF Railway to serve the World Energy facility. Shared ROW with freight operations would introduce the potential for a derailment or a collision between the trains that could cause service interruptions, equipment damage, and/or harm to passengers and employees. This situation currently exists on the Metro A (Blue) Line along the Wilmington Branch, where it shares ROW with freight operations. To date, there have not been any collisions between the Metro A (Blue) Line and freight operations.

To avoid derailments, Alternative 1 would be designed in accordance with FRA and Metro standards and criteria, including the following:

- Appropriate track spacing distance between freight and Alternative 1
- Protective fencing and barriers installed where appropriate
- An intrusion detection system to detect an intrusion into the ROW

- Communication protocols established between the railroad and Metro to quickly respond to derailment emergencies
- Emergency responder training and drills to respond to derailment emergencies

As part of the project development process and pursuant to FTA Circular 5800.1 – Safety and Security Management Guidance for Major Capital Projects requirements, Metro would conduct a TVA and create a Fire/Life Safety committee for the Project. The TVA and the committee would review Alternative 1 and verify countermeasures to increase safety and reduce the potential of collisions during subsequent design phases.

While these safety features and processes would minimize impacts, there would still be an adverse effect due to the potential for derailment and collision. Under NEPA, Alternative 1 would result in adverse effects related to safety and security prior to the implementation of Mitigation Measure SAF-1 (Encroachment Detection) (see Section 4.18.4), which would detect potential derailments that may occur on Metro ROW. With implementation of this mitigation measure, impacts would be minimized and there would not be an adverse effect to the safety of passengers, employees, and the public from the shared ROW with freight operation. After implementation of Mitigation Measure SAF-1 (Encroachment Detection) (see Section 4.18.4), Alternative 1 would not result in adverse effects related to safety and security.

Motorist, Pedestrian, and Bicyclist Safety

At-grade crossings of Alternative 1 would introduce the potential for collisions and potential hazards to motorist safety. North of Randolph Street, Alternative 1 is either underground or in an aerial configuration. Alternative 1 would result in 34 at-grade crossings south of Randolph Street, which would introduce the potential for conflicts between LRVs and motor vehicles. The potential for impacts would be minimized because Alternative 1 would: follow the Manual of Uniform Traffic Control Devices (MUTCD) standards, observe all applicable traffic laws, implement and follow CPUC and local safety requirements, and incorporate design features such as signs and markings, flashing light signals, gates and traffic-control signals, pathway grade crossings, illumination, and safety barriers. There would be no adverse effects related to motorist safety and collisions, and mitigation measures are not required.

Pedestrian and bicycle safety during operation of Alternative 1 would consider safety along the alignment, at station locations, at designated crossings, and at proposed parking facilities. Pedestrian safety issues would mostly apply to proposed at-grade stations and less to the proposed underground and aerial LRT facilities, as underground and aerial stations can be designed to avoid these concerns. Additionally, the underground and aerial stations would avoid potential conflicts between pedestrians/bicyclists and motor vehicles that would occur with the at-grade stations.

Alternative 1 would be operated in accordance with Metro system safety plans, policies, and procedures and would provide for the safety of those riding within the LRV and for pedestrians and bicyclists along the guideway and at stations. Pedestrian and bicycle safety is prioritized through Metro's *Grade Crossing Policy for Light Rail Transit* (2010a), providing a method for determining whether proposed grade crossings should be grade-separated or at-grade. The review process begins with an initial screening during the feasibility study, which initially categorizes roadway crossings into "at-grade should be feasible," "possible at-grade operation," and "grade separation usually required." The initial analysis has been completed and further information on the grade crossing analysis specific to Alternative 1 and the other Build Alternatives can be found in the *West Santa Ana Branch Grade Crossing Analysis Step 1 Technical*

Report (Metro 2017i). In addition, in compliance with CPUC regulations (CPUC GOs 88-B and 164-D), Metro would prepare and submit grade crossing design applications and conduct grade crossing diagnostics. Based on the CPUC review of grade crossing applications and diagnostics, additional safety and security design features would be incorporated, if necessary.

Although the grade crossing analysis will determine the grade separations, there would be no changes to the determination of safety impacts for both the at-grade and grade-separated crossings. LRT systems operate safely and successfully in both at-grade and grade-separated configurations in cities across California and North America.

Alternative 1 would also be operated in conjunction with Metro's *First/Last Mile Strategic Plan* (2014b), which would incorporate pedestrian and bicycle safety improvements. Examples of first/last mile safety improvements include bike lanes, sidewalks, crosswalks, signage and wayfinding, and information and technology that eases travel.

Alternative 1 would follow Metro's latest Rail Operating Rulebook and CPUC regulations, which allow LRV operators to use audible warning devices to alert pedestrians and bicyclists that an LRV is approaching. Pedestrian and bicycle traffic control and channelization techniques (e.g., crossing gates and ROW barriers) would be used to direct pedestrian and bicycle movements at-grade crossings and to encourage the use of designated crossings. Signage would be posted at these locations to provide safety information and awareness.

Alternative 1 would comply with all applicable regulations and the MRDC or equivalent. In addition, the PHA and TVA would be prepared during preliminary engineering and final design stages of the Project to verify hazards and features for enhanced pedestrian and bicyclist safety, such as pavement markings and signs. The analysis will verify illumination levels and sight distance improvements as necessary. This analysis is required by FTA and SAF PM-5 (Certification and Approval).

Table 4.18.2 provides a qualitative evaluation of safety and security conditions for pedestrians and bicyclists. Elements evaluated include traffic safety, access/accessibility, sight visibility, lighting, and urban design, and considers both the existing conditions of the Affected Area for safety and security and the proposed project features. Each element was given a rating of either "Poor," "Fair," or "Good," and a rating of "N/A" was given for any element not applicable for any of the specific segments evaluated. A "Poor" rating is defined as a higher risk safety and security condition and should consider potential improvements. A "Fair" rating is defined as an adequate safety and security condition, where potential improvements could be considered, as needed. A "Good" rating is defined as a low risk safety and security condition, where no improvements are needed for pedestrian and bicyclist safety.

Table 4.18.3 provides a qualitative assessment of safety and security conditions and potential issues for pedestrians and bicyclists at each proposed parking facility. The assessment identified station and guideway locations as "Good" and Fair" and would not result in adverse effects. The assessment considered analysis from the *West Santa Ana Branch Transit Corridor Project Transportation Impact Analysis Report* (Metro 2021s) and *Pacific Electric ROW/West Santa Ana Branch Transit Corridor Project Urban Design Report* (SCAG 2012b).

Based on this analysis, Alternative 1 would provide a safe and secure environment for Metro patrons, pedestrians, and bicyclists. For further details on the information presented, refer to the Safety and Security Impact Analysis Report (Appendix F).

Table 4.18.2. Summary of Pedestrians and Bicyclists Safety Assessment for the Build Alternatives

Alternative	City	Segment	Type	Configuration	Traffic Safety	Access/ Accessibility	Sight Visibility	Lighting	Urban Design
1	Los Angeles	Union Station (Forecourt)	Station	Underground	**GOOD** No issues; future Los Angeles Union Station Forecourt and Esplanade project will further enhance safety	**GOOD** No issues; future Los Angeles Union Station Forecourt and Esplanade project will further enhance access and accessibility	**GOOD** No issues	**GOOD** Area is well-lit	**GOOD** Historic building with no issues
	Los Angeles	Union Station (MWD [Design Option 1])	Station	Underground	**GOOD** No issues; future Los Angeles Union Station Forecourt and Esplanade project will further enhance safety	No issues; future Los Angeles Union Station Forecourt and Esplanade project will further enhance access and accessibility	**GOOD** No issues	**GOOD** Area is well-lit	**GOOD** Historic building with no issues
	Los Angeles	Union Station to Little Tokyo	Guideway	Underground	N/A	N/A	N/A	N/A	N/A

Alternative	City	Segment	Type	Configuration	Traffic Safety	Access/ Accessibility	Sight Visibility	Lighting	Urban Design
	Los Angeles	Little Tokyo (Optional, added with Design Option 2)	Station	Underground	**GOOD** Existing signalized intersections with crosswalks; future Eastside Access Improvements project will further enhance safety	**GOOD** No issues; future Eastside Access Improvements project will further enhance access and accessibility	**GOOD** No issues	**GOOD** Area is well-lit	**GOOD** No issues
	Los Angeles	Little Tokyo to Arts/Industrial District	Guideway	Underground	N/A	N/A	N/A	N/A	N/A
2	Los Angeles	7th/Metro Center	Station	Underground	**GOOD** Existing signalized intersections with crosswalks	**GOOD** Existing wide sidewalks	**GOOD** No issues	**GOOD** Area is well-lit	**GOOD** No issues
	Los Angeles	7th/Metro Center to South Park/Fashion District	Guideway	Underground	N/A	N/A	N/A	N/A	N/A

Alternative	City	Segment	Type	Configuration	Traffic Safety	Access/ Accessibility	Sight Visibility	Lighting	Urban Design
	Los Angeles	South Park/Fashion District	Station	Underground	**GOOD** Existing signalized intersections with crosswalks and protected bikeway	**GOOD** Existing wide sidewalks	**GOOD** No issues	**GOOD** Area is well-lit	**GOOD** No issues
	Los Angeles	South Park/Fashion District to Arts/Industrial District	Guideway	Underground	N/A	N/A	N/A	N/A	N/A
1 and 2	Los Angeles	Arts/Industrial District	Station	Underground	**GOOD** Existing signalized intersections with crosswalks	**GOOD** Existing wide sidewalks	**GOOD** No issues	**GOOD** Area is well-lit	**FAIR** Industrial with no issues
	Los Angeles, Unincorporated LA County	Arts/Industrial District to Slauson	Guideway	Underground, Aerial	N/A	N/A	**GOOD** No issues	**FAIR** Area is adequately lit	**GOOD** Residential and commercial with no issues
1, 2, and 3	Unincorporated LA County	Slauson	Station	Aerial	**FAIR** Future Rail to Rail project will enhance traffic safety	**FAIR** Future Rail to Rail project will enhance traffic safety	**GOOD** No issues	**FAIR** Area is adequately lit	**FAIR** Industrial setting; future Rail to Rail project will enhance urban design

Alternative	City	Segment	Type	Configuration	Traffic Safety	Access/ Accessibility	Sight Visibility	Lighting	Urban Design
	Unincorporated LA County, Huntington Park	Slauson to Pacific/Randolph	Guideway	Aerial, At-Grade	**GOOD** Travel lane reduction and crosswalk improvements	N/A	**GOOD** No issues	**GOOD** Area is well-lit	**GOOD** Residential and commercial with no issues
	Huntington Park	Pacific/Randolph	Station	At-Grade	**GOOD** Travel lane reduction and crosswalk improvements	**GOOD** Sidewalk and curb ramp improvement	**GOOD** No issues	**GOOD** Area is well-lit	**GOOD** Residential and commercial with no issues
	Huntington Park, Bell	Pacific/Randolph to Florence/Salt Lake	Guideway	At-Grade, Aerial	**GOOD** Travel lane reduction and crosswalk improvements	N/A	**GOOD** No issues	**GOOD** Area is well-lit	**GOOD** Residential and commercial with no issues
	Huntington Park	Florence/Salt Lake	Station	At-Grade	**GOOD** Signalized intersection with crosswalk improvements	**GOOD** Sidewalk and curb ramp improvement	**GOOD** No issues	**GOOD** Area is well-lit	**GOOD** Residential and commercial with no issues
	Huntington Park, Cudahy, South Gate	Florence/Salt Lake to Firestone	Guideway	At-Grade, Aerial	**GOOD** Crossing gates and existing signalized intersections with crosswalk	N/A	**GOOD** No issues	**GOOD** Area is well-lit	**GOOD** Residential and commercial with no issues

Alternative	City	Segment	Type	Configuration	Traffic Safety	Access/ Accessibility	Sight Visibility	Lighting	Urban Design
	South Gate	Firestone **[P]**	Station	Aerial	**FAIR** Crossing gates and existing signalized intersections with crosswalk with new driveway	**FAIR** Sidewalk and curb ramps at specific locations	**FAIR** Station is located behind several buildings, but sight visibility is adequate from aerial station	**FAIR** Project provides lighting	**FAIR** Industrial with no issues
	South Gate, Downey	Firestone to Gardendale	Guideway	Aerial, At-Grade	**GOOD** Crossing gates and existing signalized intersections with crosswalk	N/A	**GOOD** No issues	**GOOD** Area is well-lit	**GOOD** Residential and commercial with no issues
	Downey,	Gardendale	Station	At-Grade	**GOOD** Signalized intersection with crosswalk improvements	**GOOD** Sidewalk and curb ramp improvement	**GOOD** No issues	**GOOD** Project provides lighting	**FAIR** Industrial with no issues
	Downey, South Gate	Gardendale to I-105/C Line	Guideway	At-Grade	**GOOD** Crossing gates and existing signalized intersections with crosswalk	N/A	**GOOD** No issues	**GOOD** Area is well-lit	**FAIR** Industrial with no issues

Alternative	City	Segment	Type	Configuration	Traffic Safety	Access/ Accessibility	Sight Visibility	Lighting	Urban Design
1, 2, 3, and 4	South Gate	I-105/C Line **[P]**	Station	At-Grade	**GOOD** Crossing gates and crosswalk	**GOOD** Curb ramps, pedestrian walkway from C Line station, direct access from parking facility	**GOOD** No issues	**GOOD** Area is well-lit	**GOOD** Residential and industrial with no issues
	South Gate, Paramount	I-105/C Line to Paramount/Rose crans	Guideway	At-Grade, Aerial	N/A	N/A	N/A	N/A	**GOOD** Residential and industrial with no issues
	Paramount	Paramount/Rose crans **[P]**	Station	Aerial	**GOOD** Existing signalized intersections with crosswalks	**GOOD** Direct access from parking facility	**GOOD** No issues	**GOOD** Area is well-lit	**GOOD** Residential and commercial with no issues
	Paramount, Bellflower	Paramount/Rose crans to Bellflower	Guideway	Aerial, At-Grade	**GOOD** Crossing gates and existing signalized intersections with crosswalk	N/A	**GOOD** No issues	**GOOD** Area is well-lit	**GOOD** Residential and commercial with no issues

Alternative	City	Segment	Type	Configuration	Traffic Safety	Access/ Accessibility	Sight Visibility	Lighting	Urban Design
	Bellflower	Bellflower **[P]**	Station	At-Grade	**GOOD** Crossing gates and existing signalized intersections with crosswalks	**GOOD** New curb ramps	**GOOD** No issues	**GOOD** Area is well-lit	**GOOD** Residential and commercial with no issues
	Bellflower, Cerritos, Artesia	Bellflower to Pioneer	Guideway	At-Grade, Aerial	**GOOD** Crossing gates and existing signalized intersections with crosswalks	N/A	**GOOD** No issues	**GOOD** Area is well-lit	**GOOD** Residential and commercial with no issues
	Artesia	Pioneer **[P]**	Station	At-Grade	**GOOD** Crossing gates and existing signalized intersections with crosswalks	**GOOD** Direct access from parking facility	**GOOD** No issues	**GOOD** Area is well-lit	**GOOD** Residential and commercial with no issues

Source: Metro 2021c
Note: MWD = Metropolitan Water District; N/A = not applicable; [P] = Proposed Station Parking

Table 4.18.3. Safety Summary for Proposed Parking Facilities

Parking Facility	Location	Proposed Parking Spaces	Parking Facility Safety Description	Potential Issues	Design Features
Firestone Station (Alternatives 1, 2, and 3)	South Gate	▪ 600 parking spaces	At-grade crossings (includes freight crossing at each) from parking facility to the Firestone aerial station. Parking facility has direct connection to station.	▪ Pedestrians need to cross freight tracks to access station.	▪ Controlled pedestrian crossing gates with warning lights and signs between plaza level and parking facility.
I-105/C Line Station (Alternatives 1, 2, 3, and 4)	South Gate	▪ 326 parking spaces	Path of travel for passengers transferring between C (Green) Line and Build Alternatives would require pedestrian movement crossing over Century Boulevard. Total distance of travel is approximately 0.1 mile.	▪ To access the station from the parking lot to the west of the station, patrons would have to cross freight track crossings. ▪ Potential for pedestrian and automobile interface accessing the station as pedestrians cross Century Boulevard.	▪ Controlled pedestrian crossing gates with warning lights and signs, crosswalks, and signage at the Century Street at-grade crossing separating the two stations for the C (Green) Line and Build Alternatives.

Parking Facility	Location	Proposed Parking Spaces	Parking Facility Safety Description	Potential Issues	Design Features
Paramount/ Rosecrans Station (Alternatives 1, 2, 3, and 4)	Paramount	▪ 490 parking spaces	Parking facility has direct connection to station. Direct connection path of travel from the parking facility to the station would require movement of pedestrians underneath transmission towers or via sidewalk along Paramount Boulevard.	▪ No safety issues.	▪ Dedicated pedestrian walkway from parking facility to plaza level.
Bellflower Station (Alternatives 1, 2, 3, and 4)	Bellflower	▪ 263 parking spaces	The path of travel requires crossing tracks to access station. Parking facility has direct connection to station.	▪ No safety issues.	▪ Pedestrian crossing with swing gates and warning signage.
Pioneer Station (Alternatives 1, 2, 3, and 4)	Artesia	▪ 1,100 parking spaces	Path of travel from the parking facility requires pedestrian movement along 187th Street or Pioneer Boulevard. Total distance of travel is less than approximately 0.1 mile.	▪ No safety issues.	▪ Pedestrian walkway from parking facility to sidewalk along 187th Street and Pioneer Boulevard. Includes pedestrian crossing gates and signage.

Source: Metro 2021c

To minimize potential hazards, traffic-control improvements and wayfinding features (e.g., signage, pavement markings) would be implemented to provide safe passage at station parking facilities and reduce potential conflicts between vehicles and the pedestrians/ bicyclists traveling between the parking facility and the station entrances. Under NEPA, Alternative 1 would not result in adverse effects related to safety and security, and mitigation would not be required.

Emergency Response Services

Potential impacts on emergency response services would occur if Alternative 1 were to interfere with local jurisdictions' emergency response plans or delay emergency service providers. Delays could occur as a result of gate downtimes at the at-grade crossings. Other potential impacts could include modifications to emergency preparedness and planning, changes in the ability to provide fast and efficient response to emergencies or disasters, and the broader ability to minimize risk to the safety and health of passengers, employees, and emergency response personnel.

Metro would coordinate with involved fire and police departments in addressing fire/life safety and security for the proposed alignment, parking facilities, and station areas within their respective jurisdictions. A comprehensive Emergency Preparedness Plan (EPP) that can be integrated with emergency service providers, local jurisdictional emergency response plans, and Metro's existing emergency procedures would be developed for operation of Alternative 1, as required by FTA. Metro, in coordination with local jurisdictions, would develop traffic management plans to reduce delays in response times for emergency service providers. Gate operations at at-grade crossings would be configured per CPUC standards as part of Alternative 1 and the traffic mitigation measures.

The previously described coordination and operational requirements would minimize the potential impacts to emergency service providers and response times. Under NEPA, Alternative 1 would not result in adverse effects related to safety and security, and mitigation would not be required.

Security and Prevention of Crime and Terrorism

Security relates to protection of people from intentional acts that could result in injury or harm, and protection of property from deliberate acts of vandalism. This includes crime prevention, law enforcement, and protection against terrorism. Terrorism is defined by the Homeland Security Act of 2002 as acts that are dangerous to human life or potentially destructive of critical infrastructure or key resources.

To help prevent crime and terrorist activity, Metro contracts with law enforcement personnel from LACSD, LAPD, and LBPD on the transit system during hours of operation (see Section 4.18.2.6). Metro and contracted law enforcement would employ an ongoing assessment of security at all station areas for appropriate redeployment of law enforcement and security services. In addition, Metro's TSB is deployed for fare compliance and patrolled security for fixed assets. The multi-agency law enforcement in the Metro system allows local jurisdictions to be positioned for active and timely response to emergency calls. Metro's policing contracts provide consistent and reliable staffing of approximately 314 law enforcement officers per 24-hour period. It also includes dedicated service and proactive security patrols and provides flexibility to enhance security as the Metro transit system expands to include Alternative 1.

Alternative 1 would be designed to include security features such as lighting, surveillance, CCTV, access control, and emergency call boxes to reduce the potential for crime and terrorist activity. The TVA conducted in compliance with FTA regulations would include a response and evacuation plan. Key provisions of the TVA would include the following:

- Identify various threat scenarios that may be applicable to project assets.
- Provide a preliminary assessment of the consequences and possible effects resulting from credible criminal and terrorist threats.
- Develop a prioritized risk assessment based on potential consequences and probability.
- Verify countermeasures that are practical to implement and help improve transit system security.

Security patrols, crime prevention through environmental design (CPTED), and compliance with FTA regulations would minimize potential security concerns associated with the identified threats. Alternative 1 would be designed to address crime and terrorism. Under NEPA, Alternative 1 would not result in adverse effects related to safety and security, and mitigation would not be required.

4.18.3.3 Alternative 2: 7th Street/Metro Center to Pioneer Station

Transit and Freight System Safety

Alternative 2 is substantially similar to Alternative 1, as described in Section 4.18.3.2 in regard to transit system safety conditions, potential impacts, and effect determinations as both alternatives terminate at underground stations adjacent to major transit hubs. The conclusions and effect determinations provided for Alternative 1 would also be applicable to Alternative 2. Therefore, adverse effects would not occur for Alternative 2.

Alternative 2 is substantially similar to Alternative 1 in regard to freight operations, potential impacts, and effect determinations as both alternatives terminate at underground stations adjacent to major transit hubs. The conclusions and effect determinations provided for Alternative 1, as described in Section 4.18.3.2, would also be applicable to Alternative 2 and, therefore, would be substantially similar to Alternative 1. Under NEPA, Alternative 2 would result in adverse effects related to safety and security prior to the implementation of Mitigation Measure SAF-1 (Encroachment Detection) (see Section 4.18.4), which would detect potential derailments that may occur on Metro ROW. After implementation of Mitigation Measure SAF-1 (Encroachment Detection) (see Section 4.18.4), Alternative 2 would not result in adverse effects related to safety and security.

Motorist, Pedestrian, and Bicyclist Safety

Alternative 2 is substantially similar to Alternative 1, as described in Section 4.18.3.2, in regard to motorist, pedestrian, and bicycle safety conditions, potential impacts, and effect determinations because both alternatives terminate at underground stations adjacent to major transit hubs. The conclusions and effect determinations provided for Alternative 1 would also be applicable to Alternative 2. Under NEPA, Alternative 2 would not result in adverse effects related to safety and security, and mitigation would not be required.

Refer to Table 4.18.2 and Table 4.18.3 for a summary of safety and security conditions relative to pedestrians and bicyclists for Alternative 2. Based on this analysis, Alternative 2 would provide a safe and secure environment for Metro patrons, pedestrians, and bicyclists. For further details on the information presented, refer to the Safety and Security Impact Analysis Report (Appendix F).

Emergency Response Services

Alternative 2 is substantially similar to Alternative 1, as described in Section 4.18.3.2, in regard to emergency response service conditions, potential impacts, and effect determinations as both alternatives terminate at underground stations adjacent to major transit hubs. The conclusions and effect determinations provided for Alternative 1 would also be applicable to Alternative 2. Under NEPA, Alternative 2 would not result in adverse effects related to safety and security, and mitigation would not be required.

Security and Prevention of Crime and Terrorism

Alternative 2 is substantially similar to Alternative 1, as described in Section 4.18.3.2 in regard to security and crime conditions, potential impacts, and effect determinations because both alternatives terminate at underground stations adjacent to major transit hubs. The conclusions and effect determinations provided for Alternative 1 would also be applicable to Alternative 2. Under NEPA, Alternative 2 would not result in adverse effects related to safety and security, and mitigation would not be required.

4.18.3.4 Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Transit and Freight System Safety

While Alternative 3 would result in a shorter alignment and fewer stations than Alternatives 1 and 2, Alternative 3 would be substantially similar to Alternative 1 in regard to transit system safety, potential impacts, and effect determinations, as described in Section 4.18.3.2. The conclusions and effect determinations provided for Alternative 1 would also be applicable to Alternative 3.

Alternative 3 would reduce the length of shared ROW with freight operations from 11.4 miles to 10.1 miles compared to Alternatives 1 and 2. Under Alternative 3, LRVs would share ROW with freight operations along the Wilmington Branch (0.5 mile), the PEROW (1.2 miles), the San Pedro Subdivision (6.1 miles), and the La Habra Branch (2.3 miles). Despite the reduction in miles of shared ROW with freight operations, the same freight operating conditions, potential impacts, and effect determinations for Alternative 1, as described in Section 4.18.3.2, would still exist under Alternative 3 and, therefore, would be substantially similar to the Alternative 1. Under NEPA, Alternative 3 would result in adverse effects related to safety and security prior to the implementation of Mitigation Measure SAF-1 (Encroachment Detection) (see Section 4.18.4), which would detect potential derailments that may occur on Metro ROW. After implementation of Mitigation Measure SAF-1 (Encroachment Detection) (see Section 4.18.4), Alternative 3 would not result in adverse effects related to safety and security.

Motorist, Pedestrian, and Bicyclist Safety

While Alternative 3 would result in a shorter alignment and fewer stations than Alternatives 1 and 2, the number of at-grade crossings and service frequencies would not be reduced (train headways would remain the same). Alternative 3 would be substantially similar to Alternative 1 in regard to motorist safety, potential impacts, and effect determinations, as described in Section 4.18.3.2. Therefore, Alternative 3 would have the same or slightly reduced impacts; no adverse effects on motorist safety would occur, and mitigation measures are not required.

Alternative 3 would be substantially similar to Alternative 1 in regard to pedestrian and bicycle safety, potential impacts, and effect determinations, as described in Section 4.18.3.2. The conclusions and effect determinations provided for Alternative 1 would also be applicable to Alternative 3. However, terminus stations generally have increased pedestrian and bicycle demand that could result in higher potential for safety hazards to occur, such as crime and pedestrian safety. Under Alternative 3, Pioneer Station would remain the southern terminus; however, the northern terminus would be located at the Slauson/A Line Station instead. The Slauson/A Line Station would also continue to serve as a transfer point and would be designed to accommodate anticipated pedestrian activity. As a result of the shorter alignment, ridership demand would be approximately 60 percent lower than the other alternatives. While the reduction in ridership would change station patronage, the same safety and security conditions, potential impacts, and effect determinations would still exist at both terminus stations and, therefore, would be substantially similar to those effects identified at the termini of the other alternatives. Under NEPA, Alternative 3 would not result in adverse effects related to safety and security, and mitigation would not be required.

Refer to Table 4.18.2 and Table 4.18.3 for a summary of safety and security conditions relative to pedestrians and bicyclists for Alternative 3. Based on this analysis, Alternative 3 would provide a safe and secure environment for Metro patrons, pedestrians, and bicyclists. For further details on the information presented, refer to the Safety and Security Impact Analysis Report (Appendix F).

Emergency Response Services

Alternative 3 would result in a shorter alignment and fewer stations, as well as slightly reduce the number of affected emergency responders (for example, police, fire, and medical) than Alternatives 1 and 2. However, the conditions for the emergency response services within Alternative 3 would be substantially similar to Alternative 1. The impact conclusions related to emergency response services for Alternative 1, as described in Section 4.18.3.2, are also applicable to Alternative 3. Under NEPA, Alternative 3 would not result in adverse effects related to safety and security, and mitigation would not be required.

Security and Prevention of Crime and Terrorism

While Alternative 3 would result in a shorter alignment and fewer stations than Alternatives 1 and 2, Alternative 3 would be substantially similar to Alternative 1 in regard to security and prevention of crime and terrorism, potential impacts, and effect determinations, as described in Section 4.18.3.2. The conclusions and effect determinations provided for Alternative 1 would also be applicable to Alternative 3. Under NEPA, Alternative 3 would not result in adverse effects related to safety and security, and mitigation would not be required.

4.18.3.5 Alternative 4: I-105/C (Green) Line to Pioneer Station

Transit and Freight System Safety

While Alternative 4 would result in a shorter alignment and fewer stations than Alternatives 1, 2, and 3, Alternative 4 would be substantially similar to Alternative 1 in regard to transit system safety, potential impacts, and effect determinations, as described in Section 4.18.3.2. The conclusions and effect determinations provided for Alternative 1 would also be applicable to Alternative 4. Therefore, adverse effects would not occur for Alternative 4.

Alternative 4 would reduce the length of shared ROW with freight operations from 11.4 miles to 2.0 miles compared to Alternatives 1 and 2. Under Alternative 4, LRVs would share ROW with freight operations for a shorter segment (0.8 mile) within the San Pedro Branch and continue to share ROW with freight operations related to the World Energy facility along the PEROW for approximately 1.2 miles. Despite the reduction in miles of shared ROW with freight operations, the same safety and security conditions, potential impacts, and effect determinations for Alternative 1, as described in Section 4.18.3.2 would still exist under Alternative 4 and, therefore, would be substantially similar to Alternative 1. As a result, the identified impacts would still be substantial and there would be an adverse effect without mitigation because of the potential for derailment and collision as a result of the shared ROW with freight operations under Alternative 4. Under NEPA, Alternative 4 would result in adverse effects related to safety and security prior to the implementation of Mitigation Measure SAF-1 (Encroachment Detection) (see Section 4.18.4), which would detect potential derailments that may occur on Metro ROW. After implementation of Mitigation Measure SAF-1 (Encroachment Detection) (see Section 4.18.4), Alternative 4 would not result in adverse effects related to safety and security.

Motorist, Pedestrian, and Bicyclist Safety

For Alternative 4, the number of at-grade crossings would be reduced to 13 compared to 34 under Alternatives 1, 2, and 3. Service frequencies would not be reduced (train headways would remain the same) at the 13 at-grade crossing locations under Alternative 4. Nonetheless, the impact conclusions for Alternative 1 described in Section 4.18.3.2 for motorist safety and collisions are applicable to Alternative 4. Therefore, Alternative 4 would have the same or slightly reduced impacts; no adverse effects on motorist safety would occur, and mitigation measures are not required.

While Alternative 4 would result in a shorter alignment and fewer stations than Alternatives 1, 2, and 3, Alternative 4 would be substantially similar to Alternative 1 in regard to pedestrian and bicycle safety, potential impacts, and effect determinations, as described in Section 4.18.3.2. The conclusions and effect determinations provided for Alternative 1 would also be applicable to Alternative 4. Therefore, adverse effects would not occur for Alternative 4.

However, terminus stations generally have increased pedestrian and bicycle demand that may result in greater potential for safety hazards to occur, such as crime and general pedestrian safety. Under Alternative 4, Pioneer Station would remain the southern terminus; however, the northern terminus would be located at the I-105/C Line Station instead. The I-105/C Line Station would also continue to serve as a transfer point and would be designed to accommodate anticipated pedestrian activity. As a result of the shorter alignment, ridership demand would be approximately 85 percent lower than the other alternatives. While this reduction in ridership would change station patronage, the same safety and security

conditions, potential impacts, and effect determinations would still exist at both terminus stations and would therefore be substantially similar to those effects identified at the termini of the other alternatives described above. Under NEPA, Alternative 4 would not result in adverse effects related to safety and security, and mitigation would not be required.

Refer to Table 4.18.2 and Table 4.18.3 for a summary of safety and security conditions relative to pedestrians and bicyclists for Alternative 4. Elements evaluated include traffic safety, access/accessibility, sight visibility, lighting, and the built environment, and considers both the existing conditions of the Affected Area for safety and security and the proposed project features. Based on this analysis, Alternative 4 would provide a safe and secure environment for Metro patrons, pedestrians, and bicyclists. For further details on the information presented, refer to the Safety and Security Impact Analysis Report (Appendix F).

Emergency Response Services

Alternative 4 would result in a shorter alignment and fewer stations and reduced number of affected emergency responders (e.g., police, fire, and medical). However, the conditions for the emergency response services within Alternative 4 would be substantially similar to the other alternatives. The impact conclusions related to emergency response services for Alternative 1, described in Section 4.18.3.2, would also be applicable to Alternative 4. Under NEPA, Alternative 4 would not result in adverse effects related to safety and security, and mitigation would not be required.

Security and Prevention of Crime and Terrorism

While Alternative 4 would result in a shorter alignment and fewer stations than Alternatives 1, 2, and 3, the number of at-grade crossings and service frequencies would remain the same. Alternative 4 would be substantially similar to Alternative 1 in regard to security and prevention of crime and terrorism, potential impacts, and effect determinations, as described in Section 4.18.3.2. The conclusions and effect determinations provided for Alternative 1 would also be applicable to Alternative 4. Under NEPA, Alternative 4 would not result in adverse effects related to safety and security and mitigation would not be required.

4.18.3.6 Design Options—Alternative 1

Design Option 1: LAUS MWD and Design Option 2: Add Little Tokyo Station

Transit and Freight System Safety: Design Options 1 and 2 are substantially similar to the Build Alternatives in regard to transit and freight system safety conditions, potential impacts, and effect determinations. The conclusions and effect determinations provided for the Build Alternatives would also be applicable to Design Options 1 and 2. Under NEPA, Design Options 1 and 2 would not result in adverse effects related to safety and security, and mitigation would not be required.

Motorist, Pedestrian, and Bicyclist Safety: Design Options 1 and 2 are substantially similar to the Build Alternatives in regard to motorist, pedestrian, and bicycle safety conditions, potential impacts, and effect determinations. The conclusions and effect determinations provided for the Build Alternatives would also be applicable to Design Options 1 and 2. Under NEPA, Design Options 1 and 2 would not result in adverse effects related to safety and security, and mitigation would not be required.

Emergency Response Services: Design Options 1 and 2 are substantially similar to the Build Alternatives in regard to emergency response service conditions, potential impacts, and effect determinations. The conclusions and effect determinations provided for the Build Alternatives would also be applicable to Design Options 1 and 2. Under NEPA, Design Options 1 and 2 would not result in adverse effects related to safety and security, and mitigation would not be required.

Security and Prevention of Crime and Terrorism: Design Options 1 and 2 are substantially similar to the Build Alternatives in regard to security and crime conditions, potential impacts, and effect determinations. The conclusions and effect determinations provided for the Build Alternatives would also be applicable to Design Options 1 and 2. Under NEPA, Design Options 1 and 2 would not result in adverse effects related to safety and security, and mitigation would not be required.

4.18.3.7 Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options

Transit and Freight System Safety: The Paramount and Bellflower MSF site options would be closed to the public and only employee-related work would occur at the selected site. The employee-related work at the MSF site options would be completed consistent with Occupational Safety and Health Administration requirements, and employees would follow the procedures in Metro's latest Rail Operating Rulebook for transit system safety. No freight operations would occur within the MSF site options. Nonetheless, the Paramount and Bellflower MSF site options are substantially similar to the Build Alternatives in regard to transit and freight system safety conditions, potential impacts, and effect determinations. The conclusions and effect determinations provided for the Build Alternatives would also be applicable to the Paramount and Bellflower MSF site options. Under NEPA, neither MSF site option would result in adverse effects related to safety and security, and mitigation would not be required.

Motorist, Pedestrian, and Bicyclist Safety: The Paramount and Bellflower MSF site options would be closed to the public and only employee-related work would occur at the selected site. Access to the MSF site options would be strictly controlled by an on-site guard and security team, as well as barriers around the perimeter of the maintenance yard to prohibit unauthorized access into the yard. Therefore, no adverse effects would occur. Under NEPA, neither MSF site option would result in adverse effects related to safety and security, and mitigation would not be required.

Emergency Response Services: The Paramount and Bellflower MSF site options would not interfere with emergency response services because there are no at-grade crossings; therefore, no adverse effects would occur. Under NEPA, neither MSF site option would result in adverse effects related to safety and security, and mitigation would not be required.

Security and Prevention of Crime and Terrorism: The Paramount and Bellflower MSF site options would be designed per the MRDC or equivalent. To deter crime and terrorism, the MSF site options would include CCTV, emergency call boxes, and the necessary lighting to provide visibility around the entire facility day and night. Access to the MSF site would be strictly controlled by an on-site guard and security team, as well as barriers around the perimeter of the maintenance yard to prohibit unauthorized access into the yard. Based on the MSF design features and operations described, no adverse effects on safety and security

to the equipment or employees at the MSF site options would occur, and mitigation measures are not required. Under NEPA, neither MSF site option would result in adverse effects related to safety and security, and mitigation would not be required.

4.18.4 Project Measures and Mitigation Measures

4.18.4.1 Project Measures

The following project measures would be required during project operation and therefore are included as part of the Build Alternatives to avoid, minimize, or reduce the potential for impacts to safety and security:

SAF PM-1 Emergency Access. Metro would coordinate access for emergency responders, locations of fire hydrants, and security features with the applicable fire and police departments in addressing fire, life, safety, and security for the proposed alignment, parking facilities, and station areas within their respective jurisdictions (Alternatives 1, 2, 3, and 4).

SAF PM-2 Security Assessments. Metro would employ an ongoing assessment of security at all WSAB station areas for possible redeployment of law enforcement and security services (Alternatives 1, 2, 3, and 4).

SAF PM-3 Freight Track Clearance. There would be a minimum 20-foot horizontal clearance between the Build Alternatives and freight track(s) where the Build Alternatives are located at-grade in shared ROW. This occurs primarily from Randolph Street to World Energy (Alternatives 1, 2, 3, and 4).

SAF PM-4 Pedestrian Bridges. Pedestrian bridges would be provided to avoid potential interactions between pedestrians and vehicle traffic at the following locations:

- East 53rd Street. WSAB and northbound A Lines go over existing bridge. Existing bridge would be above freight tracks and below WSAB viaduct (Alternatives 1 and 2).
- Paramount High School. Pedestrian tunnel connecting athletic fields to school (Alternatives 1, 2, 3, and 4).

SAF PM-5 Certification and Approval. The Build Alternatives would comply with all FTA and FRA safety and security certification processes and approval prior to the start of revenue operating services. This includes conducting a PHA and a TVA. The PHA would assess the potential hazards introduced by or associated with a design. The TVA would verify critical assets, vulnerability to specific threats, based on the likelihood of occurrence and the severity of occurrence and develop countermeasures for addressing prioritized vulnerabilities (Alternatives 1, 2, 3, and 4).

SAF PM-6 Metro Compliance. The Build Alternatives would be operated in compliance with Metro's policies, standard operating procedures, and rulebook or equivalent as approved by Metro (Alternatives 1, 2, 3, and 4).

SAF PM-7 First/Last Mile. The Build Alternatives would include first/last mile improvements around stations, such as pedestrian, bicyclist, bus stop, and Americans with Disability Act enhancements that provide safe access routes to and from the stations (Alternatives 1, 2, 3, and 4).

SAF PM-8 Fire/Life Safety Committee. A Fire/Life Safety Committee for the Build Alternatives would be established per the MRDC or equivalent and FTA requirements. The committee would be tasked with addressing fire protection requirements for the operation of the Build Alternatives, along with establishing minimum requirements that would provide for the protection of life and property from the effects of a potential fire. Additional safety and security design recommendations may be identified by the Fire/Life Safety Committee as the Build Alternatives' design progresses further during preliminary engineering and final design (Alternatives 1, 2, 3, and 4).

4.18.4.2 Mitigation Measures

The following operation-related mitigation measure would be implemented to avoid, minimize, or reduce the potential for impacts to safety and security.

SAF-1 Encroachment Detection. The Project would incorporate a means of encroachment detection along the portion of the corridor that shares right-of-way with freight operations. The encroachment detection system would detect unauthorized entry into Metro right-of-way, such as a freight train derailment. Prior to the start of service, Metro would develop a plan that outlines procedures should the encroachment detection system be triggered. In the event the intrusion detection system detects a possible derailment, all parties operating in the shared right-of-way corridor would be notified and train traffic (freight and light rail transit) would not be permitted to enter the area until the detection is investigated and the intrusion, if any, addressed to avoid possible derailments (Alternatives 1, 2, 3, and 4).

4.18.5 California Environmental Quality Act Determination

4.18.5.1 Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

No Project Alternative

The No Project Alternative would not include the operation of any project features and would not result in changes or impacts to adopted emergency response plans or emergency evacuation plans. Therefore, no impact would occur under the No Project Alternative, and no mitigation measures are required.

Alternative 1: Los Angeles Union Station to Pioneer Station

As described in Section 4.18.3.2, there would be changes in the Affected Area for safety and security because Alternative 1 would introduce operation of a new LRT route; however, Alternative 1 would not impair or interfere with adopted emergency response plans or evacuation plans because evacuation plans would typically avoid crossing active rail corridors (U.S. Department of Health and Human Services 2003) and the at-grade portions of Alternative 1 are located within active rail corridors. The aerial and underground segments of Alternative 1 would not impair or interfere with adopted emergency response plans or emergency evacuation plans.

Alternative 1 would include development of a comprehensive EPP, per CPUC GO 164-E, that would be integrated with local jurisdictional emergency response plans. The EPP would establish and coordinate the roles and responsibilities that would be carried out by Metro personnel and by various emergency response agencies in the event of a fire, medical, or security emergency. In addition to the EPP, a Fire/Life Safety Report would be developed to explain the safety features in the proposed tunnels and stations, the design specifics related to emergency access and egress, and the security and fire suppression systems.

Per FTA's System Safety Program Plans (49 CFR Part 659) and CPUC GO 164-E requirements, Metro would be responsible for implementing or conducting the TVA, Safety and Security Certification Plan, System Safety Management Plan provisions, and hazard analyses. Metro's Fire/Life Safety Committee would be responsible for overseeing project compliance with NFPA 130 and Metro's Fire/Life Safety Design Criteria, as well as coordination with fire jurisdictions for design reviews, training, and familiarization. The operation of Alternative 1 would not impair or interfere with emergency response and evacuation plans. Therefore, impacts for Alternative 1 would be less than significant, and mitigation would not be required.

Alternative 2: 7th Street/Metro Center to Pioneer Station

Alternative 2 is substantially similar to Alternative 1, as described in Section 4.18.3.3, in regard to emergency response plans or emergency evacuation plans and potential impacts determinations. The conclusions and impact determinations provided for Alternative 1 would also be applicable to Alternative 2. Therefore, impacts for Alternative 2 would be less than significant, and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

As described in Section 4.18.3.4, Alternative 3 would result in shorter alignments and fewer stations than the other alternatives, resulting in a reduction of potential impacts to the number of emergency response plans or emergency evacuation plans. Alternative 3 would still be substantially similar to Alternative 1 in regard to emergency response plans or emergency evacuation plans and potential impacts determinations described previously. Therefore, impacts for Alternative 3 would be less than significant, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

As described in Section 4.18.3.5, Alternative 4 would result in shorter alignments and fewer stations than the other alternatives, resulting in a reduction of potential impacts to the number of emergency response plans or emergency evacuation plans. Alternative 4 would still be substantially similar to Alternative 1 in regard to emergency response plans or emergency evacuation plans and potential impacts determinations described previously. Therefore, impacts for Alternative 4 would be less than significant, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Both Design Options 1 and 2 are underground stations and would not interfere with emergency response plans or emergency evacuation plans. Therefore, no impact would occur, and mitigation would not be required.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: Both the Paramount and Bellflower MSF site options would not interfere with emergency response plans or emergency evacuation plans as there are no at-grade crossings. Therefore, no impact would occur, and mitigation would not be required.

4.18.5.2 Result in substantial adverse physical impacts associated with the provisions of new or physically altered government facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain response times or other performance objectives for fire and police protection services?

No Project Alternative

The No Project Alternative would not include the operation of any project features and would not result in changes or impacts to government facilities, as well as response times for fire and police protection services. Therefore, no impact would occur under the No Project Alternative, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

As described in Section 4.18.3.2, Alternative 1 would not result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities or the need for new or physically altered government facilities in order to maintain response times or other performance objectives for fire and police protection services. Operation of Alternative 1 would not introduce the need for new or expanded facilities relative to emergency service providers, and there would not be any new buildings required for such services as a result of Alternative 1. Therefore, no impacts would occur under Alternative 1, and mitigation would not be required.

Alternative 2: 7th Street/Metro Center to Pioneer Station

Alternative 2 is substantially similar to Alternative 1, as described in Section 4.18.3.3, in regard to impacts associated with new or physically altered government facilities to maintain response times or other performance objectives for fire and police protection services. The conclusions and impact determinations provided for Alternative 1 would also be applicable to Alternative 2. Therefore, impacts would not occur under Alternative 2, and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

As described in Section 4.18.3.4, while Alternative 3 would result in shorter alignments and fewer stations than Alternatives 1 and 2, Alternative 3 would be substantially similar to Alternative 1 in regard to impacts associated with new or physically altered government facilities to maintain response times or other performance objectives for fire and police protection services. The conclusions and impact determinations provided for Alternative 1 would also be applicable to Alternative 3. Therefore, no impacts would occur under Alternative 3, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

As described in Section 4.18.3.5, while Alternative 4 would result in shorter alignments and fewer stations than Alternatives 1, 2, and 3, Alternative 4 would be substantially similar to Alternative 1 in regard to impacts associated with new or physically altered government facilities to maintain response times or other performance objectives for fire and police protection services. The conclusions and impact determinations provided for Alternative 1 would also be applicable to Alternative 4. Therefore, no impacts would occur under Alternative 4, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Both Design Options 1 and 2 are underground stations and would not result in new or physically altered government facilities to maintain response times or other performance objectives for fire and police protection services. Therefore, no impact would occur, and mitigation would not be required.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: Both the Paramount and Bellflower MSF site options would not result in new or physically altered government facilities to maintain response times or other performance objectives for fire and police protection services. Therefore, no impact would occur and mitigation would not be required.

4.18.5.3 Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

No Project Alternative

The No Project Alternative would not include the operation of any project features and would not introduce or increase hazards due to geometric design or incompatible uses. Therefore, no impact would occur under the No Project Alternative, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

As discussed in Section 4.18.3.2, for locations where Alternative 1 would cross streets at-grade, the addition of LRVs and an increase in the frequency of trains would be the primary new safety hazard for pedestrians, bicyclists, and vehicular traffic in the Affected Area for safety and security. This impact would be addressed through design features of the LRV, such as audible warning devices to alert pedestrians, bicyclists, and vehicular traffic that an LRV is approaching. Per the MRDC, pedestrian and bicycle traffic control and channelization techniques would also be used to control pedestrian and bicycle movements at intersections and encourage the use of designated crossings through pedestrian gates and crosswalks. In addition, Metro would prepare grade crossing applications for approval by the CPUC and in coordination with local public agencies, such as city and county fire departments. Following review of grade crossing applications, additional safety and security design features may be incorporated if necessary. Impacts would be further reduced through the incorporation and application of the MRDC or equivalent, CPUC rail crossing rules and regulations, and MUTCD requirements. In addition, FTA-required hazard analyses would be prepared during preliminary engineering and final design stages of the Project to identify specific hazards and may include features described in Section 4.18.3.2 for enhanced pedestrian and bicyclist

safety. Therefore, impacts related to motorist, pedestrian, and bicycle safety would be less than significant for Alternative 1, and no mitigation measures are required.

The LRT operations and stations of Alternative 1 would also share ROW with freight operations, which could result in impacts. Safety requirements would be established in accordance with FTA and FRA regulations (49 CFR 659), CPUC GO 164-E and GO 143-B requirements, the MRDC or equivalent, and with additional input from the freight operators for safety elements. The Project would also operate in accordance with Metro system safety plans, policies, and procedures, including the following: Metro System Safety Program Plan, Metro System Security Plan, Metro Standard Emergency Operating Procedures, and the Metro Rail Operating Rulebook. The direction included in these safety plans, policies, and procedures is summarized in Section 4.18.3.2.

The safety characteristics would reduce the potential for conflicts between freight and LRT service; however, impacts would not be completely avoidable and considered significant. Therefore, Mitigation Measure SAF-1 (Encroachment Detection) has been identified so that additional safety measures are incorporated to lower impacts from LRT operations and freight operations within shared ROW to less than significant levels.

Alternative 1 would provide security features to support the prevention of crime and terrorism, as described in Section 4.18.3.2. Alternative 1 would comply with Metro's MRDC or equivalent and security plans, incorporate CPTED features, and include security patrols to minimize potential security concerns associated with criminal and terrorist activities. Design features, and operational security features and requirements would help prevent crime and terrorism; therefore, it would be a less than significant level for Alternative 1.

Mitigation Measures: Mitigation Measure SAF-1 (Encroachment Detection)

Impacts Remaining After Mitigation: Less than significant.

Alternative 2: 7th Street/Metro Center to Pioneer Station

Alternative 2 is substantially similar to Alternative 1, as described in Section 4.18.3.3, in regard to impacts associated with hazards due to geometric design or incompatible uses described previously. The conclusions and impact determinations provided for Alternative 1 would also be applicable to Alternative 2. Therefore, impacts would be significant under Alternative 2 and Mitigation Measure SAF-1 (Encroachment Detection) would be required to reduce impacts, specific to shared ROW with freight operations, to less than significant.

Mitigation Measures: Mitigation Measure SAF-1 (Encroachment Detection)

Impacts Remaining After Mitigation: Less than significant.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

As described in Section 4.18.3.4, while Alternative 3 would result in shorter alignments and fewer stations than Alternatives 1 and 2, Alternative 3 would be substantially similar to Alternative 1 in regard to impacts associated with hazards due to geometric design or incompatible uses described previously. The conclusions and impact determinations provided for Alternative 1 would also be applicable to Alternative 3. Therefore, impacts would be significant under Alternative 3 and Mitigation Measure SAF-1 (Encroachment Detection) would be required to reduce impacts, specific to shared ROW with freight operations, to less than significant.

Mitigation Measures: Mitigation Measure SAF-1 (Encroachment Detection)

Impacts Remaining After Mitigation: Less than significant.

Alternative 4: I-105/C (Green) Line to Pioneer Station

As described in Section 4.18.3.5, while Alternative 4 would result in shorter alignments and fewer stations than Alternatives 1, 2, and 3, Alternative 4 would be substantially similar to Alternative 1 in regard to impacts associated with hazards due to geometric design or incompatible uses described previously. The conclusions and impact determinations provided for Alternative 1 would also be applicable to Alternative 4. Therefore, impacts would be significant under Alternative 4 and Mitigation Measure SAF-1 (Encroachment Detection) would be required to reduce impacts, specific to shared ROW with freight operations, to less than significant.

Mitigation Measures: Mitigation Measure SAF-1 (Encroachment Detection)

Impacts Remaining After Mitigation: Less than significant.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: As described in Section 4.18.3.6, both Design Options 1 and 2 would be designed per the MRDC or equivalent and would not introduce or increase hazards due to geometric design features or incompatible uses. Therefore, no impact would occur, and mitigation would not be required.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Option: As described in Section 4.18.3.7, both the Paramount and Bellflower MSF site options would be designed per the MRDC or equivalent and would not introduce or increase hazards due to geometric design features or incompatible uses. Therefore, no impact would occur, and mitigation would not be required.

4.19 Construction Impacts

4.19.1 Regulatory Background and Methodology

All state, regional, and local regulations and guidelines pertinent to the construction the Project would be followed. For additional regulatory information, refer to the *West Santa Ana Branch Transit Corridor Project Construction Methods Report* (Metro 2021g) (Appendix L). Information on regulatory requirements and methodology is also included in the prior discipline-specific subsections within this chapter. Methodology is described in 4.19.1 where it differs from the methodology used for the long-term analysis.

4.19.2 Construction Activities

This section provides an overview of typical construction activities required to build an LRT system and associated stations, systems, and other supporting facilities. The construction activities summarized in this section are based on information known at this time. Actual construction methods and materials would be site specific and at the discretion of the contractor. All construction methods and materials would be conducted per the MRDC or equivalent, and would comply with all regulatory requirements. The final means and methods may differ from what is included in this analysis. Sequencing and methods would largely be adopted during final design and may depend on a potential public-private partnership. During final design and prior to any construction, preconstruction evaluations would be completed to determine existing conditions that would affect construction methods and timing. An environmental reevaluation will be conducted as applicable if construction means and methods vary from what was described in this Draft EIS/EIR. Additional information on construction means and methods is provided in the Construction Methods Report (Appendix L) and Section 3.7 in the Transportation Chapter of this Draft EIS/EIR.

4.19.2.1 Construction Sequencing and Duration

The Project currently proposes to complete construction of the Project in a single construction phase. Construction activities for the Project are anticipated to commence as early as 2022 and last through 2028 with revenue service beginning in 2028. It is anticipated that construction activities would occur simultaneously along the project alignment. A construction plan would be developed during the final design phase of the Project to further detail the construction durations, schedule, and sequencing. Depending on the alternative selected for implementation, major components of the Project include the construction of guideways and trackwork (at-grade, aerial, and underground), grade separations, roadway improvements, utility relocations, station platforms (at-grade, aerial, and underground), a MSF, parking facilities, and supporting system facilities (e.g., TPSSs). Details of the project components are described in the Project Description, Chapter 2, of this Draft EIS/EIR. Construction activities, durations, and equipment are summarized in Table 4.19.1. Project construction would predominantly occur on weekdays between 8 a.m. and 7 p.m. Nighttime and/or weekend construction may be required to minimize impacts, such as minimizing roadway/lane closures during peak periods.

Table 4.19.1. General Sequence of Construction Activities and Equipment

	Activity	Approximate Duration (Months)[1]	Description	Equipment Required
Demolition Activities	At-grade guideway	3-6	Clear and grub ROW, remove abandoned/active track and abandoned utilities	Bulldozers, backhoes, loaders, bobcats, dump trucks
	Parking facilities	2-4	Demolish existing structures, pavement, clear and grub site, remove abandoned utilities	Bulldozers, excavators, cranes, bobcats, backhoes, loaders, dump trucks
	Maintenance facilities	3-5	Demolish existing structures, pavement, clear and grub site, remove abandoned utilities	Bulldozers, excavators, cranes, bobcats, backhoes, loaders, dump trucks
Utility Relocation	Utilities	30-40	Relocate or temporarily reroute utilities; typically would not exceed 5-10 feet of disturbance Protect-in-place utilities that would not be relocated	Trench excavators, loaders, jackhammers, pavement saws, haul trucks, excavator/backhoes, trucks, cranes, and generator/compressors, concrete trucks, rollers, and power compactors, trenchers, concrete pavers, rollers
Freight Rail Line Relocation	At-grade guideway	12-18	Relocate existing freight tracks	Rubber-tired graders, bulldozers, excavators, loaders, compactors, and water trucks for dust control, metal wheel compactors, road rollers, in addition to specialized equipment to handle and install rail, ties, and ballast
	New freight bridge over I-105	9-12	Construction of new freight bridge over I-105 using steel plate girders or precast concrete beams. Includes demolition of existing bridge once new bridge is constructed	Cranes, air compressors, loaders, trucks, specialized water jet excavators, drilling rigs, hauling trucks, transit mix concrete trucks and concrete pumps, specialized trucks to deliver precast girders, forms, reinforcing steel, pavement saws, pre-stressed concrete post tensioning strands, jacks and related equipment

	Activity	Approximate Duration (Months)[1]	Description	Equipment Required
Underground LRT	Guideway	20-50	TBM tunnel sections (bored tunnels), supported by precast concrete segmental lining. TBM requires portal launch area and retrieval shaft, access to tunnel via shaft or station excavation. TBM dismantled and retrieved through vertical shaft or station excavation at the end of tunnel alignment. SEM for construction of cross-passages and previously remained SOE removal drifts, initially supported by canopy pipes, spiling, ground improvement, and shotcrete lining	Pressurized-face TBMs, rail-mounted equipment and material/labor/tunnel liner delivery vehicles, spoil retrieval conveyors, earth moving vehicles, substation, air compressor, grouting plant, soil conditioning plant, cranes, drilling rigs, concrete mixers and pumping equipment, flatbed trucks, electric power supply equipment, tunnel ventilation equipment, sand and gravel delivery trucks, dump trucks, and TBMs, ripper teeth or roadheader mounted excavators, drill jumbo, grouting equipment, shotcrete pump and nozzle
	Stations and track crossovers	25	Cut-and-cover excavation. Excavate ground with temporary excavation support, temporary concrete decking placed over cut following first lift of excavate about 12-15 ft below ground surface to allow traffic to pass above. Once deck in place, continue excavate and internal bracing. Once construction complete, area backfilled, and surface permanently restored. SEM may be used for a crossover cavern, initially supported by canopy pipes, spiling, ground improvement, and shotcrete lining. Construction of utility rooms and entrance plaza	Bulldozers, loaders, forklifts, excavators, generators, welders, cranes, drill rigs, jackhammers, rollers, flatbed trucks, concrete delivery truck and pumping equipment, ventilation equipment, dump trucks, ripper teeth or roadheader mounted excavators, drill jumbo, grouting equipment, shotcrete pump and nozzle

	Activity	Approximate Duration (Months)[1]	Description	Equipment Required
At-grade LRT	Guideway	30	Demolish section being displaced, preparation of track bed, construction of the supporting track slab, laying of rail surface track work Concrete jacked box tunnel for I-710 crossing. Excavate ground as concurrently jacking concrete box support, which is the permanent structure	Rubber-tired graders, bulldozers, excavators, loaders, compactors, and water trucks for dust control, metal wheel compactors, road rollers, in addition to specialized equipment to handle and install rail, ties, and ballast For jacked box tunnel: box shield, hydraulic jacks and pump, grouting equipment, welders, cranes, drill rigs, jackhammers, flatbed trucks, concrete delivery truck and pumping equipment, ventilation equipment, and dump trucks
	Stations	6-24	Developed simultaneously with segments using standard building materials Construction of supporting station elements such as foundation, columns, walls, platform slab, and canopies	Forklifts, generator sets, loaders, small to mid-size cranes, welders, bulldozers, water trucks for dust control, trucks for the removal of excavated material, transit mix concrete trucks and pumps, trucks to deliver forms, reinforcing steel, and other building materials
	Surface parking facilities	2-5	Demolish existing structures and foundations to nominal depth, site grading, preparation, paving, and striping. Concrete curbs, lighting, driveways, sidewalks, and landscaping would be installed as necessary	Demolition saws, excavators, pavement breakers, jackhammers, air compressors, concrete pumping equipment, paving machines, rollers dump trucks, front-end loaders, forklifts, crawler cranes, crawler bulldozers/loaders, rubber-tired loader/bobcats, trucks, and water trucks for dust control
	Parking structure facilities	6-10	Demolish existing structures and foundations to nominal depth. Site grading, preparation, parking structure foundations, cast-in-place concrete columns, concrete slabs, installation of precast structural elements.	Demolition saws, excavators, pavement breakers, jackhammers, air compressors, concrete pumping equipment, paving machines, rollers dump trucks, front-end loaders, forklifts, large crawler

	Activity	Approximate Duration (Months)[1]	Description	Equipment Required
			Structural finishes, elevators, electrical, signage, and parking systems installation. Paving as needed, and striping. Concrete curbs, lighting, driveways, sidewalks, and landscaping would be installed as necessary	cranes, crawler bulldozers/loaders, rubber-tired loader/bobcats, trucks, and water trucks for dust control, soil augurs, pile drivers and associated equipment
Aerial LRT	Guideway	12-30	Construction of foundation columns and elevated sections, rail fastened with plinth directly to the top slab of cast-in-place/pre-stressed concrete bridge, or separately placed slab on a steel beam bridge, or a precast concrete bridge Includes ascending/descending retaining walls and fill before and after elevated sections	Cranes, air compressors, loaders, trucks, backhoes, and bulldozers for excavation, vibratory or pile driving equipment, rubber-tired and sheep's-foot rollers, water trucks for dust control, specialized water jet excavators, drilling rigs, hauling trucks, transit mix concrete trucks and concrete pumps, specialized trucks to deliver precast girders, forms, reinforcing steel, pavement saws, pre-stressed concrete post tensioning strands, jacks and related equipment
	Stations	8-30	Foundations, columns, and/or elevated sections constructed to support platform, track slabs, station amenities, and vertical circulation elements Construction of pedestrian bridge connections as shown for select station(s)	Trucks for the removal of excavated soil and surface material, trucks to deliver forms, forklifts, backhoes, welders, drilling rigs, cranes, possibly specialized water jet excavators, trucks to remove excavated soil, transit mix concrete trucks and concrete pumps, specialized truck trailers to deliver precast concrete beams (if used), pre-stressed concrete post tensioning strands, water trucks for dust control, and related equipment
Systems	Signals[2]	16-24	Construction of foundations and conduit for electrical and signaling equipment	High-rail vehicles, bobcats, forklifts, trench diggers, backhoes, and cranes, material/equipment trucks

	Activity	Approximate Duration (Months)[1]	Description	Equipment Required
	OCS[2]	16-24	Construction of foundations for the OCS poles, duct banks and conduit for underground electrical feeder lines from TPSS, followed by installation of the OCS poles. Final stage includes installation of TPSS feeder cables and overhead catenary lines	High-rail vehicles, trench diggers, backhoes, bobcats, forklifts, and cranes, material/equipment trucks
	TPSS[2]	16-24	Grounding mat, prefabricated structure containing electrical and electronic equipment for traction power systems, communications equipment	Backhoes, bobcats, forklifts, cranes, material/equipment trucks
	Systems testing and pre-revenue operations	15	System testing and integration scenario would occur after construction completion. Testing of power, communications, signaling and ventilation systems; training of operators and maintenance personal	Small equipment, service vehicles, and rail vehicles
Maintenance and Storage Facility	Maintenance and storage facility	36	Construct maintenance facility structures, rail vehicle storage yard and connecting tracks, parking facilities and site roadways, and lead track connections to mainline. Lead tracks may include at-grade rail crossings, retaining walls, and bridge and trench structures. Shop of concrete block, corrugated metal, or similar industrial materials. Storage track and trackway to allow for movement of LRVs from mainline track to maintenance facility area. Vehicle wash, TPSS, parking facility	Bulldozers, tractor trailer rigs, loaders, earthmovers, graders, bobcats, forklifts, cranes, concrete trucks, excavators, paving machines, rollers, and materials/equipment trucks

Source: Compiled for Metro in 2020

Notes: [1] Portions of activities would be conducted at the same time as other activities. Therefore, the total cumulative duration may be less than the sum of the individual activities.

[2] Assuming phased construction with major project sections

LRT = light rail transit; LRV = light rail vehicle; OCS = overhead catenary system; ROW = right-of-way; SOE = support of excavation; SEM = sequential excavation method; TBM = tunnel boring machine; TPSS = traction power substation

4.19.2.2 Construction Staging Area and Haul Routes

Staging areas would be used for the storage of construction materials and equipment, locations of temporary offices for field personnel, parking for field personnel, and fabrication of construction materials (e.g., on-site welding of rail strings). If a parcel identified as a staging area is developed, site clearance and demolition of existing structures would occur before major construction activity.

The staging area associated with the tunnel boring machine (TBM) launch site would also be used for storage and preparation of precast concrete segments, temporary spoil storage, ventilation lines, shaft support (air, water, electricity, spoil hoisting), workshops, mixing and processing slurry for excavation support or tunnel excavation, and post-excavation slurry treatment (separation), which would include filters, centrifuges, and vibrator equipment. The TBM would bore the underground tunnels for Alternatives 1 and 2. Typically, the area would be at a station excavation site to facilitate access to the tunnel.

The locations of construction staging areas and haul routes are provided in Section 3.7.1 in the Transportation Chapter of this Draft EIS/EIR (see Table 3.50). The number of construction workers on-site at any one time would vary depending on the type of activity, but generally, approximately 250 to 400 construction workers are anticipated per each 7-mile segment at the peak of construction. This number is based on the number of direct hires for the Expo Phase 2 Project, meaning workers hired full time for construction, and includes contracted and craft employees that come to the job site regularly.

4.19.2.3 Utility Relocation and Installation

To the extent possible, the Project would be designed to avoid conflicts with existing major utilities. Nevertheless, positioning of project elements may require the relocation, modification, or protection in place of utilities. Utility relocation work would generally occur within the affected ROW and on adjacent and nearby streets. Affected utilities would include storm drains, sanitary sewers, power lines, gas pipelines, electrical duct banks, oil pipelines, electrical transmission lines, lighting, irrigation pipelines, water lines, fiber optic lines, telephone, and cable lines. Relocation of utilities would generally be performed before construction of other project elements. Protecting-in-place is the method of choice, as this is less disruptive to streets and less costly. To accommodate the aerial guideway, relocation of existing utility support poles would be required to reroute the existing utility lines around the Project. Poles may also be removed and relocated underground. The equipment required for utility relocations is provided in Table 4.19.1. Metro would coordinate utility relocations under the terms of each provider's franchise or other agreements defining the provisions for relocation work. In addition to relocation, various new utilities would be installed as part of the Project.

4.19.2.4 Freight Relocation

Segments of the Project would require relocation of freight tracks. Figure 3-18 in Chapter 3, Transportation, of this Draft EIS/EIR identifies locations of proposed freight relocation. Approximately 8.1 miles of Build Alternatives 1, 2, and 3 and approximately 1.3 miles of Build Alternative 4 would require the relocation and reconstruction of existing freight tracks. Construction activities related to relocation of freight are described in Section 3.7.1 of the Transportation Chapter and summarized in Table 4.19.1. Metro would coordinate with rail operators to help maintain freight operations during construction activities of the Project to the extent feasible.

4.19.2.5 Underground Construction Activities

Guideway

Tunnel Boring Machine

Alternatives 1 and 2 would include underground guideway construction. The underground guideway would be located primarily beneath Alameda Street for Alternative 1 and 8th Street for Alternative 2. Construction activities are summarized in Table 4.19.1. Construction of the underground tunnel would be completed via TBMs, which are large-diameter horizontal drills that continuously excavate predominantly circular tunnels. This method creates a tunnel with little or no disruption at the surface. This method would also control ground and groundwater inflows into the tunnel that could lead to surface settlement if not mitigated. In addition, this technology allows the tunnel lining to be installed concurrently which also prevents groundwater from entering the tunnel behind the TBM.

The TBM would be launched from a portal located on a property adjacent to Long Beach Avenue between E 14th and Newton Streets. The extraction of the TBM(s) would occur at the station box at the northern terminus locations for Alternative 2 in the Downtown Transit Core and Alternative 1 at LAUS. If Design Option 1 (MWD) is chosen, the TBM extraction point would remain the same for Alternative 1. Ideally, a main tunnel staging site of approximately five acres is required to support efficient tunnel operation for each tunnel drive.

Cut-and-Cover Construction Method

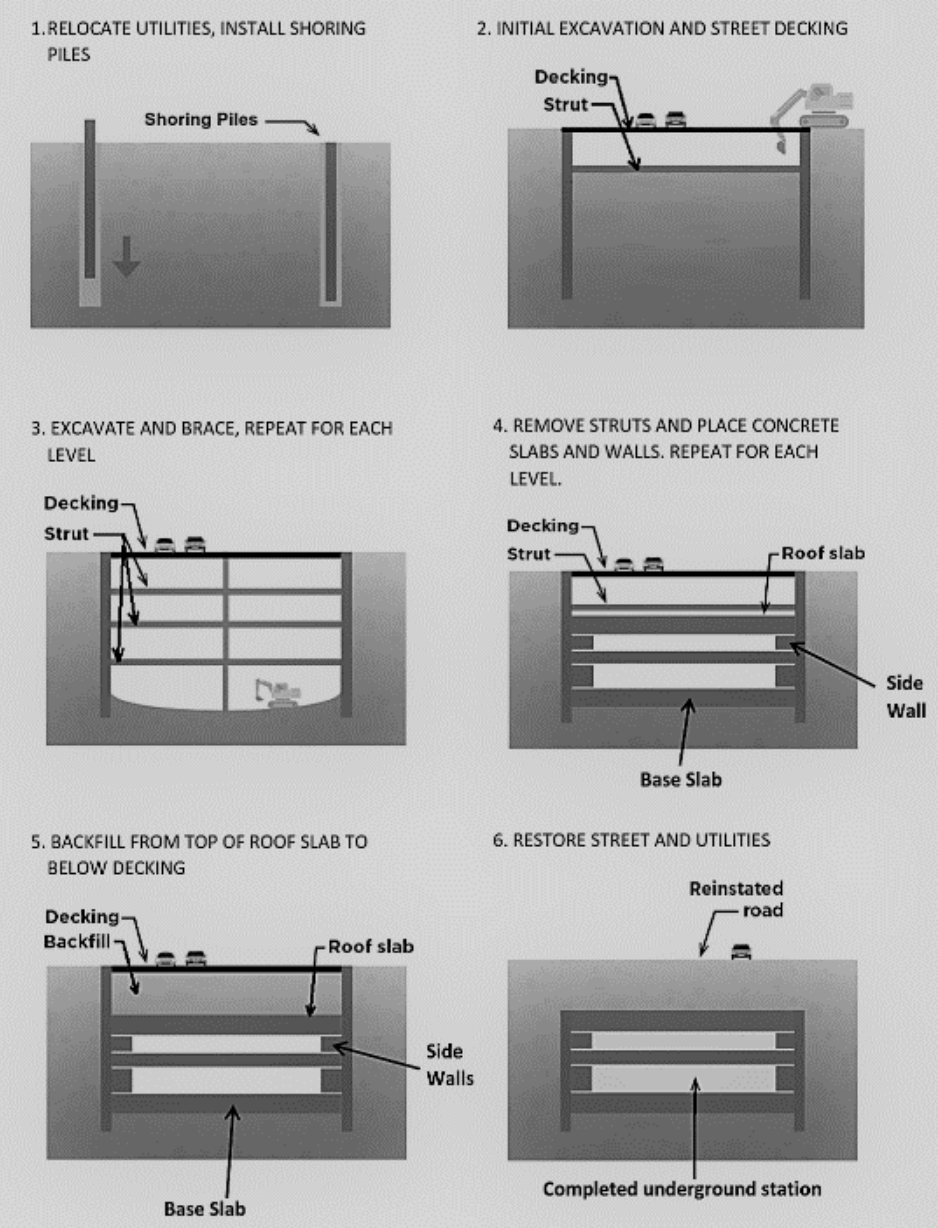
As shown in Table 4.19.1, Alternatives 1 and 2 would require cut-and-cover construction for underground stations and track crossover caverns from the ground surface. Design Option 2 would add the underground Little Tokyo Station, but the construction methods would remain the same. Cut-and-cover construction would entail a construction shoring system with a temporary deck over the excavated area, constructing the underground facilities beneath the deck, and then backfilling and restoring the surface once the facilities are complete. The temporary deck would allow traffic and pedestrian circulation to resume.

Stations

Alternatives 1 and 2 would have up to three underground stations, with Alternative 1 adding a station under Design Option 2. A combination of cut-and-cover and TBM tunnel construction is planned at all underground stations. Depending on the contractor's means and methods, the bored tunnels may be constructed prior to the station excavations. Should the tunnels be excavated first, the station excavation would follow and the tunnel segments within the station would be removed during the station construction. Figure 4.19-1 illustrates a typical cut-and-cover station excavation and construction sequence. Refer to Table 4.19.1 for additional information on construction activities for underground stations.

Dewatering may be required at underground station locations to temporarily lower the groundwater level below the excavation depth or to an impermeable layer. Dewatering facilitates installation of shoring systems, improves soil stability, and allows excavation in dry conditions. To dewater an area, groundwater would be pumped from wells installed around the perimeter of the excavation, limiting impacts to surrounding structures, ground, and utilities adjacent to the excavation. Any contaminated groundwater would be properly treated prior to being discharged. Uncontaminated groundwater may be treated and pumped back into the groundwater table, pumped to the sewer or storm drain system, or used on-site for dust control purposes.

Figure 4.19-1. Typical Cut-and-Cover Construction Sequence



Source: Developed by WSP for Metro in 2020
Note: Station walls would be constructed inside the shoring piles.

4.19.2.6 At-Grade Construction Activities

Guideway

All four Build Alternatives would include at-grade guideway construction. Table 4.19.1 summarizes construction activities associated with the at-grade guideway. Construction activities would occur in railroad ROW and within city streets.

To accommodate the guideway, reconfiguration or reconstruction of streets would be required in select locations. Street reconstruction activities would be required at proposed at-grade crossing locations and within the affected street ROW. Street reconstruction would

allow for track slab placement, crossing gates, traffic signals, and rails. Street reconfiguration and reconstruction activities would also provide beneficial infrastructure modifications to the existing street curbs, gutters, medians, and sidewalks to accommodate the rail crossing.

Stations

Construction of the at-grade stations would involve cast-in-place concrete or precast panels to construct an approximately 40-inch-high platform along with ramps and stairs. Station furnishings, including canopies, railings, lighting, seating, signage, artwork, bike racks, and fare vending equipment, would then be installed. For typical construction durations and equipment used for at-grade stations, see Table 4.19.1.

Parking Facilities

Surface parking facilities are proposed at four station locations: Firestone, I-105/C Line, Paramount/Rosecrans, and Bellflower. A parking structure is proposed at Pioneer Station. Construction of the surface parking facilities would involve initial demolition of each site where existing structures and pavement are present, subgrade preparation of the parking area, paving, and striping. Concrete curbs, lighting, driveways, sidewalks, and landscaping would be installed, as necessary. The parking structure at Pioneer Station would also require installation of new concrete foundations, cast-in-place structural columns, and installation of precast parking structure elements. Elevators, electrical, signage, and parking systems would also be installed. For typical construction durations and equipment used for construction of parking facilities, see Table 4.19.1.

4.19.2.7 Aerial Construction Activities

Guideway

All four Build Alternatives would include aerial guideway construction. Construction of an LRT aerial guideway would begin with the installation of piles for columns and piers that support the structure and loads that would be carried on it. Pile-supported columns would be constructed in two main stages. In the first stage, piles made from steel or concrete, typically about 12 to 15 inches in diameter, would be driven into the ground by vibratory or pile driving equipment or, alternatively, cast-in-drilled-hole piles. The second stage joins the piles with the construction of the pile cap, typically a 4- to 5-foot slab of reinforced concrete. The pile cap would be constructed to distribute the structural load to two or more piles.

Reinforced concrete columns are constructed in numerous sizes and can be poured inside reusable steel forms. Once the reinforced concrete columns are constructed, the horizontal support of the guideway with the aerial girders would be constructed. Cast-in-place concrete spans would require the construction of falsework (temporary framing) to support the forms into which concrete is poured. The depth of the falsework is determined by the length of the spans and could be several feet deep. If a bridge is spanning an active roadway, the bridge would be designed with sufficient clearance under the falsework to allow traffic to pass. Clearance may be temporarily reduced during construction and trucks and other vehicles may need to be detoured.

Due to the large size of the cranes, special staging areas close to the construction site would be required to set up the cranes and to temporarily store the girders. Placement of girders over active roads may occur at night to minimize impacts to traffic. Once the girders have been placed on the columns, a concrete slab would be built to secure the girders, and then

the rail is attached to the slab. At a few locations along Long Beach Avenue, straddle bents would be used when a singular column supporting the aerial guideway is not feasible. These would occur, for example, to maintain an existing left-hand turn lane. Straddle bents consist of two large-diameter columns, offset from the row of typical columns, with a beam between them and the aerial guideway on top of the beam. For typical construction durations and equipment used for aerial guideway construction, see Table 4.19.1.

River Crossings

The LRT aerial guideways would span the Los Angeles River, Rio Hondo Channel, and San Gabriel River. Crossings over the Los Angeles River and Rio Hondo would require construction of new bridges parallel to the existing active freight bridges. At the San Gabriel River, an existing abandoned freight structure owned by Metro would be demolished and replaced with a new LRT structure.

Construction within these concrete-lined channels may require the use of temporary coffer dams that would create an enclosed area where water could be pumped out as needed to facilitate the construction of the new foundations for the structures. Once the foundations are completed, columns and bent caps to support the structure would be constructed. The channels would then be repaved around the columns, and the coffer dams would be removed.

Construction of the bridges would require the erection of temporary false work towers mid-span between the newly constructed columns and bent caps. Precast girders would be placed over the column bent caps and falsework towers and then post tensioned. Following the post tensioning of the girders, the temporary falsework towers would be removed and the remaining elements of the LRT structure would be completed.

Retained Fill Guideway

Retained fill guideway would be constructed where there is a transition between the aerial and at-grade guideway. Retained cut would be constructed in transition areas between underground to at-grade guideway. A typical transition section area is about 500 to 700 feet in length. Typical equipment used to construct retained fill include backhoes and bulldozers for excavation, vibratory or pile driving equipment, loaders, cranes, rubber-tired and sheep's-foot rollers, hauling trucks, transit mix concrete trucks, concrete pumps, and water trucks for dust control.

Stations

Construction of aerial stations would involve construction techniques similar to those for aerial guideways. Foundations and columns would be constructed to support the platform. The station platform would typically be constructed of cast-in-place concrete with falsework. Forms would be erected, reinforcing steel put in place, and concrete would be placed into the forms to construct the columns and the platform slab. Ancillary facilities would then be added, including stairs, elevators, canopy, railings, lighting, seating, signage, and fare vending equipment. For typical construction durations and equipment used for aerial structures, see Table 4.19.1.

Slauson/A Line Station

The project alignment would be elevated and adjacent to the A (Blue) Line just north of the A (Blue) Line Slauson Station. The proposed Slauson/A Line Station would be an independent

structure from the existing A (Blue) Line station. Construction of the Project would require reconfiguring the existing station and tracks. The basic steps are listed below. Some of the tasks can be performed concurrently. The estimated construction time for each task is given in parentheses. A bus bridge for the A (Blue) Line during construction would be needed for approximately 3 months.

- Construct the project viaduct and the station frames (30 months)
- Construct the proposed vertical circulation and pedestrian bridge column at existing A (Blue) Line Station and install pedestrian bridge with bus bridges (6 months)
- Construct the proposed Slauson/A Line Station, including platform, vertical circulation, pedestrian bridge column and station finishes (18 months)
- Construct viaduct tracks (12 months)
- WSAB and A (Blue) Line systems integration and testing (12 months)

4.19.2.8 Freeway Crossings

The Project would cross existing freeways at US-101, I-10, I-710, I-105, SR-91, and I-605. At the US-101 crossing, the alignment crosses in a tunnel configuration underneath the freeway. Construction would not alter the existing freeway infrastructure, except at I-105. At the SR-91 and I-605 freeway crossings, the existing bridge structures contain sufficient space to accommodate the LRT tracks. Construction would be below the existing bridges and would not impact the existing freeway travel lanes. Changes at I-105 are described in the following section.

To avoid potential traffic impacts to 15th and 16th Street, the Project would cross over the I-10 freeway in an aerial configuration. Construction would require temporary closure of the existing freeway. Temporary sidewalk closures may be necessary in some locations for the delivery of materials and modifications. At I-710 there is insufficient horizontal clearance for the new LRT tracks and the opening through the embankment would need to be widened. Construction could occur via installation of a jacked box structure underneath the freeway. The construction is not anticipated to disrupt peak freeway operations, although ground improvements from the surface of the freeway may be needed to maintain support. It is anticipated the freeway lanes would remain open during this process, although there may be temporary closures to install ground-monitoring instruments and/or ground support infrastructure in the median. The basic steps of a jacked box structure are as follows:

- Construct jacked box structure segments in-line with and adjacent to the freeway embankment and a thrust block
- Perform ground improvements and/or install structural ground support along the entire jacked tunnel alignment from either the surface and/or sides
- Install a tunnel shield at the front end of the box with hydraulic jacks provided at the rear
- Excavate ground from within the shield and jacking the box forward
- Repeat the preceding three steps until the new box structure is in the final position

Excavation and jacking are typically carried out alternately in 2- to 4-foot increments. The I-710 Freeway would require ground monitoring to measure potential settlement that may occur during the jacking and excavation operations.

I-105

At I-105 a new infill Metro C (Green) Line Station would be constructed in the median of the I-105 Freeway as part of the Project. Vertical pedestrian access would be provided from the LRT bridge to the proposed I-105/C Line Station platform via stairs, escalators, and/or elevators. To accommodate the construction of the new station platform, the existing Metro C (Green) Line tracks would be widened and the I-105 lanes would be reconfigured. As a separate project, Metro and Caltrans are evaluating alternatives to convert existing high-occupancy vehicle lane(s) on the I-105 Freeway to ExpressLanes. The project limits are from Imperial Highway/Sepulveda Boulevard (west of I-405) to Studebaker Road (east of I-605). It is anticipated that construction of both the I-105 ExpressLanes Project and WSAB Project would occur concurrently. The I-105 ExpressLanes Project and WSAB Project are coordinated so that the design of the projects would not conflict with or preclude either project, should the projects advance to implementation.

Three structures cross I-105 in the area of the proposed infill station—a freight bridge, the Arthur Avenue Pedestrian Overcrossing, and the Façade Avenue Overcrossing. Demolition and reconstruction of the freight bridge is required to accommodate the new LRT bridge over the freeway. Demolition and reconstruction of the Arthur Avenue Pedestrian Overcrossing and the Façade Avenue Overcrossing are required because the current column locations of these four-span bridges cannot accommodate both the I-105 ExpressLanes Project and the infill Metro C (Green) Line Station. Therefore, demolition and reconstruction of the Arthur Avenue Pedestrian Overcrossing and the Façade Avenue Overcrossing would occur as part of the WSAB Project.

To accommodate the construction activities needed for the new bridges and LRT infill station, the C (Green) Line transit operations would be temporarily suspended in this area and a bus bridge would be needed for approximately 21 months. Many of the construction activities associated with the new bridges and LRT infill station would occur simultaneously. The basic steps for construction within the freeway are as follows:

- Realign the I-105 lanes (1 month)
- Remove existing C (Green) Line tracks and establish construction area (2 months)
- Construct new freight bridge (10 months)
  - Construct falsework and then a cast-in-place concrete bridge over the freeway lanes and frontage roads, maintaining vehicular access to the extent feasible
- Shift the existing freight operations to the new bridge and demolish the existing bridge (3 months)
- Construct new LRT bridge (17 months)
  - Construct median column(s) and abutments for the LRT bridge
  - Construct falsework and then a cast-in-place concrete bridge, including a pedestrian walkway, over the freeway lanes and frontage roads, maintaining vehicular access
  - Connect the pedestrian walkway to the new C (Green) Line Station platform
- Demolish and replace the Façade Avenue Overcrossing and the Arthur Avenue Pedestrian Overcrossing; can be performed concurrently with the WSAB structure (25 months)

- Realign the C (Green) Line tracks to the final location for the station (7 months)
- Construct infill C (Green) Line station (8 months)

The freeway lanes would be reconfigured to accommodate the wider median. The width of the shoulder lanes may decrease during construction to accommodate falsework or other construction elements. In general, vehicular traffic on the freeway and frontage roads would be maintained during the duration of construction. Temporary freeway and frontage road closures, with appropriate detours, may be required during off-peak hours for the demolition of the existing freight bridge, and if the final design calls for placement of precast structural beams across the roadways.

Alternatively, Metro is considering single-track operations along the Metro C (Green) Line, which would reduce the duration of the bus bridge but could increase the overall duration of construction in this location. Construction methods would be considered further during the advancement of design. Construction activities for the WSAB Project would be coordinated with the I-105 ExpressLanes Project.

4.19.2.9 Other Construction Activities

Traction Power Substations

TPSS locations and an image of an example TPSS are identified in Appendix C, Section 1.6. A TPSS provides power to the overhead catenary system (OCS) and is typically a metal prefabricated building approximately 15 feet wide by 40 feet long by 15 feet high. Each at-grade TPSS site would be cleared and graded, and a concrete slab would be constructed with the appropriate underground utility connections. The TPSS structure 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 required. Typical equipment used to construct TPSS are identified in Table 4.19.1.

Overhead Catenary Systems

The OCS is described in Appendix C, Section 1.2, which also includes an example image. The OCS electrically powers the LRT through a contact wire suspended above the track. Construction of the OCS in the at-grade and aerial guideway sections would involve constructing the foundations for the OCS poles. This would be accompanied by the construction of duct banks and conduit for the underground electrical feeder lines from the TPSS sites, followed by installation of the OCS poles. For underground segments, the OCS would typically be fixed to the tunnel ceiling with no poles. Installation of the feeder cables and overhead catenary lines would occur after guideway construction. The overhead wires would be installed from the guideway using high-rail equipment and specialized vehicles with the ability to operate on both roadways and rails. Construction equipment is summarized in Table 4.19.1.

Maintenance and Storage Facility

One MSF would be constructed as part of the Project. The construction of an MSF would involve the following construction phases:

- Demolition and site preparation and grading
- Construction of foundations for new buildings

- Erection of buildings with steel framing, concrete masonry units (CMU), concrete, and building aesthetic materials
- Preparation of the rail track bed, installation of the supporting track slab, and laying of the rail tracks for the LRT storage area
- Construction of roadway and parking facilities, including concrete curbs, lighting, driveways, and sidewalks as necessary
- Site aesthetic improvements such as landscaping

Construction is anticipated to occur over an approximate 41-month period, including demolition. Equipment associated with construction of the MSF is shown in Table 4.19.1.

4.19.3 Construction Impacts, Mitigation Measures, and CEQA Determination

The following sections summarize the evaluation of construction-related effects of the Build Alternatives, including design options and MSF site options, by discipline under NEPA, followed by the analysis per CEQA. To satisfy CEQA requirements, impacts are analyzed in accordance with Appendix G of the *CEQA Guidelines*. Project measures and/or mitigation measures are identified as applicable. The analysis of construction effects applies similar methodology as that described for the operational/long-term analysis for the disciplines, as discussed earlier in Chapter 4 and the corresponding technical reports, unless specified otherwise. The construction effects of each discipline are evaluated in this section, with the exception of environmental justice. Construction effects to environmental justice populations are discussed in Section 4.22.5 of the Environmental Justice Section. This section summarizes information from the corresponding impact reports. The evaluation is based on the construction activities summarized in Section 3.7 of the Transportation Chapter and Section 4.19.2, and detailed in the Construction Methods Report (Appendix L).

A discipline-specific evaluation of the No Build Alternative is not included in the following subsections. Under the No Build Alternative, infrastructure and transportation-related projects located within the Study Area and identified in SCAG 2016-2040 RTP/SCS (SCAG 2016a), Metro's 2009 LRTP (Metro 2009a), and Measure M would continue to be implemented and built with the exception of the Project. Projects included under the No Build Alternative would be subject to environmental clearance prior to construction. Construction activities would be temporary and would not result in long-term impacts. Furthermore, projects built under the No Build Alternative would implement project-specific construction-related measures to reduce and minimize potential adverse effects to the extent feasible. Refer to Section 4.21.4 in the Cumulative Impacts Section for the construction-related cumulative impact assessment that considers effects from construction of the Project concurrent with other planned and reasonably foreseeable projects.

4.19.3.1 Land Use

Alternative 1: Los Angeles Union Station to Pioneer Station

Land Use Compatibility: Construction of Alternative 1 would result in temporary activities and require construction staging, materials stockpiling, hauling of dirt and materials, temporary street and lane closures, and temporary bike trail detours. Temporary construction easements (TCEs) and property acquisition would also be required for construction. Temporary construction activities would be located within the public right-of-way and/or rail ROW or on sites acquired for construction. Temporary barriers and fencing would be placed along the perimeter of construction areas; temporary parking for construction personnel

would be provided at construction staging areas; and the use of nearby streets could result in restricted street parking, sidewalk detours, bike trail detours, and traffic lane closures. Implementation of Mitigation Measure COM-1 (Construction Outreach Plan) would maintain access to residences and businesses to the extent feasible. All construction activities would be temporary and areas of temporary construction easements would be returned to preconstruction conditions once construction is complete. Therefore, under NEPA, Alternative 1 would not result in adverse effects related to land use compatibility and would not permanently physically divide an established community.

Consistency with Regional Land Use Plans: Construction activities would be temporary and areas of temporary construction easements would be returned to preconstruction conditions once construction is complete. Construction activities would not conflict with applicable regional land use plans, policies, and regulations. Under NEPA, Alternative 1 would not result in adverse construction effects regarding consistency with regional land use plans, policies, and regulations.

Consistency with Local Land Use Plans: Construction activities would be temporary and areas of temporary construction easements would be returned to preconstruction conditions once construction is complete. Therefore, construction would not conflict with applicable land use plans, policies, and regulations of local jurisdictions. In addition, as discussed in Sections 4.19.3.5 and 4.19.3.7, construction activities for Alternative 1 would also be consistent with air quality plans and policies and noise ordinances to minimize construction impacts to surrounding land uses. Under NEPA, Alternative 1 would not result in adverse construction effects related to consistency with local land use plans, policies, and regulations.

Alternative 2: 7th St/Metro Center to Pioneer Station

Construction activities for Alternative 2 would be similar to Alternative 1. Construction activities would be temporary; affected sites would be returned to preconstruction conditions once construction is complete; and implementation of Mitigation Measure COM-1 (Construction Outreach Plan) would maintain access to residences and businesses to the extent feasible. Similarly, Alternative 2 would not conflict with regional or local land use plans, policies, and regulations. Therefore, under NEPA, Alternative 2 would not result in adverse effects related to land use compatibility and would not permanently physically divide an established community.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Construction activities for Alternative 3 would be similar to Alternatives 1 and 2, with these effects beginning at the trail tracks for the Slauson/A Line Station in the City of Los Angeles/Florence-Firestone community of LA County. Alternative 3 would have a shorter alignment and would not include underground construction activities. All construction activities would be temporary; affected sites would be returned to preconstruction conditions once construction is complete; and implementation of Mitigation Measure COM-1 (Construction Outreach Plan) would maintain access to residences and businesses to the extent feasible. Similarly, Alternative 3 would not conflict with regional or local land use plans, policies, and regulations. Therefore, under NEPA, Alternative 3 would not result in adverse effects related to land use compatibility and would not permanently physically divide an established community.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Construction activities for Alternative 4 would be similar to Alternatives 1, 2, and 3 with effects beginning at the trail tracks for the I-105/C Line Station in the City of South Gate. Alternative 4 would have a shorter alignment and would not include underground construction activities. All construction activities would be temporary; affected sites would be returned to preconstruction conditions once construction is complete; and implementation of Mitigation Measure COM-1 (Construction Outreach Plan) would maintain access to residences and businesses to the extent feasible. Similarly, Alternative 4 would not conflict with regional or local land use plans, policies, and regulations. Therefore, under NEPA, Alternative 4 would not result in adverse effects related to land use compatibility and would not permanently physically divide an established community.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station

Similar to the Build Alternatives, construction activities for the design options would be temporary and, therefore, would not affect land use compatibility, as well as regional and local land use plans, policies, and regulations. Under NEPA, Design Options 1 and 2 would not result in construction adverse effects related to land use.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options

Construction of the Paramount and Bellflower MSF site options would be located entirely on the MSF sites and sites acquired for construction support and rail construction, including temporary parking for construction personnel. Construction activities would be temporary and, therefore, would not affect land use compatibility, as well as regional and local land use plans, policies, and regulations. Under NEPA, the Paramount and Bellflower MSF site options would not result in construction adverse effects related to land use.

Project Measures and Mitigation Measures

Refer to Mitigation Measure COM-1 (Construction Outreach Plan) in Section 4.19.3.2 for a description of the Construction Outreach Plan that would be developed by Metro as part of its Construction Relation Program in Community Relations. Refer to Section 4.19.3.5 for Mitigation Measure AQ-1 (Vehicle Emissions) and Section 4.19.3.7 for Mitigation Measures NOI-8 (Noise Control Plan) and VIB-3 through VIB-7, which include a Vibration Control Plan, minimizing the use of impact devices, drilling for building foundations, construction vibration limits, and construction monitoring.

California Environmental Quality Act Determination

Would the Project physically divide an established community?

No Project Alternative

No construction activities would occur under the No Project Alternative and, therefore, there would not be a division of an existing community. Therefore, no construction-related impacts would occur, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Temporary barriers and fencing would be placed along the perimeter of construction areas. Although these barriers may result in sidewalk detours and traffic lane closures, the barriers would not permanently divide an established community because they would be removed once construction is complete.

Construction would also result in temporary street and lane closures, TCEs, reconstruction of a pedestrian bridge in Paramount, and potentially detoured segments of the Bellflower Bike Trail. In response to construction activities, detours and directional signage would be provided per the Construction Outreach Plan as part of Metro's Construction Relation Program in Community Relations designed for the Project, as further detailed in Mitigation Measure COM-1 (Construction Outreach Plan). This plan would maintain accessibility to residences and businesses in communities and neighborhoods to the extent feasible, as well as the flow of traffic around the construction area. In addition, sites acquired for TCEs and for temporary street, lane, pedestrian bridge, and bike path detours and closures would be returned to preconstruction conditions once construction is complete. Therefore, Alternative 1 would not permanently physically divide an existing community and impacts would be less than significant.

Mitigation Measures: Mitigation Measure COM-1 (Construction Outreach Plan)

Impacts Remaining After Mitigation: Less than significant impact.

Alternative 2: 7th St/Metro Center to Pioneer Station

Construction activities for Alternative 2 would be similar to Alternative 1. Temporary barriers and fencing may result in sidewalk detours and traffic lane closures; however, the barriers would be removed once construction is complete and Mitigation Measure COM-1 (Construction Outreach Plan) would be implemented. Sites would be returned to preconstruction conditions upon the conclusion of construction. Therefore, Alternative 2 would not permanently physically divide an existing community and impacts would be less than significant.

Mitigation Measures: Mitigation Measure COM-1 (Construction Outreach Plan)

Impacts Remaining After Mitigation: Less than significant impact.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Construction activities for Alternative 3 would be similar to Alternatives 1 and 2, beginning at the trail tracks of its northern terminus at the Slauson/A Line Station to its southern terminus at Pioneer Station. Temporary barriers and fencing may result in sidewalk detours and traffic lane closures; however, the barriers would be removed once construction is complete. Mitigation Measure COM-1 (Construction Outreach Plan) would be implemented during construction of Alternative 3. Sites would be returned to preconstruction conditions upon the conclusion of construction. Therefore, Alternative 3 would not permanently physically divide an existing community and impacts would be less than significant.

Mitigation Measures: Mitigation Measure COM-1 (Construction Outreach Plan)

Impacts Remaining After Mitigation: Less than significant impact.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Construction activities for Alternative 4 would be similar to Alternatives 1, 2, and 3 beginning at the trail tracks of its northern terminus at the I-105/C Line Station to its southern terminus at Pioneer Station. Temporary barriers and fencing may result in sidewalk detours and traffic lane closures; however, the barriers would be removed once construction is complete. Mitigation Measure COM-1 (Construction Outreach Plan) would be implemented during construction of Alternative 4. Sites would be returned to preconstruction conditions upon the conclusion of construction. Therefore, Alternative 4 would not permanently physically divide an existing community and impacts would be less than significant.

Mitigation Measures: Mitigation Measure COM-1 (Construction Outreach Plan)

Impacts Remaining After Mitigation: Less than significant impact.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Construction of Design Options 1 and 2 would occur largely underground. Construction activities would be temporary and located entirely on sites that would be acquired for construction support sites, excavation for tunneling, rail construction, and station construction. If construction activities require temporary street and lane closures, detours and directional signage would be provided per Mitigation Measure COM-1 (Construction Outreach Plan). Therefore, construction activities for Design Options 1 and 2 would not permanently physically divide an established community and impacts would be less than significant.

Mitigation Measures: Mitigation Measure COM-1 (Construction Outreach Plan)

Impacts Remaining After Mitigation: Less than significant impact.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: All temporary construction activities would be located entirely on the MSF sites and sites acquired for construction support and rail construction. Temporary barriers and fencing would be placed along the perimeter of construction areas and would be removed once construction is complete. Temporary barriers and fencing may result in sidewalk detours and traffic lane closures; however, the barriers would be removed once construction is complete. If construction activities require temporary street and lane closures, detours and directional signage would be provided per Mitigation Measure COM-1 (Construction Outreach Plan). Therefore, the Paramount and Bellflower MSF site options would not permanently physically divide an existing community impacts and impacts would be less than significant.

Mitigation Measures: Mitigation Measure COM-1 (Construction Outreach Plan)

Impacts Remaining After Mitigation: Less than significant impact.

Would the Project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

No Project Alternative

No construction activities would occur under the No Project Alternative and there would be no conflicts with applicable land use plans, policies, and regulations of local jurisdictions. Therefore, no construction-related impacts would occur and no mitigation measures are required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Construction activities for Alternative 1 would be temporary and would not directly conflict with applicable regional and local land use plans, policies, and regulations. Construction of Alternative 1 would further the policies of SCAG 2016-2040 RTP/SCS providing jurisdictions the opportunities to develop compact communities around the public transit system; be an alternative to automobile travel; provide residents, visitors, and employees within the vicinity of the Project another mode of transportation to access regional destinations and employment areas; and reduce overall air quality emissions and traffic congestion.

With regard to consistency with local land use plans, policies, and regulations, TCEs and property acquisition would be required for construction staging areas and construction support sites. Following construction, TCEs would be returned to preconstruction conditions and acquired parcels would increase the opportunity for development in station areas. Because the acquired parcels would be Metro-owned, it would create additional opportunity for transit-oriented development. Metro's role in the ownership of these parcels would be limited to that of a property owner, and the parcels would be subject to the land use controls of the local jurisdictions. In addition, as discussed in Sections 4.19.3.5 and 4.19.3.7, construction activities for Alternative 1 would also be consistent with air quality plans and policies and noise ordinances to minimize construction impacts to surrounding land uses. Construction of Alternative 1 would further the goals, objectives, and policies of local land use plans as they relate to alternative transportation, public transportation, and future growth in transit within the respective jurisdictional boundaries. Therefore, construction-related impacts to land use plans, policies, and regulations would be less than significant and mitigation would not be required.

Alternative 2: 7th St/Metro Center to Pioneer Station

Construction activities for Alternative 2 would be similar to Alternative 1 and would not directly conflict with applicable regional and local land use plans, policies, and regulations. Therefore, the impact conclusions presented for Alternative 1 are also applicable to Alternative 2. Construction of Alternative 2 would further the goals, objectives, and policies of regional and local land use plans related to alternative transportation, public transportation, future growth in transit within the respective jurisdictional boundaries, and opportunities to develop compact communities around the public transit system. Therefore, construction-related impacts to land use plans, policies, and regulations would be less than significant and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Construction activities for Alternative 3 would be similar to Alternatives 1 and 2 beginning at the trail tracks of its northern terminus at the Slauson/A Line Station to its southern terminus at Pioneer Station. Construction activities for Alternative 3 would not directly conflict with applicable regional and local land use plans, policies, and regulations. Therefore, construction-related impacts to land use plans, policies, and regulations would be less than significant and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Construction activities for Alternative 4 would be similar to Alternatives 1, 2, and 3 beginning at the trail tracks of its northern terminus at the I-105/C Line Station to its southern terminus at Pioneer Station. Construction activities for Alternative 4 would not directly conflict with applicable regional and local land use plans, policies, and regulations. Therefore, construction-related impacts to land use plans, policies, and regulations would be less than significant and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Construction activities for Design Options 1 and 2 would be temporary and would not directly conflict with applicable regional and local land use plans, policies, and regulations. Design Options 1 and 2 would further regional policies of SCAG 2016-2040 RTP/SCS and land use plans, policies, and regulations of the City of Los Angeles and for LAUS related to alternative transportation, public transportation, and future growth in transit within the respective jurisdictional boundaries. Therefore, construction-related impacts to land use plans, policies, and regulations would be less than significant, and mitigation would not be required.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: Construction activities for the Paramount or Bellflower MSF site option would be temporary and would not directly conflict with applicable SCAG 2016-2040 RTP/SCS and local land use plans goals and policies. Construction of the Paramount MSF site option would further the goals and policies of these regional and local land use plans. Therefore, a less than significant impact would occur, and mitigation would not be required.

4.19.3.2 Communities and Neighborhoods

Alternative 1: Los Angeles Union Station to Pioneer Station

Access and Mobility: Access and mobility to residential neighborhoods and community facilities could be temporarily affected during construction as a result of temporary street, lane, and bike detours and closures. Table 4.19.2 summarizes the community facilities and residential properties in which access would be affected by construction activities for Alternative 1.

Table 4.19.2. Affected Access to Community Facilities and Residences during Construction—Build Alternatives

Build Alternative	Type of Construction Activity	Community Facilities and Residences	Affected Community
1	Underground	Residences to the north of LAUS	Central City, Los Angeles
1	Underground	Residences on the east side of Alameda St, between 1st St and 2nd St	Central City North, Los Angeles
2	Underground	Residences along 8th St between Francisco St and Hope St	Central City, Los Angeles
2	Underground	Residences along 8th St between Main St and Santee St	Central City, Los Angeles
1, 2, 3	Aerial	Residences along Long Beach Ave	Southeast Los Angeles
1, 2, 3	Aerial	Residences along Holmes Ave south of Randolph St	Florence-Firestone
1, 2, 3	Aerial	Lillian Street Elementary School	Florence-Firestone
1, 2, 3	At-grade	Residences north and south of Randolph St	Huntington Park
1, 2, 3	At-grade	UEI College	Huntington Park
1, 2, 3	At-grade	San Antonio Continuation School	Huntington Park
1, 2, 3	At-grade	San Antonio Elementary School	Huntington Park
1, 2, 3	At-grade	Residences north and south of Salt Lake Ave	Bell, Huntington Park, and Cudahy
1, 2, 3	At-grade	Salt Lake Park	Huntington Park
1, 2, 3, 4	Aerial	Paramount Park	Paramount
1, 2, 3, 4	Aerial	Residences on Downey Ave	Paramount
1, 2, 3, 4	Aerial, At-grade	Bellflower Bike Trail	Bellflower
1, 2, 3, 4	At-grade	Bellflower Pacific Electric Railway Depot	Bellflower
1, 2, 3, 4	At-grade	Residences on the north and south sides of PEROW	Bellflower, Cerritos, and Artesia
1, 2, 3, 4	Aerial	Residences surrounding 183rd St/Gridley Ave	Artesia and Cerritos

Source: Compiled for Metro in 2020
Notes: LAUS = Los Angeles Union Station; PEROW = Pacific Electric Right-of-Way

Community disruption could occur during the construction phase. Alternative 1 would maintain access to businesses, community facilities, residences, and neighborhoods to the extent feasible. However, construction activities (adjacent or near construction areas, aerial segments of the alignment, and at-grade crossings) and construction staging areas could result in temporary street and lane closures. Motorist, pedestrian, and bicycle access to businesses, community facilities, and neighborhoods may be detoured temporarily. Table 3.50 in the Transportation Chapter

identifies the anticipated street, lane, and sidewalk closures required during construction. While construction activities could temporarily disrupt transit services, transit stations within construction areas would be temporarily relocated and would remain accessible in the affected communities. In addition, construction activities could interrupt community gatherings or festivals in the project area. Mitigation Measure COM-1 (Construction Outreach Plan) would require Metro to develop a Construction Outreach Plan to minimize effects to affected communities and businesses and minimize impacts to community gatherings or festivals in the project area. Because construction activities are temporary, barriers around construction activities and staging areas would be removed upon completion of construction. Temporary street, lane, and bike path detours and closures would be returned to preconstruction conditions once construction is completed. Under NEPA, Alternative 1 would not result in adverse effects related to community access and mobility during construction.

Community Character and Cohesion: During construction, community character and cohesion could be affected if community facilities and residences are displaced and changes in visual character, noise levels, air quality, land uses, and demographics adversely affect the character of community facilities and residential areas. These factors are discussed below. Under Alternative 1, construction activities would result in temporary disruption to community activities, but it is not anticipated to result in permanently adverse effects to character and cohesion of communities.

Acquisitions and Displacements: As discussed in Section 4.19.3.3, construction activities, including staging areas, excavation sites for tunnel portals and station areas, construction support sites, and TCEs, would require property acquisitions. Properties with partial acquisitions for construction or TCEs would be returned to preconstruction conditions once construction is completed. No residential uses or community facilities would be temporarily or permanently displaced. Some construction staging areas would be located on proposed parking facilities. Permanent acquisition would occur in these areas since these construction staging areas would be converted to parking facilities to support operation of the Project. The effects of permanent acquisition are discussed in Section 4.2.3. Alternative 1 construction activities would be temporary, and construction is not expected to permanently disrupt surrounding land uses.

Visual and Aesthetics: As discussed in Section 4.19.3.4, construction activities, construction equipment, and construction work would be visible in affected communities and could temporarily affect the visual character of some community assets, such as LAUS, the El Pueblo de Los Angeles Historical Monument, and residential neighborhoods. At LAUS, the removal of palm trees along the forecourt driveway would adversely affect the visual character of LAUS since the palm trees contribute to the unique character of LAUS. As LAUS is a community asset, changes in the visual character of LAUS would affect community character. Construction sites would be returned to preconstruction conditions once construction is completed. Implementation of Mitigation Measures VA-3 (Landscaping at LAUS) and VA-4 (Construction Screening) would reduce visual impacts in the communities during construction. Mitigation Measure VA-3 (Landscaping at LAUS) would require that palm trees along the LAUS forecourt driveway be replaced and, thus, the visual character at LAUS would not be permanently altered with implementation of this mitigation measure. Construction activities are not anticipated to result in adverse changes to the visual character of the affected communities and would not permanently change the established character and cohesion of the affected communities.

Any future development near the alignment or stations would be separate from the Project and subject to separate environmental analysis, as necessary. Future development in the Affected Area would be required to comply with the land use regulations of local jurisdictions and are expected to be consistent with the goals, policies, and objectives of the affected communities' general plans to maintain the existing character and community cohesion of the neighborhood.

As construction activities are temporary and are not expected to permanently isolate residential neighborhoods or community facilities and would not permanently alter the physical layout of the affected communities, construction activities would not change the character and cohesion of the affected community. Under NEPA, Alternative 1 would not result in construction adverse effects related to community character and cohesion.

Noise and Vibration: As discussed in Section 4.19.3.7, noise and vibration related to construction may affect community facilities and residences within 500 feet of potential construction activities, as this is the distance where noise levels are loudest. It is expected that community facilities and residences farther than 500 feet would not be adversely affected by noise. Typically, at distances greater than 500 feet, construction noise levels are reduced as a result of geometric spreading of noise over an increased area and attenuation provided by intervening rows of buildings. Community facilities that may be affected include schools, community centers, parks, churches, and bike trails. Mitigation Measure NOI-8 (Noise Control Plan) and Mitigation Measures VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), and VIB-7 (Construction Monitoring for Vibration) would be implemented during construction to reduce construction noise and vibration impacts to the extent feasible. With mitigation, vibration impacts during construction would not occur, but construction noise may exceed the FTA construction noise criteria and result in temporary adverse effects to community facilities and residences. Construction noise levels would be temporary disruptions and are not anticipated to reach noise levels that would inhibit use of community facilities and residential properties.

Air Quality: As discussed in Section 4.19.3.5, construction activities could temporarily expose sensitive receptors to air pollutants. Adverse effects regarding construction emissions would affect residences near construction activities, which could inhibit the use of community facilities. Construction activities would be required to comply with applicable rules and regulations and adhere to BMPs to control emissions and exposure to air pollution. Implementation of Mitigation Measure AQ-1 (Vehicle Emissions) would reduce maximum daily NO_X emissions but would still result in a temporary adverse effect related to emissions of criteria pollutants and ozone precursors. However, impacts related to construction air quality would be temporary and would not permanently inhibit the use of community facilities, change the community character, or affect community cohesion.

Community Stability: During construction, an adverse effect on community stability would occur if it would cause residents to move out of their communities. Construction activities would be temporary. While construction would require the acquisition and displacement of properties for construction staging, construction support sites, and TCEs (Section 4.19.3.3), no residential uses or community facilities would be temporarily or permanently displaced as a result of these property acquisitions. As discussed above, community disruptions could occur during construction since access to businesses, community facilities, and neighborhoods may be detoured. Transit stations within the construction areas would also be temporarily relocated

but would remain accessible within the affected community. Although construction could temporarily affect access and mobility, as well as community character and cohesion, construction activities are temporary and are not expected to cause residents to move out of the affected communities. Additionally, Mitigation Measure COM-1 (Construction Outreach Plan) would maintain access to community facilities, businesses, and residential areas. Under NEPA, Alternative 1 would not result in construction adverse effects related to community stability.

Alternative 2: 7th St/Metro Center to Pioneer Station

Access and Mobility: Construction for Alternative 2 would involve similar underground, aerial, and at-grade construction activities and would have similar effects on communities and neighborhoods as Alternative 1 (Table 4.19.2). Similar to Alternative 1, Alternative 2 would implement Mitigation Measure COM-1 (Construction Outreach Plan) to maintain access to businesses, community facilities, community gatherings or festivals, residences, and neighborhoods to the extent feasible. As construction activities are temporary, barriers around construction activities and staging areas would be removed upon completion of construction; and temporary street, lane, and bike path detours and closures would be returned to preconstruction conditions once construction is completed. Under NEPA, Alternative 2 would not result in adverse effects related to community access and mobility during construction.

Community Character and Cohesion: As with Alternative 1, Alternative 2 would result in similar temporary construction activities that would not permanently disrupt surrounding land uses. While some parcels would be partially or fully acquired for construction activities, residential uses and community assets would not be displaced. Properties with partial acquisitions for construction or TCEs would be returned to preconstruction conditions once construction is completed. Some properties that would be used for construction staging would be permanently acquired. These permanently acquired properties would be converted to parking facilities to support operation of the Project. The effects of permanent acquisition are discussed in Section 4.2.3. New development on the acquired properties would be required to comply with the land use regulations of local jurisdictions and are expected to maintain the existing character and community cohesion of the neighborhood.

Mitigation Measures NOI-8 (Noise Control Plan), VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), VIB-7 (Construction Monitoring for Vibration), AQ-1 (Vehicle Emissions), VA-3 (Landscaping at LAUS), and VA-4 (Construction Screening) would be implemented to minimize adverse effects related to construction noise, vibration, air quality, and visual quality during construction. However, adverse effects related to noise and air quality emissions during construction would occur even with mitigation. Nonetheless, the indirect impacts associated with temporary construction-related noise, vibrations, and air quality would be temporary and would not permanently inhibit the use of community facilities, change community character, or affect community cohesion.

Similar to Alternative 1 and based on the above analysis, under NEPA, Alternative 2 would not result in construction adverse effects related to community character and cohesion.

Community Stability: Similar to Alternative 1, Alternative 2 construction activities would be temporary and no residential uses or community facilities would be temporarily or permanently displaced as a result of property acquisition. Although construction could temporarily affect access and mobility, as well as community character and cohesion,

construction activities are temporary and are not expected to cause residents to move out of the affected communities. Additionally, Mitigation Measure COM-1 (Construction Outreach Plan) would maintain access to community facilities, businesses, and residential areas. Under NEPA, Alternative 2 would not result in construction adverse effects related to community stability.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Access and Mobility: Alternative 3 would have a shorter alignment than Alternatives 1 and 2 and would involve the same construction activities as Alternatives 1 and 2; no underground construction activities would occur for Alternative 3 (Table 4.19.2). Alternative 3 would have similar effects on communities and neighborhoods as Alternatives 1 and 2. Similar to Alternatives 1 and 2, Alternative 3 would implement Mitigation Measure COM-1 (Construction Outreach Plan) to maintain access to businesses, community facilities, community gatherings or festivals, residences, and neighborhoods to the extent feasible. As construction activities are temporary, barriers around construction activities and staging areas would be removed upon completion of construction, and temporary street, lane, and bike path detours and closures would be returned to preconstruction conditions once construction is completed. Under NEPA, Alternative 3 would not result in adverse effects related to community access and mobility during construction.

Community Character and Cohesion: As with Alternatives 1 and 2, Alternative 3 would result in similar temporary construction activities that would not permanently disrupt surrounding land uses. No underground construction activities would occur for Alternative 3. While some parcels would be partially or fully acquired for construction activities, residential uses and community assets would not be displaced. Properties with partial acquisitions for construction or TCEs would be returned to preconstruction conditions once construction is completed. Some properties that would be used for construction staging would be permanently acquired. These permanently acquired properties would be converted to parking facilities to support operation of the Project. The effects of permanent acquisition are discussed in Section 4.2.3. New development on the acquired properties would be required to comply with the land use regulations of local jurisdictions and are expected to maintain the existing character and community cohesion of the neighborhood.

Mitigation Measures NOI-8 (Noise Control Plan), VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), VIB-7 (Construction Monitoring for Vibration), and VA-4 (Construction Screening) would be implemented to minimize adverse effects related to construction noise, vibration, and visual quality during construction. However, adverse effects related to noise during construction would occur even with mitigation. Nonetheless, the indirect impacts associated with temporary construction-related noise would be temporary disruptions and would not permanently inhibit the use of community facilities, change community character, or affect community cohesion.

Similar to Alternatives 1 and 2 and based on the above analysis, under NEPA, Alternative 3 would not result in construction adverse effects related to community character and cohesion.

Community Stability: Similar to Alternatives 1 and 2, Alternative 3 construction activities would be temporary and no residential uses or community facilities would be temporarily or permanently displaced as a result of property acquisition. Although construction could temporarily affect access and mobility, as well as community character and cohesion, construction activities are temporary and are not expected to cause residents to move out of

the affected communities. Additionally, Mitigation Measure COM-1 (Construction Outreach Plan) would maintain access to community facilities, businesses, and residential areas. Under NEPA, Alternative 3 would not result in construction adverse effects related to community stability.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Access and Mobility: Alternative 4 would have a shorter alignment than Alternatives 1, 2, and 3 and would involve the same construction activities as Alternatives 1, 2, and 3; no underground construction activities would occur for Alternative 4 (Table 4.19.2). Similar to Alternatives 1, 2, and 3, Alternative 4 would implement Mitigation Measure COM-1 (Construction Outreach Plan) to maintain access to businesses, community facilities, community gatherings or festivals, residences, and neighborhoods to the extent feasible. As construction activities are temporary, barriers around construction activities and staging areas would be removed upon completion of construction, and temporary street, lane, and bike path detours and closures would be returned to preconstruction conditions once construction is completed. Under NEPA, Alternative 4 would not result in adverse effects related to community access and mobility during construction.

Community Character and Cohesion: Similar to Alternatives 1, 2, and 3, Alternative 4 would result in similar temporary construction activities that would not permanently disrupt surrounding land uses. No underground construction activities would occur for Alternative 4. While some parcels would be partially or fully acquired for construction activities, residential uses and community assets would not be displaced. Properties with partial acquisitions for construction or TCEs would be returned to preconstruction conditions once construction is completed. Some properties that would be used for construction staging would be permanently acquired. These permanently acquired properties would be converted to parking facilities to support operation of the Project. The effects of permanent acquisition are discussed in Section 4.2.3. New development on the acquired properties would be required to comply with the land use regulations of local jurisdictions and are expected to maintain the existing character and community cohesion of the neighborhood.

Mitigation Measures NOI-8 (Noise Control Plan), VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), VIB-7 (Construction Monitoring for Vibration), and VA-4 (Construction Screening) would be implemented to minimize adverse effects related to construction noise, vibration, and visual quality during construction. However, adverse effects related to noise during construction would occur even with mitigation. Nonetheless, the indirect impacts associated with temporary construction-related noise, vibrations, and air quality would be temporary and would not permanently inhibit the use of the community facilities, change community character, or affect community cohesion.

Similar to Alternatives 1, 2, and 3 and based on the above analysis, under NEPA, Alternative 4 would not result in construction adverse effects related to community character and cohesion.

Community Stability: Similar to Alternatives 1, 2, and 3, Alternative 4 construction activities would be temporary and no residential uses or community facilities would be temporarily or permanently displaced as a result of property acquisition. Although construction could temporarily affect access and mobility, as well as community character and cohesion, construction activities are temporary and are not expected to cause residents to move out of the affected communities. Additionally, Mitigation Measure COM-1 (Construction Outreach Plan)

would maintain access to community facilities, businesses, and residential areas. Under NEPA, Alternative 4 would not result in construction adverse effects related to community stability.

Design Options—Alternative 1

Design Option 1: LAUS at MWD

Construction activities for Design Option 1 (MWD) would be temporary and would occur primarily underground at the baggage area parking facility to the rear of LAUS and in the concourse area inside LAUS. Although barriers would be placed along the perimeter of the construction areas, interior and exterior access to LAUS would be maintained during construction and is not expected to impede the function of LAUS as a transportation hub or access to other community facilities.

Design Option 2: Add Little Tokyo Station

Construction activities for Design Option 2 would be temporary and would occur primarily underground in Little Tokyo and at-grade for the station entrances. Although barriers would be placed along the perimeter of the construction areas and temporary street and lane closures could occur, access to the surrounding neighborhood and community facilities would be maintained during construction. Roadway, lane, and sidewalk closures have the potential to affect community events in the surrounding area (such as the Nisei Week Japanese Festival). Mitigation Measure COM-1 (Construction Outreach Plan) would require Metro to develop a Construction Outreach Plan to minimize effects to affected communities and businesses, such as impacts to community gatherings or festivals in the project area. Because construction activities are temporary, barriers around construction activities and staging areas would be removed upon completion of construction. Temporary street, lane, and bike path detours and closures would be returned to preconstruction conditions once construction is completed. Once constructed, Design Option 2 would permanently improve community access by providing a new attractive means of access that does not rely on driving alone. Connections to other neighborhoods within the downtown area and across the region would be strengthened by the rail link.

Construction of Design Options 1 and 2 does not include construction activities (such as construction staging) or TCEs that would displace residences or community facilities. Furthermore, Mitigation Measures NOI-8 (Noise Control Plan), VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), VIB-7 (Construction Monitoring for Vibration), and VA-4 (Construction Screening) would be implemented to minimize adverse effects related to construction noise, vibration, and visual quality during construction. However, adverse effects related to noise during construction would occur even with mitigation. Nonetheless, the indirect impacts associated with temporary construction-related noise would be temporary disruptions and would not permanently inhibit the use of community facilities, change community character, or affect community cohesion. Under NEPA, Design Options 1 and 2 would not result in construction adverse effects related to access and mobility, community character and cohesion, and community stability.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options

Construction activities related to the Paramount MSF site option would be temporary and would primarily occur within the MSF site and along the existing San Pedro Subdivision ROW between

the PEROW and the MSF site. Construction activities related to the Bellflower MSF site option would be temporary and would primarily occur within the MSF site. Temporary construction barriers surrounding the Paramount and Bellflower MSF site options are not expected to adversely affect access and mobility to residential neighborhoods and community assets. Construction activities for both MSF site options would not alter the physical layout of the affected communities and no residential uses or community assets would be displaced for the purposes of construction staging. Although temporary increases in noise levels and changes in air quality and visual character would occur during construction and could temporarily disrupt the area surrounding the MSF site, the construction-related changes would not permanently alter the character of Paramount or Bellflower as construction activities are temporary and would be site specific.

Because construction of both MSF site options could result in temporary street and lane closures, and access to businesses and neighborhoods may be temporarily detoured, adverse effects are anticipated during construction. Implementation of Mitigation Measure COM-1 (Construction Outreach Plan) would be implemented to maintain access to the surrounding uses and to maintain traffic flow. Mitigation Measures NOI-8 (Noise Control Plan), VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), VIB-7 (Construction Monitoring for Vibration), and VA-4 (Construction Screening) would be implemented to minimize adverse effects related to construction noise, vibration, and visual quality during construction. However, adverse effects related to noise during construction would occur even with mitigation. Nonetheless, the indirect impacts associated with temporary construction-related noise would be temporary disruptions and would not permanently inhibit the use of community facilities, change community character, or affect community cohesion. Under NEPA, the Paramount and Bellflower MSF site options would not result in construction adverse effects related to access and mobility, community character and cohesion, and community stability would not occur.

Project Measures and Mitigation Measures

There are no construction-related project measures related to communities and neighborhoods. The following mitigation measure would apply:

COM-1 **Construction Outreach Plan.** Metro would develop a Construction Outreach Plan as part of Metro's Construction Relation & Mitigation Programs in Community Relations in coordination with affected communities and businesses that would be implemented by Metro and its contractors during construction of the Project. The Construction Outreach Plan would include, but not be limited to, the following elements:

- Maintain access to community assets (including, but not limited to, bike trails) and neighborhoods during construction as practicable
- Maintain access to businesses during the operating hours of the businesses as practicable
- Provide signage to direct pedestrians and motorists around construction areas; around sidewalk, street, and lane closures; to entrances of businesses and community assets; and to maintain the flow of traffic around the construction area

- Provide appropriate signage, barriers, and fencing for pedestrian and bicycle detour routes to prevent pedestrians and bicyclists from entering the construction zones
- Provide signage alerting potential customers that businesses are open during construction and clearly mark detours as appropriate
- Provide the public with construction updates, alerts, and schedules through informational meetings, the project website, and other forms of communication such as, but not limited to, mailings and flyers to businesses and residences with 0.25-mile of the construction zone
- Develop a marketing plan to help reduce impacts to businesses during construction
- Coordinate construction activities with other capital improvement projects being carried out nearby to minimize construction impacts and competing needs for detour routes

Refer to Section 4.19.3.5 for Mitigation Measure AQ-1 (Vehicle Emissions) and Section 4.19.3.7 for Mitigation Measures NOI-8 (Noise Control Plan) and VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), and VIB-7 (Vibration Survey).

California Environmental Quality Act Determination

Would the Project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

No Project Alternative

Under the No Project Alternative, the Project would not be constructed, and the existing communities and neighborhoods would remain unchanged. No properties would be acquired; no structures along the project alignment would be demolished; and no new structures would be constructed. No population growth beyond that already anticipated in the SCAG growth projections for the region and in local community plans would occur either directly or indirectly. Therefore, no impacts would occur, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

The construction phase for Alternative 1 would be temporary and would not directly or indirectly induce unplanned population growth in the area. Construction workers are anticipated to be existing Metro workers or new workers who live within driving distance to the job site and would not require moving to the surrounding area for work. Therefore, impacts regarding population growth would be less than significant, and mitigation would not be required.

Alternative 2: 7th St/Metro Center to Pioneer Station

Similar to Alternative 1, the construction phase for Alternative 2 would be temporary and would not directly or indirectly induce unplanned population growth in the area. Therefore, impacts regarding population growth would be less than significant, and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Similar to Alternatives 1 and 2, the construction phase for Alternative 3 would be temporary and would not directly or indirectly induce unplanned population growth in the area. Therefore, impacts regarding population growth would be less than significant, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Similar to Alternatives 1, 2, and 3, the construction phase for Alternative 4 would be temporary and would not directly or indirectly induce unplanned population growth in the area. Therefore, impacts regarding population growth would be less than significant, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Similar to the Build Alternatives, the construction phase for Design Options 1 and 2 would be temporary and would not directly or indirectly induce unplanned population growth in the area. Therefore, impacts regarding population growth would be less than significant, and mitigation would not be required.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: Similar to the Build Alternatives, the construction phase for the Paramount and Bellflower MSF site options would be temporary and would not directly or indirectly induce unplanned population growth in the area. Construction workers are anticipated to be existing Metro workers or new workers who live within driving distance to the job site and would not require moving to the surrounding area for work. Therefore, impacts regarding population growth would be less than significant, and mitigation would not be required.

4.19.3.3 Acquisitions and Displacements

Alternative 1: Los Angeles Union Station to Pioneer Station

Construction staging areas would be primarily located on acquired sites characterized as industrial, commercial, or vacant. Parcels to be fully acquired for construction staging and construction support sites would require the demolition of existing structures on the properties and require the relocation of existing businesses. TCEs would not impact existing buildings on the properties or change the primary function of the existing use. TCEs would be temporary and the sites would be returned to preconstruction conditions once construction is completed.

Construction staging areas would also be located on proposed parking facilities for Firestone Station, I-105/C Line Station, Paramount/Rosecrans Station, Bellflower Station, and Pioneer Station. These would be permanent acquisitions that would be converted from a construction staging area during the construction phase of the Project to parking facilities to support operation of the Project.

Table 4.19.3 and Table 4.19.4 summarize the construction-related acquisitions for the Build Alternatives, including design options and MSF site options, and by jurisdiction. All construction impacts are separate from and in addition to the impacts described in Section 4.3 of the Acquisitions and Displacement Section. Alternative 1 would affect 238 parcels and require 60 full acquisitions and 227 TCEs for construction staging areas and construction support sites.

Table 4.19.3. Summary of Construction-related Acquisitions by Build Alternatives

Build Alternative	Affected Parcels[1]	Construction Full Acquisitions	TCE	Affected Area (sq ft)[2]
Alternative 1	238	60	227	2,583,300
Alternative 2	235	60	223	2,577,500
Alternative 3	191	34	200	2,038,400
Alternative 4	87	17	103	743,100
Design Option 1	5	0	9	5,000
Design Option 2	3	1	2	31,500
Paramount MSF site option	2	0	2	9,800
Bellflower MSF site option	0	0	0	0

Source: Metro 2021m

Note: MSF = maintenance and storage facility; sq ft = square feet; TCE = temporary construction easement

[1] Parcels are identified by parcel boundaries and APN. "Affected Parcels" is not a total sum of the full and partial acquisitions. More than one partial acquisition may occur on a single parcel. Affected parcels, acquisitions, and TCEs identified here are for construction-related acquisitions. Construction full acquisitions refer to property acquisitions for construction staging area on which parking facilities to support operation of the Project would be later constructed. See Section 4.3 of the Acquisitions and Displacement Section for permanent acquisitions required by the Project.

[2] Rounded to nearest hundred

Table 4.19.4. Construction-Related Acquisitions by Jurisdiction and Build Alternatives

	Build Alternative/Jurisdiction	Affected Parcels[1]	Construction Full Acquisitions	TCE	Affected Area (sq ft)[2]
Los Angeles	Alternative 1	61	37	30	599,200
	Alternative 2	58	37	26	593,300
	Alternative 3	14	11	3	54,200
	Design Option 1	5	0	9	5,000
	Design Option 2	3	1	2	31,500
	Vernon	3	0	3	9,100
	Unincorporated LA County	1	0	2	800
	Huntington Park	32	1	34	79,400
	Cudahy	8	1	7	14,000
	Downey	1	0	2	213,300

	Build Alternative/Jurisdiction	Affected Parcels[1]	Construction Full Acquisitions	TCE	Affected Area (sq ft)[2]
South Gate	Alternatives 1, 2, 3	50	6	49	1,082,200
	Alternative 4	5	2	3	157,700
	Paramount	64	3	94	361,200
	Paramount MSF Site Option[3, 4]	2	0	2	9,800
	Bellflower	5	1	4	123,600
	Bellflower MSF Site Option[4]	0	0	0	0
	Artesia	13	11	2	100,600

Source: Metro 2021m
Note: MSF = maintenance and storage facility; sq ft = square feet; TCE = temporary construction easement
Alternatives 1, 2, and 3 include all the cities identified. Alternative 4 only includes the Cities of South Gate, Paramount, Bellflower, and Artesia
[1] Parcels are identified by parcel boundaries and APN. "Affected Parcels" is not a total sum of the full and partial acquisitions. More than one partial acquisition may occur on a single parcel. Affected parcels, acquisitions, and TCEs identified here are for construction-related acquisitions. See Section 4.3 of the Acquisitions and Displacement Section for permanent acquisitions required by the Project.
[2] Rounded to nearest hundred
[3] TCEs would support construction of the lead tracks to the MSF
[4] The acquisition of the MSF site is considered a permanent acquisition and is not included in this table.

Metro would provide compensation for all businesses and residents affected during construction as required under the Uniform Act and California Relocation Act. Under NEPA, Alternative 1 would not result in construction adverse effects related to acquisitions and displacements.

Alternative 2: 7th St/Metro Center to Pioneer Station

Alternative 2 would affect 235 parcels and require 60 full acquisitions and would include 223 TCEs (Table 4.19.3 and Table 4.19.4), slightly less compared to Alternative 1. Similar to Alternative 1, Metro would provide compensation for all businesses and residents affected during construction as required under the Uniform Act and California Relocation Act. Under NEPA, Alternative 2 would not result in construction adverse effects related to acquisitions and displacements.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Alternative 3 would affect 191 parcels and require 34 full acquisitions and would include 200 TCEs (Table 4.19.3 and Table 4.19.4), less compared to Alternatives 1 and 2 based on a shorter alignment. Similar to Alternatives 1 and 2, Metro would provide compensation for all businesses and residents affected during construction as required under the Uniform Act and California Relocation Act. Under NEPA, Alternative 3 would not result in construction adverse effects related to acquisitions and displacements.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Alternative 4 would affect 87 parcels and require 17 full acquisitions and would include 103 TCEs (Table 4.19.3 and Table 4.19.4), less compared to Alternatives 1, 2, and 3 based on a shorter alignment. Similar to Alternatives 1, 2, and 3, Metro would provide compensation for all businesses and residents affected during construction as required under the Uniform Act and California Relocation Act. Under NEPA, Alternative 4 would not result in construction adverse effects related to acquisitions and displacements.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station

Design Option 1 (MWD) would affect 5 parcels and require 9 TCEs for construction support specific to the LAUS (MWD). Design Option 2 would affect 3 parcels and require 1 full acquisition and 2 TCEs for construction support specific to the Little Tokyo Station.

Similar to the Build Alternatives, Metro would provide compensation for all businesses and residents affected during construction of the design options as required under the Uniform Act and California Relocation Act. Under NEPA, Design Options 1 and 2 would not result in construction adverse effects related to acquisitions and displacements.

Maintenance and Storage Facility

Paramount MSF Site Option

Construction staging areas would be located at the Paramount MSF site option during the construction phase and permanently acquired to be used as the selected MSF site option. The Paramount MSF site option would impact 2 parcels and would require 2 TCEs for construction support related to the lead tracks. Permanent displacements associated with this MSF site option are described in Section 4.3.3.7 of the Acquisitions and Displacements Section.

Bellflower MSF Site Option

Construction staging areas would be located at the Bellflower MSF site option during the construction phase and permanently acquired to be used as the selected MSF site option. No additional parcels would be temporarily affected to support construction of this MSF option. Permanent displacements associated with this MSF site option are described in Section 4.3.3.7 of the Acquisitions and Displacements Section.

As discussed for the Build Alternatives, Metro would provide compensation for all businesses and residents affected during construction of the design options as required under the Uniform Act and California Relocation Act. Under NEPA, the Paramount and Bellflower MSF site options would not result in construction adverse effects related to acquisitions and displacements.

Project Measures and Mitigation Measures

Metro would provide relocation assistance and compensation for all displaced businesses and residences as required under the Uniform Act, California Relocation Act, and other applicable regulations. No project measures or mitigation measures are required.

California Environmental Quality Act Determination

Would the Project displace substantial numbers of existing people, housing or business, necessitating the construction of replacement housing or replacement business elsewhere?

No Project Alternative

No project-related construction activities would occur under the No Project Alternative that would result in the need for TCEs and construction staging areas. Therefore, no construction-related impacts would occur.

Alternative 1: Los Angeles Union Station to Pioneer Station

Construction-related acquisitions for Alternative 1 would be primarily located on acquired sites characterized as industrial, commercial, or vacant. Parcels to be fully acquired for construction would require the demolition of existing structures on the properties and require the relocation of existing businesses. TCEs would not impact existing buildings on the properties or change the primary function of the existing use. TCEs would be temporary and the sites would be returned to preconstruction conditions once construction is completed.

Construction staging areas would also be located on proposed parking facilities for the Firestone Station, I-105/C Line Station, Paramount/Rosecrans Station, Bellflower Station, and Pioneer Station. These would be permanent acquisitions that would be converted from a construction staging area during the construction phase of the Project to parking facilities to support operation of the Project. Similarly, construction staging areas would also be located at the selected MSF site option during the construction phase and permanently acquired to be used as the selected MSF site option. Construction staging areas and construction support sites for the Build Alternatives would not require the relocation or demolition of residential uses.

Table 4.19.3 summarizes the affected parcels, acquisitions, and TCEs for Alternative 1. Metro would provide compensation for all businesses and residents affected during construction. Therefore, with full compliance of the Uniform Act, California Relocation Act, relocation policies and procedures of Metro, and other applicable policies, construction impacts related to displacements would be less than significant, and mitigation would not be required.

Alternative 2: 7th St/Metro Center to Pioneer Station

Construction activities, laydown areas, and TCEs for Alternative 2 would be similar to Alternative 1. Table 4.19.3 summarizes the affected parcels, acquisitions, and TCEs under Alternative 2. Metro would provide compensation for all businesses and residents affected during construction. Therefore, with full compliance of the Uniform Act, California Relocation Act, relocation policies and procedures of Metro, and other applicable policies, construction impacts related to displacements would be less than significant, and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Construction activities, staging areas, and TCEs for Alternative 3 would be similar to Alternatives 1 and 2. Table 4.19.3 summarizes the affected parcels, acquisitions, and TCEs under Alternative 3. Metro would provide compensation for all businesses and residents affected during construction. Therefore, with full compliance of the Uniform Act, California Relocation Act, relocation policies and procedures of Metro, and other applicable policies, construction impacts related to displacements would be less than significant and mitigation would not be required.

Alternative 4: 7th St/Metro Center to Pioneer Station

Construction activities, staging areas, and TCEs for Alternative 4 would be similar to Alternative 3. Table 4.19.3 summarizes the affected parcels, acquisitions, and TCEs under Alternative 4. Metro would provide compensation for all businesses and residents affected during construction. Therefore, with full compliance of the Uniform Act, California Relocation Act, relocation policies and procedures of Metro, and other applicable policies,

construction impacts related to displacements would be less than significant, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Table 4.19.3 summarizes the affected parcels and TCEs under Design Options 1 and 2. TCEs would not impact existing buildings on the properties or change the primary function of the existing use. TCEs would be temporary and the sites would be returned to preconstruction conditions once construction is completed. Similar to the Build Alternatives, Metro would provide compensation for all businesses and residents affected during construction. Therefore, with full compliance of the Uniform Act, California Relocation Act, relocation policies and procedures of Metro, and other applicable policies, construction impacts related to displacements would be less than significant and mitigation would not be required.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: Construction staging areas would be located at the Paramount or Bellflower MSF site option during the construction phase and permanently acquired to be used as the selected MSF site option. The Paramount MSF site option would affect 2 parcels and require 2 TCEs for construction support associated with the lead tracks. No additional parcels would be temporarily affected during construction of the Bellflower MSF site option.

Similar to the Build Alternatives, Metro would provide compensation for all businesses and residents affected during construction of the MSF. Therefore, with full compliance of the Uniform Act, California Relocation Act, relocation policies and procedures of Metro, and other applicable policies, construction impacts related to displacements would be less than significant, and mitigation would not be required.

4.19.3.4 Visual and Aesthetics

Methodology

To satisfy NEPA requirements, the analysis of construction effects related to visual and aesthetics uses the same methods as described in Section 4.4.1.2 of the Visual and Aesthetics Section in the context of temporary project-related construction activities and its overall effects on visual character, views on scenic resources, visual quality, and viewer sensitivity within the Affected Area for visual. To satisfy CEQA requirements, the analysis of construction-related visual and aesthetic impacts assesses temporary project-related construction activities and its overall effects on scenic vistas, scenic resources within a state scenic highway, applicable zoning and other regulations governing scenic quality, nighttime lighting, and glare in accordance with Appendix G of the *CEQA Guidelines*.

The analysis considers the construction activities summarized in Section 3.7 of the Transportation Chapter and Section 4.19.2. Construction activities occurring at-grade and above-grade have the potential to temporarily alter the visual character and quality of the Affected Area for visual because these activities could introduce heavy equipment to the area (e.g., tunnel boring machines, cranes, bulldozers, scrapers, and trucks), security fencing, barricade materials, noise barriers or noise-control curtains (Mitigation Measure NOI-8 [Noise Control Plan] in Section 4.19.3.7), stockpiled building materials, and safety and directional signage into the view corridor of public streets, sidewalks, rail ROWs, and

properties where construction would occur. Mature vegetation, including trees, would be removed from some areas. Staging areas would be located primarily on surface parking lots and on commercial, industrial, or vacant properties. Where construction activities involve tunneling or underground station construction (such as in the Downtown Low-Rise and Mid-Rise Landscape Unit and Industrial Landscape Unit), staging areas would also be located on portions of existing street rights-of-way.

Alternative 1: Los Angeles Union Station to Pioneer Station

No scenic vistas are located within the Affected Area for visual of Alternative 1. In each landscape unit, nighttime construction may be required for certain construction activities, such as tunneling, trackwork, catenary wire installation, and other construction activities that require cut-and-cover sections. Generally, construction activities are not a substantial source of light or glare. However, nighttime construction work may be required and could increase nighttime light or glare in the Affected Area for visual. If nighttime lighting spills over onto nearby areas or is not shielded in a manner to prevent glare, the additional lighting and glare would be inconsistent with the visual character of the Affected Area for visual and sensitive viewers would be highly sensitive to the change, if not mitigated. Mitigation Measure VA-5 (Construction Lighting) would be required to reduce spillover light and glare. The following discussion describes other visual effects during construction within each landscape unit that is part of Alternative 1.

Downtown Low-Rise and Mid-Rise Landscape Unit: Construction activities would be visible to viewer groups in the Affected Area for visual at proposed station entrances and staging areas. In all other areas within the Downtown Low-Rise and Mid-Rise Landscape Unit, construction activities would not be visible because construction would occur underground, which would not detract from the visual character of the Affected Area.

Construction activities would temporarily introduce visual elements that would conflict with the visual character and quality of LAUS and the El Pueblo de Los Angeles Historical Monument, both of which are considered scenic resources for the purpose of the visual and aesthetic analysis. Construction activities would also be visible at residences near the staging area at the southeast corner of Main Street/Vignes Street and adjacent to LAUS Forecourt in Lot B. Because construction has the potential to conflict with the visual character and quality of LAUS and El Pueblo de Los Angeles Historical Monument, adverse visual effects could occur during construction. Mitigation Measure VA-4 (Construction Screening) would screen construction activities in the staging areas at the southeast corner of Main Street/Vignes Street and LAUS Forecourt area from views at residences, LAUS, and El Pueblo de Los Angeles Historical Monument. Construction screening could partially block westerly views of El Pueblo de Los Angeles Historical Monument from LAUS and southeasterly views of LAUS from Alameda Street and El Pueblo de Los Angeles Historical Monument. However, El Pueblo de Los Angeles Historical Monument is located across the street from the LAUS Forecourt staging area, and unobstructed views of this scenic resource would remain available along Alameda Street. Although partial southeasterly views of LAUS would be obstructed, westerly and northeasterly views of LAUS would remain available from Alameda Street and El Pueblo de Los Angeles Historical Monument. Additionally, community artwork that would be incorporated into the screening under Mitigation Measure VA-4 (Construction Screening) would reduce the visual contrast between the construction area, LAUS, and El Pueblo de Los Angeles Historical Monument. Construction screening would be temporary and would be removed upon completion of construction activities in the area.

In addition, construction activities have the potential to remove ornamental landscaping (e.g., bushes and small trees) at the LAUS surface parking lot. The ornamental landscaping that would be removed does not contribute to the unique character of LAUS. The rows of palm trees that line the forecourt driveway (including the row of palm trees adjacent and closest to the surface parking lot on the north side of the forecourt driveway) are not expected to be removed. However, if construction activities require the staging area to extend into the rows of palm trees, the palm trees may need to be removed and the visual character of LAUS would be adversely affected because the palm trees contribute to the unique character of LAUS. Visitors and users of LAUS would be highly sensitive to this change at LAUS. Mitigation Measure VA-3 (Landscaping at LAUS) would be required to replace the palm trees after construction in the area has been completed.

Construction activities are not expected to degrade visual character and quality in other portions of the Downtown Low-Rise and Mid-Rise Landscape Unit. With implementation of Mitigation Measures VA-3 (Landscaping at LAUS), VA-4 (Construction Screening), and VA-5 (Construction Lighting), Alternative 1 would not result in adverse effects related to visual quality during construction in the Downtown Low-Rise and Mid-Rise Landscape Unit.

Industrial Landscape Unit: The existing visual quality of the landscape unit is inharmonious, disorderly, and incoherent due to the industrial nature of the area, and construction activities, including those that involve nighttime lighting or would create glare, would not further degrade the visual quality of the landscape unit. However, views of construction activities would be available at Hollydale Community Park and at residential properties across the street from this park. Both of these areas contain sensitive viewers (users of Hollydale Community Park and residents). If nighttime construction activities occur in these areas, spillover lighting and glare from construction areas could affect these sensitive viewers. These sensitive viewers would be highly sensitive to changes in lighting and glare. Because sensitive viewers would be able to see construction activities and could be affected by spillover lighting and glare, construction activities in these areas would result in adverse effects related to visual quality in the Industrial Landscape Unit.

Industrial and Residential Landscape Unit: Construction activities are not expected to obstruct views of Fred Roberts Recreation Center from residential areas, which are located west of Long Beach Avenue. Although views of the park would be affected on the east side of Long Beach Avenue, the uses along the east side of the street are industrial, which have low sensitivity to visual changes. Views of Salt Lake Park would remain unobstructed because this scenic resource would be located across the street from the San Pedro Subdivision ROW, where construction activities would primarily occur. Although construction activities, including those that involve nighttime lighting or would create glare, are not expected to degrade visual quality of the landscape unit, which is currently inharmonious, disorderly, and incoherent, sensitive viewers (residents and users of Fred Roberts Recreation Center and Salt Lake Park) are located in this landscape unit and would be able to see construction activities. If nighttime construction activities occur in these areas and would result in spillover lighting and glare, these sensitive viewers would be highly sensitive to the change in lighting and glare. Thus, construction activities in these areas could result in adverse effects related to visual quality during construction in the Industrial and Residential Landscape Unit.

Residential Landscape Unit: Construction activities, including those that involve nighttime lighting or would create glare, would temporarily alter the visual character of this landscape unit but are not expected to degrade visual character and quality because the existing visual

quality in the landscape unit is inharmonious, disorderly, and incoherent. However, sensitive viewers (e.g., residents) facing the rail ROWs would be able to see the construction areas and would be sensitive to the change in visual character and quality. If nighttime construction activities occur in these areas and would result in spillover lighting and glare, sensitive viewers would also be highly sensitive to the changes in lighting and glare. Therefore, construction activities in these areas could result in adverse effects related to visual quality during construction in the Industrial and Residential Landscape Unit.

Suburban Residential and Industrial Landscape Unit: Construction activities would not block views of Paramount Park but have the potential to block views of the Los Angeles River truss bridge from the residential area along Salt Lake Avenue between Southern Avenue and the Los Angeles River, from Firestone Boulevard, and along the Los Angeles River Bike Path north of the bridge. Existing views of the Los Angeles River truss bridge along Firestone Boulevard are at an angle and are relatively brief because the street is primarily used for vehicular travel. The heavily industrialized area, along with the lack of public parking and stopover points around Firestone Boulevard and the Los Angeles River Bike Path make it difficult for the public to access the area for the purpose of viewing the truss bridge. As a result, construction activities are not expected to adversely affect views of the Los Angeles River truss bridge at Firestone Boulevard and along the Los Angeles River Bike Path. Although views of the truss bridge could temporarily be blocked at the residential area south of Southern Avenue, views of the bridge from the residential area is generally at an angle. Additionally, construction activities are temporary, and view of the truss bridge at the residential area would be available upon completion of construction in the area.

Southwesterly views of "Defiance" from Paramount Boulevard and easterly views from Rosecrans Avenue (east of Paramount Boulevard) would also be obstructed. However, views of "Defiance" would remain available along the south side of Rosecrans Avenue.

Construction activities, including those that involve nighttime lighting or would create glare, would temporarily alter the visual character of this landscape unit but are not expected to degrade visual character and quality because the existing visual quality in the landscape unit is inharmonious, disorderly, and incoherent. However, sensitive viewers would be able to see construction activities. If nighttime construction activities occur in these areas and would result in spillover lighting and glare, sensitive viewers would also be highly sensitive to the changes in lighting and glare. Therefore, construction activities in these areas could result in adverse effects related to visual quality during construction in the Suburban Residential and Industrial Landscape Unit.

Suburban Residential Landscape Unit: Construction activities are not expected to obstruct views of Ruth R. Caruthers Park, Rosewood Park, Artesia Historical Museum, and Old Station #30 because construction activities would occur behind these facilities. Existing landscaping and screened fences along the perimeter of Ruth R. Caruthers Park adjacent to the PEROW and an existing wall along the perimeter of Rosewood Park facing the PEROW would obscure views of construction activities within the PEROW. While construction activities could block southerly views of the original Bellflower Pacific Electric Station, easterly and northerly views of this scenic resource would remain available.

Construction activities, which include the construction of aerial structures, and the placement of concrete barriers and fencing along the perimeter of the construction areas, would be visible to sensitive viewers. Additionally, construction activities, including those that involve nighttime

lighting or would create glare, would temporarily alter the visual character and quality of the Affected Area for visual. However, construction activities are not expected to degrade visual character and quality of the landscape unit because the existing visual quality of the Affected Area is inharmonious, disorderly, and incoherent. Construction activities are temporary and construction barriers and equipment would be removed once construction is completed. However, sensitive viewers would be able to see construction activities. If nighttime construction activities occur in these areas and would result in spillover lighting and glare, sensitive viewers would also be highly sensitive to the changes in lighting and glare. Therefore, construction activities in these areas could result in adverse effects related to visual quality during construction in the Suburban Residential Landscape Unit.

Summary of Visual Character and Quality: Construction activities, including those that involve nighttime lighting or would create glare, would be visible to sensitive viewers (e.g., residents, users of Fred Roberts Recreation Center and Hollydale Community Park, and visitors of LAUS and El Pueblo de Los Angeles Historical Monument) and could potentially conflict with the visual character and quality of LAUS. Therefore, construction activities in these areas could result in adverse effects related to visual quality during construction.

Mitigation Measure VA-3 (Landscaping at LAUS) would require the existing palm trees at the LAUS Forecourt driveway, if removed during construction, be replaced after construction is completed. Mitigation Measure VA-4 (Construction Screening) would provide screening to obstruct views of construction areas from sensitive viewers, such as residents, park users, and visitors of scenic resources. Mitigation Measure NOI-8 (Noise Control Plan) could reduce significant impacts construction would have on visual quality. Specifically, this mitigation measure could require that equipment and staging areas be located away from noise-sensitive receivers, which also include some sensitive viewers (such as residences). Mitigation Measure NOI-8 (Noise Control Plan) could also require the installation of temporary noise barriers or noise-control curtains. Mitigation Measures VA-4 and NOI-8 would screen views of construction activities, limit the amount of light that could spill over onto adjacent areas, and limit glare from affecting sensitive viewers. In addition, Mitigation Measure VA-5 (Construction Lighting) would require lighting to be directed toward the interior of construction areas and shielded to limit spillover light on adjacent areas and to reduce glare. Construction activities, equipment, and lighting are temporary and would be removed once construction is completed. Upon completion of construction activities adjacent to scenic resources, views of the scenic resources would no longer be obstructed. Under NEPA, with implementation of Mitigation Measures VA-3 (Landscaping at LAUS), VA-4 (Construction Screening), VA-5 (Construction Lighting), and NOI-8 (Noise Control Plan), Alternative 1 would not result in adverse effects related to visual quality during construction.

Alternative 2: 7th St/Metro Center to Pioneer Station

Alternative 2 would involve the same construction activities at the same location as Alternative 1 in the Industrial and Residential, Residential, Suburban Residential and Industrial, and Suburban Residential Landscape Units. See discussion under Alternative 1 for analysis of construction-related impacts in these landscape units. See below for an analysis of construction-related visual character impact in the Downtown Mid-Rise and High-Rise Landscape Unit and Industrial Landscape Unit. No construction activities would occur in the Downtown Low-Rise and Mid-Rise Landscape Unit under Alternative 2, thus, construction effects related to visual character would not occur in this landscape unit.

Downtown Mid-Rise and High-Rise Landscape Unit: Construction activities, particularly at staging areas, could partially block views of the Southern California Gas Company Complex north of 8th Street, as well as the Garment Capitol Building south of 8th Street and on Santee Street. However, the staging areas would be located across the street from the scenic resources. Unobstructed views of the Southern California Gas Company Complex would remain available along the south side of 8th Street and along Flower Street. Unobstructed views of the Garment Capitol Building would remain available along the north side of 8th Street. Construction activities are not expected to adversely affect views of other scenic resources, such as the Barker Brothers Building and Textile Center Building, in the Affected Area for visual for this landscape unit.

Construction activities, including those that involve nighttime lighting or would create glare, would also temporarily introduce features that would contrast with the visual character of the scenic resources. Visitors and residents would be sensitive to changes in the visual quality of this landscape unit. If nighttime construction activities occur in areas with sensitive viewers, these viewer groups would also be highly sensitive to spillover lighting and glare that originate from construction areas. Thus, construction activities in these areas could result in adverse effects related to visual quality during construction in the Downtown Mid-Rise and High-Rise Landscape Unit.

Industrial Landscape Unit: North of Bay Street/Alameda Street, construction activities at the staging areas from 7th Street to Bay Street would be visible to viewer groups. Given the industrial nature of the Affected Area for visual and that no scenic resources or sensitive viewers are in the Industrial Landscape Unit north of Bay Street/Alameda Street, viewer groups would be insensitive to the visual changes associated with construction activities.

South of Bay Street/Alameda Street, Alternative 2 would involve the same types of construction activities, including those that involve nighttime lighting or would create glare, at the same locations as Alternative 1. As a result, Alternative 2 would result in the same impacts during construction as Alternative 1 for the Industrial Landscape Unit. As discussed for Alternative 1, sensitive viewers (users of Hollydale Community Park and residences across the street from the park) would be able to see construction activities within the San Pedro Subdivision ROW. If nighttime construction activities occur in these areas, sensitive viewers would also be highly sensitive to spillover lighting and glare that originate from construction areas. Therefore, construction activities in these areas could result in adverse effects related to visual quality during construction in the Industrial Landscape Unit.

Summary of Visual Character and Quality: As discussed previously for the Downtown Mid-Rise and High-Rise Landscape Unit and in the construction-related discussion for Alternative 1 in the Industrial, Industrial and Residential, Residential, Suburban Residential and Industrial, and Suburban Residential Landscape Units, construction activities would be visible to sensitive viewers and sensitive viewers would be highly sensitive to spillover lighting and glare from nighttime construction activities. Therefore, adverse effects are expected. Construction activities, equipment, and lighting are temporary and would be removed once construction is completed. Upon completion of construction activities adjacent to scenic resources, views of the scenic resources would no longer be obstructed. Under NEPA, with implementation of Mitigation Measure VA-4 (Construction Screening), VA-5 (Construction Lighting), and NOI-8 (Noise Control Plan), Alternative 2 would not result in adverse effects related to visual quality during construction.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Alternative 3 would involve the same construction activities at the same location as Alternatives 1 and 2 south of 55th Street/Long Beach Avenue in the Industrial, Industrial and Residential, Residential, Suburban Residential and Industrial, and Suburban Residential Landscape Units. The Downtown Low-Rise and Mid-Rise Landscape Unit and Downtown Mid-Rise and High-Rise Landscape Unit are not part of Alternative 3, thus, Alternative 3 would not result in adverse construction-related effects in these two landscape units. Similarly, no adverse construction-related effects would occur in the Industrial Landscape Unit and Industrial and Residential Landscape Unit north of 55th Street/Long Beach Avenue. Alternative 3 would have fewer construction-related effects on visual character and quality than Alternatives 1 and 2 because Alternative 3 is a shorter alignment. Similarly, fewer sensitive viewers would be affected during construction of Alternative 3 than Alternatives 1 and 2.

Refer to the discussion under Alternative 1 for analysis of construction-related impacts in the landscape units applicable to Alternative 3. As discussed, construction activities would be visible to sensitive viewers and sensitive viewers would be highly sensitive to spillover lighting and glare that originate from the construction areas. Therefore, adverse effects are expected. Construction activities, equipment, and lighting are temporary and would be removed once construction is completed. Upon completion of construction activities adjacent to scenic resources, views of the scenic resources would no longer be obstructed. Under NEPA, with implementation of Mitigation Measures VA-4 (Construction Screening), VA-5 (Construction Lighting), and NOI-8 (Noise Control Plan), Alternative 3 would not result in adverse effects related to visual quality during construction.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Alternative 4 would involve the same construction activities at the same location as Alternatives 1 through 3 south of Main Street/San Pedro Subdivision ROW in the Industrial, Industrial Suburban Residential and Industrial, and Suburban Residential Landscape Units. The Downtown Low-Rise and Mid-Rise, Downtown Mid-Rise and High-Rise, Industrial and Residential, and Residential Landscape Units are not part of Alternative 4, thus, Alternative 4 would not result in adverse construction-related effects in these four landscape units. Similarly, no adverse construction-related effects would occur in the Industrial Landscape Unit north of Main Street/San Pedro Subdivision ROW. Alternative 4 would have fewer construction-related effects on visual character and quality than Alternatives 1 through 3 because Alternative 4 is a shorter alignment. Similarly, fewer sensitive viewers would be affected during construction of Alternative 4 than the other three alternatives.

See discussion under Alternative 1 for analysis of construction-related impacts in the landscape units applicable to Alternative 4. As discussed, construction activities would be visible to sensitive viewers and sensitive viewers would be highly sensitive to spillover lighting and glare that originate from the construction areas. Therefore, adverse effects are expected. Construction activities, equipment, and lighting are temporary and would be removed once construction is completed. Upon completion of construction activities adjacent to scenic resources, views of the scenic resources would no longer be obstructed. Under NEPA, with implementation of Mitigation Measures VA-4 (Construction Screening), VA-5 (Construction Lighting), and NOI-8 (Noise Control Plan), Alternative 4 would not result in adverse effects related to visual quality during construction.

Design Options—Alternative 1

Design Option 1: LAUS at MWD

Construction activities would be visible to viewer groups in the Affected Area for visual at the proposed station entrance and staging areas, which consists of the LAUS concourse area and the baggage area parking lot between the LAUS building and LAUS train terminals. In all other areas under Design Option 1 (MWD), construction activities would be underground and would not be visible. Construction activities at the LAUS Forecourt would not occur. Construction activities in the concourse area and baggage area parking lot are not expected to detract from the visual character of the area. Although LAUS is considered a scenic resource, the rear of the LAUS building and the LAUS concourse area do not have any features that contribute to the visual character of LAUS as a scenic resource. The concourse area has been previously modified from its original character with historical elements integrated into this current design. Views of the historical elements within the waiting room (e.g., wall tiles, ceiling, light fixtures), which contains historical elements of LAUS, would not be adversely affected during construction.

Nighttime lighting or glare associated with construction at the baggage area parking lot could affect residences to the north of the area if light spills over to the residences or if lighting is not shielded to limit glare at these residences. At the LAUS concourse area, nighttime lighting and glare are not expected to substantially increase since the concourse area is consistently lit during the day and nighttime.

The use of construction equipment and lighting would be temporary and would be removed once construction is completed. However, residents north of LAUS would have views of construction activities occurring at the baggage area parking lot and would be highly sensitive to the effects associated with spillover lighting and glare. As a result, adverse effects would occur. Mitigation Measures VA-4 (Construction Screening) and NOI-8 (Noise Control Plan) would limit views of construction activities from residential areas. These mitigation measures, in addition to Mitigation Measure VA-5 (Construction Lighting), would also limit the amount of light that could spill over onto adjacent areas and reduce glare. Therefore, under NEPA, with implementation of mitigation measures, Design Option 1 (MWD) would not result in adverse effects related to visual quality during construction.

Design Option 2: Add Little Tokyo Station

Construction activities would be visible to viewer groups in the Affected Area for visual at the proposed station entrance and staging areas, which consists of the west side of Alameda Street right-of-way, the easterly side yard of a commercial property between 1st Street and 2nd Street, and the LADWP Materials Testing Laboratory property. Construction activities would temporarily alter the visual character of Little Tokyo Station area but would not significantly degrade the visual character and quality of the Affected Area because no notable scenic resources are located within the viewshed of this area and the visual quality of the properties on which construction activities would be located do not contain features that beneficially contribute to the visual quality of the Affected Area.

Construction activities associated with Design Option 2 may require nighttime and weekend construction, which could increase nighttime light or glare in the area surrounding Alameda Street generally between 1st Street and Traction Avenue, which is where construction activities would be visible in the surrounding area. Construction in all other areas associated with Design Option 2 would occur underground. Residences in the Affected Area for visual could be

affected by nighttime light or glare if light spills over to the residences or if lighting is not shielded to limit glare at these residences.

Construction is temporary, and construction barriers, equipment, and lighting would be removed once construction is completed. However, sensitive viewers (residents) in the Affected Area for visual would be able to see construction activities at the station entrance and staging areas and would be highly sensitive to the effects associated with spillover lighting and glare. As a result, adverse effects would occur. Mitigation Measures VA-4 (Construction Screening) and NOI-8 (Noise Control Plan) would limit views of construction activities from residential areas. These mitigation measures, in addition to Mitigation Measure VA-5 (Construction Lighting), would also limit the amount of light that could spill over onto adjacent areas and reduce glare. Therefore, under NEPA, with implementation of mitigation measures, Design Option 2 would not result in adverse effects related to visual quality during construction.

Maintenance and Storage Facility

Paramount MSF Site Option

No scenic resources are in the Affected Area for visual for the Paramount MSF site option. Public views of construction activities of the Paramount MSF site option would be limited because the site is situated between the rears of commercial and industrial properties, as well as the rear of a school. Construction of lead tracks along the San Pedro Subdivision and PEROW north of Rosecrans Avenue would occur to the rear of residential properties and are not expected to be visible to other residential uses in the surrounding area. Nevertheless, Mitigation Measure VA-4 (Construction Screening) would require that screening would be provided if construction activities are visible to nearby residential uses. Mitigation Measure NOI-8 (Noise Control Plan) could also block views of construction activities from residential uses if temporary noise barriers are installed in the residential area. Construction activities at the Rosecrans Avenue/San Pedro Subdivision ROW grade crossing would generally be visible. However, the area consists of a mix of commercial and industrial uses, and construction at this grade crossing would not impede the visual character and quality of the area.

If nighttime construction is required, particularly the construction of lead tracks associated with the Paramount MSF site option, residential uses surrounding the San Pedro Subdivision ROW and PEROW north of Rosecrans Avenue could be affected if light spills over to the residences or if lighting is not shielded to limit glare at these residences. Residents would be highly sensitive to the effects associated with spillover lighting and glare. Mitigation Measures VA-4 (Construction Screening) and NOI-8 (Noise Control Plan), in addition to Mitigation Measure VA-5 (Construction Lighting), would limit the amount of light that could spill over onto adjacent areas and reduce glare. Under NEPA, with implementation of mitigation measures, the Paramount MSF site option would not result in adverse effects related to visual quality during construction.

Bellflower MSF Site Option

Although residential uses are located to the east, northwest, and north of the Bellflower MSF site option, tall trees and vines along the easterly and northerly perimeters currently block views of this MSF site option from residential uses east and north of the site, respectively. The existing wall along the northwest perimeter of the proposed site would block views of construction from the mobile home community. The tall trees, vines, and walls are likely to remain in place during construction of the Bellflower MSF site option. However, if the

landscaping and barriers were removed during construction, views of construction activities within the Bellflower MSF site option would be visible at the residential areas until other types of landscaping and barriers are installed to obstruct views of the MSF site option, and adverse effects would occur. Implementation of Mitigation Measure VA-4 (Construction Screening) would provide construction screening that would block views of the construction area from residents. Mitigation Measure NOI-8 (Noise Control Plan) could also block views of construction activities from residential uses if temporary noise barriers are installed in the residential area.

If nighttime construction is required, residential uses surrounding the Bellflower MSF site option could be affected if light spills over to the residences or if lighting is not shielded to limit glare at these residences. Residents would be highly sensitive to the effects associated with spillover lighting and glare. Mitigation Measures VA-4 (Construction Screening) and NOI-8 (Noise Control Plan), in addition to Mitigation Measure VA-5 (Construction Lighting), would limit the amount of light that could spill over onto adjacent areas and reduce glare. Construction is temporary and construction barriers, equipment, and lighting would be removed once construction is completed. Under NEPA, with implementation of mitigation measures, the Bellflower MSF site option would not result in adverse effects related to visual quality during construction.

Project Measures and Mitigation Measures

No project measures are required during construction. The following mitigation measures would apply, with VA-3 (Landscaping at LAUS) under Alternative 2, and VA-4 (Construction Screening) and VA-5 (Construction Lighting) under all alternatives.

VA-3 **Landscaping at Los Angeles Union Station (LAUS)**. If construction activities require the removal of the palm trees along the LAUS Forecourt driveway, the same species and number of palm trees removed would be replaced upon completion of construction activities at LAUS. The palm trees would be placed at similar intervals as existing conditions. The palm trees would be monitored for five years or until the tree planting has been firmly established. If one or more of the replacement palm trees die before the trees have been firmly established, Metro would replant the palm tree(s) and continue to monitor the replanted palm tree(s) until the palm tree(s) have been firmly established.

VA-4 **Construction Screening**. During construction, the perimeter of construction staging areas and laydown areas would be screened to shield construction activities and laydown areas from adjacent visually sensitive land uses, including the following:

- Los Angeles Union Station Forecourt (City of Los Angeles)
- Alameda Street at LAUS (City of Los Angeles)
- Alameda Street at the proposed Little Tokyo Station (Design Option 2) (City of Los Angeles)
- 8th Street in downtown Los Angeles (City of Los Angeles)
- Fred Roberts Recreation Center (City of Los Angeles)
- Salt Lake Park (City of Huntington Park)
- Hollydale Community Park (City of South Gate)
- Original Bellflower Pacific Electric Station (City of Bellflower)

- Artesia Historical Museum (City of Artesia)
- Old Station #30 (City of Artesia)

The screening would be designed consistent with the Metro requirements and in coordination with cities and could incorporate community artwork, Metro-branded art, and/or community relevant messaging.

VA-5 **Construction Lighting.** During construction, nighttime construction lighting would be directed toward the interior of the construction area and shielded with temporary construction screening approved by Metro to limit light spillover into adjacent areas.

Mitigation Measure VA-5 (Construction Lighting) is required for impacts under CEQA only. Also refer to Mitigation Measure NOI-8 (Noise Control Plan) in Section 4.19.3.7.

California Environmental Quality Act Determination

Would the Project have a substantial adverse effect on a scenic vista?

No Project Alternative

No scenic vistas are located within the Affected Area for visual and no project-related construction activities would occur under the No Project Alternative. Therefore, no mitigation measures are required and no construction-related impacts would occur.

Build Alternatives, Design Options, and Maintenance and Storage Facility Site Options

There are no scenic vistas within the Affected Area for visual of the Build Alternatives, design options, or MSF site options. Therefore, there would be no impact to scenic vistas and mitigation would not be required.

Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Project Alternative

Construction activities would not occur under the No Project Alternative; therefore, no construction-related impacts would occur to scenic resources, and mitigation would not be required.

Build Alternatives, Design Options, and Maintenance and Storage Facility Site Options

No state scenic highways are located within the Affected Area for visual of the Build Alternatives, design options, or MSF site options; therefore, no scenic resources within a state scenic highway would be affected by project construction. No construction-related impacts would occur, and mitigation would not be required.

In nonurbanized areas, would the Project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?

No Project Alternative

No construction activities would occur under the No Project Alternative and the visual character and quality of the Affected Area for visual would remain similar to existing conditions. Therefore, no construction-related impacts would occur, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Based on the definition contained within *CEQA Guidelines* Section 15387, the jurisdictions within the Affected Area for visual are urbanized areas, and significant impacts would occur if project-related construction would conflict with applicable zoning and other regulations governing scenic quality.

The municipal codes of the affected jurisdictions generally do not contain regulations that govern scenic quality during construction. However, the SCAQMD Rules 403 would have the potential to beneficially affect visual quality during construction by reducing the amount of visible dirt and dust along public rights-of-way (e.g., sidewalks and roadways) and properties in the Affected Area beyond the construction area. Rule 403 does not permit track-out dust to extend 25 feet or more beyond the active construction area and requires all track-out dirt to be removed at the end of each workday or evening shift. Project-related construction activities would be required to comply with this rule.

Construction has the potential to temporarily alter the visual character and quality of the Affected Area for visual because construction activities would introduce heavy equipment (e.g., cranes, bulldozers, scrapers, and trucks), security fencing, barricade materials, stockpiled building materials, and safety and directional signage into the view corridor of public streets, sidewalks, and properties where construction would occur. However, construction activities and equipment are temporary and would be removed once construction is completed. Although the municipal codes of the affected jurisdictions do not contain regulations that govern scenic quality during construction, implementation of Mitigation Measures VA-3 (Landscaping at LAUS), VA-4 (Construction Screening), and NOI-8 (Noise Control Plan) would reduce construction-related effects on visual character and quality. Implementation of Mitigation Measures VA-3 (Landscaping at LAUS) would require palm trees at the LAUS Forecourt driveway to be replaced if the trees are removed during construction. Mitigation Measure VA-4 (Construction Screening) would screen construction activities from sensitive viewers. Additionally, Mitigation Measure NOI-8 (Noise Control Plan) would reduce significant effects construction could have on visual quality because this mitigation measure would require that equipment and staging areas are located away from noise-sensitive receivers, which also include some sensitive viewers (such as residences). Mitigation Measure NOI-8 (Noise Control Plan) would also require the installation of temporary noise barriers or noise-control curtains, both of which would screen views of construction activities. With implementation of these mitigation measures, the visual character and quality for sensitive viewers in the Affected Area would not be degraded during construction.

Because Alternative 1 would not conflict with applicable regulations governing scenic quality during construction and would implement Mitigation Measures VA-3 (Landscaping at LAUS), VA-4 (Construction Screening), and NOI-8 (Noise Control Plan) to reduce construction-related effects on visual character and quality on sensitive viewers and scenic resources, impacts on visual character and quality during construction would be less than significant with implementation of mitigation measures.

Mitigation Measures: Mitigation Measures VA-3 (Landscaping LAUS), VA-4 (Construction Screening), and NOI-8 (Noise Control Plan)

Impacts Remaining After Mitigation: Less than significant impact after mitigation.

Alternative 2: 7th St/Metro Center to Pioneer Station

Construction activities for Alternative 2 would occur in the same jurisdictions as Alternative 1 and would also be required to comply with SCAQMD 403. Similarly, Alternative 2 construction activities would introduce temporary visual components that would temporarily alter the visual character and quality of the construction area; however, these components would be removed once construction is completed. With implementation of Mitigation Measures VA-4 (Construction Screening) and NOI-8 (Noise Control Plan), the visual character and quality for sensitive viewers in the Affected Area for visual would not be degraded during construction. Therefore, impacts on visual character and quality during construction would be less than significant with implementation of mitigation measures.

Mitigation Measures: Mitigation Measures VA-4 (Construction Screening) and NOI-8 (Noise Control Plan)

Impacts Remaining After Mitigation: Less than significant impact after mitigation.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Construction activities for Alternative 3 would occur in the same jurisdictions as Alternatives 1 and 2 and would be required to comply with SCAQMD Rule 403. While construction activities for Alternative 3 would occur in the same jurisdictions as Alternatives 1 and 2, Alternative 3 would be a shorter alignment, and no construction activities would occur north of 55th Street/Long Beach Avenue. As a result, construction-related effects on visual character and quality would be less than Alternatives 1 and 2. Construction would involve temporary at-grade and aerial construction activities that have the potential to temporarily alter the visual character and quality of the Affected Area for visual. No underground tunneling would occur for Alternative 3, although excavation activities for proposed underpasses would occur. Construction activities and equipment are temporary and would be removed once construction is completed. With implementation of Mitigation Measures VA-4 (Construction Screening) and NOI-8 (Noise Control Plan), the visual character and quality for sensitive viewers in the Affected Area would not be degraded during construction. Therefore, impacts on visual character and quality during construction would be less than significant with implementation of mitigation measures.

Mitigation Measures: Mitigation Measures VA-4 (Construction Screening) and NOI-8 (Noise Control Plan)

Impacts Remaining After Mitigation: Less than significant impact after mitigation.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Construction activities for Alternative 4 would affect fewer jurisdictions than Alternatives 1, 2, and 3 because it is a shorter alignment. No construction activities would occur north of Main Street/San Pedro Subdivision ROW. As a result, construction-related impacts on visual character and quality would be less than Alternatives 1, 2, and 3. Similarly, Alternative 4 would be required to comply with SCAQMD Rule 403. Construction would involve temporary at-grade and aerial construction activities that have the potential to temporarily

alter the visual character and quality of the Affected Area for visual. No underground tunneling would occur for Alternative 4. Construction activities and equipment are temporary and would be removed once construction is completed. With implementation of Mitigation Measures VA-4 (Construction Screening) and NOI-8 (Noise Control Plan), the visual character and quality for sensitive viewers in the Affected Area would not be degraded during construction. Therefore, impacts on visual character and quality during construction would be less than significant with implementation of mitigation measures.

Mitigation Measures: Mitigation Measures VA-4 (Construction Screening) and NOI-8 (Noise Control Plan)

Impacts Remaining After Mitigation: Less than significant impact after mitigation.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Construction activities for Design Options 1 and 2 would comply with applicable regulations governing scenic quality, including SCAQMD Rule 403. Construction of these design options would not conflict with applicable regulations governing scenic quality. With implementation of Mitigation Measures VA-4 (Construction Screening) and NOI-8 (Noise Control Plan), the visual character and quality for residents north of the baggage area parking lot would not be degraded during construction. The mitigation measures would also avoid impacts to visual character and quality for sensitive viewers in the Little Tokyo area affected by Design Option 2. Therefore, impacts on visual character and quality during construction would be less than significant.

Mitigation Measures: Mitigation Measures VA-4 (Construction Screening) and NOI-8 (Noise Control Plan)

Impacts Remaining After Mitigation: Less than significant impact after mitigation.

Maintenance and Storage Facility

Paramount MSF Site Option: Construction of the Paramount MSF site option would comply with applicable regulations governing scenic quality, including SCAQMD Rule 403. Construction of the Paramount MSF site option would not conflict with applicable regulations governing scenic quality. Although several residential properties adjacent to the San Pedro Subdivision ROW and PEROW north of Rosecrans Avenue would be acquired, construction activities would occur to the rear of the acquired properties and are not expected to be visible to other residential uses in the surrounding area. Nevertheless, with Mitigation Measures VA-4 (Construction Screening) and NOI-8 (Noise Control Plan), visual character and quality for sensitive viewers would not be degraded during construction. Therefore, no adverse effects would occur with implementation of mitigation measures.

Bellflower MSF Site Option: Construction of the Bellflower MSF site option would comply with applicable regulations governing scenic quality, including SCAQMD Rule 403. Although construction of the Bellflower MSF site option would not conflict with applicable regulations governing scenic quality, Mitigation Measures VA-4 (Construction Screening) and NOI-8 (Noise Control Plan) would be implemented to avoid impacts to visual character and quality for sensitive viewers in the Affected Area for visual. Therefore, impacts would be less than significant with implementation of mitigation measures.

Mitigation Measures: Mitigation Measures VA-4 (Construction Screening) and NOI-8 (Noise Control Plan)

Impacts Remaining After Mitigation: Less than significant impact after mitigation.

Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

No Project Alternative

No project-related construction activities would occur under the No Project Alternative and new sources of light and glare would not be introduced. Therefore, no mitigation measures are required, and no construction-related impacts would occur.

Alternative 1: Los Angeles Union Station to Pioneer Station

Hours of construction would vary to meet the type of work being performed and to meet local ordinance restrictions. Nighttime and weekend construction may be required and may include, but not be limited to, tunneling operations, trackwork, catenary wire installation, and other construction that requires cut-and-cover sections. Generally, construction activities would not result in a substantial source of light or glare. However, nighttime construction work could increase nighttime light or glare in the Affected Area for visual and temporarily affect visibility and result in temporary significant impacts related to spillover lighting and glare if not mitigated. Potential impacts related to construction-related spillover lighting and glare would be reduced to less than significant levels with the implementation of Mitigation Measure VA-5 (Construction Lighting).

Mitigation Measures: Mitigation Measure VA-5 (Construction Lighting)

Impacts Remaining After Mitigation: Less than significant impact after mitigation.

Alternative 2: 7th St/Metro Center to Pioneer Station

Similar to Alternative 1, hours of construction would vary for Alternative 2 and may require nighttime and weekend construction. Nighttime construction work could increase nighttime light or glare in the Affected Area for visual and temporarily affect visibility and result in temporary significant impacts related to spillover lighting and glare if not mitigated. Potential impacts related to construction-related spillover lighting and glare would be reduced to less than significant levels with the implementation of Mitigation Measure VA-5 (Construction Lighting).

Mitigation Measures: Mitigation Measure VA-5 (Construction Lighting)

Impacts Remaining After Mitigation: Less than significant impact after mitigation.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Hours of construction would vary for Alternative 3 and may require nighttime and weekend construction. Nighttime construction work could increase nighttime light or glare in the Affected Area for visual south of 55th Street/Long Beach Avenue and temporarily affect visibility and result in temporary significant impacts related to spillover lighting and glare if not mitigated. Potential impacts related to construction-related spillover lighting and glare would be reduced to less than significant levels with the implementation of Mitigation Measure VA-5 (Construction Lighting).

No significant impacts would occur north of 55th Street/Long Beach Avenue because Alternative 3 does not involve any construction activities north of the station. Therefore, Alternative 3 would result in fewer construction-related spillover light and glare impacts than Alternatives 1 and 2.

Mitigation Measures: Mitigation Measure VA-5 (Construction Lighting)

Impacts Remaining After Mitigation: Less than significant impact after mitigation.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Hours of construction would vary for Alternative 4 and may require nighttime and weekend construction. Nighttime construction work could increase nighttime light or glare in the Affected Area for visual south of Main Street/San Pedro Subdivision ROW and temporarily affect visibility and result in temporary significant impacts related to spillover lighting and glare if not mitigated. Potential impacts related to construction-related spillover lighting and glare would be reduced to less than significant levels with the implementation of Mitigation Measure VA-5 (Construction Lighting).

No significant impacts would occur north of Main Street/San Pedro Subdivision ROW because Alternative 4 does not involve any construction activities north of the station. Therefore, Alternative 4 would result in fewer construction-related spillover light and glare impacts than Alternatives 1 through 3.

Mitigation Measures: Mitigation Measure VA-5 (Construction Lighting)

Impacts Remaining After Mitigation: Less than significant impact after mitigation.

Design Options—Alternative 1

Design Option 1: LAUS at MWD: Construction activities associated with Design Option 1 (MWD) may require nighttime and weekend construction, which could potentially increase nighttime light or glare around the LAUS concourse area and LAUS baggage area parking lot. Construction in all other areas associated with Design Option 1 (MWD) would occur underground and would not be visible in the surrounding area. Nighttime lighting and glare are not expected to significantly increase in the LAUS concourse area given that the area is consistently lit during the day and nighttime. Nighttime lighting or glare associated with construction at the baggage area parking lot may potentially affect residences to the north of the area, which could result in significant impacts. Potential impacts related to construction-related spillover lighting and glare would be reduced to less than significant levels with the implementation of Mitigation Measure VA-5 (Construction Lighting).

Design Option 2: Add Little Tokyo Station: Construction activities associated with Design Option 2 may require nighttime and weekend construction, which could potentially increase nighttime light or glare in the area surrounding Alameda Street generally between 1st Street and Traction Avenue, which is where construction activities would be visible in the surrounding area. Construction in all other areas associated with Design Option 2 would occur underground. Residences in the Affected Area for visual may potentially be affected by nighttime light or glare associated with construction of Design Option 2, which could result in significant impacts. Potential impacts related to construction-related spillover lighting and glare would be reduced to less than significant levels with the implementation of Mitigation Measure VA-5 (Construction Lighting).

Mitigation Measures: Mitigation Measure VA-5 (Construction Lighting)

Impacts Remaining After Mitigation: Less than significant impact after mitigation.

Maintenance and Storage Facility

Paramount MSF Site Option: Construction activities associated with the Paramount MSF site option may require nighttime and weekend construction, which could potentially increase nighttime light or glare in the Affected Area for visual for the Paramount MSF site option. No light-sensitive uses are located around the Paramount MSF site option. However, residential uses surrounding the San Pedro Subdivision ROW and PEROW north of Rosecrans Avenue may potentially be affected by nighttime light or glare associated with construction of lead tracks associated with the Paramount MSF site option. Therefore, significant impacts on light and glare could occur for the Paramount MSF site option. Potential impacts related to construction-related spillover lighting and glare would be reduced to less than significant levels with the implementation of Mitigation Measures VA-5 (Construction Lighting).

Bellflower MSF Site Option: Construction activities associated with the Bellflower MSF site option may require nighttime and weekend construction, which could potentially increase nighttime light or glare for the Bellflower MSF site option. Residential uses surrounding the Bellflower MSF site option may potentially be affected by nighttime light or glare from construction occurring from the Bellflower MSF site option. Therefore, significant impacts on light and glare could occur. Potential impacts related to construction-related spillover lighting and glare would be reduced to less than significant levels with the implementation of Mitigation Measure VA5 (Construction Lighting).

Mitigation Measures: Mitigation Measure VA-5 (Construction Lighting)

Impacts Remaining After Mitigation: Less than significant impact after mitigation.

4.19.3.5 Air Quality

Methodology

CalEEMod was used to estimate air pollutant emissions that would be generated by construction activities and accounts for emissions from off-road construction equipment exhaust; on-road mobile vehicle travel associated with workers, vendors, and hauling; and area sources such as fugitive dust generation, architectural coating, and paving. The emissions analysis characterized maximum daily emissions that would be generated by a combination of simultaneous activities for each Build Alternative.

Regional Emissions: The regional portion of the construction air quality assessment evaluated emissions of regulated criteria pollutants and O_3 precursors that would be generated by all construction related activities for the Project occurring within the basin. This includes all sources and activities located within the ROW and on construction sites, and all vehicle travel and source activity on the regional roadway network involved in construction activities. Due to the uncertainty in construction activity sequencing, the regional emissions analysis assumed that several construction sites could be underway simultaneously at various locations throughout the project corridor. Parameters of the potentially concurrent construction site scenarios included in the regional emissions analysis in CalEEMod are presented in Table 4.19.5.

Table 4.19.5. Examples of the Regional Emissions Analysis Source Activity

Construction Activity	Off-Road Equipment Count	Daily Construction Workers	Daily Vendor Deliveries	Daily Haul Truck Loads	Daily Material Import/Export Total Volume (Cubic Yards)
Demolition and Relocations	8	100	0	60	600
Underground LRT Excavation	12	200	0	60	600
At-Grade LRT Construction	10	150	30	0	0
Aerial LRT Construction	10	150	30	0	0
Systems Installation	10	150	20	0	0
MSF Construction	10	150	20	30	300
Totals	**60**	**900**	**100**	**150**	**1,500**

Source: Prepared for Metro in 2019
Note: LRT = light rail transit; MSF = maintenance and storage facility

Furthermore, the differences in excavation and infill volumes would affect the duration of the excavation and fill activities, but not the maximum daily activity intensity. The regional emissions analysis focuses on maximum daily pollutant emissions; therefore, the maximum daily emissions related to construction activities would be the same regardless of the Build Alternative ultimately selected.

For the NEPA and CEQA analyses, regional emissions are evaluated in the context of the SCAQMD Air Quality Significance Thresholds. The SCAQMD established maximum daily emissions threshold values for volatile organic compounds, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$ as a quantitative guideline for identifying potentially significant air quality impacts from CEQA projects. A significant air quality impact may occur if maximum daily emissions exceed any of the regional mass daily threshold values. Maximum daily regional emissions that would be generated by project construction were compared to the SCAQMD mass daily thresholds presented in Table 4.19.6.

Table 4.19.6. SCAQMD Air Quality Significance Thresholds – Construction Mass Daily Thresholds

Pollutant	Threshold Value (lbs/day)
Volatile Organic Compounds (VOC)	75
Nitrogen Oxides (NO_X)	100
Carbon Monoxide (CO)	50
Sulfur Oxides (SO_X)	150
Respirable Particulate Matter (PM_{10})	150
Fine Particulate Matter ($PM_{2.5}$)	55
Lead (Pb)	3

Source: SCAQMD 2015
Note: lbs/day = pounds per day

Localized Emissions: SCAQMD provides guidance recommending an assessment of localized air quality impacts near construction sites. The localized analysis focuses on emission sources located on the construction site itself and does not include regional vehicle travel and other remote emissions. Using ambient air monitoring data from 37 monitoring sites throughout the basin in conjunction with air dispersion modeling, the SCAQMD determined regionally specific incremental increases in localized pollutant concentrations throughout the basin that could constitute a significant air quality impact by exceeding an applicable air quality standard. The basin was subdivided into SRAs based on proximity to the nearest monitoring station and local topography. The project corridor transects portions of SRA 1 (Central LA County), SRA 4 (South Coastal LA County), SRA 5 (Southeast LA County), and SRA 12 (South Central LA County).

Under the SCAQMD Localized Significance Thresholds (LST) methodology, daily emissions of NO_X, CO, PM_{10}, and $PM_{2.5}$ from sources located on the construction site are compared to regionally specific quantitative threshold values derived for each SRA based on construction site size and proximity of sensitive receptors. Table 4.19.7 presents the applicable SCAQMD LST values based on construction site location, size, and receptor proximity. Applicable LST values were determined in accordance with the SCAQMD *Fact Sheet for Applying CalEEMod to Localized Significance Thresholds* (SCAQMD 2015).

Localized emissions for construction were analyzed for each project component: aerial station and guideway; at-grade station and guideway; underground station and guideway; underground-to-at-grade LRT transition portal in downtown Los Angeles; parking facilities; and MSF. Alternative 3 and Alternative 4 would not involve underground construction or portal construction. The various construction activities that would occur throughout the project corridor were compared to the corresponding LST values.

Table 4.19.7. SCAQMD Localized Significance Thresholds – Construction

Source Receptor Area	Site Size (Acres)	Receptor Distance (m)	(lbs/day)			
			CO	NO_X	PM_{10}	$PM_{2.5}$
1 (Central LA County)	≤1	25	680	74	5	3
		50	882	74	15	5
		100	1,259	82	33	10
		200	2,406	106	70	24
		500	7,911	168	179	102
	2	25	1,048	108	8	5
		50	1,368	106	25	7
		100	1,799	110	43	12
		200	3,016	126	80	28
		500	8,637	179	190	110
	5	25	1,861	161	16	8
		50	2,331	157	50	11
		100	3,030	165	69	18
		200	4,547	173	107	36
		500	10,666	212	219	126

Source Receptor Area	Site Size (Acres)	Receptor Distance (m)	(lbs/day)			
			CO	NO_X	PM_{10}	$PM_{2.5}$
4 (South Coastal LA County)	≤1	25	585	57	4	3
		50	789	58	13	5
		100	1,180	68	29	10
		200	2,296	90	61	26
		500	7,558	142	158	93
	2	25	842	82	7	5
		50	1,158	80	21	7
		100	1,611	87	37	13
		200	2,869	106	70	30
		500	8,253	151	167	101
	5	25	1,530	123	14	8
		50	1,982	118	42	10
		100	2,613	126	58	18
		200	4,184	141	92	39
		500	10,198	179	191	120
5 (Southeast LA County)	≤1	25	571	80	4	3
		50	735	81	13	4
		100	1,088	94	30	8
		200	2,104	123	66	19
		500	6,854	192	173	86
	2	25	681	114	7	4
		50	1,082	111	21	6
		100	1,496	121	39	10
		200	2,625	145	74	22
		500	7,500	205	182	92
	5	25	1,480	172	14	7
		50	1,855	165	42	10
		100	2,437	176	60	15
		200	3,867	194	95	30
		500	9,312	244	203	103
12 (South Central LA County)	≤1	25	231	46	4	3
		50	342	46	12	4
		100	632	54	26	7
		200	1,545	70	54	17
		500	5,452	109	139	70
	2	25	346	65	7	4
		50	515	64	20	6

Source Receptor Area	Site Size (Acres)	Receptor Distance (m)	(lbs/day)			
			CO	NO_X	PM_{10}	$PM_{2.5}$
		100	841	69	34	9
		200	1,817	82	62	19
		500	5,962	117	146	74
	5	25	630	98	13	7
		50	879	84	41	10
		100	1,368	101	55	15
		200	2,514	111	83	27
		500	7,389	139	166	86

Source: SCAQMD 2009
Notes: LA = Los Angeles; SRA = Source Receptor Area; lbs/day = pounds per day; m = meters; CO = carbon monoxide; NO_X = nitrogen oxide; PM_{10} = particulate matter less than 10 microns; $PM_{2.5}$ = nitrogen oxide less than 2.5 microns

Each component would be constructed with the same off-road equipment inventory and on-road vehicle fleet and would employ the same types of activities and techniques to complete. Maximum daily emissions generated by on-site sources (i.e., equipment exhaust and fugitive dust) at the various sites were quantified using CalEEMod and the activity-specific equipment inventories outlined in Table 4.19.5.

All construction activities for each Build Alternative would be conducted in accordance with the Metro *Green Construction Policy* (Metro 2011b), and all emissions analyses account for adherence to the mandatory provisions of the policy. Mandatory provisions include the use of construction equipment with engines meeting Tier 4 Final emissions standards and the use of haul trucks that comply with 2007 USEPA on-road emission standards for PM (0.01 g/bhp-hr) and NO_X (1.2 g/bhp-hr). Sources included in the emissions analysis are summarized in Table 4.19.5.

Construction Activities: Construction activities are summarized in Section 3.7 of the Transportation Chapter and Section 4.19.2. Table 4.19.1 provides a general overview of construction activities, the equipment used, and duration. Maximum construction activity intensity on a given day would not differ among the Build Alternatives.

Construction of the Build Alternatives would require substantial excavation to accommodate the system components. A summary of the soil export and fill import quantities for each Build Alternative is provided in Table 4.19.8. Daily haul truck activity would fluctuate throughout the course of construction. Based on feasibility constraints and preliminary schedule coordination, maximum daily truck activity would not exceed 150 hauling loads and 100 material deliveries throughout the project corridor regardless of the Build Alternative ultimately selected.

All construction activities would be required to comply with the provisions of the Metro *Green Construction Policy* (Metro 2011b), which requires stringent equipment and vehicle inspection and maintenance programs so that operations are within desired manufacturer specifications. Additionally, construction activities would adhere to BMPs to control emissions and exposures to air pollution generated by construction. The BMPs would apply to all construction staging areas throughout the project corridor and would avoid generation of excessive emissions in relocating equipment and material stockpiles. Adhering to BMP provisions contained in the Metro *Green Construction Policy* would comply with SCAQMD Rule 403 governing fugitive dust control.

Table 4.19.8. Export and Import Quantities—Build Alternatives

Build Alternative	Total Export (Cubic Yards)[1]	Export Truck Loads (10-Cubic Yard Trucks)	Total Import (Cubic Yards)[1]	Import Truck Loads (10-Cubic Yard Trucks)
Alternative 1	987,700	98,770	722,400	72,240
Alternative 2	1,107,800	110,780	677,500	67,750
Alternative 3	78,800	7,880	513,800	51,380
Alternative 4	7,000	700	214,800	321,480
Design Option 1	1,066,400	106,640	757,000	75,700
Design Option 2	1,167,200	116,720	745,900	74,590

Source: Compiled by WSP for Metro in 2020
Note: [1] Rounded to nearest hundred

Alternative 1: Los Angeles Union Station to Pioneer Station

Criteria Pollutant and Ozone Precursor Emissions: Alternative 1 would involve a variety of construction activities throughout the project corridor and would be conducted in accordance with the Metro *Green Construction Policy*. Table 4.19.9 presents the maximum daily emissions that would be generated by concurrent activities during construction of Alternative 1, as well as the SCAQMD Air Quality Significance Thresholds for mass daily emissions at the regional level. Despite complying with the 2007 USEPA emissions standards and adhering to BMPs contained within the Metro *Green Construction Policy*, daily emissions of NO_X would exceed the SCAQMD threshold and potentially create an adverse effect related to air quality. The NO_X emissions are mostly attributed to haul trucks, as equipment would be required to comply with the most stringent emissions standards promulgated by the USEPA and the CARB. Under NEPA, unmitigated haul truck emissions would create an adverse effect related to air quality.

Table 4.19.9. Maximum Daily Regional Emissions during Construction (Alternatives 1 and 2)

Emissions Source	Measured in lbs/day					
	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Equipment Exhaust	4.0	195.1	18.8	0.4	0.1	0.1
On-Site Dust and Vapors	23.0	-	-	-	22.2	9.8
Material Hauling	2.0	19.8	75.6	0.2	6.3	1.8
Vendor Deliveries	0.6	5.3	18.4	<0.1	1.3	0.4
Crew Worker Trips	8.1	61.1	5.3	0.2	20.3	5.5
Total	**37.7**	**281.3**	**118.2**	**0.9**	**50.3**	**17.7**
SCAQMD Threshold	75	550	100	150	150	55

Sources: Metro 2021i, SCAQMD 2015
Notes: CO = carbon monoxide; lbs/day = pounds per day; NO_x = nitrogen oxide; $PM_{2.5}$ = fine particulate matter of diameter less than 2.5 microns; PM_{10} = respirable particulate matter of diameter less than 10 microns; ROG = reactive organic gases; SCAQMD = South Coast Air Quality Management District; SO_x = sulfur oxides

Implementation of Mitigation Measure AQ-1 (Vehicle Emissions) would reduce maximum daily NO_X emissions to approximately 104.0 lbs/day. Nonetheless, under NEPA, Alternative 1 construction activities would result in a temporary adverse effect related to emissions of criteria pollutants and ozone precursors.

Odors and Dust: Alternative 1 would not generate a substantial source of construction odors or visible dust. Construction activities would use a variety of gasoline or diesel-powered equipment that emit exhaust fumes as well as asphalt paving, which has a distinctive odor during application. Persons within proximity to the construction work area may find these odors objectionable or could result in a temporary annoyance if the odors and dust are excessive. However, it is anticipated that emissions from construction activities would occur intermittently throughout the workday and the associated odors would dissipate rapidly within the immediate vicinity of the work area.

Construction activities would adhere to the stringent provisions of the Metro *Green Construction Policy* (e.g., equipment maintenance and inspections, restriction of idling, maintaining buffer zones where feasible) and employ BMPs to prevent the occurrence of a nuisance odor or dust plume in accordance with SCAQMD Rule 402 (Nuisance). Under NEPA, Alternative 1 would not result in adverse effects related to odor and dust nuisance during construction.

Alternative 2: 7th St/Metro Center to Pioneer Station

Criteria Pollutant and Ozone Precursor Emissions: Similar to Alternative 1, Alternative 2 would involve a variety of construction activities throughout the project corridor and would be conducted in accordance with the Metro *Green Construction Policy*. Construction of Alternative 2 would employ the same equipment and vehicle fleet as Alternative 1 and the maximum daily construction activity and emissions would be consistent with Alternative 1, as shown in Table 4.19.9. Construction of Alternative 2 would result in daily emissions of NO_X that would exceed the SCAQMD threshold and potentially create an adverse effect related to air quality. Under NEPA, unmitigated haul truck emissions would create an adverse effect related to air quality.

Implementation of Mitigation Measure AQ-1 (Vehicle Emissions) would reduce maximum daily NO_X emissions to approximately 104.0 lbs/day. Nonetheless, under NEPA, Alternative 2 construction activities would result in a temporary adverse effect related to emissions of criteria pollutants and ozone precursors.

Odors and Dust: The odors and dust analysis for Alternative 2 would be similar to Alternative 1. Construction activities would not generate a substantial source of construction odors or visible dust plumes and would adhere to the stringent provisions of the Metro *Green Construction Policy* and employ BMPs in accordance with SCAQMD Rule 402 (Nuisance). Under NEPA, Alternative 2 would not result in adverse effects related to odor and dust nuisance during construction.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Criteria Pollutant and Ozone Precursor Emissions: Alternative 3 would involve a variety of construction activities throughout the project corridor and would be conducted in accordance with the Metro *Green Construction Policy*. Alternative 3 would not include any underground station or track construction and would have a shorter alignment, which would result in less excavation, a reduction of maximum daily haul truck loads from 150 to 120, and a reduction

of maximum daily construction crew from 900 to 700 workers. Table 4.19.10 presents the maximum daily emissions that would be generated by concurrent activities during construction of Alternative 3, as well as the SCAQMD Air Quality Significance Thresholds for mass daily emissions at the regional level. Under NEPA, construction of Alternative 3 would not produce emissions exceeding any regional mass daily threshold and would not result in adverse effects related to emissions of criteria pollutants and ozone precursors.

Table 4.19.10. Maximum Daily Regional Emissions during Construction (Alternative 3)

Emissions Source	Measured in lbs/day					
	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Equipment Exhaust	3.2	159.3	15.4	0.3	0.1	0.1
On-Site Dust and Vapors	23.0	-	-	-	16.6	7.1
Material Hauling	1.6	15.8	60.5	0.2	5.1	1.5
Vendor Deliveries	0.6	5.3	18.4	< 0.1	1.3	0.4
Crew Worker Trips	6.3	47.5	4.1	0.1	15.8	4.3
Total	**34.7**	**228.0**	**98.4**	**0.7**	**38.9**	**13.4**
SCAQMD Threshold	75	550	100	150	150	55

Sources: Metro 2021i, SCAQMD 2015
Notes: CO = carbon monoxide; lbs/day = pounds per day; NO_x = nitrogen oxide; $PM_{2.5}$ = fine particulate matter of diameter less than 2.5 microns; PM_{10} = respirable particulate matter of diameter less than 10 microns; ROG = reactive organic gases; SCAQMD = South Coast Air Quality Management District; SO_x = sulfur oxides

Odors and Dust: The odors and dust analysis for Alternative 3 would be similar to the analysis presented for Alternative 1. Construction activities would not generate a substantial source of construction odors or visible dust plumes and would adhere to the stringent provisions of the Metro *Green Construction Policy* and employ BMPs in accordance with SCAQMD Rule 402 (Nuisance). Under NEPA, Alternative 3 would not result in adverse effects related to odor and dust nuisance during construction.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Criteria Pollutant and Ozone Precursor Emissions: Alternative 4 would involve a variety of construction activities throughout the project corridor and would be constructed in accordance with the Metro *Green Construction Policy*. Alternative 4 would not include any underground station or track construction and would have a shorter alignment, which would result in less excavation, a reduction of maximum daily haul truck loads from 150 to 100, and a reduction of maximum daily construction crew from 900 to 400 workers. Table 4.19.11 presents the maximum daily emissions that would be generated by concurrent activities during construction of Alternative 4, as well as the SCAQMD Air Quality Significance Thresholds for mass daily emissions at the regional level. Under NEPA, construction of Alternative 4 would not produce emissions exceeding any regional mass daily threshold and would not result in adverse effects related to emissions of criteria pollutants and ozone precursors.

Table 4.19.11. Maximum Daily Regional Emissions during Construction (Alternative 4)

Emissions Source	Measured in lbs/day					
	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Equipment Exhaust	3.2	159.3	15.4	0.3	0.1	0.1
On-Site Dust and Vapors	23.0	-	-	-	16.6	7.1
Material Hauling	1.3	13.2	50.4	0.2	4.2	1.2
Vendor Deliveries	0.6	5.3	18.4	< 0.1	1.3	0.4
Crew Worker Trips	3.6	27.1	2.4	0.1	9.0	2.4
Total	**31.7**	**205.0**	**86.6**	**0.6**	**31.3**	**11.3**
SCAQMD Threshold	75	550	100	150	150	55

Sources: Metro 2021i, SCAQMD 2015
Notes: CO = carbon monoxide; lbs/day = pounds per day; LRT = light rail transit; MSF = maintenance and storage facility; NO_x = nitrogen oxide; $PM_{2.5}$ = fine particulate matter of diameter less than 2.5 microns; PM_{10} = respirable particulate matter of diameter less than 10 microns; ROG = reactive organic gases; SCAQMD = South Coast Air Quality Management District; SO_x = sulfur oxides

Odors and Dust: The odors and dust analysis for Alternative 4 would be similar to the analysis presented for Alternative 1. Construction activities would not generate a substantial source of construction odors or visible dust plumes and would adhere to the stringent provisions of the Metro *Green Construction Policy* and employ BMPs in accordance with SCAQMD Rule 402 (Nuisance). Under NEPA, Alternative 4 would not result in adverse effects related to odor and dust nuisance during construction.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station

Criteria Pollutant and Ozone Precursor Emissions: Design Options 1 and 2 would involve a variety of construction activities throughout the project corridor similar to Alternative 1 and would be conducted in accordance with the Metro *Green Construction Policy*. Construction of Design Options 1 and 2 would employ the same equipment and vehicle fleet as Alternative 1, and the maximum daily construction activity and emissions would be consistent with Alternative 1, as shown in Table 4.19.9. Construction of Design Options 1 and 2 would result in daily emissions of NO_X that would exceed the SCAQMD threshold and potentially create a temporary adverse effect related to air quality.

Implementation of Mitigation Measure AQ-1 (Vehicle Emissions) would reduce maximum daily NO_X emissions to approximately 104.0 pounds per day. Nonetheless, under NEPA, Design Options 1 and 2 construction activities would result in a temporary adverse effect related to emissions of criteria pollutants and ozone precursors.

Odors and Dust: The odors and dust analysis for Design Options 1 and 2 would be similar to the analysis presented for Alternative 1. Construction activities would not generate a substantial source of construction odors or visible dust plumes and would adhere to the stringent provisions of the Metro *Green Construction Policy* and employ BMPs in accordance with SCAQMD Rule 402 (Nuisance). Under NEPA, Design Options 1 and 2 would not result in adverse effects related to odor and dust nuisance during construction.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options

Criteria Pollutant and Ozone Precursor Emissions: As the Paramount and Bellflower MSF site options would be similar in size, it was assumed that construction would employ the same equipment and vehicle inventory, result in the same maximum daily activity, and follow the same schedule regardless of the site option selected. The data presented in Table 4.19.12 apply to the construction of either the Paramount or Bellflower MSF site options.

Table 4.19.12. Maximum Daily Construction Emissions – MSF (Paramount and Bellflower)

Construction Phase	Measured in lbs/day					
	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Demolition	2.7	49.3	22.7	0.1	5.6	1.5
Site Preparation	2.8	51.7	23.4	0.2	11.2	4.2
Building/Track Installation	1.8	34.8	7.2	0.1	3.6	1.0
Paving/Coating/Striping	25.0	34.1	5.2	0.1	3.6	1.0
Maximum Daily Emissions	**25.0**	**51.7**	**23.4**	**0.2**	**11.2**	**4.2**
SCAQMD Threshold	75	550	100	150	150	55

Sources: Metro 2021i, SCAQMD 2015
Notes: CO = carbon monoxide; lbs/day = pounds per day; NO_x = nitrogen oxide; $PM_{2.5}$ = fine particulate matter of diameter less than 2.5 microns; PM_{10} = respirable particulate matter of diameter less than 10 microns; ROG = reactive organic gases; SCAQMD = South Coast Air Quality Management District; SO_x = sulfur oxides

Construction of an MSF site option would generally involve demolition, site clearing, grading, structure and track installation, paving, and architectural coating activities. Construction of the MSF site options would last for approximately three years and would be constructed in accordance with the Metro *Green Construction Policy*. Table 4.19.12 presents the maximum daily emissions that would be generated by construction of the Paramount or Bellflower MSF site option, as well as the SCAQMD Air Quality Significance Thresholds for mass daily emissions at the regional level. Under NEPA, construction of the Paramount or Bellflower MSF site option would not produce emissions exceeding any regional mass daily threshold and would not result in adverse effects related to emissions of criteria pollutants and ozone precursors.

Odors and Dust: The odors and dust analysis for the MSF site options would be similar to the analysis presented for Alternative 1. Construction of an MSF site option would not generate a substantial source of construction odors or visible dust plumes and would adhere to the stringent provisions of the Metro *Green Construction Policy* and employ BMPs in accordance with SCAQMD Rule 402 (Nuisance). Therefore, the Paramount or Bellflower MSF site option would not result in adverse effects related to construction nuisance.

Project Measures and Mitigation Measures

There are no construction-related project measures related to air quality. The following mitigation measure would be implemented:

AQ-1 **Vehicle Emissions.** On-road vehicles registered with the California Air Resource Board's 2010 engine emissions standards at 0.01 grams per brake horsepower-hour (g/bhp-hr) of particulate matter and 0.20 g/bhp-hr of nitrogen oxide

emissions would be used during construction. Off-road vehicles or equipment would meet Tier 4 requirements. Operators would maintain records of all trucks associated with project construction to document that each truck used meets these emission standards and make the records available for inspection.

California Environmental Quality Act Determination

As described in Sections 4.5.1.2 of the Air Quality Section and 4.19.3.5 under the heading "Methodology," construction of the Project would generate air pollutant emissions through sources such as heavy-duty off-road equipment exhaust, fugitive dust produced by ground disturbance and soil displacement activities, on-road vehicle exhaust from trips by construction workers, haul trucks, material delivery trucks, and on-road re-entrained dust and brake and tire wear. The SCAQMD guidance states that air pollutant emissions be analyzed on both regional and local scales. The regional emissions analysis, where applicable, considers daily pollutant emissions that would be generated by all sources involved in project construction, both on-site and remote (mobile). The localized emissions analysis relates to the potential concentrations of pollutants in the vicinity of the construction sites, and only considers emissions from sources located on the construction site (i.e., equipment exhaust and on-site fugitive dust). The daily pollutant emissions are compared to the applicable SCAQMD Air Quality Significance Thresholds discussed in Section 4.5.1.2 of the Air Quality Section.

Would the Project conflict with or obstruct implementation of the applicable air quality plan?

The following analyses address consistency with applicable SCAQMD and SCAG policies, including SCAQMD's 2016 AQMP and growth projections within the SCAG's 2016–2040 RTP/SCS. The following impact discussions focus on construction emissions in the context of air quality violations and attainment of the air quality standards.

No Project Alternative

The No Project Alternative would not include construction of any project-related facilities or infrastructure and would not introduce additional sources of construction air pollutant emissions into the SCAQMD jurisdiction. Ongoing Metro construction activities and those planned for future Metro projects would remain committed to compliance with the Metro *Green Construction Policy*. Therefore, no impact would occur related to obstructing implementation of the applicable air quality plan by increasing the frequency or severity of air quality violations or delaying attainment of the air quality standards.

Alternative 1: Los Angeles Union Station to Pioneer Station

Alternative 1 would involve a variety of construction activities throughout the project corridor and would be conducted in accordance with the Metro *Green Construction Policy*. Table 4.19.9 shows a detailed breakdown of the maximum daily emissions that would be generated by concurrent activities during construction of Alternative 1. Table 4.19.13 summarizes the total maximum daily emissions for each criteria pollutant that would be generated by each Build Alternative. The table also identifies the SCAQMD Air Quality Significance Thresholds for mass daily emissions at the regional level.

Table 4.19.13 Maximum Daily Regional Emissions – Build Alternatives

Alternative	Emissions Source[1]	Measured in lbs/day					
		ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
	SCAQMD Threshold	**75**	**550**	**100**	**150**	**150**	**55**
1 and 2	Emissions Source Total[1]	37.7	281.3	118.2	0.9	50.3	17.7
	Threshold Exceeded?	No	No	**Yes**	No	No	No
3	Emissions Source Total[1]	34.7	228.0	98.4	0.7	38.9	13.4
	Threshold Exceeded?	No	No	No	No	No	No
4	Emissions Source Total[1]	31.7	205.0	86.6	0.6	31.3	11.3
	Threshold Exceeded?	No	No	No	No	No	No

Sources: Metro 2021i, SCAQMD 2015
Notes: [1] Emission Source Total includes the total emissions for equipment exhaust, on-site dust and vapors, material hauling, vendor deliveries, and crew worker trips.
lbs/day = pounds per day; CO = carbon monoxide; NO_x = nitrogen oxide; $PM_{2.5}$ = fine particulate matter of diameter less than 2.5 microns; PM_{10} = respirable particulate matter of diameter less than 10 microns; ROG = reactive organic gases; SCAQMD = South Coast Air Quality Management District; SO_x = sulfur oxides

Despite complying with the 2007 USEPA emissions standards and adhering to the BMPs contained within the Metro *Green Construction Policy*, daily emissions of NO_X would exceed the SCAQMD threshold, potentially creating a significant impact related to obstructing timely implementation of the AQMP. The NO_X emissions are mostly attributed to haul trucks, as equipment would be required to comply with the most stringent emissions standards promulgated by the USEPA and the CARB. Therefore, unmitigated haul truck emissions would potentially create a significant impact related to obstructing timely implementation of the AQMP.

Implementation of Mitigation Measure AQ-1 (Vehicle Emissions) would reduce maximum daily NO_X emissions to approximately 104.0 pounds per day. Nonetheless, construction of Alternative 1 would result in a temporary significant and unavoidable impact related to emissions of criteria pollutants and ozone precursors.

Mitigation Measures: Mitigation Measure AQ-1 (Vehicle Emissions)

Impacts Remaining After Mitigation: Significant and unavoidable impact.

Alternative 2: 7th St/Metro Center to Pioneer Station

Similar to Alternative 1, Alternative 2 construction activities throughout the project corridor would be conducted in accordance with the Metro *Green Construction Policy;* would employ the same equipment and vehicle fleet as Alternative 1; and the maximum daily construction activity and emissions would be consistent with Alternative 1 as detailed in Table 4.19.9 and summarized in Table 4.19.13. Construction of Alternative 2 would result in daily emissions of NO_X that would exceed the applicable SCAQMD regional mass daily threshold and potentially create a temporary significant impact to air quality related to obstructing timely implementation of the AQMP. Implementation of Mitigation Measure AQ-1 (Vehicle Emissions) would reduce maximum daily NO_X emissions to approximately 104.0 pounds per day. Nonetheless, construction of Alternative 2 would result in a temporary significant and unavoidable impact related to emissions of criteria pollutants and ozone precursors.

Mitigation Measures: Mitigation Measure AQ-1 (Vehicle Emissions)

Impacts Remaining After Mitigation: Significant and unavoidable impact.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Alternative 3 construction activities throughout the project corridor would be conducted in accordance with the Metro *Green Construction Policy*. Alternative 3 would not include any underground station or track construction, which would result in less excavation, a reduction of maximum daily haul truck loads from 150 to 120, and a reduction of maximum daily construction crew from 900 to 700 workers. As detailed in Table 4.19.10 and summarized in Table 4.19.13, construction of Alternative 3 would not produce emissions exceeding any regional mass daily threshold. Construction of Alternative 3 would result in a less than significant impact related to potentially obstructing timely attainment of the AQMP, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Alternative 4 construction activities throughout the project corridor would be constructed in accordance with the Metro *Green Construction Policy*. Alternative 4 would not include any underground station or track construction, which would result in less excavation, a reduction of maximum daily haul truck loads from 150 to 100, and a reduction of maximum daily construction crew from 900 to 400 workers. As detailed in Table 4.19.11 and summarized in Table 4.19.13, construction of Alternative 4 would not produce emissions exceeding any regional mass daily threshold. Construction of Alternative 4 would result in a less than significant impact related to potentially obstructing timely attainment of the AQMP, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Construction activities throughout the project corridor for Design Options 1 and 2 would be similar to Alternative 1 and would be conducted in accordance with the Metro *Green Construction Policy*. Construction activities would employ the same equipment and vehicle fleet as Alternative 1 and the maximum daily construction activity and emissions would be consistent with Alternative 1, as shown in Table 4.19.9 and summarized in Table 4.19.13. Construction of Design Option 1 or 2 would result in daily emissions of NO_X that would exceed the applicable SCAQMD regional mass daily threshold and potentially create a temporary significant impact to air quality related to obstructing timely implementation of the AQMP. Implementation of Mitigation Measure AQ-1 (Vehicle Emissions) would reduce maximum daily NO_X emissions to approximately 104.0 pounds per day. Nonetheless, construction of Design Option 1 or 2 would result in a temporary significant and unavoidable impact related to emissions of criteria pollutants and ozone precursors.

Mitigation Measures: Mitigation Measure AQ-1 (Vehicle Emissions)

Impacts Remaining After Mitigation: Significant and unavoidable impact.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: As the Paramount and Bellflower MSF site options would be similar in size, it was assumed that construction would employ the same equipment and vehicle inventory, result in the same maximum daily activity, and follow the same schedule

regardless of the site option selected. Construction of an MSF site option would generally involve demolition, site clearing, grading, structure and track installation, paving, and architectural coating activities. Construction of the MSF site options would last for approximately three years and would be constructed in accordance with the Metro *Green Construction Policy*. As detailed in Table 4.19.12, construction of the Paramount or Bellflower MSF site option would not produce emissions exceeding any regional mass daily threshold. Construction of an MSF site option would result in a less than significant impact related to potentially obstructing timely attainment of the AQMP, and mitigation would not be required.

Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

The project region is currently designated nonattainment for O_3, PM_{10}, and $PM_{2.5}$. The following analysis focuses on ozone precursors (reactive organic gas and NO_X) and particulate matter (PM_{10} and $PM_{2.5}$) emissions that may contribute to a cumulatively considerable incremental increase in atmospheric concentrations of ozone and particulate matter.

No Project Alternative

The No Project Alternative would not include construction of any project-related facilities or infrastructure, and no new sources of construction air pollutant emissions would be introduced to the SCAQMD jurisdiction. Therefore, no impact related to cumulatively considerable net increases in criteria pollutant or ozone precursor emissions would occur, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

As demonstrated in the emissions analysis detailed in Table 4.19.9 and summarized in Table 4.19.13, construction of Alternative 1 would result in a significant and unavoidable air quality impact related to regional emissions of NO_X (an ozone precursor) predominantly attributed to on-road heavy-duty truck trips. Implementation of Mitigation Measure AQ-1 (Vehicle Emissions) would reduce maximum daily NO_X emissions to approximately 104.0 pounds per day. Nonetheless, construction of Alternative 1 would result in a temporary significant and unavoidable impact related to emissions of criteria pollutants and ozone precursors. As such, no feasible mitigation measures were identified to reduce daily NO_X emissions during construction of Alternative 1 to below the applicable SCAQMD regional threshold.

The SCAQMD asserts that if a project generates daily emissions exceeding the project-level CEQA mass daily thresholds of significance, those emissions would also be considered cumulatively considerable. Therefore, construction of Alternative 1 would generate a significant and unavoidable impact related to cumulatively considerable increases in emissions of nonattainment pollutants.

Mitigation Measures: Mitigation Measure AQ-1 (Vehicle Emissions)

Impacts Remaining After Mitigation: Significant and unavoidable impact

Alternative 2: 7th St/Metro Center to Pioneer Station

The emissions analysis for Alternative 2 is similar to the analysis presented for Alternative 1, as detailed in Table 4.19.9 and summarized in Table 4.19.13. Construction of Alternative 2 would result in a significant and unavoidable air quality impact related to regional emissions

of NO_X and implementation of Mitigation Measure AQ-1 (Vehicle Emissions) would reduce maximum daily NO_X emissions to approximately 104.0 pounds per day. Nonetheless, construction of Alternative 2 would result in a temporary significant and unavoidable impact related to emissions of criteria pollutants and ozone precursors. As such, no feasible mitigation measures were identified to reduce daily NO_X emissions during construction of Alternative 2. Therefore, construction of Alternative 2 would generate a significant and unavoidable impact related to cumulatively considerable increases in emissions of nonattainment pollutants.

Mitigation Measures: Mitigation Measure AQ-1 (Vehicle Emissions)

Impacts Remaining After Mitigation: Significant and unavoidable impact.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

As demonstrated in the emissions analysis detailed in Table 4.19.10 and summarized in Table 4.19.13, construction of Alternative 3 would generate maximum daily emissions of particulate matter and ozone precursors below the applicable SCAQMD regional mass daily threshold value throughout the construction phase. Therefore, according to SCAQMD guidance, construction of Alternative 3 would result in a less than significant impact related to cumulatively considerable increases in nonattainment pollutants, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

As demonstrated in the emissions analysis detailed in Table 4.19.11 and summarized in Table 4.19.13, construction of Alternative 4 would generate maximum daily emissions of particulate matter and ozone precursors below the applicable SCAQMD regional mass daily threshold value throughout the construction phase. Therefore, according to SCAQMD guidance, construction of Alternative 4 would result in a less than significant impact related to cumulatively considerable increases in nonattainment pollutants, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: As demonstrated in the emissions analysis detailed in Table 4.19.9 and summarized in Table 4.19.13, regional emissions of ozone precursors and particulate matter generated by construction activities for Design Options 1 and 2 would be consistent with those presented for Alternative 1. Construction of Design Options 1 and 2 would result in a significant and unavoidable air quality impact related to regional emissions of NO_X. Implementation of Mitigation Measure AQ-1 (Vehicle Emissions) would reduce maximum daily NO_X emissions to approximately 104.0 pounds per day. Nonetheless, construction of Design Options 1 and 2 would result in a temporary significant and unavoidable impact related to emissions of criteria pollutants and ozone precursors. As such, no feasible mitigation measures were identified to reduce daily NO_X emissions to below the applicable SCAQMD regional threshold.

Therefore, construction of either Design Option 1 or 2 would generate a significant and unavoidable impact related to cumulatively considerable increases in emissions of nonattainment pollutants.

Mitigation Measures: Mitigation Measure AQ-1 (Vehicle Emissions)

Impacts Remaining After Mitigation: Significant and unavoidable impact.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: As the Paramount and Bellflower MSF site options would be similar in size, it was assumed that construction would employ the same equipment and vehicle inventory, result in the same maximum daily activity, and follow the same schedule regardless of the site option selected. As detailed in Table 4.19.12, construction of the Paramount or Bellflower MSF site option would generate maximum daily emissions of particulate matter and ozone precursors below the applicable SCAQMD regional mass daily threshold value. Therefore, according to SCAQMD guidance, construction of the Paramount or Bellflower MSF site option would result in a less than significant impact related to cumulatively considerable increases in nonattainment pollutants, and mitigation would not be required.

Would the Project expose sensitive receptors to substantial pollutant concentrations?

The potential sensitive receptor exposures to substantial pollutant concentrations and the public health implications of construction emissions are assessed in both regional and localized contexts. At the regional level, in a recent decision in *Sierra Club v. County of Fresno* (Friant Ranch) the California Supreme Court held that CEQA requires EIRs to correlate regional air quality impacts to health impacts, or to explain why doing so is not scientifically feasible. Therefore, the regional emissions associated with construction of the Build Alternatives are evaluated in the context of the Friant Ranch decision, with consideration given to potential public health effects resulting from the emissions and resulting concentrations.

No Project Alternative

The No Project Alternative would not include construction of any project-related facilities or infrastructure. Therefore, the No Project Alternative would not introduce any sources of air pollutant emissions into the area and no construction-related emissions would occur. No impact related to exposure of sensitive receptors to substantial pollutant concentrations generated by construction activity emissions would occur, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Regional Emissions: Construction of Alternative 1 would generate approximately 104 lbs/day NO_X, after implementation of Mitigation Measure AQ-1 (Vehicle Emissions), which would still exceed the applicable SCAQMD regional threshold of 100 lbs/day. Construction of Alternative 1 would generate approximately 4 lbs/day of excessive NO_X emissions that would be distributed along the haul truck vendor delivery routes. However, these emissions would contribute to negligible incremental increases in atmospheric NO_2 and O_3 as the emissions would be dispersed along hundreds of miles of roadway throughout LA County.

The City of Los Angeles (City of Los Angeles, 2019) recently published guidance related to the estimation of public health effects resulting from excessive emissions at the project level, which states:

> *For local plans or projects that exceed any identified SCAQMD air quality threshold, City EIR documents typically identify and disclose generalized health effects of certain air pollutants but are currently unable to establish a reliable connection between any local plan or project and a particulate health effect. In addition, no expert agency has yet to approve a quantitative method to reliably and meaningfully do so. A number of factors contribute to this uncertainty, including the regional scope of air quality monitoring and planning, technological limitations for modeling at a local plan- or*

project-level, and the intrinsically complex nature between air pollutants and health effects in conjunction with local environmental variables. Therefore, at this time, it is infeasible for City EIRs to directly link a plan's or project's significant air quality impacts with a specific health effect.

Therefore, construction of Alternative 1 would not generate regional emissions that would expose sensitive receptors to substantial pollutant concentrations solely by exceeding the NO_X threshold. This impact would be less than significant at the regional level.

Localized Emissions: Table 4.19.14 presents the maximum daily emissions that would be generated by individual demolition and relocations throughout the project corridor, along with the applicable LST values for a 1-acre work site. The LST values are provided for all SRAs in which demolition and relocation activities would occur during construction of Alternative 1. Based on the LST analysis, the demolition and relocation activities would not generate emissions exceeding any applicable LST value for sensitive receptors located within approximately 80 feet of the construction sites. Therefore, demolition and relocation activities would result in a less than significant impact related to the exposure of sensitive receptors to substantial localized pollutant concentrations.

Table 4.19.14. Demolition and Relocation Daily Localized Construction Emissions

Description	Measured in lbs/day			
	CO	NO_X	PM_{10}	$PM_{2.5}$
Equipment Exhaust/Area Source	**29.0**	**2.7**	**3.9**	**0.6**
SCAQMD SRA 1 LST Value	680	74	5	3
SCAQMD SRA 4 LST Value	585	57	4	3
SCAQMD SRA 5 LST Value	571	80	4	3
SCAQMD SRA 12 LST Value	231	43	4	3
Exceed SCAQMD LST Threshold?[1]	**No**	**No**	**No**	**No**

Sources: Metro 2021i, SCAQMD 2009
Notes: [1] The exceedance of SCAQMD thresholds are measured by comparing the "Equipment Exhaust/Area Source" with the SCAQMD Localized Significance Thresholds
CO = carbon monoxide; lbs/day = pounds per day; LST = Localized Significance Threshold; NO_x = nitrogen oxide; $PM_{2.5}$ = fine particulate matter of diameter less than 2.5 microns; PM_{10} = respirable particulate matter of diameter less than 10 microns; SCAQMD = South Coast Air Quality Management District; SRA = Source Receptor Area

Table 4.19.15 presents the maximum daily emissions generated by excavation and grading sites throughout the project corridor, along with the applicable LST values for a 2-acre work site. Based on the LST analysis, excavation and grading activities would not generate emissions exceeding any applicable LST value for sensitive receptors located within approximately 80 feet of the construction sites. Therefore, excavation and grading activities would result in a less than significant impact related to exposure of sensitive receptors to substantial localized pollutant concentrations.

Table 4.19.15. Excavation and Grading Daily Localized Construction Emissions

Description	Measured in lbs/day			
	CO	NO_X	PM_{10}	$PM_{2.5}$
Equipment Exhaust/Area Source	**35.8**	**3.5**	**5.6**	**2.7**
SCAQMD SRA 1 LST Value	1,048	108	8	5
SCAQMD SRA 4 LST Value	842	82	7	5
SCAQMD SRA 5 LST Value	861	114	7	4
SCAQMD SRA 12 LST Value	346	65	7	4
Exceed SCAQMD LST Threshold?[1]	**No**	**No**	**No**	**No**

Source: Metro 2021i, SCAQMD 2009
Notes: [1] The exceedance of SCAQMD thresholds are measured by comparing the "Equipment Exhaust/Area Source" with the SCAQMD Localized Significance Thresholds
CO = carbon monoxide; lbs/day = pounds per day; LRT = light rail transit; LST = Localized Significance Threshold; NO_x = nitrogen oxide; $PM_{2.5}$ = fine particulate matter of diameter less than 2.5 microns; PM_{10} = respirable particulate matter of diameter less than 10 microns; SCAQMD = South Coast Air Quality Management District; SRA – Source Receptor Areas

Table 4.19.16 presents the maximum daily emissions that would be generated by construction of the underground-to-at-grade portal, along with the applicable LST values for a 1-acre work site. It was determined that sensitive receptors would be located within approximately 350 feet of the construction site boundary. In addition, the proposed location for the portal from underground to at-grade LRT is approximately 700 feet south of the intersection of East Olympic Boulevard and Long Beach Avenue in the City of Los Angeles; therefore, the LST analysis considers maximum daily on-site emissions in SRA 1. Based on the LST analysis, portal construction activities would not generate emissions exceeding any applicable LST value for sensitive receptors located within approximately 350 feet of the construction sites. Therefore, portal construction would result in a less than significant impact related to exposure of sensitive receptors to substantial localized pollutant concentrations.

Table 4.19.16. Portal Daily Localized Construction Emissions

Activity	Measured in lbs/day			
	CO	NO_X	PM_{10}	$PM_{2.5}$
Portal Construction On-Site	**35.8**	**3.5**	**5.6**	**2.7**
SCAQMD SRA 1 LST Value	1,259	82	33	10
Exceed SCAQMD LST Threshold?	**No**	**No**	**No**	**No**

Sourced: Metro 2021i, SCAQMD 2009
Notes: CO = carbon monoxide; lbs/day = pounds per day; LST = Localized Significance Threshold; NO_x = nitrogen oxide; $PM_{2.5}$ = fine particulate matter of diameter less than 2.5 microns; PM_{10} = respirable particulate matter of diameter less than 10 microns; SCAQMD = South Coast Air Quality Management District; SRA – Source Receptor Areas

Table 4.19.17 presents the maximum daily emissions generated by individual at-grade track and station sites throughout the project corridor following demolition and site clearing activities, along with the applicable LST values for a 1-acre work site. The LST values are provided for all SRAs in which at-grade LRT segment construction activities along the Alternative 1 corridor would occur. Based on the LST analysis, at-grade construction activities would not generate emissions exceeding any applicable LST value for sensitive receptors located within approximately 80 feet of the construction sites. Therefore, at-grade construction activities would result in a less than significant impact related to exposure of sensitive receptors to substantial localized pollutant concentrations.

Table 4.19.17. At-Grade Track and Station Daily Localized Construction Emissions

Description	Measured in lbs/day			
	CO	NO_X	PM_{10}	$PM_{2.5}$
Equipment Exhaust/Area Source	**35.6**	**3.3**	**2.8**	**1.4**
SCAQMD SRA 1 LST Value	680	74	5	3
SCAQMD SRA 4 LST Value	585	57	4	3
SCAQMD SRA 5 LST Value	571	80	4	3
SCAQMD SRA 12 LST Value	231	43	4	3
Exceed SCAQMD LST Threshold?[1]	**No**	**No**	**No**	**No**

Sources: Metro 2021i, SCAQMD 2009
Notes:[1] The exceedance of SCAQMD thresholds are measured by comparing the "Equipment Exhaust/Area Source" with the SCAQMD Localized Significance Thresholds.
CO = carbon monoxide; lbs/day = pounds per day; LST = Localized Significance Threshold; NO_x = nitrogen oxide; $PM_{2.5}$ = fine particulate matter of diameter less than 2.5 microns; PM_{10} = respirable particulate matter of diameter less than 10 microns; SCAQMD = South Coast Air Quality Management District; SRA = Source Receptor Area

Table 4.19.18 presents the maximum daily emissions that would be generated by individual aerial track and station sites throughout the project corridor following demolition and site clearing activities, as well as the applicable LST values for a 1-acre work site. The LST values are provided for all SRAs in which at-grade LRT segment construction activities along the Alternative 1 corridor would occur. Based on the LST analysis, aerial track and station construction activities would not generate emissions exceeding any applicable LST value for sensitive receptors located within approximately 80 feet of the construction sites. Therefore, aerial track and station construction activities would result in a less than significant impact related to exposure of sensitive receptors to substantial localized pollutant concentrations.

Table 4.19.18. Aerial Track and Station Daily Localized Construction Emissions

Description	Measured in lbs/day			
	CO	NO_X	PM_{10}	$PM_{2.5}$
Equipment Exhaust/Area Source	**29.4**	**3.0**	**2.8**	**1.4**
SCAQMD SRA 1 LST Value	680	74	5	3
SCAQMD SRA 4 LST Value	585	57	4	3
SCAQMD SRA 5 LST Value	571	80	4	3
SCAQMD SRA 12 LST Value	231	43	4	3
Exceed SCAQMD LST Threshold?[1]	**No**	**No**	**No**	**No**

Sources: Metro 2021i, SCAQMD 2009
Notes: [1] The exceedance of SCAQMD thresholds are measured by comparing the "Equipment Exhaust/Area Source" with the SCAQMD Localized Significance Thresholds
CO = carbon monoxide; lbs/day = pounds per day; LST = Localized Significance Threshold; NO_x = nitrogen oxide; $PM_{2.5}$ = fine particulate matter of diameter less than 2.5 microns; PM_{10} = respirable particulate matter of diameter less than 10 microns; SCAQMD = South Coast Air Quality Management District; SRA = Source Receptor Area

Table 4.19.19 presents the daily localized emissions that would be generated by construction of the MSF site regardless of location, as well as the applicable LST values for a 2-acre work site in SRA 5. Based on the LST analysis, construction of an MSF site option would not generate emissions exceeding any applicable LST value for sensitive receptors located within approximately 80 feet of the construction sites. Therefore, construction of an MSF site option would result in a less than significant impact related to exposure of sensitive receptors to substantial localized pollutant concentrations.

Table 4.19.19. Daily Localized Construction Emissions for MSF Site Options

Construction Phase	Measured in lbs/day			
	CO	NO_X	PM_{10}	$PM_{2.5}$
Demolition	34.2	3.1	0.9	0.2
Site Preparation	36.5	3.8	5.8	2.8
Building/Track Installation	24.5	3.7	<0.1	<0.1
Paving/Coating/Striping	24.5	1.8	<0.1	<0.1
Maximum Daily Emissions	**36.5**	**3.8**	**5.8**	**2.8**
SCAQMD SRA 5 LST Value	861	114	7	4
Exceed SCAQMD LST Threshold?[1]	**No**	**No**	**No**	**No**

Sources: Metro 2021i, SCAQMD 2015
Notes: [1] The exceedance of SCAQMD thresholds are measured by comparing the "Equipment Exhaust/Area Source" with the SCAQMD Localized Significance Thresholds
CO = carbon monoxide; lbs/day = pounds per day; NO_x = nitrogen oxide; $PM_{2.5}$ = fine particulate matter of diameter less than 2.5 microns; PM_{10} = respirable particulate matter of diameter less than 10 microns; ROG = reactive organic gases; SCAQMD = South Coast Air Quality Management District; SO_x = sulfur oxides

Overall, Alternative 1 would result in a less than significant impact related to the exposure of sensitive receptors to substantial localized pollutant concentrations during construction.

Mitigation Measures: Mitigation Measure AQ-1 (Vehicle Emissions)

Impacts Remaining After Mitigation: Less than significant impact.

Alternative 2: 7th St/Metro Center to Pioneer Station

Regional Emissions: Alternative 2 regional emissions analysis is similar to Alternative 1. Alternative 2 would generate approximately 104 lbs/day NO_X, after implementation of Mitigation Measure AQ-1 (Vehicle Emissions), which would still exceed the applicable SCAQMD regional threshold of 100 lbs/day. However, these emissions would contribute to negligible incremental increases in atmospheric NO_2 and O_3. Therefore, construction of Alternative 2 would result in a less than significant impact related to regional emissions producing substantial pollutant concentrations to which sensitive receptors may be exposed.

Localized Emissions: The localized emissions analysis for Alternative 2 is similar to Alternative 1 and as presented in Table 4.19.14 through Table 4.19.19. Therefore, Alternative 2 would result in a less than significant impact related to the exposure of sensitive receptors to substantial localized pollutant concentrations.

Mitigation Measures: Mitigation Measure AQ-1 (Vehicle Emissions)

Impacts Remaining After Mitigation: Less than significant impact.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Regional Emissions: The regional emissions analysis for Alternative 3 presented in Table 4.19.10 and summarized in Table 4.19.13 demonstrated that maximum daily regional emissions would remain below all applicable SCAQMD mass daily thresholds of significance. Therefore, construction of Alternative 3 would not generate regional emissions that would potentially expose sensitive receptors to substantial pollutant concentrations and impacts would be less than significant.

Localized Emissions: The localized emissions analysis for Alternative 3 is similar to Alternative 1 and as presented in Table 4.19.14 through Table 4.19.19, with the exception that no underground or portal construction activities would occur. Therefore, Alternative 3 would result in a less than significant impact related to the exposure of sensitive receptors to substantial localized pollutant concentrations, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Regional Emissions: The regional emissions analysis for Alternative 4 presented in Table 4.19.11 and summarized in Table 4.19.13 demonstrated that maximum daily regional emissions would remain below all applicable SCAQMD mass daily thresholds of significance. Therefore, construction of Alternative 4 would not generate regional emissions that would potentially expose sensitive receptors to substantial pollutant concentrations and impacts would be less than significant.

Localized Emissions: The localized emissions analysis for Alternative 4 is similar to Alternative 1 and as presented in Table 4.19.14 through Table 4.19.19, with the exception that no underground or portal construction activities would occur. Therefore, Alternative 4 would result in a less than significant impact related to the exposure of sensitive receptors to substantial localized pollutant concentrations, and mitigation would not be required.

Design Options—Alternative 1

Regional Emissions: The regional emissions analysis for Design Options 1 and 2 is similar to Alternative 1, in which Design Options 1 and 2 would generate approximately 104 lbs/day NO_X, after implementation of Mitigation Measure AQ-1 (Vehicle Emissions), which would still exceed the applicable SCAQMD regional threshold of 100 lbs/day. However, these emissions would contribute to negligible incremental increases in atmospheric NO_2 and O_3. Therefore, construction of Design Option 1 or 2 would result in a less than significant impact related to regional emissions producing substantial pollutant concentrations to which sensitive receptors may be exposed.

Localized Emissions: The localized emissions analysis for Design Options 1 and 2 is similar to Alternative 1 as presented in Table 4.19.14 through Table 4.19.19. Therefore, construction of Design Option 1 or 2 would result in a less than significant impact related to the exposure of sensitive receptors to substantial localized pollutant concentrations.

Mitigation Measures: Mitigation Measure AQ-1 (Vehicle Emissions)

Impacts Remaining After Mitigation: Less than significant impact.

Maintenance and Storage Facility

As the Paramount and Bellflower MSF site options would be similar in size, it is assumed construction equipment and vehicle inventories, schedule, and maximum daily activity would be the same. Therefore, the analyses pertaining to construction activities and associated emissions are identical for the two site options.

Regional Emissions: The regional emissions analysis for the Paramount and Bellflower MSF site options presented in Table 4.19.12 demonstrated that maximum daily regional emissions would remain below all applicable SCAQMD mass daily thresholds of significance. Therefore, construction of an MSF site option would not generate regional emissions that would potentially expose sensitive receptors to substantial pollutant concentrations; impacts would be less than significant; and mitigation would not be required.

Localized Emissions: The localized emissions that would be generated by construction of either MSF site option are presented within the analysis for Alternative 1. As shown in Table 4.19.19, maximum daily localized emissions would not exceed the applicable LST values, and construction of an MSF would result in a less than significant impact related to potential exposures of sensitive receptors to substantial localized pollutant concentrations, and mitigation would not be required.

Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

No Project Alternative

The No Project Alternative would not include construction of any project-related facilities or infrastructure. Therefore, the No Project Alternative would not introduce any sources of air pollutant emissions into the area and no construction-related emissions would occur. No impact related to the creation of emissions that would potentially result in a public nuisance for odors or visible dust plumes would occur, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Alternative 1 construction activities would not generate a substantial source of construction odors or visible dust plumes. Alternative 1 would result in exhaust fumes through gasoline or diesel-powered equipment and asphalt paving. Such emissions would occur intermittently and associated odors would dissipate rapidly within the immediate vicinity of the work area. Construction activities would adhere to the stringent provisions of the Metro *Green Construction Policy* and employ BMPs to prevent the occurrence of a nuisance odor or dust plume in accordance with SCAQMD Rule 402 (Nuisance). Therefore, Alternative 1 would result in a less than significant impact related to public nuisance for odors or visible dust plumes, and mitigation would not be required.

Alternative 2: 7th St/Metro Center to Pioneer Station

The odors analysis for Alternative 2 is identical to the analysis presented for Alternative 1. Alternative 2 construction activities would not generate a substantial source of construction odors or visible dust plumes and would adhere to the stringent provisions of the Metro *Green Construction Policy* and employ BMPs. Therefore, Alternative 2 would result in a less than significant impact related to public nuisance for odors or visible dust plumes, and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

The odors analysis for Alternative 3 is identical to the analysis presented for Alternative 1. Alternative 3 construction activities would not generate a substantial source of construction odors or visible dust plumes and would adhere to the stringent provisions of the Metro *Green Construction Policy* and employ BMPs. Therefore, Alternative 3 would result in a less than significant impact related to public nuisance for odors or visible dust plumes, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

The odors analysis for Alternative 4 is identical to the analysis presented for Alternative 1. Alternative 4 construction activities would not generate a substantial source of construction odors or visible dust plumes and would adhere to the stringent provisions of the Metro *Green Construction Policy* and employ BMPs. Therefore, Alternative 4 would result in a less than significant impact related to public nuisance for odors or visible dust plumes, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo: The odors analysis for Design Options 1 and 2 is identical to the analysis presented for Alternative 1. Construction activities for Design Options 1 and 2 would not generate a substantial source of construction odors or visible dust plumes and would adhere to the stringent provisions of the Metro *Green Construction Policy* and employ BMPs. Therefore, Design Options 1 and 2 would result in a less than significant impact related to public nuisance for odors or visible dust plumes, and mitigation would not be required.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: The odors analysis for the Paramount or Bellflower MSF site option is identical to the analysis presented for Alternative 1. Construction of an MSF would not generate a substantial source of construction odors or visible dust plumes and would adhere to the stringent provisions of the Metro *Green Construction Policy* and employ BMPs. Therefore, the Paramount or Bellflower MSF site option would not result in a less than significant impact related to public nuisance for odors or visible dust plumes, and mitigation would not be required.

4.19.3.6 Greenhouse Gas Emissions

Methodology

The analysis of construction effects uses the same methods as described in Section 4.6.1.2 of the GHG Section in the context of anticipated construction activities and phasing and identifies where construction staging could occur. Construction would occur in several stages, including site clearing and demolition activities, excavation and grading, utilities and subgrade installations, and paving. During each phase of construction, GHG emissions would be generated from heavy-duty construction equipment, worker travel to and from the project site, and material import and export using haul trucks. GHG emissions associated with construction of the Build Alternatives were quantified using the CalEEMod Version 2016.3.2, November 2017. Model default assumptions were incorporated where project-specific details were unavailable.

Alternative 1: Los Angeles Union Station to Pioneer Station

Construction of the underground segments in Alternative 1 would require the use of a TBM and/or use of the cut-and-cover method, both of which would generate the greatest magnitude of GHG emissions. Sources of GHG emissions included in the analyses were comprised of heavy-duty construction equipment, haul truck trips used for material import and export, and construction worker vehicle trips. Construction activities associated with Alternative 1 are anticipated to last up to six years.

Table 4.19.20 presents the source contributions of Alternative 1 construction to GHG emissions. Construction of Alternative 1 would generate approximately 42,098 metric tons of carbon dioxide equivalent ($MTCO_2e$), or approximately 1,404 $MTCO_2e$ annually when amortized over a 30-year operational lifetime in accordance with SCAQMD methodology (SCAQMD 2008). All construction activities would be conducted in accordance with Metro's *Green Construction Policy* to prevent excessive emissions. Temporary GHG emissions would be generated to construct an energy-efficient mass transit system that would reduce long-term regional GHG emissions through transportation mode shift, as demonstrated by the net decrease in annual emissions shown in Section 4.6.3, Table 4.6.5 of the GHG Section. Metro recognizes transportation mode shift as the primary contributor to GHG emissions displacement, and direct emissions generated through construction activities would be more than offset by the future benefits of transportation mode shift that would occur with implementation of Alternative 1. Under NEPA, Alternative 1 would not result in adverse effects related to GHG emissions during construction and mitigation is not required.

Alternative 2: 7th St/Metro Center to Pioneer Station

Alternative 2 construction activities would be similar to Alternative 1, including underground construction activities, and would last up to six years. Alternative 2 would comply with Metro*'s Green Construction Policy* and construction equipment would be maintained in accordance with manufacturers' specifications. Construction of the underground segments for Alternative 2 would require the same construction methods and include similar sources of GHG emissions as described for Alternative 1.

As shown in Table 4.19.20, construction of Alternative 2 would generate approximately 43,961 $MTCO_2e$, or approximately 1,465 $MTCO_2e$ annually when amortized over a 30-year operational lifetime. Temporary GHG emissions would be generated to construct an energy-efficient mass transit system that would reduce long-term regional GHG emissions through transportation mode shift, as demonstrated by the net decrease in annual emissions analyzed in Table 4.6.5 in Section 4.6.3 of the GHG Section. Metro recognizes transportation mode shift as the primary contributor to GHG emissions displacement, and direct emissions generated through construction activities would be more than offset by the future benefits of transportation mode shift that would occur with implementation of Alternative 2. Under NEPA, Alternative 2 would not result in adverse effects related to GHG emissions during construction.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Alternative 3 would have a shorter alignment and construction activities would be similar to Alternatives 1 and 2 with the exception of the underground construction. Construction activities would last up to six years and would comply with Metro*'s Green Construction Policy* and construction equipment would be maintained in accordance with manufacturers' specifications.

Table 4.19.20. Construction GHG Emissions

Emission Source	$MTCO_2e$						
	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Design Option 1	Design Option 2	MSF[1]
Off-Road Construction Equipment	17,385	17,936	11,636	6,850	17,385	17,936	2,158
Haul Truck Trips	14,678	15,779	6,204	4,097	15,953	16,279	1,003
Vendor Delivery Trips	2,691	2,691	2,144	1,288	2,691	2,691	459
Construction Worker Trips	7,344	7,555	4,854	3,072	7,344	7,555	1,321
Total Emissions	**42,098**	**43,961**	**24,838**	**15,307**	**43,373**	**44,461**	**4,941**
Amortized Construction (30 Years) [2]	**1,404**	**1,465**	**828**	**510**	**1,446**	**1,483**	**165**

Source: Metro 2021f

Notes: [1] Construction emissions were estimated for both MSF site options. As the Paramount and Bellflower MSF site options would be similar in size, it was assumed that construction would employ the same equipment and vehicle inventory and follow the same schedule regardless of the site option selected. The data presented apply to construction of either the Paramount or Bellflower site, and these emissions are included in the subtotals for each of the Build Alternatives.

[2] Amortized Construction= Total Emissions divided by 30 years.

GHG = greenhouse gas; MSF = maintenance and storage facility; $MTCO_2e$ = million metric tons of CO_2e

As shown in Table 4.19.20, construction of Alternative 3 would generate approximately 24,838 $MTCO_2e$, or approximately 828 $MTCO_2e$ annually when amortized over a 30-year operational lifetime. Temporary GHG emissions would be generated to construct an energy-efficient mass transit system that would reduce long-term regional GHG emissions through transportation mode shift, as demonstrated by the net decrease in annual emissions presented in Table 4.6.5 in Section 4.6.3 of the GHG Section. Metro recognizes transportation mode shift as the primary contributor to GHG emissions displacement, and direct emissions generated through construction activities would be more than offset by the future benefits of transportation mode shift that would occur with implementation of Alternative 3. Under NEPA, Alternative 3 would not result in adverse effects related to GHG emissions during construction.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Alternative 4 would have a shorter alignment and construction activities would be similar to Alternatives 1 and 2, with the exception of the underground construction. Construction activities would last for up to six years and would comply with Metro*'s Green Construction Policy* and construction equipment would be maintained in accordance with manufacturers' specifications.

As shown in Table 4.19.20, construction of Alternative 4 would generate approximately 15,307 $MTCO_2e$, or approximately 510 $MTCO_2e$ annually when amortized over a 30-year operational lifetime in accordance with SCAQMD methodology. Temporary GHG emissions would be generated to construct an energy-efficient mass transit system that would reduce long-term regional GHG emissions through transportation mode shift and increasing Metro ridership, as demonstrated by the net decrease in annual emissions presented in Table 4.6.5 in Section 4.6.3 of the GHG Section. Metro recognizes transportation mode shift as the primary contributor to GHG emissions displacement, and direct emissions generated through construction activities would be more than offset by the future benefits of transportation mode shift that would occur with implementation of Alternative 4. Under NEPA, Alternative 4 would not result in adverse effects related to GHG emissions during construction.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station

Design Options 1 and 2 construction activities would be similar to Alternative 1 and would not increase the overall construction duration for Alternative 1. Construction activities would comply with Metro's *Green Construction Policy* and construction equipment would be maintained in accordance with manufacturers' specifications. Construction of the underground segments for Design Options 1 and 2 would require the same construction methods and include similar sources of GHG emissions as described for Alternative 1. As shown in Table 4.19.20, construction of Design Option 1 (MWD) would generate approximately 43,373 $MTCO_{2e}$, or approximately 1,446 MTCO2e annually when amortized over a 30-year operational lifetime. Construction of Design Option 2 would generate approximately 44,461 $MTCO_{2e}$, or approximately 1,483 $MTCO_2e$ annually when amortized over a 30-year operational lifetime. Temporary GHG emissions would be generated to construct an energy-efficient mass transit system that would reduce long-term regional GHG emissions through transportation mode shift and increasing Metro ridership, as demonstrated by the net decrease in annual emissions presented in Table 4.6.5 in Section 4.6.3 of the GHG Section. Metro recognizes transportation mode shift as the primary contributor to GHG

emissions displacement, and direct emissions generated through construction activities would be more than offset by the future benefits of transportation mode shift that would occur with implementation of Design Options 1 and 2. Under NEPA, Design Options 1 and 2 would not result in adverse effects related to GHG emissions during construction.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options

As the Paramount and Bellflower MSF site options would be similar in size, it was assumed that construction would employ the same equipment and vehicle inventory and follow the same schedule (approximately 36 months duration) regardless of the site option selected. The data presented apply to construction of either the Paramount or Bellflower site. As shown in Table 4.19.20, construction of the MSF site options would generate approximately 4,941 $MTCO_2e$ in total over 36 months. Total construction emissions have been amortized over 30 years (approximately 165 $MTCO_2e$ annual average) and included in the operational analysis for each of the Build Alternatives. Independently, the generation of emissions is not considered significant as the emissions are related to the construction of a mass transit system, which has been identified by state and regional agencies as an efficient method of reducing statewide emissions. Temporary GHG emissions would be generated to construct an energy-efficient mass transit system that would reduce long-term regional GHG emissions. Under NEPA, the Paramount and Bellflower MSF site options would not result in adverse effects related to GHG during construction.

Project Measures and Mitigation Measures

No project measures or mitigation measures are required.

California Environmental Quality Act Determination

Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

No Project Alternative

The No Project Alternative would not include construction of any project-related facilities or infrastructure. Therefore, no significant impact related to GHG emissions would occur, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Construction activities for Alternative 1 would generate GHG emissions through off-road heavy-duty equipment exhaust and on-road vehicle exhaust associated with construction workers, material deliveries, and hauling of cut and fill. Compliance with Metro's *Green Construction Policy*, CARB In-Use Off-Road Diesel Vehicle Regulation, and CARB Truck and Bus Rule would minimize GHG emissions generated by these sources. All equipment and vehicles would be maintained in accordance with optimal manufacturer specifications and idling of equipment and vehicles would be restricted to less than five minutes.

Table 4.19.20 presents the source contributions to Alternative 1 construction GHG emissions. Construction of Alternative 1 would generate approximately 42,098 $MTCO_2e$, or approximately 1,404 $MTCO_2e$ annually when amortized over a 30-year operational lifetime. Emissions related to construction activities would be temporary; in accordance with SCAQMD guidance (SCAQMD 2008), total construction emissions have been amortized over

30 years and included in the operational analysis for each of the Build Alternatives. Independently, the generation of emissions is not considered significant as the emissions are related to the construction of a mass transit system, which has been identified by state and regional agencies as an efficient method of reducing statewide emissions. Temporary GHG emissions would be generated to construct an energy-efficient mass transit system that would reduce long-term regional GHG emissions. Therefore, impacts related to GHG emissions would be less than significant, and mitigation would not be required.

Alternative 2: 7th St/Metro Center to Pioneer Station

Construction activities for Alternative 2 would be similar to Alternative 1 and generate GHG emissions through off-road heavy-duty equipment exhaust and on-road vehicle exhaust. Construction activities would comply with Metro*'s Green Construction Policy* to prevent excessive emissions, construction equipment would be maintained in accordance with manufacturers' specifications, and idling would be limited. As shown in Table 4.19.20, construction of Alternative 2 would generate approximately 43,961 $MTCO_2e$, or approximately 1,465 $MTCO_2e$ annually when amortized over a 30-year operational lifetime. Temporary GHG emissions would be generated to construct an energy-efficient mass transit system that would reduce long-term regional GHG emissions. Therefore, impacts related to GHG emissions would be less than significant, and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Construction activities for Alternative 3 would be similar to Alternative 1 with the exception that Alternative 3 would not require underground construction. Construction activities would generate GHG emissions through off-road heavy-duty equipment exhaust and on-road vehicle exhaust and would comply with Metro*'s Green Construction Policy* to prevent excessive emissions. In addition, construction equipment would be maintained in accordance with manufacturers' specifications and idling would be limited. As shown in Table 4.19.20, construction of Alternative 3 would generate approximately 24,836 $MTCO_2e$, or approximately 828 $MTCO_2e$ annually when amortized over a 30-year operational lifetime. Independently, the generation of emissions is not considered significant as the emissions are related to the construction of a mass transit system, which has been identified by state and regional agencies as an efficient method of reducing statewide emissions. Temporary GHG emissions would be generated to construct an energy-efficient mass transit system that would reduce long-term regional GHG emissions. Therefore, impacts related to GHG emissions would be less than significant, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Construction activities for Alternative 4 would be similar to Alternative 1 with the exception that Alternative 4 would not require underground construction. Construction activities would generate GHG emissions through off-road heavy-duty equipment exhaust and on-road vehicle exhaust. Construction activities would comply with Metro*'s Green Construction Policy* to prevent excessive emissions, construction equipment would be maintained in accordance with manufacturers' specifications, and idling would be limited. As shown in Table 4.19.20, construction of Alternative 4 would generate approximately 15,307 $MTCO_2e$, or approximately 510 $MTCO_2e$ annually when amortized over a 30-year operational lifetime. Independently, the generation of emissions is not considered significant as the emissions are related to the construction of a mass transit system, which has been identified by state and regional agencies as an efficient method of reducing statewide emissions. Temporary GHG emissions

would be generated to construct an energy-efficient mass transit system that would reduce long-term regional GHG emissions. Therefore, impacts related to GHG emissions would be less than significant, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Construction activities for Design Options 1 and 2 would be similar to Alternative 1. Construction activities would comply with Metro*'s Green Construction Policy* to prevent excessive emissions, construction equipment would be maintained in accordance with manufacturers' specifications, and vehicle idling would be strictly monitored so as not to exceed five minutes at any location. As shown in Table 4.19.20, construction of Design Option 1 (MWD) would generate approximately 43,373 $MTCO_2e$, or approximately 1,446 $MTCO_2e$ annually when amortized over a 30-year operational lifetime. Construction of Design Option 2 would generate approximately 44,461 $MTCO_2e$, or approximately 1,483 $MTCO_2e$ annually when amortized over a 30-year operational lifetime. Temporary GHG emissions would be generated to construct an energy-efficient mass transit system that would reduce long-term regional GHG emissions. Therefore, impacts related to GHG emissions would be less than significant, and mitigation would not be required.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: As the Paramount and Bellflower MSF site options would be similar in size, it was assumed that construction would employ the same equipment and vehicle inventory and follow the same schedule regardless of the site option selected. As shown in Table 4.19.20, construction of the MSF site options would generate approximately 4,941 $MTCO_2e$. Total construction emissions have been amortized over 30 years (approximately 165 $MTCO_2e$ annual average) and included in the operational analysis. Independently, the generation of emissions is not considered significant as the emissions are related to the construction of a mass transit system, which has been identified by state and regional agencies as an efficient method of reducing statewide emissions. Temporary GHG emissions would be generated to construct an energy-efficient mass transit system that would reduce long-term regional GHG emissions. Therefore, impacts related to GHG emissions would be less than significant, and mitigation would not be required.

Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHG?

No Project Alternative

The No Project Alternative would not include construction of any project-related facilities or infrastructure. Therefore, no significant impact would occur, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Alternative 1 construction activities would be conducted in accordance with Metro's *Green Construction Policy* to prevent excessive emissions. Best practices include Tier 4 emission standards for off-road diesel-powered construction equipment with greater than 50 horsepower and restricting idling to a maximum of five minutes. In addition, Metro must comply with the CALGreen Code, which requires reduction, disposal, and recycling of at least 50 percent of nonhazardous construction and demolition debris. Temporary GHG emissions would be generated to construct an energy-efficient mass transit system that would reduce long-term

regional GHG emissions. Construction of Alternative 1 would not interfere with GHG reduction plans, policies, or regulations. Therefore, impacts related to applicable GHG plans, policies, or regulations would be less than significant, and mitigation would not be required.

Alternative 2: 7th St/Metro Center to Pioneer Station

Similar to the other Build Alternatives, Alternative 2 construction activities would be conducted in accordance with Metro's *Green Construction Policy,* CALGreen Code, and other applicable policies and regulations. Temporary GHG emissions would be generated to construct an energy-efficient mass transit system that would reduce long-term regional GHG emissions. Construction of Alternative 2 would not interfere with GHG reduction plans, policies, or regulations. Therefore, impacts related to applicable GHG plans, policies, or regulations would be less than significant, and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Similar to the other Build Alternatives, Alternative 3 construction activities would be conducted in accordance with Metro's *Green Construction Policy,* CALGreen Code, and other applicable policies and regulations. Temporary GHG emissions would be generated to construct an energy-efficient mass transit system that would reduce long-term regional GHG emissions. Construction of Alternative 3 would not interfere with GHG reduction plans, policies, or regulations. Therefore, impacts related to applicable GHG plans, policies, or regulations would be less than significant, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Similar to the other Build Alternatives, Alternative 4 construction activities would be conducted in accordance with Metro's *Green Construction Policy,* CALGreen Code, and other applicable policies and regulations. Temporary GHG emissions would be generated to construct an energy-efficient mass transit system that would reduce long-term regional GHG emissions. Construction of Alternative 4 would not interfere with GHG reduction plans, policies, or regulations. Therefore, impacts related to applicable GHG plans, policies, or regulations would be less than significant, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Design Options 1 and 2 construction activities would be conducted in accordance with Metro's *Green Construction Policy,* CALGreen Code, and other applicable policies and regulations. Temporary GHG emissions would be generated to construct an energy-efficient mass transit system that would reduce long-term regional GHG emissions. Construction of Design Options 1 and 2 would not interfere with GHG reduction plans, policies, or regulations. Therefore, impacts related to applicable GHG plans, policies, or regulations would be less than significant, and mitigation would not be required.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: Paramount and Bellflower MSF site option construction activities would be conducted in accordance with Metro's *Green Construction Policy,* CALGreen Code, and other applicable policies and regulations. Temporary GHG emissions would be generated to construct an energy-efficient mass transit system that would reduce long-term regional GHG emissions. Construction of either the Paramount or Bellflower MSF site option would not interfere with GHG reduction plans, policies, or regulations. Therefore, impacts

related to applicable GHG plans, policies, or regulations would be less than significant, and mitigation would not be required.

4.19.3.7 Noise and Vibration

Noise

Methodology

To satisfy NEPA requirements, the analysis uses FTA Transit Noise and Vibration Impact Assessment guidance for the general assessment construction noise criteria. The criteria are based upon a 1-hour L_{eq}. There may be adverse community reaction if the following 1-hour L_{eq} noise levels are exceeded:

- Residential: 90 dBA during the day and 80 dBA at night
- Commercial: 100 dBA during the day and 100 dBA at night
- Industrial: 100 dBA during the day and 100 dBA at night

As shown in Table 4.19.21, several jurisdictions have not established quantitative thresholds for construction noise, but instead rely on allowable hours of construction to limit construction noise. The City of Los Angeles, County of Los Angeles, and the City of Downey have established quantitative standards for construction noise. For the purposes of this analysis, the FTA general assessment construction noise limit criteria 1-hour L_{eq} have been applied.

Table 4.19.21. Construction Standards by Jurisdiction

Jurisdiction	Permissible Construction Time	Quantitative Construction Noise Standard
City of Artesia	7:00 a.m. to 7:00 p.m. Monday through Saturday	No
City of Bell	Not Established	No
City of Bellflower	7:00 a.m. to 6:00 p.m. Monday through Friday 8:00 a.m. to 6:00 p.m. Saturdays	No
City of Cerritos	7:00 a.m. to 7:00 p.m.	No
City of Cudahy	Daytime (not defined)	No
City of Huntington Park	7:00 a.m. to 7:00 p.m. Monday through Saturday	No
City of Paramount	7:00 a.m. to 8:00 p.m. Monday through Saturday	No
City of South Gate	8:00 a.m. to 7:00 p.m. Monday through Saturday	No
City of Vernon	Not Established	No
City of Downey	7:00 a.m. to 9:00 p.m.	85 dBA at the property line
City of Los Angeles	7:00 a.m. to 9:00 p.m. Monday through Friday 8:00 a.m. to 6:00 p.m. Saturdays:	75 dBA at 50 feet within 500 feet of a residential zone

Jurisdiction	Permissible Construction Time	Quantitative Construction Noise Standard
County of Los Angeles	7:00 a.m. to 7:00 p.m. Monday through Saturday	75 dBA at single-family residence 80 dBA at multifamily residence

Sources: City of Artesia, *Municipal Code*, March 2017; City of Bellflower, *Municipal Code*, February 2017; City of Cerritos, *Municipal Code*, May 25, 2017; City of Cudahy, *2010 General Plan Noise Element*, September 15, 2010; City of Huntington Park, *Municipal Code*; City of Paramount, *Municipal Code*, 2017; City of South Gate, *Municipal Code*, February 14, 2017
Note: dBA = A-weighted decibels

Construction noise was modeled using noise levels from the FTA Guidance Manual and the FHWA Roadway Construction Noise Model version 1.1. The FTA Guidance Manual includes noise levels for common pieces of construction equipment. For equipment noise levels not listed in the FTA Guidance Manual, noise levels from FHWA's Roadway Construction Noise Model were used. Construction noise levels were assessed as they would typically occur on the alignment. The two loudest pieces of construction equipment were combined and this noise level was used to assess construction noise against the FTA construction 1-hour L_{eq} noise criteria.

Alternative 1: Los Angeles Union Station to Pioneer Station

Construction of Alternative 1 would occur over the course of approximately six years. It is anticipated that several construction phases would occur simultaneously along the project alignment, accommodating activities requiring lengthy construction times such as utility relocation, tunnels, belowground stations, and aerial segments. Working hours of construction would vary to meet the type of work being performed and to meet local ordinance restrictions. Project construction would be minimized during weekday AM and PM peak hours and would typically occur between 8:00 a.m. and 7:00 p.m. in accordance with the most conservative of the local ordinance restrictions among all involved cities. Nighttime construction may be required at times to avoid congested freeways and surface streets or due to the nature of certain construction processes. Alternative 1 would be located in a fully built-out urban environment and construction activities would occur in close proximity to sensitive land uses, including residences, parks, religious uses, and schools, throughout the corridor and may occur during daytime or nighttime hours. Unless variances, such as variances for nighttime or weekend construction, are obtained, the Project would be required to comply with the construction time limits of the Cities of Los Angeles, Huntington Park, Cudahy, South Gate, Downey, Paramount, Bellflower, Artesia, and Cerritos, and the County of Los Angeles.

The four phases of construction that would occur are at-grade construction, tunnel construction, cut-and-cover construction, and elevated guideway construction. Construction activity at station areas would be dependent on the profile of the station (at-grade, aerial, underground – cut and cover). Construction activity at staging areas would be most similar to noise levels generated by at-grade construction and would primarily involve the movement of equipment to and from the project site.

The TBM would be launched from a portal located on a property adjacent to Long Beach Avenue between E 14th Street and Newton Street. Land uses immediately adjacent to the TBM launch site are primarily non-noise sensitive industrial and commercial uses. The nearest sensitive receivers would be located approximately 400 feet to the west of the launch

site with several rows of intervening buildings in the line-of-sight to the construction area. Entrances for TBM operations (tunnel launch sites) would follow similar construction methods as the station excavations (cut and cover). However, the TBM launch site area may require a higher number of haul trucks than other construction areas due to the need to export materials from tunneling. During tunnel construction activities, the TBM would not be audible at aboveground sensitive receivers. Tunnel construction activities would also require the use of ventilation fans.

Typical construction equipment to be used during each phase of construction are listed in Table 4.19.22 along with the 1-hour L_{eq} (dBA).

Table 4.19.22. Construction Noise and Equipment Use by Phase

Equipment	1-hour L_{eq} (dBA)	Construction Phase			
		At-Grade Construction	Tunnel Construction	Cut-And-Cover	Elevated Guideway
Backhoe	80.0	X	X	X	—
Compressor (air)	80.0	X	—	X	—
Concrete mixer truck	85.0	—	—	—	X
Concrete pump truck	82.0	—	—	—	X
Concrete saw	89.6	—	—	X	X
Crane	83.0	X	X	X	X
Dump truck	76.5	X	X	X	X
Excavator	80.7	—	—	X	—
Flat bed truck	74.3	X	—	X	X
Generator	82.0	X	X	X	X
Grader	85.0	X	—	—	—
Paver	85.0	X	—	—	—
Pneumatic tools	85.0	X	X	X	X
Rail saw	90.0	X	—	—	—
TBM	0.0	—	X	—	—
Ventilation fan	85.0	—	X	—	—
Welder/torch	74.0	X	—	X	X
Combined 1-hour L_{eq}[1]		**91.2**	**88.0**	**90.9**	**90.9**

Source: FHWA 2008, FTA 2018
Notes: [1] Logarithmic sum of two loudest pieces of equipment. "—" = not applicable.
dBA = A-weighted decibel; L_{eq} = equivalent sound level; TBM = tunnel boring machine

At-grade construction would be the loudest with a 1-hour L_{eq} of 91.2 dBA at 50 feet. The 1-hour L_{eq} would exceed the 1-hour L_{eq} FTA standards of 90 dBA during the day and 80 dBA at night for residential uses during the at-grade, cut-and-cover, and elevated guideway phases. Tunnel construction would exceed the nighttime 1-hour L_{eq} FTA standard, but could also exceed the daytime standards. Therefore, without mitigation, Alternative 1 construction activity is expected to result in potentially adverse noise effects. Mitigation Measure NOI-8 (Noise Control Plan) would require the contractor to prepare a Noise Control Plan to be

approved by Metro to reduce construction noise levels. Noise-reducing methods that could be used include acoustically attenuating shields around construction equipment, high performance noise-reducing mufflers, temporary noise barriers, and substitution of diesel power equipment for quieter electric equipment. The Noise Control Plan would require the contractor to conduct periodic noise monitoring in response to noise complaints to demonstrate compliance with FTA standards. Other less conventional techniques, such as temporarily relocating affected residents, could be employed when the noise-reducing options would not suffice, particularly when loud, necessary construction operations must occur. However, construction noise would still likely exceed the FTA construction noise criteria. Therefore, under NEPA, Alternative 1 would result in adverse effects related to construction noise even with mitigation incorporated.

Alternative 2: 7th St/Metro Center to Pioneer Station

Construction methods and equipment for Alternative 2 would be similar to Alternative 1 and would include the same construction phases. Under Alternative 2, the 1-hour L_{eq} of 91.2 dBA would exceed the FTA standards for residential uses. Therefore, Alternative 2 construction activity is expected to result in potentially adverse noise effects without mitigation. Mitigation Measure NOI-8 (Noise Control Plan) would be implemented and other less conventional noise-reducing techniques could be employed. However, construction noise would still likely exceed the FTA construction noise criteria. Therefore, under NEPA, Alternative 2 would result in adverse effects related to construction noise even with mitigation incorporated.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Construction methods and equipment for Alternative 3 would be similar to Alternatives 1 and 2; however, Alternative 3 would not require underground construction. In addition, due to the shortened length of Alternative 3, the extent of construction noise impacts would be reduced. Nonetheless, under Alternative 3, the 1-hour L_{eq} of 91.2 dBA would exceed the FTA standards for residential uses. Therefore, Alternative 3 construction activity is expected to result in potentially adverse noise effects without mitigation. Mitigation Measure NOI-8 (Noise Control Plan) would be implemented and other less conventional noise-reducing techniques could be employed. However, construction noise would still likely exceed the FTA construction noise criteria. Therefore, under NEPA, Alternative 3 would result in adverse effects related to construction noise even with mitigation incorporated.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Construction methods and equipment for Alternative 4 would be similar to the other Build Alternatives. Similar to Alternative 3, Alternative 4 would not require underground construction. Alternative 4 would have the shortest alignment and would therefore have the greatest reduction in the extent of construction noise impacts compared to Alternatives 1 and 2. Nonetheless, under Alternative 4, the 1-hour L_{eq} of 91.2 dBA would exceed the FTA standards for residential uses. Therefore, Alternative 4 construction activity is expected to result in a potentially adverse noise effect without mitigation. Mitigation Measure NOI-8 (Noise Control Plan) would be implemented and other less conventional noise-reducing techniques could be employed. However, construction noise would still likely exceed the FTA construction noise criteria. Therefore, under NEPA, Alternative 4 would result in adverse effects related to construction noise even with mitigation incorporated.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Construction activities and requirements for the design options would be similar to Alternative 1 without the implementation of the design options. Design Option 1 (MWD) construction noise would be moved to the east side of LAUS. Design Option 2 would result in additional construction noise impacts around the station area due to additional construction. Under NEPA, Design Options 1 and 2 construction activity is expected to result in potentially adverse noise effects without mitigation. Mitigation Measure NOI-8 (Noise Control Plan) would be implemented and other less conventional noise-reducing techniques could be employed. However, construction noise would still likely exceed the FTA construction noise criteria. Therefore, under NEPA, the design options would result in adverse effects related to construction noise even with mitigation incorporated.

Maintenance and Storage Facility

Paramount MSF Site Option: Construction of the maintenance and storage facility at Paramount would utilize equipment most similar to that used for at-grade construction of the alignment. The 1-hour L_{eq} for MSF construction is anticipated to be 91.2 dBA at 50 feet. Sensitive receptors near Paramount MSF construction activity would include residences adjacent to the lead tracks, as well as Bianchi Stadium 11 Theatres to the north and Paramount Adult School, Our Lady of the Rosary Parish, and associated facilities to the east of the MSF site. The 1-hour L_{eq} of 91.2 dBA would exceed the FTA standards for residential uses. Therefore, without mitigation, Paramount MSF construction activity is expected to result in a potentially adverse noise impact. Mitigation Measure NOI-8 (Noise Control Plan) would be implemented and other less conventional noise-reducing techniques could be employed. However, construction noise would still likely exceed the FTA construction noise criteria. Therefore, under NEPA, the Paramount MSF site option would result in adverse effects related to construction noise even with mitigation incorporated.

Bellflower MSF Site Option: Construction of the maintenance and storage facility at Bellflower would utilize equipment most similar to that used for at-grade construction of the alignment. The 1-hour L_{eq} for MSF construction is anticipated to be 91.2 dBA at 50 feet. Sensitive receptors near Bellflower MSF construction activity would include residences to the north, west, east, and south and Albert Baxter Elementary School approximately 400 feet to the north. The 1-hour L_{eq} of 91.2 dBA would exceed the FTA standards for residential uses. Therefore, without mitigation, Bellflower MSF construction activity is expected to result in a potentially adverse noise impact. Mitigation Measure NOI-8 (Noise Control Plan) would be implemented and other less conventional noise-reducing techniques could be employed. However, construction noise would still likely exceed the FTA construction noise criteria. Therefore, under NEPA, the Bellflower MSF site option would result in adverse effects related to construction noise even with mitigation incorporated.

Vibration

Methodology

To satisfy NEPA requirements, the potential for damage to structures associated with construction vibration has been assessed using the FTA vibration damage criteria shown in Table 4.19.23.

Table 4.19.23. Construction Vibration Damage Risk Criteria

Building Category	PPV (inches/second)
I. Reinforced concrete, steel, or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Historic buildings that have average sensitivity to vibration damage and non-engineered timber and masonry buildings	0.2
IV. Buildings extremely susceptible to vibration damage	0.12

Source: FTA 2018
Note: PPV = peak particle velocity

The limit of 0.12 inch per second for fragile historic structures is among the most restrictive limits used for vibration damage risk to buildings. A damage risk criterion of 0.2 inch per second (PPV) is protective of all but the most fragile buildings.

The FTA analytical/empirical construction vibration prediction model was used to estimate vibration level propagation from construction equipment to vibration-sensitive locations. The vibration model is based on a combination of previous works, including measured equipment vibration emission data from several reference sources and projects, including the FTA's Guidance Manual, the Central Artery/Tunnel Project in Boston, and ground transmissibility relationships found in Charles Dowding's reference textbook. The fundamental equation used in the model is based on propagation relationships of vibration through average soil conditions and distance, as follows:

$$PPV_{receiver} = PPV_{ref} * \left(25 / Dist_{receiver} \right)^{n}$$

where:
$PPV_{receiver}$ = predicted PPV at the receiver
PPV_{ref} = reference PPV of equipment at 25 feet
$Dist_{receiver}$ = distance from the receiver to the equipment in feet
n = 1.5 (the vibration attenuation rate through the soil)

The suggested value for "n" in the FTA Guidance Manual is 1.5. The value for "n" can lie between 1.0 and 2.0, and a value of 1.5 is commonly used in general vibration prediction models. Equipment vibration emission levels used for the predictions are shown in Table 4.19.24.

Table 4.19.24. Equipment Vibration Emission Levels

Equipment	Vibration Level at 25 feet (in/sec PPV)
Pile driver (impact) – Upper Range	1.518
Pile driver (impact) – Typical	0.644
Large bulldozer	0.089
Caisson drilling	0.089
Small bulldozer	0.003
Jack hammer	0.035
Hoe ram	0.089

Equipment	Vibration Level at 25 feet (in/sec PPV)
Loaded truck	0.076
Vibratory roller	0.210

Source: FTA 2018
Note: PPV = peak particle velocity

Alternative 1: Los Angeles Union Station to Pioneer Station

Construction vibration varies greatly depending on the construction process, type of equipment used, and distance to the closest receivers. Many of these factors are traditionally left to the contractor's discretion, which makes it difficult to accurately estimate levels of construction vibration. Overall, construction vibration levels are governed primarily by the equipment being used. Table 4.19.25 lists categories of equipment that are likely to be used during construction and the typical vibration generated by this equipment when it is operating at full load. The table also shows FTA vibration damage criteria and the Metro standard. Equipment used for underground construction, such as the TBM, could generate vibration levels that could result in audible groundborne-noise levels in buildings at the surface, depending on the depth of the tunnel and soil conditions.

Table 4.19.25. Construction Vibration

Equipment	Vibration Level at 25 feet (in/sec PPV)	FTA Damage Risk Vibration Criteria (in/sec PPV)[1]	Vibration Level at 25 feet (VdB RMS)
Large bulldozer	0.089	Category I - 0.5 Category II - 0.3 Category III - 0.2 Category IV - 0.12	87
Jack hammer	0.035		79
Hoe ram	0.089		87
Mobile crane	0.008		67
Front-end loader	0.088		87
Loaded truck	0.076		86
Vibratory roller	0.210		94

Source: FTA 2018
Notes: [1] FTA Damage Risk per building category:
Category I – Reinforced concrete, steel, or timber (no plaster)
Category II – Engineered concrete and masonry (no plaster)
Category III – Non-engineered timber masonry
Category IV – Buildings extremely susceptible to vibration damage
FTA = Federal Transit Administration; in/sec = inches per second; PPV = peak particle velocity; RMS = root mean square; VdB = decibel notation

Vibration-generating activities could result in noticeable levels of vibration but would largely occur within the ROW and are unlikely to result in building damage. Most buildings within the project corridor are constructed of engineered concrete and masonry (no plaster) or non-engineered timber masonry that are held to vibration damage thresholds of 0.3 PPV and 0.2 PPV, respectively. The use of vibration-intensive equipment, such as a compactor/ballast tamper or an impact pile driver, could exceed the 0.2 PPV threshold within 45 feet of a structure. Equipment such as a vibratory roller could result in an exceedance of the 0.2 PPV threshold within 25 feet of a structure. Equipment such as large bulldozers, caisson drills, and hoe rams could result in an exceedance of the 0.2 PPV threshold within 15 feet of a

structure. Additionally, 59 historic structures have been identified along the proposed alignment. Historic structures are held to a vibration damage threshold of 0.2 PPV. An impact pile driver would exceed this threshold within 35 feet of a historic structure. A vibratory roller would exceed this threshold within 26 feet of a historic structure, and equipment such as a large bulldozer would exceed the threshold within 20 feet of a historic structure. Vibration could also exceed the FTA vibration annoyance criteria outlined in Table 4.7.3 in Section 4.7.1 of the Noise and Vibration Section when vibration-intensive equipment would be operated within 25 feet of sensitive uses. Under NEPA, Alternative 1 construction activity would result in potentially adverse vibration effects without mitigation. Mitigation Measure VIB-3 (Vibration Control Plan) would require the contractor to prepare a Vibration Control Plan to be approved by Metro to reduce construction vibration levels. Mitigation Measure VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), and VIB-7 (Construction Monitoring for Vibration) include good engineering practices that would avoid exceedance of the FTA building damage risk thresholds and avoid exceeding the FTA construction impact criteria. Under NEPA, with mitigation incorporated, Alternative 1 would not result in adverse effects related to construction vibration.

Construction Vibration Effects on Historic Resources: The predicted construction vibration from the equipment and activities associated with this Project are presented in Section 7 of the *West Santa Ana Branch Transit Corridor Project Final Noise and Vibration Impact Analysis Report* (Metro 20211) (Appendix M) for each of the eligible historic resources. The locations of these historic resources are shown in the *West Santa Ana Branch Transit Corridor Project Final Cultural Resources Survey Report–Rev 1* (Metro 2020d) (Appendix W) and summarized in Section 4.14 of the Historic, Archaeological, and Paleontological Resources Section. The highest ground vibration at those historic resources near the underground trackwork alignments would be generated by the TBM operations. Compacting of the track beds and ballast tamping would generate the highest levels of vibration for the at-grade trackwork alignments, and caisson drilling for column structures would generate the highest levels of vibration for the aerial trackwork alignments. There are no historic structures in locations where construction vibration levels would exceed the damage risk criteria. Under NEPA, Alternative 1 construction vibration effects would not result in adverse effects on historic resources.

Alternative 2: 7th St/Metro Center to Pioneer Station

Construction methods and equipment for Alternative 2 would be similar to Alternative 1. Under Alternative 2, construction vibration levels could exceed the FTA vibration damage criteria and the FTA vibration annoyance criteria. Therefore, without mitigation, construction activity is expected to result in a potentially adverse vibration impact. Implementation of Mitigation Measure VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), and VIB-7 (Construction Monitoring for Vibration) would avoid exceeding the FTA building damage risk thresholds and avoid exceeding the FTA construction impact criteria. Under NEPA, with mitigation incorporated, Alternative 2 would not result in adverse effects related to construction vibration.

As with Alternative 1, there are no historic resources in locations where construction vibration levels would exceed the damage risk criteria; therefore, construction vibration effects would not result in adverse effects on historic resources.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Construction methods and equipment for Alternative 3 would be similar to Alternatives 1 and 2. However, Alternative 3 would not require underground construction and would have a shorter alignment. This would reduce the potential for groundborne vibration to be felt by residences and other sensitive land uses in the downtown area. In addition, due to the shortened length of Alternative 3, the extent of construction vibration impacts would be reduced. Nonetheless, under Alternative 3, construction vibration levels could exceed the FTA vibration damage criteria and the FTA vibration annoyance criteria. Therefore, without mitigation, construction activity is expected to result in a potentially adverse vibration impact. Implementation of Mitigation Measure VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), and VIB-7 (Construction Monitoring for Vibration) would avoid exceeding the FTA building damage risk thresholds and avoid exceeding the FTA construction impact criteria. Under NEPA, with mitigation incorporated, Alternative 3 would not result in adverse effects related to construction vibration.

As with Alternatives 1 and 2, there are no historic resources in locations where construction vibration levels would exceed the damage risk criteria; therefore, construction vibration effects would not result in adverse effects on historic resources.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Construction methods and equipment for Alternative 4 would be similar to Alternatives 1 and 2. However, Alternative 4 would not require underground construction and would have a shorter alignment. This would reduce the potential for groundborne vibration to be felt by residences and other sensitive land uses in the downtown area. Alternative 4 would be the shortest Build Alternative and would therefore have the greatest reduction in the extent of construction vibration impacts. Nonetheless, under Alternative 4, construction vibration levels could exceed the FTA vibration damage criteria and the FTA vibration annoyance criteria. Therefore, without mitigation, construction activity is expected to result in a potentially adverse vibration impact. Implementation of Mitigation Measure VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), and VIB-7 (Construction Monitoring for Vibration) would avoid exceeding the FTA building damage risk thresholds and avoid exceeding the FTA construction impact criteria. Under NEPA, with mitigation incorporated, Alternative 4 would not result in adverse effects related to construction vibration.

As with Alternative 1, there are no historic resources in locations where construction vibration levels would exceed the damage risk criteria; therefore, construction vibration effects would not result in adverse effects on historic resources.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Construction activities for the design options would be similar to Alternative 1 without the design options. Design Option 1 (MWD) construction vibration would be moved to the east side of LAUS. Design Option 2 would result in additional construction vibration impacts around the station area due to additional construction. Therefore, without mitigation, impacts related to construction vibration would be potentially adverse. Implementation of Mitigation Measure VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), and VIB-7 (Construction

Monitoring for Vibration) would avoid exceeding the FTA building damage risk thresholds and avoid exceeding the FTA construction impact criteria. Under NEPA, with mitigation incorporated, Design Options 1 and 2 would not result in adverse effects related to construction vibration. There are no historic resources in locations where construction vibration levels for the design options would exceed the damage risk criteria; therefore, construction vibration effects would not result in adverse effects on historic resources.

Maintenance and Storage Facility

Paramount MSF Site Option: Construction equipment used during construction of the Paramount MSF would be most similar to a large bulldozer. A large bulldozer would generate a vibration level of approximately 0.089 inch per second PPV at 25 feet. Vibration-generating activities could result in noticeable levels of vibration but would largely occur within the MSF site and are unlikely to result in building damage. Most buildings within the project corridor are constructed of engineered concrete and masonry (no plaster) or non-engineered timber masonry that are held to vibration damage thresholds of 0.3 PPV and 0.2 PPV, respectively. Nearby structures would typically be more than 25 feet away from construction occurring at the MSF site and are unlikely to exceed the vibration damage threshold. However, construction of lead tracks could result in the exceedance of the vibration damage threshold due to the proximity of nearby residences. Therefore, without mitigation, construction activity is expected to result in a potentially adverse vibration impact. Implementation of Mitigation Measure VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), and VIB-7 (Construction Monitoring for Vibration) would avoid exceeding the FTA building damage risk thresholds and avoid exceeding the FTA construction impact criteria. Under NEPA, with mitigation incorporated, the Paramount MSF site option would not result in adverse effects related to construction vibration.

There are no historic resources in locations where construction vibration levels for the MSF would exceed the damage risk criteria; therefore, construction vibration effects would not result in adverse effects on historic resources.

Bellflower MSF Site Option: Construction equipment used during construction of the Bellflower MSF would be most similar to a large bulldozer. A large bulldozer would generate a vibration level of approximately 0.089 inch per second PPV at 25 feet. Vibration-generating activities could result in noticeable levels of vibration but would largely occur within the MSF site and are unlikely to result in building damage. Most buildings within the project corridor are constructed of engineered concrete and masonry (no plaster) or non-engineered timber masonry that are held to vibration damage thresholds of 0.3 PPV and 0.2 PPV, respectively. Nearby structures would typically be more than 25 feet away from construction occurring at the MSF site and are unlikely to exceed the vibration damage threshold. However, residences to the northwest and northeast of the MSF site are adjacent to where construction activity would occur, which could result in the exceedance of the vibration damage threshold. Therefore, without mitigation, construction activity is expected to result in a potentially adverse vibration impact. Implementation of Mitigation Measure VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), and VIB-7 (Construction Monitoring for Vibration) would avoid exceeding the FTA building damage risk thresholds and avoid exceeding the FTA construction impact criteria. Under NEPA, with mitigation incorporated, the Paramount MSF site option would not result in adverse effects related to construction vibration.

There are no historic resources in locations where construction vibration levels for the MSF would exceed the damage risk criteria; therefore, construction vibration effects would not result in adverse effects on historic resources.

Project Measures and Mitigation Measures

No project measures are required. The following mitigation measures would apply.

NOI-8 **Noise Control Plan.** Metro's contractor would develop a Noise Control Plan demonstrating how noise criteria would be achieved during construction. The Noise Control Plan would be designed to follow Metro requirements, Construction Noise Control, and would include measurements of existing noise, a list of the major pieces of construction equipment that would be used, and predictions of the noise levels at the closest noise-sensitive receivers (residences, hotels, schools, churches, temples, and similar facilities). The Noise Control Plan would be approved by Metro prior to initiating construction. Where the construction cannot be performed in accordance with the FTA 1-hour L_{eq} construction noise standards, the contractor would investigate alternative construction measures that would result in lower sound levels. The FTA 1-hour L_{eq} construction noise standards are as follows: Residential daytime standard of 90 dBA L_{eq} and nighttime standard of 80 dBA L_{eq}, and Commercial and Industrial daytime standard of 100 dBA L_{eq} and nighttime standard of 100 dBA L_{eq}. The contractor would conduct noise monitoring to demonstrate compliance with contract noise limits. In addition, Metro would comply with local noise ordinances when applicable. Noise-reducing methods that may be implemented by Metro include:

- If nighttime construction is planned, a noise variance may be prepared by the contractor, if required by the jurisdiction, that demonstrates the implementation of control measures to maintain noise levels below the applicable FTA standards.
- Where construction occurs near noise-sensitive land uses, specialty equipment with enclosed engines, acoustically attenuating shields, and/or high-performance mufflers may be used.
- Limit unnecessary idling of equipment.
- Install temporary noise barriers or noise-control curtains, where feasible and desirable.
- Reroute construction-related truck traffic away from local residential streets and/or sensitive receivers.
- Limit impact pile driving where feasible and effective.
- Use electric instead of diesel-powered equipment and hydraulic instead of pneumatic tools where feasible.
- Minimize the use of impact devices such as jackhammers and hoe rams, using concrete crushers and pavement saws instead.

VIB-3 **Vibration Control Plan.** Metro's contractor would prepare a Vibration Control Plan demonstrating how the FTA building damage risk criteria and the FTA vibration annoyance criteria would be achieved. The Vibration Control Plan would include a list of the major pieces of construction equipment that would be used and predictions of the vibration levels at the closest sensitive receivers (residences, hotels, schools, churches, temples, and similar facilities). The Vibration Control

Plan would need to be approved by FTA prior to initiating construction. Where the construction cannot be performed to meet the Metro vibration criteria, the contractor would investigate alternative means and methods of construction measures that would result in lower vibration levels. The contractor would conduct vibration monitoring to demonstrate compliance with contract vibration limits.

VIB-4 **Minimize the Use of Impact Devices.** Metro's contractor would avoid or minimize the use of impact devices such as jackhammers and hoe rams, and would instead use concrete crushers and pavement saws.

VIB-5 **Drilling for Building Foundations.** Where building foundation systems are needed, drilling instead of driven piles would be used.

VIB-6 **Construction Vibration Limits.** Historic structures would be held to a vibration damage threshold of 0.20 inch per second peak particle velocity. Where possible, operation of the compactor/ballast tamper would be restricted to no closer than 40 feet; and other equipment, such as, and similar to, vibratory rollers, large bull dozers, caisson drills, and hoe rams, would be restricted to no closer than 25 feet to a historic structure. This measure applies to structures identified as eligible for the National Register of Historic Places and/or California Register of Historical Resources in the *West Santa Ana Branch Transit Corridor Final Cultural Resources Survey Report – Rev 1* (Metro 2020d, Appendix W).

VIB-7 **Construction Monitoring for Vibration.** The contractor would monitor construction vibration levels within 200 feet of historic buildings and structures so that the vibration damage threshold for that building or structure of 0.20 inch per second peak particle velocity would not be exceeded. A preconstruction and post-construction survey of these buildings would be conducted by a qualified structural engineer. Any damage would be noted. All vibration monitors used for these measurements would be equipped with an "alarm" feature to provide notification that vibration impact criteria have been approached or exceeded. This measure applies to structures identified as eligible for the National Register of Historic Places and/or California Register of Historical Resources in the *West Santa Ana Branch Transit Corridor Project Final Cultural Resources Survey Report – Rev 1* (Metro 2020d, Appendix W).

California Environmental Quality Act Determination

Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established by FTA or in the local general plans or noise ordinances?

No Project Alternative

Under the No Project Alternative, the Project would not be constructed and no change would occur. Therefore, impacts related to temporary or periodic increases in ambient noise levels would be less than significant, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Alternative 1 would result in temporary and periodic increases in ambient noise levels due to construction activity that would exceed FTA's criteria, and, where applicable, the standards

established by the local noise ordinances of the Cities of Artesia, Bell, Bellflower, Cerritos, Cudahy, Huntington Park, Paramount, South Gate, Vernon, Downey, and Los Angeles, and the County of Los Angeles, listed in Table 4.19.21. Therefore, without mitigation, impacts related to temporary or periodic increases in ambient noise levels would be potentially significant. Mitigation Measure NOI-8 (Noise Control Plan) is anticipated to reduce construction noise levels. However, in some instances the FTA construction impact criteria may still be exceeded.

Regarding health effects of noise, it is unlikely for construction noise to result in noise-induced hearing loss for persons residing or working near construction zones, as this is an occupational hazard related to working over long periods of time (years) in high noise environments. However, construction noise could increase stress and the potential for stress-related diseases at affected sensitive uses. Health effects related to noise would be the same for other alternatives and where noise impacts would occur.

Mitigation Measures: Mitigation Measure NOI-8 (Noise Control Plan)

Impacts Remaining After Mitigation: Significant and unavoidable.

Alternative 2: 7th St/Metro Center to Pioneer Station

Similar to Alternative 1, Alternative 2 would result in temporary and periodic increases in ambient noise levels due to construction activity that would exceed FTA's criteria, and, where applicable, the standards established by the local noise ordinances of the Cities of Artesia, Bell, Bellflower, Cerritos, Cudahy, Huntington Park, Paramount, South Gate, Vernon, Downey, and Los Angeles, and the County of Los Angeles, listed in Table 4.19.21. Therefore, without mitigation, impacts related to temporary or periodic increases in ambient noise levels would be potentially significant. Mitigation Measure NOI-8 (Noise Control Plan) is anticipated to reduce construction noise levels. However, in some instances the FTA construction impact criteria may still be exceeded.

Mitigation Measures: Mitigation Measure NOI-8 (Noise Control Plan)

Impacts Remaining After Mitigation: Significant and unavoidable.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Similar to Alternative 1, Alternative 3 would result in temporary and periodic increases in ambient noise levels due to construction activity that would exceed FTA's criteria, and, where applicable, the standards established by the local noise ordinances of the Cities of Artesia, Bell, Bellflower, Cerritos, Cudahy, Huntington Park, Paramount, South Gate, Vernon, Downey, and Los Angeles, and the County of Los Angeles, as listed in Table 4.19.21. Therefore, without mitigation, impacts related to temporary or periodic increases in ambient noise levels would be potentially significant. Mitigation Measure NOI-8 (Noise Control Plan) is anticipated to reduce construction noise levels. However, in some instances the FTA construction impact criteria may still be exceeded.

Mitigation Measures: Mitigation Measure NOI-8 (Noise Control Plan)

Impacts Remaining After Mitigation: Significant and unavoidable.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Similar to Alternative 1, Alternative 4 would result in temporary and periodic increases in ambient noise levels due to construction activity that would exceed FTA's criteria, and, where applicable, the standards established by the local noise ordinances of the Cities of Artesia, Bellflower, Cerritos, Paramount, and South Gate, as listed in Table 4.19.21. Therefore, without mitigation, impacts related to temporary or periodic increases in ambient noise levels would be potentially significant. Mitigation Measure NOI-8 is anticipated to reduce construction noise levels. However, in some instances the FTA construction impact criteria may still be exceeded.

Mitigation Measures: Mitigation Measure NOI-8 (Noise Control Plan)

Impacts Remaining After Mitigation: Significant and unavoidable.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Similar to the Build Alternatives, Design Options 1 and 2 would result in temporary and periodic increases in ambient noise levels due to construction activity that would exceed FTA's criteria, and, where applicable, the standards established by local noise ordinances in Table 4.19.21. Therefore, without mitigation, impacts related to temporary or periodic increases in ambient noise levels would be potentially significant. Mitigation Measure NOI-8 (Noise Control Plan) is anticipated to reduce construction noise levels. However, in some instances the FTA construction impact criteria may still be exceeded.

Mitigation Measures: Mitigation Measure NOI-8 (Noise Control Plan)

Impacts Remaining After Mitigation: Significant and unavoidable.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: The City of Paramount and City of Bellflower have not established a quantitative construction noise standard; therefore, an impact determination has been made based upon FTA construction noise criteria. Construction of the MSF at the Paramount or Bellflower MSF site option would exceed the FTA standards for residential uses. Therefore, without mitigation, impacts related to temporary or periodic increases in ambient noise levels would be potentially significant. Mitigation Measure NOI-8 (Noise Control Plan) is anticipated to reduce construction noise levels. However, in some instances the FTA construction impact criteria may still be exceeded.

Mitigation Measures: Mitigation Measure NOI-8 (Noise Control Plan)

Impacts Remaining After Mitigation: Significant and unavoidable.

Would the Project result in generation of excessive groundborne vibration or groundborne noise levels?

No Project Alternative

Under the No Project Alternative, no changes would occur within the Affected Area. Therefore, impacts would be less than significant, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

The FTA has provided guidance for assessing construction vibration associated with transit projects. The vibration criteria are based on potential damage risk to buildings and potential annoyance to building occupants. The FTA standards are used in this analysis so the potential for construction vibration impacts is assessed similarly throughout the corridor. Typical construction equipment to be used during construction is listed in Table 4.19.25 along with the predicted vibration levels at 25 feet. To limit the damage risk to buildings along the alignment, operation of compactor/ballast tampers would be restricted to no closer than 40 feet, and other equipment such as vibratory rollers, large bull dozers, front-end loaders, and hoe rams would operate no closer than 25 feet to a building. Construction activities beyond 40 feet from a building are unlikely to cause damage. Mitigation Measure VIB-3 (Vibration Control Plan) would require the contractor to prepare a Vibration Control Plan to be approved by Metro to reduce construction vibration levels. Typical approaches to reducing vibration levels are outlined in Mitigation Measures VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), and VIB-7 (Construction Monitoring for Vibration), which include typical approaches to avoiding vibration levels that would exceed the FTA damage risk thresholds. Mitigation Measures VIB-3 (Vibration Control Plan) through VIB-7 (Construction Monitoring for Vibration) are anticipated to avoid construction vibration levels that would exceed the FTA construction impact criteria. Therefore, impacts related to construction vibration would be less than significant with mitigation incorporated.

Mitigation Measures: Mitigation Measures VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), and VIB-7 (Construction Monitoring for Vibration).

Impacts Remaining After Mitigation: Less than significant.

Alternative 2: 7th St/Metro Center to Pioneer Station

Similar to Alternative 1, Alternative 2 construction activity is expected to result in a potentially significant vibration impact. Mitigation Measures VIB-3 (Vibration Control Plan) through VIB-7 (Construction Monitoring for Vibration) are anticipated to avoid construction vibration levels that would exceed the FTA construction impact criteria. Therefore, impacts related to construction vibration would be less than significant with mitigation incorporated.

Mitigation Measures: Mitigation Measures VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), and VIB-7 (Construction Monitoring for Vibration).

Impacts Remaining After Mitigation: Less than significant.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Similar to Alternatives 1 and 2, Alternative 3 construction activity is expected to result in a potentially significant vibration impact. Mitigation Measures VIB-3 (Vibration Control Plan) through VIB-7 (Construction Monitoring for Vibration) are anticipated to avoid construction vibration levels that would exceed the FTA construction impact criteria. Therefore, impacts related to construction vibration would be less than significant with mitigation incorporated.

Mitigation Measures: Mitigation Measures VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), and VIB-7 (Construction Monitoring for Vibration).

Impacts Remaining After Mitigation: Less than significant.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Similar to Alternatives 1, 2, and 3, Alternative 4 construction activity is expected to result in a potentially significant vibration impact. Mitigation Measures VIB-3 (Vibration Control Plan) through VIB-7 (Construction Monitoring for Vibration) are anticipated to avoid construction vibration levels that would exceed the FTA construction impact criteria. Therefore, impacts related to construction vibration would be less than significant with mitigation incorporated.

Mitigation Measures: Mitigation Measures VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), and VIB-7 (Construction Monitoring for Vibration).

Impacts Remaining After Mitigation: Less than significant.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Similar to Alternative 1, Design Options 1 and 2 would result in temporary and periodic increases in vibration levels that would exceed the FTA damage risk thresholds. Mitigation Measures VIB-3 (Vibration Control Plan) through VIB-7 (Construction Monitoring for Vibration) are anticipated to avoid construction vibration levels that would exceed the FTA construction impact criteria. Therefore, impacts related to construction vibration would be less than significant with mitigation incorporated.

Mitigation Measures: Mitigation Measures VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), and VIB-7 (Construction Monitoring for Vibration).

Impacts Remaining After Mitigation: Less than significant.

Maintenance and Storage Facility

Paramount MSF Site Option: Construction equipment used during construction of the Paramount MSF would be most similar to a large bulldozer. Nearby structures would typically be more than 25 feet away from construction occurring at the MSF site and are unlikely to exceed the vibration damage threshold. However, construction of lead tracks could result in the exceedance of the vibration damage threshold due to the proximity of nearby residences. Therefore, without mitigation, construction activity is expected to result in a potentially significant vibration impact.

Bellflower MSF Site Option: Construction equipment used during construction of the Bellflower MSF would be most similar to a large bulldozer. Nearby structures would typically be more than 25 feet away from construction occurring at the MSF site and are unlikely to exceed the vibration damage threshold. However, residences to the northwest and northeast of the MSF site are adjacent to where construction activity would occur, which could result in the exceedance of the vibration damage threshold. Therefore, without mitigation, construction activity is expected to result in a potentially significant vibration impact.

Mitigation Measures: Mitigation Measures VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), and VIB-7 (Construction Monitoring for Vibration).

Impacts Remaining After Mitigation: Less than significant.

For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No public airports, private airstrips, or airport land use plans are located within 2 miles of the project area. Therefore, no impacts related to airport noise would occur, and mitigation would not be required.

4.19.3.8 Ecosystems/Biological Resources

Build Alternatives

Environmental impacts and consequences are analyzed for the Project as a whole (i.e., Alternatives 1, 2, 3, and 4) as the urban nature of the Affected Area for bio is generally consistent within the Affected Area of each alternative. The analysis presented below concludes that with Mitigation Measures BIO-1 (Special-Status Bats), BIO-2 (Nesting Birds), BIO-3 (Jurisdictional Resources), and BIO-4 (Protected Trees), construction of the Project would result in no adverse effects related to special-status species, jurisdictional waters, and protected trees. However, potential effects associated with construction of the Project are greater under Alternatives 1 and 2 due to their overall length (19.3 miles as opposed to 14.8 under Alternative 3 and 6.6 miles under Alternative 4). Alternative 4 poses the least potential for effects as it would be the shortest and includes one river crossing as opposed to three (Alternatives 1, 2, and 3 include three river crossings).

Special-Status Species and Nesting Birds: Although unlikely, roosting bats may be present within the Affected Area for bio during construction. Nesting birds may also be present. If initial ground disturbance and vegetation/tree trimming or removal is required during the nesting bird season, the Project may adversely affect nesting birds through increased injury or mortality or disruption of normal adult behaviors resulting in the abandonment or harm to eggs and nestlings. Construction-related noise and dust could also result in an adverse indirect effect to nesting birds. Likewise, if initial ground disturbance occurs during bat maternity season, the Project may adversely affect maternal roosting bats and their young by increasing the potential for injury or mortality through disruption of normal foraging, flying, or roosting behaviors. With implementation of Mitigation Measures BIO-1 (Special-Status Bats) and BIO-2 (Nesting Birds), no adverse effects related to bats and nesting birds would occur as a result of project construction.

Jurisdictional Waters: Current engineering plans indicate that permanent piers and debris walls would be constructed within the jurisdictional limits of the Los Angeles River, Rio Hondo Channel, and San Gabriel River. The Project does not propose to alter any embankments or the existing contours of these jurisdictional resources. However, the piers and debris walls would be considered permanent fill impacts to jurisdictional water resources. The jurisdictional delineation conducted for this study mapped the location and extent of jurisdictional water resources potentially impacted by the Project. Specifically, the Los Angeles River, Rio Hondo Channel, and San Gabriel River crossings would result in

approximately 0.09 acre, 0.01 acre, and 0.02 acre of fill, respectively. Alternatives 1, 2, and 3 would cross each jurisdictional resource, whereas Alternative 4 would only cross the San Gabriel River. Construction of these structures must adhere to the requirements outlined in Section 404 of the CWA, the RWQCB under Section 401 of the CWA, and the CDFW pursuant to Section 1600 et. seq. of the California Fish and Game Code. These jurisdictional water resources would be confirmed by the state and federal authorities at the time that permits are requested. With implementation of Mitigation Measure BIO-3 (Jurisdictional Resources), adverse effects to jurisdictional water resources would be minimized to the extent practicable. Implementation of Mitigation Measure BIO-3 (Jurisdictional Resources) would compensate for effects to jurisdictional water resources. With mitigation, construction of the Project would result in no adverse effects related to jurisdictional resources.

Protected Trees: Effects to trees that meet the requirements of local policies as being protected may require that a permit be obtained prior to encroachment or removal/relocation. Relevant tree protection regulations or ordinances of jurisdictions within the Affected Area for bio are provided in detail in Section 3.4 of the *West Santa Ana Branch Transit Corridor Project Final Biological Resources Impact Analysis Report* (Metro 2021q) (Appendix N) for the Cities of Los Angeles, Huntington Park, Bell, South Gate, Downey, and Cerritos. Unincorporated LA County, Vernon, Cudahy, Paramount, Bellflower, and Artesia do not have specific applicable regulations or ordinances related to protected trees.

The exact number and species of protected trees potentially affected within each city is not known at this time but will be subject to verification during final design. A desktop analysis, which included a review of aerial photographs and an estimation of the number of trees potentially impacted was conducted to determine potential project impacts on protected trees. An estimated 110 trees could be affected by Alternatives 1 and 2; 85 trees could be affected by Alternative 3; and 75 trees could be affected by Alternative 4. Due to the underground configuration, no trees are anticipated to be affected in the underground portions of Alternatives 1 and 2. Without mitigation, impacts would be adverse. The Project would comply with applicable regulations and ordinances as required by each corresponding city to minimize potential impacts. Additionally, Mitigation Measure BIO-4 (Protected Trees) would require that protected trees be protected to the greatest extent to avoid adverse effects. With implementation of Mitigation Measure BIO-4 (Protected Trees), construction of the Project would result in no adverse effects related to protected trees.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station

Construction of Design Options 1 and 2 would occur primarily underground in an urban, disturbed location that is not in proximity to jurisdictional resources. Construction is not expected to result in direct and/or indirect adverse effects to nesting birds, roosting bats, or protected trees. Therefore, construction of these design options would result in no adverse effects to biological resources, and mitigation is not required.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options

The Paramount and Bellflower MSF site options are substantially similar to the rest of the Affected Area for bio in regard to existing biological conditions (i.e., urban, disturbed) and are consistent with one another in terms of potential effects.

Special-Status Species: Nesting birds and roosting bats may be present within either MSF site option. Construction activities could result in an adverse direct or indirect effect to nesting birds and roosting bats. Mitigation Measures BIO-1 (Special-Status Bats) and BIO-2 (Nesting Birds) would be implemented and no adverse effects to bats and nesting birds would occur. With implementation of Mitigation Measures BIO-1 (Special-Status Bats) and BIO-2 (Nesting Birds), construction of the Paramount and Bellflower MSF site options would result in no adverse effects related to special-status species.

Protected Trees: Approximately 10 street trees may be affected by construction within the Paramount MSF site option, and approximately 25 trees may be affected by construction within the Bellflower MSF site option; however, neither the City of Paramount nor the City of Bellflower have specific applicable regulations or ordinances related to protected trees. No adverse effects as a result of the Paramount and Bellflower MSF site options are expected to protected trees, and no mitigation is required.

Project Measures and Mitigation Measures

No project measures are required during construction. The following mitigation measures would be required.

BIO-1: Special-Status Bats. A Bat Habitat Suitability Assessment would be conducted by a qualified bat biologist prior to initiation of construction near areas with the potential to provide bat habitat to determine the potential presence and document suitable locations for special-status bat species. If project construction occurs within the bat maternity season (June 1 through October 31) in the vicinity of suitable habitat for western mastiff bat, pallid bat, silver haired bat, and big free tailed bat, a qualified biologist would complete a preconstruction survey to determine the presence or absence of any maternity roosting of special-status bats. If special-status bats are present, project activities disruptive to the roost within 100 feet of an active maternity roost would be delayed until after the maternity season, until a qualified biologist determines that the roosting site is no longer in use, or as otherwise determined in coordination with the applicable resource agency. This buffer may be reduced at the discretion of a qualified monitoring biologist. A criterion to be used to evaluate the appropriate maternity roosting site buffer includes existing levels of ambient disturbance.

BIO-2: Nesting Birds. If Project construction occurs within the peak bird breeding season (January 1 through May 31 for raptors, and March 1 through August 31 for passerines) within suitable nesting habitat (e.g., vegetation, bridges, or other structures), a nesting bird and/or raptor preconstruction survey would be conducted by a qualified biologist within the disturbance footprint plus a 300-foot buffer. The survey would occur no more than three days prior to initiation of ground disturbance and/or vegetation removal. If Project construction occurs in an area over multiple nesting seasons, a subsequent preconstruction nesting bird and raptor survey may be required prior to the initiation of construction each season. Preconstruction nesting bird and raptor surveys would be conducted during the time of day when birds are active and would be of sufficient duration to reliably conclude the presence or absence of nesting birds and/or raptors on-site and within the designated vicinity. The nesting bird and raptor survey results

would be submitted to Metro prior to ground and/or vegetation disturbance activities.

If active nests are found, their locations would be flagged. An appropriate avoidance buffer, depending upon the species and the proposed work activity, would be determined by a qualified biologist in consultation with the appropriate regulatory agency. The buffer would be delineated with bright orange construction fencing or other suitable flagging. Active nests would be monitored at a minimum of once per week until it has been determined that the nest is no longer being used by either the young or adults. If project activities must occur within the buffer, they would be conducted at the discretion of the qualified biologist. Inactive nests that have been confirmed by a qualified biologist could be removed based on their recommendations.

BIO-3: Jurisdictional Resources. Impacts associated with permanently disturbed areas within regulated waters would be mitigated in-kind at a minimum ratio of 1:1.

Mitigation can be completed by providing adequate funding to a third-party organization, conservation bank, or in-lieu fee program for the in-kind creation or restoration. If mitigation is implemented off-site, mitigation lands should be located in the vicinity of the Affected Area for bio or within the Los Angeles River Watershed. The Affected Area for bio falls within the service area for the Land Veritas Soquel Canyon mitigation bank, which is approved to provide mitigation for permitted impacts under US Army Corps of Engineers 404 permits, Regional Water Quality Control Board 401 Certifications, and California Department of Fish and Wildlife 1600 agreements.

Note: the final mitigation ratios required by regulatory agencies during the permitting process may differ from those identified above.

BIO-4: Protected Trees. Prior to removal of any protected trees (as specified in applicable local ordinances), an Arborist Study would be completed to plot the location of each protected tree that may be encroached upon (i.e., construction activities within the tree protection zone, as measured 5 feet from the canopy dripline), and identify each protected tree proposed to be removed or retained and impacted. The Arborist Study would be prepared by a Certified Consulting Arborist in compliance with local ordinance guidelines and would be prepared in accordance with the reporting requirements of the applicable local jurisdiction. In addition, as required by applicable local jurisdiction ordinances, a tree protection plan would be prepared that would, at a minimum, include site plans, protective tree barriers, the designated tree protection zone (identifying an area sufficiently large enough to protect the tree and its roots from disturbance), activities prohibited or permitted within the tree protection zone, and encroachment boundaries. The Arborist Study and tree protection plan would be submitted to the appropriate departments of local jurisdictions with applicable tree ordinances for approval prior to the start of any tree-disturbing construction activities.

California Environmental Quality Act Determination

Impacts to biological resources were analyzed for construction of the Project (Alternatives 1, 2, 3, and 4; Design Options 1 and 2; and the Paramount and Bellflower MSF site options) as a

whole as the urban nature of the Affected Area for bio is generally consistent for biological resources.

Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or United States Fish and Wildlife Service?

No Project Alternative

Under the No Project Alternative, the Project would not be constructed; no new infrastructure would be built within the Affected Area for bio as a result of the Project. The existing freight tracks within the rail ROWs and the environmental setting would remain in current conditions. Therefore, under the No Project Alternative, there would be no direct or indirect impacts to special-status species as a result of project construction.

Build Alternatives, Design Options, and MSF Site Options

Impacts to roosting western mastiff bats may occur during project construction if the species is roosting within buildings or bridges. This is a potentially significant impact. Impacts to western mastiff bats would be reduced to less than significant with implementation of Mitigation Measure BIO-1 (Special-Status Bats), requiring the preparation of a preconstruction bat survey and delay of construction activities if active maternity roosts are present.

In addition, habitat for protected nesting birds is present within and adjacent to the Affected Area for bio. If nesting birds are present within the Affected Area for bio during project construction, it may result in a potentially significant impact. With implementation of Mitigation Measure BIO-2 (Nesting Birds), which requires preconstruction nesting bird surveys and avoidance of nests during the bird nesting season, impacts related to nesting birds would be less than significant.

Mitigation Measures: Mitigation Measures BIO-1 (Special-Status Bats) and BIO-2 (Nesting Birds)

Impacts Remaining After Mitigation: Less than significant impact.

Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or United States Fish and Wildlife Service?

No Project Alternative

Under the No Project Alternative, the Project would not be constructed; no new infrastructure would be built within the Affected Area for bio as a result of the Project. The existing freight tracks within the rail ROWs and the environmental setting would remain in current conditions. Therefore, under the No Project Alternative, there would be no direct or indirect impacts to special-status species as a result of project construction.

Build Alternatives, Design Options, and MSF Site Options

The Project is located in a highly developed/urban area, and no quality habitat that would support native riparian plant or wildlife species is present. Plant communities are considered sensitive biological resources if they have limited distributions, have high wildlife value, include sensitive species, or are particularly susceptible to disturbance. CDFW ranks sensitive

communities as "threatened" or "very threatened" and keeps records of their occurrences in the California Natural Diversity Database. Similar to special-status plant and wildlife species, vegetation alliances are ranked 1 through 5 based on NatureServe's (2010) methodology, with those alliances ranked with a scale of global (G) or state/providence (S) as 1 through 3 considered sensitive. The vegetation that is present throughout the Affected Area for bio is ruderal or ornamental in nature. Therefore, impacts to sensitive natural communities would not occur, there would be no impact, and mitigation would not be required.

Would the Project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, and coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No Project Alternative

Under the No Project Alternative, the Project would not be constructed, and the environmental setting would remain in current conditions. Therefore, under the No Project Alternative, there would be no impact on state or federally protected wetlands through direct removal, filling, hydrological interruption, or other means, and no impacts would occur as a result of project construction.

Build Alternatives, Design Options, and MSF Site Options

State and federally protected wetlands are not present within the Affected Area for bio. Therefore, impacts to protected wetlands as a result of the Project would not occur. Urban channels, including the Los Angeles River, Rio Hondo Channel, and the San Gabriel River, occur within the Affected Area for bio. According to current project design and construction methods, impacts to these jurisdictional water resources would occur. Specifically, the Los Angeles River, Rio Hondo Channel, and San Gabriel River crossings associated with Alternatives 1, 2, and 3 would result in 0.09 acre, 0.01 acre, and 0.02 acre of permanent fill, respectively. Alternative 4 would cross the San Gabriel River only.

The Project does not propose to alter any embankments or the existing contours of the jurisdictional resources. Impacts within regulated waters may be subject to the jurisdiction of regulatory agencies. This includes the requirements of the USACE under Section 404 of the CWA, the RWQCB under Section 401 of the CWA, and CDFW pursuant to Section 1600 et. seq. of the California Fish and Game Code. The jurisdictional delineation conducted for this study mapped the extent of regulated waters and potential impacts. However, the location and extent of jurisdictional features would be confirmed by the state and federal authorities at the time that permits are requested. Implementation of Mitigation Measure BIO-3 (Jurisdictional Resources) requiring avoidance, minimization, and compensatory measures would be implemented to minimize and compensate for potential significant impacts to jurisdictional waters. With mitigation, impacts would be less than significant.

Mitigation Measures: Mitigation Measure BIO-3 (Jurisdictional Resources)

Impacts Remaining After Mitigation: Less than significant impact.

Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

No Project Alternative

The Project would not be constructed under the No Project Alternative; the environmental setting would remain in current conditions. Under the No Project Alternative, there would be no interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites and no impacts would occur as a result of project construction.

Build Alternatives, Design Options, and MSF Site Options

The Project is located within developed, urban areas; therefore, it is unlikely that wildlife utilizes the immediate area for regional movement. Furthermore, CDFW does not identify any mapped California Essential Habitat Connectivity areas within the Affected Area for bio, nor does it contain any Missing Linkages, as identified by the South Coast Wildlands Network. Therefore, the Project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. No impacts would occur, and mitigation would not be required.

Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No Project Alternative

The Project would not be constructed under the No Project Alternative; the environmental setting would remain in current conditions. Under the No Project Alternative, the Project would not conflict with any local policies or ordinances protecting biological resources, and no impacts would occur as a result of project construction.

Build Alternatives, Design Options, and MSF Site Options

Numerous protected street trees in the Cities of Los Angeles, Huntington Park, Bell, South Gate, Downey, Bellflower, and Cerritos are present within the Affected Area for bio. The exact number and species of protected trees potentially impacted by the Project is not known at this time. Based on a desktop study, approximately 110 trees could be affected by Alternatives 1 and 2, 85 trees by Alternative 3, and 75 trees by Alternative 4. Impacts to protected trees would result in a potentially significant impact without mitigation. With implementation of Mitigation Measure BIO-4 (Protected Trees), an Arborist Study prepared by a Certified Consulting Arborist would be completed to plot the location of each protected tree within the Affected Area for bio that may be encroached upon and identify each protected tree proposed to be removed or retained and impacted. Additionally, the Arborist Study would detail a mitigation program for the potential impacts to be tailored to comply with the requirements of each relevant local jurisdiction. Thus, impacts related to protected trees would be reduced to a less than significant level with mitigation.

Mitigation Measure: Mitigation Measure BIO-4 (Protected Trees)

Impacts Remaining After Mitigation: Less than significant impact.

Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Project Alternative

Under the No Project Alternative, the Project would not be constructed, and the environmental setting would remain in current conditions. Under the No Project Alternative, the Project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan, and no impacts would occur as a result of project construction.

Build Alternatives, Design Options, and MSF Site Options

The Project is not located in an area with an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved Habitat Conservation Plan. Thus, the Project would not conflict with any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state Habitat Conservation Plan. No impact would occur, and mitigation would not be required.

4.19.3.9 Geotechnical, Subsurface, and Seismic Impacts

This section describes the temporary construction impacts of the Build Alternatives, including the design options and MSF site options, on geotechnical, subsurface, and seismic resources. Construction would require the activities as summarized in Section 4.19.2. As detailed in the Section 4.9.2 in the Geotechnical, Subsurface, and Seismic Resources Section, the geotech Affected Area is underlain by alluvial soils with a locally shallow groundwater table, is situated near active faults, and traverses oil fields and methane hazard and buffer zones. Potential impacts associated with construction of the Build Alternatives, design options, and MSF site options would be minimized through compliance with the methodology and established design standards discussed in Section 4.9.1 in the Geotechnical, Subsurface, and Seismic Section and implemented through Project Measures GEO PM-3 (Geotechnical Design [Construction]) and GEO PM-4 (Oil and Gas Zones [Construction]) and Mitigation Measure GEO-5 (Gas Monitoring [Construction]). Project Measure GEO PM-3 (Geotechnical Design [Construction]) is applicable to all Build Alternatives, design options, and MSF site options. Project Measure GEO PM-4 (Oil and Gas Zones [Construction]) and Mitigation Measure GEO-5 (Gas Monitoring [Construction]) are specific to Build Alternatives 1 and 2. As a result, adverse impacts to geotechnical, subsurface, and seismic resources would be minimized. Note that construction impacts associated with oil and gas fields, including environmental and health impacts, are discussed in Section 4.19.3.10 in the Hazards and Hazardous Materials Section.

Alternative 1: Los Angeles Union Station to Pioneer Station

Natural Subsurface Gas; At- and Above-Grade Design Features: If oil wells are encountered during construction, the wells would be abandoned in accordance with state guidelines. Refer to Section 4.19.3.10 for additional discussion on oil wells in the Affected Area for geotech.

As described in Sections 4.9.2.7 and 4.9.3.3 in the Geotechnical, Subsurface, and Seismic Section, hazardous subsurface gases are present in the Affected Area for geotech of Alternative 1. If subsurface gases were to be encountered during excavation for foundations for viaducts or other support structures, this could pose a fire/explosion hazard during construction. Additionally, accumulation of methane gas in an excavation could replace

oxygen in the breathing zone, and accumulation of H_2S would be highly toxic when inhaled at high concentrations, thus creating a health hazard during construction. Methane and H_2S are considered hazardous gases because of their explosive properties. H_2S is also highly toxic when inhaled and typically has a strong rotten-egg-like odor at lower, non-toxic levels. Foundation excavations for viaducts or other support structures in hazardous areas may need to be considered "potentially gassy," and precautions such as forced-air circulation and air monitoring may need to be implemented during construction. In accordance with Project Measure GEO PM-3 (Geotechnical Design [Construction]), this potential hazard associated with Alternative 1 (including Design Options 1 and 2) would be addressed by incorporating the geotechnical report's recommendations into the project plans and specifications. Comprehensive geologic, geotechnical, and environmental investigations would be conducted and design-level documents would be prepared for the selected alternative. These design-level reports would verify and document the hazardous subsurface conditions in the project area and support the design recommendations in compliance with the applicable regulations and standards for hazardous gases. Under NEPA, adverse effects would be avoided by implementing these mandatory design requirements; impacts related to naturally occurring oil and gas would be minimized and no mitigation would be required for the at- and above-grade design features.

Natural Occurring Subsurface Gas; Subterranean Design Features: As discussed in Sections 4.9.2.7 and 4.9.3.3 in the Geotechnical, Subsurface, and Seismic Section, there is moderate-to-high potential to encounter naturally occurring oil and/or gas during tunneling (bored or cut-and-cover such as the tunnel portals), excavation for the Alternative 1 underground stations, or other deep excavations (such as tunnel shafts). As stated in the prior section, if subsurface gases were to be encountered during excavation for tunnels or stations, this could pose a fire/explosion hazard during construction and accumulation of methane gas would be highly toxic when inhaled at high concentrations, thus creating a health hazard during construction. In accordance with Project Measures GEO PM-3 (Geotechnical Design [Construction]) and GEO PM-4 (Oil and Gas Zones [Construction]) and Mitigation Measure GEO-5 (Gas Monitoring [Construction]), investigations would be conducted on the selected alternative that would verify and quantify the gas hazard. Various construction techniques can satisfy the requirements of Mitigation Measure GEO-5 (Gas Monitoring [Construction]). The following discussion provides potential options that may be implemented, dependent on the anticipated and actual conditions encountered during construction.

The use of a slurry-face TBM or an earth pressure balance TBM (both pressurized-face TBMs) would minimize the exposure of workers to elevated gas concentrations underground because the excavated soil is removed in a fully enclosed slurry pipeline to an aboveground, enclosed treatment plant. Refer to Section 4.19.2.5 and the Construction Methods Report (Appendix L) for additional information on TBMs.

In areas of potential H_2S exposure, several techniques could be used to lower the risk of exposure. Areas determined to be at risk of elevated H_2S levels could be pretreated by displacing and oxidating the H_2S by injecting large quantities of H_2S-free water containing dilute hydrogen peroxide into the ground and groundwater in advance of the tunnel excavation (Jacobs et al. 1999). This *in-situ* oxidation method reduces H_2S levels even before the ground is excavated. This pretreatment method is unlikely to be necessary where a slurry-face TBM is used but may be implemented in areas with tunnel-to-station connections or at cross-passage excavation areas and where open excavation and limited dewatering may be conducted, such as emergency exit shafts and low-point sump shafts.

In addition to pretreatment of the ground and groundwater mentioned above, and prior to tunneling, additives such as sodium hydroxide can be injected into the bentonite slurry during the tunneling and/or prior to discharge into the slurry separation plant. The use of sodium hydroxide as an additive to maintain the pH of the slurry at 10 or 11 has been found to be effective in suppressing H_2S "off-gassing" from the slurry (Jacobs et al. 1999). However, because of health and safety issues associated with use of sodium hydroxide, Cal/OSHA has previously indicated that it would not support such an application in a tunnel environment. If the slurry treatment plant were located aboveground, the suppression of off-gassing could be tightly controlled and monitored, and sodium hydroxide dosing may be possible.

The addition of zinc oxide to the slurry is also a method commonly used in oil-field operations. The zinc oxide precipitates out dissolved sulfides to similarly reduce the potential for H_2S release or exposure. The slurry pipelines can be equipped with H_2S sensors that can automatically start zinc oxide dosing when certain levels are reached. However, if zinc dosages are significant enough, the post-treatment solids could be considered contaminated, which could require disposal at special facilities.

All of these treatments can neutralize the presence of H_2S, improving the safety of workers involved in the slurry and separation plant systems. Such treatments have the additional benefit of reducing the corrosive effects of H_2S when it is dissolved in the slurry or groundwater.

Where a TBM cannot be used, such as in areas with tunnel-to-station connections, at cross-passage excavation areas, and at open excavations such as emergency exit shafts and low-point sump shafts, the soil and/or groundwater may be pretreated (mixed or injected) with special additives (prior to construction) to lower gas levels to below threshold levels. The use of relatively impermeable diaphragm or slurry walls may be required to reduce gas inflow in other excavations in gassy areas, such as for stations.

In accordance with CCR Title 8, Division 1, Tunnel Safety Orders would be prepared for Alternative 1 (including Design Options 1 and 2), and if oil and/or gas are anticipated (based on the detailed studies and field investigations that would be conducted prior to construction, as mandated by Project Measures GEO PM-3 (Geotechnical Design [Construction]) and GEO PM-4 (Oil and Gas Zones [Construction]), the excavation would be classified by Cal/OSHA as a "Gassy or Potentially Gassy Operation." This designation requires that special precautions be taken and safety measures implemented to protect workers that could be exposed to this hazard. Additional ventilation, monitoring, and worker training for exposure to hazardous gases would also be required during construction. Some work may require additional worker training and use of personal protective equipment such as a fitted breathing apparatus, which may include supplied air.

Under NEPA, adverse effects would be avoided based on the above discussions and application of the prescribed standards, requirements, and guidance mandated by Project Measures GEO PM-3 (Geotechnical Design [Construction]) and GEO PM-4 (Oil and Gas Zones [Construction]) and Mitigation Measure GEO-5 (Gas Monitoring [Construction]). Impacts from Alternative 1, including Design Options 1 and 2, would be minimized.

Unconsolidated/Saturated Alluvial Soils; At- and Above-grade Design Features: Construction of Alternative 1 (including Design Options 1 and 2) could result in an adverse effect related to unconsolidated/saturated alluvial soils, if construction (deep excavations) would directly or indirectly cause settlement resulting in distress to existing adjacent improvements.

Unconsolidated or water-saturated alluvial soil deposits can be encountered during deep excavations, such as for viaduct foundation elements included in Alternative 1 (including Design Options 1 and 2). Shoring, casing, or other ground-stabilization methods would be used to minimize impacts during excavations.

Temporary excavations would be required during construction of the Project. Unsafe excavations could result in risk to life and property as a result of a temporary excavation failure. All temporary excavations would be performed in accordance with the safety requirements of Cal/OSHA. Shoring would be designed in accordance with the MRDC or equivalent, as discussed in Section 4.9.1 in the Geotechnical, Subsurface, and Seismic Section.

Soil types may mandate various types/styles of bracing or excavation support. However, regardless of soil type, excavation depth and configuration drive the requirement of whether a temporary excavation requires support. Temporary excavation needs would be developed as the designs progress for the selected Build Alternative.

Temporary excavation bracing would be designed to protect adjacent structures, traffic, utilities, and construction personnel. Suitable factors of safety would be used in the design of the temporary supports. Performance of the temporary construction must conform to the requirements stated in the MRDC or equivalent.

Under NEPA, adverse effects would be avoided based on the above discussions and application of the prescribed standards, requirements, and guidance as mandated by Project Measure GEO PM-3 (Geotechnical Design [Construction]). Impacts resulting from Alternative 1, including Design Options 1 and 2, would be minimized, and no construction-related mitigation measures would be required for unconsolidated/saturated alluvial soils during construction of at- and above-grade design features.

Unconsolidated/Saturated Alluvial Soils; Subterranean Design Features: Construction of Alternative 1 (including Design Options 1 and 2) could result in an adverse effect related to ground loss, subsidence, and settlement if construction (tunnel boring) would directly or indirectly cause settlement resulting in distress to existing adjacent improvements. Construction of Alternative 1 (including Design Options 1 and 2) would include tunnel boring in alluvial soils, which may result in running or flowing ground conditions (depending on groundwater conditions), resulting in ground loss. Ground loss occurs when the soils adjacent to the tunnel excavation enter the excavation, which can result in settlement at the ground surface.

In accordance with Project Measure GEO PM-3 (Geotechnical Design [Construction]), investigations would be conducted to verify and quantify the ground loss potential. Various construction techniques can adequately control ground loss. The following discussion provides potential options that may be implemented, dependent on the anticipated and actual conditions encountered during construction.

To optimize control of the ground overlying and surrounding the tunnels and limit ground subsidence to acceptable levels, pressurized-face TBMs would be recommended for tunnel construction. These TBMs also allow the tunnel lining to be installed and grout to be injected concurrently into the annulus between the lining and the tunnel excavation immediately behind the TBM, without having to lower potential groundwater levels by dewatering.

As added protection against potential subsidence induced by tunneling and related excavation activities, preconstruction surveys would be required and performed to document the existing conditions of buildings along the alignment before tunneling begins. During construction, instrumentation (such as ground surface and building monitoring devices) would be in place to measure movements and provide information to the contractor on tunneling performance and to document that the settlement specifications are met. If measurements indicate settlement limits would be exceeded, the contractor would be required to change or add methods and/or procedures to comply with those limits. In addition, construction work would be reassessed when settlements exceed action (warning) levels. Contractors would be required to modify construction methods if settlements exceed specified maximum levels.

Where conditions warrant, such as in shallow tunnels directly below sensitive structures or utilities, additional methods to reduce settlement would be evaluated and specified. Such methods could include permeation grouting to improve the ground prior to tunneling, compaction grouting as the tunnel is excavated, and compensation grouting involving the carefully controlled injection of grout between underground excavations and structures requiring protection from settlement or underpinning the structure's foundation. Dewatering is usually not necessary when tunneling with pressurized-face TBMs. However, station construction would require excavations that would likely encounter the groundwater table and/or perched groundwater. Therefore, dewatering may be required to complete the construction in some areas. Dewatering of the excavation during construction could result in potentially damaging subsidence adjacent to the construction area. However, dewatering in sensitive areas would be avoided by utilizing slurry walls or secant pile walls (among other methods) during construction.

Under NEPA, adverse effects would be avoided based on the above discussions and application of the prescribed standards, requirements, and guidance as mandated by Project Measure GEO PM-3 (Geotechnical Design [Construction]). Impacts to Alternative 1, including Design Options 1 and 2, would be minimized and no construction-related mitigation measures would be required for unconsolidated/saturated alluvial soils during construction of subterranean design features.

Alternative 2: 7th St/Metro Center to Pioneer Station

Naturally Occurring Subsurface Gas; At- and Above-grade Design Features: As with Alternative 1, if oil wells are encountered during construction, the wells would be abandoned in accordance with state guidelines.

As described in Sections 4.9.2.7 and 4.9.3.3 in the Geotechnical, Subsurface, and Seismic Section, hazardous subsurface gases are present in the geotech Affected Area for Alternative 2. The potential impacts caused by construction of Alternative 2 would be the same as those described for Alternative 1. In accordance with Project Measure GEO PM-3 (Geotechnical Design [Construction]), potential hazards associated with Alternative 2 would be addressed by incorporating the geotechnical report's recommendations into the project plans and specifications. Design-level reports would verify and document the hazardous subsurface conditions in the project area and support the design recommendations in compliance with the applicable regulations and standards for hazardous gases. Under NEPA, impacts resulting from Alternative 2 related to naturally occurring oil and gas would be minimized;

adverse effects would be avoided; and no mitigation would be required for the at- and above-grade design features.

Naturally Occurring Subsurface Oil and Gas; Subterranean Design Features: As discussed in Sections 4.9.2.7 and 4.9.3.3 in the Geotechnical, Subsurface, and Seismic Section, there is moderate-to-high potential to encounter naturally occurring oil and/or gas during tunneling (bored or cut-and-cover such as the tunnel portals), during excavation for the Alternative 2 underground stations, or other deep excavations (such as tunnel shafts). The potential impacts caused by construction of Alternative 2 would be the same as those described for Alternative 1. In accordance with Project Measures GEO PM-3 (Geotechnical Design [Construction]) and GEO PM-4 (Oil and Gas Zones [Construction]) and Mitigation Measure GEO-5 (Gas Monitoring (Construction]), investigations would be conducted that would verify and quantify the gas hazard. Various construction techniques are available that can satisfy the requirements of Mitigation Measure GEO-5 (Gas Monitoring (Construction]). Because of the similar geologic environment and design features, the discussion presented for Alternative 1 in regard to naturally occurring oil and gas hazard and subterranean structures is also applicable to Alternative 2. Therefore, with implementation of Project Measures GEO PM-3 (Geotechnical Design [Construction]) and GEO PM-4 (Oil and Gas Zones [Construction]) and Mitigation Measure GEO-5 (Gas Monitoring [Construction]), under NEPA, impacts resulting from Alternative 2 would be minimized and adverse effects would be avoided.

Unconsolidated/Saturated Alluvial Soils; At- and Above-grade Design Features: Unconsolidated or water-saturated alluvial soil deposits can be encountered during deep excavations, such as for viaduct foundation elements included in Alternative 2. Shoring, casing, or other ground-stabilization methods would be used to minimize impacts during excavations. Because of the similar geologic environment and design features, the discussion presented for Alternative 1 in regard to unconsolidated/saturated alluvial soils and at- and above-grade structures is also applicable to Alternative 2. Therefore, with implementation of Project Measure GEO PM-3 (Geotechnical Design [Construction]), under NEPA, impacts resulting from Alternative 2 would be minimized; adverse effects would be avoided; and no construction-related mitigation measures would be required for unconsolidated/saturated alluvial soils during construction of at- and above-grade design features.

Unconsolidated/Saturated Alluvial Soils; Subterranean Design Features: Construction of Alternative 2 would include tunnel boring in alluvial soils, which may result in running or flowing ground conditions (depending on groundwater conditions), resulting in ground loss. Ground loss occurs when the soils adjacent to the tunnel excavation enter the excavation, which can result in settlement at the ground surface. In accordance with Project Measure GEO PM-3 (Geotechnical Design [Construction]), investigations would be conducted that would verify and quantify the ground loss potential. Various construction techniques can adequately control ground loss. Because of the similar geologic environment and design features, the discussion presented for Alternative 1 in regard to unconsolidated/saturated alluvial soils and subterranean design features is also applicable to Alternative 2. Therefore, with implementation of Project Measure GEO PM-3 (Geotechnical Design [Construction]), under NEPA, impacts to Alternative 2 would be minimized, adverse effects would be avoided, and no construction-related mitigation measures would be required for unconsolidated/saturated alluvial soils during construction of subterranean design features.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Naturally Occurring Subsurface Gas; At- and Above-grade Design Features: If oil wells are encountered during construction, the wells would be abandoned in accordance with state guidelines.

Although not likely in the geotech Affected Area of Alternative 3, foundation excavations for viaducts or other support structures in hazardous areas may need to be considered "potentially gassy," and precautions such as forced-air circulation and air monitoring may need to be implemented during construction. In such a case, the potential impacts caused by construction of Alternative 3 at these locations would be the same as those described for Alternative 1 for at- and above-grade design features. In accordance with Project Measure GEO PM-3 (Geotechnical Design [Construction]), this potential hazard from Alternative 3 would be addressed by incorporating the geotechnical report's recommendations into the project plans and specifications. Design-level reports would verify and document the hazardous subsurface conditions in the project area and support the design recommendations in compliance with the applicable regulations and standards for hazardous gases. Therefore, under NEPA, impacts resulting from Alternative 3 related to naturally occurring oil and gas would be minimized; adverse effects would be avoided; and no mitigation would be required for the at- and above-grade design features.

Naturally Subsurface Gas; Subterranean Design Features: Subterranean design features are not included as part of Alternative 3.

Unconsolidated/Saturated Alluvial Soils; At- and Above-grade Design Features: Construction of Alternative 3 could result in an adverse effect related to unconsolidated/saturated alluvial soils, if construction (deep excavations) would directly or indirectly cause settlement resulting in distress to existing adjacent improvements.

Although Alternative 3 would have a shorter alignment than Alternative 1, because of the similar geologic environment and design features south of 55th Street/Long Beach Avenue, the discussion presented for Alternative 1 in regard to unconsolidated/saturated alluvial soils and at- and above-grade structures is also applicable to Alternative 3. Based on the above discussions and application of the prescribed standards, requirements, and guidance as mandated by Project Measure GEO PM-3 (Geotechnical Design [Construction]), under NEPA, impacts resulting from Alternative 3 would be minimized; adverse effects would be avoided; and no construction-related mitigation measures would be required for unconsolidated/saturated alluvial soils during construction of at- and above-grade design features.

Unconsolidated/Saturated Alluvial Soils; Subterranean Design Features: Subterranean design features are not included as part of Alternative 3.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Naturally Occurring Subsurface Gas; At- and Above-grade Design Features: If oil wells are encountered during construction, the wells would be abandoned in accordance with state guidelines.

Although not likely in the geotech Affected Area of Alternative 4 (including the Paramount and Bellflower MSF site options) foundation excavations for viaducts or other support structures in hazardous areas may need to be considered "potentially gassy," and precautions

such as forced-air circulation and air monitoring may need to be implemented during construction. In such a case, the potential impacts caused by construction of Alternative 4 at these locations would be the same as those described for Alternative 1 for naturally occurring subsurface gas; at- and above-grade design features. In accordance with Project Measure GEO PM-3 (Geotechnical Design [Construction]), this potential hazard resulting from Alternative 4 would be addressed by incorporating the geotechnical report's recommendations into the project plans and specifications. Design-level reports would verify and document the hazardous subsurface conditions in the project area and support the design recommendations in compliance with the applicable regulations and standards for hazardous gases. Therefore, under NEPA, impacts resulting from Alternative 4 (including the Paramount and Bellflower MSF site options) related to naturally occurring oil and gas would be minimized; adverse effects would be avoided; and no mitigation would be required for the at- and above-grade design features.

Naturally Occurring Subsurface Gas; Subterranean Design Features: Subterranean design features are not included as part of Alternative 4 (including the Paramount and Bellflower MSF site options).

Unconsolidated/Saturated Alluvial Soils; At- and Above-grade Design Features: Construction of Alternative 4 (including the Paramount and Bellflower MSF site options) could result in an adverse effect related to unconsolidated/saturated alluvial soils, if construction (deep excavations) would directly or indirectly cause settlement resulting in distress to existing adjacent improvements. Although Alternative 4 would have a shorter alignment, because of the similar geologic environment and design features south of Main Street/San Pedro Subdivision, the discussion presented for Alternative 1 in regard to unconsolidated/saturated alluvial soils and at-and above-grade structures is also applicable to Alternative 4. Based on the above discussions and application of the prescribed standards, requirements, and guidance as mandated by Project Measure GEO PM-3 (Geotechnical Design [Construction]), under NEPA, impacts resulting from Alternative 4 (including the Paramount and Bellflower MSF site options) would be minimized; adverse effects would be avoided; and no construction-related mitigation measures would be required for unconsolidated/saturated alluvial soils during construction of at- and above-grade design features.

Unconsolidated/Saturated Alluvial Soils; Subterranean Design Features: Subterranean design features are not included as part of Alternative 4 (including the Paramount and Bellflower MSF site options).

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: The design options have substantially similar geologic settings and potential geotechnical construction impacts and effect determinations as Alternative 1. The conclusions provided for Alternative 1 are also applicable to the design options. With the implementation of Project Measures GEO PM-3 (Geotechnical Design [Construction]) and GEO PM-4 Oil and Gas Zones (Construction), and Mitigation Measure GEO-5 (Gas Monitoring [Construction]), under NEPA, impacts resulting from Design Options 1 and 2 would be minimized and no adverse effects would occur.

Maintenance and Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option: Similar to Alternative 4, structures associated with the Paramount and Bellflower MSF site options would be subject to associated

prescribed standards, requirements, and guidance related to temporary excavations, including Cal/OSHA requirements for temporary shoring and worker safety. Therefore, the discussion, analysis, and impact determinations presented for construction of Alternative 4 are applicable to both MSF sites; impacts resulting from the Paramount and Bellflower MSF site options would be minimized; no adverse effects would occur; and no mitigation would be required.

Project Measures and Mitigation Measures

Potential impacts associated with construction of the Build Alternatives, design options, and MSF sites would be minimized through compliance with established design standards discussed in Section 4.9.1 in the Geotechnical, Subsurface, and Seismic Section and implemented through Project Measures GEO PM-3 (Geotechnical Design [Construction]) and GEO PM-4 (Oil and Gas Zones [Construction]) and Mitigation Measure GEO-5 (Gas Monitoring [Construction]). Project Measure GEO PM-3 (Geotechnical Design [Construction]) is applicable to all of the Build Alternatives, design options, and MSF sites. Project Measure GEO PM-4 (Oil and Gas Zones [Construction]) and Mitigation Measure GEO-5 (Gas Monitoring [Construction]) are specific to Alternative 1 (including Design Options 1 and 2) and Alternative 2.

During project construction, temporary conditions might arise that could result in potential impacts related to human injury and loss or damage to structures. Worker health and safety plans specific to each of the major tasks involved in development of the Build Alternatives (including Design Options 1 and 2, and the MSF) would be prepared in accordance with Metro and Cal/OSHA requirements. Strict compliance with these worker health and safety plans would reduce the risks to workers, and no adverse effects would result.

Project Measures

Metro would implement the following project measures (which were developed in accordance with the design requirements summarized in Section 4.9.1 of the Geotechnical, Subsurface, and Seismic Section) to reduce geologic-, soil-, and seismicity-related impacts during construction. These project measures are required and are considered to be part of the Project:

GEO PM-3: Geotechnical Design (Construction)

A number of geotechnical design reports are required for the Project, as detailed in the MRDC, Section 5.6, Geotechnical Investigations, Analysis, and Design. Section 5.6 of the MRDC provides detailed requirements for planning and conducting a geotechnical investigation, geotechnical design methodologies, and reporting. In addition, and as referenced in the MRDC, Caltrans and the County of Los Angeles Building Code have their own design requirements for bridges and aerial structures (Caltrans) and building structures (County of Los Angeles) that are also required.

In accordance with the MRDC, geotechnical report recommendations would be incorporated into the project plans and specifications. These recommendations would be a product of final design and would address the subsurface hazards identified in this report. The design reports would also provide recommendations to be implemented during construction. The construction recommendations would address temporary excavations, ground settlement and ground loss, and oil and gas hazards, and would include construction monitoring plans. As part of the construction monitoring plans, and for

protection against potential ground settlement induced by tunneling and other excavation activities, preconstruction surveys would be performed to document the existing conditions of buildings along the alignment before tunneling begins. During construction, instrumentation (ground surface and building monitoring devices) would be put in place to measure movements and provide information to the contractor on tunneling performance and to document that the settlement specifications are met. If measurements indicate that settlement limits would be exceeded, the contractor would be required to change or add methods and procedures to comply with those limits. In addition, construction work would be reassessed when settlements exceed action (warning) levels. Contractors would be required to modify construction methods if settlements exceed specified maximum levels. Implementation of these recommendations and monitoring plans would be required, as applicable, for both on-site and off-site properties and existing improvements.

Without these construction recommendations, the project plans and specifications would not be approved and the Project would not be allowed to advance into the final design stage or ultimately into construction. As a part of the West Santa Ana Branch Project conceptual engineering phase, Metro has developed a comprehensive geotechnical field investigation and laboratory testing program and is in the process of implementing the program. Findings from that program would be used to verify the information presented in the EIS/EIR.

GEO PM-4: Oil and Gas Zones (Construction)

Construction of the tunnels, stations, and appurtenant facilities would be designed in accordance with the City of Los Angeles Municipal Code, Chapter IX, Building Regulations, Article 1, Division 71, Methane Seepage Regulations, as amended by the City of Los Angeles Methane Ordinance (No. 175790). Design requirements would be specific to verified methane levels and pressures measured along the Affected Area for geotech and would be incorporated into the design and construction.

Metro would continuously monitor for gaseous environments in its tunnels during construction and would have emergency ventilation in all of its tunnel facilities, in addition to standard ventilation. Tunnels would have adequate ventilation to dilute gases to safe levels. The main ventilation systems would exhaust flammable gas or vapors from the tunnel, be provided with explosion-relief mechanisms, and be constructed of fire-resistant materials (Metro 2012a).

Metro has extensively studied methane and hydrogen sulfide impacts on tunnel projects throughout Los Angeles and has developed methods for reducing or eliminating hazardous conditions in its facilities while under construction (Metro 2017g). Prior to construction, Metro would require contractors to complete an assessment for methane and hydrogen sulfide in accordance with the *Site Testing Standards for Methane* (LADBS 2014) guidelines where the Affected Area for geotech passes through oil fields, methane zones, and/or methane buffer zones. The assessment would determine where hazardous gases are present and at what quantities. In areas where elevated gases are detected,

soil gas probes would be installed to monitor for methane, hydrogen sulfide, oxygen, and carbon dioxide before, during, and after tunneling.

During construction, Metro may use pressurized-face tunnel boring machines that could help control intrusion of hazardous gases into the tunnel. The tunnel boring machines may use an enclosed mucking system to prevent spoil and groundwater from releasing gas into the tunnel. An adequate ventilation system that would dilute and transport gases out of the tunnel would be mandated.

At stations located within methane zones, construction can be accomplished by installing a relatively impervious cut-off wall (such as a slurry wall) that reduces gas migration into the work area during construction and/or the tunnel/station area after construction. The acceptable levels of gas migration during construction and operation are based on OSHA and MRDC requirements.

To protect workers during construction, the California Occupational Safety and Health Act requires monitoring devices to detect gas and trigger automatic shutdown of the tunnel boring machines. Equipment used in the tunnel would be sealed and would be of explosion-proof design. Refuge chambers or alternate escape routes may be required, depending on site-specific conditions.

Mitigation Measures

GEO-5 Gas Monitoring (Construction)

In accordance with the MRDC or equivalent, during construction of underground portions of the Project, monitoring and recording of hazardous gas levels would be required to protect the public and workers in areas of known or suspected gassy soil conditions. The hazardous gas levels in the construction environment would be continuously monitored and recorded. If monitoring gas levels exceed the most recent thresholds established by Cal/OSHA, construction schedules and processes would be altered to maintain a safe worksite atmosphere (such as by increasing mechanical ventilation or by installing a relatively impervious cut-off wall that reduces gas migration into the work area during construction). The working environment would comply with federal, state, and local regulations, including the South Coast Air Quality Management District and Cal/OSHA standards.

California Environmental Quality Act Determination

To satisfy CEQA requirements, the following subsections present geology and soils construction impacts analyzed in accordance with Appendix G of the *CEQA Guidelines*. CEQA is only concerned with the effects of a project on the environment, not the effects of the environment on the Project (*California Building Industry Association v. Bay Area Air Quality Management District* [2015] 62 Cal. 4th 369.) As such, the following analysis considers whether construction of the Project might exacerbate geological, seismic, and related hazards (see state *CEQA Guidelines*, 14 CCR §15126.2(a)).

The determinations for each of the CEQA Appendix G checklist thresholds are applicable to all of the Build Alternatives, (including Design Options 1 and 2 and the MSF site options), unless the determination is subdivided.

The CEQA determinations for naturally occurring gases as they relate to the project alternatives, including environmental and health impacts, are discussed in Section 4.19.3.10.

No Project Alternative

Under the No Project Alternative, project-related construction activities would not occur; no construction-related impacts would occur; and no mitigation measures would be required. As such, the No Project Alternative is not specifically addressed in the following subsections.

Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?

Build Alternatives, Design Options, and MSF Site Options

Construction of the Build Alternatives, including Design Options 1 and 2, and the MSF site options, would not have a significant impact on the faults in the Affected Area for geotech. The design features being considered are not uncommon for the Los Angeles region. The improvements included in the Build Alternatives are shallow from a geologic perspective and would not exacerbate existing geologic conditions related to active faulting during construction. Therefore, impacts would be less than significant, and mitigation would not be required.

Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving Strong seismic ground shaking?

Build Alternatives, Design Options, and MSF Site Options

Construction of the Build Alternatives, including Design Options 1 and 2, and the MSF site options, would not have significant impacts on the seismic potential of the Affected Area for geotech. The design features being considered are not uncommon for the Los Angeles region. The improvements included in the Build Alternatives are shallow from a geologic perspective and would not exacerbate existing geologic conditions related to seismic shaking. Therefore, impacts would be less than significant, and mitigation would not be required.

Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

Build Alternatives, Design Options, and MSF Site Options

Construction of the Build Alternatives, including Design Options 1 and 2, and the MSF site options, would not result in significant impacts on the geologic environment of the Affected Area for geotech. The design features being considered are not uncommon for the Los Angeles region and would not result in new liquefiable areas or exacerbate existing geologic conditions related to seismic-related ground failure, including liquefaction. Therefore, impacts would be less than significant, and mitigation would not be required.

Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

Build Alternatives, Design Options, and MSF Site Options

The landscape within the Affected Area for geotech of the Build Alternatives, including Design Options 1 and 2, and the MSF site options, is relatively flat, and no landslides have been mapped in the vicinity of the subject Affected Area.

Construction of Build Alternatives, including Design Options 1 and 2, and the MSF site options, could result in adverse effects related to unconsolidated/saturated alluvial soils if construction (deep excavations) would directly or indirectly cause settlement resulting in distress to existing adjacent improvements. Unconsolidated or water-saturated alluvial soil deposits can be encountered during deep excavations. Shoring, casing, or other ground-stabilization methods would be used to minimize impacts during excavations.

Temporary excavations would be required during construction of the Project. Unsafe excavations could result in risk to life and property as a result of a temporary excavation failure. All temporary excavations would be performed in accordance with the safety requirements of Cal/OSHA. Shoring would be designed in accordance with the MRDC or equivalent, as discussed in Section 4.9.1 in the Geotechnical, Subsurface, and Seismic Section.

Soil types may mandate various types/styles of bracing or excavation support. However, regardless of soil type, excavation depth and configuration drive the requirement of whether a temporary excavation requires support. Temporary excavation needs would be developed as the designs progress for the selected Build Alternative.

Temporary excavation bracing would be designed to protect adjacent structures, traffic, utilities, and construction personnel. Suitable factors of safety would be used in the design of the temporary supports. Performance of the temporary construction must conform to the requirements stated in the MRDC or equivalent.

Based on the above discussions and application of the prescribed standards, requirements, and guidance as mandated by Project Measure GEO PM-3 (Geotechnical Design [Construction]), impacts would be minimized; adverse effects would be avoided; and construction-related mitigation would not be required for unconsolidated/saturated alluvial soils.

Result in substantial soil erosion or the loss of topsoil?

Build Alternatives, Design Options, and MSF Site Options

The Build Alternatives, including Design Options 1 and 2, and the MSF site options, are located in an urban setting and the topsoil layer in most of the Affected Area for geotech has been disturbed or concealed by previous human activities. Construction of the Build Alternatives would result in ground surface disturbance during site clearance, excavation, and grading that could create the potential for soil erosion and loss of topsoil. The Build Alternatives would be designed and constructed in accordance with state and local guidelines regarding erosion control and management (see Section 4.19.3.11). Additionally, as detailed in Section 4.19.3.11, a Stormwater Pollution Prevention Plan and Water Quality Control Plan would be required as implementation elements of the Project. These plans would limit potential impacts related to erosion. As such, the Build Alternatives would minimize significant impacts involving soil erosion or loss of topsoil. Therefore, impacts associated

with soil erosion or loss of topsoil would be reduced to less than significant levels, and mitigation would not be required.

Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Alternative 1, Including Design Options 1 and 2

Construction of Alternative 1, including Design Options 1 and 2, would not generate new natural geologic hazard areas (landslide, lateral spreading, subsidence, liquefaction, or collapse) or result in significant impacts on the geologic environment of the Affected Area for geotech. The design features being considered are not uncommon for the Los Angeles region and would not exacerbate existing geologic conditions related to potential on- or off-site lateral spreading, subsidence, liquefaction, or collapse or seismic-related ground failure, including liquefaction. Therefore, impacts would be less than significant, and mitigation would not be required.

Construction of Alternative 1 (including Design Options 1 and 2) would use a variety of construction methods, such as tunneling (bored or cut-and-cover such as the tunnel portals), excavation for the Alternative 1 underground stations, or other deep excavations (such as tunnel shafts), which could result in off-site unstable ground (soil settlement). More specifically, tunnel boring in alluvial soils is planned as part of Alternative 1, including Design Options 1 and 2, and may result in unstable ground, such as running or flowing ground conditions (depending on groundwater conditions), resulting in ground loss. Ground loss occurs when soils adjacent to the tunnel excavation enter the excavation, which can result in settlement at the ground surface. To optimize control of the ground overlying and surrounding the tunnels and to limit ground subsidence to acceptable levels, and in accordance with Metro standard design procedures for tunneling in the downtown Los Angeles area, pressurized-face TBMs would be required for tunnel construction. TBMs allow the tunnel lining to be installed and grout to be injected into the annulus between the lining and the tunnel excavation immediately behind the TBM without requiring dewatering to lower groundwater levels around the tunnel.

In accordance with Project Measure GEO PM-3 (Geotechnical Design [Construction]), for protection against potential ground settlement induced by tunneling and other excavation activities, preconstruction surveys would be performed to document the existing conditions of buildings along the alignment before tunneling begins. During construction, instrumentation (ground surface and building monitoring devices) would be put in place to measure movements and provide information to the contractor on tunneling performance and to document that the settlement specifications are met. If measurements indicate that settlement limits would be exceeded, the contractor would be required to change or add methods and procedures to comply with those limits. In addition, construction work would be reassessed when settlements exceed action (warning) levels. Contractors would be required to modify construction methods if settlements exceed specified maximum levels.

Based on the above discussions and application of the prescribed standards, requirements, and guidance, impacts would be reduced to less than significant levels, and construction-related mitigation would not be required.

Alternative 2

Construction of Alternative 2 would not generate new natural geologic hazard areas (landslide, lateral spreading, subsidence, liquefaction, or collapse) or result in significant impacts on the geologic environment of the Affected Area for geotech. The design features being considered are not uncommon for the Los Angeles region and would not exacerbate existing geologic conditions related to potential on- or off-site lateral spreading, subsidence, liquefaction, or collapse or seismic-related ground failure, including liquefaction. Therefore, impacts would be less than significant, and mitigation would not be required.

Construction of Alternative 2 would use a variety of construction methods, such as tunneling (bored or cut-and-cover such as the tunnel portals), excavation for the Alternative 2 underground stations, or other deep excavations (such as tunnel shafts), which could result in off-site soil settlement.

Because of the similar geologic environment and design features, the discussion presented for Alternative 1 is also applicable to Alternative 2. As such, and as mandated by Project Measure GEO PM-3 (Geotechnical Design [Construction]), impacts would be reduced to less than significant levels, and construction-related mitigation would not be required.

Alternatives 3 and 4 and MSF Site Options

Construction of Alternatives 3 and 4 and the MSF site options would not generate new natural geologic hazard areas (landslide, lateral spreading, subsidence, liquefaction, or collapse) or result in significant impacts on the geologic environment of the Affected Area for geotech. The design features being considered are not uncommon for the Los Angeles region and would not exacerbate existing geologic conditions related to potential on- or off-site lateral spreading, subsidence, liquefaction or collapse or seismic-related ground failure, including liquefaction. Therefore, impacts would be less than significant, and mitigation would not be required.

Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

Build Alternatives, Design Options, and MSF Site Options

Construction of the Build Alternatives, including Design Options 1 and 2, and the MSF site options, would not have a significant impact on the expansive potential of the soils in the Affected Area for geotech. The design features being considered are not uncommon for the Los Angeles region and would not exacerbate existing geologic conditions related to expansive soils during construction. Therefore, impacts would be less than significant, and mitigation would not be required.

Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

Build Alternatives, Design Options, and MSF Site Options

Construction activities associated with the Build Alternatives, including Design Options 1 and 2, and the MSF site options, would all occur within highly urbanized areas served by existing municipal sewage systems. The use of septic tanks or alternative wastewater systems during construction is not anticipated under the Build Alternatives. No impacts would occur, and mitigation would not be required.

Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Refer to Section 4.19.3.14 (Historic, Archaeological, and Paleontological Resources) and the *West Santa Ana Branch Transit Corridor Project Final Paleontological Resource Impacts Analysis Report* (Metro 2021y) (Appendix Y) for the determination to this threshold.

4.19.3.10 Hazards and Hazardous Materials

No wildlands are located within the Affected Area for hazards and hazmat, and no airports are located within 4 miles of the alignment centerlines; therefore, the Project would not result in adverse effects related to wildland fires or airports and these issue areas are not further discussed in detail this section.

Alternative 1: Los Angeles Union Station to Pioneer Station

Environmental Concern Sites

Known, Potential, and Historical Concern Sites: There are 619 known, potential, and historical environmental concern sites in the Affected Area for hazards and hazmat of Alternative 1 (30 with contaminated groundwater) (refer to Appendix B of the *West Santa Ana Branch Transit Corridor Project Final Hazardous Materials Impact Analysis Report* (Metro 2021p), which is included as Appendix S of this Draft EIS/EIR, and Table 4.10.1 in Section 4.10, Hazards and Hazardous Materials). Disturbances of soil, soil vapor, or groundwater during construction at environmental concern sites have the potential to result in adverse effects due to potential health risks to work crews, nearby residents, or the public during construction.

The following required project measures would be implemented to reduce potential effects associated with environmental concern sites during construction: HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-5 (Property Assessment-Phase I and II ESAs), HAZ PM-7 (Disposal of Groundwater), and HAZ PM-9 (Contaminated Soil, Soil Vapor, and Groundwater). With implementation of these project measures, construction of Alternative 1 would not result in adverse effects related to environmental concern sites.

Landfills: One former landfill (South Gate Rod and Gun Club) with potential soil vapor concerns is located in the Affected Area for hazards and hazmat (landfill) of Alternative 1, within a proposed laydown yard. As a result, methane or other gases may be present and accumulate near the Project, creating a health and explosion hazard during construction. Therefore, Mitigation Measure GEO-5 (Gas Monitoring [Construction]) would be required. With implementation of Mitigation Measure GEO-5 (Gas Monitoring [Construction]), which requires the monitoring and recording of hazardous gas levels, construction of Alternative 1 would not result in adverse effects associated with potential landfill gases.

Groundwater Contamination: The Affected Area for hazards and hazmat of Alternative 1 contains 30 sites with known groundwater contamination. Construction dewatering may be required at underground station locations, tunnel sites, and for bridge and structure footings. If contaminated groundwater is disturbed during construction due to dewatering activities, an adverse effect would occur. In locations where long-term contaminated groundwater dewatering is necessary, Project Measure HAZ PM-7 (Disposal of Groundwater) would be implemented. With implementation of this project measure, contaminated groundwater would

be managed appropriately, and construction of Alternative 1 would not result in adverse effects related to contaminated groundwater.

General Hazardous Materials Conditions

LBP, ACM, Railroad, Pipelines, Agriculture, PCBs: LBP, asbestos/ACM, PCBs, ADL, and contaminants associated with railroad and pipeline utility corridors and previous agricultural use may be encountered during demolition and ground-disturbing activities associated with construction of Alternative 1. The disturbance of contaminated soil and/or groundwater may create a health risk to construction crews, nearby residents, or the public.

The following required project measures would be implemented to identify and reduce potential effects related to general hazardous materials conditions: HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-5 (Property Assessment-Phase I and II ESAs), HAZ PM-6 (Demolition Plans), and HAZ PM-9 (Contaminated Soil, Soil Vapor, and Groundwater). With implementation of these project measures, construction of Alternative 1 would not result in adverse effects related to general hazardous materials conditions.

Educational Facilities

There are 53 educational facilities within 0.25 mile of Alternative 1 and 10 educational facilities within 0.25 mile of the Alternative 1 tunnel. The use of extremely hazardous materials in quantities equal to or greater than the state threshold quantity specified pursuant to subdivision (j) of Section 25532 of the Health and Safety Code would not be used during the construction of Alternative 1. Additionally, there are no emissions anticipated due to construction of Alternative 1. Therefore, construction of Alternative 1 would not result in adverse effects related to educational facilities.

Oil and Gas Wells, Fields, and Hazardous Subsurface Gases

In addition to this section, potential effects related to subsurface gases are discussed in Section 4.19.3.9.

Three abandoned oil/gas wells are located in the Affected Area for hazards and hazmat of Alternative 1 (outside the construction footprint). Although these wells are reportedly abandoned, they may not be abandoned to current CCR standards. Additionally, unidentified abandoned oil/gas wells may also be present in the Affected Area for hazards and hazmat of Alternative 1, and hazardous subsurface gases are assumed to be present in the vicinity of the underground stations and tunnels proposed for construction under Alternative 1. Potential effects associated with abandoned oil/gas wells and hazardous subsurface gases associated with the construction of Alternative 1 include the release of methane and/or hydrogen sulfide gas, oil seepage, the presence of contaminated soils and groundwater, leaking oil/gas wells, and wells not plugged and abandoned to current standards. Additionally, methane vapor and hydrogen sulfide gas from oil wells and fields could result in adverse effects if subsurface gases were to accumulate within the underground construction areas, posing a potential fire and explosion hazard during construction. In addition, the accumulation of methane gas could displace oxygen in the breathing zone, resulting in high concentrations of hydrogen sulfide, which would be highly toxic when inhaled and create a health hazard during construction.

To reduce the potential effects of known and unidentified wells and hazardous subsurface gases that may occur as a result of construction of Alternative 1, the following project measures are required: HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-5 (Property Assessment – Phase I and II ESAs), HAZ PM-7 (Disposal of Groundwater), HAZ PM-8 (Oil Well Abandonment), HAZ PM-9 (Contaminated Soil, Soil Vapor, and Groundwater), GEO PM-3 (Geotechnical Design [Construction]), and GEO PM-4 (Oil and Gas Zones [Construction]).

With implementation of these required project measures during construction, impacts would be reduced because hazardous materials would be managed appropriately; property assessments (Phase I and II ESAs) would be completed prior to construction; contaminated groundwater would be managed appropriately; CalGEM would be notified of wells; oil/gas wells would be abandoned appropriately; the contractor would be prepared for encountering known or undocumented hazardous materials; and appropriate ventilation would be maintained during construction through the underground tunnel and station methane zones.

Despite implementation of the above-noted project measures, the potential for adverse effects as a result of construction of Alternative 1 would remain. Therefore, the following mitigation measures are additionally required: Mitigation Measure HAZ-1 (Oil and Gas Wells in Tunnel Areas), GEO-2 (Structural Design)[10], and GEO-5 (Gas Monitoring [Construction]). With implementation of these mitigation measures, wells would be identified and/or avoided during construction; appropriate monitoring, venting, and alarm system activation measures would occur; physical barriers would be constructed; and the contractor would provide continuous monitoring and recording of gaseous soil conditions. With implementation of these mitigation measures, construction of Alternative 1 would not result in adverse effects related to oil/gas wells and fields and hazardous subsurface gases.

Alternative 2: 7th St/Metro Center to Pioneer Station

Environmental Concern Sites

Known, Potential, and Historical Concern Sites: The Affected Area for hazards and hazmat of Alternative 2 contains 634 known, potential, or historical environmental concern sites, 27 of which have contaminated groundwater (refer to Appendix B of the Hazardous Materials Impact Analysis Report [Appendix S of this Draft EIS/EIR] and Table 4.10.1 in Section 4.10, Hazards and Hazardous Materials).

The environmental conditions related to environmental concern sites in the Affected Area for hazards and hazmat of Alternative 2 (over 600 environmental concern sites) and project designs for Alternatives 1 and 2 (tunnels) are generally consistent. Therefore, the evaluation for Alternative 1 related to environmental concern sites and Project Measures HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-5 (Property Assessment-Phase I and II ESAs), HAZ PM-7 (Disposal of Groundwater), and HAZ PM-9 (Contaminated Soil, Soil Vapor, and Groundwater) are applicable to Alternative 2. With implementation of these project measures, construction of Alternative 2 would not result in adverse effects related to environmental concern sites.

[10] GEO-2 (Structural Design) would be required during both construction and operation of the Project. The measure is aimed at providing protection from hazardous gases during operation of the Project. However, the design features required by the measure, for example tunnel liner membrane, would be installed during project construction.

Landfills: One former landfill (South Gate Rod and Gun Club) with potential soil vapor concerns is located in the Affected Area for hazards and hazmat (landfill) of Alternative 2. The Affected Area for hazards and hazmat of Alternatives 1 and 2 includes the same former landfill. Therefore, potential effects associated with landfill gases are consistent under these alternatives and the evaluation for Alternative 1 related to landfills and Mitigation Measure GEO-5 (Gas Monitoring [Construction]) are applicable to Alternative 2. With implementation of these project measures and mitigation measure, construction of Alternative 2 would not result in adverse effects related to landfill gases.

Groundwater Contamination: The Affected Area for hazards and hazmat of Alternative 2 contains 27 sites with known groundwater contamination. With a generally similar number of sites with known groundwater contamination, the environmental conditions of Alternatives 1 and 2 related to groundwater are consistent. Therefore, Project Measure HAZ PM-7 (Disposal of Groundwater) would be implemented as required by the local, regional, or state agencies to manage the proper disposal of contaminated groundwater. With implementation of this project measure, construction of Alternative 2 would not result in adverse effects related to groundwater contamination.

General Hazardous Materials Conditions

LBP, ADL, Asbestos/ACM, Railroad, Pipelines, Agriculture, PCBs: The potential hazards related to LBP, ADL, asbestos/ACM, railroad, pipelines, agriculture, and PCBs associated with Alternative 2 are consistent with those described for Alternative 1. Additionally, due to consistency in length and design, the degree of potential effects related to LBP, ADL, asbestos/ACM, railroad, pipelines, agriculture, and PCBs associated with these two alternatives is consistent. Therefore, Project Measures HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-5 (Property Assessment-Phase I and II ESAs), HAZ PM-6 (Demolition Plans), and HAZ PM-9 (Contaminated Soil, Soil Vapor, and Groundwater) are also applicable to Alternative 2. With implementation of these project measures, construction of Alternative 2 would not result in adverse effects related to general hazardous material conditions.

Educational Facilities

There are 56 educational facilities located within 0.25 mile of Alternative 2 and 18 educational facilities within 0.25 mile of the Alternative 2 tunnels. The potential for effects to educational facilities resulting from construction of the Project are generally consistent among Alternatives 1, 2, 3, and 4. The evaluation for Alternative 1 related to educational facilities is also applicable to Alternative 2. There are no anticipated emissions or use of extremely hazardous substances or mixtures within 0.25 mile of educational facilities. Therefore, construction of Alternative 2 would not result in adverse effects related to hazardous air emissions or extremely hazardous substances or mixtures within 0.25 mile of educational facilities.

Oil and Gas Wells, Fields, and Hazardous Subsurface Gases

Alternative 2 would traverse an area characterized by an abandoned oil field and methane zones, and two abandoned oil wells have been identified within the Affected Area for hazards and hazmat of Alternative 2. Potential effects associated with oil wells and hazardous subsurface gases are generally consistent across Alternatives 1 and 2 and are less than those under Alternatives 3 and 4, which do not traverse an area where abandoned oil fields and methane zones are present.

Due to their consistency in the existing environment related to oil and gas wells, fields, and hazardous subsurface gases, the evaluation for Alternative 1 related to the presence of known and undocumented oil and gas wells and fields and hazardous subsurface gases is also applicable to Alternative 2 and the following project and mitigation measures are required: HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-5 (Property Assessment – Phase I and II ESAs), HAZ PM-7 (Disposal of Groundwater), HAZ PM-8 (Oil Well Abandonment), HAZ PM-9 (Contaminated Soil, Soil Vapor, and Groundwater), GEO PM-3 (Geotechnical Design [Construction]), and GEO PM-4 (Oil and Gas Zones [Construction]), Mitigation Measure HAZ-1 (Oil and Gas Wells in Tunnel Areas), GEO-2 (Structural Design), and GEO-5 (Gas Monitoring [Construction]). With implementation of the above-noted project and mitigation measures, construction of Alternative 2 would not result in adverse effects related to oil/gas wells and fields and hazardous subsurface gases.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Environmental Concern Sites

Known, Potential, and Historical Concern Sites: The Affected Area for hazards and hazmat of Alternative 3 contains 298 known, potential, or historical environmental concern sites, 22 of which have contaminated groundwater (refer to Appendix B of the Hazardous Materials Impact Analysis Report [Appendix S of this Draft EIS/EIR] and Table 4.10.1 in Section 4.10, Hazards and Hazardous Materials). With over 300 fewer environmental concern sites in its hazards and hazmat Affected Area, potential effects related to environmental concern sites associated with Alternative 3 are significantly less than Alternatives 1 and 2 but more than Alternative 4 (which has even fewer environmental concern sites in its Affected Area for hazards and hazmat).

Despite fewer sites, the evaluation for Alternative 1 related to environmental concern sites and Project Measures HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-5 (Property Assessment-Phase I and II ESAs), HAZ PM-7 (Disposal of Groundwater), and HAZ PM-9 (Contaminated Soil, Soil Vapor, and Groundwater) are also applicable to Alternative 3. With implementation of these project measures, construction of Alternative 3 would not result in adverse effects related to environmental concern sites.

Landfills: One former landfill (South Gate Rod and Gun Club) has potential soil vapor concerns in the Affected Area for hazards and hazmat (landfill) of Alternative 3. The Affected Area for hazards and hazmat of Alternatives 1, 2, and 3 include the same former landfill. Therefore, potential effects associated with landfill gases are consistent among these alternatives and the evaluation for Alternative 1 related to landfills and Mitigation Measure GEO-5 (Gas Monitoring [Construction]) are applicable to Alternative 3. With implementation of this mitigation measure, construction of Alternative 3 would not result in adverse effects related to landfill gas accumulation.

Groundwater Contamination: There are 22 sites with known groundwater contamination in the Affected Area for hazards and hazmat of Alternative 3. There are no planned tunnels in Alternative 3. Due to the lack of tunnels proposed for Alternative 3, the necessity for long-term groundwater dewatering and therefore for potential effects is limited when compared to Alternatives 1 and 2. Despite these differences in design, portions of Alternative 3 may require long-term groundwater dewatering and the potential associated effects are consistent with those described for Alternatives 1 and 2. Therefore, Project Measure HAZ PM-7 (Disposal of Groundwater) would be implemented. With implementation of this project

measure, construction of Alternative 3 would not result in adverse effects related to groundwater contamination.

General Hazardous Materials Conditions

LBP, ADL, Asbestos/ACM, Railroad, Pipelines, Agriculture, PCBs: The potential hazards related to LBP, ADL, asbestos/ACM, railroad, pipelines, agriculture, and PCBs associated with Alternative 3 are consistent among Alternatives 1, 2, 3, and 4. However, due to its shorter length and lack of proposed tunnels, the degree of potential effects related to LBP, ADL, asbestos/ACM, railroad, pipelines, agriculture, and PCBs is less under Alternative 3 than under Alternatives 1 and 2.

The evaluation for Alternative 1 related to general hazardous material conditions and Project Measures HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-5 (Property Assessment-Phase I and II ESAs), HAZ PM-6 (Demolition Plans), and HAZ PM-9 (Contaminated Soil, Soil Vapor, and Groundwater) remain applicable to Alternative 3. With implementation of these project measures, construction of Alternative 3 would not result in adverse effects related to general hazardous material conditions.

Educational Facilities

There are 37 educational facilities located within 0.25 mile of Alternative 3. The potential for effects to educational facilities resulting from construction of the Project are generally consistent among Alternatives 1, 2, 3, and 4. Therefore, the evaluation for Alternative 1 related to educational facilities is applicable to Alternative 3. There are no anticipated emissions or use of extremely hazardous substances or mixtures within 0.25 mile of educational facilities associated with construction of Alternative 3. Therefore, construction of Alternative 3 would not result in adverse effects related to hazardous air emissions or extremely hazardous substances or mixtures within 0.25 mile of educational facilities.

Oil and Gas Wells, Fields, and Hazardous Subsurface Gases

Although not anticipated within the project footprint, there is one known abandoned oil/gas well within the Affected Area for hazards and hazmat of Alternative 3. In addition, unidentified abandoned oil/gas wells may be present. There are no oil/gas fields located in the Affected Area for hazards and hazmat of Alternative 3. Due to the fewer number of abandoned wells and the lack of oil fields in the Affected Area for hazards and hazmat of Alternative 3, the degree of potential effect associated with oil and gas wells, fields, and hazardous subsurface gases is less under Alternative 3 than Alternatives 1 and 2. However, the evaluation for Alternative 1 and Project Measures HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-7 (Disposal of Groundwater), and HAZ PM-8 (Oil Well Abandonment) remain applicable to Alternative 3. With these measures, construction of Alternative 3 would not result in adverse effects related to oil/gas wells, fields, and hazardous subsurface gases.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Environmental Concern Sites

Known, Potential, and Historical Concern Sites: The Affected Area for hazards and hazmat of Alternative 4 contains 79 known, potential, or historical environmental concern sites (refer to Appendix B of the Hazardous Materials Impact Analysis Report [included as Appendix S of this Draft EIS/EIR] and Table 4.10.1 in Section 4.10, Hazards and Hazardous Materials).

Although construction of Alternative 4 poses the same potential effects as Alternatives 1, 2, and 3 in relation to environmental concern sites, the degree of proposed effects is less due to a significantly lower number of environmental concern sites that may be encountered during construction. Nevertheless, the evaluation for Alternative 1 related to environmental concern sites and Project Measures HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-5 (Property Assessment-Phase I and II ESAs), HAZ PM-7 (Disposal of Groundwater), and HAZ PM-9 (Contaminated Soil, Soil Vapor, and Groundwater) remain applicable to Alternative 4. With implementation of these project measures, construction of Alternative 4 would not result in adverse effects related to environmental concern sites.

Landfills: There are no former or current landfills with potential soil vapor concerns located within 0.25 mile of Alternative 4 (as opposed to one in the Affected Area for hazards and hazmat for Alternatives 1, 2, and 3). Therefore, construction of Alternative 4 would not result in adverse effects related to landfill gas accumulation.

Groundwater Contamination: Eight sites with known groundwater contamination are present within the Affected Area for hazards and hazmat of Alternative 4 (22 fewer than Alternative 1). There are no planned tunnels in Alternative 4. Due to the lack of tunnels proposed for Alternative 4, the necessity for long-term groundwater dewatering and therefore for potential effects is limited when compared to Alternatives 1 and 2. Despite these differences in design, portions of Alternative 4 may require long-term groundwater dewatering and the potential associated effects are consistent with those described for Alternatives 1 and 2. Therefore, Project Measure HAZ PM-7 (Disposal of Groundwater) would be implemented, and construction of Alternative 4 would not result in adverse effects related to groundwater contamination.

General Hazardous Materials Conditions

LBP, ADL, Asbestos/ACM, Railroad, Pipelines, Agriculture, PCBs: The hazards related to LBP, ADL, asbestos/ACM, railroad, pipelines, agriculture, and PCBs associated with Alternative 4 are similar to those described for Alternative 1 (although the degree of potential effects associated with these hazardous materials is less due to the reduced length of the alignment under Alternative 4). The evaluation for Alternative 1 related to general hazardous material conditions and Project Measures HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-5 (Property Assessment-Phase I and II ESAs), HAZ PM-6 (Demolition Plans), and HAZ PM-9 (Contaminated Soil, Soil Vapor, and Groundwater) are also applicable to Alternative 4. With implementation of these project measures, construction of Alternative 4 would not result in adverse effects related to LBP, ADL, asbestos/ACM, railroad, pipelines, agriculture, and PCBs.

Educational Facilities

There are 17 educational facilities within 0.25 mile of Alternative 4. Potential effects to educational facilities are generally consistent among Alternatives 1, 2, 3, and 4. The evaluation for Alternative 1 related to educational facilities is also applicable to Alternative 4. There are no anticipated emissions or use of extremely hazardous substances or mixtures within 0.25 mile of educational facilities. Therefore, construction of Alternative 4 would not result in adverse effects related to hazardous air emissions or extremely hazardous substances or mixtures within 0.25 mile of educational facilities.

Oil and Gas Wells, Fields, and Hazardous Subsurface Gases

There are no known oil/gas wells or fields located in the Affected Area for hazards and hazmat of Alternative 4. Although unidentified abandoned oil/gas wells may be present, the potential for effects associated with known oil/gas wells, fields, and hazardous subsurface gases is less under Alternative 4 (similar to Alternative 3) when compared with Alternatives 1 and 2. However, the evaluation for Alternative 1 related to the presence of known and undocumented oil/gas wells not plugged and abandoned to current standards and Project Measures HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-7 (Disposal of Groundwater), and HAZ PM-8 (Oil Well Abandonment) are also applicable to Alternative 4. With implementation of these project measures, construction of Alternative 4 would not result in adverse effects related to the presence of known and undocumented oil/gas wells, fields, and hazardous subsurface gases.

Design Options—Alternative 1

Design Option 1: LAUS at MWD: Based on review of Design Option 1 (MWD) and analysis of the existing environment, construction of Alternative 1 with Design Option 1 (MWD) would be similar to Alternative 1 without the design option. Specifically, the following are located within the Affected Area for hazards and hazmat for Alternative 1 with Design Option 1 (MWD):

- 23 known, potential, or historical environmental concern sites (one with contaminated groundwater)
- No landfills
- 2 educational facilities within 0.25 mile
- 1 hazardous material pipeline

In addition, Design Option 1 (MWD) is in an abandoned oil field, methane zone, and methane buffer zone.

The potential for effects resulting from construction of Alternative 1 with Design Option 1 (MWD) are generally consistent with those associated with Alternative 1 without Design Option 1 (MWD). Consistent with Alternative 1, the following project and mitigation measures would also be implemented for construction of Design Option 1 (MWD): HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-5 (Property Assessment-Phase I and II ESAs), HAZ PM-6 (Demolition Plans), HAZ PM-8 (Oil Well Abandonment), HAZ PM-9 (Contaminated Soil, Soil Vapor, and Groundwater), GEO PM-3 (Geotechnical Design [Construction]), GEO PM-4 (Oil and Gas Zones [Construction]), HAZ-1 (Oil and Gas Wells in Tunnel Areas), GEO-2 (Structural Design), and GEO-5 (Gas Monitoring [Construction]). With implementation of these measures, construction of Design Option 1 (MWD) would not result in adverse effects related to environmental concern sites, landfill gases, groundwater contamination, LBP, ADL, asbestos/ACM, railroad, pipelines, agriculture, PCBs, educational facilities, oil/gas wells, fields, and hazardous subsurface gases.

Design Option 2: Add Little Tokyo Station: The potential for effects associated with construction of Alternative 1 with Design Option 2 are generally consistent with those associated with construction of Alternative 1 without Design Option 2. The existing environment of the Affected Area for hazards and hazmat of Design Option 2 is consistent

with Alternative 1. However, the following occur within the Affected Area for hazards and hazmat for Design Option 2:

- 1 environmental concern site, which does not have known contaminated groundwater
- No landfills
- 4 educational facilities within 0.25 mile
- 1 hazardous material pipeline

In addition, Design Option 2 is in an abandoned oil field, methane zone, and methane buffer zone.

The potential for effects resulting from construction of Alternative 1 with Design Option 2 are generally consistent with those associated with Alternative 1 without Design Option 2. Consistent with Alternative 1, the following project and mitigation measures would also be implemented for construction of Design Option 2: HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-5 (Property Assessment-Phase I and II ESAs), HAZ PM-6 (Demolition Plans), HAZ PM-8 (Oil Well Abandonment), HAZ PM-9 (Contaminated Soil, Soil Vapor, and Groundwater), GEO PM-3 (Geotechnical Design [Construction]), GEO PM-4 (Oil and Gas Zones [Construction]), HAZ-1 (Oil and Gas Wells in Tunnel Areas), GEO-2 (Structural Design), and GEO-5 (Gas Monitoring [Construction]). With implementation of these measures, construction of Design Option 2 would not result in adverse effects related to environmental concern sites, landfill gases, groundwater contamination, LBP, ADL, asbestos/ACM, railroad, pipelines, agriculture, PCBs, educational facilities, oil/gas wells, fields, and hazardous subsurface gases.

Maintenance and Storage Facility

Paramount MSF Site Option

Environmental Concern Sites

Known, Potential, and Historical Concern Sites: Nine known and potential environmental concern sites are located within the Affected Area for hazards and hazmat of the Paramount MSF site option, including six known release sites (four with groundwater contamination) and three potential environmental concern sites (refer to Appendix B of the Hazardous Materials Impact Analysis Report [included as Appendix S of this Draft EIS/EIR] and Table 4.10.1 in Section 4.10, Hazards and Hazardous Materials). The Affected Area for hazards and hazmat of the Paramount MSF site option includes six more environmental concern sites than the Bellflower MSF site option.

Construction of the Paramount MSF site option may disturb soil, soil vapor, or groundwater at these environmental concern sites; therefore, adverse effects could occur. Specifically, potential on-site impacts for this MSF site option may include soil impacts from former railroad spurs on-site, residual petroleum hydrocarbon contaminants in soil and/or groundwater from an adjacent closed leaking underground storage site, VOCs in soil and/or groundwater from a known VOC groundwater plume located upgradient of and potentially on-site, and unknown hazardous material soil and/or contaminated groundwater from former on-site hazardous material transfer station activities. In some cases, the extent of contamination is either unknown or extensive, such that adverse conditions are present.

The evaluation for Alternative 1 related to environmental concern sites and Project Measures HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-5 (Property Assessment-Phase I and II ESAs), HAZ PM-7 (Disposal of Groundwater), and HAZ PM-9 (Contaminated Soil, Soil Vapor, and Groundwater) are also applicable to the Paramount MSF site option. With implementation of these project measures, construction of the Paramount MSF site option would not result in adverse effects related to environmental concern sites.

Landfills: No landfill-listed facilities are present within 0.25 mile of the Paramount MSF site option; therefore, construction of the Paramount MSF site option would not result in adverse effects related to landfill gases.

Groundwater Contamination: Four sites with known groundwater contaminants are present within the Affected Area for hazards and hazmat of the Paramount MSF site option. Rail features may be placed in areas where shallow groundwater is present and short-term groundwater dewatering is necessary to keep the rail features from flooding during construction. If dewatering is necessary in areas that correspond to a known groundwater release site, an adverse effect could occur due to the necessity to handle contaminated groundwater. With implementation of required Project Measure HAZ PM-7 (Disposal of Groundwater), construction of the Paramount MSF site option would not result in adverse effects because contaminated groundwater would be managed appropriately.

General Hazardous Material Conditions

LBP, ADL, Asbestos/ACM, Railroad, Pipelines, Agriculture, PCBs: LBP, asbestos/ACM, and PCBs would likely be encountered during demolition of industrial and commercial structures present in the Affected Area for hazards and hazmat of the Paramount MSF site option and soils surrounding the structures may be contaminated. Soil and/or groundwater in the northern portion of the Affected Area for hazards and hazmat of the Paramount MSF site option may be affected by common railroad corridor contaminants and hazardous materials such as pesticides, arsenic, and lead associated with past land use. Additionally, the relocation or disturbance of the four pipelines located in the Affected Area for hazards and hazmat of the Paramount MSF site option could create a health risk to construction workers and nearby residents or the public through the disturbance of contaminated soil and/or groundwater.

The following required project measures would be implemented to identify and reduce potential effects associated with the general hazardous material conditions noted above: HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-5 (Property Assessment-Phase I and II ESAs), HAZ PM-6 (Demolition Plans), and HAZ PM-9 (Contaminated Soil, Soil Vapor, and Groundwater). With implementation of these project measures, hazardous materials would be managed appropriately; property assessments (Phase I and II ESAs) would be completed prior to construction; and contractors would be prepared for encountering hazardous building materials and known or undocumented hazardous materials. Therefore, construction of the Paramount MSF site option would not result in adverse effects related to general hazardous materials conditions.

Educational Facilities

Two educational facilities are located adjacent to the Paramount MSF site option and two additional facilities are not adjacent but within 0.25 mile of the Paramount MSF site option. There are no anticipated emissions or use of extremely hazardous substances or mixtures

within 0.25 mile of educational facilities. Therefore, construction of the Paramount MSF site option would not result in adverse effects related to emissions or use of extremely hazardous substances or mixtures within 0.25 mile of educational facilities.

Oil and Gas Wells, Fields, and Hazardous Subsurface Gases

There are no known oil/gas wells or fields located within the Affected Area for hazards and hazmat of the Paramount MSF site option. However, unidentified abandoned oil/gas wells not abandoned to current CCR standards may be present, and the release of subsurface gases could occur and result in an adverse effect during construction of the Paramount MSF site option. The evaluation for Alternative 1 related to the presence of known and undocumented oil and gas wells that are not plugged and abandoned to current standards and Project Measures HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-7 (Disposal of Groundwater), and HAZ PM-8 (Oil Well Abandonment) are applicable to the Paramount MSF site option. With implementation of these project measures, construction of the Paramount MSF site option would not result in adverse effects related to the presence of known and undocumented oil and gas wells, fields, and hazardous subsurface gases.

Bellflower MSF Site Option

Environmental Concern Sites

Known, Potential, and Historical Concern Sites: There are three environmental concern sites, all of which are historical, within the Affected Area for hazards and hazmat of the Bellflower MSF site option (refer to Appendix B of the Hazardous Materials Impact Analysis Report [included as Appendix S of this Draft EIS/EIR] and Table 4.10.1 in Section 4.10, Hazards and Hazardous Materials). The Affected Area for hazards and hazmat of the Bellflower MSF site option includes six fewer environmental concern sites than the Paramount MSF site option. Therefore, the potential for effects related to environmental concern sites is less under the Bellflower MSF site option than the Paramount MSF site option. Despite a lesser potential, construction of the Bellflower MSF site option may disturb soil, soil vapor, and/or groundwater at environmental concern sites and an adverse effect could occur.

The evaluation for Alternative 1 related to environmental concern sites and Project Measures HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-5 (Property Assessment-Phase I and II ESAs), HAZ PM-7 (Disposal of Groundwater), and HAZ PM-9 (Contaminated Soil, Soil Vapor, and Groundwater) are also applicable to the Bellflower MSF site option. With implementation of these project measures, construction of the Bellflower MSF site option would not result in adverse effects related to environmental concern sites.

Landfills: No landfill-listed facilities are present within 0.25 mile of the Bellflower MSF site option. Therefore, construction of the Bellflower MSF site option would not result in adverse effects related to landfill gases. As neither the Paramount nor Bellflower MSF site option includes landfill-listed facilities within 0.25 mile, the potential for effects between the site options in relation to landfill gases are consistent.

Groundwater Contamination: There are no known groundwater release sites within 0.25 mile of the Bellflower MSF site option. Therefore, construction of the Bellflower MSF site option would not result in adverse effects related to groundwater contamination. As the Paramount

MSF site option includes four sites with known groundwater contaminants, the potential for effects related to groundwater contamination is greater under the Paramount MSF site option.

General Hazardous Material Conditions

LBP, ADL, Asbestos/ACM, Railroad, Pipelines, Agriculture, PCBs: The potential for effects related to LBP, ADL, asbestos/ACM, railroad, pipelines (two as opposed to four), agriculture, and PCBs are generally consistent between the Paramount and Bellflower MSF site options. Therefore, the analysis presented for the Paramount MSF site option and the following project measures would also apply to construction of the Bellflower MSF site option: HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-5 (Property Assessment-Phase I and II ESAs), HAZ PM-6 (Demolition Plans), and HAZ PM-9 (Contaminated Soil, Soil Vapor, and Groundwater). With implementation of these project measures, construction of the Bellflower MSF site option would not result in adverse effects related to general hazardous material conditions.

Educational Facilities

Two educational facilities are within 0.25 mile of the Bellflower MSF site option. The potential for effects related to educational facilities is less under the Bellflower MSF site option because of fewer educational facilities in its vicinity. However, consistent with the Paramount MSF site option, construction of the Bellflower MSF site option is not anticipated to create hazardous emissions or use extremely hazardous substances or mixtures within 0.25 mile of educational facilities. Therefore, construction of the Bellflower MSF site option would not result in adverse effects related to emissions or use of extremely hazardous substances or mixtures within 0.25 mile of educational facilities.

Oil and Gas Wells, Fields, and Hazardous Subsurface Gases

The potential for effects associated with oil/gas wells, fields, and hazardous subsurface gases are consistent between the Paramount and Bellflower MSF site options. There are no known oil or gas wells within 200 feet of the Bellflower MSF site option. However, unidentified abandoned oil and gas wells may not be abandoned to current standards and may be present. The evaluation for Alternative 1 related to the presence of known and undocumented oil and gas wells and Project Measures HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-7 (Disposal of Groundwater), and HAZ PM-8 (Oil Well Abandonment) are applicable to the Bellflower MSF site option. With implementation of these project measures, construction of the Bellflower MSF site option would not result in adverse effects related to oil and gas wells, fields, and hazardous subsurface gases.

Project Measures and Mitigation Measures

Project Measures

HAZ PM-4 Handling, Storage, and Transport of Hazardous Materials or Wastes

Prior to the start of construction of Alternatives 1, 2, 3, and 4, Design Options 1 and 2, and the Paramount and Bellflower MSF site options, the contractor would provide Metro with an industrial waste management plan and/or a waste and hazardous materials management plan, such as a plan defined in Title 19 CCR or a Spill Prevention, Control, and Countermeasure Plan. These plans will be completed to Metro contractor specifications and will identify the responsible parties and outline procedures for hazardous waste and hazardous materials

handling, storage, and transport during construction of the Project. The plan will specify how the contractor will handle and manage wastes on-site, including the following:

- Prescribe BMPs to follow to prevent hazardous material releases and cleanup of any hazardous material releases that may occur
- Comply with the SWRCB Construction CWA Section 402 General Permit conditions and requirements for transport, labeling, containment, cover, and other BMPs for storage of hazardous materials during construction (SWRCB 2017)

During construction, the contractor would comply with applicable federal and state regulations that consider hazardous material handling and storage practices, such as the Resource Conservation and Recovery Act, the Comprehensive Environmental Response and Compensation Liability Act, the Hazardous Materials Release Response Plans and Inventory Law, and the Hazardous Waste Control Act.

HAZ PM-5 Property Assessment – Phase I and II ESAs

Consistent with Metro's standard practice, prior to the start of construction of Alternatives 1, 2, 3, and 4, Design Options 1 and 2, and the Paramount and Bellflower MSF site options, the contractor must provide Phase I ESAs in accordance with standard ASTM methodologies, to assess the land use history of each parcel that would be acquired/utilized for the Project. The determination of parcels that require a Phase II ESA (i.e., soil, groundwater, soil vapor subsurface investigations) would be evaluated after the Phase I ESAs have been completed and would be based on the results of the Phase I ESAs. Specifically, if the Phase I ESAs identify suspected contamination in the soil, soil vapor, or groundwater, a Phase II ESA would be conducted to determine whether the suspect contamination had resulted in soil, groundwater, or soil vapor contamination exceeding regulatory action levels.

If the Phase II ESA concludes that the site is contaminated, remediation or corrective action (e.g., removal of contamination, *in-situ* treatment, capping) would be conducted prior to or during construction under the oversight of federal, state, and/or local agencies (e.g., USEPA, DTSC, RWQCB, Los Angeles County) and in full compliance with current and applicable federal and state laws and regulations. Additionally, Voluntary Cleanup Agreements may be used for parcels where remediation or long-term monitoring is necessary.

HAZ PM-6 Demolition Plans

The contractor would prepare demolition plans for the safe dismantling and removal of building components and debris prior to construction of Alternatives 1, 2, 3, and 4, Design Options 1 and 2, and the Paramount and Bellflower MSF site options. The demolition plans would be completed to Metro contractor specifications and would include the following:

- LBP testing and abatement procedures

- Proper procedures for handling and disposal of lead and chromium in roadway paint striping
- ACM testing and abatement procedures
- PCB testing and abatement procedures

The demolition plans would be submitted to Metro for verification that appropriate demolition practices would be followed, consistent with federal and state handling and disposal regulations regarding ACM, lead, LBP, and PCBs.

HAZ PM-7 Disposal of Groundwater

If disposal of contaminated groundwater (decontamination water, purge water, dewatering, or underground structures [groundwater leakage into the final structure]) is generated during construction of Alternatives 1, 2, 3, and 4, Design Options 1 and 2, and the Paramount and Bellflower MSF site options, the LARWQCB would be consulted and the Project would comply with permits as required by the LARWQCB. The LARWQCB may require that an individual NPDES permit and/or waste discharge requirements be obtained for dewatering activities. Additionally, the following agencies will be contacted as needed:

- City of Los Angeles Sanitation would be notified if contaminated groundwater will be discharged to the sewer system.
- City of Vernon Health and Environmental Control Department will be contacted if contaminated groundwater will be discharged to the stormwater system.
- County of Los Angeles Department of Public Health will be contacted if contaminated groundwater is encountered during dewatering within the boundaries of the following cities: Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, Cerritos, and Artesia, and the unincorporated community of Florence-Firestone.

The groundwater discharge and disposal requirements vary by agency, location, concentration, and contaminant of concern and, therefore, are developed in consultation with the appropriate agency and the project proponent.

HAZ PM-8 Oil Well Abandonment

The Well Safety Devices for Critical Wells (CCR, Title 14, Section 1724.3) regulation governs safety devices required on "critical wells" located within 100 feet of an operating railway. Therefore, prior to demolition, grading, or construction within 400 feet of operating or abandoned oil wells (Alternatives 1, 2, and 3), the contractor must perform the following steps in the Affected Area for hazards and hazmat (within 200 feet of the project footprint) to reduce risk:

- Notify CalGEM about planned subsurface work within 200 feet of the project footprint and use its Construction Site Review Plan Program to locate wells (CalGEM 2020).
- "Critical" oil wells within 100 feet of the alignment would be evaluated by CalGEM to determine if they require additional safety features. The definition of a critical oil well is included in Section 3.2.4 of the Hazardous Materials Impact Analysis Report (Appendix S).

- The Department of Conservation's Geologic Energy Management Division (CalGEM, formerly DOGGR) Construction Site Well Review Program would be utilized per Section 3208.1 of the Public Resources Code (CalGEM 2020) and the local permitting agencies would also be consulted to evaluate whether any specific preconstruction requirements would apply to oil wells located within 100 feet of the construction footprint.
- Oil well abandonment must proceed in accordance with California Laws for Conservation of Petroleum and Gas (1997), Division 3. Oil and Gas, Chapter 1. Oil and Gas Conservation, Article 4, Sections 3228, 3229, 3230, and 3232. These requirements include written notification to CalGEM, protection of adjacent property, and before commencing any work to abandon any well, obtaining approval by CalGEM.
- Abandonment work, including sealing off oil and gas bearing units, pressure grouting, etc., must be performed by a state-licensed contractor under the regulatory oversight and approval of CalGEM.

Proper abandonment of oil wells must be conducted by the contractor prior to conducting subsurface activities that disturb soil and documentation of the work completed would be provided to Metro. Documented wells in the Affected Area for hazards and hazmat and undocumented oil and gas wells encountered during construction in non-tunneled areas of the Project would also be subject to this project measure. See Mitigation Measure HAZ-1 (Oil and Gas Wells in Tunnel Areas) for undocumented well procedures in tunnel areas.

HAZ PM-9 Contaminated Soil, Soil Vapor, and Groundwater

Prior to the start of construction of Alternatives 1, 2, 3, and 4, Design Options 1 and 2, and the Paramount and Bellflower MSF site options, the contractor must retain a qualified environmental consultant to prepare a Soil Management Plan, Soil Reuse Management Plan, Groundwater Management Plan, and/or Soil, Soil Vapor, and Groundwater Management Plan. These plans must be completed to Metro's contractor specifications and submitted to Metro prior to any ground-disturbing activities for the Project. Alternatively, soil, soil vapor, and/or groundwater plans may be prepared separately together as a Soil, Soil Vapor, and Groundwater Management Plan.

The Soil and Soil Vapor Plans must establish provisions per Metro's contractor specifications for the disturbance of contaminated materials (known and undocumented). Proper management and disposition of contaminated soils gases would be determined in consultation with appropriate regulatory agencies and in accordance with applicable federal and/or state guidance (USEPA, DTSC, RWQCB, and other local agencies).

The Soil Reuse Management Plan must establish provisions per Metro's contractor specifications for the reuse of contaminated known or undocumented soils. Proper management and disposition of contaminated soils would be determined in consultation with appropriate regulatory agencies and in accordance with applicable federal and/or state guidance (USEPA, DTSC, RWQCB, and other local agencies).

The Groundwater Management Plan, which must be prepared prior to construction activities shall establish provisions per Metro's contractor specifications for encountering and managing contaminated groundwater (known and undocumented). Proper disposal of contaminated groundwater would be determined in consultation with appropriate regulatory agencies and in accordance with applicable federal and/or state guidance (USEPA, DTSC, RWQCB, and other local agencies).

Where open or closed regulatory release cases are already managed by a regulatory agency (USEPA, DTSC, RWQCB, etc.) and Metro plans to alter the use of the site and/or disturb contaminated soil and/or groundwater on-site, Metro would notify the regulatory agency of the planned land use changes prior to ground-disturbing activities at the location of the open or closed regulatory release site. The regulatory agency would determine the level of investigation and/or remediation (performance standards) necessary on a case-by-case basis. A closure or no further action determination letter from the regulatory agency would be obtained when investigation and/or remediation is complete.

Mitigation Measures

Mitigation Measure HAZ-1 (Oil and Gas Wells in Tunnel Areas) is recommended for all sections of the Affected Area for hazards and hazmat to reduce potential adverse construction effects to no adverse effects:

HAZ-1 Oil and Gas Wells in Tunnel Areas

Preconstruction geophysical surveys will be conducted to screen further for unmapped abandoned oil wells along the tunnel alignment for Alternatives 1 and 2. It is anticipated that the geophysical surveys will be performed along the proposed tunnel alignment prior to construction in the areas of known oil production and mapped or otherwise suspected wells. This survey will incorporate techniques such as ground-penetrating radar and electromagnetic testing procedures to screen for oil well casings and other subsurface obstructions along the tunnel alignment. These procedures could be implemented from the ground surface, using horizontal directional drilling techniques at the tunnel elevation, or a combination of both methods. Shallow excavations may be made to expose and observe anomalies that are detected.

Where the tunnel alignment cannot be adjusted to avoid well casings, CalGEM and a re-abandonment specialty contractor will be contacted to determine the appropriate method of re-abandoning the well. Oil well abandonment must proceed in accordance with California Laws for Conservation of Petroleum and Gas (1997), Division 3. Oil and Gas, Chapter 1. Oil and Gas Conservation, Article 4, Sections 3228, 3229, 3230, and 3232.

The requirements include written notification to CalGEM, protection of adjacent property, and before commencing any work to abandon any well, obtaining approval by CalGEM. Abandonment work, including sealing off oil and gas bearing units, pressure grouting, etc., must be performed by a state-licensed contractor under the regulatory oversight and approval of CalGEM. If an unknown well is encountered during tunnel construction, the contractor will

notify Metro, Cal/OSHA, and CalGEM and proceed in accordance with state requirements.

California Environmental Quality Act Determination – Construction

The hazards and hazardous materials CEQA determinations presented in the following sections are based on the existing conditions presented in Section 4.10.2 of the Hazards and Hazardous Materials Section and the environmental impacts analysis, project measures, and mitigation measure presented above.

No Project Alternative

Under the No Project Alternative, no changes would occur within the Affected Area for hazards and hazmat and no direct impacts would result. Remediation of existing contaminated sites that could take place in conjunction with construction of the Project would also not occur. Therefore, the No Project Alternative would not result in any of the potential long-term benefits of the Project.

Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Alternatives 1 and 2

General Hazardous Materials Conditions: During construction of Alternatives 1 and 2, demolition, grading, or other construction activities could result in disturbance, excavation, removal, and/or transport of the following hazardous materials:

- Known, potential, and historical concern sites (contaminated soil and/or groundwater)
- Landfills
- Lead-based paint and yellow paint striping
- Asbestos-containing materials
- Polychlorinated biphenyls
- Common railroad corridor contaminants
- Aerially deposited lead in soil
- Pesticides from agricultural uses
- Hazardous material pipeline utility corridor contaminants
- Oil and gas wells, oil fields, and hazardous subsurface gases

A summary of where and how these conditions may be encountered during the construction of Alternatives 1 and 2 is provided below. Additional information on each of these general hazardous materials conditions, including risks, are discussed in Section 4.10.2.3 in the Hazards and Hazardous Materials Section and Section 4.19.3.10 for Alternative 1. These general hazardous materials conditions impacts are potentially significant because the disturbance, excavation, removal, and/or transport could create a health risk to construction workers and nearby residents and/or the public.

Known, Potential, and Historical Concern Sites (contaminated soil and/or groundwater): Soils and groundwater in the Affected Area for hazards and hazmat of Alternatives 1 and 2 may be contaminated with hazardous materials such as VOCs, petroleum hydrocarbons, pesticides and herbicides, PAHs, and heavy metals, including lead and arsenic, due to the presence of known, potential, and historical concern sites (refer to Appendix A and Appendix B of the

Hazardous Materials Impact Analysis Report [included as Appendix S of this Draft EIS/EIR] and Table 4.10.1 in Section 4.10, Hazards and Hazardous Materials). During construction of Alternatives 1 and 2, these materials would be excavated or otherwise disturbed, resulting in a potential health risk to construction workers and nearby residents and/or the public and, therefore, a potentially significant impact could occur.

Landfills: One former landfill (South Gate Rod and Gun Club) with potential soil vapor concerns is located in the Affected Area for hazards and hazmat of Alternatives 1 and 2 at 10200 Millers Way in South Gate within a proposed laydown yard (refer to Appendix A, Sheets 25 and 26 of the Hazardous Materials Impact Analysis Report [included as Appendix S of this Draft EIS/EIR]). If methane or other gases are present and accumulate near the Project, a health and explosion hazard, and therefore a potentially significant impact, may exist during construction.

LBP, ADL, Asbestos/ACM, Railroad, Pipelines, Agriculture, and PCBs: LBP and yellow paint striping, ACM, and PCBs would likely be encountered during demolition of roads and industrial, commercial, and residential structures in the Affected Area for hazards and hazmat of Alternatives 1 and 2. Additionally, soils surrounding structures containing LBP, ACM, and PCBs may be contaminated. Soil and/or groundwater in the Affected Area for hazards and hazmat of Alternatives 1 and 2 may also be contaminated due to historic-period railroad and agricultural use. The Affected Area for hazards and hazmat of Alternatives 1 and 2 include hazardous material pipelines containing petroleum hydrocarbons and natural gas (refer to Table 4.1 of the Hazardous Materials Impact Analysis Report [Appendix S]).

The disturbance of soils and/or groundwater contaminated with LBP, ADL, asbestos/ACM, PCBs, and contaminants associated with railroad or agricultural use could create a health risk to construction workers and nearby residents and/or the public and, therefore, a potentially significant impact could occur. Additionally, the relocation or disturbance of existing pipelines could create a health risk to construction workers and nearby residents or the public through the disturbance of contaminated soil and/or groundwater. As required by California law, Government Code 4216, Underground Service Alert (a utility marking service) would be notified prior to the commencement of any subsurface excavation. Therefore, these pipeline risks would be reduced, and impacts would be less than significant.

Oil and Gas Wells, Fields, and Hazardous Subsurface Gases: Three abandoned oil wells are located within the Affected Area for hazards and hazmat of Alternative 1 and two abandoned oil wells are located within the Affected Area for hazards and hazmat of Alternative 2 (refer to Figure 4-2 of the Hazardous Materials Impact Analysis Report [Appendix S]). Additionally, unidentified wells may be present. If these wells require re-abandonment per CalGEM, hazardous materials may be encountered during construction, resulting in a health risk to construction workers and nearby residents or the public through the disturbance of contaminated soils, resulting in a potentially significant impact.

Additionally, oil fields and methane zones are located within the Affected Area for hazards and hazmat of Alternatives 1 and 2 (refer to Figures 4-1 and 4-2 of the Hazardous Materials Impact Analysis Report [Appendix S]). Assuming gaseous soils are present, construction activities would result in subsurface gas releases, as discussed in Section 4.10.2.5 of the Hazards and Hazardous Materials Section. Encountering such hazardous materials during excavation or grading could create a health risk to construction workers and nearby residents or the public through the disturbance of subsurface gases. The subsurface gases would cause a temporary, routine presence of hazardous materials during construction, which could

create a health risk to construction workers and nearby residents and/or the public and, therefore, a potentially significant impact could occur.

During construction, contaminated soils and/or groundwater would be disturbed and handled on-site or processed and moved off-site for disposal or recycling. These activities would result in the temporary, routine transport, use, or disposal of hazardous materials, which could create a health risk to construction workers and nearby residents and/or the public, as discussed in Section 4.10.2.3 of the Hazards and Hazardous Materials Section and in the Alternative 1 discussion of Section 4.19.3.10. These impacts would be significant.

Summary: Contractors would be required to implement federal and state handling and disposal regulations, which would reduce the risk of exposure of the public and the environment during transport and disposal of hazardous contaminants encountered during construction. The contractor would comply with existing federal regulations pertaining to hazardous material handling, transport, and disposal, as discussed in Section 4.10.1.1 of the Hazards and Hazardous Materials Section, and as required by the following project measures: HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-5 (Property Assessment-Phase I and II ESAs), HAZ PM-6 (Demolition Plans), HAZ PM-7 (Disposal of Groundwater), HAZ PM-8 (Oil Well Abandonment), and HAZ PM-9 (Contaminated Soil, Soil Vapor, and Groundwater). With implementation of these project measures, hazardous materials would be managed appropriately and impacts of construction of Alternatives 1 and 2 would be less than significant.

However, ventilation of subsurface gases (e.g., methane or hydrogen sulfide) would require additional controls. Specifically, continuous air monitoring and venting of underground tunnels and underground stations during construction of Alternatives 1 and 2 may create a significant hazard to the public and/or the environment. Compliance with existing regulations pertaining to tunnel venting and hazardous material handling, transport, and disposal, as discussed in Section 4.10.1.1 of the Hazards and Hazardous Materials Section and required by Project Measures GEO PM-3 (Implementation of Geotechnical Design Requirements-Construction) and GEO PM-4 (Oil Fields, Methane Zones, and Methane Buffer Zones-Construction) would reduce the risk of subsurface exposure to the public and the environment during construction of Alternatives 1 and 2 because the operator would maintain ventilation during construction through the underground tunnel and station methane zones.

With implementation of Project Measures GEO PM-3 (Implementation of Geotechnical Design Requirements-Construction) and GEO PM-4 (Oil Fields, Methane Zones, and Methane Buffer Zones-Construction), the risk of subsurface gas exposure to the public and the environment during construction of Alternatives 1 and 2 would be reduced; however, impacts would remain potentially significant. Remaining impacts would be reduced to less than significant levels through the implementation of the following mitigation measures related to the presence, design, and monitoring of hazardous subsurface gases during construction of Alternatives 1 and 2: GEO-2 (Structural Design) and GEO-5 (Gas Monitoring [Construction]). With implementation of these mitigation measures, impacts during construction of Alternatives 1 and 2 would be less than significant because appropriate monitoring, venting, and alarm and system activation measures to reduce the health and explosion hazards would occur; physical barriers would be constructed; and the contractor would provide continuous monitoring and recording of gaseous soil conditions.

Mitigation Measures: HAZ-1 (Oil and Gas Wells in Tunnel Areas), GEO-2 (Structural Design), GEO-5 (Gas Monitoring [Construction]).

Impacts Remaining After Mitigation: Less than significant. Impacts associated with construction of Alternative 1 or Alternative 2 would be reduced to less than significant with implementation of mitigation.

Alternative 3

The environmental conditions related to hazards and hazardous materials and, therefore, potential impacts associated with construction of Alternative 3 are generally consistent with those described for Alternatives 1 and 2. However, the potential for impacts to occur is less under Alternative 3 when compared with Alternatives 1 and 2 because of the alignment's shorter length, lack of tunnels, and the lack of oil fields present in the Affected Area for hazards and hazmat of Alternative 3. The following required project measures would minimize the risk of exposure of the public and the environment to hazardous materials used during construction of Alternative 3: HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-5 (Property Assessment-Phase I and II ESAs), HAZ PM-6 (Demolition Plans), HAZ PM-7 (Disposal of Groundwater), HAZ PM-8 (Oil Well Abandonment), and HAZ PM-9 (Contaminated Soil, Soil Vapor, and Groundwater).

With implementation of the above-noted project measures, hazardous materials would be managed appropriately; property assessments (Phase I and II ESAs) would be completed prior to construction; contractors would be prepared for encountering hazardous building materials and known and undocumented hazardous materials; contaminated groundwater would be managed appropriately; and CalGEM would be notified about oil/gas wells and oil/gas wells would be abandoned appropriately. Therefore, impacts associated with construction of Alternative 3 related to the routine transport, use, or disposal of hazardous waste would be less than significant and mitigation would not be required.

Alternative 4

The environmental conditions related to hazards and hazardous materials and, therefore, potential impacts associated with Alternative 4 are similar to those described for Alternative 3, which also does not include any proposed tunnels. However, the potential for impacts to occur is least under Alternative 4 when comparing all four alternatives because of its reduced length and, therefore, reduced potential to encounter hazardous soils and groundwater.

The following required project measures would minimize the risk of exposure of the public and the environment to hazardous materials used during construction of Alternative 4: HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-5 (Property Assessment-Phase I and II ESAs), HAZ PM-6 (Demolition Plans), and HAZ PM-9 (Contaminated Soil, Soil Vapor, and Groundwater). With implementation of these project measures, hazardous materials would be managed appropriately; property assessments (Phase I and II ESAs) would be completed prior to construction; and contractors would be prepared for encountering hazardous building materials and known or undocumented hazardous materials. With implementation of these project measures, impacts associated with construction of Alternative 4 would be less than significant.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: The environmental conditions related to hazards and hazardous materials and, therefore, potential impacts associated with construction of Alternative 1 with Design Option 1 (MWD) would be similar to Alternative 1 without Design Option 1 (MWD).

The following project measures and mitigation measures are applicable to Design Options 1 and 2: HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes) through HAZ PM-9 (Contaminated Soil, Soil Vapor, and Groundwater), GEO PM-3 (Implementation of Geotechnical Design Requirements-Construction), GEO PM-4 (Oil Fields, Methane Zones, and Methane Buffer Zones-Construction), HAZ-1 (Oil and Gas Wells in Tunnel Areas), GEO-2 (Structural Design), and GEO-5 (Gas Monitoring [Construction]). With implementation of these project measures and mitigation measures, the impacts during construction would be less than significant.

Mitigation Measures: HAZ-1 (Oil and Gas Wells in Tunnel Areas), GEO-2 (Structural Design), and GEO-5 (Gas Monitoring [Construction]).

Impacts Remaining After Mitigation: Less than significant.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: The environmental conditions related to hazards and hazardous materials and, therefore, potential impacts associated with construction of the Paramount and Bellflower MSF site options are generally consistent with those described for Alternative 4 and commensurate with one another. The following required project measures would minimize the risk of exposure of the public and the environment to hazardous materials used during construction of the MSF site options: HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-5 (Property Assessment-Phase I and II ESAs), HAZ PM-6 (Demolition Plans), HAZ PM-7 (Disposal of Groundwater), and HAZ PM-9 (Contaminated Soil, Soil Vapor, and Groundwater). With implementation of these project measures, hazardous materials would be managed appropriately; property assessments (Phase I and II ESAs) would be completed prior to construction; contractors would be prepared for encountering hazardous building materials; contaminated groundwater would be managed appropriately; and contractors would be prepared for encountering known or undocumented hazardous materials. Therefore, impacts of construction of Paramount and Bellflower MSF site options related to the routine transport, use, or disposal of hazardous waste would be less than significant, and mitigation would not be required.

Would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Alternatives 1 and 2

General Hazardous Materials Conditions: During construction of Alternatives 1 and 2, the following hazardous materials could be involved in a reasonably foreseeable upset and accident conditions, which could result in the release of hazardous materials into the environment:

- Hazardous materials containing LBP and yellow paint striping, ACM, and/or PCBs
- Soils containing aerially deposited lead

- Soils containing common railroad corridor contaminants
- Soils containing pesticides from past agricultural uses
- Soils and/or groundwater containing hazardous material pipeline utility corridor contaminants
- Contaminated soils and/or groundwater from known, potential, and historical concern sites and re-abandonment of oil wells

Additionally, construction teams may use hazardous materials such as fuels, paints and coatings, solvents, and welding materials during construction. A significant impact would occur if handling of these materials results in upset and accident conditions. However, construction contractors would be required to implement the federal and state handling and disposal regulations described in Section 4.10.1.1 of the Hazards and Hazardous Materials Section, which would reduce the risk of exposure of the public and the environment. Additionally, Project Measure HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes) would be implemented during construction, which would minimize the risk of exposure of the public and the environment. With implementation of this project measure, hazardous materials and contaminated soil and groundwater would be managed appropriately during demolition, excavation, loading, and transportation so that reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment would be less than significant.

Oil and Gas Wells, Fields, and Hazardous Subsurface Gases: An accidental release of hazardous subsurface gases could occur from within the tunnel areas of Alternatives 1 and 2 during construction due to the continuous construction air monitoring and venting of subsurface gases such as methane or hydrogen sulfide. This could result in a construction hazard to the workers and public and could be a significant impact.

Compliance with existing regulations pertaining to tunnel venting and hazardous material handling, transport, and disposal (as discussed in Section 4.10.1.1 of the Hazards and Hazardous Materials Section), required by Project Measures GEO PM-3 (Implementation of Geotechnical Design Requirements [Construction]) and GEO PM-4 (Oil Fields, Methane Zones, and Methane Buffer Zones [Construction]), would reduce the risk of subsurface exposure to the public and the environment during construction of Alternatives 1 and 2 because the contractor would maintain ventilation during construction through the underground tunnel and station in methane zones and oil fields. However, accidental release impacts would remain potentially significant. Such remaining impacts would be reduced to less than significant levels through the implementation of the following mitigation measures related to the presence, design, and monitoring of hazardous subsurface gases during construction of Alternatives 1 and 2: HAZ-1 (Oil and Gas Wells in Tunnel Areas), GEO-2 (Structural Design), and GEO-5 (Gas Monitoring [Construction]). With implementation of these mitigation measures, appropriate monitoring, venting, alarm and system activation measures to reduce the health and explosion hazards would occur; physical barriers would be constructed; and the contractor would provide continuous monitoring and recording of gaseous soil conditions. Impacts would be less than significant with mitigation.

Mitigation Measures: HAZ-1 (Oil and Gas Wells in Tunnel Areas), GEO-2 (Structural Design), and GEO-5 (Gas Monitoring [Construction]).

Impacts Remaining After Mitigation: Less than significant.

Alternative 3

General Hazardous Materials Conditions: The environmental conditions related to hazards and hazardous materials and, therefore, potential impacts associated with construction of Alternative 3 would be similar to those identified for Alternatives 1 and 2. However, due to the lack of oil fields present in the Affected Area for hazards and hazmat of Alternative 3, the lack of tunnels, and the alignment's shorter length, the potential for impacts to occur is less under Alternative 3 than for Alternatives 1 and 2. The federal regulations identified in Section 4.10.1.1 of the Hazards and Hazardous Materials Section and Project Measure HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes) would also apply during construction of Alternative 3 and would minimize the risk of exposure of the public and the environment to hazardous materials used during construction of Alternative 3. With implementation of this project measure, impacts would be less than significant.

Alternative 4

General Hazardous Materials Conditions: The environmental conditions related to hazards and hazardous materials and, therefore, potential impacts associated with construction of Alternative 4 are consistent with Alternative 3. However, as Alternative 4 is shorter than Alternative 3, the potential for impacts to occur is less under this alternative. The federal regulations identified in Section 4.10.1.1 of the Hazards and Hazardous Materials Section and Project Measure HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes) would also apply during construction of Alternative 4 and would minimize the risk of exposure of the public and the environment to hazardous materials used during construction of Alternative 4. With implementation of this project measure, impacts associated with construction of Alternative 4 would be less than significant.

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station

General Hazardous Materials Conditions: The environmental conditions related to hazards and hazardous materials and, therefore, potential impacts associated with construction of Design Options 1 and 2 are consistent with those identified for Alternative 1, and the construction of either of these design options does not significantly increase the potential for impacts to occur. Similar to Alternative 1, construction contractors would be required to implement federal and state handling and disposal regulations, which would reduce the risk of exposure of the public and the environment. Compliance with existing federal regulations pertaining to hazardous material handling, transport, and disposal (as discussed in Section 4.10.1.1 of the Hazards and Hazardous Materials Section) and implementation of Project Measure HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes) would minimize the risk of exposure of the public and the environment. With implementation of this project measure, hazardous materials and contaminated soil and groundwater would be managed appropriately during demolition, excavation, loading, and transportation so that reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment would be less than significant.

Oil and Gas Wells, Oil Fields and Hazardous Subsurface Gases: The evaluation and impact conclusions for oil and gas wells, oil fields, and hazardous subsurface gases for Alternative 1 is also applicable to construction of Design Options 1 and 2. Consistent with Alternative 1, compliance with existing regulations pertaining to tunnel venting and hazardous material handling, transport, and disposal (as discussed in Section 4.10.1.1 of the Hazards and Hazardous Materials Section) and required by Project Measures GEO PM-3 (Implementation

of Geotechnical Design Requirements-Construction) and GEO PM-4 (Oil Fields, Methane Zones, and Methane Buffer Zones-Construction) would reduce the risk of subsurface exposure to the public and the environment. With implementation of this project measure, the risk of subsurface gas exposure to the public and the environment would be reduced however, accidental release impacts would remain potentially significant. Such remaining impacts would be reduced to less than significant levels through the implementation of the following Mitigation Measures: HAZ-1 (Oil and Gas Wells in Tunnel Areas), GEO-2 (Structural Design), and GEO-5 (Gas Monitoring [Construction]). With implementation of these mitigation measures, impacts during construction of Design Options 1 and 2 would be less than significant.

Mitigation Measures: HAZ-1 (Oil and Gas Wells in Tunnel Areas), GEO-2 (Structural Design), and GEO-5 (Gas Monitoring [Construction]).

Impacts Remaining After Mitigation: Less than significant.

Paramount and Bellflower MSF Site Options

General Hazardous Materials Conditions: During construction required for the Paramount and Bellflower MSF site options, the following hazardous materials could be involved in reasonably foreseeable upset and accident conditions, which could result in the release of hazardous materials into the environment:

- Hazardous materials containing LBP and yellow paint striping, ABM, and/or PCBs
- Soils containing common railroad corridor contaminants
- Soils containing pesticides from past agricultural uses
- Soils and/or groundwater containing hazardous material pipeline utility corridor contaminants
- Contaminated soils and/or groundwater from known and potential concern sites (Paramount MSF site option) and contaminated soils from historical concern sites (Bellflower MSF site option)

Because the Affected Area for hazards and hazmat of the Paramount and Bellflower MSF site options are not located adjacent to highways, ADL is not expected to impact either site. In addition, there are no known landfills or oils wells, methane zones, and subsurface gases present in the Affected Area for hazards and hazmat of either site. The potential impacts associated with construction of the Paramount and Bellflower MSF site options are consistent with those presented for Alternative 4 and commensurate with one another. The federal regulations identified in Section 4.10.1.1 of the Hazards and Hazardous Materials Section and Project Measure HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes) would also apply during construction of the MSF site option and would minimize the risk of exposure of the public and the environment. With implementation of this project measure, impacts would be less than significant.

Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Alternatives 1 and 2

There are 53 educational facilities within 0.25 mile of Alternative 1; 10 of these facilities are within 0.25 mile of the Alternative 1 tunnel. There are 56 educational facilities within 0.25 mile of Alternative 2, 18 of which are within 0.25 mile of the Alternative 2 tunnel. Although

methane and hydrogen sulfide gases would be present in the soils surrounding the tunnels, the tunnels would be constructed in a manner that would include ventilation to the atmosphere per OSHA requirements and CCR Title 8, Subchapter 20, Tunnel Safety Orders. Because there would no hazardous air emissions during construction, impacts would be less than significant.

Construction of Alternatives 1 and 2 would not require emitting hazardous materials or handling of hazardous or acutely hazardous materials, substances, or wastes within 0.25 mile of an existing or proposed school; therefore, impacts would be less than significant.

Alternatives 3 and 4

The Affected Area for hazards and hazmat of Alternative 3 contains 37 educational facilities, and the Affected Area for hazards and hazmat of Alternative 4 contains 17 educational facilities. There are no tunnels planned during construction of Alternatives 3 and 4. Therefore, the potential for impacts under these alternatives is less than for Alternatives 1 and 2. Construction of Alternatives 3 and 4 would not require emitting hazardous materials or handling hazardous or acutely hazardous materials, substances, or wastes within 0.25 mile of an existing or proposed school during construction; therefore, impacts would be less than significant.

Design Options—Alternative 1

Design Option 1: LAUS at MWD: There are 23 educational facilities within the Affected Area for hazards and hazmat of Design Option 1 (MWD). Although methane and hydrogen sulfide gases would be present in the soils surrounding the tunnels, the tunnels would be constructed in a manner that would include ventilation to the atmosphere per OSHA requirements and CCR Title 8, Subchapter 20, Tunnel Safety Orders. Because there would be no hazardous air emissions during construction, impacts would be less than significant.

Construction of Design Option 1 (MWD) would not result in hazardous emissions or require handling hazardous or acutely hazardous materials, substances, or wastes within 0.25 mile of an existing or proposed school during construction. Therefore, impacts would be less than significant and construction of Design Option 1 (MWD) would not increase the potential for impacts to occur when compared to Alternative 1 without Design Option 1 (MWD).

Design Option 2: Add Little Tokyo Station: There are 4 educational facilities located within 0.25 mile of Design Option 2, all 4 of which are present within 0.25 mile of the tunnel portion of the alignment. Similar to Design Option 1 (MWD), the tunnels would be constructed in a manner that would include ventilation to the atmosphere per OSHA requirements and CCR Title 8, Subchapter 20, Tunnel Safety Orders. Because there would no hazardous air emissions during construction, impacts would be less than significant.

Construction of Design Option 2 would not require emitting hazardous materials or handling hazardous or acutely hazardous materials, substances, or wastes within 0.25 mile of an existing or proposed school during construction. Therefore, impacts would be less than significant, and construction of Design Option 2 would not increase the potential for impacts to occur when compared to Alternative 1 without Design Option 2.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: Two educational facilities are located adjacent to the Paramount MSF site option, with an additional two educational facilities located within 0.25 mile of the Paramount MSF site option. Two educational facilities are located within 0.25 mile of the Bellflower MSF site option. Construction of the MSF site options would not require emitting hazardous materials or handling hazardous or acutely hazardous materials, substances, or wastes within 0.25 mile of an existing or proposed school during construction. Therefore, impacts would be less than significant, and construction of either MSF site option would not increase the potential for impacts to occur when compared to Alternative 4 without either MSF site option.

Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Build Alternatives Design Options, and MSF Site Options

Alternatives 1, 2, and 3 are located near three Government Code Section 65962.5 (Cortese) hazardous material sites, as described in Section 4.10.2.2 of the Hazards and Hazardous Materials Chapter. No Cortese hazardous materials sites compiled pursuant to Government Code Section 65962.5 are located in or partially within Alternative 4, Design Options 1 and 2, or the MSF site options. However, all of the Build Alternatives, design options, and MSF site options are located near known, potential, and/or historical environmental concern sites that are similar to Cortese sites, in that hazardous materials are or may be present on-site.

Potential impacts from construction of the Build Alternatives with regard to Cortese and environmental concern sites include the potential exposure of construction workers or members of the public to chemical compounds in soils, soil gases, and groundwater, and exposure of workers, the public, and the environment to airborne chemical compounds migrating from the demolition, grading, or construction areas. Soil disturbance such as trenching, digging, and/or grading in contaminated areas could create situations where exposure could occur. This would be a potentially significant impact.

Construction activities could also encounter contaminants or interfere with the ongoing remediation efforts at some facilities. For example, a groundwater monitoring well may need to be relocated prior to construction, which would interfere with ongoing remediation efforts at Cortese and environmental concern site. Unless construction activities are properly coordinated with those site remediation activities, there could be a temporary increased risk of damage to or interference with ongoing site remediation activities such as soil containment areas, or potential negative influences on the control of contaminated groundwater due to construction dewatering activities. This would be a potentially significant impact.

Construction activities could also result in the discovery of unanticipated contamination at known release sites, potential environmental concern sites, or historical environmental concern sites (as identified in Section 4.10.2.1 of the Hazards and Hazardous Materials Chapter). This would be a potentially significant impact.

Construction contractors would be required to implement federal and state handling and disposal regulations, which would reduce the risk of exposure of the public and the environment to hazardous materials during transport and disposal of hazardous contaminants encountered during construction. Compliance with existing federal regulations

pertaining to hazardous material handling, transport, and disposal (as discussed in Section 4.10.1.1 of the Hazards and Hazardous Materials Chapter) and implementation of required Project Measures HAZ PM-4 (Handling, Storage, and Transport of Hazardous Materials or Wastes), HAZ PM-5 (Property Assessment-Phase I and II ESAs), HAZ PM-7 (Disposal of Groundwater), and HAZ PM-9 (Contaminated Soil, Soil Vapor, and Groundwater) would reduce the risk of exposure of the public and the environment to hazardous materials used during construction. With implementation of these measures, the risk of exposure of the public or the environment to hazardous materials encountered during construction of the Build Alternatives, design options 1 and 2, and the MSF site options would be reduced because hazardous materials would be managed appropriately; property assessments (Phase I and II ESAs) would be completed prior to construction; contaminated groundwater would be managed appropriately; and contractors would be prepared for encountering known or undocumented hazardous materials. Impacts would be less than significant.

Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The CEQA determinations for this potential impact are discussed in Section 7.4 of the *West Santa Ana Branch Transit Corridor Project Safety and Security Impact Analysis Report* (Metro 2021c), included as Appendix F of this Draft EIS/EIR, and Section 4.19.3.18.

Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

No wildlands are located in the vicinity of Alternatives 1, 2, 3, and 4, Design Options 1 and 2, and the Paramount and Bellflower MSF site options; therefore, no impact would occur from construction of the Project.

4.19.3.11 Water Resources

Build Alternatives, Design Options, and Maintenance and Storage Facility Construction Impacts

This section describes the temporary construction impacts of the Build Alternatives, including the design options and MSF site options, on water resources. Construction would require the activities as summarized in Section 4.19.2. Compliance with the design features described under the heading "Project Design Features During Construction" would be required during construction of the Project, the design options, and the MSF site options. As a result, adverse impacts to hydrology and water bodies, water quality, floodplains, and groundwater would be minimized.

Project Design Features During Construction

Construction General NPDES Permit Compliance

The SWRCB CGP (Order No. 2009-0009-DWQ, as Amended by 2010-0014-DWQ and 2012-0006-DWQ) requires that the Contractor identify pollutant sources that could affect water quality, and identify, implement, and maintain BMPs to reduce pollutants and non-stormwater discharges in construction site runoff. The Contractor must also develop and implement a SWPPP that is approved by the SWRCB prior to construction, and document compliance with the CGP throughout construction.

The SWPPP evaluates the risk level to downstream water bodies and identifies stormwater BMPs that minimize potential short-term increases in discharges of non-stormwater pollutants. Examples of these BMPs include the following:

- "Good housekeeping BMPs" such as waste management, stockpile management, trash enclosures, stabilized construction entrances, and concrete washouts that would minimize exposure of construction materials, sediments, trash and debris, and potential contaminants to stormwater
- Site perimeter controls such as silt fence and fiber roll that would minimize discharge of contaminants in stormwater by sheet flow
- Erosion control BMPs to reduce erosion of exposed soils, including stockpile covers, soil stabilization (e.g., temporary hydraulic mulch), watering for dust control, and perimeter silt fences
- Sediment control BMPs that would minimize sediment discharge, such as check dams in drainage ditches, silt fences, fiber rolls, inlet barriers, and sediment basins.
- Details on construction techniques required to minimize pollutant and other non-stormwater discharges directly to surface waters, such as covered materials storage and cofferdams for in-stream construction
- Maintenance BMPs such as a regular maintenance schedule for equipment and maintenance of construction site BMPs, such as daily checks for vehicle condition, protected areas for fueling and maintenance activities, and drip pans under idle equipment

The SWPPP also documents the risk level to downstream water bodies based on the CGP's defined risk-level determination method. The CGP establishes three risk levels that are based on site erosion and receiving-water risk factors as described in Chapter 3 of the *West Santa Ana Branch Transit Corridor Project Final Water Resources Impact Analysis Report* (Metro 2021d), included as Appendix T of this Draft EIS/EIR. Risk Level 1 projects are subject to minimum BMP and visual monitoring requirements; Risk Level 2 projects are subject to Numeric Action Levels and some additional monitoring requirements; and Risk Level 3 projects are subject to Numeric Action Levels and more rigorous monitoring requirements such as receiving-water monitoring and, in some cases, bioassessment.

A preliminary analysis indicates that most of the Project would fall under Risk Level 2, meaning there is a moderate risk to downstream water bodies of increased sediment and construction-related discharge of contaminants. Therefore, additional construction site BMPs and water quality monitoring are required. The Project Risk Level is based on the sediment erosion risk and the potential for impacts to downstream receiving water bodies. It is evaluated using procedures defined by the SWRCB. The project has a high sediment erosion risk factor due to the existing soils on the project site and the construction duration. However, the Project has low receiving water body risk because the downstream water bodies are not designated by the Regional Water Quality Control Board to have the beneficial uses "COLD," "SPAWN," and "MIGRATORY." Combined, the total Risk Level for this project is considered moderate, Level 2. This analysis incorporates assumptions about the construction period and is therefore preliminary. The Risk Level must be updated and submitted to SWRCB for approval at the time of construction. Risk level calculations are included in Appendix D of the Water Resources Impact Analysis Report (Appendix T). The Contractor would implement these Risk Level 2 measures throughout the Project's disturbance area and where construction activities are conducted within or immediately adjacent to sensitive environmental areas (e.g., wetlands, Waters of the State/U.S., and biological habitats).

Implementation of the construction SWPPP in compliance with the CGP would avoid or minimize discharge of non-stormwater contaminants from the project site. Further, construction of the Project would comply with construction-related requirements specified in permits obtained from applicable resource agencies (e.g., CDFW and USACE). Compliance with the CGP, other resource agency permits, and implementation of the design features would avoid and minimize construction-related impacts to hydrology and water quality.

Construction Dewatering

Groundwater and accumulated precipitation may be encountered during construction in the river, excavation activities, and construction of bridges, structures, and tunnels. Removal of groundwater or accumulated precipitation may trigger a Construction Dewatering Permit or other WDRs, as referenced in Section 4.11.3.1 in the Water Resources Chapter. Dewatering impacts include the potential of increasing the exposure of groundwater to construction-related contaminants or dewatering previously contaminated groundwater. Where dewatering is required, construction activities will be conducted in accordance with the appropriate permit(s) and the Project will include preparation of a BMP or Control Strategy Plan to identify site-specific plans and procedures to be implemented to prevent the generation and potential release of pollutants.

Alternative 1: Los Angeles Union Station to Pioneer Station

Hydrology and Surface Water Bodies/Water Quality

Alternative 1 would require construction activities that could adversely affect hydrology and surface water quality, including the following:

- At-grade facilities, including guideway construction, utility relocations, rail facilities within the railroad rights-of-way, freeway crossings, city street widening and reconstruction, station facilities (stations and parking facilities), MSF, rail service facilities (TPSS facilities), radio towers, site preparation and demolition, and construction access
- Aerial facilities, including guideway construction, utility relocations, river crossings, freeway crossings, pedestrian bridges, retained fill guideways, aerial station facilities, site preparation and demolition, and construction access
- Underground facilities that require construction at the surface, including cut-and-cover construction, utility relocations, site preparation and demolition, and construction access

These construction activities could degrade water quality by increasing the risk of discharge of contaminants to surface water. This is especially true where direct discharge may occur, such as at the San Gabriel River, Rio Hondo, and Los Angeles River crossings. Construction would involve ground disturbance (e.g., excavation, stockpiling, and grading) that would expose bare soils to stormwater and could lead to erosion and sedimentation. Construction materials in staging areas could also be exposed to stormwater and contaminants could be discharged in runoff from the project sites. Other construction impacts to hydrology and surface water quality could include the following:

- Temporary changes in grades and drainage patterns
- Potential spills of construction materials or equipment maintenance materials

- Temporary dewatering may be required if groundwater is encountered or if construction occurs during the wet-weather season and dewatering of excavations is required

The Los Angeles River crossing is especially susceptible due to the number and size of piers constructed in the channel. The proximity of flowing water to active construction could provide a direct path for construction-related contaminants to reach surface water. Downstream erosion impacts are minimized because these river channels are lined with concrete.

Impacts to downstream water bodies can be generally quantified by the total disturbance area of the Build Alternative, including both permanent and temporary disturbance areas, because construction activities that disturb soils throughout the construction site could also result in non-stormwater discharges in runoff from the construction site. Temporary disturbance areas include any areas of construction activities, including construction staging areas and excavation extents for underground stations and column foundations. The total disturbed areas are presented in Table 4.11-3 in the Water Resources Chapter and vary for each Build Alternative. The total disturbed soil area for Alternative 1 is 202.3 acres, with construction extending through the Ballona Creek, Los Angeles River, and San Gabriel River watersheds.

To address these temporary impacts, the Build Alternative would include implementation of the design features discussed above under the heading "Project Design Features During Construction" and implementation of a SWPPP that complies with the CGP. Under NEPA, Alternative 1 would not result in adverse effects related to hydrology and surface water bodies during construction.

Floodplains

Alternative 1 would require construction activities that could adversely affect floodplains, including up to three river crossings that would be constructed within existing floodplain extents. Construction within the river may require temporary coffer dams, which may impact the ability of the flood-control channel to contain flood flows or increase non-stormwater discharges. Construction of aerial structures over the Los Angeles River, the Rio Hondo Channel, and the San Gabriel River would require new bridge piers within the channel. Earthwork and demolition would be required for new concrete bridge piers with substantial construction footprint below the ordinary high-water mark. Construction access would also require construction equipment, materials, and storage inside the channel. Therefore, construction could result in impacts within the ordinary high-water mark, banks, or levees under USACE jurisdiction. The placement of the columns that would support the aerial LRT structure is flexible, and this flexibility in locations would allow Metro to avoid potential direct impacts to the riverbed and banks. Where construction occurs in the Los Angeles River, the Rio Hondo Channel, or the San Gabriel River, activities would comply with all applicable federal and local floodplain regulations, including applicable NFIP regulations described in Section 4.11.1 of the Water Resources Chapter. Furthermore, implementation of the design features described above under the heading "Project Design Features During Construction" would avoid and minimize construction-related flooding impacts. Under NEPA, Alterative 1 would not result in adverse effects related to floodplains during construction.

Groundwater

Alternative 1 would require construction activities that could adversely affect groundwater resources, including the following:

- At-grade facilities, including guideway construction, utility relocations, rail facilities within the railroad rights-of-way, freeway crossings, city street widening and reconstruction, station facilities (stations and parking facilities), MSF, rail service facilities (TPSS facilities), radio towers, site preparation and demolition, and construction access
- Aerial facilities, including guideway construction, utility relocations, river crossings, freeway crossings, pedestrian bridges, retained fill guideways, aerial station facilities, site preparation and demolition, and construction access
- Underground facilities, including tunneling, cut-and-cover construction, utility relocations, site preparation and demolition, and construction access

These construction activities could adversely affect groundwater by 1) dewatering that may be needed during construction, especially for tunnels or where columns are constructed within the Los Angeles River, the Rio Hondo Channel, and the San Gabriel River, which could result in a drawdown of the local groundwater table, or 2) by exposing groundwater to contamination during construction. Based on well data collected by the LACDPW, historical groundwater depths within the Affected Area for water are estimated to be 75 to 100 feet near the river crossings and more than 200 feet in the downtown area (LACDPW 2019). Groundwater levels can change seasonally; therefore, preconstruction evaluations would be completed prior to construction to determine existing conditions that could affect construction methods, including evaluation of groundwater levels. Dewatering may be needed in excavation areas required for foundation construction, utility installation, and demolition. Dewatering activities can cause impacts to groundwater by temporarily reducing the local groundwater elevation. Groundwater removed from the site as a result of dewatering could come in contact with construction-related contaminated groundwater (e.g., fuels, solvents, oils, grease). Spills from construction materials could also inadvertently contaminate groundwater.

Dewatering of the construction site would be subject to the requirements of the Construction Dewatering Permit and other applicable permits and, therefore, would not cause construction-related impacts to groundwater quality. Furthermore, implementation of the design features described above under the heading "Project Design Features During Construction," including good housekeeping and spill prevention BMPs, would avoid and minimize construction-related impacts on groundwater. Under NEPA, Alterative 1 would not result in adverse effects related to groundwater during construction. Evaluation of groundwater contamination is presented in the *West Santa Ana Branch Transit Corridor Project Final Hazardous Materials Impact Analysis Report* (Metro 2021p), included as Appendix S to this Draft EIS/EIR.

Alternative 2: 7th Street/Metro Center to Pioneer Station

Hydrology and Surface Water Bodies/Water Quality

Alternative 2 would require construction of similar rail facilities as for Alternative 1. While construction activities would be similar in scope and duration to Alternative 1, Alternative 2

would require a slightly larger total disturbed area (203.2 acres). Therefore, construction impacts are expected to be slightly greater than Alternative 1.

To address these temporary impacts, Alternative 2 would include implementation of the design features discussed above under the heading "Project Design Features During Construction" and a SWPPP that complies with the CGP. Under NEPA, Alternative 2 would not result in adverse effects related to hydrology and surface water bodies during construction.

Floodplains

Alternative 2 would require construction of similar rail facilities through the Los Angeles River, Rio Hondo, and San Gabriel River channels as Alternative 1. Therefore, construction impacts are expected to be similar to those described for Alternative 1.

Groundwater

Alternative 2 would require construction of similar rail facilities within the groundwater basins as Alternative 1. While construction activities would be similar in scope and duration to Alternative 1, Alternative 2 would require a slightly larger total disturbed area (203.2 acres). Therefore, construction impacts to groundwater are expected to be slightly greater than Alternative 1.

To address these temporary impacts, Alternative 2 would include implementation of the design features discussed above under the heading "Project Design Features During Construction," implementation of a SWPPP in compliance with the CGP, and obtaining approvals for dewatering activities. Therefore, potential impacts would be minimized and no adverse effects during construction would occur.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Hydrology and Surface Water Bodies/Water Quality

Alternative 3 would require construction of similar facilities as Alternative 1 but without any underground facilities. While construction activities would be similar in scope to Alternative 1, Alternative 3 would require a substantially smaller total disturbance area (183.0 acres) and a reduced construction duration. Therefore, construction impacts are expected to be less than for Alternative 1.

To address these temporary impacts, Alternative 3 would include implementation of the design features discussed above under the heading "Project Design Features During Construction," implementation of a SWPPP in compliance with the CGP, and obtaining approvals for dewatering activities. Under NEPA, Alternative 3 would not result in adverse effects related to hydrology and surface water bodies during construction.

Floodplains

Alternative 3 would require construction of similar rail facilities through the Los Angeles River, Rio Hondo, and San Gabriel River channels as Alternative 1. Therefore, construction impacts are expected to be similar to those described for Alternative 1. Under NEPA, Alternative 3 would not result in adverse effects related to floodplains during construction.

Groundwater

Alternative 3 would require construction of similar rail facilities within the groundwater basins as Alternative 1 but without any underground facilities. While construction activities would be similar in scope and duration to Alternative 1, Alternative 3 would require a smaller total disturbed area (183.0 acres) and a reduced construction duration. Therefore, construction impacts to groundwater are expected to be less than Alternative 1.

To address these temporary impacts, Alternative 3 would include implementation of the design features discussed above under the heading "Project Design Features During Construction," implementation of a SWPPP in compliance with the CGP, and obtaining approvals for dewatering activities. Under NEPA, Alternative 3 would not result in adverse effects related to groundwater during construction.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Hydrology and Surface Water Bodies/Water Quality

Alternative 4 would require construction of similar facilities as Alternative 1 but without any underground facilities. While construction activities would be similar in scope to Alternative 1, Alternative 4 would require a substantially smaller total disturbance area (83.8 acres) and a reduced construction duration. Therefore, construction impacts are expected to be less than for Alternative 1.

To address these temporary impacts, Alternative 4 would include implementation of the design features discussed above under the heading "Project Design Features During Construction" and a SWPPP that complies with the CGP. Under NEPA, Alternative 4 would not result in adverse effects related to hydrology and surface water bodies during construction.

Floodplains

Alternative 4 would require construction of similar rail facilities through the San Gabriel River channel as Alternative 1, but would not include construction in the Rio Hondo or Los Angeles River channels. Therefore, while construction impacts in the San Gabriel River are expected to be similar to Alternative 1, total impacts to floodplains from Alternative 4 are expected to be substantially reduced compared to the other alternatives. Under NEPA, Alternative 4 would not result in adverse effects related to floodplains during construction.

Groundwater

Alternative 4 would require construction of similar rail facilities within the groundwater basins as Alternative 1 but without any underground facilities. While construction activities would be similar in scope and duration to Alternative 1, Alternative 4 would require a smaller total disturbed area (83.8 acres) and a reduced construction duration. Therefore, construction impacts to groundwater are expected to be less than Alternative 1.

To address these temporary impacts, Alternative 4 would include implementation of the design features discussed above under the heading "Project Design Features During Construction," implementation of a SWPPP in compliance with the CGP, and obtaining approvals for dewatering activities. Under NEPA, Alternative 4 would not result in adverse effects related to groundwater during construction.

Design Options—Alternative 1

Hydrology and Surface Water Bodies/Water Quality

Design Options 1 and 2 would require construction of similar facilities as Alternative 1 in scope, magnitude, and duration. Therefore, construction impacts for Design Options 1 and 2 are expected to be similar to Alternative 1.

To address these temporary impacts, Design Options 1 and 2 would include implementation of the design features discussed above under the heading "Project Design Features During Construction" and a SWPPP that complies with the CGP. Therefore, potential impacts would be minimized and no adverse effects during construction would occur.

Floodplains

Design Options 1 and 2 would require construction of similar rail facilities through the Los Angeles River, Rio Hondo, and San Gabriel River channels as Alternative 1. Therefore, construction impacts are expected to be similar to those described for Alternative 1.

Groundwater

Design Options 1 and 2 would require construction of similar rail facilities within the groundwater basins as Alternative 1. Therefore, construction impacts to groundwater are expected to be similar to Alternative 1.

To address these temporary impacts, Design Options 1 and 2 would include implementation of the design features discussed above under the heading "Project Design Features During Construction," implementation of a SWPPP in compliance with the CGP, and obtaining approvals for dewatering activities. Therefore, potential impacts would be minimized and no adverse effects during construction would occur.

Paramount and Bellflower MSF Site Options

Hydrology and Surface Water Bodies/Water Quality

The Paramount and Bellflower MSF site options would require similar construction activities as for Alternative 1. The total disturbed area for the Paramount and Bellflower MSF site options is presented in Table 4.11-5 in the Water Resources Chapter. The Bellflower MSF site option is expected to require 21.5 acres of disturbed area. The Paramount MSF site option is expected to require 22.2 acres of total disturbed area. Therefore, construction impacts at the Paramount and Bellflower MSF site options are expected to be similar to Alternative 1 and limited to the construction footprint.

To address these temporary impacts, the Paramount and Bellflower MSF site options would include implementation of the design features discussed above under the heading "Project Design Features During Construction" and a SWPPP that complies with the CGP. Therefore, potential impacts would be minimized and no adverse effects during construction would occur.

Floodplains

The Paramount and Bellflower MSF site options are located outside of the 100-year flood zone; therefore, there would be no floodplain impacts.

Groundwater

The Paramount and Bellflower MSF site options would require similar construction activities as for Alternative 1. However, these sites are outside of groundwater recharge areas. Therefore, no adverse effects to these groundwater recharge facilities would occur as a result of either MSF site option.

Project Measures and Mitigation Measures

With implementation of the design features described above under the heading "Project Design Features During Construction" for all Build Alternatives, construction of the Project would not result in adverse effects to water resources; therefore, mitigation measures are not required.

California Environmental Quality Act Determination

Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

No Project Alternative

The Affected Area for water would remain unchanged under the No Project Alternative; construction-related impacts would not occur. Therefore, there would be no impacts to surface or groundwater quality, and mitigation would not be required.

Build Alternatives, Design Options, and Maintenance and Storage Facilities

Construction of the Build Alternatives, Design Options 1 and 2, and MSF site options could result in temporary impacts to water quality. To address these temporary impacts, the Project would implement the integrated design features described above under the heading "Project Design Features During Construction" and would also be required to implement a SWPPP that complies with the CGP and applicable water quality standards. Dewatering of the construction site would also be subject to the requirements of the Construction Dewatering Permit. Construction within city rights-of-way (e.g., street intersection improvements within the City of Bellflower) would be subject to building/encroachment permits issued by the relevant city. Similarly, construction within LA County rights-of-way would be subject to an encroachment permit issued by the LACDPW. Compliance with these permits would be mandatory and a condition of approval of the final construction permits for construction within public rights-of-way. These permits would require the Project to exhibit compliance with the total maximum daily standards. Further, all phases of construction would be subject to the CGP. Therefore, the Project would not violate applicable water quality standards or WDRs or otherwise substantially degrade surface or groundwater quality; impacts would be less than significant and mitigation measures would not be required.

Further, as discussed in Section 4.19.3.10, the Affected Area for water resources of the Build Alternatives contains sites with known groundwater contamination. Groundwater could be contaminated with gasoline and petroleum hydrocarbons, dry-cleaning chemicals or other VOCs, or metals from previous site use or releases. Construction dewatering may be required at underground station locations and tunnel sites to temporarily lower the groundwater level below the excavation depth or to an impermeable layer. Dewatering may also be required for bridge and structure footings. Dewatering facilitates installation of shoring systems improves soil stability and allows excavation in dry conditions. To dewater an area, groundwater would be pumped from wells installed around the perimeter of the excavation, limiting impacts to surrounding structures, ground, and utilities adjacent to the excavation. Contaminated groundwater could be

disturbed during construction if dewatering activities occur in proximity to the groundwater release, which would result in an adverse effect. Therefore, depending on the final design of the Project, it may be necessary to utilize groundwater monitoring or dewatering during construction. In support of final design and prior to the start of construction, known dewatering or groundwater monitoring sites would be used to analyze the quality of the groundwater to determine if hazardous materials are present. The applicable procedures would be identified based on the results of this review. If necessary, Project Measure HAZ PM-7 would be implemented as required by the local, regional, or state agencies. With implementation of this project measure, contaminated groundwater would be managed appropriately and no adverse effects related to groundwater monitoring or dewatering would occur during construction.

Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?

No Project Alternative

The Affected Area for water would remain unchanged under the No Project Alternative; construction-related impacts would not occur. Therefore, there would be no impacts to groundwater recharge, and mitigation would not be required.

Build Alternatives, Design Options, and Maintenance and Storage Facilities

Dewatering activities may cause impacts to groundwater by temporarily reducing the local groundwater elevation. Dewatering of the construction site would be subject to the requirements of the Construction Dewatering Permit and other applicable permits and, therefore, would not cause construction-related impacts to groundwater quality. Furthermore, implementation of the design features described above under the heading "Project Design Features During Construction" includes a requirement to implement a SWPPP that complies with the CGP. Therefore, the impacts would be less than significant, and mitigation would not be required.

Substantially alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation onsite or offsite?

No Project Alternative

The Affected Area for water would remain unchanged under the No Project Alternative; construction-related impacts would not occur. Therefore, there would be no impacts to drainage patterns in a manner that would result in substantial erosion or siltation, and mitigation would not be required.

Build Alternatives, Design Options, and Maintenance and Storage Facilities

Construction of the Build Alternatives, Design Options 1 and 2, and MSF site options may temporarily increase the impervious area around the project site (e.g., by installing access roads or contractor staging areas or require localized changes in drainage patterns to control stormwater on and around the project site). Construction would minimize new impervious areas and would discharge runoff to existing storm drain systems. Existing drainage patterns would be preserved. Construction activities could temporarily increase the potential for stormwater to come in contact with exposed soils. To address these temporary impacts, the Build Alternatives would implement the integrated design features described above under the heading "Project Design Features During Construction" and would also be required to

implement a SWPPP that complies with the CGP. Therefore, the impact would be less than significant, and mitigation would not be required.

Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?

No Project Alternative

The Affected Area for water would remain unchanged under the No Project Alternative; construction-related impacts would not occur. Therefore, there would be no impacts to drainage patterns in a manner that would result in flooding, and mitigation would not be required.

Build Alternatives, Design Options, and Maintenance and Storage Facilities

Construction of the Build Alternatives, Design Options 1 and 2, and MSF site options may temporarily increase the impervious area around the project site (e.g., by installing access roads or contractor staging areas, or require localized changes in drainage patterns to control stormwater on and around the project site). To address these temporary impacts, the Project would implement the integrated design features described above under the heading "Project Design Features During Construction" and would also be required to implement a SWPPP that complies with the CGP. Therefore, the Project would not substantially increase the rate or amount of runoff from the project site that could cause flooding on- or off-site, impacts would be less than significant, and mitigation would not be required.

Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

No Project Alternative

The Affected Area for water would remain unchanged under the No Project Alternative; construction-related impacts would not occur. Therefore, there would be no impacts to drainage patterns in a manner that would contribute to exceedance of the capacity of stormwater drainage systems or provide substantial additional sources of polluted runoff, and mitigation would not be required.

Build Alternatives, Design Options, and Maintenance and Storage Facilities

Construction of the Build Alternatives, Design Options 1 and 2, and MSF site options may temporarily increase the impervious area around the project site (e.g., by installing access roads or contractor staging areas, or require localized changes in drainage patterns to control stormwater on and around the project site). Construction activities could temporarily increase the potential for stormwater to come in contact with construction-related contaminants. To address these temporary impacts, the Project would implement the integrated design features described above under the heading "Project Design Features During Construction" and would also be required to implement a SWPPP that complies with the CGP. Therefore, the impact would be less than significant and mitigation would not be required.

Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through addition of impervious surfaces, in a manner which would impede or redirect flood flows?

No Project Alternative

The Affected Area for water would remain unchanged under the No Project Alternative; construction-related impacts would not occur. Therefore, there would be no impacts to drainage patterns in a manner that would impede or redirect flood flows, and mitigation would not be required.

Build Alternatives, Design Options, and Maintenance and Storage Facilities

Construction of the Build Alternatives, Design Options 1 and 2, and MSF site options may temporarily increase the impervious area around the project site (e.g., by installing access roads or contractor staging areas, or require localized changes in drainage patterns to control stormwater on and around the project site). These impacts would not substantially increase the rate or volume of stormwater flows. Where construction occurs in the Los Angeles River, the Rio Hondo Channel, or the San Gabriel River, activities would comply with all applicable federal and local floodplain regulations, including applicable NFIP regulations. Furthermore, implementation of the design features described above under the heading "Project Design Features During Construction" would require the contractor to control stormwater runoff from the project site and avoid and minimize construction-related flooding impacts. Therefore, the Project is not expected to impede or redirect flood flows; impacts would be less than significant; and mitigation would not be required.

In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

No Project Alternative

The Affected Area for water would remain unchanged under the No Project Alternative; construction-related impacts would not occur. Therefore, there would be no impacts on flood, tsunami, or seiche zones that would increase the risk of pollution due to inundation, and mitigation would not be required.

Build Alternatives, Design Options, and Maintenance and Storage Facilities

Under Alternatives 1, 2, and 3, new bridges would be constructed across three major flood-control channels: the Los Angeles River, the Rio Hondo Channel, and the San Gabriel River. Under Alternative 4, only a new bridge across the San Gabriel River would be constructed. New bridge deck structures would be built above the existing river channel walls or levees, with new bridge piers or columns built within the channels. Location hydraulic studies were prepared to evaluate the Project's impacts to each river (Metro 2017a; 2017b; and 2017e). The new bridges would raise the water surface elevation within the channel; however, the Project would not alter the ability of the channel to convey the 100-year flows, and there would be negligible change to the floodplain extents. Therefore, the Project is not at risk to release pollutants due to project inundation, and impacts would be less than significant. Additionally, the project alignment would be located more than 20 miles from the ocean and, therefore, would not be within areas potentially affected by seiches or tsunamis. As a result, impacts associated with these events would not occur. With implementation of the design features described above under the heading "Project Design Features During Construction," construction of the Project, the MSF, and design options would result in less than significant impacts related to flood flows; therefore, mitigation would not be required.

Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

No Project Alternative

The Affected Area for water would remain unchanged under the No Project Alternative; construction-related impacts would not occur. Therefore, there would be no impacts to implementation of a water quality control plan or sustainable groundwater management plan, and mitigation would not be required.

Build Alternatives, Design Options, and Maintenance and Storage Facilities

Construction activities for the Build Alternatives, Design Options 1 and 2, and MSF site options could result in temporary impacts to groundwater resources. To address these temporary impacts, the Project would implement the integrated design features described above under the heading "Project Design Features During Construction" and would also be required to implement a SWPPP that complies with the CGP and local water quality control plan. Construction site dewatering activities (if needed) would be permitted. Therefore, the Project would not obstruct implementation of a water quality control plan or sustainable groundwater management plan, impacts would be less than significant, and mitigation would not be required.

4.19.3.12 Energy

Methodology

The analysis of construction effects considered the anticipated construction activities and phasing and identifies where construction staging could occur. This assessment compares energy consumption between the No Build and Build Alternatives and describes potential impacts to existing energy facilities. The assessment involves disclosing the one-time expenditure of fuel to construct the transit line, related infrastructure, and the MSF site option. The estimate of construction-related energy use (i.e., fuel consumption) was calculated by applying the fuel combustion factors related to greenhouse gases (USEPA 2018). Energy consumption associated with construction activities was estimated for the No Build Alternative and for each of the Build Alternatives.

Alternative 1: Los Angeles Union Station to Pioneer Station

Diesel fuel for construction vehicles and equipment would be the primary source of energy use during the construction period. Construction activities would comply with Metro*'s Green Construction Policy* (Metro 2011b) and construction equipment would be maintained in accordance with manufacturers' specifications. As shown in Table 4.19.26, a one-time expenditure of approximately 10,287,344 gallons of diesel fuel and 836,237 gallons of gasoline would be needed to construct Alternative 1 over the six-year duration. Given that energy would be used to construct an energy-efficient mass transit system, the extensive network of fueling stations throughout the project vicinity, and the temporary nature of the construction activities, Alternative 1 would not require new or expanded sources of energy or infrastructure to meet energy demands and would not result in the wasteful or inefficient use of energy. Under NEPA, Alternative 1 would not result in adverse effects related to energy during construction.

Table 4.19.26. Construction Energy Consumption

Fuel Type	End Use	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Design Option 1	Design Option 2
Diesel Fuel	Off-Road Construction Equipment – LRT (gallons)	7,426,266	7,426,266	5,183,928	4,130,596	7,426,266	7,426,266
	Off-Road Construction Equipment – MSF (gallons)	1,162,580	1,162,580	1,162,580	1,162,580	1,162,580	1,162,580
	Disposal Haul Trucks – LRT (gallons)	1,337,146	1,557,657	628,032	478,749	1,574,661	1,606,589
	Disposal Haul Trucks – MSF (gallons)	98,578	98,578	98,578	98,578	98,578	98,578
	Vendor Material Deliveries – LRT (gallons)	218,327	218,327	182,664	131,182	218,327	218,327
	Vendor Material Deliveries – MSF (gallons)	44,447	44,447	44,447	44,447	44,447	44,447
	Total fuel consumption (in gallons)	***10,287,344***	***10,507,855***	***7,300,229***	***6,046,132***	***10,524,859***	***10,556,787***
	Conversion factor (kBtu/gallons-diesel)	133.5	133.5	133.5	133.5	133.5	133.5
	Total diesel combustion energy consumption (MMBTU)	**1,373,247**	**1,402,683**	**974,500**	**807,092**	**1,404,953**	**1,409,215**
Gasoline Fuel	Total worker fuel consumption – LRT (gallons)	685,586	685,586	445,796	317,763	685,586	685,586
	Total worker fuel consumption – MSF (gallons)	150,651	150,651	150,651	150,651	150,651	150,651
	Total fuel consumption (gallons)	***836,237***	***836,237***	***596,447***	***468,414***	***836,237***	***836,237***
	Conversion factor (kBtu/gallons-gasoline)	118.2	118.2	118.2	118.2	118.2	118.2
	Total gasoline combustion energy consumption (MMBTU)	**98,862**	**98,862**	**70,514**	**55,377**	**98,862**	**98,862**
	Total construction energy consumption (MMBTU)	**1,472,110**	**1,501,546**	**1,045,014**	**862,469**	**1,503,815**	**1,508,077**

Source: Metro 2021h
Notes: kBtu = thousand British thermal units; LRT = light rail transit; MMBTU = million British thermal units; MSF = maintenance and storage facility
Construction energy was estimated for both MSF site options. As the Paramount and Bellflower facilities would be similar in size, it was assumed that construction would employ the same equipment and vehicle inventory and follow the same schedule regardless of the site option selected. The data presented apply to construction of either the Paramount or Bellflower site.

Alternative 2: 7th St/Metro Center to Pioneer Station

Alternative 2 construction activities would be similar to Alternative 1, would comply with Metro*'s Green Construction Policy* (Metro 2011b), and construction equipment would be maintained in accordance with manufacturers' specifications. Alternative 2 would require a one-time expenditure of approximately 10,507,855 gallons of diesel fuel and 836,237 gallons of gasoline (Table 4.19.26). Given that energy would be used to construct an energy-efficient mass transit system, the extensive network of fueling stations throughout the project vicinity, and the temporary nature of the construction activities, Alternative 2 would not require new or expanded sources of energy or infrastructure to meet energy demands and would not result in the wasteful or inefficient use of energy. Under NEPA, Alternative 2 would not result in adverse effects related to energy during construction.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Alternative 3 would result in similar construction activities as Alternatives 1 and 2 with the exception of underground construction. Alternative 3 construction activities would comply with Metro*'s Green Construction Policy* (Metro 2011b) and construction equipment would be maintained in accordance with manufacturers' specifications. Alternative 3 would require a one-time expenditure of approximately 7,300,229 gallons of diesel fuel and 596,447 gallons of gasoline (Table 4.19.26), which is less than Alternatives 1 and 2. Given that energy would be used to construct an energy-efficient mass transit system, the extensive network of fueling stations throughout the project vicinity, and the temporary nature of the construction activities, Alternative 3 would not require new or expanded sources of energy or infrastructure to meet energy demands and would not result in the wasteful or inefficient use of energy. Under NEPA, Alternative 3 would not result in adverse effects related to energy during construction.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Alternative 4 would result in similar construction activities as Alternatives 1 and 2 with the exception of underground construction. Alternative 4 construction activities would comply with Metro*'s Green Construction Policy* (Metro 2011b) and construction equipment would be maintained in accordance with manufacturers' specifications. Alternative 4 would require a one-time expenditure of approximately 6,046,132 gallons of diesel fuel and 468,414 gallons of gasoline (Table 4.19.26), which is less than Alternatives 1, 2, and 3. Given that energy would be used to construct an energy-efficient mass transit system, the extensive network of fueling stations throughout the project vicinity, and the temporary nature of the construction activities, Alternative 4 would not require new or expanded sources of energy or infrastructure to meet energy demands and would not result in the wasteful or inefficient use of energy. Under NEPA, Alternative 4 would not result in adverse effects related to energy during construction.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: As shown in Table 4.19.26, Design Option 1 (MWD) would require a one-time expenditure of approximately 10,524,859 gallons of diesel fuel and 836,237 gallons of gasoline. Design Option 2 would require a one-time expenditure of approximately 10,556,787 gallons of diesel fuel and 836,237 gallons of gasoline. Construction activities for the design options would comply with Metro's *Green Construction Policy* (Metro 2011b) and construction equipment would be maintained in accordance with manufacturers' specifications. Given that energy

would be used to construct an energy-efficient mass transit system, the extensive network of fueling stations throughout the project vicinity, and the temporary nature of the construction activities, Design Options 1 and 2 would not require new or expanded sources of energy or infrastructure to meet energy demands and would not result in the wasteful or inefficient use of energy. Under NEPA, the design options would not result in adverse effects related to energy during construction.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: Diesel fuel for construction vehicles and equipment would be the primary source of energy used during construction of the MSF site options. A one-time expenditure of approximately 1,231,975 gallons of diesel fuel and 150,651 gallons of gasoline would be needed to construct the Paramount MSF site option. A one-time expenditure of approximately 1,231,975 gallons of diesel fuel and 150,651 gallons of gasoline would be needed to construct the Bellflower MSF site option. As the MSF is a component of the Build Alternatives, energy consumption is accounted for in the overall analysis of the Build Alternatives. The MSF would contribute to a net energy reduction by contributing to implementation of the LRT and the associated VMT reductions. The Paramount and Bellflower MSF site options would not constitute a wasteful, inefficient, or unnecessary consumption of energy. Under NEPA, the MSF site options would not result in adverse effects related to energy during construction.

Project Measures and Mitigation Measures

No project measures or mitigation measures are required.

California Environmental Quality Act Determination

Would the Project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Table 4.19.26 provides an overview of the fuel consumption end uses that would be involved in construction activities for the Build Alternatives, design options, and MSF site options.

No Project Alternative

Under the No Project Alternative, the Build Alternatives would not be constructed, and the existing regional and Metro system energy consumption would remain unchanged. The No Project Alternative would not include construction of any project-related facilities or infrastructure; therefore, no diesel or gasoline fuel for equipment or vehicles would be expended. There would be no energy resource consumption related to construction of the No Project Alternative. The Metro *Green Construction Policy* and other energy-related initiatives would remain in place and apply to any other ongoing Metro construction projects. Therefore, no significant impact would occur, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Diesel fuel for construction vehicles and equipment would be the primary source of energy use during the construction period. Construction activities would comply with Metro*'s Green Construction Policy* (Metro 2011b) and construction equipment would be maintained in accordance with manufacturers' specifications. Given that energy would be used to construct an energy-efficient mass transit system, the extensive network of fueling stations throughout the project vicinity, and the temporary nature of the construction activities, Alternative 1

would not require new or expanded sources of energy or infrastructure to meet energy demands and would not result in the wasteful or inefficient use of energy. Therefore, impacts would be less than significant, and mitigation would not be required.

Alternative 2: 7th St/Metro Center to Pioneer Station

Alternative 2 construction activities would be similar to Alternative 1, would comply with Metro*'s Green Construction Policy* (Metro 2011b), and construction equipment would be maintained in accordance with manufacturers' specifications. Given that energy would be used to construct an energy-efficient mass transit system, the extensive network of fueling stations throughout the project vicinity, and the temporary nature of the construction activities, Alternative 2 would not require new or expanded sources of energy or infrastructure to meet energy demands and would not result in the wasteful or inefficient use of energy. Therefore, impacts would be less than significant, and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Alternative 3 would result in similar construction activities as Alternatives 1 and 2 with the exception of underground construction. Alternative 3 construction activities would comply with Metro*'s Green Construction Policy* (Metro 2011b) and construction equipment would be maintained in accordance with manufacturers' specifications. Given that energy would be used to construct an energy-efficient mass transit system, the extensive network of fueling stations throughout the project vicinity, and the temporary nature of the construction activities, Alternative 3 would not require new or expanded sources of energy or infrastructure to meet energy demands and would not result in the wasteful or inefficient use of energy. Therefore, impacts would be less than significant, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Alternative 4 would result in similar construction activities as Alternatives 1 and 2 with the exception of underground construction. Alternative 4 construction activities would comply with Metro*'s Green Construction Policy* (Metro 2011b) and construction equipment would be maintained in accordance with manufacturers' specifications. Given that energy would be used to construct an energy-efficient mass transit system, the extensive network of fueling stations throughout the project vicinity, and the temporary nature of the construction activities, Alternative 4 would not require new or expanded sources of energy or infrastructure to meet energy demands and would not result in the wasteful or inefficient use of energy. Therefore, impacts would be less than significant, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Construction of Design Options 1 and 2 would comply with Metro*'s Green Construction Policy* (Metro 2011b) and construction equipment would be maintained in accordance with manufacturers' specifications. Given that energy would be used to construct an energy-efficient mass transit system, the extensive network of fueling stations throughout the project vicinity, and the temporary nature of the construction activities, Design Options 1 and 2 would not require new or expanded sources of energy or infrastructure to meet energy demands and would not result in the wasteful or inefficient use of energy. Therefore, impacts would be less than significant, and mitigation would not be required.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: Diesel fuel for construction vehicles and equipment would be the primary source of energy use during construction of an MSF. As the MSF is a component of the Build Alternatives, energy consumption is accounted for in the overall analysis of the Build Alternatives. The MSF would contribute to a net energy reduction by contributing to implementation of the LRT and the associated VMT reductions. The Paramount or Bellflower MSF site option would not constitute a wasteful, inefficient, or unnecessary consumption of energy. Therefore, impacts would be less than significant, and mitigation would not be required.

Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Project Alternative

The No Project Alternative would not include construction of any project-related facilities or infrastructure. Therefore, no significant impact would occur and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Construction of Alternative 1 would be consistent with state and local energy plans and policies to reduce energy consumption as activities would comply with Metro's *Green Construction Policy* (Metro 2011b), CALGreen Code, and Title 24. The *Green Construction Policy* commits Metro contractors to using less-polluting construction equipment and vehicles and implementing best practices to reduce harmful diesel emissions on all Metro construction projects performed on Metro properties and rights-of-way. Best practices include Tier 4 emission standards for off-road diesel-powered construction equipment with greater than 50 horsepower and restricting idling to a maximum of five minutes. The CALGreen Code requires reduction, disposal, and recycling of at least 50 percent of nonhazardous construction materials and requires demolition debris to be recycled and/or salvaged. Alternative 1 would comply with state and local plans for energy efficiency in construction activities. Therefore, impacts would be less than significant, and mitigation would not be required.

Alternative 2: 7th St/Metro Center to Pioneer Station

Similar to the other Build Alternatives, construction of Alternative 2 would comply with Metro's *Green Construction Policy* (Metro 2011b), CALGreen Code, and Title 24 and, therefore, would be consistent with state and local energy plans and policies to reduce energy consumption. Therefore, impacts would be less than significant, and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Similar to the other Build Alternatives, construction of Alternative 3 would comply with Metro's *Green Construction Policy* (Metro 2011b), CALGreen Code, and Title 24 and, therefore, would be consistent with state and local energy plans and policies to reduce energy consumption. Therefore, impacts would be less than significant and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Similar to the other Build Alternatives, construction of Alternative 4 would comply with Metro's *Green Construction Policy* (Metro 2011b), CALGreen Code, and Title 24 and, therefore, would be consistent with state and local energy plans and policies to reduce energy consumption. Therefore, impacts would be less than significant and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Similar to the Build Alternatives, construction of Design Options 1 and 2 would comply Metro's *Green Construction Policy* (Metro 2011b), CALGreen Code, and Title 24 and, therefore, would be consistent with state and local energy plans and policies to reduce energy consumption. Therefore, impacts would be less than significant, and mitigation would not be required.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: Construction activities for the Paramount and Bellflower MSF site options would comply with Metro's *Green Construction Policy* (Metro 2011b), CALGreen Code, and Title 24 and, therefore, would be consistent with state and local energy plans and policies to reduce energy consumption. Therefore, impacts would be less than significant, and mitigation would not be required.

Would the Project require or result in the relocation or construction of new or expanded electric power, natural gas, or telecommunication facilities, the construction or relocation of which could cause significant environmental effects?

No Project Alternative

The No Project Alternative would not include construction of any project-related facilities or infrastructure. Therefore, no impact would occur, and mitigation would not be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Alternative 1 would not require new or relocated distribution infrastructure such as transmission lines from power facilities and transformers. New connections between TPSS units and existing electrical utility lines would be constructed within the existing ROW, would not be related to supply or capacity deficiencies, and would be similar to routine utility improvements (e.g., construction of new underground conduits). Therefore, impacts would be less than significant, and mitigation would not be required.

Alternative 2: 7th St/Metro Center to Pioneer Station

Similar to the other Build Alternatives, Alternative 2 would not require new or relocated distribution infrastructure, but new connections between TPSS units and existing electrical utility lines would be constructed within the existing ROW. This new connection would not be related to supply or capacity deficiencies and would be similar to routine utility improvements. Therefore, impacts would be less than significant, and mitigation would not be required.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Similar to the other Build Alternatives, Alternative 3 would not require new or relocated distribution infrastructure, but new connections between TPSS units and existing electrical

utility lines would be constructed within the existing ROW. This new connection would not be related to supply or capacity deficiencies and would be similar to routine utility improvements. Therefore, impacts would be less than significant, and mitigation would not be required.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Similar to the other Build Alternatives, Alternative 4 would not require new or relocated distribution infrastructure, but new connections between TPSS units and existing electrical utility lines would be constructed within the existing ROW. This new connection would be similar to routine utility improvements (e.g., construction of new underground conduits). Therefore, impacts would be less than significant, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Similar to the Build Alternatives, Design Options 1 and 2 would not require new or relocated distribution infrastructure, but new connections between TPSS units and existing electrical utility lines would be constructed within the existing ROW. This new connection would not be related to supply or capacity deficiencies and would be similar to routine utility improvements. Therefore, impacts would be less than significant, and mitigation would not be required.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: The Paramount MSF site option and Bellflower MSF site option would require new electrical power and natural gas connections but would not require new telecommunication facilities. The MSF site options are in developed urban sites with existing or adjacent electricity and natural gas supplies. Utility connections would be within the existing ROW, would not be related to supply or capacity deficiencies, and would be similar to routine utility improvements. Therefore, impacts would be less than significant, and mitigation would not be required.

4.19.3.13 Electromagnetic Fields

Electromagnetic field (EMF) levels generated by power tools, such as cordless drills and table saws, would be similar to those found inside many buildings that are generated by devices such as refrigerators, televisions, and florescent lights. However, power tools used for the Project are expected to be farther away from buildings than EMF-generating devices typically found within a building. Therefore, EMF generated by construction activities would not affect existing buildings beyond the levels that are generally experienced in a building. Hence, construction activities would not cause adverse levels of EMF. System integration tests would generate EMF levels similar to those generated during LRT operations. Impacts of EMF during system testing are not treated as a construction impact because the testing replicates operation of the system. Mitigation is not required as project construction would not generate adverse EMF impacts.

4.19.3.14 Historic, Archaeological, and Paleontological Resources

This section summarizes the Section 106 analysis for built environment and archaeological historic properties, the NEPA analysis for paleontological resources, and the CEQA analysis for built environment, archaeological, and paleontological resources that was performed for construction of the Project. For the purposes of Section 106 and as detailed below, FTA has

made the following preliminary determinations. Final determinations are subject to consultation with SHPO.

Built Environment Historic Properties

Construction of Alternatives 1, 2, 3, and 4 and the Paramount MSF site option and Design Option 1 (MWD) would result in no adverse effect to built environment historic properties, and construction of Design Option 2 and the Bellflower MSF site option would result in no effect to built environment historic properties. Descriptions of the historic properties within the APE and additional information on the evaluation of effect are presented in the *West Santa Ana Branch Transit Corridor Project Cultural Resources Effects Report* (Metro 2021u), included as Appendix X of this Draft EIS/EIR.

Build Alternatives

This subsection presents the potential effects common among Alternatives 1, 2, 3, and 4. Potential effects to built environment historic properties as a result of construction of the Build Alternatives encompass those directly related to their construction, including temporary noise and vibration effects, temporary visual effects, and temporary property acquisitions and easements. Of the Build Alternatives, Alternative 2 has the most built environment historic properties in the APE, with 42 historic properties. The number of historic properties decreases among Alternatives 1, 3, and 4, with 33, 14, and 4 built environment historic properties in the APE for these alternatives, respectively. Construction of the Build Alternatives would result in no adverse effect to built environment historic properties.

Potential noise and vibration effects related to construction of the Build Alternatives were evaluated and presented in the *West Santa Ana Branch Transit Corridor Project Noise and Vibration Impact Analysis Report* (Metro 2021j), included as Appendix M of this Draft EIS/EIR and summarized in Section 4.7, Noise and Vibration. In relation to built environment historic properties, noise and vibration would have an adverse effect if they were to alter any of the characteristics of a historic property that qualify it for inclusion in the NRHP. Noise and/or vibration levels associated with construction of the Build Alternatives would not result in physical damage to historic structures in the APE (Metro 2021j). The APE traverses an urbanized environment and noise and/or vibration associated with construction of the Build Alternatives would not change the character of use or diminish the integrity of any of the significant features of historic properties in the APE. Noise and/or vibration associated with project construction would not alter the characteristics of any of the historic properties in the APE that qualify them for inclusion in the NRHP and therefore would result in no adverse effects.

Construction of the Build Alternatives would not physically permanently alter any of the built environment historic properties in the APE. However, construction of the Build Alternatives would introduce visual elements within or in the vicinity of historic properties in the APE. These elements would be temporary in nature and would not permanently diminish the integrity of any of the historic properties in the APE. All construction-related equipment and associated elements would be removed following construction. As the APE traverses a largely urban area, construction equipment and other associated elements would not significantly alter the existing urban environment. The introduction of temporary construction-related visual elements to historic properties or their vicinity would not alter any of the characteristics of historic properties in the APE that qualify them for inclusion in the NRHP or the physical features within the setting of any historic properties that contribute to their

historic significance. No adverse effect would occur as a result of the introduction of temporary construction-related visual elements associated with the Build Alternatives.

Easements necessary to facilitate construction of the Build Alternatives, such as those to enable installation of vibration monitors (required by Mitigation Measure VIB-7 [Construction Monitoring for Vibration]), would also be temporary and would not remain following construction of the Build Alternatives. Temporary acquisitions and easements would result in no adverse effect to built environment historic properties.

Construction of the Build Alternatives would result in no adverse effect to built environment historic properties.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Potential effects to built environment historic properties as a result of noise, vibration, easements, and the introduction of visual elements associated with construction of Design Options 1 and 2 are consistent with those described above for the Build Alternatives. In particular, construction of Design Option 1 (MWD) would introduce new visual elements within or in the vicinity of LAUS/MRN 1-007. However, these elements would be temporary in nature and would not permanently diminish the integrity of the historic property. All construction-related equipment and associated elements would be removed following construction. As LAUS is located in a largely urban setting, construction equipment and other associated elements would not reduce the integrity of features within its setting that contribute to its historic significance.

Therefore, construction of Design Option 1 (MWD) would result in no adverse effect to built environment historic properties. As no historic properties are present within its immediate vicinity, construction of Design Option 2 would result in no effect to historic properties. Construction of Alternative 1 with Design Options 1 or 2 does not increase the potential for adverse effects to occur when compared to construction of Alternative 1 without Design Options 1 or 2.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: Potential effects to built environment historic properties as a result of noise, vibration, easements, and the introduction of visual elements associated with construction of the Paramount and Bellflower MSF site options are consistent with those described above for the Build Alternatives. There are no built environment historic properties in the immediate vicinity of the Bellflower MSF site option. While there are no built environment historic properties within the direct footprint of the proposed Paramount MSF site option, this site option would be located roughly 450 feet west of one historic property: Our Lady of the Rosary Church/MRN 24-001.

Our Lady of the Rosary Church was considered a noise-sensitive land use in the Noise and Vibration Impact Analysis Report (Appendix M). The study indicates that construction of the Paramount MSF site option would not result in exceedances of the FTA standards for noise or vibration. Additionally, as per the Paramount Municipal Code, no noise associated with project construction would occur on Sundays. The eligibility of Our Lady of the Rosary Church is related to its architecture, which would not be altered by construction of the Paramount MSF site option. Construction of the Paramount MSF site option would temporarily introduce new visual elements to the vicinity of this historic property. However,

new elements would not significantly alter the visual character and quality of the area or reduce the property's integrity. The property on which the Paramount MSF is proposed is currently occupied with mixed commercial and industrial use and a variety of buildings and structures that include a large-scale abandoned industrial site. Additionally, the larger setting surrounding the church may be characterized as urban. Therefore, construction activities associated with the Paramount MSF site option would not reduce the integrity of features within its setting that contribute to its historic significance.

As there are no built environment historic properties located in the immediate vicinity of the proposed Bellflower MSF site option, its construction would result in no effect to historic properties. Construction of the Paramount MSF site option would result in no adverse effect to historic properties. Potential effects to built environment historic properties are less as a result of construction of the Bellflower MSF site option than the Paramount MSF site option due to the presence of no, as opposed to one, historic properties in its vicinity.

Archaeological Historic Properties

Construction of Alternatives 1, 2, and 3 and Design Options 1 and 2 may result in adverse effects to known archaeological historic properties, and construction of Alternative 4 and the Paramount and Bellflower MSF site options would result in no effect to known archaeological historic properties. Construction of Alternatives 1, 2, 3, and 4; Design Options 1 and 2; and the Paramount and Bellflower MSF site options may encounter undiscovered archaeological resources and may result in adverse effects to those resources.

Build Alternatives, Design Options, and MSF Site Options

This subsection presents the potential impacts to archaeological historic properties common among Alternatives 1, 2, 3, 4, Design Options 1 and 2, and the Paramount and Bellflower MSF site options. The analysis presented in the Cultural Resources Survey Report is based largely on existing documentation from efforts that occurred as a result of previous development within the current APE or its vicinity. The archaeological survey performed for this study did not identify any archaeological remains in the APE. The previously identified archaeological historic properties/historical resources located in the APE and discussed in this study are below grade and are thereby covered by developments such as paved surfaces, buildings, and railroad infrastructure. It is likely that these previously recorded archaeological historic properties/historical resources may have been removed due to previous development and may no longer be extant.

Intensive archaeological surveys and testing are not possible at the current time because the entirety of the APE is located in a developed, urbanized area characterized by the presence of paved and landscaped surfaces, existing infrastructure, and industrial, commercial, and residential development. Indicated by the archaeological field survey conducted for this study, visibility in the direct APE is less than 10 percent due to this existing development. Testing of properties/resources, such as an Extended Phase I (XPI) or Phase II study, would require the demolition of existing development, including structures and roadways, and potentially result in a significant disruption to needed infrastructure and commerce. As such, testing to assess site boundaries and locations to determine if avoidance is feasible is not possible at the current time.

The APE and surrounding area is considered sensitive for buried archaeological deposits with a moderate to high likelihood of encountering buried deposits during construction.

Construction of the Project would involve substantial ground disturbance with the potential to physically alter buried archaeological deposits associated with known archaeological historic properties in the direct APE in addition to unknown archaeological historic properties in the APE. Expected ground-disturbing activities include grading, excavation, trenching, boring, cut-and-cover tunneling, and wide-diameter auguring. These activities have the potential to physically alter, remove, or destroy buried archaeological deposits associated with known and unknown archaeological historic properties. The Noise and Vibration Impact Analysis Report (Appendix M) indicates that construction of the Project would not result in adverse noise or vibration effects according to FTA standards. Therefore, noise and vibration effects associated with construction of the Project are not expected to affect archaeological historic properties. Undiscovered archaeological historic properties may be encountered during ground-disturbing activities associated with construction of the Project. The direct alteration of these archaeological historic properties would represent an adverse effect.

The potential effects discussed above are generally consistent among Alternatives 1, 2, 3, 4, Design Options 1 and 2, and the Paramount and Bellflower MSF site options. Therefore, they are not discussed in detail in the subsections below

Alternative 1: Los Angeles Union Station to Pioneer Station: Construction of Alternative 1 may result in an adverse effect to five archaeological historic properties (P-19-001575, P-19-002849, P-19-003181, P-19-004171, and P-19-004202) in the APE for Alternative 1. Unanticipated archaeological historic properties may also be encountered during ground-disturbing activities associated with construction of Alternative 1. Alternative 1 has the most potential for construction-related effects to archaeological historic properties due to the presence of five archaeological historic properties in its APE.

Alternative 2: 7th Street/Metro Center to Pioneer Station: Construction of Alternative 2 may result in an adverse effect to one archaeological historic property (P-19-002849) in the APE for Alternative 2. Unanticipated archaeological historic properties may also be encountered during ground-disturbing activities associated with construction of Alternative 2. The potential for construction-related effects to archaeological historic properties are less under Alternative 2 than Alternative 1 because of fewer known archaeological historic properties in its APE.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station: Construction of Alternative 3 may result in an adverse effect to one archaeological historic property (P-19-002849) in the APE for Alternative 3. Unanticipated archaeological historic properties may also be encountered during ground-disturbing activities associated with construction of Alternative 3. The potential for construction-related effects to archaeological historic properties are less under Alternative 3 than Alternative 1. This alternative has one archaeological historic property within its APE (consistent with Alternative 2). However, the potential to encounter unknown archaeological historic properties is less given the reduced length of the alignment and, hence, less ground disturbance proposed under this alternative.

Alternative 4: I-105/C (Green) Line to Pioneer Station: There are no known archaeological historic properties in the APE for Alternative 4. Therefore, the construction of Alternative 4 would result in no effect to known archaeological historic properties. Unanticipated archaeological historic properties may be encountered during ground-disturbing activities associated with construction of Alternative 4. The potential for construction-related effects to archaeological historic properties is least under this alternative.

Design Options—Alternative 1

Design Option 1: LAUS at MWD: A portion of P-19-001575 is located in the direct APE associated with Design Option 1 (MWD). As the construction of Design Option 1 (MWD) includes excavations for the station box and rail tunnel that would extend down 130 feet below the current ground surface, construction of Design Option 1 (MWD) may result in adverse effects to P-19-001575. As Alternative 1 without Design Option 1 (MWD) may also result in potentially adverse effects to P-19-001575, the potential for construction-related effects to occur to archaeological properties between Alternative 1 with and without Design Option 1 (MWD) is consistent.

Design Option 2: Add Little Tokyo Station: A portion of P-19-004171 is located in the direct APE associated with Design Option 2. As the construction of Little Tokyo Station would require cut-and-cover excavations, construction of Design Option 2 may result in adverse effects to P-19-004171. As Alternative 1 without Design Option 2 may also result in adverse effects to P-19-004171, the potential for construction-related effects to archaeological properties between Alternative 1 with and without Design Option 2 is consistent.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: No known archaeological historic properties are in the APE for the Paramount or Bellflower MSF site options. Therefore, construction of either MSF would result in no effect to known archaeological historic properties, and the potential for construction-related effects to archaeological historic properties to occur is consistent among the site options.

Paleontological Resources

Construction of the Project, including Alternatives 1, 2, 3, and 4, Design Options 1 and 2, and the Paramount and Bellflower MSF site options may result in an adverse effect to paleontological resources.

Build Alternatives

As a consequence of the paleontological sensitivity of the Affected Area for paleontological resources, the potential to discover paleontological resources during ground-disturbing activities associated with construction of the Build Alternatives (i.e., Alternative 1, 2, 3, and 4) is high because there is the potential to encounter paleontological resources at depths below 5 feet bgs. The potential for effects to paleontological resources to occur diminishes along with the length of the Build Alternatives, with the most potential under Alternatives 1 and 2 and the least under Alternative 4. In general, the potential for a given project activity to result in adverse effects to paleontological resources is directly proportional to the amount and location of ground disturbance associated with the activity. The types of effects to paleontological resources may include disturbance, damage, or destruction of a significant fossil; destruction of a unique geologic feature associated with a paleontological site; or disturbance or destruction of a paleontological site, which results in the loss of scientific context of fossil remains.

The types of project-related disturbances and associated effects during construction of the Build Alternatives include grading, excavation, trenching, and wide-diameter auguring (greater than 3 feet). If construction of the Build Alternatives results in the disturbance or destruction of paleontological resources, an adverse effect for the purposes of NEPA would occur.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: The types of project-related disturbances and associated effects during construction of Design Options 1 and 2 would include grading, excavation, trenching, and wide-diameter auguring (greater than 3 feet). If construction of Design Options 1 or 2 results in the disturbance or destruction of paleontological resources, an adverse effect for the purposes of NEPA would occur. The potential for effects to paleontological resources to occur is consistent between Alternative 1 with or without either of the design options.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: The types of project-related disturbances and associated effects during construction of the Paramount or Bellflower MSF site option would include grading, excavation, trenching, and wide-diameter auguring (greater than 3 feet). If construction of either MSF site option results in the disturbance or destruction of paleontological resources, an adverse effect for the purposes of NEPA would occur. The potential for effects to paleontological resources to occur is consistent between the Paramount and Bellflower MSF site options.

Project Measures and Mitigation Measures

Archaeological Historic Properties

Results of the effects/impacts analysis presented in the Cultural Resources Effects Report (Appendix X) indicate that ground-disturbing activities associated with construction of the Project may result in adverse effects/significant impacts to archaeological historic properties/historical resources. While avoidance is the preferred method of treatment of cultural resources, engineering designs, safety standards, cost, and location limitations sometimes render avoidance infeasible. The density of development in Downtown Los Angeles, land ownership, and rail tracks limit the design and location of project elements. These factors do not allow flexibility to physically move design elements to avoid known resources within certain alternatives (e.g., Alternative 1). Adverse effects/significant impacts to archaeological historic properties/historical resources would be reduced with implementation of Minimization/Mitigation Measures CR-1 through CR-5, listed below. CR-2 (Treatment of Known Significant Archaeological Resources) would only be applicable under Alternatives 1, 2, and 3 because known significant archaeological resources are present in the APE for these alternatives, whereas the other measures would be applicable under all four Build Alternatives.

- Minimization/Mitigation Measure CR-1: Development of Cultural Mitigation and Monitoring Program
- Minimization/Mitigation Measure CR-2: Treatment of Known Significant Archaeological Resources
- Minimization/Mitigation Measure CR-3: Archaeological Worker Environmental Awareness Program
- Minimization/Mitigation Measure CR-4: Archaeological Monitoring
- Minimization/Mitigation Measure CR-5: Treatment of Unanticipated Discoveries

A post-discovery treatment methodology is proposed where testing/data recovery needs are implemented as needed based on discoveries during construction. Treatment plans would be prepared in advance of construction based on existing data to help guide and expedite an

evaluation of treatment needs. Therefore, the preparation of a CRMMP and treatment plans for each resource potentially affected by the Project are included as minimization/mitigation. Both documents would be developed in consultation with the State Historic Preservation Office and consulting parties.

Mitigation of archaeological resources often consists of one or more of the following: data recovery excavations, archival research, historic group outreach/interviews, and development of educational materials (e.g., journal articles, interpretive displays). Any such efforts would produce data to provide an understanding of past activities (prehistoric and historic) within the Los Angeles area. Data recovery efforts for archaeological resources would aim to achieve data redundancy (the point at which no new data may be acquired through continued efforts). In accordance with the Secretary of Interior Standards for Archaeology and Historic Preservation, data redundancy is the point at which "further data recovery and documentation fail to improve the usefulness of the archaeological information being recovered" and efforts become "duplicative." The local interested parties (consulting parties) consulted with as part of this study did not oppose the Project based on the archaeological record, as discussed in the *West Santa Ana Branch Transit Corridor Project Final Cultural Resources Survey Report – Rev 1* (Metro 2020d). Therefore, data recovery efforts can feasibly mitigate project effects through the execution of a data recovery plan using the methods discussed above.

CR-1 – Development of Cultural Resource Mitigation and Monitoring Program

Prior to the start of any ground-disturbing activity, an archaeologist that meets the Secretary of Interior's Professional Qualification Standards in Archaeology would prepare a CRMMP for the Project that would be implemented during construction. The CRMMP would include the requirements of Mitigation Measures CR-2 (Treatment of Known Significant Archaeological Resources) through CR-5 (Treatment of Unanticipated Discoveries) and the following:

- A summary of the results of the West Santa Ana Branch Transit Corridor Project Final Cultural Resources Survey Report – Rev 1 (Appendix W) and the West Santa Ana Branch Transit Corridor Project Final Cultural Resources Effects Report (Appendix X).
- Procedures for avoidance of unanticipated discoveries where possible.
- Procedures for preservation of unanticipated discoveries in place where possible.
- Provisions of cultural resources awareness training to construction workers that would be implemented as part of Mitigation Measure CR-3 (Archaeological Worker Environmental Awareness Program).
- Provisions for archaeological and Native American monitoring of ground disturbance related to construction of the Project.
- Summary of the treatment procedures for unanticipated discoveries, as specified in Mitigation Measure CR-5 (Treatment of Unanticipated Discoveries). This would include general research questions to be addressed by any studies, field and laboratory methods for the gathering of data to evaluate sites for the California Register of Historical Resources and/or National Register of Historic Places, and requirements for addressing any sites identified as significant.
- Procedures for Native American coordination and input.
- Procedures for the treatment of human remains, if applicable, as outlined in existing regulations. These procedures would include, but not be limited to, communication

protocol for contacting the coroner and preparation of a human remains treatment plan in consultation with the Most Likely Descendant(s).
- Guidelines for the reporting of monitoring and treatment results.

CR-2 – Treatment of Known Significant Archaeological Resources

Upon selection of a project alternative, treatment plans would be developed on a case-by-case basis for the five archaeological historic properties/historical resources that may be adversely effected/significantly impacted by the Project (P-19-001575, P-19-002849, P-19-003181, P-19-004171, and 19-004202). If the selected alternative would not result in a potential adverse effect/significant impact to archaeological historic properties/historical resources (i.e., if no archaeological historic properties/historical resources exist in the chosen alternative), treatment plans would not be required. If the selected alternative includes previously recorded archaeological historic properties/historical resources, treatment plans would be developed based on the known constituents to guide the post-discovery process and initial treatment requirements upon discovery. Treatment plans may be modified and updated depending on the nature of the discovery and consultation with SHPO and consulting parties. Treatment plans would be developed so that treatment of archaeological historic properties/historical resources meets the Secretary of the Interior's Standards and Guidelines for Archaeological Documentation, the California Office of Historic Preservation's Archaeological Resources Management Report, Recommended Contents and Formats (1989), the Guidelines for Archaeological Research Design (1991), the Advisory Council on Historic Preservation's publication Treatment of Archaeological Properties: A Handbook, and the Department of the Interior's Guidelines for Federal Agency Responsibility under Section 110 of the National Historic Preservation Act. The intent of the treatment plans will be to achieve data redundancy where recovery and documentation efforts have reached the point of diminishing returns (National Park Service 1983).

The treatment plans would include the following: procedures required should archaeological historic properties/historical resources be determined to no longer be extant, methods for avoidance should avoidance be determined feasible upon discovery, and Phase III data recovery methods in the event that avoidance is infeasible. Phase III data recovery methods within the treatment plan would include, but not be limited to, research questions to be addressed by the study of each site, a description of methods including excavation methods, data analysis, reporting requirements, and final disposition of recovered materials. The Phase III data recovery methods would also identify the thresholds at which point data redundancy is achieved. Phase III data recovery would allow for each site to be adequately documented in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties.

CR-3 – Archaeological Worker Environmental Awareness Program

A Secretary of the Interior qualified archaeologist would be retained to prepare a Worker's Environmental Awareness Program training for archaeological sensitivity. This training would be provided to all construction personnel prior to the commencement of any ground-disturbing activities. Archaeological sensitivity training would include a description of the types of cultural material that may be encountered, cultural sensitivity issues, regulatory issues, and the proper protocol for stopping construction activities and the treatment of the materials in the event of a find.

CR-4 – Archaeological Monitoring.

Monitoring pursuant to the Archaeological Mitigation and Monitoring Program would be supervised by the qualified archaeologist who meets the Secretary of Interior Standards. The duration and timing of the monitoring would be determined by the qualified archaeologist. The archaeological monitor under the direction of a Secretary of the Interior qualified archaeologist would be present during ground-disturbing activities that have the potential to uncover previously known and unknown archaeological resources (i.e., ground-disturbing activities that would extend beyond the limits of prior disturbances). These activities would include, but would not be limited to, pavement removal, grading, and trenching. Activities such as drilling that do not allow for soil visibility during excavation would be spot-checked but would not require a full-time monitor. Monitoring and spot-checking would be required up to a depth of 20 feet. If the qualified archaeologist determines that full-time monitoring is no longer warranted, he or she may recommend reducing monitoring to periodic spot-checking or cease entirely. Monitoring would be reinstated if any new or unforeseen deeper ground disturbances are required and reduction or suspension would need to be reconsidered by the qualified archaeologist. In the event that an archaeological resource is discovered, the monitor would have the authority to temporarily divert construction equipment around the find with a 50-foot buffer or other buffer as determined by the archaeologist to protect the resource until it is assessed for significance and treatment (e.g., avoidance, testing, data recovery), if necessary, is determined by FTA in consultation with SHPO and consulting parties and executed.

At the conclusion of archaeological monitoring, a final report would be prepared by a qualified archaeologist who meets the Secretary of Interior Standards describing the results of the archaeological monitoring efforts associated with the Project. If previously unidentified cultural resources are discovered during construction monitoring, a report would be prepared following the State Historic Preservation Office's Archaeological Resource Management Report Guidelines that document the findings of the field and laboratory analysis and interpret the data within appropriate research context.

CR-5 – Treatment of Unanticipated Discoveries

The contractor or archaeological monitor would notify Metro immediately if potentially significant archaeological resources are exposed during ground-disturbing activities. Archaeological monitors would have the authority to divert or temporarily halt ground-disturbing operations at the discovery. The area would be fenced or flagged as soon as possible following the discovery. Until the boundaries of the resource can be established with testing procedures, a 50-foot buffer zone around the identified deposit would be fenced or flagged off. Subsequent to the identification of site boundaries, the fenced or flagged buffer surrounding the resource could be reduced to a 10- to 15-foot buffer zone at the discretion of the qualified archaeologist. All fencing or flagging of archaeological deposits would be monitored by a qualified archaeologist. Temporary fencing or flagging would remain in place until the resource has been released by the qualified archaeological monitor, in consultation with Metro and FTA. Construction activities may continue in areas beyond the buffer zones. The discovery would be evaluated by the qualified archaeologist in accordance with the methods identified in the CRMMP to determine if the archaeological resource is eligible for listing on the NRHP and/or CRHR. If the archaeological resource is determined eligible for the NRHP and/or CRHR, a treatment plan, as described in Mitigation Measure CR-2 (Treatment of Known Significant Archaeological Resources) would be developed.

Built Environment Historic Properties

Minimization/Mitigation Measures for built environment historic properties are not required during construction. Refer to Section 4.14.4 of the Historic, Archaeological, and Paleontological Section for minimization/mitigation measures that apply during operation.

Paleontological Resources

Based on the effect/impact analysis performed for the Project, construction of Alternatives 1, 2, 3, and 4, Design Options 1 and 2, and both MSF site options would have a high potential to result in adverse effects/significant impacts to paleontological resources during grading, excavation, trenching, and wide-diameter (greater than 3 feet) auguring activities that extend below 5 feet bgs. These adverse effects/impacts would be reduced with implementation of Mitigation Measure PR-1 (a) through (d): PR-1a: Paleontological Resources Mitigation and Monitoring Program, Mitigation Measure PR-1b: Paleontological Worker Environmental Awareness Program, Mitigation Measure PR-1c: Construction Monitoring, and Mitigation Measure PR-1d: Preparation and Curation of Recovered Fossils.

Mitigation Measure PR-1 (a through d), as presented below, would effectively reduce the Project's adverse effects/significant impacts to these resources through the recovery, identification, and curation of previously unrecovered fossils. No project measures have been identified for paleontological resources.

PR-1(a): Paleontological Resources Mitigation and Monitoring Program

Prior to the commencement of ground-disturbing activities for the Project, Metro shall retain a qualified professional paleontologist to prepare and implement a Paleontological Resources Mitigation and Monitoring Program (PRMMP) for the Project. The qualified paleontologist (principal paleontologist) must have at least a Master's degree or equivalent work experience in paleontology, would have experience with local paleontology, and would be familiar with paleontological procedures and techniques. The PRMMP shall describe mitigation requirements to be consistent with the Society of Vertebrate Paleontology (SVP) standards for paleontological resources mitigation (SVP 2010). The PRMMP will include at a minimum the following:

1) Geologic setting, including paleontological sensitivity of the project site
2) Project description outlining the type and extent of ground disturbance
3) Specifications for what ground-disturbing activity requires paleontological monitoring
4) Paleontological monitoring procedures:
    a. Qualifications of paleontological monitors
    b. Timing and duration of monitoring
    c. Required data collection procedures
    d. Daily monitoring log content
5) Communication protocols to be followed in the event that an unanticipated fossil discovery is made during project development
6) Construction diversion and resource recovery protocols:
    a. Authority for ceasing construction
    b. Aerial extent of avoidance (construction exclusion) for any discovery
    c. Timing to evaluate and recover the fossil
7) Fossil collection and preparation standards (field and museum)

8) Curation standards including appropriate institutions, curation agreements, and deadlines for materials to be accessioned
9) Post-recovery reporting requirements

PR-1(b): Paleontological Worker Environmental Awareness Program

Prior to the start of construction, the qualified paleontologist or his or her designee would conduct training for construction personnel regarding the appearance of fossils and the procedures for notifying paleontological staff should fossils be discovered by construction staff. The Paleontological Worker Environmental Awareness Program would be fulfilled at the time of a preconstruction meeting. In the event of a fossil discovery by construction personnel, all ground-disturbing activities within 50 feet of the find would be halted, a 50-foot exclusion zone around the find would be established, and the qualified paleontologist and/or designee would be contacted to evaluate the find before re-starting work in the exclusion zone. If the qualified paleontologist determines that the fossil(s) is (are) scientifically significant, the qualified paleontologist would complete the conditions outlined in Mitigation Measure PR-1(c) and PR-1(d) to mitigate impacts to significant fossil resources.

PR-1(c): Construction Monitoring

Ground-disturbing construction activities (including grading, excavation, trenching, and wide-diameter auguring) that have the potential to impact previously undisturbed (i.e., native) sediments or geologic units of high paleontological sensitivity below 5 feet bgs would be monitored on a full-time basis by a qualified paleontological monitor during initial ground disturbance. Monitoring pursuant to the Paleontological Mitigation and Monitoring Program would be supervised by the qualified paleontologist and would be conducted by a monitor who meets or exceeds the Society of Vertebrate Paleontology (2010) requirements for a qualified paleontological monitor, including at least a Bachelor's degree in geology, paleontology, or related field, and experience with collection and salvage of paleontological resources. If geological evidence indicates that sediments are younger alluvium or previously disturbed sediments and have a low potential to yield paleontological resources, or if older sediments are determined not to be fossiliferous based on results of monitoring at this location, the qualified paleontologist may determine that full-time monitoring is no longer warranted and may recommend reducing monitoring to periodic spot-checking or cease entirely. Monitoring would be reinstated if any new or unforeseen deeper ground disturbances are required and reduction or suspension would need to be reconsidered by the qualified paleontologist. Ground-disturbing activity that reaches a depth of less than 5 feet bgs would not require paleontological monitoring.

In the event that a paleontological resource is discovered, the monitor would have the authority to temporarily divert the construction equipment around the find until it is assessed for scientific significance and collected. Typically, fossils can be safely recorded and, if significant, potentially collected quickly by a single paleontologist without disrupting construction activity. In some cases, larger fossils (such as complete skeletons or large mammal fossils) may require more extensive excavation and longer recovery periods. In such a case, the monitor, under the supervision of the principal paleontologist, would have the authority to temporarily direct, divert, or halt construction activity so that the fossil(s) can be removed in a safe and timely manner.

PR-1(d): Preparation and Curation of Recovered Fossils

Once recovered, significant fossils would be identified to the lowest possible taxonomic level, prepared to a curation-ready condition, and curated at a scientific institution with a permanent paleontological collection (such as the Natural History Museum of Los Angeles County) along with all pertinent field notes, photos, data, and maps. Fossils of undetermined significance at the time of collection may also warrant curation at the discretion of the qualified paleontologist. The cost of curation is assessed by the repository and would be the responsibility of Metro.

At the conclusion of all required monitoring, laboratory work, and museum curation, the qualified paleontologist would prepare a final report describing the results of the paleontological mitigation monitoring efforts associated with the Project. The report would include a summary of the field and laboratory methods, an overview of the project geology and paleontology, a list of taxa recovered (if any), an analysis of fossils recovered (if any) and their scientific significance, and recommendations. If the monitoring efforts produced fossils, then a copy of the report would also be submitted to the designated museum repository and to Metro.

California Environmental Quality Act Determination

Historic Built Resources

For the purposes of CEQA and as detailed below, the No Project Alternative and construction of Alternatives 1, 2, 3, and 4, Design Options 1 and 2, and the Paramount and Bellflower MSF site options would result in no impact to built environment historical resources.

Would the Project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

No Project Alternative

Under the No Project Alternative, the Project would not be developed or constructed, properties would not be acquired for the Project, and no built resources or structures along the project alignment would be altered as a result of the Project. The existing freight tracks within the rail ROWs would remain undisturbed, and no aerial structures would be constructed along the public or rail ROWs. No project-related noise or vibration would occur. The environmental setting would remain in current conditions and no impact to built environment historical resources would occur. Mitigation would not be required.

Build Alternatives

Potential impacts to built environment historical resources as a result of construction of the Build Alternatives (i.e., 1, 2, 3, and 4) include those directly related to the construction of Alternatives 1, 2, 3, 4, including temporary noise and vibration impacts, temporary visual impacts, and temporary property acquisitions and easements. As discussed below, none of these activities is expected to result in a significant impact to built environment historical resources.

Potential noise and vibration impacts related to construction of the Build Alternatives were evaluated and presented in the Noise and Vibration Impact Analysis Report (Appendix M) and summarized in Section 4.7, Noise and Vibration, of this Draft EIS/EIR. Consistent with the effects analysis presented above in relation to historical resources, noise and vibration

were analyzed based on their potential to significantly impact historical resources. Noise and/or vibration associated with construction of the Build Alternatives would not alter the characteristics of any of the historical resources in the APE that qualify them for inclusion in the NRHP and therefore would not result in a substantial adverse change in the significance of historical resources or a significant impact.

Construction of the Build Alternatives would not physically permanently alter any of the built environment historical resources in the APE. However, it would introduce new visual elements within or in the vicinity of historical resources in the APE. These elements would be temporary and would not permanently diminish the integrity of any of the historical resources in the APE. All construction-related equipment and associated elements would be removed following construction. The APE traverses a largely urban area. Therefore, construction equipment and other associated elements would not significantly alter the existing urban environment surrounding built environment historical resources in the APE. The introduction of temporary, construction-related visual elements would not result in a substantial adverse change in the significance of historical resources or a significant impact.

Easements necessary to facilitate construction of the Build Alternatives, such as those to install vibration monitors (required by Mitigation Measure VIB-7 [Construction Monitoring for Vibration]), would be temporary and would not remain following the construction of the Project. Temporary easements would not result in a substantial adverse change in the significance of historical resources or a significant impact

Construction of the Build Alternatives would result in no impact to built environment historical resources and mitigation would not be required. Alternative 2 has the most potential for impacts to built environment historical resources due to the presence of 56 historical resources in its APE. The potential for impacts diminishes among Alternatives 1, 3, and 4 with 37, 17, and 5 built environment historical resources in the APE for these alternatives, respectively.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Potential significant impacts to built environment historical resources as a result of noise, vibration, easements, and the introduction of visual elements associated with construction of Design Options 1 and 2 are consistent with those previously described for the Build Alternatives. In particular, construction of Design Option 1 (MWD) would introduce new visual elements within or in the vicinity of LAUS/MRN 1-007. However, these elements would be temporary and would not permanently diminish the integrity of the resource. All construction-related equipment and associated elements would be removed following construction. Additionally, LAUS is located in a largely urban area and construction equipment and other associated elements would not alter any features within the property's setting that contribute to its significance.

There are no built environment historical resources in the immediate vicinity of Design Option 2. Construction of Design Options 1 and 2 would result in no impact to historical resources, and mitigation would not be required. The potential for impacts to built environment historical resources is less under Design Option 2 than Design Option 1 (MWD) because of the presence of one as opposed to no built environment historical resources in its vicinity. However, the potential for impacts to occur as a result of construction is consistent between Alternative 1 with or without Design Options 1 or 2.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: Potential significant impacts to built environment historical resources as a result of noise, vibration, easements, and the introduction of visual elements associated with construction of the Paramount and Bellflower MSF site options are consistent with those previously described for the Build Alternatives. There are no built environment historical resources within the direct footprint of the proposed Paramount or Bellflower MSF site options. Therefore, construction of either maintenance facility would not directly physically alter any built environment historical resources.

The proposed Paramount MSF is located approximately 450 feet west of one historical resource: Our Lady of the Rosary Church/MRN 24-001. The Noise and Vibration Impact Analysis Report (Appendix M) conducted for the Project considered this property a noise-sensitive land use and indicates that construction of the Paramount MSF would not exceed FTA noise or vibration standards and thresholds. Additionally, per the Paramount Municipal Code, noise related to project construction would not occur on Sundays. The eligibility of Our Lady of the Rosary Church is related to its architecture, which would not be altered by construction of the Paramount MSF site option.

Construction of the Paramount MSF site option would temporarily introduce new visual elements to the vicinity of Our Lady of the Rosary Church. However, new elements would not significantly alter the visual character and quality of the area or reduce the resource's historic integrity. The property on which the Paramount MSF is proposed is currently occupied with mixed commercial and industrial use and a variety of buildings and structures that include a large-scale abandoned industrial site. Therefore, construction activities associated with the Paramount MSF would not alter the physical features within the property's setting that contribute to its significance or modify the existing visual character and setting of Our Lady of the Rosary Church.

Construction of the Paramount MSF site option would result in a less than significant impact to historical resources. There are no built environment historical resources in the vicinity of the Bellflower MSF site option. Therefore, its construction would result in no impact to historical resources. Mitigation would not be required for construction of either MSF site option.

Archaeological Resources

Would the Project cause a substantial adverse change in the significance of an archaeological resource as defined in Section 15064.5?

For the purposes of CEQA and as detailed below, the No Project Alternative would result in no impact to archaeological resources. Impacts to known and unknown archaeological resources associated with construction of the Project, including Alternatives 1, 2, 3, and 4, Design Options 1 and 2, and the Paramount and Bellflower MSF site options, would be less than significant with mitigation incorporated.

No Project Alternative

Under the No Project Alternative, the environmental setting would remain in current conditions. No substantial physical impacts to archaeological resources would occur. Therefore, no significant impacts related to archaeological resources would occur under the No Project Alternative, and mitigation would not be required.

Build Alternatives, Design Options, and MSF Site Options

Construction of the Project would involve substantial ground disturbance with the potential to physically impact known and unknown archaeological resources within the direct APE. Expected ground-disturbing activities would include grading, excavation, trenching, boring, cut-and-cover tunneling, and wide-diameter auguring activities. These activities have the potential to physically alter, remove, or destroy buried archaeological resources that may extend into the direct APE. In addition to known archaeological resources, unanticipated archaeological resources may be encountered during ground-disturbing activities associated with construction of the Project. The direct alteration of these unanticipated archaeological resources would represent a significant direct impact without mitigation. Other impacts such as noise, vibration, or visual impacts are not expected to affect cultural deposits associated with any of the archaeological resources in the APE.

Alternative 1: Los Angeles Union Station to Pioneer Station

Eight archaeological resources that are listed or presumed eligible for listing in the CRHR under Criterion 4 (P-19-001575, P-19-002849, P-19-003181, P-19-003588, P-19-003862, P-19-004171, P-19-004201, P-19-004202) have been documented in the direct APE for Alternative 1. Ground-disturbing activities during construction of this alternative have the potential to directly alter or destroy buried cultural remains associated with five of these resources (P-19-001575, P-19-002849, P-19-003181, P-19-004171 and 19-004202). Such damage would represent a significant impact to these archaeological resources without mitigation incorporated. The direct alteration of unanticipated archaeological resources would also represent a significant direct impact without mitigation.

Mitigation Measures: Implementation of Mitigation Measures CR-1 (Development of Cultural Resource Mitigation and Monitoring Program) and CR-2 (Treatment of Known Significant Archaeological Resources) would reduce potential significant impacts to P-19-001575, P-19-002849, P-19-003181, P-19-004171, and 19-004202 to a less than significant level. Additionally, implementation of Mitigation Measures CR-3 (Archaeological Worker Environmental Awareness Program), CR-4 (Archeological Monitoring), and CR-5 (Treatment of Unanticipated Discoveries) would reduce potential significant impacts to unanticipated archaeological resources to a less than significant level.

Impacts Remaining After Mitigation: Less than significant.

Alternative 2: 7th Street/Metro Center to Pioneer Station

One archaeological resource that is presumed eligible for listing on the CRHR under Criterion 4 (P-19-002849) has been documented in the direct APE for Alternative 2. Ground-disturbing activities during construction of this alternative have the potential to directly alter or destroy buried cultural remains associated with this resource. Such damage would represent a significant direct impact to the archaeological resource without mitigation incorporated. The direct alteration of unanticipated archaeological resources would also represent a significant direct impact without mitigation. The potential for impacts to known archaeological resources is less under Alternative 2 than Alternative 1 because of the presence of only one (as opposed to eight) archaeological resources in its APE. However, the potential for impacts to unanticipated archaeological resources is consistent among these alternatives.

Mitigation Measures: Implementation of Mitigation Measures CR-1 (Development of Cultural Resource Mitigation and Monitoring Program) and CR-2 (Treatment of Known

Significant Archaeological Resources) would reduce potential significant impacts on P-19-002849 to a less than significant level. Additionally, implementation of Mitigation Measures CR-1 (Development of Cultural Resource Mitigation and Monitoring Program), CR-3 (Archaeological Worker Environmental Awareness Program), CR-4 (Archeological Monitoring), and CR-5 (Treatment of Unanticipated Discoveries) would reduce potential significant impacts to unanticipated archaeological resources to a less than significant level.

Impacts Remaining After Mitigation: Less than significant.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

One archaeological resource that is presumed eligible for listing on the CRHR under Criterion 4 (P-19-002849) has been documented in the direct APE for Alternative 3. Ground-disturbing activities during construction of this alternative have the potential to directly alter or destroy buried cultural remains associated with this resource. Such damage would represent a significant direct impact to the archaeological resource without mitigation incorporated. The direct alteration of unanticipated archaeological resources would also represent a significant direct impact without mitigation. The potential for impacts to known archaeological resources is less under Alternative 3 but consistent with Alternative 2 because of the presence of only one archaeological resource in its APE. Additionally, the potential for impacts to unanticipated archaeological resources is less under Alternative 3 because of the reduced length of the alignment under this alternative.

Mitigation Measures: Implementation of Mitigation Measures CR-1 (Development of Cultural Resource Mitigation and Monitoring Program) and CR-2 (Treatment of Known Significant Archaeological Resources) would reduce potential significant impacts on P-19-002849 to a less than significant level. Additionally, implementation of Mitigation Measures CR-1 (Development of Cultural Resource Mitigation and Monitoring Program), CR-3 (Archaeological Worker Environmental Awareness Program), CR-4 (Archeological Monitoring), and CR-5 (Treatment of Unanticipated Discoveries) would reduce potential significant effects to unanticipated archaeological resources to a less than significant level.

Impacts Remaining After Mitigation: Less than significant.

Alternative 4: I-105/C (Green) Line to Pioneer Station

No archaeological resources have been identified within the direct APE for Alternative 4. As such, ground-disturbing activities associated with construction of Alternative 4 would not result in significant impacts to known archaeological resources. The direct alteration of unanticipated archaeological resources would also represent a significant direct impact without mitigation. The potential for impacts to known and unanticipated archaeological resources is least under Alternative 4 because of the lack of known resources in its APE and the proposed length of the alignment under this alternative.

Mitigation Measures: Mitigation Measures CR-1 (Development of Cultural Resource Mitigation and Monitoring Program), CR-3 (Archaeological Worker Environmental Awareness Program), CR-4 (Archeological Monitoring), and CR-5 (Treatment of Unanticipated Discoveries) would be implemented to mitigate potential significant impacts during construction of Alternative 4 on unanticipated archaeological resources.

Impacts Remaining After Mitigation: Less than significant.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: The potential for impacts to archaeological historical resources is consistent between Alternative 1 without Design Options 1 or 2 and Alternative 1 with Design Options 1 or 2.

Construction of Design Option 1 (MWD) would involve substantial ground disturbance associated with installation of the underground alignment, station box, and crossovers. (MWD) Such damage to an archaeological resource would represent a significant impact without mitigation. Under Design Option 2, the Little Tokyo Station would be constructed. One known archaeological historical resource, P-19-004171, is located within the direct APE of the Little Tokyo Station. Given the construction method for Little Tokyo Station is cut-and-cover, construction of this station may result in damage to P-19-004171.

Unanticipated archaeological resources may also be encountered during ground-disturbing activities associated with construction of Design Options 1 and 2. The direct alteration of these unanticipated archaeological resources would represent a significant direct impact without mitigation.

Mitigation Measure: Implementation of Mitigation Measures CR-1 (Development of Cultural Resource Mitigation and Monitoring Program) and CR-2 (Treatment of Known Significant Archaeological Resources) would reduce potential project-related impacts to P-19-001575 and P-19-004171 to a less than significant level. Additionally, Mitigation Measures CR-3 (Archaeological Worker Environmental Awareness Program), CR-4 (Archeological Monitoring), and CR-5 (Treatment of Unanticipated Discoveries) would be implemented to mitigate potential significant impacts during construction of Design Options 1 and 2 on unanticipated archaeological resources.

Impacts Remaining After Mitigation: Less than significant.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: The potential for impacts to archaeological historical resources is consistent between the Paramount and Bellflower MSF site options. No known archaeological resources have been documented in the direct APE associated with either MSF site option. As such, construction activities associated with construction of the MSF site options would not result in any significant effects to known archaeological resources. Unanticipated archaeological resources may also be encountered during ground-disturbing activities associated with construction of the Paramount and Bellflower MSF site options. The direct alteration of these unanticipated archaeological resources would represent a significant direct impact without mitigation.

Mitigation Measures: Implementation of Mitigation Measures CR-1 (Development of Cultural Resource Mitigation and Monitoring Program), CR-3 (Archaeological Worker Environmental Awareness Program), CR-4 (Archeological Monitoring), and CR-5 (Treatment of Unanticipated Discoveries) would reduce potential project-related impacts to a level of less than significant.

Impacts Remaining After Mitigation: Less than significant.

Would the Project disturb any human remains, including those interred outside of dedicated cemeteries?

For the purposes of CEQA and as detailed below, the No Project Alternative would result in no impact to human remains, including those interred outside of dedicated cemeteries. Impacts to known and unknown human remains associated with construction of the Project, including Alternatives 1, 2, 3, and 4, Design Options 1 and 2, and the Paramount and Bellflower MSF site options, would be less than significant with adherence to State of California Health and Safety Code Section 7050.5.

No Project Alternative

Under the No Project Alternative, the environmental setting would remain in current conditions. Therefore, no impact to human remains would occur under the No Project Alternative, and mitigation would not be required.

Build Alternatives, Design Options, and MSF Site Options

This section presents the potential construction-related impacts common among Alternatives 1, 2, 3, and 4, Design Options 1 and 2, and the Paramount and Bellflower MSF site options. Construction of the Project would involve substantial ground disturbance with the potential to physically impact human remains within the direct APE. Expected ground-disturbing activities would include grading, excavation, trenching, boring, cut-and-cover tunneling, and wide-diameter auguring activities. These activities have the potential to physically alter, remove, or destroy buried human remains that may extend into the direct APE. Additional effects associated with construction of the Project would be temporary and are not expected to result in significant impacts to human remains.

Furthermore, unanticipated human remains located outside of a dedicated cemetery may be unearthed in the direct APE during ground-disturbing activities associated with the construction of the Project. If human remains are found, the State of California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the county coroner has made a determination of origin and disposition pursuant to PRC Section 5097.98. In the event of an unanticipated discovery of human remains, the Los Angeles County Coroner must be notified immediately. If the human remains are determined to be prehistoric, the coroner is required to notify the Native American Heritage Commission, which would determine and notify a Most Likely Descendant who must complete the inspection of the site within 48 hours of notification and provide recommendations for treatment to the landowner within 48 hours of being granted access. Archaeological and Native American monitors would be present during all project ground-disturbing activities with the potential to encounter human remains. Incidental discoveries would be treated in accordance with existing regulation.[11]

The following sections discuss the potential effects of project construction that are unique to Alternatives 1, 2, 3, and 4, Design Options 1 and 2, and the Paramount and Bellflower MSF site options.

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[11] The *West Santa Ana Branch Transit Corridor Project Final Traditional Cultural Properties and Tribal Cultural Resources Impact Analysis Report* (Appendix Z of this Draft EIS/EIR) additionally requires implementation of Mitigation Measures TCR-1 (Native American Monitoring) and TCR-2 (Unanticipated Discovery of Tribal Cultural Resources) to reduce impacts to TCRs to less than significant.

Alternative 1

One known prehistoric Native American cemetery consisting of 14 interments and five cremations was documented at P-19-001575 in the direct APE of Alternative 1. Additional human remains may be present at P-19-001575 that could be encountered during project-related construction in Alternative 1. Construction of Alternative 1 would result in a less than significant impact to human remains with adherence to existing state regulations concerning the discovery of human remains and no mitigation measures are required.

Alternatives 2, 3, and 4

No known human remains or cemeteries have been documented in the direct APE associated with Alternatives 2, 3, and 4. However, unanticipated human remains may be unearthed in the direct APE during ground-disturbing activities associated with the construction of Alternatives 2, 3, and 4. As detailed above, incidental discoveries would be treated in accordance with State of California Health and Safety Code Section 7050.5. Construction of Alternatives 2, 3, and 4 would result in a less than significant impact to human remains with adherence to existing state regulations concerning the discovery of human remains and no mitigation measures are required.

Design Options – Alternative 1

The potential for impacts to human remains is consistent between Alternative 1 with or without Design Options 1 or 2.

Design Option 1: LAUS at MWD: Construction of Design Option 1 (MWD) would involve substantial ground disturbance with the potential to impact human remains associated with the previously documented prehistoric cemetery at P-19-001575. Human remains may be encountered during construction of Design Option 1 (MWD). However, construction of Design Option 1 (MWD) would result in less than significant impacts to human remains with adherence to existing state regulations (State of California Health and Safety Code Section 7050.5 and PRC Section 5097.98) concerning the discovery of human remains and no mitigation measures are required.

Design Option 2: Add Little Tokyo Station: No known human remains or cemeteries have been documented in the direct APE associated with Design Option 2. However, unanticipated human remains may be unearthed in the direct APE during ground-disturbing activities associated with the construction of Design Option 2. However, construction of Design Option 2 would result in less than significant impacts to human remains with adherence to existing state regulations (State of California Health and Safety Code Section 7050.5 and PRC Section 5097.98) concerning the discovery of human remains and no mitigation measures are required.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: No human remains or cemeteries have been documented in the direct APE associated with either MSF site option. As such, construction activities associated with construction of the MSF site options would not result in any significant effects to known human remains or cemeteries. It is possible that previously undocumented human remains could be encountered during construction activities. However, construction of the Paramount and Bellflower MSF site options would result in less than significant impacts to human remains with adherence to existing state regulations

(State of California Health and Safety Code Section 7050.5 and PRC Section 5097.98) concerning the discovery of human remains and no mitigation measures are required. The potential for impacts to human remains is consistent between the Paramount and Bellflower MSF site options.

Paleontological Resources

Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

For the purposes of CEQA and as detailed below, the No Project Alternative would result in no impact to paleontological resources. Impacts to paleontological resources associated with construction of the Project, including Alternatives 1, 2, 3, and 4, Design Options 1 and 2, and the Paramount and Bellflower MSF site options, would be less than significant with mitigation incorporated.

No Project Alternative

Under the No Project Alternative, no new ground disturbance would occur because the Project would not be constructed and the environmental setting would remain in current conditions. As such, there would be no impacts to paleontological resources. Mitigation would not be required.

Build Alternatives

Potential impacts to paleontological resources in the Affected Area during ground-disturbing activities associated with construction of Alternatives 1, 2, 3, and 4 are high. As the entire Affected Area for paleontological resources is considered to have the same paleontological sensitivity (high at depths at or below 5 feet), potential impacts to paleontological resources associated with project construction is consistent among Alternatives 1, 2, 3, and 4. However, as Alternatives 1 and 2 are significantly longer than Alternatives 3 and 4, the potential for impacts is greater under these alternatives. Given its length, the potential for impacts to paleontological resources as a result of project construction is least under Alternative 4.

Impacts to paleontological resources associated with construction of Alternatives 1, 2, 3, and 4 would be greatest for activities such as grading, excavation, trenching, and wide-diameter auguring (greater than 3 feet) that require a high degree of sediment displacement. These activities would directly impact and disturb the geologic strata at depth and have a high potential to impact buried paleontological resources where disturbance would extend below 5 feet bgs. Staging areas or access roads would be examples of project activities that would be limited to surface-disturbing activities; therefore, the potential to significantly impact paleontological resources as a result of these ancillary activities is low or is not anticipated. Removal of existing structures is not anticipated to result in significant impacts because ground disturbance would occur within previously disturbed sediments. Indirect impacts of the Project are not anticipated because non-construction personnel would not be allowed to gain access to any newly unearthed, previously buried paleontological resources and unlawful collection of fossils would not occur.

Mitigation Measures: Implementation of Mitigation Measure PR-1 (PR-1a: Paleontological Resources Mitigation and Monitoring Program, PR-1b: Paleontological Worker Environmental Awareness Program, PR-1c: Construction Monitoring, and PR-1d:

Preparation and Curation of Recovered Fossils) is required and would reduce project impacts associated with the construction of Alternatives 1, 2, 3, and 4 to a less than significant level.

Impacts Remaining After Mitigation: Less than significant.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Potential impacts to paleontological resources associated with construction of Design Options 1 and 2 are consistent and do not present increased potential for impacts when compared to Alternative 1 without Design Options 1 or 2. Potential impacts to paleontological resources in the Affected Area during ground-disturbing activities associated with construction of Design Options 1 and 2 are high. Impacts to paleontological resources associated with the construction of Design Options 1 and 2 would be greatest for activities such as grading, excavation, trenching, and wide-diameter auguring (greater than 3 feet) that require a high degree of sediment displacement. These activities would directly impact and disturb the geologic strata at depth and have a high potential to impact buried paleontological resources where disturbance would extend below 5 feet bgs. Staging areas or access roads would be examples of project activities that would be limited to surface-disturbing activities; therefore, the potential to significantly impact paleontological resources as a result of these ancillary activities is low or is not anticipated. Removal of existing structures is not anticipated to result in significant impacts because ground disturbance would occur within previously disturbed sediments. Indirect impacts of the Project are not anticipated because non-construction personnel would not be allowed to gain access to any newly unearthed, previously buried paleontological resources and unlawful collection of fossils would not occur.

Mitigation Measures: Implementation of Mitigation Measure PR-1 (PR-1a: Paleontological Resources Mitigation and Monitoring Program, PR-1b: Paleontological Worker Environmental Awareness Program, PR-1c: Construction Monitoring, and PR-1d: Preparation and Curation of Recovered Fossils) is required and would reduce project impacts associated with construction of Design Options 1 and 2 to a less than significant level.

Impacts Remaining After Mitigation: Less than significant.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: The potential for impacts to paleontological resources due to construction is consistent between the Paramount and Bellflower MSF site options. Potential impacts to paleontological resources in the Affected Area during ground-disturbing activities associated with construction of the Paramount and Bellflower MSF site options are high. Impacts to paleontological resources associated with construction of the Paramount and Bellflower MSF site options would be greatest for activities such as grading, excavation, trenching, and wide-diameter auguring (greater than 3 feet) that require a high degree of sediment displacement. These activities would directly impact and disturb the geologic strata at depth and have a high potential to impact buried paleontological resources where disturbance would extend below 5 feet bgs. Staging areas or access roads would be examples of project activities that would be limited to surface-disturbing activities; therefore, the potential to significantly impact paleontological resources as a result of these ancillary activities is low or is not anticipated. Removal of existing structures is not anticipated to result in significant impacts because ground disturbance would occur within previously disturbed sediments. Indirect impacts of the Project are not anticipated because non-construction personnel would not be allowed to

gain access to any newly unearthed, previously buried paleontological resources and unlawful collection of fossils would not occur.

Mitigation Measures: Implementation of Mitigation Measure PR-1 (PR-1a: Paleontological Resources Mitigation and Monitoring Program, PR-1b: Paleontological Worker Environmental Awareness Program, PR-1c: Construction Monitoring, and PR-1d: Preparation and Curation of Recovered Fossils) is required and would reduce project impacts associated with construction of the Paramount and Bellflower MSF site options to a less than significant level.

Impacts Remaining After Mitigation: Less than significant.

4.19.3.15 Tribal Cultural Properties

Build Alternatives

No TCPs have been identified in the direct APE for Alternative 1, 2, 3, or 4. Therefore, the construction of these alternatives would not result in effects to known TCPs. The construction of Alternatives 1 and 2 would involve substantial ground disturbance with the potential to alter, remove, or destroy previously undocumented TCPs within the APE. Expected ground-disturbing activities include grading, excavation, trenching, boring, cut-and-cover tunneling, drilling, and wide-diameter auguring activities. Similar to Alternatives 1 and 2, construction of Alternatives 3 and 4 would involve substantial ground disturbance, with the exception of tunneling, which would not be required for Alternatives 3 and 4. If previously undocumented TCPs are directly altered, removed, or destroyed by the construction, an adverse effect would occur.

The potential to encounter TCPs during construction of the Build Alternatives is consistent between Alternatives 1 and 2 because of their similar length and extent of ground disturbance. The potential to encounter TCPs during construction is less under Alternative 3 than Alternatives 1 and 2 and least under Alternative 4 because of the length of the alignment and associated extent of ground disturbance proposed under these alternatives.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station

No TCPs have been identified in the direct APE for Design Options 1 and 2. Therefore, the potential to encounter TCPs during construction is consistent between Alternative 1 with or without Design Options 1 and 2. Construction of the design options would not result in effects to known TCPs. Construction of Design Options 1 and 2 involves substantial ground disturbance. These activities have the potential to alter, remove, or destroy known or previously undocumented TCPs within the direct APE. It is possible that previously undocumented TCPs could be encountered during construction activities. If unanticipated TCPs are directly altered, removed, or destroyed by the construction of Design Options 1 and 2, an adverse effect would occur.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options

No TCPs have been identified in the APE associated with the Paramount or Bellflower MSF site option. Therefore, the potential to encounter TCPs is consistent between these MSF site options. Construction of these MSF site options would not result in effects to known

TCPs. Construction of the MSF site options involves substantial ground disturbance having the potential to alter, remove, or destroy known or previously undocumented TCPs within the direct APE. It is possible that previously undocumented TCPs could be encountered during construction activities. If unanticipated TCPs are directly altered, removed, or destroyed by the construction of the Paramount or Bellflower MSF site options, an adverse effect would occur.

Project Measures and Mitigation Measures

Ground-disturbing activities associated with construction of the Project could result in significant impacts to known and potentially unknown TCPs. These significant impacts would be reduced with implementation of Mitigation Measure TCR-1 (Native American Monitoring) and TCR-2 (Unanticipated Discovery of Tribal Cultural Resources) detailed below. Mitigation Measures CR-1 (Development of Cultural Resource Mitigation and Monitoring Program) and CR-2 (Treatment of Known Significant Archaeological Resources) detailed in Section 4.19.3.14 would also be implemented. As noted in CR-1 (Development of Cultural Resource Mitigation and Monitoring Program), human remains would be handled in accordance with existing regulations, including the State of California Health and Safety Code Section 7050.5.

TCR-1: Native American Monitoring. Because of the potential to encounter previously undocumented tribal cultural properties/resources, a Native American monitor would be retained by Los Angeles County Metropolitan Transportation Authority to monitor project-related, ground-disturbing construction activities (e.g., grading, excavation, drilling, trenching) that occur within areas that are identified as having a moderate-to-high potential for containing prehistoric Native American remains, as specified in the CRMMP, as described in Mitigation Measure CR-1 (Development of Cultural Mitigation and Monitoring Program). The appropriate Native American monitors would be selected based on the tribal consultation under AB 52 and Section 106. Monitoring staff would be identified in the CRMMP. Monitoring procedures and the role and responsibilities of the Native American monitor would be outlined in the CRMMP. In the event that the Native American monitor identifies a cultural resource of Native American origin during construction, the monitor would be given the authority to temporarily halt ground-disturbing activities (if safe) within 50 feet (15 meters) of the discovery to investigate the find and contact the Project Archaeologist and Metro. The Native American monitor and consulting tribe(s) would be provided an opportunity to participate in the documentation and evaluation of the find and development of treatment, as necessary.

TCR-2: Unanticipated Discovery of Tribal Cultural Resources. In the event that cultural resources of Native American origin are identified during construction, all earth-disturbing work within a 50-foot radius of the find would be temporarily suspended or redirected until an archaeologist has evaluated the nature and significance of the find and an appropriate Native American representative, based on the nature of the find, is consulted. The specific procedures to be followed in the event of an unanticipated discovery of cultural resources of Native American origin would be identified in the CRMMP, as described in Mitigation Measure CR-1 (Development of Cultural Mitigation and Monitoring Program). If Metro determines that the resource is a TCP/TCR and is found significant under CEQA/Section 106 a treatment plan would be prepared and implemented in accordance with state guidelines and in consultation with Native American groups as required by CR-2 (Treatment of Known Significant Archaeological Resources). The plan would include avoidance of the

resource or, if avoidance of the resource is infeasible, the plan would outline the appropriate treatment of the resource in coordination with the archaeologist and the appropriate Native American tribal representative.

California Environmental Quality Act Determination

Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

- ***a) Listed or eligible for listing in the California Register of Historical Resources, or a local register of historical resources as defined in Public Resources Code section 5020.1(k), or***
- ***b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subsection (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.***

No Project Alternative

Under the No Project Alternative, the environmental setting within the Affected Area for tribal cultural resources would remain in its current condition and no ground disturbance would occur. No physical alteration of known or unanticipated TCRs would take place under the No Project Alternative. The No Project Alterative would result no impacts to known or unanticipated TCRs.

Alternative 1

One presumed TCR (P-19-001575) has been identified in Alternative 1. P-19-001575 consists of buried archaeological remains of Native American origin. A large portion of P-19-001575 is located in the direct APE for Alternative 1. Construction of Alternative 1 may result in direct impacts to undisturbed archaeological deposits associated with the TCR. Substantial ground disturbance is associated with Alternative 1, including cut-and-cover excavations for the station and boring excavations for the rail tunnel. These activities, which may extend over several years, have the potential to directly alter buried archaeological deposits associated with P-19-001575. Although a large percentage of the site has been covered in artificial fill, the proposed depth of construction activities for Alternative 1 may extend up to 130 feet below the present ground surface. As such, construction activities in some portions of the direct APE would extend below the maximum recorded level of artificial fill and would likely impact archaeological deposits. Construction of Alternative 1 may also result in the discovery of unanticipated TCRs, the direct alteration or destruction of which would result in a significant impact without mitigation.

Mitigation Measures: TCR-1 (Native American Monitoring), TCR-2 (Unanticipated Discovery of Tribal Cultural Resources), CR-1 (Development of Cultural Resource Mitigation and Monitoring Program), and CR-2 (Treatment of Known Significant Archaeological Resources) would reduce impacts associated with the construction of Alternative 1 on known and unanticipated TCRs.

Impacts Remaining After Mitigation: Less than significant.

Alterative 2, 3, and 4

No TCRs have been identified in the direct APE for Alternatives 2, 3, or 4. Therefore, construction of these alternatives would not result in effects to known TCRs. The construction of Alternatives 2, 3, and 4 involves substantial ground disturbance with the potential to alter, remove, or destroy unanticipated TCRs within the direct APE. It is possible that previously undocumented TCRs could be encountered during construction activities. If unanticipated TCRs are directly altered, removed, or destroyed by the construction of Alternatives 2, 3, or 4 a significant impact would occur.

As no known TCRs have been identified in the APE for these alternatives, the potential for impacts to known TCRs as a result of construction is less under Alternatives 2, 3, and 4 when compared to Alternative 1. The potential for effects to unanticipated TCRs is generally consistent between Alternatives 1 and 2 and is less under Alternative 3 and least under Alternative 4 because of the length of the alignments proposed under these alternatives.

Mitigation Measures: TCR-1 (Native American Monitoring), TCR-2 (Unanticipated Discovery of Tribal Cultural Resources), and CR-1 (Development of Cultural Resource Mitigation and Monitoring Program).

Impacts Remaining After Mitigation: Less than significant.

Design Options—Alternative 1

When comparing Design Options 1 and 2, the potential for impacts to known TCRs is greater under Design Option 1 (MWD) because of the presence of one presumed TCR as opposed to none. The potential for impacts to unanticipated TCRs is consistent between Alternative 1 with or without Design Options 1 and 2.

Design Option 1: LAUS at MWD: One presumed TCR (P-19-001575) has been identified in the APE associated with Design Option 1 (MWD). Construction of Design Option 1 (MWD) may result in direct impacts to undisturbed archaeological deposits associated with the TCR. Substantial ground disturbance is associated with the construction of Design Option 1 (MWD). These activities have the potential to directly alter buried archaeological deposits associated with P-19-001575. Although a large percentage of the site has been covered in artificial fill, the proposed depth of construction activities for Design Option 1 (MWD) may extend up to 130 feet below the present ground surface. As such, construction activities in some portions of the direct APE would extend below the maximum recorded level of artificial fill and would likely impact archaeological deposits. In addition to P-19-001575, previously undocumented TCRs could be encountered during construction activities. If unanticipated TCRs are directly altered, removed, or destroyed by the construction of Design Option 1 (MWD), a significant impact would occur.

Design Option 2: Add Little Tokyo: No TCRs have been identified in the vicinity of Little Tokyo Station. As such, construction activities associated with construction of the Little Tokyo Station would result in no impacts to known TCRs. It is possible that previously undocumented TCRs could be encountered during construction activities. The destruction or alteration of unanticipated TCRs would result in a significant impact.

Mitigation Measures: Design Option 1 (MWD): TCR-1 (Native American Monitoring), TCR-2 (Unanticipated Discovery of Tribal Cultural Resources), CR-1(Development of Cultural Resource Mitigation and Monitoring Program), and CR-2 (Treatment of Known Significant

Archaeological Resources). Design Option 2: TCR-1 (Native American Monitoring), TCR-2 (Unanticipated Discovery of Tribal Cultural Resources), and CR-1 (Development of Cultural Resource Mitigation and Monitoring Program).

Impacts Remaining After Mitigation: Less than significant.

Maintenance and Storage Facility

Paramount and Bellflower MSF Site Options: No TCRs have been identified in the APE associated with the Paramount or Bellflower MSF site option. Therefore, the potential for impacts to known and unanticipated TCRs is consistent between the MSF site options. The construction of the MSF would not result in impacts to known TCRs. Construction of the either MSF would involve substantial ground disturbance having the potential to alter, remove, or destroy known or unanticipated TCRs within the direct APE. It is possible that previously undocumented TCRs could be encountered during construction activities. If unanticipated TCRs are directly altered, removed, or destroyed by the construction of the Paramount or Bellflower MSF site option, a significant impact would occur.

Mitigation Measures: TCR-1 (Native American Monitoring), TCR-2 (Unanticipated Discovery of Tribal Cultural Resources), and CR-1 (Development of Cultural Resource Mitigation and Monitoring Program).

Impacts Remaining After Mitigation: Less than significant.

4.19.3.16 Parklands and Community Facilities

Analysis of impacts to recreational and community facilities during construction considers construction-related acquisitions, air quality, noise and vibration, and access and parking. Further discussion regarding potential construction effects as they relate to parklands, recreational facilities, bike facilities, and community facilities are provided in the following reports and the corresponding sections of this Draft EIS/EIR: the *West Santa Ana Branch Transit Corridor Project Final Transportation Impact Analysis Report* (Metro 2021s, Appendix D), the *West Santa Ana Branch Transit Corridor Project Final Displacements and Acquisitions Impact Analysis Report* (Metro 2021m, Appendix H), the *West Santa Ana Branch Transit Corridor Project Draft Section 4(f) and 6(f) Impact Analysis Report* (Metro 2021l, Appendix BB), the *West Santa Ana Branch Transit Corridor Project Final Air Quality Impact Analysis Report* (Metro 2021i, Appendix J), the *West Santa Ana Branch Transit Corridor Project Final Noise and Vibration Impact Analysis Report* (Metro 2021j, Appendix M), and the *West Santa Ana Branch Transit Corridor Project Final Communities and Neighborhoods Impact Analysis Report* (Metro 2021n, Appendix G).

Alternative 1: Los Angeles Union Station to Pioneer Station

Acquisitions: Property acquisitions for construction or TCEs would be located primarily on Metro-acquired properties consisting of commercial, industrial, or vacant properties. As discussed in Section 4.16.3.2 of the Parklands and Community Facilities section, a 40-foot-wide section of in the northern portion of Paramount Park is owned by Metro and leased to the City of Paramount for parking and landscaping. Construction of the alignment would require the termination of the lease agreement between Metro and the City of Paramount, which would remove approximately 20 (of over 300) on-site parking spaces used by park patrons. The reversion of the leased parking area does not require property acquisition within the Paramount Park boundary. Park recreational facilities and buildings would not be disturbed,

and the general function of Paramount Park would remain unchanged. Construction sites would not be located on and would not permanently disrupt function or access to parklands, recreation facilities, bike facilities, and community facility properties. Therefore, adverse effects related to property acquisitions for construction or TCEs in the context of parklands and community facilities would not occur.

Air Quality: As discussed in Section 4.19.3.5, construction activities could temporarily expose sensitive receptors to air pollutants, and adverse effects regarding construction emissions would affect community residents that use parklands, recreational facilities, or community facilities near construction activities. Construction activities would be required to comply with applicable rules and regulations and adhere to BMPs to control emissions and exposure to air pollution. Implementation of Mitigation Measure AQ-1 (Vehicle Emissions) would reduce maximum daily NO_X emissions but would still result in a temporary adverse effect related to emissions of criteria pollutants and ozone precursors. As listed in Table 4.16.1, approximately seven recreational facilities are within 80 feet of potential construction site boundaries. Nonetheless, based on the conservative assumptions that sensitive receptors would be located within 80 feet of construction site boundaries and modeled construction assumptions for regional and localized emissions, construction-related activities would not expose sensitive receptors, such as parklands, recreational facilities, bike facilities, and community facility users, to air pollutants, and adverse effects would not occur. Therefore, adverse effects in regard to construction-related air quality in the context of parklands and community facilities would not occur.

Noise and Vibration: As discussed in Section 4.19.3.7, based on noise measurements conducted for the Project, construction noise and vibration may temporarily affect 32 community facilities within 500 feet of potential construction activities; however, it was determined that no parklands or recreational facilities would be affected by construction noise. Mitigation Measure NOI-8 (Noise Control Plan) and Mitigation Measures VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), and VIB-7 (Construction Monitoring for Vibration) would be implemented during construction to reduce construction noise and vibration impacts to the extent feasible. With mitigation, vibration impacts during construction would not occur, but construction noise would still likely exceed the FTA construction noise criteria. Impacts related to noise would be temporary and are not anticipated to reach noise levels that would inhibit use of parklands, recreational facilities, and community facilities.

Access and Parking: For the safety of pedestrians, bicyclists, and construction workers, construction-related traffic, sidewalk and bike facility detours (i.e., Paramount Bike Trail and Bellflower Bike Trail), and lane closures could temporarily affect access and parking for parklands, recreational facilities, and community facilities. However, access to parklands, recreational facilities, and community facilities would be maintained to the extent feasible. Construction would not affect parking for parklands, recreational facilities, bike facilities, and community facilities, except for the Metro-owned section located in the northern portion of Paramount Park. As discussed above, the termination of the lease agreement between Metro and the City of Paramount for the 40-foot-wide section of the Metro-owned ROW used for parking and landscaping in Paramount Park would result in the return of the section to Metro and the removal of approximately 20 (of over 300) on-site parking spaces currently used by park patrons. The remaining on-site parking (approximately 280 parking spaces) would be maintained to the extent feasible, and off-site parking along Paramount Boulevard would not be affected; no replacement parking is proposed. With the potential loss of on-site parking

and circulation issues during construction at Paramount Park, impacts related to parking, circulation, and access could occur at the park.

Mitigation Measure COM-1 (Construction Outreach Plan) would maintain access, coordinate construction activities to minimize construction impacts, and provide detour and informational signage to the public to minimize effects to parklands, recreational facilities, bike trails, and community facilities to the extent feasible. As construction activities would be temporary, barriers around construction activities and staging areas would be removed upon completion of construction, and temporary street, lane, and bike path detours and closures would be returned to preconstruction conditions once construction is completed. Under NEPA, with the implementation of mitigation, Alternative 1 would not result in adverse effects related to parklands and community facilities during construction.

Alternative 2: 7th Street/Metro Center to Pioneer Station

Construction for Alternative 2 would involve similar underground, aerial, and at-grade construction activities as Alternative 1 and would result in similar temporary adverse effects during construction. Parcels acquired for construction support sites would not be located on and would not permanently disrupt parklands, recreation facilities, bike facilities, and community facility properties. Mitigation Measures AQ-1 (Vehicle Emissions), NOI-8 (Noise Control Plan), VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), VIB-7 (Construction Monitoring for Vibration), and COM-1 (Construction Outreach Plan) would be implemented to minimize adverse effects related to air quality, noise, vibration, and to maintain access and parking at parklands, recreational facilities, and bike facilities. As construction activities would be temporary, barriers around construction activities and staging areas would be removed upon completion of construction; and temporary street, lane, and bike path detours and closures would be returned to preconstruction conditions once construction is completed. Under NEPA, with the implementation of mitigation, Alternative 2 would not result in adverse effects related to parklands and community facilities during construction.

Alternative 3: Slauson/ A (Blue) Line to Pioneer Station

Alternative 3 would be a shorter alignment and would involve similar aerial and at-grade construction activities as Alternatives 1 and 2, except for underground activities. Alternative 3 would result in similar temporary adverse effects during construction. Parcels acquired for construction support sites would not be located on and would not permanently disrupt parklands, recreation facilities, bike facilities, and community facility properties. Mitigation Measures NOI-8 (Noise Control Plan), VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), VIB-7 (Construction Monitoring for Vibration), and COM-1 (Construction Outreach Plan) would be implemented to minimize adverse effects related to noise and vibration, and to maintain access and parking at parklands, recreational facilities, and bike facilities. As construction activities would be temporary, barriers around construction activities and staging areas would be removed upon completion of construction, and temporary street, lane, and bike path detours and closures would be returned to preconstruction conditions once construction is completed. Under NEPA, with the implementation of mitigation, Alternative 3 would not result in adverse effects related to parklands and community facilities during construction.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Alternative 4 would be a shorter alignment and would involve similar aerial and at-grade construction activities as Alternatives 1 and 2, except for underground activities. Alternative 4 would result in similar temporary adverse effects during construction. Parcels acquired for construction support sites would not be located on and would not permanently disrupt parklands, recreation facilities, bike facilities, and community facility properties. Mitigation Measures NOI-8 (Noise Control Plan), VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), VIB-7 (Construction Monitoring for Vibration), and COM-1 (Construction Outreach Plan) would be implemented to minimize adverse effects related to noise and vibration, and to maintain access and parking at parklands, recreational facilities, and bike facilities. As construction activities would be temporary, barriers around construction activities and staging areas would be removed upon completion of construction, and temporary street, lane, and bike path detours and closures would be returned to preconstruction conditions once construction is completed. Under NEPA, with the implementation of mitigation, Alternative 4 would not result in adverse effects related to parklands and community facilities during construction.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station

Construction activities for Design Options 1 and 2 would be located primarily underground. Construction of these design options would not be located on or permanently disrupt parklands, recreation facilities, bike facilities, and community facility properties. Similar to Alternative 1, Mitigation Measures AQ-1 (Vehicle Emissions), NOI-8 (Noise Control Plan), VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), VIB-7 (Construction Monitoring for Vibration), and COM-1 (Construction Outreach Plan) would be implemented to minimize adverse effects related to air quality, noise, and vibration, and to maintain access and parking at parklands, recreational facilities, and bike facilities. As construction activities would be temporary, barriers around construction activities and staging areas would be removed upon completion of construction, and temporary street, lane, and bike path detours and closures would be returned to preconstruction conditions once construction is completed. Under NEPA, with the implementation of mitigation, Design Options 1 and 2 would not result in adverse effects related to parklands and community facilities during construction.

Maintenance and Storage Facility

Paramount MSF Site Option

Construction activities for the Paramount MSF site option would require a full property acquisition. Temporary construction activities would be located entirely on-site. Construction activities for this MSF would not be located on parklands, recreational facilities, or community facility properties, and would not disrupt the essential function of any such facilities. In addition, construction activities would not disrupt the function or access of parklands, recreational facilities, or community facilities located along Paramount Boulevard and south of Somerset Boulevard. Similar to the Build Alternatives, Mitigation Measures AQ-1 (Vehicle Emissions), NOI-8 (Noise Control Plan), VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), VIB-7 (Construction Monitoring for Vibration), and COM-1 (Construction Outreach Plan) would be implemented to minimize adverse effects related to air quality, noise

and vibration, and to maintain access and parking at parklands, recreational facilities, and bike facilities. As construction activities would be temporary, barriers around construction activities and staging areas would be removed upon completion of construction, and temporary street, lane, and bike path detours and closures would be returned to preconstruction conditions once construction is completed. Under NEPA, with the implementation of mitigation, the Paramount MSF site option would not result in adverse effects related to parklands and community facilities during construction.

Bellflower MSF Site Option

Construction activities for the Bellflower MSF site option would require a full property acquisition. The site for this MSF is city-owned, designated as Open Space by the City of Bellflower, and currently leased by the city for use as a recreational commercial business (Hollywood Sports Park and Bellflower BMX). This site is currently not designated as a public park. Temporary construction activities would be located entirely on-site. Construction activities would not be located on public parklands, recreational facilities, or community facility properties, and would not disrupt the essential functions of any such facilities. In addition, construction activities would not disrupt the function or access of parklands, recreational facilities, or community facilities located north of Somerset Boulevard and east of the Bellflower MSF site option. Similar to the Build Alternatives, Mitigation Measures AQ-1 (Vehicle Emissions), NOI-8 (Noise Control Plan), VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), VIB-7 (Construction Monitoring for Vibration), and COM-1 (Construction Outreach Plan) would be implemented to minimize adverse effects related to air quality, noise and vibration, and to maintain access and parking at parklands, recreational facilities, and bike facilities. As construction activities would be temporary, barriers around construction activities and staging areas would be removed upon completion of construction, and temporary street, lane, and bike path detours and closures would be returned to preconstruction conditions once construction is completed. Under NEPA, with the implementation of mitigation, the Bellflower MSF site option would not result in adverse effects related to parklands and community facilities during construction.

Project Measures and Mitigation Measures

No project measures are required. Refer to Section 4.19.3.2 for Mitigation Measure COM-1 (Construction Outreach Plan). Refer to Section 4.19.3.5 for Mitigation Measure AQ-1 (Vehicle Emissions) and Section 4.19.3.7 for Mitigation Measures NOI-8 (Noise Control Plan) and VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), and VIB-7 (Vibration Survey).

California Environmental Quality Act Determination

Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable standards for any park or recreational facility?

No Project Alternative

Under the No Project Alternative, the Project would not be constructed and existing land uses would remain unchanged; no properties would be acquired for the Project; no structures

along the project alignment would be demolished; and no new structures would be constructed. Bike paths proposed within or along the rail ROW could be built and implemented within the rail ROW or along the public ROW that parallel the rail ROW. Therefore, temporary construction activities would not occur, and no impact would occur.

Alternative 1 and Alternative 2

Construction of Alternatives 1 and 2 would result in similar temporary activities and require construction staging, materials stockpiling, hauling of dirt and materials, temporary street and lane closures, and TCEs. Temporary construction activities would be located within the public ROW and/or rail ROW or on sites acquired for construction activities. Construction activities would not be located on and would not permanently disrupt parklands, recreation facilities, bike facilities, and community facility properties.

Pedestrian and bicycle access routes in the construction area would be temporarily disrupted during construction. In addition, off-street parking that may be used by parkland, recreational facility, bike facility, and community facility visitors may be temporarily removed for the duration of construction. Implementation of Mitigation Measure COM-1 (Construction Outreach Plan) would maintain access to parklands, recreational facilities, and community facilities during construction; and construction detour signage, and barriers and fencing are provided. As construction activities are temporary, Alternatives 1 and 2 would not result in permanent impacts to parklands, recreation facilities, community facilities, and bike facilities that would require the need for new facilities. Therefore, impacts would be less than significant with mitigation.

Mitigation Measures: Mitigation Measure COM-1 (Construction Outreach Plan).

Impacts Remaining After Mitigation: Less than significant impact.

Alternative 3 and Alternative 4

Construction of Alternatives 3 and 4 would be similar to Alternatives 1 and 2, with the exception that underground construction would not be required and the alignment would be shorter. Temporary construction activities would not be located on and would not permanently disrupt parklands, recreation facilities, bike facilities, and community facility properties.

Pedestrian and bicycle access routes in the construction area and off-street parking that may be used by parkland, recreational facility, bike facility, and community facility visitors may be temporarily disrupted for the duration of construction. Implementation of Mitigation Measure COM-1 (Construction Outreach Plan) would maintain access to parklands, recreational facilities, and community facilities during construction; and construction detour signage, and barriers and fencing are provided. As construction activities are temporary, Alternatives 3 and 4 would not result in permanent impacts to parklands, recreation facilities, community facilities, and bike facilities that would require the need for new facilities. Therefore, impacts would be less than significant with mitigation.

Mitigation Measures: Mitigation Measure COM-1 (Construction Outreach Plan).

Impacts Remaining After Mitigation: Less than significant impact.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Construction activities for Design Options 1 and 2 would be located primarily underground and would not be located on or not permanently disrupt parklands, recreation facilities, bike facilities, and community facility properties. Similar to the Alternative 1, Measure COM-1 (Construction Outreach Plan) would maintain access to parklands, recreational facilities, and community facilities during construction. Therefore, impacts would be less than significant with mitigation.

Mitigation Measures: Mitigation Measure COM-1 (Construction Outreach Plan).

Impacts Remaining After Mitigation: Less than significant impact.

Maintenance and Storage Facility

Paramount MSF Site Option: Construction activities would be located entirely on-site and would not be located on and would not permanently disrupt parklands, recreation facilities, bike facilities, and community facility properties. Similar to the Build Alternatives, Mitigation Measure COM-1 (Construction Outreach Plan) would maintain access to parklands, recreational facilities, and community facilities during construction; and construction detour signage, and barriers and fencing are provided. Therefore, impacts would be less than significant with mitigation.

Bellflower MSF Site Option: Construction activities would be located entirely on-site. The Bellflower MSF site option site is city-owned, designated as Open Space by the City of Bellflower, and currently leased by the city for use as a recreational commercial business (Hollywood Sports Park and Bellflower BMX) and is not a public parkland or recreational facility. Similar to the Build Alternatives, Mitigation Measure COM-1 (Construction Outreach Plan) would maintain access to parklands, recreational facilities, and community facilities during construction; and construction detour signage, and barriers and fencing are provided. Therefore, impacts would be less than significant with mitigation.

Mitigation Measures: Mitigation Measure COM-1 (Construction Outreach Plan).

Impacts Remaining After Mitigation: Less than significant impact.

Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

No Project Alternative

No project-related construction activities would occur under the No Project Alternative. Therefore, no construction impacts would occur, and mitigation would not be required.

Build Alternatives, Design Options, and Maintenance and Storage Facility

Construction of the Build Alternatives, design options, and MSF site options would be temporary and would not generate permanent residences that would increase the use of existing neighborhood and regional parks or other recreational facilities resulting in accelerated physical deterioration of the facilities. Construction workers may utilize nearby parks or recreational facilities during lunchtime breaks, but such use would be temporary and nominal. Therefore, impacts would be less than significant, and mitigation would not be required.

Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

No Project Alternative

No project-related construction activities would occur under the No Project Alternative. The No Project Alternative would not include the development of recreational facilities or the construction or expansion of recreational facilities. Therefore, no construction-related impacts would occur, and mitigation would not be required.

Build Alternatives, Design Options, and Maintenance and Storage Facility

Construction of the Build Alternatives, design options, and MSF site options would be temporary and would not include the construction of recreational facilities or require the expansion of existing recreational facilities. Therefore, no impacts would occur, and mitigation would not be required.

4.19.3.17 Economic and Fiscal Impacts

Build Alternatives

Regional Economic Construction Impacts

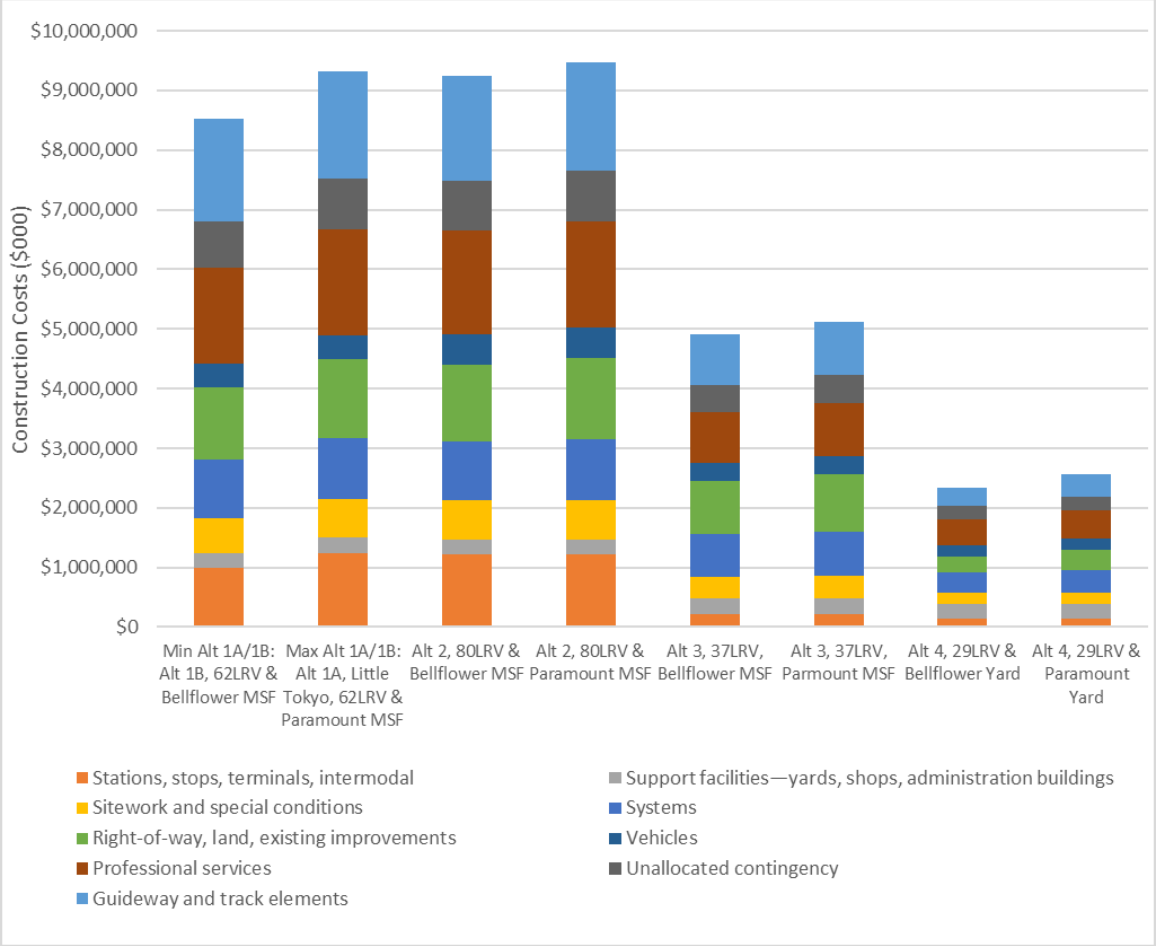
Construction of the Build Alternatives would represent a substantial capital investment in the regional economy that would increase employment, earnings, and economic output during the construction period. Figure 4.19-2 presents the construction costs for each of the Build Alternatives. A range of costs are presented for Alternative 1 to reflect the various design options and MSF site options under consideration. The minimum cost option includes Alternative 1 with Design Option 1 (MWD) and the Bellflower MSF site option. The maximum cost option is represented by Alternative 1 without Design Option 1 (MWD) and includes Design Option 2 (Add Little Tokyo Station) and the Paramount MSF site option. Construction cost estimates for Alternatives 1 and 2 range from $8.5 to $9.5 billion (2020 dollars). Alternative 3 is estimated to cost $4.9 to $5.1 billion, and Alternative 4 is estimated to cost $2.3 to $2.6 billion.

The degree to which construction of the Build Alternatives would provide an economic stimulus to the region depends on the source of project funding. Only those economic effects that are attributable to funds that are made available for this specific Project (new or federal money) would be considered as project-related. Funds from local sources, such as sales tax revenue from Measures M and R, are economic transfers that would have been spent in the regional economy with or without construction of the Project. Currently, federal, state, and local sources have been identified but may change before the Project is approved. The amount of new or federal funding sources are not known at this time, thus the economic impacts associated with construction spending are estimated using the total project cost. Additional information on financing options is provided in *Funding and Financing for the West Santa Ana Branch Project* (Appendix R).

In order to estimate the regional impacts associated with the Project, Regional Input-Output Modeling System II final-demand multipliers from the Bureau of Economic Analysis for the construction and professional services industry were applied to the amount of new funding that would be used for capital expenditures. Light rail vehicle costs are not included because vehicles would likely be purchased from outside the region. Right-of-way costs are also not included because the costs for real estate acquisition and relocation as well as "loss of business" compensation result in minimal economic output or employment impacts.

Multipliers for the greater Los Angeles area were used (Bureau of Economic Analysis 2017). The results of this analysis are summarized in Table 4.19.27.

Figure 4.19-2. Construction Cost Estimate by Alternative



Source: Metro 2021b
Note: Alternative 1A = Alternative 1 with northern terminus at LAUS Forecourt; Alternative 1B = Alternative 1 with Design Option 1 (MWD)

Table 4.19.27. Summary of Economic Impacts during Project Construction

	Impact Category	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	Total Capital (2025$), Billion[1,2,3]	$7.1 - $7.8	$7.6 - $7.8	$3.8 - $4.0	$1.9 - $2.1
Regional Impacts	Output ($Billion)	$14.3 - $15.7	$15.4 - $15.7	$7.7 - $8.0	$3.9 - $4.2
	Earnings ($Billion)	$4.4 - $4.9	$4.8 - $4.9	$2.4 - $2.5	$1.2 - $1.3
	Employment (jobs)[4]	81,700 - 89,800	88,100 – 89,800	44,000 - 45,700	22,400 - 24,000

Sources: BEA 2017; Metro 2021g
Notes: [1] Inflated to mid-point of construction (2025) using historical California Construction Cost Index.
[2] Assumed 90 percent of total construction costs occurred within LA County. It is assumed the greater LA economy would support the majority of the labor and materials needed for the Project.
[3] Excludes ROW and vehicle costs.
[4] Compared to the No Build Alternative; a job is defined as one job for one person for one year.
LA = Los Angeles

The construction spending effects associated with the Project would result in an estimated $3.9 to $15.7 billion in overall economic activity (year of expenditure dollars) for the Los Angeles-Long Beach-Anaheim Metropolitan Statistical Area over the six-year construction period, depending on the alternative constructed. The economic activity includes direct, indirect, and induced activity. Direct impacts include employment and income resulting from construction of the Project. Indirect effects would include indirect employment resulting from the purchase of goods and services by firms involved with construction, and induced employment resulting from construction workers spending their income within the region. It is estimated that construction-related spending would provide regional economic benefits by generating approximately $1.2 to $4.9 billion in additional wages and salaries for households and by creating 22,400 to nearly 90,000 person-year jobs for all industries in the region during the construction phase of the Project. A person-year job is defined as one job for one person for one year. If a job employs a single person for three years, it would equal three person-year jobs. Based on the predicted regional economic benefits, from both direct and indirect sources, along with the creation of person-year jobs, the potential impacts would be beneficial, and no adverse effects would occur.

It is possible Metro may pursue a public-private partnership to fund and operate the Project. Under the public-private partnership scenario, project impacts are expected to be similar; however, the construction and operation schedule would likely be accelerated.

Localized Project Impacts

For all project options, construction may result in lost revenues for businesses and result in short-term property value reductions. Those effects would be caused by construction-related activities, such as the following:

- Temporary or permanent elimination of parking
- Traffic congestion, changes in access and reduced visibility from the street (e.g., establishing a detour that requires customers to take longer or less familiar routes to a business, removing a left-hand turn lane into a shopping center, or eliminating the "street appeal" from a business that depends on drive-by or walk-up sales)
- Increased noise and dust, and perceived changes in visual quality (e.g., glare from nighttime construction lighting)

Retail and personal services businesses that depend on good access and an aesthetically pleasing experience for customers are most likely to experience short-term adverse impacts during construction. Implementation of Mitigation Measures COM-1 (Construction Outreach Plan) and TRA-23 (Loss of Parking [Construction]) would reduce these potential impacts, and no adverse effects would result.

Alternative 1: Los Angeles Union Station to Pioneer Station

Construction of Alternative 1 would include aerial, underground, and at-grade features that would have impacts on residences and businesses near proposed stations, construction staging areas, and the project alignment. Table 4.19.28 presents the proposed stations for Alternative 1 and the construction-related impacts anticipated at each station. While some individual businesses would likely experience adverse impacts associated with construction activities, implementation of Mitigation Measure COM-1 (Construction Outreach Plan) to each construction area would minimize the impacts to the overall economy. Therefore, no adverse construction-related effects would occur.

Table 4.19.28. Alternative 1: Construction-Related Economic Impacts at Station Locations

Station	Type of Proposed Station	Impacts
LAUS Forecourt	Underground	Construction impacts near station access points at LAUS. Construction would have minimal impacts on Metro operations. Impacts are anticipated to be minor.
Arts/Industrial District	Underground	Nearby businesses would likely experience delays and access issues because of construction activities, and would experience noise, dust, and vibration nuisances, which could negatively impact retail sales. Some businesses could experience an increase in sales as construction workers spend at local stores. Implementation of Mitigation Measure COM-1 (Construction Outreach Plan) would minimize the potential impacts.
Slauson/A Line	Aerial	Construction would occur parallel to the existing Metro A (Blue) Line. Construction-related traffic and temporary road closures would cause traffic delays on Slauson Ave, Long Beach Ave, Randolph St, and adjacent streets. Noise, dust, and vibration nuisances would also be present and may cause potential nuisance to customers. Some businesses could experience an increase in sales as construction workers spend at local stores. Implementation of Mitigation Measure COM-1 (Construction Outreach Plan) would minimize the potential impacts.
Pacific/ Randolph	At-grade	Construction would occur between the eastern and western lanes of Randolph St. Construction would increase delays and congestion along Randolph St and adjacent streets. Many retail businesses in this area rely on drive-by traffic for sales. Potential customers may avoid the construction area, which could affect sales at some businesses. Conversely, some businesses could experience an increase in sales as construction workers spend at local stores. Construction-related nuisances such as noise, dust, and vibration could also deter customers from visiting the area. Implementation of Mitigation Measure COM-1 (Construction Outreach Plan) would minimize the potential impacts.
Florence/Salt Lake	At-grade	Noise, dust, and vibration could have impacts on some nearby businesses and residences. Some businesses could experience an increase in sales as construction workers spend at local stores. Impacts to retail sales are expected to be negligible with implementation of Mitigation Measure COM-1 (Construction Outreach Plan).
Firestone	Aerial	Construction would result in property displacements for a proposed parking area. Construction would increase delays and congestion along Atlantic Ave, Firestone Blvd, and adjacent streets because roads may be temporarily closed or access may be temporarily altered. Noise, dust, and vibration nuisances could also affect businesses near the construction area. Most businesses near the construction area are commercial and industrial uses that do not rely as much on drive-by traffic to generate sales revenue.

Station	Type of Proposed Station	Impacts
Gardendale	At-grade	Construction would increase delays and congestion along Gardendale St and adjacent streets because roads may be temporarily closed or access may be temporarily altered. Converting Dakota Ave to one-way and installing signalized intersections may also cause delays. Noise, dust, and vibration nuisances could also have impacts on businesses near the construction area. Some businesses could experience an increase in sales as construction workers spend at local stores. Overall impacts to retail sales are expected to be negligible because businesses are commercial/industrial uses that do not rely heavily on drive-by traffic.
I-105/C Line	At-grade	Construction would result in property displacement for parking and rail alignment. Construction would likely cause delays and congestion along I-105 and adjacent streets because lanes may be temporarily closed or access may be temporarily altered. Noise, dust, and vibration nuisances could also have short-term impacts on property values of nearby residences.
Paramount/ Rosecrans	Aerial	Construction would increase truck traffic and may cause delays and congestion along Rosecrans Ave, Paramount Blvd, and adjacent streets. Construction-related nuisances (noise, dust, and vibration) could also have impacts on businesses near the construction area. Some businesses could experience an increase in sales as construction workers spend at local stores. Implementation of Mitigation Measure COM-1 (Construction Outreach Plan) would minimize potential impacts.
Bellflower	At-grade	Construction would result in property displacement for parking. Construction would increase delays and congestion along Bellflower Blvd, Pacific Ave, and adjacent streets because roads may be temporarily closed or access may be temporarily altered. Noise, dust, and vibration nuisances could also have impacts on residents and businesses near the construction area. Some businesses could experience an increase in sales as construction workers spend at local stores. Implementation of Mitigation Measure COM-1 (Construction Outreach Plan) would minimize potential construction-related impacts.
Pioneer	At-grade	Construction would result in property displacement for parking. Construction would increase delays and congestion along Pioneer Blvd, 187th St, and adjacent streets because roads may be temporarily closed or access may be temporarily altered. Noise, dust, and vibration nuisances could also have impacts on businesses and residences near the construction area. Some businesses could experience an increase in sales as construction workers spend at local stores. Implementation of Mitigation Measure COM-1 (Construction Outreach Plan) would minimize potential construction-related impacts.

Source: Prepared for Metro by Jacobs in 2020
Note: LAUS = Los Angeles Union Station

Alternative 2: 7th Street/Metro Center to Pioneer Station

Similar to Alternative 1, Alternative 2 shares portions of the Wilmington Branch, La Habra Branch, and San Pedro Subdivision Right-of-Way. The construction impacts described for Alternative 1 would be similar to those described for Alternative 2, except Alternative 2 would begin in the Downtown Transit Core instead of at LAUS. Businesses located along South Flower Street would experience construction-related impacts, such as temporary street closures, modified access, and construction-related nuisances (noise, dust, and vibration). Table 4.19.29 presents the station area construction impacts for Alternative 2 that differ from Alternative 1.

Table 4.19.29 Alternative 2 Station Construction Impacts

Station	Type of Proposed Station	Impacts
7th St/Metro Center	Underground	Construction would be focused at station access points. Businesses would experience delays in the movement of goods and services and access issues resulting from construction activities. Noise, dust, and vibration nuisances would also be present. Businesses located in the area that rely on walk-up customers would likely experience impacts to sales if customers avoid the area. Conversely, some businesses could experience an increase in sales as construction workers spend at local stores. Implementation of Mitigation Measure COM-1 (Construction Outreach Plan) would result in negligible construction-related impacts.
South Park/ Fashion District	Underground	Construction would be focused at station access points. Businesses located along 8th St near Los Angeles and Santee Streets would experience delays in the movement of goods and services and access issues resulting from construction activities. Noise, dust, and vibration nuisances would also be present. Businesses that rely on walk-up customers and outside retail/restaurant space would likely experience impacts to sales if customers avoid the area. Conversely, some businesses could experience an increase in sales as construction workers spend at local stores. Implementation of Mitigation Measure COM-1 (Construction Outreach Plan) would minimize construction-related impacts.

Source: Prepared for Metro by Jacobs in 2020

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

The localized economic project impacts for Alternative 3 are substantially similar to the economic impacts under Alternative 1, as described in Section 4.17.3.2 of the Economics and Fiscal Impacts Section. The conclusions and effect determinations provided for Alternative 1 would also be applicable to Alternative 3. Implementation of Mitigation Measure COM-1 (Construction Outreach Plan) would minimize construction-related impacts.

Alternative 4: I-105/C (Green) Line to Pioneer Station

The localized economic project impacts for Alternative 4 are substantially similar to the economic impacts under Alternative 1, as described in Section 4.17.3.2 of the Economics and Fiscal Impacts Section. The conclusions and effect determinations provided for Alternative 1 would also be applicable to Alternative 4. Implementation of Mitigation Measure COM-1 (Construction Outreach Plan) would minimize construction-related impacts.

Design Options—Alternative 1

Design Option 1: LAUS at MWD

Design Option 1 (MWD) would place an underground station at LAUS that would be located behind the MWD building and on the eastern side of LAUS. This design option would be located primarily underground and would not displace residential properties or community assets. Construction impacts would be similar to those described for Alternative 1, LAUS Forecourt.

Design Option 2: Add Little Tokyo Station

Under this design option, the underground Little Tokyo Station would be constructed. Construction would be focused at station access points. Businesses located in the area would experience delays in the movement of goods and services and access issues as a result of construction activities. Noise, dust, and vibration nuisances would also be present. Construction would likely increase delays and congestion along Alameda Street and adjacent streets because roads may be temporarily closed or access may be temporarily altered. Proximity impacts related to construction activities (noise, dust, and vibration) could also deter customers from visiting the area and would have impacts on residences (i.e., Savoy Community Association) near the proposed station. Some businesses would likely experience an increase in sales as construction workers spend at local stores. Implementation of Mitigation Measure COM-1 (Construction Outreach Plan) would result in negligible construction-related impacts.

Maintenance and Storage Facilities

Paramount MSF Site Option: The potential MSF site option in the City of Paramount is in an area with commercial and residential land uses. The proposed site is located on properties that are used for commercial purposes. Construction of the proposed MSF site option would displace the existing businesses, and the construction of the yard leads would create intermittent traffic delays along Rosecrans Avenue. Construction of the MSF would create noise, dust, and construction-related truck trips. Potential impacts to the property values of surrounding business and residences are expected to be negligible.

Displaced property owners in the City of Paramount would be eligible for compensation as provided by federal and state law for the acquired property based on the land's highest and best use. Displaced tenants may also be eligible for relocation assistance, depending on the terms of their lease agreements with the property owner. Barring any exclusions, the tenants would be eligible for relocation assistance in accordance with state and federal law.

Bellflower MSF Site Option: The potential MSF site option in the City of Bellflower is on a city-owned property currently leased to the Hollywood Sports Paintball & Airsoft Park and Bellflower BMX. Construction of the MSF would displace this business. Land uses surrounding the property include single-family and multifamily residential uses, mobile

home communities, and industrial and commercial uses. Construction of the MSF would create noise, dust, and construction-related truck trips. Impacts to the surrounding land uses are expected to be minimal.

Affected property owners in the City of Bellflower would be eligible for compensation as provided by federal and state law for the acquired property based on the land's highest and best use. Displaced tenants may also be eligible for relocation assistance depending on the terms of their lease agreements with the property owner. Barring any exclusions, the tenants would be eligible for relocation assistance in accordance with state and federal law.

Project Measures and Mitigation Measures

No project measures are required during construction. To address the potential impacts to businesses and residences as a result of construction of the Project, Mitigation Measures COM-1 (Construction Outreach Plan) and TRA-23 (Loss of Parking [Construction]) would be implemented, and impacts would be reduced to a less than significant level.

California Environmental Quality Act Determination

While the Appendix G Checklist in the CEQA Guidelines does not specify economic thresholds to be analyzed, the following questions are presented as relevant economic issues to be considered under CEQA Guidelines and to determine whether significant impacts would result from implementation of the No Project and Build Alternatives.

Result in substantial impacts to regional mobility and connectivity?

As discussed in Section 4.17.3 of the Economics and Fiscal Impacts Section, operation of the Project would have beneficial economic and fiscal impacts by improving transit accessibility and mobility, enhancing regional connectivity, and reducing travel time and costs in the region. These improvements would likely encourage greater economic activity and would benefit businesses and commuting employees. The Project would also result in an increase in employment and tax revenue, which would benefit local and regional economies. No impacts to regional mobility or connectivity are anticipated.

No Project Alternative

Under the No Project Alternative, access modifications and potential delays related to construction activities that could affect mobility and access would not occur. Therefore, construction-related impacts would not occur, and mitigation would not be required.

Build Alternatives

Construction activities for the Build Alternatives would likely result in access modifications, and potential transportation delays that would result in temporary significant impacts to the surrounding communities; therefore, the following mitigation measures would be implemented: COM-1 (Construction Outreach Plan) and TRA-23 (Loss of Parking [Construction]). Implementation of these two measures during construction activities would address the potential construction impacts to businesses and residences located near construction areas associated with the Build Alternatives and would minimize temporary effects. Therefore, construction activities of the Build Alternatives would result in impacts that would be less than significant.

Mitigation Measures: Mitigation Measure COM-1 (Construction Outreach Plan) and Mitigation Measure TRA-23 (Loss of Parking [Construction]).

Impacts Remaining After Mitigation: Less than significant.

Design Options—Alternative 1

Design Option 1: LAUS at MWD: The construction activities for Design Option 1 (MWD) would mostly be underground and outside the public right-of-way and would likely not result in access modifications and transportation delays that would result in temporary impacts to the surrounding communities. Therefore, no construction-related impacts for Design Option 1 (MWD) would occur beyond those identified for Alternative 1, and mitigation would not be required.

Design Option 2: Add Little Tokyo Station: The construction activities for Design Option 2 would likely increase delays and congestion along Alameda Street and adjacent streets because roads may be temporarily closed or access may be temporarily altered. Proximity impacts related to construction activities (noise, dust, and vibration) could also deter customers from visiting the area and could have short-term impacts on residences (i.e., Savoy Community Association) near the proposed station.

Mitigation Measures: Mitigation Measure COM-1 (Construction Outreach Plan) would result in negligible construction-related impacts.

Impacts Remaining After Mitigation: Less than significant for the overall Project, including Design Option 2.

Maintenance and Storage Facility

Paramount MSF Site Option: The construction activities for the Paramount MSF would create intermittent traffic delays along Rosecrans Avenue. Construction of the MSF would create noise, dust, and construction-related truck trips. Potential short-term impacts to property values of the surrounding land uses are expected to be negligible, and mitigation would not be required.

Bellflower MSF Site Option: The construction activities for the Bellflower MSF would create noise, dust, and construction-related truck trips. Impacts to the surrounding land uses are expected to be minimal, and mitigation would not be required.

Result in substantial construction-related impacts to businesses and residences that would result in physical deterioration of the existing environment?

No Project Alternative

Under the No Project Alternative, the Build Alternatives would not be constructed and no construction-related impacts would occur within the Affected Area for businesses and residences. Therefore, construction-related impacts would not occur, and no mitigation measures are required.

Build Alternatives

Construction of the Build Alternatives would have beneficial economic and fiscal impacts related to direct and indirect effects from construction spending. While the construction spending effects would be a positive for the overall regional economy, construction of the Build Alternatives would have potential impacts on businesses and residences near active construction areas. The Build Alternatives would require additional right-of-way for project alignments, construction staging areas, tunnel portals, and parking areas, resulting in

displacements of businesses and residences. Affected property owners and tenants would be eligible for compensation or relocation assistance in accordance with state and federal law. Property owners would be compensated based on the highest and best use of the property.

Construction activities would also cause temporary road closures, modified access, and construction-related nuisances (noise, dust, and vibration) that may deter potential customers from visiting the area while the Project is under construction. The temporary construction-related impacts would not lead to physical deterioration of the existing environment or "urban decay." Implementation of Mitigation Measures COM-1 (Construction Outreach Plan) and TRA-23 (Loss of Parking [Construction]) would minimize economic impacts.

Mitigation Measures: Mitigation Measures COM-1 (Construction Outreach Plan) and TRA-23 (Loss of Parking [Construction]).

Impacts Remaining After Mitigation: Less than significant.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Design Option 1 (MWD) would have similar impacts as Alternative 1. Design Option 2 would construct a new underground station in Little Tokyo and would also cause temporary road closures, modified access, and construction-related nuisances (noise, dust, and vibration) that may deter potential customers from visiting the area while the Project is under construction. The temporary construction-related impacts would not lead to physical deterioration of the existing environment or "urban decay."

Mitigation Measures: Mitigation Measures COM-1 (Construction Outreach Plan) and TRA-23 (Loss of Parking [Construction]).

Impacts Remaining After Mitigation: Less than significant impacts.

Maintenance and Storage Facilities

Paramount MFS Site Option: Construction of the proposed MSF would displace the existing businesses, and the construction of the yard leads would create intermittent traffic delays along Rosecrans Avenue. Construction of the MSF would create noise, dust, and construction-related truck trips. The temporary construction-related impacts would not lead to physical deterioration of the existing environment or "urban decay." Potential short-term impacts to the property values of the surrounding land uses are expected to be less than significant.

Bellflower MSF Site Option: The potential MSF in the City of Bellflower is on a city-owned property currently leased to the Hollywood Sports Paintball & Airsoft Park. Construction of the MSF would displace this business. Land uses surrounding the property include single-family and multifamily residential, mobile home communities, and industrial and commercial. Construction of the MSF would create noise, dust, and construction-related truck trips. Potential short-term impacts to the property values of surrounding land uses are expected to be minimal. The temporary construction-related impacts would not lead to physical deterioration of the existing environment or "urban decay."

Mitigation Measures: Mitigation Measures COM-1 (Construction Outreach Plan) and TRA-23 (Loss of Parking [Construction]) (Chapter 3, Section 3.7.3.8).

Impacts Remaining After Mitigation: Less than significant impact.

4.19.3.18 Safety and Security

Alternative 1: Los Angeles Union Station to Pioneer Station

Pedestrian, Bicyclist, and Motorist Safety

Temporary construction-related activities and conditions that could impact pedestrian, bicyclist, and motorist safety include the following:

- Construction activities along Alternative 1 related to excavation and construction of tunnels (north of I-10 only) and aerial structures, columns, stations, track, street improvements, and TPSS facilities
- Shallow excavation and construction activity along the centerline of streets along the Alternative 1 alignment to install columns, utility relocations, and track and power facilities
- Activities at the locations of staging and storage areas for construction equipment and materials
- Movement of construction equipment and materials between staging and storage areas and the areas of construction
- Transport of excavation debris along haul routes within communities
- Construction sites and staging areas where bystanders could suffer falls or other accidents

The construction effects of Alternative 1 would also include street and lane closures; traffic detours; designated truck ingress, egress, and haul routes; and potential sidewalk and bike lane closures, which could affect pedestrian, bicycle, and motorist safety, as well as Safe Routes to School.[12] For example, the construction of the Arts/Industrial District Station could have potential impacts to pedestrian and cyclist safety because this portion of the alignment is not within an existing rail ROW. However, most of the LRT corridor would be constructed along an existing rail ROW and, therefore, impacts to pedestrian and cyclist safety are expected to be minimal.

Other impacts to pedestrian and cyclist safety during construction of Alternative 1 may potentially occur along the Los Angeles River Bike Path, the Rio Hondo Bike Path, the San Gabriel River Bike Path, or the Bellflower-Paramount Bike Trail. Construction of Alternative 1 where the LRT tracks would cross over the existing pedestrian overcrossing at the intersection of Long Beach Avenue and East 53rd Street in an aerial configuration may result in temporary closures to the pedestrian bridge. The existing pedestrian overcrossing at Paramount High School over the PEROW would be removed as a result of construction of Alternative 1 and replaced with a pedestrian undercrossing. A temporary detour route would be designated to provide safe access between Paramount High School and Paramount Park during construction of Alternative 1.

While Alternative 1 would not permanently remove sidewalks or reduce existing sidewalk widths to less than applicable standard design criteria, there would be temporary impacts (closures, detours, and temporary reductions in width/length) to these facilities during

[12] Safe Routes to School is a program aimed at increasing the number of students who choose active (walking, bicycling, scooter, skateboarding) or shared (public transit, carpooling) modes of transportation to school by making it safer and more accessible to walk, bicycle, and/or take transit. (Source: https://www.metro.net/projects/srts/)

construction. Metro would identify safe detour routes that are also ADA-compliant during construction in coordination with the local jurisdictions. Advance notices, signage, barriers, and fencing would be used to direct pedestrian, bicyclist, and motorist travel, thereby reducing the potential for temporary safety impacts.

Per Metro's Construction Relations policy or equivalent, Metro and the construction contractor would develop a Construction Management Plan during final design and would implement the program during construction. This program would specify traffic-control measures, schedules of activities, public outreach, and durations of operations and would further minimize potential safety impacts.

Pedestrian, bicyclist, and motorist safety is substantially similar for aerial, at-grade, and below-grade construction. Lane closures and detour routes would be provided for the public to safely navigate around at-grade, aerial, and belowground construction activities, including access points, entrances, and portals to construction activity areas. Fencing and barriers would also be provided for all construction areas, again including construction entrances and portals, to prevent entry into an active construction site (staging, storage, mobilization, and active areas).

The implementation of the aforementioned safety measures during construction of Alternative 1 would minimize the potential hazards to pedestrians, bicyclists, and motorists. However, these same construction activities and the corresponding detour routes may interfere with or potentially block Safe Routes to School. Under NEPA, Alternative 1 would result in adverse effects related to safety and security prior to implementation of Mitigation Measures SAF-2 (School District Coordination) and elements of COM-1 (Construction Outreach Plan). After implementation of Mitigation Measure SAF-2 (School District Coordination) and elements of COM-1 (Construction Outreach Plan), Alternative 1 would not result in adverse effects related to safety and security.

Emergency Response Services

The potential impacts from temporary construction activities on the ability of emergency response services (medical, police, and fire) to provide timely responses would be influenced by activities such as street or lane closures, roadway detours, increased traffic near emergency facilities or along emergency response routes, and construction staging plans.

In response to these potential conditions, fire and emergency medical services personnel have the ability to use on-board live mapping software that alerts drivers of construction activities that may impede travel times to and from the scene of an emergency. Emergency responders are also able to see which roadways are experiencing delays due to construction, accidents, or other events, and would be able to take alternate routes accordingly. Metro and the construction contractor would coordinate with police, medical, and fire services to develop construction staging plans and detours to provide appropriate public safety and security for the Metro system, employees, and surrounding communities. Emergency response service is substantially similar for aerial, at-grade, and below-grade construction. Lane closures and detour routes would be identified for emergency response to safely navigate around at-grade construction (including construction entrances and portals to belowground areas, and columns for aerial construction). Under NEPA, Alternative 1 would not result in adverse effects related to safety and security and mitigation would not be required.

Security and Prevention of Crime

The potential for crime during construction is primarily related to construction equipment and staging areas that are not adequately secured. To reduce potential impacts, construction sites would include security features such as CCTV, on-site guards and security teams, and perimeter fencing to prohibit unauthorized individuals from accessing the area. Security and prevention of crime and terrorism is substantially similar for aerial, at-grade, and below-grade construction. All at-grade construction sites, including entrances, portals, staging and storage areas, and active construction areas, that interface with public ROW would provide the security features described above. However, crime from intentional acts against people and facilities cannot be completely eliminated. Under NEPA, Alternative 1 would result in adverse effects related to safety and security prior to implementation of Mitigation Measure SAF-3 (Construction Site Measures). After implementation of Mitigation Measure SAF-3 (Construction Site Measures), Alternative 1 would not result in adverse effects related to safety and security.

Alternative 2: 7th Street/Metro Center to Pioneer Station

Pedestrian, Bicyclist, and Motorist Safety

Alternative 2 is substantially similar to Alternative 1 in regard to pedestrian, bicycle, and motorist safety, potential construction-related impacts, and effect determinations. The conclusions and effect determinations provided for Alternative 1 would also be applicable to Alternative 2. Under NEPA, Alternative 2 would result in adverse effects related to safety and security prior to implementation of Mitigation Measures SAF-2 (School District Coordination) and elements of COM-1 (Construction Outreach Plan). After implementation of Mitigation Measure SAF-2 (School District Coordination) and elements of COM-1 (Construction Outreach Plan), Alternative 2 would not result in adverse effects related to safety and security.

Emergency Response Services

Alternative 2 is substantially similar to Alternative 1 in regard to emergency response services, potential impacts, and effect determinations. The conclusions and effect determinations provided for Alternative 1 would also be applicable to Alternative 2. Under NEPA, Alternative 2 would not result in adverse effects related to safety and security and mitigation would not be required.

Security and Prevention of Crime

Alternative 2 is substantially similar to Alternative 1 in regard to security and prevention of crime, potential impacts, and effect determinations. The conclusions and effect determinations provided for Alternative 1 would also be applicable to Alternative 2. Under NEPA, Alternative 2 would result in adverse effects related to safety and security prior to implementation of Mitigation Measure SAF-3 (Construction Site Measures). After implementation of Mitigation Measure SAF-3 (Construction Site Measures), Alternative 2 would not result in adverse effects related to safety and security.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Pedestrian, Bicyclist, and Motorist Safety

Alternative 3 would result in a shorter alignment and fewer stations than Alternative 1, but it is substantially similar to Alternative 1 in regard to pedestrian, bicycle, and motorist safety, potential construction-related impacts, and effect determinations. The conclusions and effect determinations provided for Alternative 1 would also be applicable to Alternative 3. Under NEPA, Alternative 3 would result in adverse effects related to safety and security prior to implementation of Mitigation Measures SAF-2 (School District Coordination) and elements of COM-1 (Construction Outreach Plan). After implementation of Mitigation Measure SAF-2 (School District Coordination) and elements of COM-1 (Construction Outreach Plan), Alternative 3 would not result in adverse effects related to safety and security.

Emergency Response Services

Alternative 3 would result in a shorter alignment and fewer stations than Alternative 1, but it is substantially similar to Alternative 1 in regard to emergency response services, potential impacts, and effect determinations. The conclusions and effect determinations provided for Alternative 1 would also be applicable to Alternative 3. Under NEPA, Alternative 3 would not result in adverse effects related to safety and security and mitigation would not be required.

Security and Prevention of Crime

Alternative 3 is substantially similar to Alternative 1 in regard to security and prevention of crime, potential impacts, and effect determinations. The conclusions and effect determinations provided for Alternative 1 would also be applicable to Alternative 3. Under NEPA, Alternative 3 would result in adverse effects related to safety and security prior to implementation of Mitigation Measure SAF-3 (Construction Site Measures). After implementation of Mitigation Measure SAF-3 (Construction Site Measures), Alternative 3 would not result in adverse effects related to safety and security.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Pedestrian, Bicyclist, and Motorist Safety

Alternative 4 would result in a shorter alignment and fewer stations than Alternative 1, but it is substantially similar to Alternative 1 in regard to pedestrian, bicycle, and motorist safety, potential construction-related impacts, and effect determinations. The conclusions and effect determinations provided for Alternative 1 would also be applicable to Alternative 4. Under NEPA, Alternative 4 would result in adverse effects related to safety and security prior to implementation of Mitigation Measures SAF-2 (School District Coordination) and elements of COM-1 (Construction Outreach Plan). After implementation of Mitigation Measure SAF-2 (School District Coordination) and elements of COM-1 (Construction Outreach Plan), Alternative 4 would not result in adverse effects related to safety and security.

Emergency Response Services

Alternative 4 is substantially similar to Alternative 1 in regard to emergency response services, potential impacts, and effect determinations. The conclusions and effect determinations provided for Alternative 1 would also be applicable to Alternative 4. Under NEPA, Alternative 4 would not result in adverse effects related to safety and security and mitigation would not be required.

Security and Prevention of Crime

Alternative 4 is substantially similar to Alternative 1 in regard to security and prevention of crime, potential impacts, and effect determinations. The conclusions and effect determinations provided for Alternative 1 would also be applicable to Alternative 4. Under NEPA, Alternative 4 would result in adverse effects related to safety and security prior to implementation of Mitigation Measure SAF-3 (Construction Site Measures). After implementation of Mitigation Measure SAF-3 (Construction Site Measures), Alternative 4 would not result in adverse effects related to safety and security.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station

Pedestrian, Bicyclist, and Motorist Safety: Design Options 1 and 2 would be specific to underground station locations, and the construction activities would be minimal in regard to construction-related impacts associated with pedestrian, bicycle, and motorist safety. The construction site for Design Options 1 and 2 would be closed to the public, and only construction-related work would occur at the selected site. Access to the sites would be strictly controlled by an on-site guard and security team, as well as barriers around the perimeter of the site to prohibit unauthorized access. Under NEPA, both design options would not result in adverse effects related to safety and security and mitigation would not be required.

Emergency Response Services: Design Options 1 and 2 would be specific to underground station locations, and the construction activities would be minimal in regard to construction-related impacts associated with emergency response service. The construction site for the design options would be closed to the public and only construction-related work would occur at the selected site. Access to the site would be strictly controlled by an on-site guard and security team, as well as barriers around the perimeter of the site to prohibit unauthorized access. Under NEPA, both design options would not result in adverse effects related to safety and security and mitigation would not be required.

Security and Prevention of Crime: Design Options 1 and 2 would be specific to underground station locations, and the construction activities would be minimal in regard to construction-related impacts associated with security and prevention of crime. The construction site for the design options would be closed to the public and only construction-related work would occur at the selected site. Access to the sites would be strictly controlled by an on-site guard and security team, as well as barriers around the perimeter of the site to prohibit unauthorized access. Under NEPA, both design options would not result in adverse effects related to safety and security and mitigation would not be required.

Maintenance and Storage Facilities

Paramount and Bellflower MSF Site Options

Pedestrian, Bicyclist, and Motorist Safety: The Paramount and Bellflower MSF site options would be closed to the public and only construction-related work would occur at the selected site. Access to the site options would be strictly controlled by an on-site guard and security team, as well as barriers around the perimeter of the maintenance yard to prohibit unauthorized access into the yard. Under NEPA, both MSF site options would not result in adverse effects related to safety and security and mitigation would not be required.

Emergency Response Services: The Paramount and Bellflower MSF site options would not interfere with emergency response services because construction activities would not interfere or block public ROW for emergency response vehicles. Under NEPA, both MSF site options would not result in adverse effects related to safety and security and mitigation would not be required.

Security and Prevention of Crime: The Paramount and Bellflower MSF site options would be closed to the public and only construction-related work would occur at the selected site. Access to the site options would be strictly controlled by an on-site guard and security team, as well as barriers around the perimeter of the maintenance yard to prohibit unauthorized access into the yard. Under NEPA, both MSF site options would not result in adverse effects related to safety and security and mitigation would not be required.

Project Measures and Mitigation Measures

Project Measures

The following project measures would be required during project construction and therefore are included as part of the Build Alternatives to avoid, minimize, or reduce the potential for impacts to safety and security:

SAF PM-9 Metro would coordinate with police and fire service providers prior to and during construction.

SAF PM-10 The Build Alternatives would be designed and constructed in compliance with the MRDC related to safety and security.

SAF PM-11 A Fire/Life Safety Committee for the Build Alternatives would be established per the MRDC and FTA requirements. The committee would be tasked with addressing fire protection requirements for the construction of the Build Alternatives.

Mitigation Measures

The following construction-related mitigation measures would be implemented to avoid, minimize, or reduce the potential for impacts to safety and security.

SAF-2 (School District Coordination) Metro would coordinate with and notify the school districts and individual school administrators to maintain or modify safe and convenient pedestrian, bicycle, and bus routes to schools as necessary during and after construction. This also includes the publication and distribution of alternative pedestrian and bicycle route maps.

SAF-3 (Construction Site Measures) Metro's contractor would provide safety and security measures at the construction sites and staging areas. Security measures would include barriers for excavations, installation of temporary barriers around perimeters, security patrols, and appropriate signage and lighting. The contractor would provide a safety and security plan to Metro for review prior to the start of construction.

California Environmental Quality Act Determination

Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

No Project Alternative

Project-related construction activities would not occur under the No Project Alternative. Therefore, no construction-related impacts for the No Project Alternative would occur, and mitigation would not be required.

Alternative 1 and Alternative 2

Construction-related impacts of Alternatives 1 and 2 on emergency response plans or emergency evacuation plans could be caused by temporary construction activities, such as the following:

- Street or lane closures
- Roadway detours
- Increased traffic near emergency facilities or along emergency response routes
- Construction staging plans

In response to these potential conditions, fire and emergency medical services personnel have the ability to use on-board live mapping software that alerts drivers of construction activities that may impede travel times to and from the scene of an emergency. Emergency responders are also able to see which roadways are experiencing delays due to construction, accidents, or other events, and would be able to take alternate routes accordingly. Metro and the contractor would coordinate with involved police, medical, and fire service providers during construction. Therefore, construction-related impacts would be less than significant, and mitigation would not be required.

Alternative 3 and Alternative 4

Alternatives 3 and 4 would result in shorter alignments and fewer stations than the other alternatives, resulting in a reduction of potential construction-related impacts to the number of emergency response plans or emergency evacuation plans. Alternatives 3 and 4 would still be substantially similar to Alternative 1 in regard to emergency response plans or emergency evacuation plans and potential impacts determinations described previously. Therefore, construction-related impacts for Alternatives 3 and 4 would be less than significant, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: The construction activities for both Design Options 1 and 2 would mostly be underground and outside the public-of-way and would not interfere with emergency response plans or emergency evacuation plans. Therefore, no construction-related impact for both Design Options 1 and 2 would occur, and mitigation would not be required.

Maintenance Storage Facility

Paramount and Bellflower MSF Site Options: The construction activities for both the Paramount and Bellflower MSF site options would occur outside of public ROW and would not interfere with emergency response plans or emergency evacuation plans. Therefore, no

construction-related impacts for both the Paramount and Bellflower MSF sites would occur, and mitigation would not be required.

Result in substantial adverse physical impacts associated with the provisions of new or physically altered government facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain response times or other performance objectives for fire and police protection services?

No Project Alternative

Project-related construction activities would not occur under the No Project Alternative. Therefore, no construction-related impacts for the No Project Alternative would occur, and mitigation would not be required.

Alternative 1 and Alternative 2

Under Alternatives 1 and 2, there would be no construction-related activities associated with new or physically altered government facilities to maintain response times or other performance objectives for fire and police protection services. Therefore, no construction-related impacts for Alternative 1 or 2 would occur, and mitigation would not be required.

Alternative 3 and Alternative 4

Alternatives 3 and 4 would result in shorter alignments and fewer stations than Alternatives 1 and 2, resulting in a reduction of potential construction-related impacts associated with new or physically altered government facilities to maintain response times or other performance objectives for fire and police protection services. Alternatives 3 and 4 would still be substantially similar to Alternative 1 in regard to the conclusions and construction-related impact determinations described previously. Therefore, no construction-related impacts for Alternatives 3 and 4 would occur, and mitigation would not be required.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: The construction activities for both Design Options 1 and 2 would not result in new or physically altered government facilities to maintain response times or other performance objectives for fire and police protection services. Therefore, no construction-related impact for both Design Options 1 and 2 would occur and mitigation would not be required.

Maintenance Storage Facility

Paramount and Bellflower MSF Site Options: The construction activities for both the Paramount and Bellflower MSF site options would not result in new or physically altered government facilities to maintain response times or other performance objectives for fire and police protection services. Therefore, no construction-related impacts for both the Paramount and Bellflower MSF sites would occur and mitigation would not be required.

Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

No Project Alternative

Project-related construction activities would not occur under the No Project Alternative. Therefore, no construction-related impacts for the No Project Alternative would occur, and no mitigation measures would be required.

Alternative 1: Los Angeles Union Station to Pioneer Station

Temporary construction-related activities and conditions that could impact pedestrian, bicyclist, and motorist safety include the following:

- Construction activities along Alternative 1 related to excavation and construction of tunnels (north of I-10 only) and aerial structures, columns, stations, track, street improvements, and TPSS facilities
- Shallow excavation and construction activity along the centerline of streets along Alternative 1 alignment to install columns, utility relocations, and track and power facilities
- Activities at the locations of staging and storage areas for construction equipment and materials
- Movement of construction equipment and materials between staging and storage areas and the areas of construction
- Transport of excavation debris along haul routes within communities
- Construction sites and staging areas where bystanders could suffer falls or other accidents

The construction effects of Alternative 1 would also include lane closures; traffic detours; designated truck ingress, egress, and haul routes; and potential sidewalk and bike lane closures, which could affect pedestrian, bicycle, and motorist safety, as well as Safe Routes to School. For example, the construction of the Arts/Industrial District Station could have potential impacts to pedestrian and cyclist safety as this portion of the alignment is not within an existing rail ROW. However, most of the LRT corridor would be constructed along an existing rail ROW and, therefore, impacts to pedestrian and cyclist safety are expected to be minimal.

Lanes closures and detour routes would be provided for the public to safely navigate around at-grade construction (including construction entrances and portals to belowground construction and column construction for aerial construction). Fencing and barriers would be provided for all at-grade construction, again including entrances and portals, to prevent entry into active construction sites for the safety of pedestrians, bicyclists, and motorists. Detailed discussion on construction, including methodologies, staging areas, and traffic detours, are provided in Section 3.7 of the Transportation Chapter.

Other impacts to pedestrian and cyclist safety during construction of Alternative 1 may potentially occur along the Los Angeles River Bike Path, the Rio Hondo Bike Path, the San Gabriel River Bike Path, or the Bellflower-Paramount Bike Trail. Construction of Alternative 1 where the LRT tracks would cross over the existing pedestrian overcrossing at the intersection of Long Beach Avenue and East 53rd Street in an aerial configuration may result in temporary closures to the pedestrian bridge. The existing pedestrian overcrossing at Paramount High School over the PEROW would be removed as a result of construction of Alternative 1 and replaced with a pedestrian undercrossing. A temporary detour route would be designated to provide safe access between Paramount High School and Paramount Park during construction of Alternative 1.

The implementation of the aforementioned safety measures during construction of Alternative 1 would minimize the potential hazards to pedestrians, bicyclists, and motorists. However, these same construction activities and the corresponding detour routes may

interfere with or potentially block Safe Routes to School. Therefore, the construction-related impacts to pedestrian and bicycle safety along Safe Routes to School would be potentially significant during construction. However, with implementation of Mitigation Measures SAF-2 (School District Coordination), as well as elements of COM-1 (Construction Outreach Plan), construction-related impacts would be reduced to a less than significant level. Specific elements of COM-1 (Construction Outreach Plan) related to safety and security for construction-related impacts include the following:

- Provide signage to direct pedestrians and motorists around construction areas; around sidewalk, street, and lane closures; to entrances of businesses and community assets; and to maintain the flow of traffic around the construction area.
- Provide appropriate signage, barriers and fencing for pedestrian and bicycle detour routes to prevent pedestrians and bicyclists from entering the construction zones.
- Provide the public with construction updates, alerts, and schedules through informational meetings, the project website, and other forms of communication such as, but not limited to, mailings and flyers to businesses and residences with 0.25-mile of the construction zone.

The potential for crime and protection of the public during construction is primarily related to construction equipment and staging areas that are not adequately secured. To reduce potential impacts, construction sites would include security features such as CCTV, on-site guards and security teams, and perimeter fencing to prohibit unauthorized individuals from accessing the area. However, crime from intentional acts against people and facilities cannot be completely eliminated. Therefore, Mitigation Measure SAF-3 (Construction Site Measures) would be implemented to reduce construction-related impacts to less than significant levels.

Mitigation Measures: Mitigation Measures COM-1 (Construction Outreach Plan), SAF-2 (School District Coordination), and SAF-3 (Construction Site Measures)

Impacts Remaining After Mitigation: Less than significant.

Alternative 2: 7th Street/Metro Center to Pioneer Station

Alternative 2 is substantially similar to Alternative 1 in regard to construction-related impacts associated with hazards due to geometric design or incompatible uses described previously. The conclusions and impact determinations provided for Alternative 1 would also be applicable to Alternative 2. Therefore, construction-related impacts would be significant under Alternative 2, and mitigation measures would be required to reduce impacts—specific to construction activities interfering with Safe Routes to School and potential for crime protection of the public at construction sites—to less than significant.

Mitigation Measures: Mitigation Measures COM-1 (Construction Outreach Plan), SAF-2 (School District Coordination), and SAF-3 (Construction Site Measures)

Impacts Remaining After Mitigation: Less than significant.

Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Although Alternative 3 would result in shorter alignments and fewer stations than Alternatives 1 and 2, Alternative 3 would be substantially similar to Alternative 1 in regard to construction-related impacts associated with hazards due to geometric design or incompatible uses

described previously. The conclusions and impact determinations provided for Alternative 1 would also be applicable to Alternative 3. Therefore, construction-related impacts would be significant under Alternative 3, and mitigation measures would be required to reduce impacts—specific to construction activities interfering with Safe Routes to School and potential for crime protection of the public at construction sites—to less than significant.

Mitigation Measures: Mitigation Measures COM-1 (Construction Outreach Plan), SAF-2 (School District Coordination), and SAF-3 (Construction Site Measures)

Impacts Remaining After Mitigation: Less than significant.

Alternative 4: I-105/C (Green) Line to Pioneer Station

Although Alternative 4 would result in shorter alignments and fewer stations than other alternatives, Alternative 4 would be substantially similar to Alternative 1 in regard to construction-related impacts associated with hazards due to geometric design or incompatible uses described previously. The conclusions and impact determinations provided for Alternative 1 would also be applicable to Alternative 4. Therefore, construction-related impacts would be significant under Alternative 4, and mitigation measures would be required to reduce impacts—specific to construction activities interfering with Safe Routes to School and potential for crime protection of the public at construction sites—to less than significant.

Mitigation Measures: Mitigation Measures COM-1 (Construction Outreach Plan), SAF-2 (School District Coordination), and SAF-3 (Construction Site Measures)

Impacts Remaining After Mitigation: Less than significant.

Design Options—Alternative 1

Design Option 1: LAUS at MWD and Design Option 2: Add Little Tokyo Station: Both Design Options 1 and 2 would be specific to underground station locations, and the construction activities would be minimal in regard to construction-related impacts associated with hazards due to geometric design or incompatible uses. The construction sites for both Design Options 1 and 2 would be closed to the public, and only construction-related work would occur at the selected site. Access to the sites would be strictly controlled by an on-site guard and security team, as well as barriers around the perimeter of the site to prohibit unauthorized access. Therefore, no impact would occur, and no mitigation measures are required.

Maintenance Storage Facility

Paramount MSF Site Option and Bellflower MSF Site Option: Both the Paramount and Bellflower MSF site options would be specific to selected sites, and the construction activities would be minimal in regard to construction-related impacts associated with hazards due to geometric design or incompatible uses. The MSF sites would be closed to the public and only construction-related work would occur at the selected site. Access to the MSF sites would be strictly controlled by an on-site guard and security team, as well as barriers around the perimeter of the maintenance yard to prohibit unauthorized access into the yard. Therefore, no impact would occur, and no mitigation measures are required.

4.20 Growth-Inducing

This section summarizes information and analysis presented in the *West Santa Ana Branch Transit Corridor Project Final Growth-Inducing Impact Analysis Report* (Metro 2021t), included as Appendix DD of this Draft EIS/EIR.

4.20.1 Regulatory Setting and Methodology

4.20.1.1 Regulatory Setting

The SCAG 2016-2040 RTP/SCS (SCAG 2016a) is a long-range visioning plan that balances future mobility and housing needs with economic, environmental, and public health goals. The RTP/SCS plans for new growth focused on transit and is supported by policies that support the development of high-quality transit areas, livable corridors, and neighborhood mobility areas, including the following:

- Identifying regional strategic areas for infill and investment
- Structuring the plan on centers development
- Developing "Complete Communities"
- Developing nodes on a corridor
- Planning for additional housing and jobs near transit
- Planning for changing demand in types of housing
- Continuing to protect stable, existing single-family areas
- Providing adequate access to open space and preservation of habitat
- Incorporating local input and feedback on future growth

4.20.1.2 Methodology

In parallel with Section 4.2, Communities and Neighborhoods, the Affected Area for growth-inducing impacts is defined as those areas located 0.25 mile on each side of the proposed alignments, parking facilities, and MSF sites, as well as 0.5-mile around the proposed station areas.

Historical population, housing, and employment data were obtained from the U.S. Department of Finance, the SCAG 2016-2040 RTP/SCS Demographics & Growth Forecast, and the U.S. Census Bureau. The Base Year 2017 and Build-out Year 2042 residential population in the Affected Area for growth-inducing impacts are derived from Transportation Analysis Zone-level estimates from the SCAG 2016-2040 RTP/SCS.[13, 14] Information about average household size was obtained from the U.S. Census Bureau's block group-level 2015 American Community Survey 5-Year Estimates released in 2016.

An analysis of growth-inducing impacts includes an evaluation of the Build Alternatives' reasonably anticipated growth in comparison to the population, households, and employment projections developed by a federally designated metropolitan planning organization. SCAG is the federally designated metropolitan planning organization for LA County. The SCAG regional growth forecast represents the most likely growth scenario for the Southern California region in

[13] The Base Year 2017 is determined by the year the Notice of Intent was publicly published in the *Federal Register* and the Notice of Preparation was published informing the public of the intent to prepare a combined Draft EIS/EIR for the Project and notifying interested agencies and parties of public scoping meetings. The Notice of Intent and Notice or Preparation were published in 2017. The Build-out Year 2042 is determined when the Project would be completed.

[14] The forecasted growth does not include a No Build Alternative scenario, but a portion of projected growth would still occur under the No Build Alternative.

the future and considers recent and past trends, key technical assumptions, regional growth policies, and local plans and policies. The SCAG regional growth forecast is used to identify trends in population, housing, and employment and to determine if the Project would result in direct or indirect unplanned growth beyond growth already anticipated for the SCAG region.

NEPA requires that the federal government use all practicable means to provide all Americans with safe, healthful, productive, and aesthetically and culturally pleasing surroundings (42 U.S.C. 4331(b)(2)). NEPA does not include specific guidance or direction with respect to evaluating alternatives and relative effects of inducing growth, so a significant impact under CEQA is treated as an adverse effect under NEPA.

Per the *CEQA Guidelines* Section 15126.2(e), a growth-inducing analysis evaluates whether a project could promote economic or population growth in the vicinity of the project or remove obstacles to population growth. The CEQA requirements are identified in Section 4.20.5.

4.20.2 Affected Environment/Existing Conditions

4.20.2.1 Historic Growth

Population and Housing

Table 4.20.1 shows the average growth trend from 2000 to 2017 for LA County and the cities within the Affected Area for growth-inducing impacts. Accordingly, historical housing growth has remained consistent with the population growth for each city. Population and housing growth in the City of Los Angeles was greater than at the county level, while the Cities of Huntington Park, Bell, and Cerritos experienced a reduction in population and housing, which can indicate a redistribution of growth located elsewhere. The population and housing growth for the City of Vernon during this period is skewed and does not reflect similar growth at the county level or in the surrounding cities. The city primarily consists of industrial uses with a few scattered commercial businesses and a small residential neighborhood located near the Vernon Avenue/Santa Fe Avenue intersection.

Table 4.20.1. Historic Population and Housing Growth

Jurisdiction	2000 – 2017 Change	
	Population	Housing
Los Angeles County	7.5%	7.6%
Los Angeles City	8.8%	8.7%
Vernon	129.7%	129.7%
Huntington Park	-3.1%	-3.3%
Bell	-1.0%	-1.1%
Cudahy	0.5%	0.5%
South Gate	1.7%	1.8%
Downey	5.9%	7.0%
Paramount	1.2%	1.2%
Bellflower	6.3%	6.2%
Artesia	2.4%	2.3%
Cerritos	-2.8%	-2.9%

Source: Metro 2021t

Employment

Table 4.20.2 shows the average employment trend from 2002 to 2015 for LA County and the cities within the Affected Area for growth-inducing impacts. Employment growth occurred in the Cities of Los Angeles, Bell, Cudahy, South Gate, Paramount, Bellflower, and Cerritos, while the Cities of Vernon, Huntington Park, Downey, and Artesia experienced a loss of job opportunities that may be attributable to the 2007-2009 economic recession. The loss of job opportunities may also reflect employment growth and the shift of jobs to surrounding or adjacent cities. The Southern California region continued to historically grow and attract job opportunities, although growth may be slower in some cities.

Table 4.20.2. 2002-2015 Employment Growth

Jurisdiction	2002 – 2015 Change[1]
Los Angeles County	15.0%
Los Angeles	19.2%
Vernon	-14.6%
Huntington Park	-5.1%
Bell	123.7%
Cudahy	31.4%
South Gate	23.2%
Downey	-5.6%
Paramount	9.1%
Bellflower	41.6%
Artesia	-10.3%
Cerritos	-8.1%

Source: Metro 2021t
Notes: [1] 2002 and 2015 employment data from U.S. Census Bureau Longitudinal Employer-Household Dynamics "OnTheMap" is the most available data to characterize historical employment growth.

Growth-inducing projects are typically located in more isolated or underdeveloped areas as these areas are more likely to require the additional infrastructure (e.g., housing, roads, utilities, schools) to support any growth that would accompany a project. Generally, these impacts are considered significant if a project would directly or indirectly lead to substantial population or employment growth in the project area that would exceed growth projections and planned capacities, or otherwise lead to a degradation of environmental quality such as increased noise or air quality impacts. Cities within the Affected Area for growth-inducing impacts are established communities that have generally experienced relative stability with population and housing growth and a mix of gains and losses in employment.

4.20.2.2 Forecasted Growth

Table 4.20.3 summarizes the SCAG-forecasted population, housing, and employment growth from 2012 to 2040 for LA County and the cities within the Affected Area for growth-inducing impacts. Accordingly, population, housing, and job opportunities are expected to grow in the cities in the Affected Area for growth-inducing impacts. Similar to the historical growth of the cities, the forecasted growth shows correlated growth between population and housing in addition to employment growth within the region. The City of Vernon would continue to be an exclusively industrial community with a few scattered commercial businesses and minimal residential uses. The high population and housing growth would be indicative of future growth in the small existing residential neighborhood. Forecasted growth would generally exceed the average historical growth, except for the City of Cudahy, which does not anticipate population, housing, or employment growth in the 2012 to 2040 forecasted growth compared to historical growth. The City of Bell expects reduced levels of employment growth. This may suggest little or no growth in the city for the forecasted growth.

Table 4.20.3. SCAG-Forecasted Growth in Cities within the Affected Area (2012-2040)

Jurisdiction	2000-2017 Growth			2012 – 2040 Forecasted Growth		
	Population	Housing	Employment	Population	Housing	Employment
Los Angeles County	7.5%	7.6%	15.0%	16.0%	16.9%	23.1%
Los Angeles	8.8%	8.7%	19.2%	19.9%	27.5%	27.9%
Vernon	129.7%	129.7%	-14.6%	200.0%	100.0%	6.7%
Huntington Park	-3.1%	-3.3%	-5.1%	15.2%	19.2%	19.2%
Bell	-1.0%	-1.1%	123.7%	3.4%	3.4%	10.5%
Cudahy	0.5%	0.5%	31.4%	0.0%	0.0%	0.0%
South Gate	1.7%	1.8%	23.2%	18.1%	22.0%	17.6%
Downey	5.9%	7.0%	-5.6%	8.2%	10.0%	39.1%
Paramount	1.2%	1.2%	9.1%	6.4%	6.5%	13.8%
Bellflower	6.3%	6.2%	41.6%	3.2%	3.0%	8.1%
Artesia	2.4%	2.3%	-10.3%	8.4%	11.1%	16.0%
Cerritos	-2.8%	-2.9%	-8.1%	3.2%	3.2%	10.9%

Source: Metro 2021t

4.20.3 Environmental Consequences/Environmental Impacts

4.20.3.1 No Build Alternative

Under the No Build Alternative, infrastructure, transit, and transportation projects would not directly foster growth within a region, but instead would accommodate forecasted growth in the local communities and in the greater region and could help direct growth geographically throughout the SCAG region to areas more heavily served by transit. The No Build Alterative would include infrastructure and transportation-related projects that would accommodate the existing and future transportation needs of the area. In addition, these types of projects would be located within a densely developed region and would not extend into previously undeveloped areas that could induce growth or remove a barrier for growth.

The No Build Alternative could limit transit-related opportunities to intensify land uses at potential transit station areas and along the corridor; limit jurisdictions from developing compact communities around a public transit system; limit alternatives to automobile travel; and limit transit choices for residents, visitors, and employees (see *the West Santa Ana Branch Transit Corridor Project Final Land Use Impact Analysis Report* [Metro 2021a, Appendix E]). However, the No Build Alternative would still implement the other identified transit and transportation improvements in the region to accommodate forecasted growth and development consistent with local plans on a project-specific basis and as forecasted in the SCAG 2016-2040 RTP/SCS. In addition, the No Build Alternative would not conflict with plans to accommodate population growth with future planning of TODs surrounding future proposed transit station areas as related to other transit projects.

As such, projects included in the No Build Alternative are identified and forecasted for in the SCAG 2016-2040 RTP/SCS (SCAG 2016a), Metro's 2009 LRTP (Metro 2009a), and Measure M, and would provide infrastructure and transportation-related projects to accommodate and serve forecasted growth in the region and would not induce new growth. Thus, the No Build Alternative would not result in adverse growth-inducing effects.

4.20.3.2 Alternative 1: Los Angeles Union Station to Pioneer Station

Table 4.20.4 summarizes the SCAG-derived forecasted population, housing, and employment growth from 2017 to build-out year 2042 for the growth-inducing Affected Area (within 0.25 miles on both sides of the alignment) for the Build Alternatives. The forecasted growth considers projects identified in the SCAG 2016-2040 RTP/SCS, Metro's 2009 LRTP, and Measure M, including this Project. Accordingly, population, housing, and employment growth is anticipated along the project alignment with population and housing growth being closely related.

Table 4.20.4. Forecasted Growth within the Affected Area of the Build Alternatives (2017-2042)

Build Alternative	2017-2042 Percent Change (%)		
	Population	Housing	Employment
Los Angeles County	12.0	12.0	17.0
Alternative 1	59.9	66.4	32.4
Alternative 2	74.9	84.5	24.7
Alternative 3	59.2	62.0	22.4
Alternative 4	62.2	65.9	19.9

Source: Metro 2021t
Note: Affected Area = 0.25 mile on both sides of the alignment
A portion of the forecasted growth would also occur under the No Build Alternative.

Alternative 1 has a forecasted population, housing, and employment growth of 59.9 percent, 66.4 percent, and 32.4 percent, respectively.

Table 4.20.5 identifies the average forecasted population, housing, and employment growth within 0.5-mile around the proposed station areas from 2017 to build-out year 2042.

Table 4.20.5. Forecasted Growth within 0.5-mile of Station Areas

	Build Alternative/Station Areas	2017-2042 Percent Change (%)		
		Population	Housing	Employment
	Los Angeles County	12.0	12.0	17.0
Alternative 1	LAUS (Forecourt)	68.3	53.1	16.8
	Arts/Industrial District Station	232.0	84.8	74.1
Alternative 2	7th Street/Metro Center Station	107.7	91.1	8.3
	South Park/Fashion District Station	128.6	96.0	27.1
	Arts/Industrial District Station	226.2	83.9	80.1
Alternatives 1, 2, and 3	Slauson/A Line Station	52.1	56.7	54.5
	Pacific/Randolph Station	19.1	21.4	16.8
	Florence/Salt Lake Station	19.9	22.4	22.4
	Firestone Station	72.2	74.8	10.7
	Gardendale Station	78.9	93.3	10.9
Alternatives 1, 2, 3, and 4	I-105/C Line Station	25.4	37.1	33.9
	Paramount/Rosecrans Station	21.6	33.7	41.1
	Bellflower Station	40.6	38.6	17.5
	Pioneer Station	109.2	106.0	22.1
Design Options	LAUS (MWD)	68.3	53.1	16.8
	Little Tokyo Station (Optional)	189.8	114.7	35.1

Source: Metro 2021t
Notes: LAUS = Los Angeles Union Station; MWD = Metropolitan Water District
A portion of the forecasted growth would also occur under the No Build Alternative.

The highest population growth is projected in the Arts/Industrial District Station area (232.0 percent growth) and the lowest population growth is projected in the Pacific/Randolph Station area (19.1 percent). In correlation with the projected population growth, the Pioneer Station area is projected to have the highest housing growth (106.0 percent). The lowest household growth is projected in the Pacific/Randolph Station area (21.4 percent). Employment is projected to increase in the Affected Area for growth-inducing impacts consistent with the presence of industrial and commercial uses. Employment growth would increase the most in the Arts/Industrial District Station area (74.1 percent). The smallest increase in employment growth is projected in the LAUS Forecourt Station area (16.8 percent), which is indicative of the already job-saturated area (see *West Santa Ana Branch Transit Corridor Project Final Communities and Neighborhoods Impact Analysis Report* [Metro 2021n, Appendix G]).

The Project is a transit infrastructure project proposed to serve forecasted population, housing, and employment growth within the project corridor and SCAG region and accommodate the existing and future transportation needs of the area. Alternative 1 would not generate direct growth within the project corridor and station areas, but instead would accommodate the directed growth from throughout the SCAG region to the project corridor

and public transit options. The forecasted growth is identified in the SCAG 2016-2040 RTP/SCS and Metro's 2009 LRTP and is not new unplanned growth. In addition, Alternative 1 would be located within a densely developed region, both urban and suburban in character, and would not extend into previously undeveloped areas.

The forecasted growth for Alternative 1 also indicates potential changes to the existing land uses surrounding the station areas as jurisdictions engage in future planning opportunities to intensify existing land uses. Potential indirect effects as a result of Alternative 1 would include the future planning and development of TODs surrounding the proposed station areas. Metro prepared the *West Santa Ana Branch Transit-Oriented Development Strategic Implementation Plan* (Metro 2019d) to be used by local jurisdictions as a resource to develop new corridor-wide governance strategies and implement plans, policies, and economic development strategies to transform station areas into equitable, sustainable, and safe areas for development in the project corridor. As a toolkit for future planning, the plan does not contain specific plans for TOD development within the project corridor. Regional and local policies also encourage TOD planning and development, including the intensification of land uses at potential station areas and along the corridor; development of compact communities around a public transit system; alternatives to automobile travel; and planning for residents, visitors, and employees within the vicinity of the areas (see the Land Use Impact Analysis Report (Appendix E)). Such future planned densification of land uses is also incorporated into the forecasted SCAG growth data and is not considered unplanned growth. Alternative 1 would be a catalyst to the TOD planning and development and would not generate new unplanned growth, but instead would redistribute forecasted growth of a jurisdiction.

Alternative 1 would not result in unplanned growth beyond growth already anticipated in the regional plans and projections for the SCAG region, or in existing or future local land use and community plans. Rather, Alternative 1 would direct planned growth to transit areas. Under NEPA, Alternative 1 would provide benefits to jurisdictions in the project corridor and in the SCAG region and would not result in adverse effects related to unplanned growth.

4.20.3.3 Alternative 2: 7th Street/Metro Center to Pioneer Station

Direct and indirect growth-inducing impacts for Alternative 2 would be similar to Alternative 1. As shown in Table 4.20.4, Alternative 2 has a forecasted population, housing, and employment growth of 74.9 percent, 84.5 percent, and 24.7 percent, respectively, from 2017 to 2042 identified in the SCAG 2016-2040 RTP/SCS and Metro's 2009 LRTP. As previously discussed in Section 4.20.3.2 and summarized in Table 4.20.5, the Arts/Industrial District Station area (226.2 percent growth) and Pacific/Randolph Station area (19.1 percent) are projected to have the highest and lowest population growth, respectively. The Pioneer Station area (106.0 percent) and Pacific/Randolph Station area (21.4 percent) are projected to have the highest and lowest housing growth, respectively. The Arts/Industrial District Station area (80.1 percent) and 7th Street/Metro Center Station area (8.3 percent) would have the highest and lowest increase in employment growth, respectively. The low increase in employment growth is indicative of the already job-saturated downtown Los Angeles area.

Alternative 2 would not generate direct growth within the project corridor and station areas, but instead would accommodate the directed growth from throughout the SCAG region to the project corridor and public transit options. Alternative 2 would not induce growth, either directly or indirectly, beyond growth already anticipated in the regional plans and projections for the SCAG region, or in local land use and community plans. In addition, Alternative 2

would direct planned growth to transit areas and would provide benefits to jurisdictions in the project corridor and in the SCAG region. Under NEPA, Alternative 2 would not result in adverse effects related to unplanned growth.

4.20.3.4 Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Direct and indirect growth-inducing impacts for Alternative 3 would be similar to Alternatives 1 and 2. As shown in Table 4.20.4, Alternative 3 has a forecasted population, housing, and employment growth of 59.2 percent, 62.0 percent, and 22.4 percent, respectively, from 2017 to 2042 identified in the SCAG 2016-2040 RTP/SCS and Metro's 2009 LRTP. As summarized in Table 4.20.5, the Pioneer Station area (109.2 percent growth) and Pacific/Randolph Station area (19.1 percent) are projected to have the highest and lowest population growth, respectively. The Pioneer Station area (106.0 percent) and Pacific/Randolph Station area (21.4 percent) are projected to have the highest and lowest housing growth, respectively. The Slauson/A Line Station area (54.5 percent) and Firestone Station area (8.3 percent) would have the highest and lowest increase in employment growth, respectively.

Alternative 3 would not generate direct growth within the project corridor and station areas, but instead would accommodate the directed growth from throughout the SCAG region to the project corridor and public transit options. Alternative 3 would not induce growth, either directly or indirectly, beyond growth already anticipated in the regional plans and projections for the SCAG region, or in local land use and community plans. In addition, Alternative 3 would direct planned growth to transit areas and would provide benefits to jurisdictions in the project corridor and in the SCAG region. Under NEPA, Alternative 3 would not result in adverse effects related to unplanned growth.

4.20.3.5 Alternative 4: I-105/C (Green) Line to Pioneer Station

Direct and indirect growth-inducing impacts for Alternative 4 would be similar to Alternatives 1, 2, and 3. As shown in Table 4.20.4, Alternative 4 has a forecasted population, housing, and employment growth of 62.2 percent, 65.9 percent, and 19.9 percent, respectively, from 2017 to 2042 identified in the SCAG 2016-2040 RTP/SCS and Metro's 2009 LRTP. As summarized in Table 4.20.5, the Pioneer Station area (109.2 percent) and Paramount/Rosecrans Station area (21.6 percent) are projected to have the highest and lowest population growth, respectively. The Pioneer Station area (106.0 percent) and Paramount/Rosecrans Station area (33.7 percent) are projected to have the highest and lowest housing growth, respectively. The Paramount/Rosecrans area (41.4 percent) and Bellflower Station area (17.5 percent) would have the highest and lowest increase in employment growth, respectively.

Alternative 4 would not generate direct growth within the project corridor and station areas, but instead would accommodate the directed growth from throughout the SCAG region to the project corridor and public transit options. Alternative 4 would not induce growth, either directly or indirectly, beyond growth already anticipated in the regional plans and projections for the SCAG region, or in local land use and community plans. In addition, Alternative 4 would direct planned growth to transit areas and would provide benefits to jurisdictions in the project corridor and in the SCAG region. Under NEPA, Alternative 4 would not result in adverse effects related to unplanned growth.

4.20.3.6 Design Options—Alternative 1

Design Option 1: LAUS at MWD: As summarized in Table 4.20.5, Design Option 1 (MWD) would not change the forecasted growth for population, housing, and employment (68.3 percent, 53.1 percent, and 16.8 percent, respectively) compared to the LAUS Forecourt. Design Option 1 (MWD) would serve and accommodate the forecasted growth for the project corridor, and would not result in unplanned growth beyond what was identified and forecasted for in the SCAG 2016-2040 RTP/SCS and Metro's 2009 LRTP. Under NEPA, Design Option 1 (MWD) would not result in adverse effects related to unplanned growth.

Design Option 2: Add Little Tokyo Station: As summarized in Table 4.20.5, the Little Tokyo Station has a forecasted population, housing, and employment growth of 189.8 percent, 114.7 percent, and 35.1 percent, respectively. Design Option 2 would serve and accommodate the forecasted growth for the project corridor and in the Little Tokyo community. Design Option 2 would not result in unplanned growth beyond what was identified and forecasted for in the SCAG 2016-2040 RTP/SCS and Metro's 2009 LRTP. Under NEPA, Design Option 2 would not result in adverse effects related to unplanned growth.

4.20.3.7 Maintenance Storage Facility

Paramount and Bellflower MSF Site Options: The Paramount and Bellflower MSF site options would be an integral part of the Project's infrastructure and would support the maintenance, operations, and storage activities for the proposed LRT system. The MSF site options would improve the regional transportation system and support SCAG mobility goals by providing a reliable alternative mode of transportation to the region. The MSF site options are not anticipated to generate population and housing growth, although nominal employment growth could occur. However, employment opportunities would primarily consist of existing Metro employees that may be transferred from other existing MSFs and live within the region. Potential employment would not exceed forecasted projections for the SCAG region or in local land use and community plans. Under NEPA, the MSF site options would not result in adverse effects related to unplanned growth.

4.20.4 Mitigation Measures

No mitigation measures are required.

4.20.5 California Environmental Quality Act Determination

To satisfy CEQA requirements, growth-inducing impacts are considered significant if the project has the potential to induce substantial economic or population growth in the project area that would exceed growth projections and planned capacities, or otherwise lead to a degradation of environmental quality such as increased noise or air quality impacts, either directly (for example, by proposing new homes and businesses), or indirectly (for example, through extension of roads or other infrastructure).

CEQA requires that the analysis identify if the "proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment." *CEQA Guidelines* Section 15126.2(e) also requires the analysis to identify if the project "would remove obstructions to population growth…[or] encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively."

4.20.5.1 No Project Alternative

The No Project Alternative could limit transit-related opportunities to intensify land uses at potential transit station areas and along the corridor; limit jurisdictions from developing compact communities around a public transit system; limit alternatives to automobile travel; and limit transit choices for residents, visitors, and employees (see Land Use Impact Analysis Report (Appendix E)). However, other transit and transportation improvements in the region may be implemented and completed, which would accommodate forecasted growth and development consistent with local plans, on a project-specific basis, as forecasted in the SCAG 2016-2040 RTP/SCS, Metro's 2009 LRTP, and Measure M. The No Project Alternative would not anticipate indirect economic growth as the Build Alternatives would not be implemented. Thus, the No Project Alternative would not result in significant growth-inducing impacts, and mitigation would not be required.

4.20.5.2 Alternative 1: Los Angeles Union Station to Pioneer Station

The Project is a transit infrastructure project proposed to serve forecasted population, housing, and employment growth within the project corridor and SCAG region and accommodate the existing and future transportation needs of the area identified in the SCAG 2016-2040 RTP/SCS and Metro's 2009 LRTP and is not new unplanned growth.

As shown in Table 4.20.4, Alternative 1 has a forecasted population, housing, and employment growth of 59.9 percent, 66.4 percent, and 32.4 percent, respectively. Alternative 1 would not generate direct growth within the project corridor and station areas, but instead would accommodate the directed growth from throughout the SCAG region to the project corridor and public transit options. In addition, Alternative 1 would be located within a densely developed region, both urban and suburban in character, and would not extend into previously undeveloped areas. Table 4.20.5 summarizes the projected population, housing, and employment growth within 0.5 mile around the proposed station areas. The low increase in employment growth is indicative of the already job-saturated downtown Los Angeles area.

Potential indirect effects as a result of Alternative 1 would include the future planning and development of TODs surrounding the proposed station areas. Metro prepared the *West Santa Ana Branch Transit-Oriented Development Strategic Implementation Plan* (Metro 2019d) to be used by local jurisdictions as a resource to develop new corridor-wide governance strategies and implement plans, policies, and economic development strategies to transform station areas into equitable, sustainable, and safe areas for development in the project corridor. As a toolkit for future planning, the plan does not contain specific plans for TOD development within the project corridor. In addition, several jurisdictions in the corridor have completed or are in the process of developing their own individual station area plans. Such future planned densification of land uses is also incorporated into the forecasted SCAG growth data and is not considered unplanned growth. TOD planning would not generate new unplanned growth, but instead would redistribute forecasted growth of a jurisdiction.

As such, Alternative 1 would not induce direct or indirect growth beyond that already anticipated in the regional plans, projections for the SCAG region, or in local land use and community plans. Alternative 1 would direct planned growth to transit areas and would provide benefits to jurisdictions in the project corridor and in the SCAG region. Therefore, Alternative 1 would not result in significant growth-inducing impacts, and mitigation would not be required.

4.20.5.3 Alternative 2: 7th Street/Metro Center to Pioneer Station

Direct and indirect growth-inducing impacts for Alternative 2 would be similar to Alternative 1. As shown in Table 4.20.4, Alternative 2 has a forecasted population, housing, and employment growth of 74.9 percent, 84.5 percent, and 24.7 percent, respectively. Table 4.20.5 summarizes the projected population, housing, and employment growth within 0.5 mile around the proposed station areas. Alternative 2 would not induce direct or indirect growth beyond that already anticipated in the regional plans, projections for the SCAG region, or in local land use and community plans. Alternative 2 would direct planned growth to transit areas and would benefit jurisdictions in the project corridor and in the SCAG region. Therefore, Alternative 2 would not result in significant growth-inducing impacts, and mitigation would not be required.

4.20.5.4 Alternative 3: Slauson/A (Blue) Line to Pioneer Station

Direct and indirect growth-inducing impacts for Alternative 3 would be similar to Alternatives 1 and 2. As shown in Table 4.20.4, Alternative 3 has a forecasted population, housing, and employment growth of 59.2 percent, 62.0 percent, and 22.4 percent, respectively. Table 4.20.5 summarizes the projected population, housing, and employment growth within 0.5 mile around the proposed station areas. Alternative 3 would not induce direct or indirect growth beyond that already anticipated in the regional plans, projections for the SCAG region, or in local land use and community plans. Alternative 3 would direct planned growth to transit areas and would benefit jurisdictions in the project corridor and in the SCAG region. Therefore, Alternative 3 would not result in significant growth-inducing impacts, and mitigation would not be required.

4.20.5.5 Alternative 4: I-105/C (Green) Line to Pioneer Station

Direct and indirect growth-inducing impacts for Alternative 4 would be similar to Alternatives 1, 2, and 3. As shown in Table 4.20.4, Alternative 4 has a forecasted population, housing, and employment growth of 62.2 percent, 65.9 percent, and 19.9 percent, respectively. Table 4.20.5 summarizes the projected population, housing, and employment growth within 0.5 mile around the proposed station areas. Alternative 4 would not induce direct or indirect growth beyond that already anticipated in the regional plans, projections for the SCAG region, or in local land use and community plans. Alternative 4 would direct planned growth to transit areas and would benefit jurisdictions in the project corridor and in the SCAG region. Therefore, Alternative 4 would not result in significant growth-inducing impacts, and mitigation would not be required.

4.20.5.6 Design Options—Alternative 1

Design Option 1: LAUS at MWD: As summarized in Table 4.20.5, Design Option 1 (MWD) would have the same forecasted growth for population, housing, and employment (68.3 percent, 53.1 percent, and 16.8 percent, respectively) as the LAUS Forecourt. Design Option 1 (MWD) would continue serve and accommodate forecasted growth for the project corridor, and would not result in unplanned growth beyond what was identified and forecasted for in the SCAG 2016-2040 RTP/SCS and Metro's 2009 LRTP. Design Option 1 (MWD) would not result in significant growth-inducing impacts, and mitigation would not be required.

Design Option 2: Add Little Tokyo Station: As summarized in Table 4.20.5, the Little Tokyo Station has a forecasted population, housing, and employment growth of 189.8 percent, 114.7 percent, and 35.1 percent, respectively. Design Option 2 would serve and accommodate the forecasted growth for the project corridor and in the Little Tokyo community. Design Option

2 would not result in unplanned growth beyond what was identified and forecasted for in the SCAG 2016-2040 RTP/SCS and Metro's 2009 LRTP. Design Option 2 would not result in significant growth-inducing impacts, and mitigation would not be required.

4.20.5.7 Maintenance Storage Facility

Paramount and Bellflower MSF Site Options: The Paramount and Bellflower MSF site options would be an integral part of the Project's infrastructure and would support the maintenance, operations, and storage activities for the proposed LRT system. The MSF site options would improve the regional transportation system and support SCAG mobility goals by providing a reliable alternative mode of transportation to the region. The MSF site options are not anticipated to generate population and housing growth, although nominal employment growth could occur. However, employment opportunities would primarily consist of existing Metro employees that may be transferred from other existing MSFs and live within the region. Potential employment would not exceed forecasted projections for the SCAG region or in local land use and community plans. The MSF site options would not result in significant growth-inducing impacts, and mitigation would not be required.

4.21 Cumulative Impacts

This section summarizes the potential cumulative impacts that could result from the No Build and Build Alternatives, including design options and MSF site options, in combination with identified past, present, and reasonably foreseeable future projects. Information in this section is based on the *West Santa Ana Branch Transit Corridor Project Final Cumulative Impact Analysis Report* (Metro 2021aa), included as Appendix EE of this Draft EIS/EIR). Cumulative analysis regarding transportation impacts is provided in Chapter 3 Transportation, of this Draft EIS/EIR.

4.21.1 Regulatory Setting and Methodology

4.21.1.1 Regulatory Setting

CEQ (40 CFR) Sections 1500 – 1508. The CEQ regulations (40 CFR Sections 1500 – 1508) define effects as "changes to the human environment from the proposed action or alternatives that are reasonably foreseeable…and may include effects that are later in time or farther removed in distance from the proposed action or alternatives." The discussion included in this section addresses the potential for the Build Alternatives to result in effects that are later in time or farther removed in distance.

CEQA (Cal. PRC, Section 21000 et seq.) and *CEQA Guidelines* (14 CCR, Section 15000 et seq.). CEQA requires an EIR to evaluate cumulative impacts of a project when the project's incremental effect is cumulatively considerable. If the project's incremental effect is not cumulatively considerable, the effect need not be considered as significant, but the basis for concluding that the incremental effect is not cumulatively considerable must be briefly described. "'Cumulatively considerable' means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" (*CEQA Guidelines*, Section 15064(h)(1)).

4.21.1.2 Methodology

To satisfy NEPA requirements, the degree of the effects of the action are analyzed to assess the likelihood of effects that are later in time or farther removed in distance.

To satisfy CEQA requirements, this chapter follows the methodology prescribed by *CEQA Guidelines* Section 15130 and 15130(b) that states that the cumulative impacts can be based on a "summary of projections contained in an adopted local, regional, or statewide plan, or related planning document that describes or evaluates conditions contributing to the cumulative effect."

4.21.2 Affected Environment/Existing Conditions

4.21.2.1 Affected Area

For purposes of the cumulative analysis, the geographic area that could be affected by the Build Alternatives in combination with projected growth varies depending on the environmental resource. The Affected Area for each environmental topic is discussed in Chapter 3, Transportation, and throughout Chapter 4, Affected Environment and Environmental Consequences, of this Draft EIS/EIR. For example, cumulative visual quality and aesthetics or noise impacts are more localized; whereas, cumulative air quality and climate change impacts occur on a broader regional or global scale. Table 4.0.1 in the introduction to Chapter 4 describes the geographic scope of the cumulative impact analysis for each environmental resource.

4.21.2.2 Forecasted Growth

As of the time the NOP/NOI were issued, the SCAG 2016-2040 RTP/SCS (SCAG 2016a) was the adopted population, housing, and employment forecast for Southern California inclusive of the project study area. This forecast envisions change associated with the development of high-quality transit areas, livable corridors, and neighborhood mobility areas. The forecast has been adopted in close coordination with cities and jurisdictions throughout the SCAG region. This forecast process fundamentally assumes proposed land use changes at the local level.

Changes within jurisdictions within the project study area are expected to take the form of new development, expansion of existing development, redevelopment/demolition, and intensification of land use densities. Over the forecast period of 28 years (2012 to 2040), demolition, modification of existing buildings and infrastructure, and new residential and non-residential construction is expected. In most of the corridor jurisdictions, these changes have been anticipated and are incorporated into local planning processes, including the initiation and/or adoption of specific plans or transit-oriented communities anticipating the Project among other changes. As such, these changes would likely result in overlapping construction and associated activities in areas near or adjacent to the proposed project, particularly station vicinities. Table 4.21.1 shows the projected 2012-2040 net growth for projected future projects within the jurisdictions that intersect the Project. This illustrates the magnitude of future changes, particularly during construction of transportation and development projects and associated infrastructure, that could combine for cumulative effects. Projected growth forecasts also include the transportation projects identified in Table 2.2 in Chapter 2, the Alternatives Considered/Project Description, of this Draft EIS/EIR.

Table 4.21.1. SCAG-Forecasted 2012 – 2040 Net Growth

Jurisdiction	2012 – 2040 Net Growth		
	Population	Housing	Employment
Central City North, City of Los Angeles [1]	38,400	7,900	10,700
Central City, City of Los Angeles [2]	84,000	49,300	37,800
Southeast Los Angeles, City of Los Angeles [3]	100	0	8,300
Vernon	200	100	2,900
Huntington Park	8,900	2,800	3,000
Bell	1,200	300	1,300
Cudahy	0	0	0
South Gate	17,100	5,100	3,600
Downey	9,200	3,400	14,600
Paramount	3,500	900	2,700
Bellflower	2,500	700	1,100
Artesia	1,400	500	800
Cerritos	1,600	500	3,300
TOTAL	**168,100**	**71,500**	**90,100**

Source: Metro 2021aa
Notes: [1] Identifying the growth in the City of Los Angeles community plan areas better represents the related cumulative growth for the immediate project area rather than the City of Los Angeles as a whole as the city is large. City of Los Angeles Central City North neighborhoods within 0.25 mile of the alignment and 0.5 mile from the station areas include downtown Los Angeles, Arts District/Little Tokyo, Chinatown, and Echo Park.
[2] City of Los Angeles Central City neighborhoods within 0.25 mile of the alignment and 0.5 mile from the station areas include downtown Los Angeles, Arts District/Little Tokyo, and Chinatown.
[3] City of Los Angeles Southeast Los Angeles neighborhoods within 0.25 mile of the alignment and 0.5 mile from the station areas include downtown Los Angeles, South Central, and Central Alameda.
SCAG = Southern California Association of Governments

4.21.3 Environmental Consequences/Environmental Impacts – Long Term

4.21.3.1 No Build Alternative

The No Build Alternative includes regional projects identified in the SCAG 2016-2040 RTP/SCS (SCAG 2016a), Metro's 2009 LRTP (Metro 2009a), and Measure M. These projects include the Metro East-West Line/Regional Connector/Eastside Phase 2, California High-Speed Rail, Metro North-South Line/Regional Connector, I-710 South Corridor, I-105 Express Lane, I-605 Corridor "Hot Spot" improvements, and improvements to the Metro bus system and local municipality bus systems. The No Build Alternative also includes local transportation-related projects, including Link Union Station, Active Transportation Rail to Rail/River Corridor, Los Angeles Union Station Forecourt and Esplanade Improvement, I-710 Corridor Bike Path, and Cesar Chavez Bus Stop Improvements projects.

Under the No Build Alternative, regional and local projects would continue to be built. These projects would undergo project-specific environmental clearance and would implement project-specific mitigation measures, as necessary, so that potential adverse effects are reduced or avoided. As the Build Alternatives would not be constructed under the No Build

Alternative scenario and no related adverse effects would occur, the No Build Alternative would not result in significant cumulative effects.

4.21.3.2 Build Alternatives

A detailed analysis of the adverse effects to environmental resources is provided in the impact analysis reports prepared for the Build Alternatives, including Design Options 1 and 2 for Alternative 1. The MSF site options are support facilities to serve the Project and for the purpose of a cumulative analysis are analyzed together with the Build Alternatives.

Transportation

The traffic analysis considered traffic impacts for the horizon year 2042 for the No Build Alternative (refer to Table 2.2 in Chapter 2, Alternatives Considered/Project Description) and each Build Alternative. The traffic volumes utilized for the No Build Alternative were derived using growth rates obtained from the Metro Travel Demand Model, which includes planned growth in population and employment in the LA County region. As a result, the traffic volumes used for the No Build Alternative represents the cumulative future condition based on the effects of regional growth on the transportation system. The traffic analysis evaluates cumulative future impacts and is presented in Section 3.4.1 through 3.4.4 of the Transportation Chapter. Based on the transportation analysis, the Build Alternatives in combination with the projected growth in the region would cause significant cumulative transportation effects and the Project's incremental contribution to this cumulatively significant impact would be cumulatively considerable.

Land Use and Development

The geographic scope for the cumulative land use and development analysis includes the Build Alternatives' immediate vicinities and the land use Affected Area. The Build Alternatives and projected growth in the land use Affected Area would be in highly urbanized areas. The Build Alternatives would be primarily located within public rights-of-way, and projected growth could consist of new development or infrastructure, redevelopment, or expansions. As such, the Build Alternatives in relation to projected growth are not anticipated to introduce project components that would create physical barriers or generate any permanent access disruptions to existing land uses, and access to the surrounding communities would remain available. Proposed street closures and turning restrictions associated with the Build Alternative and related projects would not divide existing communities as access to streets and surrounding properties would generally be required to be maintained through the rerouting of traffic within adjacent local streets. Therefore, the Build Alternatives in relation to projected growth would not cause a significant cumulative impact related to the division of an established community.

The Build Alternatives and projected growth in the region would provide future development opportunities that may result in a more densely developed urban environment in the Affected Area. The Build Alternatives and projected future growth would be required to comply with applicable land use plans, policies, and regulations of the affected jurisdictions so that land use compatibility issues would not occur. Related transit projects in the region, including the Build Alternatives, would provide opportunities for implementing SCAG and local land use policies or local planning objectives. The Build Alternatives and projected future projects would be generally consistent with applicable goals, objectives, and policies related to alternative transportation, public transportation, and future growth in transit identified in the general plans, community plans, specific plans, master plans, and bicycle master plans of the

affected local jurisdictions. Therefore, cumulative land use impacts would generally not be cumulatively significant.

However, the Build Alternatives could potentially preempt future development and implementation of planned Class I bicycle paths identified in the General Plan or bicycle master plan of the Cities of Huntington Park, Bell, Cudahy, South Gate, Paramount, and Bellflower. While planned, the bike facilities are unfunded and not scheduled for implementation. With implementation of Mitigation Measure LU-1 (Consistency with Bike Plans), as described in Section 4.1.4 of the Land Use Section, Metro would continue to coordinate with jurisdictions and local agencies and would support preparation of amended language for each affected bicycle plan consistent with the city's mobility and connectivity goals. However, because the process to amend General Plans and bike plans is a local process, including public participation, and the ultimate outcome and resolution of plan elements cannot be predicted. Even with mitigation, the Project may preempt future development and implementation of planned bike paths and an adverse effect and significant and unavoidable impact would occur. Therefore, the Build Alternatives in relation to the projected future growth in the land use Affected Area would cause significant cumulative land use effects with respect to planned Class I bicycle paths and the Project's incremental contribution to this cumulatively significant impact would be cumulatively considerable.

Community and Neighborhood

The geographic scope for the community and neighborhood analysis includes the Build Alternatives' immediate vicinities where the adverse effects are largely localized. The Build Alternatives and projected growth in the community and neighborhood Affected Area would be in highly urbanized areas. The Build Alternatives are anticipated to enhance circulation and connectivity with the greater region and improve connections with transit stations and other pedestrian and bike facilities, while projected projects could consist of new development, redevelopments, or infrastructure projects. The Build Alternatives and projected future projects may also help the communities and neighborhoods within the Affected Area remain cohesive. Similar to the Build Alternatives, the projected future projects would be solely at the discretion and approval of the affected jurisdiction and would be subject to all applicable requirements and regulations of local jurisdictions. Therefore, the Build Alternatives and projected future projects would not result in significant cumulative effects associated with access and mobility, community stability, and community character and cohesion.

The Build Alternatives would not directly result in population growth within surrounding communities. However, the Build Alternatives could indirectly affect population, housing, and employment growth as a result of and in combination with projected future projects in the region. Changes in demographics associated with new development opportunities are anticipated to be consistent with the SCAG adopted growth projections since these growth projections are based on the General Plan land use designations of local jurisdictions. Therefore, the Build Alternatives and projected future projects would not result in significant cumulative impacts associated with access and mobility, community stability, community character and cohesion.

Displacement and Acquisitions

In general, effects associated displacement and acquisitions are site-specific and adverse effects are largely localized and located in a highly urbanized geographical area. The Build Alternatives would result in property acquisitions and displacements required to

accommodate project components. This displacement of properties is not expected to displace a substantial number of people that would necessitate the construction of replacement housing elsewhere. Adequate replacement housing is available in the Affected Area for acquisitions and in surrounding areas based on the Project's gap analysis of the housing and business market. In addition, projected population and housing growth is accounted for in the local and regional plans to guide jurisdictions in market growth. Metro, public agencies, and developers are required to provide relocation assistance and compensation for all displaced businesses as required under the Uniform Act (for federally funded projects) and California Relocation Act. For relocated businesses, jobs would also be relocated and not permanently displaced; however, permanent job losses may be anticipated as a result of economic market conditions. In sum, the Build Alternatives and projected future projects would not result in adverse effects related to property acquisition and displacements and a significant cumulative impact would not result.

Greenhouse Gas Emissions

The *CEQA Guidelines* emphasize that the effects of GHG emissions are cumulative in nature and should be analyzed in the context of CEQA's existing cumulative impacts analysis. As compared to the No Build Alternative, the Build Alternatives would result in fewer GHG emissions with reductions related to the reduction of regional VMT for passenger vehicles associated with increased transit ridership. The Build Alternatives would be consistent with applicable GHG plans, policies, and regulations. The Build Alternatives would be consistent with the 2016-2040 RTP/SCS, *Energy Conservation Management Plan*, *City of Los Angeles Zero Emission 2028 Roadmap*, and other conservation plans for local jurisdictions. GHG emissions that would be generated are not considered significant as mass transit and reduced VMT is a key component of relevant GHG reduction plans. There is no potential for the Build Alternatives to interfere with state and regional GHG reduction targets. Consequently, the Build Alternatives would not incrementally contribute to cumulatively significant GHG effects and the impact would not be cumulatively considerable.

Visual Quality and Aesthetics

The geographic area of the Build Alternatives and the projected future projects in the visual quality Affected Area is characterized as predominantly developed with varied heights and massing in the visual environment. In general, effects associated with visual quality and aesthetics are site specific and localized. Projected growth and future projects could alter the visual environment in the Affected Area and in neighboring jurisdictions. Visual resource effects would not be expected to combine with other projects in separate viewsheds to create a cumulative impact.

No scenic vistas or scenic highways are located in the visual quality Affected Area. The Build Alternatives and related projects would not obstruct views of or alter the visual character and quality of scenic resources, such as scenic vistas and scenic highways. Therefore, the Build Alternatives and projected future projects would not have the potential to contribute to cumulative effects associated with scenic vistas and scenic highways.

The Build Alternatives and projected future projects would provide for future development opportunities that could result in a more densely developed urban environment, which could affect visual character and quality in the vicinity of the related projects. These development opportunities would be required to comply with local jurisdictional regulations in the areas in which they would be located, would be designed to complement the surrounding area, and

would require mitigation measures to reduce visual impacts, if any. The Build Alternatives would be consistent with, and are not expected to permanently degrade, the existing visual character and quality of the Affected Area with the implementation of Mitigation Measures VA-1 (Screening at Somerset Boulevard) and VA-2 (Relocation of "Belle"). Therefore, the Build Alternatives and projected future projects would not result in a significant cumulative impact on visual character and quality.

The Build Alternatives and projected future projects could also provide opportunities for development that may result in an increase in daytime glare and ambient nighttime lighting. These development opportunities would be required to adhere to glare and lighting regulations of the affected jurisdictions. The Build Alternatives and projected growth identified in Section 4.21.2.2 are located in a highly developed and already well-lit area and would not represent a substantial change in the lighting environment of the area to the extent that nighttime views that are currently available would become unavailable. The Build Alternatives would not result in adverse impacts on light and glare as lighting would incorporate standard practices that would reduce potential lighting and glare effects (i.e., exterior lighting shielded and directed downward, low-reflective surfaces). It is expected that the projected future projects would also incorporate similar practices in their lighting and structure design to minimize excessive adverse lighting and glare effects. Therefore, the Build Alternatives in combination with projected future projects would not result in significant cumulative impacts on light and glare.

Air Quality

California is divided geographically into 15 air basins for the purpose of managing the state's air resources at a regional level. Each air basin generally has similar meteorological and geographic conditions throughout. Each local district is responsible for preparing the portion of the State Implementation Plan applicable within their boundaries. The South Coast Air Basin is the Affected Area for evaluation of cumulative impacts for air quality for this Project. The South Coast Air Basin is currently designated as being in nonattainment of the federal and state ambient air quality standards for ozone and particulate matter (PM_{10} and $PM_{2.5}$). Therefore, there is an ongoing significant cumulative effect associated with these air pollutants.

The SCAQMD is responsible for managing the South Coast Air Basin's air resources and is responsible for bringing the South Coast Air Basin into attainment for federal and state air quality standards. The SCAQMD prepares the Air Quality Management Plan to evaluate contemporary South Coast Air Basin air quality and the emissions inventory and forecast control strategies to ultimately bring the South Coast Air Basin into attainment of the ambient air quality standards. The Air Quality Management Plan emissions budgets are partially developed based on the 2016-2040 RTP/SCS, and the two planning documents are developed in conjunction with one another. The Build Alternatives are included in 2016-2040 RTP/SCS under Project ID 1TR1011, which demonstrates that the regional transportation and emissions modeling budget in the Air Quality Management Plan accounts for implementation of the Build Alternatives. Therefore, implementation of the Build Alternatives would not contribute in a significant way to cumulative effects related to projections built into the Air Quality Management Plan.

In 2003, the SCAQMD published a white paper on cumulative impacts and potential control strategies, which contains considerations for evaluating cumulative air quality impacts under CEQA. Projects that exceed the project-specific thresholds are considered by the SCAQMD to

be cumulatively considerable, and, conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant. The Build Alternatives represent public transit projects that would reduce regional VMT and associated air pollutant emissions, and operation of all Build Alternatives would result in less than significant air quality impacts when compared to the project-specific SCAQMD thresholds. Therefore, operation of the Build Alternatives would not result in a cumulatively considerable impact for any South Coast Air Basin nonattainment pollutant.

Noise and Vibration

Noise: The geographic scope for the cumulative noise analysis is the immediate vicinity (within 350 feet of LRT tracks) of the Build Alternatives where project-generated noise could be heard concurrently with noise from other sources. The noise environment in the vicinity of the Build Alternative alignments can be primarily defined by traffic on adjacent roadways, freight trains, and the existing Metro A (Blue) Line (applicable to Alternatives 1, 2, and 3). Cumulative growth and development in the cities located in the vicinity of the Build Alternatives could result in increases in roadway traffic volumes over time that would concurrently increase ambient noise levels in the vicinity of the Build Alternatives. However, future increases in roadway noise are expected to be minimal along the alignment because of limited roadway capacity and freight train noise, which is generally intermittent as only two to three trains pass-by per day. Therefore, it is unlikely for the Build Alternatives, traffic, and freight train noise to combine to produce a significant cumulative adverse noise effect. However, the Build Alternatives would result in adverse operational noise effects at sensitive receptors along the project alignment. Implementation of Mitigation Measures NOI-1 through NOI-7, which include soundwalls, low impact frogs, noise monitoring, crossing signal bells, gate-down-bell-stop variance, and TPSS noise reduction, would reduce adverse effects related to noise; however, due to physical constraints along the alignment, not all affected areas would be fully mitigated, and adverse effects and significant and unavoidable impacts would remain. Therefore, the Build Alternatives in combination with traffic noise generated by projected future projects would result in a significant cumulative noise impact to sensitive receptors along the alignment; the Project's contribution to this significant cumulative impact would be cumulatively considerable.

Vibration: Permanent vibration effects are typically localized and instantaneous events. The geographic scope for the cumulative vibration analysis is the immediate vicinity (within 25 feet) of the Build Alternatives where project-generated vibrations could occur concurrently with vibrations from other sources. The primary source of existing vibration within the corridor is the freight lines along the alignment. Due to the infrequency of freight trains, it is unlikely that LRT vibration and freight train vibration would combine to produce a cumulative vibration effect. Regardless of the existing vibrations from infrequent freight trains, after implementation of Mitigation Measures VIB-1 (Ballast Mat or Resilient Rail Fasteners) and VIB-2 (Low Impact Frogs), adverse effects and significant and unavoidable impacts would remain for the Build Alternatives. Therefore, the Build Alternatives in combination with vibration generated by projected projects and existing freight, would result in a significant cumulative vibration impact; the Project's contribution to this significant cumulative impact would be cumulatively considerable.

Ecosystems and Biological Resources

The geographic scope for ecosystems and biological resources is the immediate vicinity and the biological resources Affected Area. The Build Alternatives and projected future projects are located in a heavily developed/disturbed area and do not support any plant species

identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or the USFWS and would be unlikely to affect wildlife species if present. Most wildlife species that could be expected to be present in the cumulative Affected Area are species that have adapted to urban environments and disturbances caused by human-induced activities. The Build Alternatives in combination with projected future projects are unlikely to result in impacts to ecosystems and biological resources. Similar to the Build Alternatives, the projected future projects would be required to comply with applicable regulations and include mitigation measures so that impacts to biological resources are reduced or avoided. Therefore, the Build Alternatives in combination with projected future projects would not result in a significant cumulative impact to ecosystems and biological resources.

Geotechnical/Subsurface/Seismic Hazards

The geographic scope for geologic, subsurface, and seismic hazards is site-specific and adverse effects are largely localized. The Build Alternatives and projected future projects are located in a seismically active region of Southern California, with large liquefaction zones under each of the Build Alternatives and are not in an area with landslide risks. The Build Alternatives and projected future projects would be required to comply with all prescribed standards, requirements, and guidance related to geologic, subsurface, and seismic hazards and implement mitigation measures, as necessary. The Build Alternatives would implement Mitigation Measures GEO-1 (Hazardous Gas [Operation]), GEO-2 (Structural Design), and GEO-3 (Gas Monitoring [Operation]) to comply with all applicable state and local guidelines and mandatory design requirements with seismic-related ground failure and no adverse effects would occur. Therefore, the Build Alternatives in combination with projected future projects would not result in significant cumulative geologic, subsurface, and seismic hazards effects.

Hazards and Hazardous Materials

In general, impacts associated with hazards and hazardous materials are site-specific and adverse effects are largely localized. The Build Alternatives would not result in adverse effects related to hazards and hazardous materials with implementation of Project Measures HAZ PM-1 (Handling, Storage, and Transport of Hazardous Materials or Wastes [Operation]), HAZ PM-2 (Disposal of Groundwater [Operation]), and HAZ PM-3 (Contaminated Soil, Soil Vapor, and Groundwater [Operation]), and GEO PM-2 (Oil Fields, Methane Zones, and Methane Buffer Zones [Operation]) and Mitigation Measures HAZ-1 (Oil and Gas Wells in Tunnel Areas) and GEO-1 (Hazardous Gas [Operation]). The Build Alternatives and projected future projects would be required to comply with all prescribed standards, requirements, and guidance related to hazards and hazardous materials. Therefore, the Build Alternatives in combination with projected future projects would not result in significant cumulative hazard and hazardous materials effects.

Water Resources

The geographic scope for the cumulative water resources analysis is the LA County storm drainage system serving the water resources Affected Area and watersheds the area discharges to (i.e., the Los Angeles River Watershed and the Rio Hondo Channel and Compton Creek sub-watersheds, the San Gabriel River Watershed and the Coyote Creek and Los Cerritos Channel sub-watersheds, and the Ballona Creek Watershed). The Build Alternatives and projected future projects would result in modifications to the local drain systems, a cumulative increase in impervious surfaces or pollutant runoff, and may also affect groundwater resources that

could result in adverse effects. However, similar to the Build Alternatives, projected future projects would be subject to the same state and regional water quality permit requirements as the Build Alternatives and would be designed in compliance with all existing regulations regarding water resources. Therefore, the Build Alternatives in combination with projected future projects would not result in significant cumulative water resources effects.

Energy

The Build Alternatives and projected future development would be subject to compliance with applicable energy efficiency and management codes and regulations, including, but not limited to, the California Building Standards Code Energy Efficiency Standards (Title 24 Parts 6 and 11) and the Los Angeles Green Building Code, as well as other provisions of local planning initiatives from the Cities of Vernon, Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, Artesia, and Cerritos. All new Metro projects will be implemented in accordance with the Metro *Green Construction Policy and the Energy Conservation and Management Plan* so that the expenditure of energy resources is controlled to the maximum extent feasible.

There is no present regional shortage of energy resources for land use and transportation development planning and implementation, and no foreseeable strains on existing resources have been identified. The Build Alternatives would not require new distribution infrastructure, and existing electrical utility lines would be required to operate the Build Alternatives. Such activities would not be related to supply or capacity deficiencies and would be similar to routine utility improvements. There is no potential for operation of the Build Alternatives to conflict with energy conversion goals or interfere with the energy supply and distribution facilities. The Build Alternatives in combination with the projected future projects would not result in significant cumulative energy effects during operation.

Historic, Archaeological, and Paleontological Resources

The geographic scope of historic, archaeological, and paleontological effects is generally site-specific and localized and generally characterized as urbanized and highly developed. No adverse effects would occur to historic properties, archaeological resources, or paleontological resources during operation of the Build Alternatives. Direct and indirect impacts to historic, archaeological, and paleontological resources due to ongoing maintenance and operations of the Build Alternatives would be negligible because there would be minimal, if any, ground disturbance during operation of the Build Alternatives outside of existing ROW and previously disturbed areas. Similarly, projected future projects would be located within existing public ROWs or in highly urbanized areas. As all historic, archaeological, and paleontological resources are unique, projected future projects would be expected to comply with applicable federal, state, and local regulations to protect those resources. Therefore, the Build Alternatives in combination with projected future projects would not cause significant cumulative impacts to historic, archaeological, and paleontological resources effects during operations.

Tribal Cultural Resources

The geographic scope of tribal cultural resources is generally site-specific and localized and generally characterized as urbanized and highly developed. No tribal cultural resources were identified within the Area of Potential Effect and no adverse effects would occur to tribal cultural resources during operation of the Build Alternatives. Direct and indirect impacts to tribal cultural resources due to ongoing maintenance and operations of the Build Alternatives

would be negligible because there would be minimal, if any, ground disturbance during operation of the Build Alternatives outside of existing ROW and previously disturbed areas. Similarly, related projects would be located within existing public ROWs or in highly urbanized areas. As tribal cultural resources are unique, projected future projects would be expected to comply with applicable federal, state, and local regulations to protect tribal cultural resources. Similar to the Build Alternatives, projected future projects are not anticipated to cause adverse effects to tribal cultural resources during operation with compliance of all applicable regulations regarding the handling and care of such resources. Therefore, the Build Alternatives in combination with projected future projects would not result in significant cumulative tribal cultural resource effects.

Parklands and Community Facilities

Realignment of segments of the Paramount Bike Trail and Bellflower Bike Trail would not result in adverse physical effects or prevent access to existing bike facilities. Mitigation Measure LU-1 (Consistency with Bike Plans), as described in Section 4.1.4 of the Land Use Section, would be implemented to maintain connectivity. Alternative 1 could preempt future development and implementation of the planned Class I bicycle path along Salt Lake Avenue and the Class I bicycle path north of Rayo Avenue and south of the Los Angeles River, identified in the *City of Huntington Park Bicycle Transportation Master Plan*, *City of Cudahy 2040 General Plan*, *South Gate Bicycle Transportation Plan*, and *City of Bell Bicycle Master Plan*. However, while planned, the bike facilities are conceptual in the local plans, unfunded and not scheduled for implementation. Therefore, they are remote and speculative. The impacts related to consistency with land use plans is discussed above under the heading "Land Use and Development".

Overall, the Build Alternatives would not result in adverse effects to parklands or community facilities, as the LRT would operate within the confines of the rail ROW and would not impede access to any parklands or community facility. The Build Alternatives and projected future projects are located in urban areas and primarily would be located within existing public ROW or within infill parcels. Subsurface easements or partial acquisitions would not affect the function or result in a displacement of community facilities. Some projected future projects would improve the overall accessibility to the station areas, community facilities, and other modes of transportation. Projected future projects may also increase the number of businesses and residents in the area; however, population growth has been accounted for in the regional and local plans. Therefore, the Build Alternatives in combination with projected future projects would not result in significant cumulative effects to parklands or community facilities.

Economic and Fiscal Impacts

Operation of the Build Alternatives would have beneficial economic and fiscal impacts by improving transit accessibility and mobility, enhancing regional connectivity, and reducing travel time and costs in the region. Similarly, projected future projects may also introduce new businesses, residents, and jobs to the area, the growth of which has been accounted for in the local and regional plans. Combined with the Build Alternatives, projected future projects would likely encourage greater economic activity and benefit surrounding businesses and commuting employees. The Build Alternatives and projected future projects would increase employment and tax revenue that would benefit local and regional economies. Therefore, the Build Alternatives in combination with projected future projects would not result in significant cumulative economic and fiscal effects during operations.

Safety and Security

Adverse safety and security impacts are generally site-specific and localized. Operation of the Build Alternatives would be in accordance with Metro system safety plans, policies, and procedures, including the *Metro System Safety Program Plan, the Metro System Security Plan, the Metro Standard and Emergency Operating Procedures,* and *the Rail Operating Rulebook*, or equivalent. The Build Alternatives would comply with all applicable federal, state, and local safety codes and regulations, and Metro would coordinate with emergency response services so that response times and emergency access would not be adversely affected during operation. Mitigation Measures SAF-1 (Encroachment Detection) would be implemented so that no adverse effects would occur. Similarly, projected future projects would be required to be designed safely and would be subject to all safety codes and regulations and would comply with the requirements of local emergency services. In the event projected future projects would result in an overall decrease in safety and security, each project would be required to implement project-specific measures and mitigation measures, as necessary, to reduce impacts. Therefore, the Build Alternatives in combination with the projected future projects would not result in significant cumulative safety and security effects during operations.

Environmental Justice

The Build Alternatives would not result in disproportionately high and adverse effects on minority and low-income populations. Therefore, the Build Alternatives would not contribute to cumulative impacts on EJ communities.

4.21.4 Environmental Consequences/Environmental Impacts – Construction

4.21.4.1 No Build Alternative

Under the No Build Alternative, the Build Alternatives would not be developed and adverse effects related to construction of the Build Alternatives would not occur. Under the No Build Alternative, adverse construction effects are not anticipated to occur as projects identified in the No Build Alternative would generally comply with applicable regulations, plans, and policies to avoid potential adverse effects to the environment to the extent possible. In addition, projected future projects would undergo project-specific environmental clearance and would implement project-specific mitigation measures, as necessary, so that potential adverse effects related to construction are reduced or avoided. As the No Build Alternative would not result in adverse construction effects or impacts, cumulative effects would not occur. As the Build Alternatives would not be constructed under the No Build scenario and no related adverse effects would occur, the No Build Alternative would not contribute to potential adverse cumulative construction effects and would not be cumulatively considerable.

4.21.4.2 Build Alternatives

Transportation

The traffic analysis evaluates cumulative future impacts and is presented in Chapter 3 of this Draft EIS/EIR. Based on the transportation analysis, the Build Alternatives in combination with projected growth in the region would cause significant cumulative temporary transportation effects, and the Project's incremental contribution to this cumulatively significant impact would be cumulatively considerable.

Land Use and Development

Construction of the Build Alternatives would involve temporary construction activities, such as construction staging, materials stockpiling, hauling of dirt and materials, temporary street and lane closures, TCE and permanent easements, and property acquisitions. Similar construction activities may also occur with projected future projects in the Affected Area. Although access to businesses and neighborhoods may be detoured temporarily during construction, Mitigation Measure COM-1 (Construction Outreach Plan) would be implemented to minimize impacts to the community. Sites acquired for TCEs and for temporary street, lane, and bicycle path detours and closures would be returned to preconstruction conditions once construction is complete. Metro would coordinate with other ongoing construction projects to minimize temporary construction issues.

Similarly, projected future projects would also result in temporary construction effects and it is anticipated they would also implement a construction plan to minimize temporary construction impacts. Construction of the Build Alternatives in combination with projected future projects could affect nearby sensitive land uses. However, given the temporary nature of construction activities and the implementation of mitigation measures for air quality, noise, and traffic, construction of the Build Alternatives and projected future projects would not result in land use conflicts and would not conflict with applicable land use plans, policies, and regulations of local agencies. Therefore, the Build Alternatives in combination with projected future projects would not result in significant cumulative effects related to land use during construction.

Community and Neighborhood

Construction of the Build Alternatives and projected future projects would involve temporary construction activities that could disrupt the community where the construction activities occur. The Build Alternatives would implement Mitigation Measure COM-1 (Construction Outreach Plan) to minimize effects to communities and businesses. Metro would also coordinate with other ongoing construction projects to minimize street and sidewalk closures, maintain access to businesses, and to minimize any other cumulative temporary community impacts. Similarly, projected future projects would result in temporary construction activities that could result in temporary adverse effects to the surrounding community and may also require mitigation measures to minimize potential effects. Therefore, the Build Alternatives in combination with projected future projects would not result in significant effects associated with communities and neighborhoods.

Acquisitions and Displacements

The Build Alternatives and projected future projects may require TCEs and full acquisitions for construction-related activities. As with the Build Alternatives, projected future projects would be required to comply with applicable regulations, including the Uniform Act (for federally funded projects) and the California Relocation Act, to provide compensation for all affected businesses and residents, and impacts would not be adverse. Therefore, the Build Alternatives in combination with projected future projects would not result in significant cumulative effects regarding displacement and acquisitions during construction.

Visual Quality and Aesthetics

The Build Alternatives and projected future projects are located in a highly urbanized area with varied heights and massing in the visual environment. Construction activities of the

Build Alternatives would temporarily alter the visual character and quality of the Affected Area. Mitigation Measures VA-3 (Landscaping at LAUS) and VA-4 (Construction Screening) would be implemented to minimize potential temporary construction visual impacts. Similar temporary visual adverse effects would also be associated with construction of projected future projects, which would be localized to the area and may require the implementation of mitigation measures to minimize potential construction-related adverse effects. Therefore, the Build Alternatives in combination with projected future projects would not result in significant cumulative effects on visual quality or character during construction.

No scenic vistas or scenic highways are located within the visual quality Affected Area. Therefore, construction of the Build Alternatives in combination with projected future projects would not have the potential to contribute to cumulative effects associated with scenic vistas and scenic highways.

Construction activities for the Build Alternatives would not result in a substantial source of light or glare. Implementation of Mitigation Measure VA-5 (Construction Lighting) would minimize potential construction lighting adverse effects. Similar to the Build Alternatives, projected future projects would be required to comply with applicable policies and regulations regarding construction hours and light and glare and would need to implement project or mitigation measures to further minimize potential construction lighting effects. Therefore, the Build Alternatives in combination with construction of projected future projects would not result in significant cumulative effects related to light and glare during construction.

Air Quality

The South Coast Air Basin is currently designated as being in nonattainment of the federal and state ambient air quality standards for ozone and particulate matter (PM_{10} and $PM_{2.5}$). Therefore, there is an ongoing significant cumulative effect associated with these air pollutants. Emissions generated during construction of the Build Alternatives combined with construction of projected future projects could impede attainment efforts or result in locally significant pollutant concentrations. Therefore, the Build Alternatives in combination with projected future projects could result in significant cumulative air quality impacts.

The SCAQMD has not established separate quantitative cumulative thresholds for emissions of criteria pollutants. Rather, the SCAQMD established the same mass daily thresholds of significance for project-specific and cumulative impacts assessment because of the regional importance of project-specific emissions in the context of attaining the ambient air quality standards. Attainment designations are made at the county and geographic basin levels; therefore, there is a cumulative aspect to all project-level emissions in nonattainment areas. For both construction and operational activities, if a project exceeds the identified project-level significance thresholds, its emissions would be considered cumulatively significant, resulting in significant adverse air quality impacts to the region's existing air quality conditions.

Construction of the Build Alternatives would generate varying degrees of maximum daily air pollutant emissions due to differences in daily haul truck activity required to dispose of demolition debris and excavated soil and import fill materials. Maximum daily emissions of NO_X—an ozone precursor—during construction of Alternatives 1 and 2 would exceed the mass daily significance threshold even after implementation of Mitigation Measure AQ-1 (Vehicle Emissions). The exceedance in the NO_X threshold is due to haul truck emissions that would be distributed along the regional roadway network and not concentrated in one

specific location. Because construction of Alternatives 1 and 2 would temporarily exceed the SCAQMD significance threshold for NO_X during the most intensive material hauling activities, Alternatives 1 and 2 would cause a cumulatively considerable impact to the region's air quality related to the nonattainment designation for ozone. No additional feasible control strategies were identified to further reduce regional NO_X emissions beyond compliance with the Metro *Green Construction Policy* and implementation of mitigation. Therefore, this impact would remain cumulatively significant and unavoidable during construction of Alternatives 1 and 2, if implemented.

Construction of Alternatives 3 and 4 would have fewer maximum daily haul truck loads and maximum daily construction workers resulting in fewer daily vehicle trips that would not produce emissions exceeding any regional mass daily threshold (including NO_X). Therefore, construction of Alternatives 3 and 4 would not result in a cumulatively considerable short-term contribution to degradation of the region's air quality. Once operational, Alternatives 3 and 4 would reduce VMT, which would result in a net benefit to regional air quality.

Construction activities of the Build Alternatives would adhere to provisions of the Metro *Green Construction Policy* and employ BMPs to prevent the occurrence of a nuisance odor or dust plume in accordance with SCAQMD Rule 402 (Nuisance). The related projects would also be required to employ similar BMPs. Therefore, a cumulatively significant impact related to odor and dust is not anticipated.

Greenhouse Gas Emissions

The Build Alternatives would result in fewer GHG emissions than both the Existing Condition (if the Build Alternatives were operational in 2017) and the No Build Alternative. The Build Alternatives would be consistent with applicable GHG plans, policies, and regulations. Standard construction procedures would be undertaken in accordance with the Metro *Green Construction Policy* and SCAQMD and California Air Resource Board regulations applicable to heavy-duty construction equipment and diesel haul trucks. Adherence to requirements pertinent to equipment maintenance and inspections standards and emissions standards, as well as diesel fleet requirements related to idling restrictions, would prevent construction of the Build Alternatives from conflicting with GHG emissions reductions efforts. The Build Alternatives would be consistent with the 2016-2040 RTP/SCS, the *Energy Conservation Management Plan*, the *City of Los Angeles Zero Emission 2028 Roadmap*, and other conservation plans for local jurisdictions. Although temporary GHG emissions would be generated during construction, no adverse impact would occur as the Project is for mass transit and reduced VMT is a key component of relevant GHG reduction plans. There is no potential for the Build Alternatives to interfere with state and regional GHG reduction targets. Consequently, the Build Alternatives would not cause a cumulatively considerable incremental impact related to GHG emissions.

Noise and Vibration

Noise: The geographic scope for the cumulative noise analysis is the immediate vicinity (within 500 feet) of the Build Alternatives where project construction-generated noise could be heard concurrently with noise from other sources. Construction of the Build Alternatives would require heavy earth-moving equipment, generators, cranes, pneumatic tools, and other similar machinery. Construction activity north of the I-10 freeway (Alternatives 1 and 2) would include the use of a TBM or cut-and-cover for construction of the underground segments (Alternatives 1 and 2). The TBM would not be audible at aboveground sensitive receivers, but the TBM launch

site or cut-and-cover activities would include equipment similar to the other aboveground activities. Construction noise levels for each Build Alternative would exceed FTA and local noise standards due to the intensive nature of LRT construction activities and the proximity of sensitive land uses to the corridor without mitigation measures. Implementation of Mitigation Measure NOI-8 (Noise Control Plan) would reduce construction noise levels but would still likely exceed the FTA construction noise criteria and local standards resulting in temporary adverse effects related to construction noise. Similar to the Build Alternatives, construction of projected future projects would likely include the use of heavy construction equipment that would generate elevated construction noise levels. Projected future projects would go through their own environmental clearance process and would include mitigation for construction noise to reduce impacts. Related projects within 500 feet of Build Alternatives construction could result in a cumulative construction noise impact at sensitive receptors. Although it is not possible to predict which related projects would result in a cumulative construction noise scenario, the construction noise levels associated with the Build Alternatives could increase ambient noise levels. Therefore, when combined with noise generated by projected future projects, the Build Alternatives would result in cumulative noise effects during construction, and the Build Alternatives' incremental contribution to this impact would be cumulatively considerable.

Vibration: The geographic scope for the cumulative construction vibration analysis is the immediate vicinity (within 75 feet) of the Build Alternatives where project-generated vibrations could occur concurrently with vibrations from other sources. Vibration-generating activities associated with construction of the Build Alternatives could result in noticeable levels of vibration, but would largely occur within the rail ROWs, are unlikely to result in building damage, and would attenuate quickly with distance. The Build Alternatives would implement Mitigation Measures VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), and VIB-7 (Construction Monitoring for Vibration) to avoid construction vibration levels that would exceed the FTA construction impact criteria and no adverse effect would occur. The Build Alternatives in combination with projected future projects are not considered likely to result in the exposure of sensitive receivers to excessive vibration due to the localized nature of vibration impacts and the fact that not all construction would occur at the same time and at the same location. Only sensitive receivers located near each construction site could be affected by each activity. For the combined vibration impact from simultaneous construction projects to reach cumulatively significant levels, intense construction from these projects would have to occur simultaneously within 75 feet of any sensitive receiver. It is not anticipated that vibration-generating equipment from related projects would operate at the same time and at the same location as equipment related to the Build Alternatives. Therefore, when combined with vibration generated by projected future projects, the Build Alternatives would not result in significant cumulative vibration effects during construction.

Ecosystems and Biological Resources

The Build Alternatives and related projects are located in dense urban environments. Although unlikely, the Build Alternatives may adversely affect nesting birds and bats if initial ground disturbance and vegetation/tree trimming or removal are required during the nesting bird season. Construction-related noise and dust could also result in an adverse indirect effect on nesting birds and bats. The Build Alternatives would comply with all required applicable regulations. Project construction would not result significant impacts related to special-status species, jurisdictional waters, and protected trees with implementation of Mitigation Measures BIO-1 (Special-Status Bats), BIO-2 (Nesting Birds), BIO-3 (Jurisdictional

Resources), and BIO-4 (Protected Trees). However, potential effects associated with construction of the Project are greater under Alternatives 1 and 2 due to their overall length (19.3 miles as opposed to 14.8 under Alternative 3 and 6.6 miles under Alternative 4). Alternative 4 poses the least potential for effects as it would have the shortest length and includes one river crossing as opposed to three (Alternatives 1, 2, and 3 include three river crossings). Similar to the Build Alternatives, projected future projects would comply with applicable regulations and ordinances and would implement applicable mitigation so impacts to special-status species, jurisdictional waters, and protected trees are minimized or avoided. Therefore, the Build Alternatives in combination with projected future projects would not result in cumulatively significant impacts to jurisdictional waters.

Geotechnical/Subsurface/Seismic Hazards

In general, geologic, subsurface, and seismic hazards are site-specific and adverse effects are largely localized. The greatest potential for an adverse cumulative construction effect to occur during construction of the Build Alternatives would be in the downtown LA area where other tunneling and excavation related to the Regional Connector Transit Project is currently underway. However, it is anticipated that construction of the Regional Connector Transit Project would be completed by 2021 and would not result in adverse cumulative construction effects related to the Build Alternatives. No adverse effects would occur related to geologic, subsurface, and seismic hazards due to construction of the Build Alternatives, and the Build Alternatives would comply with all prescribed standards, requirements, and guidance related to geologic, subsurface, and seismic hazards. In addition, the Build Alternatives (except for Alternatives 3 and 4 because they do not consist of underground activities) would implement Mitigation Measure GEO-5 (Gas Monitoring [Construction]), which would minimize potential adverse effects related to hazardous gases in methane zones. Similarly, projected future projects would be required to comply with all prescribed standards, requirements, and guidance related to geologic, subsurface, and seismic hazards. Therefore, the Build Alternatives combined with projected future projects would not result in significant cumulative geologic, subsurface, and seismic hazards effects during construction.

Hazards and Hazardous Materials

In general, impacts associated with hazards and hazardous materials are site-specific and adverse effects are largely localized. The Build Alternatives would not result in adverse effects related to hazards and hazardous materials. They would comply with all regulatory requirements and hazardous wastes would be properly handled. The Build Alternatives would implement Project Measures HAZ PM-4 through PM-9—which includes oil and gas zones, gas monitoring, demolition plans, groundwater disposal, oil well abandonment, and contaminated soil, soil vapor, and groundwater—and GEO PM-4 (Tunnel Advisory Panel) and Mitigation Measures HAZ-1 (Oil and Gas Wells in Tunnel Areas) and GEO-4 (Tunnel Advisory Panel) to minimize potential impacts and reduce the risk of adverse health effects during construction; therefore, no adverse effect would occur. Similarly, projected future projects would be required to comply with all prescribed standards, requirements, and guidance related to hazards and hazardous materials and implement project measures and mitigation measures to minimize potential hazards and hazardous materials impacts. Therefore, the Build Alternatives in combination with projected future projects would not result in significant cumulative hazard and hazardous materials effects during construction.

Water Resources

Construction of the Build Alternatives could lead to temporary changes in grades and drainage patterns, discharge of pollutants into surface waters, exposure of soils to stormwater and erosive conditions. In addition, temporary dewatering may be required. These temporary impacts would be addressed via a SWPPP that complies with the General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit). Construction of the Build Alternatives over the Los Angeles River, Rio Hondo, and San Gabriel River would not result in impacts to floodplains as construction activities would comply with all applicable federal and local floodplain regulations, including applicable National Flood Insurance Program regulations. Dewatering of the construction site would be subject to the requirements of the Construction Dewatering Permit and, therefore, would not cause construction-related impacts to surface or groundwater quality. Similarly, projected future projects could result in similar water resource impacts during construction and would be required to comply with existing regulations, including SWPPPs, and to implement BMPs to reduce construction impacts on water resources. Therefore, the Build Alternatives in combination with projected future projects would not result in significant cumulative water resource effects during construction.

Energy

Diesel fuel for construction vehicles and equipment would be the primary end use of energy resources consumed throughout the course of the construction period. There is no currently identified ongoing cumulatively significant condition related to energy resources that construction of the Build Alternatives would have the potential to exacerbate. Given the extensive network of fueling stations throughout the project vicinity and the fact that construction would be temporary, no new or expanded sources of energy or infrastructure would be required to meet the energy demands during construction of the Build Alternatives. In addition, construction activities would comply with the Metro *Green Construction Policy* and construction equipment and vehicles would be maintained in accordance with manufacturers' specifications to limit the consumption of transportation fuels to the maximum extent feasible. The one-time expenditure of fuel is not considered a wasteful or inefficient use of non-renewable resources as the fuel is being used to construct a mass transit system that has been identified by state and regional agencies as an efficient method of reducing permanent energy use. Projected future projects, including transportation and general land use development projects, are not expected to place an undue burden on the availability of existing or future energy resources. Consequently, the Build Alternatives would incrementally contribute to cumulative energy effects during construction and would not be cumulatively considerable.

Historic, Archaeological, and Paleontological Resources

Historic, archaeological, and paleontological impacts are generally site-specific and localized. Ground-disturbing construction activities could directly impact paleontological resources and archaeological resources. The Build Alternatives would implement Mitigation Measures PR-1(a) (Paleontological Resources Mitigation and Monitoring Program), PR-1(b) (Paleontological Worker Environmental Awareness Program), PR-1(c) (Construction Monitoring), and PR-1(d) (Preparation and Curation of Recovered Fossils) to reduce potential adverse effects and, therefore, no adverse effect would occur. Surface-level activities could result in impacts to historic structures from the operation of heavy equipment in close proximity. Temporary visual impacts and construction easements related to construction would be temporary and would not result in any

permanent change to a historical resource. Implementation of Mitigation Measures CR-1 through CR-6 would further reduce impacts by requiring archaeological and culture resource monitoring programs, treatment of known and unknown resources, worker awareness programs, and historic design review and would not result in adverse effects. Similarly, projected future projects could require ground-disturbing activities during construction and would be required to comply with all applicable regulations and would implement mitigation measures to reduce adverse effects. Therefore, the Build Alternatives when combined with projected future projects would not result in significant cumulative historic, archaeological, and paleontological resources effects during construction.

Tribal Cultural Resources

Impacts to tribal cultural resources are generally site-specific and localized. The Affected Area is located within a previously disturbed developed area. Nonetheless, the potential still exists for tribal cultural resources to be encountered due to the previous inhabitance of the Los Angeles Basin by various Native American tribes. Should potential tribal cultural resources be discovered, Metro would comply with applicable federal, state, and local guidelines during construction activities, including those set forth in PRC Sections 21083.2 and 5097.98 and State Health and Safety Code Section 7050.5 so that no adverse effects would occur. In addition, the Build Alternatives would implement Mitigation Measures TCR-1 (Native American Monitoring) and TCR-2 (Unanticipated Discovery of Tribal Cultural Resources) and would not result in adverse effects. Projected future projects would also be required to comply with applicable federal, state, and local guidelines. As with the Build Alternatives, projected future projects are not anticipated to cause adverse effects to tribal cultural resources during construction and would comply with all applicable regulations regarding the handling and care of such resources. Therefore, the Build Alternatives when combined with projected future projects would not result in significant cumulative tribal cultural resource effects during construction.

Parklands and Community Facilities

Construction activities of the Build Alternatives may temporarily affect parklands and community facilities. Indirect effects related to noise, vibration, and air quality would be temporary and are not anticipated to result in adverse effects to parklands and community facilities. The use of nearby streets may result in restricted street parking, sidewalk detours, and traffic lane or full street closures that may affect access to parklands and community facilities. The Build Alternatives would implement Mitigation Measure COM-1 (Construction Outreach Plan) so that access to community assets and neighborhoods during construction is maintained and construction detour routes signage is provided. Similarly, construction of proposed future projects could cause indirect effects related to noise, vibration, and air quality, and require temporary restrictions in street parking, sidewalk detours, and traffic detours. As with the Build Alternatives, projected future projects would be required to coordinate with local jurisdictions to minimize construction impacts to surrounding parklands and community facilities through project-specific construction management plans that would maintain access to parklands and community facilities to the extent feasible. Therefore, the Build Alternatives combined with projected future projects would not result in significant cumulative parklands and community facility effects during construction.

Economic and Fiscal Impacts

Construction would have beneficial economic and fiscal impacts related to direct and indirect effects from construction spending. Construction effects on businesses and residences near the construction area would be temporary. The Build Alternatives would implement Mitigation Measures COM-1 (Construction Outreach Plan) and TRA-23 (Loss of Parking [Construction]) so that access to businesses is maintained and no adverse effects would occur. Similarly, projected future projects would bring beneficial economic and fiscal effects to the city in which the project is located. Therefore, the Build Alternatives when combined with projected future projects would result in a beneficial cumulative economic and fiscal effects during construction.

Safety and Security

Adverse safety and security impacts are generally site-specific and localized. Project construction activities could temporarily affect the pedestrian and bicycle environment, motorist safety, emergency response services, and crime and terrorism activities. Temporary street closures may also result in impacts to emergency response services. The Build Alternatives would coordinate with police, medical, and fire services; develop construction staging plans; and comply with applicable regulations. The Build Alternatives would implement Mitigation Measures SAF-2 (School District Coordination), SAF-3 (Construction Site Measures), and elements of COM-1 (Construction Outreach Plan) to avoid adverse effects to pedestrian, bicyclist, or motorist safety. Similarly, projected future projects would be required to comply with all applicable regulations and implement mitigation measures and/or best management practices to reduce safety and security impacts. Therefore, the Build Alternatives when combined with projected future projects would not result in significant cumulative safety and security effects during construction.

Environmental Justice

The Build Alternatives would not result in disproportionately high and adverse effects on minority and low-income populations. Therefore, the Build Alternatives would not result in significant cumulative impacts on EJ communities.

4.22 Environmental Justice

This section examines potential disproportionately high and adverse effects from construction and operation of the No Build and Build Alternatives (including design options and MSF site options) on environmental justice (EJ) communities. Construction effects on EJ communities are also provided in this section. Information in this section is based on the *West Santa Ana Branch Transit Corridor Project Final Environmental Justice Impact Analysis Report* (Metro 2021z), included as Appendix FF of this Draft EIS/EIR.

4.22.1 Regulatory Setting and Methodology

4.22.1.1 Regulatory Setting

Federal and State

- CEQ Environmental Justice Guidance under the National Environmental Policy Act (CEQ 1997)
- Title VI of the Civil Rights Act of 1964

- EO 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*)
- EO 13166 (*Improving Access to Services for Persons with Limited English Proficiency*)
- USDOT Order 5610.2C (*U.S. Department of Transportation Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*), issued in May 2021
- FTA Circular 4702.1B (*Title VI Requirements and Guidelines for FTA Recipients*) (FTA 2012a)
- FTA Circular 4703.1 (*Environmental Justice Policy Guidance for FTA Recipients, California Environmental Quality Act*) (FTA 2012b)
- Caltrans *Standard Environmental Reference Handbook Volume 4: Community Impacts Assessment* (Caltrans 2011)

Regional and Local

- Metro LRTP (Metro 2009a)
- General plans, community plans, and specific plans for the 12 local jurisdictions: *City of Los Angeles General Plan* (City of Los Angeles 2001a), *City of Los Angeles Land Use/Transportation Policy* (City of Los Angeles 1993), *City of Vernon General Plan* (City of Vernon 2013), *Los Angeles County General Plan 2035* (LA County 2015), *Florence-Firestone Community Plan* (LA County 2019), *City of Huntington Park Draft General Plan 2030* (City of Huntington Park 2017), *City of Bell 2030 General Plan* (City of Bell 2018), *City of Cudahy 2040 General Plan* (City of Cudahy 2018a), *City of South Gate General Plan 2035* (City of South Gate 2009), *City of South Gate Hollydale Village Specific Plan* (City of South Gate 2017b), *City of Downey Vision 2025* (City of Downey 2005), *City of Paramount General Plan* (City of Paramount 2007), *City of Bellflower General Plan: 1995-2020* (City of Bellflower 1994), *City of Artesia General Plan 2030* (City of Artesia 2010), and *City of Cerritos General Plan* (City of Cerritos 2004).

CEQA has no requirements to specifically address socioeconomic factors and, as a result, there are no CEQA EJ analysis requirements and a CEQA determination is not included in this section. The issue of environmental justice, as it is defined in California law, is not required to be a separate component of analysis in an EIR. In particular, questions of social and economic effects have a circumscribed role within CEQA. *CEQA Guidelines* Section 15131 allows the approving agency to include or present economic or social information in an EIR, but *CEQA Guidelines* Section 15131(a) limits the consideration of such factors in the assessment of significant impacts, stating:

> "Economic or social effects of a project shall not be treated as significant effects on the environment. An EIR may trace a chain of cause and effect from a proposed decision on a project through anticipated economic or social changes resulting from the project to physical changes caused the economic or social changes. The intermediate economic or social changes need not be analyzed in any detail greater than necessary to trace the chain of cause and effect. The focus of the analysis shall be on the physical changes."

Issues that are pertinent to the question of environmental justice that are addressed under CEQA are considered in the Draft EIR, including discussions in the air quality, noise, hydrology and water quality, hazards and hazardous materials, population and housing, transportation, and Other CEQA Considerations technical sections.

4.22.1.2 Methodology

The EJ Affected Area is defined as the Census block groups that are located within or intersect the area within 0.25 mile of the alignments, parking facilities, and MSF site options, and within 0.5 mile of the proposed stations. The EJ Affected Area includes the approximately 19-mile alignment that crosses through or is adjacent to portions of the following jurisdictions: Cities of Los Angeles (including the Central City North, Central City, and Southeast Los Angeles communities), Vernon, Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, Artesia, and Cerritos, as well as the unincorporated Florence-Firestone community of LA County.

The description of minority populations and/or low-income populations is drawn from the demographic and socioeconomic data from the U.S. Census Bureau's block group-level 2011-2015 ACS 5-Year Estimates and TAZ-level estimates from the SCAG 2016-2040 RTP/SCS with base year 2017 and build-out year 2042.[15] [16]

USDOT Order 5610.2C and subsequent agency guidance on EJ provide clear definitions of minority groups addressed by Executive Order 12898. USDOT defines minority groups as Black; Hispanic; Asian American; American Indian and Alaskan Native; and Native Hawaiian or Other Pacific Islander.

USDOT Order3 5610.2C and subsequent agency guidance on EJ defines "low-income" as a person whose median household income at or below the U.S. Department of Health and Human Services (HHS) poverty guidelines.[17] However, FTA Circular 4703.1 also states that a locally developed threshold, such as that used for FTA's grant program or a percentage of median income for the area, provided that the threshold is at least as inclusive as the HHS poverty guidelines. For this study, the U.S. Department of Housing and Urban Development (HUD) threshold of income limits is used to define "low-income". Per HUD, low-income is a person whose median household income is 80 percent for the area. LA County is used as the geographical area because each of the jurisdictions are located in LA county and would not artificially dilute or inflate the minority or low-income population identified for this study. The 2015 median household income for LA County ($56,196) is used because it is the closest available data to the base year of 2017. A median household income 80 percent of LA County (approximately $45,000) is used as the low-income threshold.

Based on the CEQ *Environmental Justice Guidance under the National Environmental Policy Act,* a community is considered an EJ community if any of the following criteria is met:

- At least 50 percent of the population in the affected community is minority or low-income; or

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15 The Base Year 2017 is determined by the year the Notice of Intent was publicly published in the *Federal Register* and the Notice of Preparation was published informing the public of the intent to prepare a combined Draft EIS/EIR for the Project and notifying interested agencies and parties of public scoping meetings. The Notice of Intent and Notice of Preparation were published in 2017. The Build-out Year 2042 is determined when the Project would be completed.

16 At the time the Notice of Intent and Notice of Preparation were published in 2017, the most current community-related data available was obtained from the U.S. Census Bureau's block group-level 2011-2015 ACS 5-Year Estimates released in 2016. The latest 2015-2019 ACS 5-Year Estimates were released in December 2020. A comparison of the two datasets was conducted and determined that the latest ACS socioeconomic dataset would not change the identification of environmental justice populations and would not change the results of the analysis.

17 Public Law 112-141 defines "low-income individual" to mean "an individual whose family income is at or below 150 percent o the poverty line, as that term is defined in section 673(2) of the Community Services Block Grant Act (42 U.S.C. 9902(2), including any revision required by that section, for a family of the size involved".

- The minority or low-income population in the affected community is meaningfully greater than the general population in the appropriate geographic unit of analysis. For this study, 10 percent is considered statistically meaningful greater than the population in LA County (based on similar Metro studies and methodologies used throughout the Metro service areas). A median household income 80 percent of LA County ($45,000) is used as the low-income threshold. LA County was selected as the unit of geographic analysis because each of the jurisdictions are located in LA county and would not artificially dilute or inflate the minority or low-income population identified for this study.

USDOT Order 5610.2C defines "disproportionately high and adverse effect on human health or the environment" as those impacts that are:

- Predominately borne by a minority population and/or a low-income population; or
- Suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population.

Consistent with the USDOT Order v5610.2C and the FTA Circular 4703.1, when determining whether environmental effects of the Project on EJ populations are disproportionately high and adverse, the following were considered to the extent practicable:

- Will the project result in "adverse effects?"
- Will the project result in adverse effects predominately borne by an EJ population?
- Will the project result in adverse effects that would be suffered by the EJ population that would be appreciably more severe or greater in magnitude than the adverse effects that would be suffered by the non-EJ population?
- Does the project propose mitigation and/or enhancement measures?
- Are there project benefits (off-setting benefits) that would accrue to the EJ population as compared to non-EJ populations?
- Does the project affect a resource that is especially important to an EJ population? For example, does the project affect a resource that serves an especially important social, religious, or cultural function for an EJ population?

The benefits and burdens to EJ populations (particularly areas with the highest concentration of EJ populations) are examined against comparable non-EJ populations. Comparable non-EJ populations within the EJ Affected Area include those areas with a higher percentage of non-minority or a lower percent of low-income populations.

4.22.2 Affected Environment/Existing Conditions

4.22.2.1 Demographic and Socioeconomic Characteristics

The EJ Affected Area crosses the Cities of Los Angeles (including the Central City North, Central City, and Southeast Los Angeles communities), Vernon, Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, Artesia, and Cerritos, as well as the unincorporated Florence-Firestone community of LA County. Section 4.1.2.1 of the Land Use Section illustrates the land use distribution of the communities. Table 4.22.1 provides a summary of the demographic and socioeconomic characteristics (minority population and low-income population by percent) of the jurisdictions as a whole in which the Build Alternatives would be located. Based on the CEQ guidelines, a community is considered an EJ community if the minority population in the affected community is at least 10 percent higher than the average of the minority population in LA County. The percent of minority population for LA County is 73.1 percent; therefore, 10 percent higher is 83.1 percent. A community is considered an EJ community if the low-income population in the affected community is at least 10 percent higher than the median household income or a median household income less than 80 percent of LA County's median household income. LA County's median household income is $56,196. A median household income 80 percent of LA County is approximately $45,000 and is used as the low-income threshold.

Table 4.22.1. Percent Minority Population and Percent Low-Income of the Jurisdictions

Jurisdiction	Percent Minority Population [1]	Percent Low-Income[2]
County of Los Angeles[3]	73.1%	41.3%
City of Los Angeles[4]	71.6%	46.1%
Central City North[5]	82.7%	55.6%
Central City[5]	70.3%	60.3%
Southeast Los Angeles[5]	99.1%	69.2%
Florence-Firestone	99.4%	65.0%
Vernon	75.6%	43.8%
Huntington Park	98.7%	62.7%
Bell	94.7%	60.2%
Cudahy	97.3%	60.3%
South Gate	97.1%	51.5%
Downey	84.4%	34.5%
Paramount	95.0%	49.2%
Bellflower	82.4%	46.1%
Cerritos	83.9%	21.6%
Artesia	80.5%	36.1%

Source: US Census Bureau, 2016; Metro, 2021z

Notes: [1] A minority is defined as an individual who identifies as any race or ethnicity except for non-Hispanic/Latino White Alone. The table shows the percent of the total population that identified as a minority based on the 2011-2015 ACS 5-year estimates.

[2] Low-income is defined as households with income less than $45,000, or approximately 80 percent of the 2015 median household income for Los Angeles County ($56,196). The table shows the percent of the total population that met the definition of low-income in the 2011-2015 ACS 5-year estimates (2015 ACS 5-Year Estimates Table B19001).

[3] LA County contain US Census Bureau block group information for the entire county.

[4] City of Los Angeles total presented only contains Central City North, Central City, and Southeast Los Angeles US Census Bureau block groups.

[5] Central City North, Central City, and Southeast Los Angeles data comes from US Census Block Groups that fall within each community plan area.

Over 50 percent of the population for each jurisdiction are minorities. The jurisdictions with a percent minority population that is more than 10 percent higher than that for the County of Los Angeles are: Southeast Los Angeles, Florence-Firestone, Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount and Cerritos. The communities with a percent low-income with a median household income of less than 80 percent of LA County's median household income (approximately $45,000) are: Central City North, Central City, Southeast Los Angeles, Florence-Firestone, Huntington Park, Bell, Cudahy, and South Gate.

Race and Ethnicity

The EJ Affected Area includes several different racial and ethnic groups. As defined by the U.S. Census Bureau, "race" included in the census questionnaire generally reflects a social definition of race recognized in this country and does not attempt to define race biologically, anthropologically, or genetically. In addition, it is recognized that the race categories include racial and national origin or sociocultural groups. People may choose to report more than one race to indicate their racial mixture. People who identify their origin as Hispanic, Latino, or Spanish may be of any race. Table 4.22.2 characterizes the racial groups in the EJ Affected Area.

Table 4.22.2. Racial Characteristics of the Communities in the EJ Affected Area

Community	Percent Share of Total Population[1,2,3,4,5]						
	White Only	Black Only	American Indian or Alaskan Native Only	Asian Only	Native Hawaiian / Pacific Islander Only	Some Other Race Only	Two or More Races[6]
County of Los Angeles[7]	53.3%	8.3%	0.6%	14.1%	0.3%	19.6%	3.9%
City of Los Angeles[8]	36.6%	15.2%	0.5%	17.9%	0.1%	26.6%	3.1%
Central City North[9]	34.8%	17.1%	0.7%	31.8%	0.3%	12.1%	3.1%
Central City[9]	38.4%	19.8%	0.6%	25.5%	0.1%	10.6%	5.1%
Southeast Los Angeles[9]	35.8%	8.7%	0.4%	0.8%	0.0%	53.4%	0.9%
Florence-Firestone	43.2%	3.4%	0.2%	0.2%	0.1%	50.1%	2.7%
Vernon	36.6%	0.0%	0.0%	7.3%	0.0%	56.1%	0.0%
Huntington Park	68.2%	0.7%	0.4%	0.8%	0.5%	28.2%	1.2%
Bell	69.8%	0.6%	0.5%	0.2%	0.2%	27.5%	1.1%
Cudahy	72.4%	1.0%	0.4%	1.1%	0.0%	23.2%	1.8%
South Gate	56.0%	1.8%	0.2%	1.7%	0.3%	38.7%	1.4%
Downey	65.4%	1.0%	0.0%	12.0%	0.0%	21.0%	0.5%
Paramount	51.0%	10.3%	0.2%	3.3%	1.1%	30.8%	3.2%
Bellflower	42.6%	13.0%	0.6%	10.2%	0.3%	30.2%	3.0%

Community	Percent Share of Total Population[1,2,3,4,5]						
	White Only	Black Only	American Indian or Alaskan Native Only	Asian Only	Native Hawaiian / Pacific Islander Only	Some Other Race Only	Two or More Races[6]
Cerritos	29.7%	9.0%	0.4%	50.2%	0.0%	6.8%	3.8%
Artesia	37.4%	2.0%	0.2%	45.5%	0.0%	11.3%	3.6%

Source: US Census Bureau, 2016; Metro, 2021z
Notes: [1] The US Census Bureau racial categories in the census questionnaire generally reflect a social definition of race recognized in this country and does not attempt to define race biologically, anthropologically, or genetically. In addition, it is recognized that the race categories include racial and national origin or sociocultural groups. People may choose to report more than one race to indicate their racial mixture. People who identify their origin as Hispanic, Latino, or Spanish may be of any race.
[2] The US Census Bureau defines "ethnicity" as either "Hispanic or Latino" or "Not Hispanic or Latino." "Hispanic or Latino" is defined as a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race. People who identify as Hispanic, Latino, or Spanish may be any race.
[3] Data is from US Census Bureau, 2011-2015 ACS 5-Year Estimates (Table B02001 RACE).
[4] This table includes race only and does not distinguish by ethnicity (Hispanic/Latino by origin). People who identify their origin as Hispanic, Latino, or Spanish may be of any race.
[5] Percent Share of Total Population shows what percentage of a given community total population is a given race (Percent Share of Total Population = Race Population in an Affected Community ÷ Total Population in Same Affected Community).
[6] Two or more races includes subcategories: "Two races including some other race" and "Two race excluding some other race, and three or more races".
[7] LA County contain US Census Bureau block group information for the entire county.
[8] City of Los Angeles total presented only contains Central City North, Central City, and Southeast Los Angeles US Census Bureau block groups that intersect both the EJ Affected Area and the affected communities.
[9] Central City North, Central City, and Southeast Los Angeles data comes from US Census Block Groups that fall within each community plan area and intersects the EJ Affected Area.

The US Census Bureau defines "ethnicity" as either "Hispanic or Latino" or "Not Hispanic or Latino." "Hispanic or Latino" is defined as a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race. People who identify as Hispanic, Latino, or Spanish may be any race. Table 4.22.3 characterizes the ethnic groups in the EJ Affected Area. Figure 4.22-1 illustrates the percent of the population identified as minority populations within the EJ Affected Area.

Based on the 2011-2015 ACS, Southeast Los Angeles (99.5 percent), Florence-Firestone (99.2 percent), Huntington Park (98.6 percent), Cudahy (96.6 percent), and Bell (96.3 percent) have the highest percent of minority populations. Central City (70.6 percent), Artesia (75.3 percent), Vernon (75.6 percent), Cerritos (79.2 percent) and Bellflower (79.6 percent) have the lowest percent of minority populations.

Table 4.22.3. Ethnicities of the Communities in the EJ Affected Area

Community	Percent Share of Total Population [1,2,3,4]							
			Non-Hispanic					
	Total Minority[5]	Hispanic of Any Race	Black Only	Asian Only	American Indian or Alaskan Native Only	Native Hawaiian/ Pacific Islander Only	Some Other Race Only	Two or More Races
County of Los Angeles[6]	73.1%	48.2%	8.0%	14.0%	0.2%	0.2%	0.3%	2.2%
City of Los Angeles[7]	84.2%	50.1%	13.3%	18.1%	0.3%	0.3%	0.4%	1.8%
Central City North[8]	82.0%	30.0%	17.0%	31.5%	0.5%	0.3%	0.3%	2.4%
Central City [8]	70.6%	21.3%	19.5%	25.2%	0.3%	0.1%	0.8%	3.4%
Southeast Los Angeles[8]	99.5%	90.2%	8.2%	0.8%	0.1%	0.0%	0.1%	0.1%
Florence-Firestone	99.2%	95.8%	3.1%	0.2%	0.0%	0.0%	0.0%	0.0%
Vernon	75.6%	68.3%	0.0%	7.3%	0.0%	0.0%	0.0%	0.0%
Huntington Park	98.6%	97.0%	0.4%	0.7%	0.0%	0.4%	0.1%	0.1%
Bell	96.3%	95.3%	0.6%	0.2%	0.0%	0.2%	0.0%	0.0%
Cudahy	96.6%	94.8%	0.4%	1.0%	0.1%	0.0%	0.1%	0.1%
South Gate	94.6%	91.0%	1.6%	1.6%	0.0%	0.2%	0.0%	0.1%
Downey	83.2%	69.6%	1.0%	12.0%	0.0%	0.0%	0.0%	0.5%
Paramount	94.6%	78.9%	10.1%	3.3%	0.0%	1.0%	0.1%	1.2%
Bellflower	79.6%	54.1%	12.8%	10.1%	0.4%	0.3%	0.2%	1.7%
Cerritos	79.2%	17.4%	9.0%	49.7%	0.2%	0.0%	0.3%	2.5%
Artesia	75.3%	26.1%	2.0%	45.2%	0.0%	0.0%	0.0%	2.0%

Source: US Census Bureau, 2016; Metro, 2021z

Notes:

[1] The US Census Bureau defines “ethnicity” as either “Hispanic or Latino” or “Not Hispanic or Latino.” "Hispanic or Latino" is defined as a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race. People who identify as Hispanic, Latino, or Spanish may be any race.

[2] Data is from US Census Bureau, 2011-2015 ACS 5-Year Estimates

[3] People who identify their origin as Hispanic, Latino, or Spanish may be of any race.

[4] Percent Share of Total Population shows what percentage of a given community total population is a given ethnicity or minority (Percent Share of Total Population = Ethnic/Minority Population in an Affected Community ÷ Total Population in Same Affected Community).

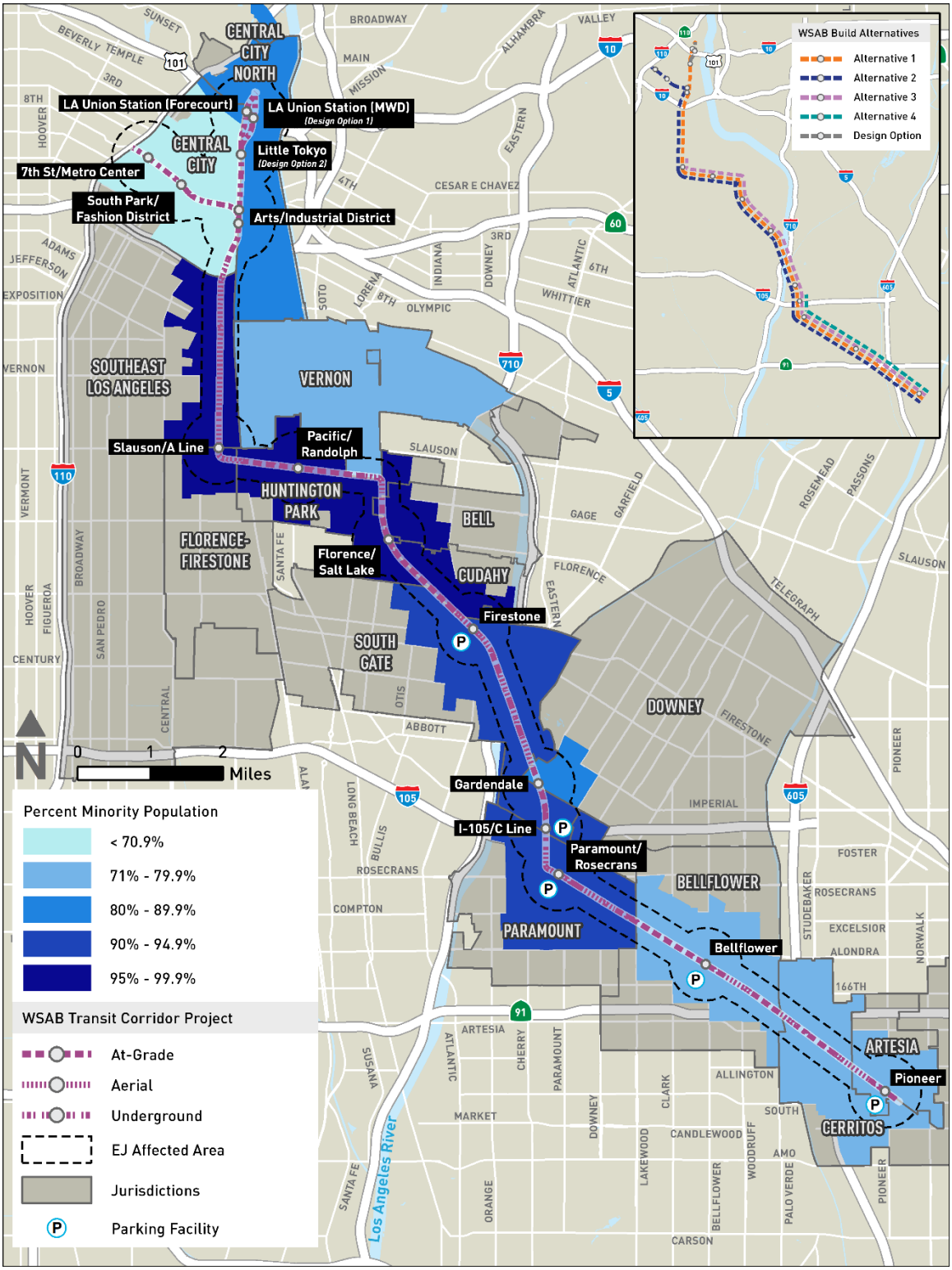
[5] A minority is defined as an individual who identifies as any race or ethnicity except for non-Hispanic/Latino White Alone. Percent of minority population is determined using 2011-2015 ACS 5-year estimates for the Census Block Groups that intersect both the EJ Affected Area and affected community.

[6] LA County contain US Census Bureau block group information for the entire county

[7] City of Los Angeles total presented only contains Central City North, Central City, and Southeast Los Angeles US Census Bureau block groups that intersect both the EJ Affected Area and the affected communities.

[8] Central City North, Central City, and Southeast Los Angeles data comes from US Census Block Groups that fall within each community plan area and intersects the EJ Affected Area.

Figure 4.22-1. Percent of the Population identified as Minority Populations in the EJ Affected Area



Source: Metro 2021z
Notes: [1] Minority is defined as an individual who identifies as any race or ethnicity except for non-Hispanic/Latino White Alone.
[2] Percent of minority population is illustrated using 2011-2015 ACS 5-year estimates for the Census Block Groups that intersect both the EJ Affected Area and affected community.

Low-Income Population

As previously discussed, the HUD threshold of income limits is used to define "low-income". The 2015 median household income for LA County ($56,196) is used because it is the closest available data to the base year of 2017. A median household income 80 percent of LA County (approximately $45,000) is used as the low-income threshold. A community is considered a low-income community if the percent low-income is at least 10 percent higher than the LA County average, or the median household income is less than 80 percent of the median household income for LA County.

Table 4.22.4 show the median household income and percent of low-income households for the communities in the EJ Affected Area. Figure 4.22-1 illustrates the percent of the population identified as low-income within the EJ Affected Area. Affected communities in the EJ Affected Area identified as low-income communities include: Central City North, Central City, Southeast Los Angeles, Florence-Firestone, Huntington Park, Bell, and Cudahy. Cerritos, Artesia, and Downey have the highest median household incomes (over $70,000 median household income) and the lowest percent of low-income households (less than 36 percent of the population are low-income). Southeast Los Angeles has the lowest median household income ($27,941) and the highest percent of low-income households (67.5 percent). Florence-Firestone (66.4 percent), Huntington Park (62.5 percent), Cudahy (61.9 percent), Central City (60.7 percent), Bell (59.5 percent), and Central City North (54.4 percent) also have high percent low-income households.

Table 4.22.4. Median Household Income and Percent Low-Income for the Communities in the EJ Affected Area

Affected Community	Median Household Income[1,2]	Percent Low-Income[3,4]
County of Los Angeles[5]	$56,196	41.3%
City of Los Angeles[6]	$31,390	61.2%
Central City North[7]	**$44,551[8]**	**54.4%[8]**
Central City[7]	**$29,623[8]**	**60.7%[8]**
Southeast Los Angeles[7]	**$27,941[8]**	**67.5%[8]**
Florence-Firestone	**$28,145[8]**	**66.4%[8]**
Vernon	$61,250	43.8%
Huntington Park	**$37,916[8]**	**62.5%[8]**
Bell	**$34,958[8]**	**59.5%[8]**
Cudahy	**$36,109[8]**	**61.9%[8]**
South Gate	$47,341	49.8%
Downey	$76,149	20.1%
Paramount	$53,940	43.6%
Bellflower	$54,242	46.6%
Artesia	$74,715	35.8%
Cerritos	$88,730	24.1%

Source: Metro, 2021z

Notes: [1] Median Household Income in 2015 Inflation-Adjusted Dollars.

[2] Low-income is defined as households with income less than $45,000, or approximately 80% of the 2015 median household income for Los Angeles County ($56,196). (2015 ACS 5-Year Estimates Table B19001), or if the percent low-income is at least 10 percent higher than the LA County average (51.3 percent)

[3] Percent Low-Income is the percent of total households within an affected community with a household income of less than $45,000.

[4] This analysis excludes block groups with zero total households. Only one block group in the Affected Area (Downey) contains zero total households (LA County Rancho Los Amigos Medical Center).

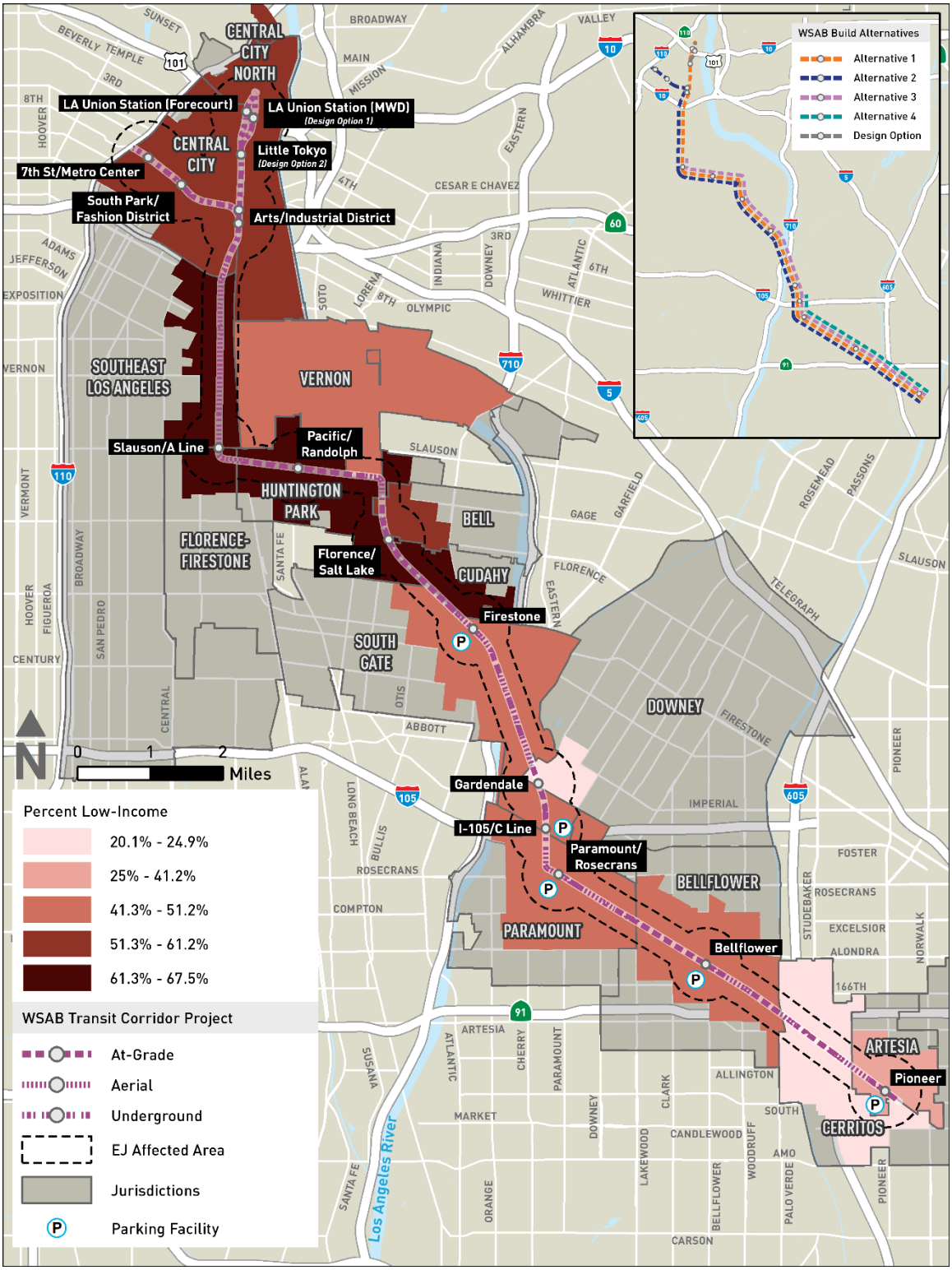
[5] LA County contain US Census Bureau block group information for the entire county.

[6] City of Los Angeles total presented only contains Central City North, Central City, and Southeast Los Angeles US Census Bureau block groups that intersect both the EJ Affected Area and the affected communities.

[7] Central City North, Central City, and Southeast Los Angeles data comes from US Census Block Groups that fall within each community plan area that intersect both the EJ Affected Area.

[8] **Bolded** entries identify the low-income communities

Figure 4.22-2. Percent of the Population Identified as Low-Income in the EJ Affected Area



Source: Metro 2021z
Notes: [1] The percent of low-income is illustrated using 2011-2015 ACS 5-year estimates for the Census Block Groups that intersect both the EJ Affected Area and affected community

Summary of Demographic Data

Based on the CEQ *Environmental Justice Guidance under the National Environmental Policy Act* EJ community criteria discussed in Section 4.22.1.2 and data provided in Table 4.22.3 and Table 4.22.4, each identified community in the EJ Affected Area is considered an EJ community.

Communities with the highest percent of minorities

- Southeast Los Angeles
- Florence-Firestone
- Huntington Park
- Cudahy
- Bell

Communities with the highest percent of low-income households

- Southeast Los Angeles
- Florence-Firestone
- Huntington Park
- Cudahy
- Central City

Communities with the lowest percent of minorities (most non-minority population)

- Central City
- Artesia
- Vernon
- Cerritos
- Bellflower

Communities with the lowest percent of low-income households (highest median income/lowest percent low-income)

- Downey
- Cerritos
- Artesia
- Paramount
- Vernon

Distribution of EJ Populations

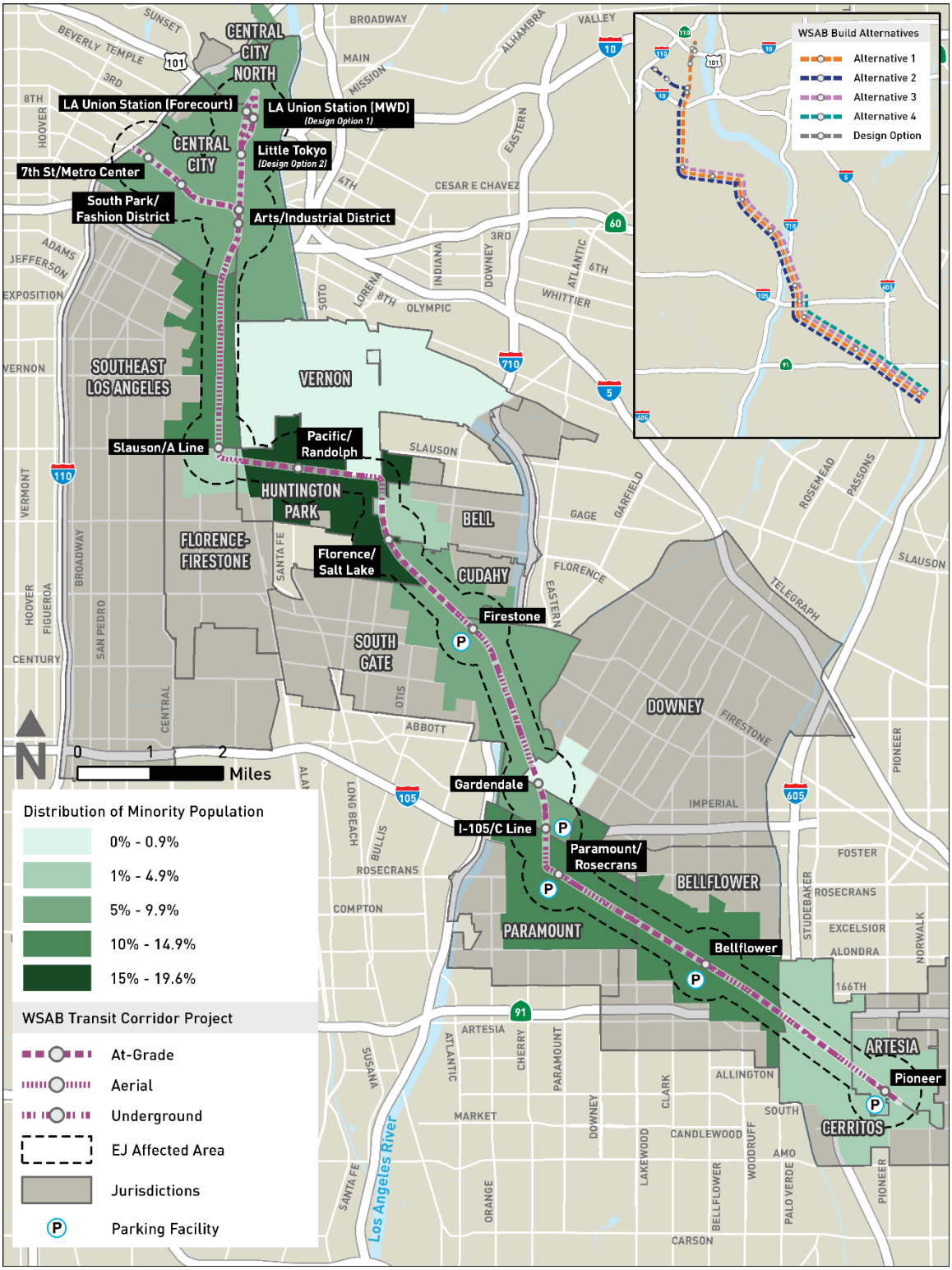
The distribution of the EJ populations presented in this section is the number of minority/low-income persons within an affected community as a proportion of the total minority/low-income persons within the entire EJ Affected Area. The distribution shows the percentage of the EJ Affected Area's total minority or low-income population within a given affected community and is provided in Table 4.22.5. The highest percentage of population identified as minority or low-income are located in Central City, Southeast Los Angeles, Huntington Park, Paramount, and Bellflower. Figure 4.22-3 and Figure 4.22-4 show the distribution of the populations identified as a minority and low-income in the EJ Affected Area.

Table 4.22.5 Distribution of EJ Populations within the EJ Affected Area

Affected Community	Minority Distribution Percent[1,2]	Low-Income Distribution Percent[1,3]
City of Los Angeles[4]	26.8%	41.2%
Central City North[5]	6.7%	5.4%
Central City[5]	8.5%	26.4%
Southeast Los Angeles[5]	11.7%	9.3%
Florence-Firestone	3.3%	2.9%
Vernon	0.01%	0.01%
Huntington Park	19.6%	17.2%
Bell	4.8%	4.2%
Cudahy	5.1%	4.5%
South Gate	9.3%	7.1%
Downey	0.6%	0.1%
Paramount	12.1%	6.9%
Bellflower	11.5%	11.6%
Artesia	3.4%	2.6%
Cerritos	3.6%	1.8%

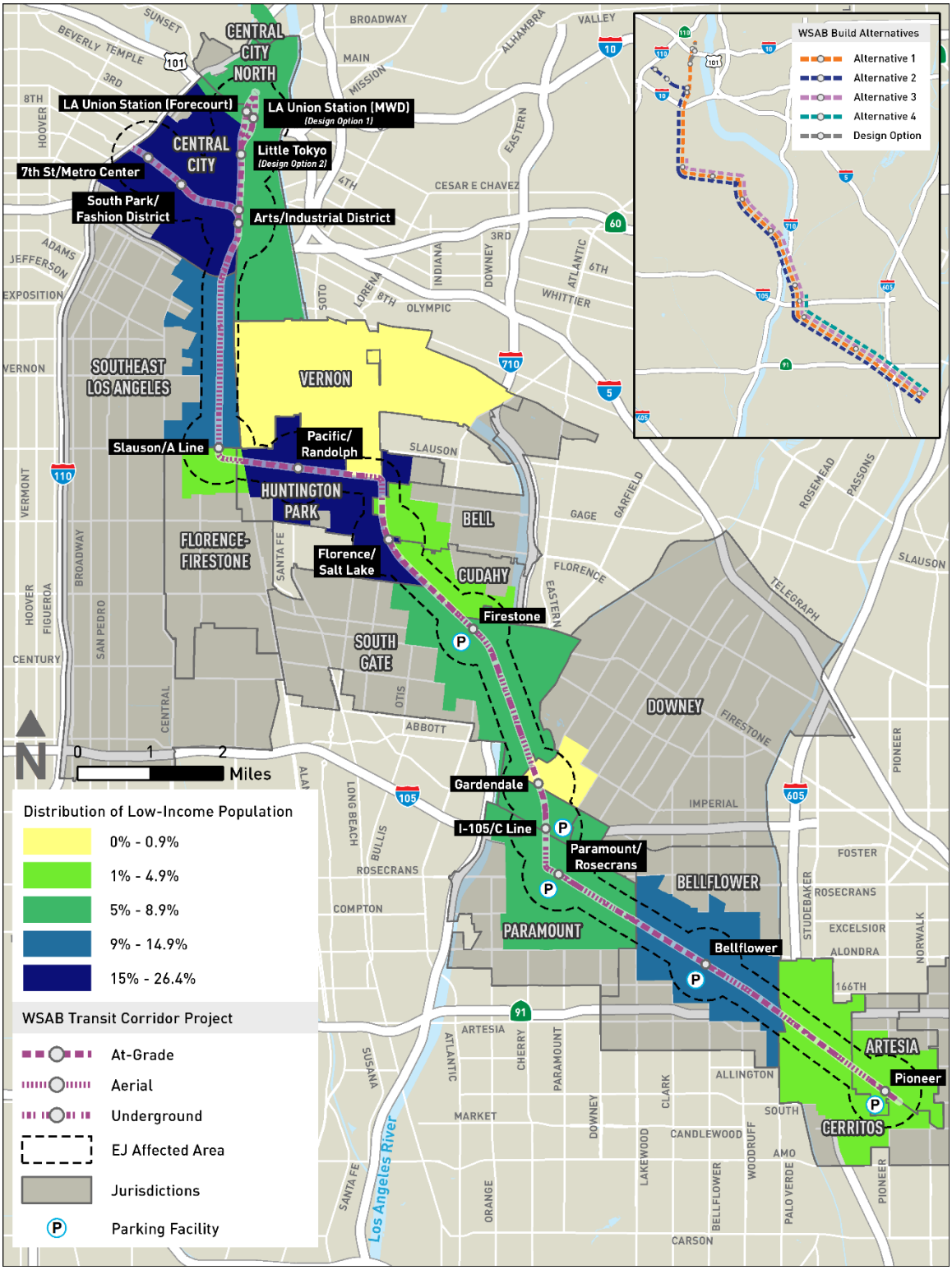
Source: U.S. Census Bureau 2016; Metro 2021z
Notes: Does not equal to 100 percent due to rounding.
[1] Distribution is the number of minority/low-income persons within an affected community as a proportion of (divided by) the total minority/low-income persons within the EJ Affected Area. Distribution shows what percentage of the EJ Affected Area's total minority or low-income population are within a given affected community. (Distribution = Minority or Low-Income Population in an Affected Community ÷ Total Minority or Low-Income Population in the entire EJ Affected Area).
[2] A minority is defined as an individual who identifies as any race or ethnicity except for non-Hispanic/Latino White Alone. Percent of minority population is illustrated using 2011-2015 ACS 5-year estimates for the Census Block Groups that intersect both the EJ Affected Area and affected community.
[3] Low-income is defined as households with income less than $45,000, or approximately 80 percent of the 2015 median household income for Los Angeles County. Percent Low-Income is the percent of total households within an affected community with a household income of less than $45,000.
[4] City of Los Angeles total presented only contains Central City North, Central City, and Southeast Los Angeles US Census Bureau block groups that intersect both the EJ Affected Area and the affected communities.
[5] Central City North, Central City, and Southeast Los Angeles data comes from US Census Block Groups that fall within each community plan area and intersects the EJ Affected Area.

Figure 4.22-3. Distribution of the Population Identified as Minority Populations in the EJ Affected Area



Source: Metro 2021z
Notes: [1] The percent of low-income is illustrated using 2011-2015 ACS 5-year estimates for the Census Block Groups that intersect both the EJ Affected Area and affected community

Figure 4.22-4. Distribution of the Population Identified as Low-Income Populations in the EJ Affected Area



Source: Metro 2021z
Notes: [1] The percent of low-income is illustrated using 2011-2015 ACS 5-year estimates for the Census Block Groups that intersect both the EJ Affected Area and affected community

4.22.2.2 Public Participation

Public outreach for the Project included a series of outreach meetings (i.e., public and interagency scoping meetings, community update meetings, and community workshops), and outreach activities (i.e., direct mail notices, project hotline, dedicated project email and website, multi-lingual project pamphlets, and a project Facebook page). The public participation strategy was developed to encourage active participation and solicit input from groups that may be affected by and/or benefit from the Project.

Over 20 public meetings for the Project have been held since 2017. Notifications for public meetings were through various communication tools, including printed materials, public signage, and social media (i.e., Metro and local city websites, Facebook, Twitter, and local transit-oriented blogs), the project website, and briefings. Outreach meetings were held in several of the affected EJ communities and complied with the Americans with Disabilities Act (ADA). Translation services were provided for several languages, including Spanish and Japanese, and printed materials were provided in English, Spanish, Japanese, and Korean based on the ethnic makeup of the affected communities and requested languages. For those unable to attend the meetings, a video recording of the formal presentations was made available to the public within one week of the conclusion of the meting series. For more information regarding the public outreach and consultation process, see Chapter 7, Public Outreach, Agency Consultation, and Coordination, of this Draft EIS/EIR.

4.22.3 Environmental Consequences/Environmental Impacts during Operations

4.22.3.1 No Build Alternative

The No Build Alternative includes local transportation-related projects in the affected jurisdictions, such as the Link US project, Active Transportation Rail to Rail/River Corridor, LAUS Forecourt and Esplanade Improvement, I-710 Corridor Bike Path, and the Cesar E. Chavez Bus Stop Improvements project. These projects would likely result in effects on environmental justice communities typically associated with transit, highway, bicycle, and pedestrian facilities and roadway projects. Projects planned under the No Build Alternative would undergo separate environmental review to determine whether the projects would adversely affect environmental justice communities.

Under the No Build Alternative, the Build Alternatives would not be developed. The No Build Alternative would result in adverse land use effects as the No Build Alternative would be inconsistent with several applicable SCAG 2016-2040 RTP/SCS policies and several applicable local land use plans and policies. The adverse effects related to land use would be distributed among the EJ communities and non-EJ communities. The effect would not be disproportionately high and adverse to EJ communities.

The No Build Alternative establishes a baseline for comparison to evaluate potential traffic effects of the other alternatives. Daily vehicle traffic within the project study area is projected to increase under future baseline conditions and under the No Build Alternative compared to existing conditions. Community mobility would be expected to deteriorate with the increased regional traffic congestion anticipated between now and 2040, which could result in a long-term reduction in access to public transportation, businesses, and community resources, as well as reduced emergency vehicle access. The No Build Alternative would not achieve the potential transportation benefits from the Build Alternative, such as improved circulation, reliability, and access. The No Build Alternative would not provide the positive benefits of increased mobility and

connectivity of the Gateway Cities region and the associated EJ populations to the Metro rail system.[18]

4.22.3.2 Build Alternatives, Design Options, MSF Site Options

The following environmental topics would not have adverse effects; therefore, these environmental topics would not result in a disproportionately high and adverse effect to EJ communities and are not further discussed:

- Transportation (transit, active transportation, off-street parking)
- Land Use (operations; land uses compatibility, regional plans)
- Communities and Neighborhoods (operations)
- Visual and Aesthetics (operations visual character and quality of scenic resources; construction)
- Air Quality (operations; construction odors, construction localized pollutant emissions)
- Greenhouse Gas Emissions
- Ecosystems and Biological Resources (operations, special-status species, jurisdictional resources, protected trees)
- Geotechnical, Subsurface, Seismic Hazards
- Hazards and Hazardous Materials
- Water Resources
- Energy
- Electromagnetic Fields
- Archaeological, Historical, and Paleontological Resources
- Traditional Cultural Properties/Tribal Cultural Resources
- Parklands and Community Facilities (operational access and function of parklands, community facilities)
- Economic and Fiscal Impacts
- Safety and Security
- Section 4(f) Resources

The EJ Affected Area encompasses predominantly EJ communities. As such, the environmental effects of the Build Alternatives, design options, and MSF site options would be predominantly borne by EJ communities. This section focuses on whether the Build Alternatives, design options, and MSF site options would result in disproportionately high and adverse effects to EJ populations identified within the EJ Affected Area. The analysis compares areas with high concentrations of EJ populations (e.g. Central City, Southeast Los Angeles, Huntington Park, Paramount, and Bellflower) with comparable non-EJ populations in the EJ Affected Area (e.g. Cerritos). As further discussed below, these types of environmental effects occur across the Metro system corridor in EJ communities and non-EJ communities. Mitigation measures would be implemented with similar type and quality throughout the EJ Affected Area.

[18] The Gateway Cities region of Los Angeles County includes the Cities of Artesia, Avalon, Bell, Bellflower, Bell Gardens, Cerritos, Commerce, Compton, Cudahy, Downey, Hawaiian Gardens, Huntington Park, La Habra Heights, Lakewood, La Mirada, Long Beach, Lynwood, Maywood, Norwalk, Paramount, Pico Rivera, Santa Fe Springs, Signal Hill, South Gate, Vernon, Walnut Park, and Whittier, as well as some unincorporated areas of Southeast Los Angeles County.

As demonstrated for the environmental topics in Chapters 3 and 4, the location and distribution of the adverse effects throughout the project corridor differ for each Build Alternative. A majority of the adverse effects would occur in Paramount (for Alternatives 1, 2, 3, and 4), followed by Central City (for Alternative 2 only), South Gate (for Alternatives 1, 2, and 3), and Huntington Park (for Alternatives 1, 2, and 3).

A review of Metro LRT projects constructed and operated in Los Angeles County was conducted to further assess the potential for disproportionately high and adverse effects. This review of the Metro LRT system identified several LRT systems comparable to the Project based on similar technologies, alignment types, and service area. These include the Metro E (Expo) Line, L (Gold) Line, and C (Green) Line. These LRT systems are adjacent to communities that contain both EJ and non-EJ populations. Based on an analysis of current census data, the non-EJ populations along these LRT systems include[19, 20]:

- **Metro E (Expo) Line:** Santa Monica, West Los Angeles, Rancho Park, Century City, Cheviot Hills, Beverlywood, Pico-Robertson
- **Metro L (Gold) Line:** Elysian Park, Pasadena
- **Metro C (Green) Line:** El Segundo, Manhattan Beach, Hawthorne, Redondo Beach

The non-EJ communities identified within these Metro LRT system corridors experienced environmental effects for construction and operations similar to those identified for the EJ communities in the EJ Affected Area of the Build Alternatives, design options, and MSF site options. Across the Metro projects, adverse effects and mitigation in these non-EJ communities were addressed in a similar manner as EJ communities. Metro has implemented each LRT system guided by established design guidelines as well as through the requirements of project-specific environmental documents. The review of Metro LRT projects indicates that mitigation measures for the Build Alternatives would be implemented throughout the EJ Affected Area with similar type and quality as other Metro projects.

Furthermore, as demonstrated in the following analysis, the implementation of mitigation (Section 4.22.3.5) and off-setting benefits (Section 4.22.3.3) are taken into consideration in determining if a disproportionately high and adverse effect would occur in an EJ community in the EJ Affected Area. Off-setting benefits of the Build Alternatives to the EJ communities include the provision of an alternative mode of transportation; increased mobility; increased transit access to areas that have been previously underserved by regional transit; improved connectivity of the EJ populations to places of employment, community facilities, and education; air quality improvements; and economic and fiscal benefits to the EJ communities.

Transportation

Traffic Operations: As summarized below and provided in greater detail in Section 3.4.1 of the Transportation Chapter, the Build Alternatives and design options would have adverse effects on traffic operations related to intersection delay as measured by level-of-service caused by at-grade rail crossings, park-and-ride and kiss-and-ride traffic, and lane closures. The operation of either the Paramount or Bellflower MSF site options would not adversely affect roadway intersections. Adverse effects may occur in either the AM peak period, the PM

[19] The communities identified contain census tracts with non-EJ populations within 0.25 mile of the Metro E (Expo) Line, L (Gold) Line, and C (Green) Line alignments and 0.5 mile of the corresponding LRT stations.

[20] Metro Countywide Planning and Development Staff, May 2021

peak period, or during both peak periods. Alternatives 1, 2, 3, and design options, would have 20 locations with adverse effects on traffic operations related to intersection level-of-service delays caused by at-grade rail crossings, increased traffic, and lane closures:

- 2 intersections on Florence Avenue/California Avenue in Huntington Park and Cudahy (Alternatives 1,2, 3, Design Options 1 and 2)
- 8 intersections along Randolph Street and Pacific Boulevard in Huntington Park (Alternatives 1,2, 3, Design Options 1 and 2)
- 3 intersections in Bell (Alternatives 1,2, 3, Design Options 1 and 2)
- 2 intersections in South Gate (Alternatives 1,2, 3, Design Options 1 and 2)
- 3 intersections in Bellflower (Alternatives 1,2, 3, 4 Design Options 1 and 2)
- 2 intersections in Cerritos (Alternatives 1,2, 3, 4 Design Options 1 and 2

Implementation of Mitigation Measures TRA-1 through TRA-20, which are specific intersection improvements and a Transportation Management Plan, would reduce adverse effects at the intersections. These measures are described in Section 3.5.2 of the Transportation Chapter. Even with implementation of Mitigation Measures TRA-1 through TRA-20, adverse effects at 12 intersections located in Huntington Park and Bell would remain for Alternatives 1, 2, and 3 and the design options:

- Randolph Street / Alameda Street (West), Huntington Park
- Randolph Street / Santa Fe Avenue, Huntington Park
- Randolph Street / Malabar Street, Huntington Park
- Pacific Boulevard / Clarendon Avenue, Huntington Park
- Randolph Street / Pacific Boulevard, Huntington Park
- Randolph Street / Seville Avenue, Huntington Park
- Randolph Street / Miles Avenue, Huntington Park
- Randolph Street / State Street, Huntington Park
- Gage Avenue / Salt Lake Avenue (West), Huntington Park
- Florence Avenue / California Avenue (West), Huntington Park
- Florence Avenue / California Avenue (East), Huntington Park
- Gage Avenue / California Avenue, Bell

Given that there are EJ populations across the corridor, the traffic effects of the Build Alternatives would be predominantly borne by EJ communities. The traffic effects would occur in both EJ communities and areas with non-EJ populations. Adverse effects after mitigation occur in Huntington Park, which has the highest concentration of EJ populations and Bell which has the lowest concentration of EJ populations and a higher concentration of non-EJ population compared to Huntington Park.

As discussed in Section 3.4.1 and 3.5.2.1, for Alternatives 1, 2, and 3 and design options, after mitigation the number of intersections with adverse effects and increased vehicle delays are the highest in Huntington Park (11 intersections, with 7 of those intersections along Randolph Street). The number of intersections that would be adversely affected after mitigation in Huntington Park (11 intersections) would be appreciably more than in Bell (1 intersection). However, as shown Table 3.14, Alternatives 1, 2, and 3 would result in a benefit and reduce intersection delay at 11 other intersections either in the AM or PM peak hour across Huntington Park. Six intersections with reduced delays are located on Randolph Street.

Metro will coordinate with applicable local cities and agencies and feasible mitigation measures would be similarly implemented along the project corridor as necessary for each Build Alternative and the design options, regardless of the composition of the population. As discussed in Section 3.5.2.1, potential mitigation measures for each affected intersection generally included three types of modifications: signalizing intersections that are currently stop controlled; adding lanes (right, through, and/or left); and extending turn bays (right or left). In developing the mitigation options, consideration was given to the efficacy of the mitigation (efficacy of reducing intersection delay) and avoidance of right-of-way, access, parking, and other impacts to adjacent properties.

The Build Alternatives and design options would also provide benefits to the affected EJ communities, including improved transit service, transit access, regional mobility, and air quality. Alternatives 1, 2, and 3 also include three new LRT stations (Slauson/A Line, Pacific/Randolph and Florence/Salt Lake Stations) near Huntington Park and Bell, which would be a benefit to those communities. As discussed in Section 3.4.1, the implementation of the Build Alternatives would result in a benefit by reducing intersection delay at several intersections across the corridor, including in Huntington Park. This would occur for a variety of reasons, including implementation of project measures (summarized in Section 3.5.1), optimized traffic signal timing, reconfiguration of roadway lanes, and/or changes in traffic flow. Improvements in delay would occur at the intersection where modifications occur and potentially at adjacent intersections due to improvements in traffic flow. Under the Build Alternatives, travel time on transit would be shorter than existing transit service across the corridor.

After the implementation of mitigation, Huntington Park would have adverse effects related to traffic. Taking into account the implementation of mitigation measures and the off-setting benefits as described above and in Section 4.22.3.3, the Build Alternatives would not result in disproportionately high and adverse effects to EJ communities within the EJ Affected Area.

Active Transportation (Bicycle/Pedestrian Facilities): The potential conflict with planned bike paths in local plans are discussed under the "Land Use and Development" heading below. As discussed in Section 3.4.3 of the Transportation Chapter, where project features would encroach on existing bicycle facilities (i.e., Paramount Bike Trail and Bellflower Bike Trail) or sidewalks, these facilities would be realigned or reconstructed as part of the Build Alternatives. Permanent impacts would be avoided. The pedestrian and bicycle facilities would remain operational and function would be maintained. The Build Alternatives would not result in adverse effects related to active transportation. The Build Alternatives would include enhancements to pedestrian walkways in the vicinity of the stations. Thus, the Build Alternatives would not result in disproportionately high and adverse effects related to active transportation to EJ communities in the EJ Affected Area.

Parking: As discussed in Section 3.4.4 of the Transportation Chapter, if parking demand exceeds the supply of parking spaces (including the parking spaces provided at the Build Alternatives), then an increase in localized traffic and delay along roadways and at intersections could occur, including a corresponding increase in idling and vehicular emissions as vehicles search for parking options. Adverse effects are not expected at the stations where no additional parking is provided (stations north of the Firestone Station and Gardendale Station).

Section 3.4.4 indicates that the parking demand may exceed the off-street parking provided at the Firestone Station in South Gate (Alternatives 1, 2, and 3), I-105/C Line Station in South Gate

(Alternatives 1 and 2), Paramount/Rosecrans Station in Paramount (Alternative 2), Bellflower Station in Bellflower (Alternatives 1, 2, 3, and 4), and Pioneer Station in Artesia (Alternatives 1 and 2). On-street parking is anticipated to be sufficient to accommodate demand during the peak hours at the I-105/C Line, Paramount/Rosecrans, Bellflower, and Pioneer Stations for Alternatives 1, 2, 3, and 4, and the Firestone Station for Alternative 3. Mitigation Measures TRA-21 (Parking Monitoring and Community Outreach) and TRA-22 (Parking Mitigation Program [Permanent]), as described in Section 3.5.2, would be implemented. The proposed mitigation would be implemented to the system as a whole and would apply to all proposed stations, including the stations were no additional parking is proposed. After mitigation, it is possible that adverse effects would remain after mitigation at Firestone Station under Alternative 1 and 2.

As discussed in Section 3.4.4 and summarized in Table 3.33 and Table 3.34, Alternatives 1, 2, and 3 would result in a net loss of on-street parking spaces in Central City North, Southeast Los Angeles, Huntington Park, and South Gate along the proposed alignment and at station areas. These areas vary in land uses including light industrial, warehouse, and church, and the loss of on-street parking would not affect the function of the adjacent land uses or the off-street parking of these facilities. Alternative 4 would not result in a net loss of on-street parking spaces. No adverse effects would occur for Design Options 1 and 2 and the two MSF site options. The MSF site options would not affect on- or off-street parking availability because the MSF site options would not create a demand for on-street parking spaces and the MSF site options would remove off-street parking and the business(es) that utilize that parking.

Adverse effects related to parking would affect Central City North, Southeast Los Angeles, South Gate, Paramount, Bellflower, and Artesia. As the communities in the EJ Affected Area are all EJ communities, environmental effects of the Build Alternatives would be predominantly borne by EJ communities. Among the areas experiencing parking effects, Southeast Los Angeles, Paramount, Bellflower, and South Gate have the highest concentrations of EJ populations while Artesia and Central City North have a higher concentration of non-EJ populations. The parking effects would occur in both EJ communities with high concentrations of EJ populations as well as areas with comparable non-EJ populations (Artesia and Central City North). The magnitude of the effects would be similar across the corridor and would not be concentrated in one community. The Build Alternatives would not result in an appreciably more severe or greater in magnitude adverse effect in areas with EJ populations compared to areas with non-EJ populations.

As described in Section 4.22.3.3, the Build Alternatives and design options would also provide benefits to the affected EJ communities, including improved transit service and transit access, regional mobility, and air quality. With the implementation of mitigation measures and in consideration of the off-setting benefits to the affected EJ communities, the Build Alternatives would not result in disproportionately high and adverse effects related to parking to the EJ communities within the EJ Affected Area.

Land Use and Development

As discussed in Section 4.1.3, the Build Alternatives would preempt the future development and implementation of Class I bicycle paths in the local bicycle plans: along Salt Lake Avenue (Huntington Park, Bell, Cudahy), north of Rayo Avenue and south of the Los Angeles River (South Gate), and south of Main Street (South Gate). While planned, the bike facilities are concepts in the local plans and are not funded nor scheduled for implementation in local

capital improvement budgets/programs. Build Alternatives would result in an inconsistency with the current local plans and an adverse effect would occur.

With the implementation of Mitigation Measure LU-1 (Consistency with Bike Plans) described in Section 4.1.4 of the Land Use Section, Metro, as appropriate, would support preparation of amended language for each affected local plan consistent with each city's mobility and connectivity goals. As further discussed in Section 4.1.3.2 in the Land Use Section, sufficient space would be available to accommodate alternative bike path classifications along the streets adjacent to the Build Alternatives. These Class II and Class III bike facilities would maintain the connectivity and be supportive of the goals identified in the bicycle plans. However, because the process to amend bike plans is a local process, including public participation, the ultimate outcome and resolution of plan elements cannot be predicted. Therefore, an adverse effect related to the inconsistency with local plans may still occur after Mitigation Measure LU-1.

The Build Alternatives were considered to have potential adverse effects related to the conflict with local plans in Huntington Park, Bell, Cudahy, and South Gate. As the communities in the EJ Affected Area are all EJ communities, the effects of the Build Alternatives would be predominantly borne by EJ communities. Huntington Park and South Gate have the highest concentration of EJ populations while Bell and Cudahy have higher concentrations of non-EJ populations. Adverse effects would be similar for Huntington Park, Bell, Cudahy, and South Gate and would occur in both EJ communities and areas with non-EJ populations. Mitigation would be similarly implemented along the project corridor as necessary for each Build Alternative.

As discussed in Section 4.22.3.3, the Build Alternatives, design options, and MSF site options would also provide benefits to the affected EJ communities, including a reliable, fixed guideway transit service that would improve mobility, and increased transit connectivity and access to areas that have been previously underserved by regional transit. The Build Alternatives would be supportive of the transportation and connectivity goals in the local plans. With the implementation of mitigation measures and in consideration of the off-setting benefits to the affected EJ communities, the Build Alternatives would not result in disproportionately high and adverse effects related to land use planning to the EJ communities in the EJ Affected Area.

Acquisitions and Displacements

As discussed in Section 4.3.3, Alternatives 1, 2, and 3 would permanently displace businesses and/or residential units in Los Angeles, Huntington Park, Cudahy, South Gate, Paramount, Bellflower, and Artesia. Alternative 4 would displace businesses and/or residential units in Paramount, Bellflower, and Artesia. Design Option 1 would not require permanent displacement of businesses and residential units, and Design Option 2 would require an acquisition of one business and no residential units in the City of Los Angeles. The Paramount MSF site option would require the displacement of several businesses and residential units, and the Bellflower MSF site option would require the displacement of two businesses and no residential units. Overall, the Los Angeles, Huntington Park, Bellflower, Paramount, and Artesia in the EJ Affected Area would each have 10 or fewer residential units displaced.

The nursery business (South Gate), drive-in theater and swap meet (Paramount) and sports center (Bellflower) may be acquired and displaced by the Build Alternatives; however, these businesses do not serve especially important social, religious or cultural functions for the

surrounding EJ populations. Although the businesses provide employment, the facilities are not large employment centers.

Metro would comply with the Uniform Act, California Relocation Act, and other applicable regulations, and no mitigation measures are required. No adverse effects from acquisitions and displacements would occur for all Build Alternatives. Compliance with the above regulations is standard practice for Metro and is implemented similarly throughout Metro's system in both EJ and non-EJ communities. As described in Section 4.22.3.3, the Build Alternatives and design options would also provide benefits to the affected EJ communities, including improved transit service and transit access, regional mobility, and air quality. With compliance with the Uniform Act, California Relocation Act, and other applicable regulations and the consideration of offsetting benefits to EJ communities, the Build Alternatives would not result in disproportionately high and adverse effects related to acquisitions and displacement to EJ communities in the EJ Affected Area.

Visual and Aesthetics

As discussed in Section 4.4.3 of the Visual and Aesthetics Section, for the Build Alternatives, the existing landscaping and decorative wall on the south side of the World Energy storage tracks on Somerset Boulevard in Paramount could be removed in which views of the storage tank cars would not be visually compatible with the surrounding residential area, and residents would be sensitive to the change in visual character. The design options and MSF site options would not adversely affect views of scenic resources. However, the Build Alternatives would remove the "Belle" public art cow statue, which has aesthetic value to Bellflower.

With implementation of Project Measures VA PM-1 through VA PM-7, which include design standards, incorporation of public art, incorporation of landscaping, screening, local zoning ordinances, and directing light away from surrounding properties, and Mitigation Measures VA-1 (Screening at Somerset Boulevard) and VA-2 (Relocation of "Belle"), no adverse effects would occur since views of the storage tank cars would remain obstructed along Somerset Boulevard and the "Belle" public art cow statue would be relocated to a city-approved location in Bellflower, subject to a condition assessment detailing the current physical condition of the artwork. Removal of the public art cow statue would not conflict with or detract from the visual character of the portion of the PEROW on which the public art statue is sited. In addition, the statue represents the city's origins as a dairy community; which may have social importance to the community of Bellflower as a whole but may not have especially important social, religious, or cultural importance for EJ communities. The relocation to a city-approved location would not change its importance to Bellflower and would not result in an adverse effect. Therefore, with the implementation of mitigation and in consideration of offsetting benefits as described in Section 4.22.3.3, the Build Alternatives would not result in disproportionately high and adverse effects related to visual and aesthetics to EJ communities in the EJ Affected Area.

Noise and Vibration

Noise: As discussed in Section 4.7.3 of the Noise and Vibration Section, without the implementation of mitigation, noise impacts related to the project operation and/or freight track relocation would generally occur throughout the project corridor where residences and other noise-sensitive land uses are located adjacent to the aerial and at-grade portions of the alignment or Paramount MSF site option. Impacts may occur in Huntington Park and Paramount in the EJ Affected Area due to the relocation of freight tracks. The Paramount MSF site option would result in adverse noise

effects related to the MSF lead tracks at the residential neighborhood north of Rosecrans Avenue in the EJ Affected Area within Paramount. The Bellflower MSF site option would not result in additional adverse noise effects at residential areas.

Mitigation Measures NOI-1 through NOI-7, which include soundwalls, low impact frogs, noise monitoring, crossing signal bells, gate-down-bell-stop variance, and TPSS noise reduction, would reduce adverse effects related to noise for the Build Alternatives and MSF site options. Mitigation measures would be implemented as required throughout the project corridor without consideration of character of the adjacent community or the composition of the population. Similar noise project measures and mitigation (e.g., varied heights in soundwalls, low-impact frogs, wheel squeal noise monitoring, crossing signal bells, gate-down-bell stop variances, and TPSS noise reduction measures) have been similarly implemented throughout Metro's system in both EJ and non-EJ communities to minimize adverse effects to the extent feasible.

Noise impacts would occur throughout the project corridor at residential areas and other noise and vibration-sensitive land uses as discussed in detail in Section 4.7.4 of the Noise and Vibration Section. Adverse noise effects would remain even after implementation of mitigation measures in Southeast Los Angeles, Florence-Firestone, Huntington Park, Bell, Cudahy, South Gate, Paramount, Bellflower, Cerritos, and Artesia. The number of affected noise receptors after mitigation would be highest in Huntington Park, Paramount, Bellflower, and Artesia. As the communities in the EJ Affected Area are all EJ communities, environmental effects of the Build Alternatives would be predominantly borne by EJ communities. Huntington Park, Paramount, Bellflower, Southeast Los Angeles, and South Gate have the highest concentration of EJ populations. Artesia, Cerritos, and Bellflower have the highest concentration of non-EJ populations compared to the other EJ communities with adverse noise effects. Adverse noise effects would occur in EJ communities with higher concentrations of EJ populations as well as areas with comparable non-EJ populations and would not be concentrated in one EJ community. The Build Alternatives would not result in an appreciably more severe or greater in magnitude adverse effect than other areas with comparable non-EJ populations.

The Build Alternatives would also provide off-setting benefits (Section 4.22.3.3) such as an alternative mode of transportation that would increase mobility and transit access, and provide air quality improvements and economic and fiscal benefits. With the implementation of mitigation and in consideration of off-setting benefits, the Build Alternatives would not result in disproportionately high and adverse effects related to noise to EJ communities in the EJ Affected Area.

Vibration: As discussed in Section 4.7.3 of the Noise and Vibration Section, the majority of vibration impacts would occur where the LRT would be at-grade. No vibration impacts would occur for the design options and MSF site options. Vibration impacts would occur along the at-grade portion of the alignment where residential uses and other sensitive land uses are located and affect the same EJ communities with noise impacts described above. This includes both EJ communities with high concentrations of EJ populations as well as areas with comparable non-EJ populations, and would not be concentrated in one EJ community. As such, the Build Alternatives would not result in an appreciably more severe or greater in magnitude adverse effect than other areas with comparable non-EJ populations.

Implementation of Mitigation Measures VIB-1 (Ballast Mat or Resilient Rail Fasteners) and VIB-2 (Low Impact Frogs) would reduce vibration impacts associated with the Build

Alternatives. Mitigation measures would be implemented similarly throughout the project corridor. Similar vibration project measures and mitigation (e.g., low-impact frogs, ballast mat or resilient rail fasteners) have been similarly implemented throughout Metro's system in both EJ and non-EJ communities to minimize adverse effects to the extent feasible.

The Build Alternatives would also provide off-setting benefits (Section 4.22.3.3).With the implementation of mitigation and in consideration of off-setting benefits, the Build Alternatives would not result in disproportionately high and adverse effects related to vibrations in EJ communities in the EJ Affected Area.

Parklands and Community Facilities

The potential conflict with planned bike paths in local plans are discussed under the "Land Use and Development" heading above. The Build Alternatives primarily would be located within street ROWs and rail ROWs, or within acquired properties. The Build Alternatives may require subsurface easements or partial acquisition of community facilities. The subsurface easements partial property acquisitions would not alter the functionality of the facilities. No displacement of community or recreational facilities are anticipated.

As discussed in Section 3.4.3 of the Transportation Chapter, where project features would encroach on existing bicycle facilities (i.e., Paramount Bike Trail and Bellflower Bike Trail) or sidewalks, these facilities would be realigned or reconstructed as part of the Build Alternatives. Permanent impacts would be avoided. The pedestrian and bicycle facilities would remain operational and function would be maintained. Thus, the Build Alternatives would not have adverse impacts to parklands and community facilities. The Build Alternatives would not result in disproportionately high and adverse impacts related to active transportation to EJ populations.

The Build Alternatives, design options, and MSF site options would provide benefits to the EJ communities such as improve transit service and access, as well as regional mobility. This would provide the EJ communities in the EJ Affected Area with increased access to other parklands and community facilities along the project corridor. With the implementation of mitigation and in consideration of off-setting benefits to the affected EJ communities, disproportionately high and adverse effects related to parklands and community facilities would not occur in EJ communities in the EJ Affected Area.

4.22.3.3 Summary of Benefits

The Build Alternatives and design options would benefit the EJ communities in the Affected Area. The Build Alternatives and design options would increase the mobility of EJ populations, improve air quality, reduce regional energy consumption, and provide economic and fiscal benefits. The MSF site options would support the Build Alternatives and design options. Additionally, the EJ communities around the MSF site options would experience similar air quality as the Build Alternatives and design options.

The Build Alternatives and design options would result in an improvement to both regional and local transit services, accessibility, and reliability because the LRT would operate in exclusive ROW. Travel time with the LRT would be shorter than existing transit service in the jurisdictions. The Build Alternatives and design options would provide the EJ communities additional transit service, new LRT stations in EJ communities, and an alternative mode of transportation. This would also increase regional and local access to employment centers, activity centers, and community facilities for the EJ communities and the residents along the

corridor. With the proposed pedestrian, bike, and transit connection improvements, the Build Alternatives would support active transportation and improve walkability near the proposed stations.

The Build Alternatives, design options, and MSF site options would reduce regional air pollutants, GHG emissions, and energy consumption by decreasing regional VMT relative to the No Build Alternative. Daily operational emissions, mobile source air toxics emissions, and regional energy consumption would be lower than under the No Build Alternative. The reduction in pollutant emissions, GHG emissions, and energy consumption represent benefits to EJ populations and the region as a whole.

As discussed in Section 4.17.3, the Build Alternatives would have positive economic and fiscal effects which would benefit EJ populations. The Build Alternatives would result in economic benefits in the form of long-term job creation, creation of construction jobs, opportunities for potential future transit-oriented development, and potential increase in property values near the station areas.

4.22.3.4 Summary of Effects on Environmental Justice Communities

The Build Alternatives, Design Options 1 and 2, and MSF site options would not have adverse effects with regard to transportation; acquisitions and displacement; communities and neighborhoods; visual and aesthetics (visual character and quality of scenic resources; construction); air quality (operations; construction odors, construction localized pollutant emissions); greenhouse gas emissions; ecosystems and biological resources (operations, special-status species, jurisdictional resources, protected trees); geotechnical, subsurface, seismic hazards; hazards and hazardous materials; water resources; energy; electromagnetic fields; archaeological, historical, and paleontological resources; traditional cultural properties/tribal cultural resources; parklands and community facilities; (operational access and function of parklands, community facilities); economic and fiscal impacts; safety and security; and Section 4(f) resources.

After the implementation of mitigation measures, the Build Alternatives would result in adverse effects on EJ communities in the EJ Affected Area related to traffic operations and parking; land use consistency; and noise and vibration levels. Adverse traffic effects after mitigation would be located in Huntington Park along Randolph Street. The Build Alternatives, design options, and MSF site options would comply with all applicable federal, state, and local regulations. Where adverse effects would occur, mitigation measures would be provided and implemented throughout the EJ communities in the EJ Affected Area.

As previously discussed, the EJ Affected Area consists of all EJ communities. Environmental effects of the Build Alternatives would be predominantly borne by EJ communities. Overall, adverse effects would occur in EJ communities with higher percentages of EJ populations and areas with comparable non-EJ populations. The Build Alternatives, design options, and MSF site options would not result in effects suffered by the EJ population that would be appreciably more severe or greater in magnitude than the adverse effects that would be suffered by the non-EJ population.

As discussed in Section 4.22.3.3, the Build Alternatives and design options would also provide benefits to the affected EJ communities, including improved transit service and transit access, regional mobility, and air quality. Under NEPA, with the implementation of mitigation and with consideration to off-setting benefits, the Build Alternatives, design options,

and MSF site options would not cause a disproportionately high and adverse effect on the EJ communities in the Affected Area.

4.22.3.5 Project Measures and Mitigation Measures

Refer to each of the environmental topic areas of this Draft EIS/EIR for a detailed discussion of the project measures and mitigation measures.

Project Measures

Transportation: TR PM-10 (Pioneer Station Parking Access)

Visual and Aesthetics: VA PM-1 (Design Standards), VA PM-2 (Public Art), VA PM-3 (Landscaping), VA PM-4 (Landscaping Screening), VA PM-5 Landscaping at Bellflower MSF Site Option), VA PM-6 (Local Zoning Ordinances), and VA PM-7 (Lighting)

Mitigation Measures

Transportation: TRA-1 through TRA-19, which are specific intersection modifications, TRA-20 (Transportation Management Plan(s)), TRA-21 (Parking Monitoring and Community Outreach), and TRA-22 (Parking Mitigation Program [Permanent]), discussed in Section 3.5.2

Land Use: LU-1 (Consistency with Bike Plans), discussed in Section 4.1.4.2

Visual and Aesthetics: VA-1 (Screening at Somerset Boulevard) and VA-2 (Relocation of "Belle"), discussed in Section 4.4.4.2

Noise and Vibration: NOI-1 (Soundwalls), NOI-2 (Low Impact Frogs), NOI-3 (Wheel Squeal Noise Monitoring), NOI-4 (Crossing Signal Bells), NOI-5 Gate-Down-Bell-Stop Variance), NOI-6 (TPSS Noise Reduction), NOI-7 (Freight Track Relocation Soundwalls), VIB-1 (Ballast Mat or Resilient Rail Fasteners), and VIB-2 (Low Impact Frogs), discussed in Section 4.7.4.2

4.22.4 Construction Impacts

No Build Alternative

Under the No Build Alternative, infrastructure and transportation-related projects located within the Affected Area and identified in the SCAG 2016-2040 RTP/SCS, Metro 2009 LRTP, and Measure M would continue to be implemented and built with the exception of the Build Alternatives. Future construction activities may include, but are not limited to, construction staging, materials stockpiling, hauling of dirt and materials, temporary street and lane closures, and use of temporary easements. However, construction activities would be temporary and would not result in long-term impacts to surrounding communities. Projects built under the No Build Alternative would implement project-specific construction-related measures to reduce and minimize potential adverse effects. Projects planned under the No Build Alternative would undergo separate environmental review to determine whether the projects would adversely affect environmental justice communities.

Build Alternatives, Design Options, MSF Site Options

Transportation

As summarized below and provided in greater detail in Section 3.7.3, temporary adverse transportation impacts would occur during construction of the Build Alternatives, design options, and MSF site options due to temporary street and lane closures; reconfiguration of roads; detours; traffic related to construction workers accessing and departing construction staging areas; rerouting of existing transit routes; closures of sidewalks, crosswalks, and bicycle facilities; and parking loss. Construction activities for the Build Alternatives are anticipated to commence as early as 2022 and last through 2028 with revenue service beginning in 2028. The adverse effects would occur in the EJ Affected Area and may temporarily inconvenience and disrupt community activities in the EJ communities. Implementation of Mitigation Measure TRA-23 (Loss of Parking [Construction]) would address potential parking reduction effects during construction and Mitigation Measure TRA-20 (Transportation Management Plan(s)) would address potential construction-related traffic impacts. Temporary construction-related effects would be minimized, but adverse effects would still occur for all Build Alternatives after mitigation.

Temporary construction effects would be predominantly borne by EJ communities. With mitigation, temporary adverse transportation effects during construction would still affect Central City, Vernon, unincorporated Florence-Firestone, Huntington Park, Bell, Cudahy, Downey, South Gate, Paramount, Bellflower, Cerritos, and Artesia. Central City, Huntington Park, Paramount, Bellflower and South Gate have the highest concentration of EJ populations. Vernon, Artesia, Cerritos, Bellflower, Downey, and Paramount have a higher concentration of non-EJ populations compared to the other EJ communities. Temporary adverse effects related to transportation would occur in EJ communities with higher EJ populations as well as areas with comparable non-EJ populations and would not be concentrated in one EJ community. Construction activities would be temporary and the adverse effects in each EJ community would not result in appreciably more severe or greater in magnitude adverse effects than areas with comparable non-EJ populations. Mitigation measures would be similarly implemented in the affected EJ communities where cut-and-cover, at-grade, and above-grade construction activities would occur. With the implementation of mitigation, the Build Alternatives would not result in disproportionately high and adverse effects related to transportation to EJ communities in the EJ Affected Area.

Land Use and Development

As discussed in Section 4.19.3.1 of the Construction Impacts Section, with regard to consistency with local land use plans, policies, and regulations, TCEs and property acquisitions would be required for construction staging areas and construction support sites of the Build Alternatives, design options, and MSF options. Following construction, TCEs would be returned to preconstruction conditions and acquired parcels would increase the opportunity for development in station areas. The Build Alternatives, Design Options 1 and 2, and MSF site options would be consistent with air quality plans and policies and noise ordinances to minimize construction impacts to surrounding land uses. Construction of Build Alternatives would further the goals, objectives, and policies of local land use plans as they relate to alternative transportation, public transportation, and future growth in transit within the respective jurisdictional boundaries. Construction of the Build Alternatives, Design Options 1 and 2, and MSF site options would not conflict with applicable land use plans, policies, and regulations of local agencies and there would be no adverse effect related to land use. Therefore, the Build Alternatives, Design Options 1 and

2, and MSF site options would not result in disproportionately high and adverse effects related to land use in EJ communities in the EJ Affected Area.

Acquisitions and Displacements

As discussed in Section 4.19.3.3 of the Construction Impacts Section, construction of the Build Alternatives, Design Options 1 and 2, and MSF site options would require TCEs and property acquisition for temporary construction laydown areas and construction support sites. Parcels to be fully acquired for construction would occur in the Central City, Central City North, Southeast Los Angeles, Huntington Park, Cudahy, South Gate, Paramount, Bellflower, and Artesia in the EJ Affected Area. No TCEs or property acquisitions would occur in unincorporated Florence-Firestone, Bell, or Cerritos.

As discussed in Section 4.3.3 of the Acquisitions and Displacements Section and summarized in Section 4.22.3.2, special property conditions (i.e., nursery, drive-in theater, swap meet, and sports center) in South Gate, Paramount, and Bellflower may struggle to find a suitable replacement site to lease at the time of acquisition and may not be able to successfully relocate and an adverse effect would occur in these EJ communities. Metro would comply with the Uniform Act, California Relocation Act, and other applicable regulations, and no adverse effects from acquisitions and displacements would occur.

Adverse effects related to construction-related acquisitions and displacement of businesses and/or residential units would affect the EJ communities of Central City, Central City North, Southeast Los Angeles, Huntington Park, Cudahy, South Gate, Paramount, Bellflower, and Artesia. Central City, Southeast Los Angeles, Huntington Park, Paramount, Bellflower, and South Gate have the highest concentration of EJ populations while Central City North, Cudahy, and Artesia have higher non-EJ populations. Artesia has the highest concentration of non-EJ populations in comparison to the other communities with construction-related acquisitions and displacements. Construction effects would be predominantly borne by EJ communities. In addition, adverse effects to the nursery business (South Gate), drive-in theater and swap meet (Paramount) and sports center (Bellflower) would be unique to the corridor; however, these businesses do not serve especially important social, religious or cultural functions for the EJ populations it serves. Although the businesses provide employment, the facilities are not large employment centers that supports the EJ communities as a whole.

Construction activities would be temporary and the adverse effects in each EJ community would not result in appreciably more severe or greater in magnitude adverse effects in areas with higher EJ populations than other areas with comparable non-EJ populations. In consideration of offsetting benefits to EJ communities, the Build Alternatives would not result in disproportionately high and adverse effects related to acquisitions and displacement to EJ communities in the EJ Affected Area.

Communities and Neighborhoods

As discussed in Section 4.19.3.2 of the Construction Impacts Section, vehicle, pedestrian, and bicycle access to businesses, community assets, and residences in EJ communities may be detoured temporarily due to temporary sidewalk, lane, and/or street closures. Access to community assets and residences may be detoured during construction including, but not limited to, the Cities of Los Angeles (Alternatives 1, 2, and 3); Florence-Firestone, Huntington Park, Bell, Cudahy (Alternatives 1, 2, and 3); and Paramount, Bellflower, Artesia,

and Cerritos (Alternatives 1, 2, 3, and 4). Implementation of Mitigation Measure COM-1 (Construction Outreach Plan) would maintain accessibility to neighborhoods and community facilities in the affected EJ communities; maintain traffic flow around construction areas; provide directional and construction detour routes signage; provide information signage and public updates; develop a plan to minimize impacts to businesses; and coordinate construction activities with other capital improvement projects. At the completion of construction, temporary barriers around construction activities and laydown sites would be removed; and temporary street, lane, and bike path detours and closures would be returned to preconstruction conditions.

Residents and users of community facilities in the portions of the affected EJ communities may experience temporary increases in construction-related noise, vibrations, air quality, and temporary visual changes, resulting in temporary community disruption. Implementation of Mitigation Measures VA-4 (Construction Screening), VA-5 (Construction Lighting), and NOI-8 (Noise Control Plan) would be implemented similarly throughout the areas to reduce construction noise, vibration, and shield sensitive viewers from views of construction sites. Construction activities would comply with Metro's *Green Construction Policy* (Metro 2011b) to reduce pollutant emissions. However, adverse noise effects would remain.

Construction activities are temporary and are not expected to cause residents to move out of the EJ communities in the Affected Area; change the character and cohesion of the EJ communities in the Affected Area; and would not permanently isolate residential neighborhoods or community facilities. Mitigation Measure COM-1 (Construction Outreach Plan) would be implemented similarly throughout the EJ populations to minimize effects to EJ communities during construction.

Temporary construction-related community impacts would occur in Central City, Central City North, Southeast Los Angeles, Huntington Park, Cudahy, South Gate, Paramount, Bellflower, and Artesia. Central City, Southeast Los Angeles, Huntington Park, Paramount, Bellflower, and South Gate have the highest concentration of EJ populations while Central City North, Cudahy. Artesia has a higher concentration of non-EJ populations in comparison to the other communities. Temporary construction-related adverse effects would occur in EJ communities with higher concentrations of EJ populations, as well as comparable non-EJ populations. Construction-related adverse effects would not be concentrated in one EJ community. Temporary construction effects would be predominantly borne by EJ communities and the adverse effects in each EJ community would not result in appreciably more severe or greater in magnitude adverse effects in communities with higher concentrations of EJ populations than other areas with comparable non-EJ populations). Mitigation measures would be similarly implemented in the affected EJ communities. With the implementation of mitigation, the Build Alternatives would not result in disproportionately high and adverse effects related to communities and neighborhoods would not occur in EJ communities in the EJ Affected Area.

Air Quality

As discussed in Section 4.19.3.5 of the Construction Impacts Section, construction of Alternatives 1 and 2 and Design Options 1 and 2 would result in daily NO_X emissions from unmitigated haul truck emissions and would exceed the SCAQMD threshold even with implementation of Mitigation Measure AQ-1 (Vehicle Emissions). This would potentially create an adverse effect related to emissions of criteria pollutants and ozone precursors. Alternatives 3 and 4 would fewer maximum daily haul truck loads and maximum daily construction workers trips and, thus, would not produce emissions exceeding any regional mass daily threshold. Construction of the Paramount or Bellflower MSF site options would not produce emissions exceeding any regional mass daily threshold.

All construction activities would be conducted in accordance with the Metro *Green Construction Policy (*Metro 2011b), and Mitigation Measure AQ-1 (Vehicle Emissions) would be implemented throughout the EJ populations to reduce emissions. However, temporary emissions would still exceed SCAQMD thresholds for Alternatives 1 and 2 and the design options. These effects are considered in the context of regional emissions. The Build Alternatives would not expose sensitive receptors to substantial localized pollutant concentrations, as construction activities would occur at various sites along the alignment and would not be concentrated at any given location. Furthermore, emissions resulting from worker vehicle and haul trips would not be localized at any given location. Temporary construction-related adverse effects would occur in EJ communities as well as areas with comparable non-EJ populations. After mitigation and in consideration of off-setting benefits, the Build Alternatives would not result in disproportionately high and adverse effects on the EJ communities in the Affected Area.

Noise and Vibration

As discussed in Section 4.19.3.7 of the Construction Impacts Section, where construction activities would occur at-grade or above-grade along the project corridor, including the underground portions where surface construction is present, construction of the Build Alternatives would exceed FTA and local noise standards. Vibration-generating activities could result in noticeable levels of vibration but would largely occur within the rail ROWs and are unlikely to result in building damage. Equipment vibration could exceed the FTA vibration damage criteria and vibration annoyance criteria when conducted in proximity to vibration-sensitive uses. Implementation of Mitigation Measures NOI-8 (Noise Control Plan) and VIB-3 through VIB-7, which include a vibration control plan, minimizing the use of impact devices, drilling for building foundations, construction vibration limits, and construction monitoring, would reduce construction noise and vibration impacts; however, impacts would remain adverse.

Temporary construction effects of the Build Alternatives related to noise and vibration would be predominantly borne by EJ communities. Temporary construction adverse effects related to noise and vibrations would affect the EJ communities of Southeast Los Angeles, unincorporated Florence-Firestone, Huntington Park, Bell, Cudahy, South Gate, Paramount, Bellflower, Cerritos, and Artesia. Of these EJ communities, Huntington Park, Paramount, Bellflower, Southeast Los Angeles, and South Gate have the highest concentration of EJ populations. Artesia, Cerritos, Bellflower, and Paramount have a higher concentration of non-EJ populations compared to the other communities.

The overall noise levels in the EJ Affected Area would be spread along the at-grade and aerial portions of the alignment, as well as the underground portions where surface construction is present. Although adverse noise and vibration effects would occur even with implementation

of mitigation measures, the severity of impacts would be largely uniform throughout the project corridor with EJ populations and non-EJ populations. Construction-related adverse effects would not be concentrated in one community. The construction noise and vibration impacts would not be appreciably more severe or greater in magnitude adverse effects areas with EJ populations than other areas with comparable non-EJ populations.

Mitigation measures would be similarly implemented throughout the project corridor where impacts have been identified. With the implementation of mitigation, the Build Alternatives would not result in disproportionately high and adverse effects related to noise and vibrations to EJ communities in the EJ Affected Area.

Parklands and Community Facilities

As discussed in Section 4.19.3.16 of the Construction Impacts Section, construction of the Build Alternatives would require the termination of the lease agreement between Metro and the City of Paramount, which would remove approximately 20 (of over 300) on-site parking spaces used by park patrons. The reversion of the leased parking area does not require property acquisition within the Paramount Park boundary. Park recreational facilities and buildings would not be disturbed, and the general function of Paramount Park would remain unchanged. Construction sites would not be located on and would not permanently disrupt function or access to parklands, recreation facilities, bike facilities, and community facility properties. Therefore, adverse effects related to property acquisitions for construction or TCEs in the context of parklands and community facilities would not occur.

Parcels acquired for construction support sites would not be located on and would not permanently disrupt parklands, recreation facilities, bike facilities, and community facility properties. Mitigation Measures AQ-1 (Vehicle Emissions), NOI-8 (Noise Control Plan), VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Business Foundations), VIB-6 (Construction Vibration Limits), VIB-7 (Construction Monitoring for Vibration), and COM-1 (Construction Outreach Plan) would be implemented to minimize adverse effects related to air quality, noise, vibration, and to maintain access and parking at parklands, recreational facilities, and bike facilities. As construction activities would be temporary, barriers around construction activities and staging areas would be removed upon completion of construction; and temporary street, lane, and bike path detours and closures would be returned to preconstruction conditions once construction is completed. With the implementation of mitigation, the Build Alternatives would not result in adverse effects related to parklands and community facilities during construction. Therefore, with the implementation of mitigation, the Build Alternatives would not result in disproportionately high and adverse effects related to parklands and community facilities to EJ communities in the EJ Affected Area.

Summary of Environmental Justice Analysis

The Build Alternatives, design options, and MSF site options would result in temporary construction-related adverse effects pertaining to transportation, land use, acquisition and displacement, communities and neighborhoods, air quality, noise and vibration, and parklands and community facilities.

All applicable federal, state, and local regulations would be implemented during construction of the Project. Project measures would be implemented, and where adverse effects would occur, mitigation measures would be provided and implemented throughout all of the

affected EJ communities. However, temporary adverse effects related to transportation, air quality, and noise and vibration on EJ communities would remain even after implementation of mitigation measures. Temporary adverse effects would affect EJ communities and non-EJ populations and are not focused within any single community. The impacts are not considered more severe or greater in magnitude areas with EJ populations versus comparable non-EJ populations along the project corridor. With the implementation of mitigation and with consideration to off-setting benefits, the Build Alternatives, design options, and MSF site options would not cause disproportionately high and adverse effects related to construction to the EJ communities in the EJ Affected Area.

Project Measures and Mitigation Measures

Refer to each of the environmental topic areas of this Draft EIS/EIR for a detailed discussion of the mitigation measures.

Mitigation Measures

Transportation: TRA-20 (Transportation Management Plan(s)) and TRA-23 (Loss of Parking [Construction]), discussed in Section 3.7.3.8

Community and Neighborhood: COM-1 (Construction Outreach Plan), discussed in Section 4.19.3.2

Air Quality: AQ-1 (Vehicle Emissions), discussed in Section 4.19.3.5

Noise and Vibration: NOI-8 (Noise Control Plan), VIB-3 (Vibration Control Plan), VIB-4 (Minimize the Use of Impact Devices), VIB-5 (Drilling for Building Foundations), VIB-6 (Construction Vibration Limits), and VIB-7 (Construction Monitoring for Vibration), discussed in Section 4.19.3.7

4.23 Other Environmental Considerations

Section 15126 of the *CEQA Guidelines* identifies subjects that shall be discussed in an EIR, which include effects determined not the be significant, significant irreversible environmental changes, and mandatory findings of significance. There are no NEPA requirements to address these subjects.

4.23.1 Effects Determined Not to be Significant

Section 15128 of the *CEQA Guidelines* states "an EIR shall contain a brief statement indicating reasons that various possible effects of a project were determined not to be significant and not discussed in detail in the EIR." This section identifies the effects found not to be significant as required by Section 15128 of the *CEQA Guidelines* and includes agriculture and forestry resources, mineral resources, wildfire, and utilities and service systems. Environmental topics not addressed in this section are addressed in Sections 4.1 through 4.21 of this Draft EIS/EIR.

4.23.1.1 Agriculture and Forestry Resources

Impacts are analyzed in accordance with *CEQA Guidelines*. Specific questions pertaining to agriculture and forestry resources from Appendix G of the *CEQA Guidelines* are as follows:

- Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the

Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

- Would the project conflict with existing zoning for agricultural use or a Williamson Act contract?
- Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in PRC Section 12220(g)), timberland (as defined by PRC Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?
- Would the project result in the loss of forest land or conversion of forest land to non-forest use?
- Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

Build Alternatives Impacts

The Project would be located in heavily developed urban and suburban areas of the Cities of Los Angeles, Vernon, Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, Artesia, and Cerritos, and the unincorporated Florence-Firestone community of LA County. As discussed in Section 4.1.2.1 of the Land Use Section, the existing land use distribution of the Build Alternatives in the Affected Area for land use identifies less than 2 percent of agricultural uses. Table 4.23.1 presents the agricultural uses in relation to the land use distribution for each Build Alternative and MSF site option.

Table 4.23.1. Agricultural Uses Surrounding the Build Alternatives

Build Alternatives	Affected Area[1]	Surrounding Area[2]
Alternative 1	0.4%	0.1%
Alternative 2	0.3%	0.1%
Alternative 3	2.0%	2.0%
Alternative 4	1.8%	0.1%
Paramount MSF Site Option	0%	0%
Bellflower MSF Site Option	0%	0%

Source: Prepared for Metro by TAHA in 2021
Notes: MSF = maintenance and storage facility
[1] "Affected Area" is defined as the adjacent area within approximately 50 feet of the Build Alternatives.
[2] "Surrounding Area" is defined as the area within 0.25 mile of the alignment and 0.5 mile of the station areas.

The agricultural land uses are located only in the Cities of South Gate and Paramount. These identified areas are also identified as Unique Farmland.[21,22] However, these sites are not used exclusively for agriculture or farming and are primarily used as a nursery. Nonetheless, the Project would be located within the public ROW and would not result in impacts to

[21] California Department of Conservation, Farmland Mapping & Monitoring Program, https://www.conservation.ca.gov/dlrp/fmmp
[22] California Department of Conservation, California Important Farmland Finder, https://maps.conservation.ca.gov/DLRP/CIFF/

agricultural land. No Williamson Act contracts are applicable within the Affected Area.[23] Therefore, no impacts related to agricultural resources would occur.

The Affected Area for land use is not zoned for forestland or timberland and no forests are located in or adjacent to the Build Alter alternatives, design options, and MSF site options. Therefore, no impacts would occur regarding forestland or timberland, or forestry resources would occur.

4.23.1.2 Mineral Resources

Impacts are analyzed in accordance with *CEQA Guidelines*. Specific questions pertaining to mineral resources from Appendix G of the *CEQA Guidelines* are as follows:

- Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?
- Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

Build Alternatives Impacts

The Surface Mining and Reclamation Act of 1975 requires the state geologist (Division of Mines and Geology) to identify and classify all mineral deposits in California. In 1979, the State Board of Mining and Geology adopted guidelines that require local general plans to reference identified mineral deposits and sites that are identified for conservation. In addition, the Board identified urban areas where irreversible land uses (development with structures) preclude mineral extraction.

As discussed in Section 4.9.2.8 of the Geotechnical, Subsurface, and Seismic Section, the Affected Area for geotechnical, subsurface, and seismic resources is situated atop alluvial soils; however, mining of these materials is not viable considering the highly urbanized nature of the Affected Area. In addition, the Build Alternatives would be located within public and rail ROW surrounded by residential, commercial, industrial, open space, and infrastructure land uses. Operation and construction of the Build Alternatives would not involve mineral resources extraction activities, and there is no existing resource recovery within the project corridor.

As discussed in Section 4.10.2.5 of the Hazards and Hazardous Materials Section, three abandoned oil wells are identified within a 200-foot radius of the Build Alternatives. No active wells have been identified, and the Build Alternatives would not impact continued oil extraction from active wells.

The Build Alternatives would not result in the loss of availability of known mineral resources or a mineral resource recovery site. Therefore, no impacts related to mineral resources would occur.

23 California Department of Conservation, The Williamson Act of 2016-17, https://www.conservation.ca.gov/dlrp/wa/Documents/stats_reports/2018%20WA%20Status%20Report.pdf

4.23.1.3 Wildfire

Impacts are analyzed in accordance with *CEQA Guidelines*. Specific questions pertaining to wildlife from Appendix G of the *CEQA Guidelines* are associated with projects that are located in or near state responsibility areas or lands classified as very high fire hazard severity zones, and are as follows:

- Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?
- Due to slope, prevailing winds, and other factors, would the project exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?
- Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?
- Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

Build Alternatives Impacts

Refer to Section 4.18, Safety and Security, for an analysis of effects on adopted emergency response plans and emergency evacuation plans. As discussed in Section 4.10, Hazards and Hazardous Materials, a review of the State of California, Los Angeles County Fire Hazard Severity Zone and CalFire Local Responsibility Area Maps indicates that the Study Area is characterized as an urban area, is not located in a Fire Hazard Severity Zone, and would therefore not be subject to effects from wildland fire.[24] As such, the Build Alternatives would not exacerbate wildfire risks and would not expose people or structures to a significant risk associated with wildland fires, such as downslope or downstream flooding or landslides as a result of runoff, post-fire slope instability, or drainage changes. Therefore, no impacts related to wildfire would occur.

4.23.1.4 Utilities and Service Systems

Impacts are analyzed in accordance with *CEQA Guidelines*. Specific questions pertaining to utilities and service systems from Appendix G of the *CEQA Guidelines* are as follows:

- Would the Proposed Project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?
- Would the Proposed Project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?
- Would the Proposed Project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

[24] Los Angeles County Fire Hazard Responsibility Areas, https://geohub.lacity.org/datasets/56935c2fb7d84455adba0c414f0ebe34_1?geometry=-118.396%2C34.029%2C-118.069%2C34.079

- Would the Proposed Project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Build Alternatives Impacts

Construction of the Build Alternatives may require relocating or temporarily rerouting utilities, as discussed in Section 4.19.2.3. Relocation typically would not exceed 5 to 10 feet of disturbance. The Build Alternatives would coordinate with utility companies to request information and determine if relocation of utilities would be required. Preliminary relocation concepts would be developed and presented to each utility owner with affected facilities. Utility agreements would be finalized to ensure the designs are prepared by third-party utility owners.

The Build Alternatives would not include a new source of potable water consumption and would not directly generate population that would require wastewater services. Water appurtenances such as fire hydrants and water meters could be relocated and/or adjusted to accommodate project elements. A short-term use of minimal water supplies would be required during construction activities (e.g., for dust control), which would not necessitate new water deliveries to the region.

Construction activities would not require the construction or relocation of wastewater treatment or stormwater facilities that could cause significant environmental effects. Additionally, construction and operation of the Build Alternatives would be required to comply with all applicable federal, state, and local statutes and regulations pertaining to solid waste disposal. The construction contractor would comply with AB 939, which requires a Solid Waste Diversion Program and diversion of at least 50 percent of the solid waste from landfills to recycling facilities. Therefore, no impact to utilities and service systems would occur related to construction or operational activities.

4.23.2 Significant Irreversible Environmental Changes

Section 15126.2(d) of the *CEQA Guidelines* requires a discussion of any significant irreversible environmental changes that would be caused by the Proposed Project. Specifically, Section 15126.2(d) states:

> *Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible, since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.*

Generally, a project would result in significant irreversible environmental changes if any of the following would occur:

- The primary and secondary impacts would generally commit future generations to similar uses;
- The project would involve a large commitment of nonrenewable resources;
- The project involves uses in which irreversible damage could result from any potential environmental accidents associated with the project; or

- The proposed consumption of resources is not justified (e.g., the project involves the wasteful use of energy).

The Project would result in the use of nonrenewable resources during construction and operation of development. Resources that would be consumed as a result of implementation of the Build Alternatives include water, electricity, natural gas, and fossil fuels. Construction activities related to the reasonably expected development would result in the irretrievable commitment of nonrenewable energy resources, primarily in the form of fossil fuels (including fuel oil), natural gas, and gasoline for automobile and construction equipment. However, use of such resources would not be unusual as compared to other construction activities and would not substantially affect the availability of such resources.

With respect to operation activities, the Build Alternatives would comply with all applicable building codes, as well as mitigation measures, so that all natural resources are conserved or recycled to the maximum extent feasible. It is also possible that new technologies or systems will emerge, or will become more cost-effective or user-friendly, that will further reduce the Project's reliance upon nonrenewable natural resources. However, even with implementation of conservation measures, the consumption of natural resources would generally increase with implementation of the Build Alternatives.

The Build Alternatives would involve irreversible environmental changes to existing natural resources, such as the commitment of energy and water resources as a result of the operation and maintenance of future development. However, the amount and rate of consumption of these resources would not result in significant environmental impacts related to the unnecessary, inefficient, or wasteful use of resources (see Section 4.12, Energy). The Build Alternatives would not involve the wasteful or unjustifiable use of energy or other resources, and energy conservation efforts would also occur with new construction.

The Build Alternatives would involve construction of power poles, transmission lines, and connections to the existing grid to support the Project, but would not require the expansion of existing generation facilities and would not interfere with efforts to augment the renewable energy supply. New development accommodated by the Build Alternatives would be constructed and operated in accordance with specifications contained in Title 24 of the CCR and local green building requirements, as discussed in Section 4.12.3, Energy. The Build Alternatives would contribute to a reduction in regional energy consumption that is consistent with objectives of regional planning strategies to reduce reliance on fossil fuels and non-renewable resources. Therefore, the use of energy related to the Build Alternatives would occur in an efficient manner and impacts related to significant irreversible environmental changes would be less than significant.

4.23.3 Mandatory Findings of Significance

CEQA requires that an EIR be prepared when certain specified impacts may result from construction or implementation of a project. Under Section 15065(a) of the *CEQA Guidelines*, a finding of significance is required if a project "has the potential to substantially degrade the quality of the environment." In practice, this is the same standard as a significant effect on the environment, which is defined in Section 15382 of the *CEQA Guidelines* as "a substantial or potentially substantial adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance." This Draft EIS/EIR has been prepared for the Build Alternatives, which fully addresses all of the Mandatory Findings of Significance, as described below. Specific

questions pertaining to Mandatory Findings of Significance from Appendix G of the *CEQA Guidelines* are as follows:

- Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?
- Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?
- Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

This Draft EIS/EIR, in its entirety, addresses and discloses all potential environmental effects associated with implementation of the Project, including direct, indirect, and cumulative impacts, feasible mitigation measures, and the level of significance after the incorporation of mitigation measures in the following resource areas:

- Transportation
- Land Use and Development
- Communities and Neighborhoods
- Acquisitions and Displacements
- Visual Quality
- Air Quality
- Greenhouse Gases
- Noise and Vibration
- Ecosystems/Biological Resources
- Geotechnical, Subsurface, Seismic
- Hazards and Hazardous Materials
- Water Resources
- Energy
- Electromagnetic Fields
- Historic, Archeological, and Paleontological Resources
- Tribal Cultural
- Parklands and Community Facilities
- Economic and Fiscal Impacts
- Safety and Security
- Environmental Justice

5 SECTION 4(f) EVALUATION

5.1 Introduction

5.1.1 Section 4(f) Regulatory Setting

Section 4(f) of the U.S. Department of Transportation (USDOT) Act of 1966 provides special protection of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of a historic site of national, state, or local significance (as determined by the official(s) with jurisdiction over the park, area, refuge, or site) (49 United States Code (U.S.C.) Section 303). The Federal Transit Administration (FTA) may not approve the non-*de minimis* use of Section 4(f) property unless the FTA determines that (1) there is no prudent or feasible alternative, and (2) the project includes all possible planning to minimize harm to these resources resulting from such use (23 Code of Federal Regulations (CFR) 774.3). The *West Santa Ana Branch Transit Corridor Project Draft Section 4(f) and 6(f) Evaluation* (Metro 2021l) is included as Appendix [BB] and incorporated into this Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR) by reference and summarized in this chapter.

5.1.2 Types of Properties Protected by Section 4(f)

The Section 4(f) regulations (23 CFR 774.17) define Section 4(f) property as publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of a historic site of national, state, or local significance. The *Section 4(f) Policy Paper* (USDOT 2012) clarifies this definition to include the following:

- Parks and recreational areas of nation, state, or local significance that are both publicly owned and open to the public
- Publicly owned land that is formally designated in a city or county master plan for a future planned public park or recreation area
- Playgrounds, sports fields, and other recreational facilities of public schools that allow the use of school recreational facilities for non-school activities, such as organized youth sports
- Off-street public bicycle, pedestrian, and equestrian trails
- Publicly owned wildlife and waterfowl refuges of national, state, or local significance that are open to the public to the extent that public access does not interfere with the primary purpose of the refuge
- Historic sites that are listed, or eligible for inclusion, in the National Register of Historic Places (NRHP) at the local, state, or national level of significance regardless of whether the historic site is publicly owned or open to the public
- Properties that contribute to the eligibility of a NRHP-eligible or listed historic district
- Archaeological sites listed in or eligible for inclusion on the NRHP, including those discovered during construction, except as set forth in 23 CFR 774.13(b)

5.1.3 Section 4(f) Use

As defined in 23 CFR 774.17, the "use" of a protected Section 4(f) property occurs when any of the conditions described in the following sections are met for permanent incorporation, temporary occupancy, constructive use, or *de minimis* use.

5.1.3.1 Permanent Incorporation

Land from a Section 4(f) property is permanently incorporated into a transportation project when it has been purchased as right-of-way or sufficient property interests have otherwise been acquired for the purpose of project implementation. For example, a permanent easement required for the purpose of project construction or that grants a future right of access onto a Section 4(f) property, such as for the purpose of routine maintenance by the transportation agency, would be considered a permanent incorporation of land into a transportation facility.

5.1.3.2 Temporary Occupancy (as a use)

Temporary occupancy results when Section 4(f) property, in whole or in part, is required for project construction-related activities. The property is not permanently incorporated into a transportation facility, but the activity is considered to be adverse in terms of the preservation purpose of Section 4(f).

5.1.3.3 Constructive Use

A constructive use occurs when the transportation project does not incorporate land from a Section 4(f) property or result in a temporary occupancy of the type that constitutes a Section 4(f) use, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired. (23 CFR Section 774.15(a)). A constructive use does not occur when compliance with the requirements of 36 CFR 800.5 for proximity impacts of the proposed action, on a site listed on or eligible for the National Register, results in an agreement of "no historic properties affected" or "no adverse effect" (23 CFR Section 774.15(f)(1)). "No historic properties affected" includes the condition where there are no historic properties present or if there are historic properties present, the project would have no effect upon them as defined under 36 CFR § 800.4. Following consultation with the State Historic Preservation Officer (SHPO) under Section 106, if a project is determined to have no historic properties affected or no adverse effect, then there is no constructive use.

5.1.3.4 Temporary Occupancy (as an exception)

A temporary occupancy exception to use of a Section 4(f) property occurs when there is a temporary use of that property. When the temporary easement is no longer needed, the Section 4(f) property must be restored to its original condition. A temporary occupancy may be a use if the property is subject to temporary or permanent adverse changes such as contour alterations, removal of trees and vegetation, or disruption of facilities or activities on the property (USDOT 2012).

Under USDOT regulations (23 CFR Section 774.13(d)), a temporary occupancy of a Section 4(f) property does not constitute a use of a Section 4(f) property when all the following conditions are satisfied:

- Duration is temporary (i.e., less than the time needed for construction of the project), and there should be no change in ownership of the land;
- Scope of work is minor (i.e., both the nature and magnitude of the changes to the Section 4(f) property are minimal);

- There are no anticipated permanent adverse physical impacts, nor is there interference with the protected activities, features, or attributes of the property, on either a temporary or permanent basis;
- The land being used will be fully restored (i.e., the property must be returned to a condition that is at least as good as that which existed prior to the project); and
- There must be documented agreement of the official(s) having jurisdiction over the Section 4(f) resource regarding the above conditions.

5.1.3.5 De Minimis Impact

Section 4(f) use is assessed in terms of the magnitude of impact to determine whether the use is "*de minimis*" or not "*de minimis.*" The requirements of Section 4(f) would be considered satisfied if it is determined that a transportation project would have only a *de minimis* impact on the Section 4(f) resource. The provision allows avoidance, minimization, mitigation, and enhancement measures to be considered in assessing the net impact to the Section 4(f) use to make a *de minimis* determination. The agencies with jurisdiction must concur in writing with the determination. *De minimis* impact determination is defined in 23 CFR 774.17 as follows:

- For parks, recreation areas, and wildlife and waterfowl refuges, a *de minimis* impact is a determination based on the net impact that the project would not adversely affect the features, attributes, or activities qualifying the property for protection under Section 4(f); and
- For historic sites, *de minimis* impact means that the FTA has determined, in accordance with 36 CFR Part 800, that no historic property is affected by the project or the project would have "no adverse effect" on the property in question.

Amended Section 4(f) legislation included in Title 23 U.S.C. Section 138 and Title 49 U.S.C. Section 303 also allows for a simplified process and approval for projects that have only *de minimis* impacts on lands subject to protection under Section 4(f). *De minimis* impacts are of such a minor extent they do not require a full Section 4(f) evaluation. Under these provisions, once the FTA determines that a transportation use of Section 4(f) property results in a *de minimis* impact, analysis of avoidance alternatives is not required and the Section 4(f) evaluation process is complete.

5.1.4 Methodology

The complete methodology for the Section 4(f) Evaluation is included in the *West Santa Ana Branch Transit Corridor Project Draft Section 4(f) and 6(f) Evaluation* (Appendix BB). The Section 4(f) Affected Area is defined as the Section 106 Area of Potential Effects (APE) for historic sites and within 150 feet of the project alternatives for public park, recreation areas, and wildlife and waterfowl refuges. All properties within the Affected Area that could be subject to Section 4(f) protection were reviewed. The analysis in this chapter is based on FTA's preliminary Section 106 effect determinations and preliminary findings that are still subject to ongoing consultation with official(s) with jurisdiction for the individual resources, as discussed in Section 5.5.

With public circulation of this Draft EIS/EIR, FTA will provide the public and officials with jurisdiction over Section 4(f) properties with an opportunity to review and consider the Section 4(f) analysis and FTA's preliminary determinations. Once FTA and Metro have collected and reviewed public comments, they will request concurrence on Section 4(f)

determinations from the agencies with jurisdiction over parks. Final Section 4(f) determinations will be included in the Final EIS/EIR and Record of Decision.

5.2 Project Description

The Project's overall purpose is to provide high-quality reliable transit service to meet the future mobility needs of residents, employees, and visitors who travel within and through the corridor. Chapter 1, Purpose and Need, describes the Project's purpose and need and related goals that have shaped the development of the project alternatives.

This Draft EIS/EIR evaluates a No Build Alternative, four Build Alternatives, two design options, and two maintenance and storage facility (MSF) site options. The Build Alternatives were developed through a comprehensive alternatives analysis process and meet the purpose and need of the Project. Chapter 2, Alternatives Considered/Project Description of this Draft EIS/EIR, describes the project alternatives evaluated in the *West Santa Ana Branch Transit Corridor Project Draft Section 4(f) and 6(f) Evaluation* (Appendix BB) and summarized in this chapter.

5.3 Section 4(f) Resources

Section 4 of the *West Santa Ana Branch Transit Corridor Project Draft Section 4(f) and 6(f) Evaluation* (Appendix BB) documents the identification of Section 4(f) properties within the Section 4(f) Affected Area of the Build Alternatives. The identified Section 4(f) properties are listed in Table 5.1 for historic sites and in Table 5.2 for parks and recreation areas.

The U.S. Fish and Wildlife Service and the California Department of Fish and Wildlife databases were reviewed for natural wildlife refuges located within the Affected Area for Section 4(f) resources. These resources are not found in the Affected Area and, therefore, are not discussed further in the Section 4(f) analysis of impacts.

Table 5.1. Summary of Evaluation of Section 4(f) Historic Sites within the Affected Area

Property	Section 4(f) Protected Activities, Features, or Attributes	Applicable to Alternative(s)	Description of Effect	Preliminary Section 106 Finding	Preliminary Section 4(f) Finding
Los Angeles Union Station 750-800 North Alameda St, Los Angeles	NRHP-listed historic property under Criteria A and C	Alternative 1 and Design Option 1 (MWD)	Permanent underground easement, minor features in non-contributing area of the historic district, and vibration monitors on property during construction[2]	No Adverse Effect	*de minimis* impact

Property	Section 4(f) Protected Activities, Features, or Attributes	Applicable to Alternative(s)	Description of Effect	Preliminary Section 106 Finding	Preliminary Section 4(f) Finding
Los Angeles Terminal Annex Post Office 900 North Alameda St, Los Angeles	NRHP-listed historic property under Criterion C	Alternative 1	Permanent underground easement and vibration monitors on property during construction[1]	No Adverse Effect	Temporary occupancy exception
Los Angeles Union Terminal District and Buildings 777 South Alameda St and 1213 East 7th St, Los Angeles	NRHP-listed historic district under Criteria A and C, includes 7 contributing buildings	Alternative 1	Vibration monitors on property during construction	No Adverse Effect	Temporary occupancy exception
		Alternative 2	Permanent underground easement, minor features in non-contributing area of the district, and vibration monitors on property during construction[1,2]	No Adverse Effect	
1608 East 15th St, Los Angeles	NRHP-eligible historic property under Criterion C	Alternatives 1 and 2	Permanent aerial easement above non-contributing area of property and vibration monitors on property during construction[3]	No Adverse Effect	Temporary occupancy exception
Angel City Brewery/John A. Roebling's Sons Company 216 South Alameda St, Los Angeles	NRHP-eligible historic property under Criteria B and C	Alternative 1	Vibration monitors on property during construction	No Historic Properties Affected[4]	Temporary occupancy exception
500 South Alameda St, Los Angeles	NRHP-eligible historic property under Criterion C	Alternative 1	Vibration monitors on property during construction	No Historic Properties Affected[4]	Temporary occupancy exception
542 South Alameda St, Los Angeles	NRHP-eligible historic property under Criterion C	Alternative 1	Vibration monitors on property during construction	No Historic Properties Affected[4]	Temporary occupancy exception

Property	Section 4(f) Protected Activities, Features, or Attributes	Applicable to Alternative(s)	Description of Effect	Preliminary Section 106 Finding	Preliminary Section 4(f) Finding
1250 Long Beach Ave, Los Angeles	NRHP-eligible historic property under Criterion C	Alternatives 1 and 2	Vibration monitors on property during construction; portion of Long Beach Ave permanently closed for construction of portal and construction laydown area	No Adverse Effect	Temporary occupancy exception
1753 East Olympic Blvd, Los Angeles	NRHP-eligible historic district under Criterion C	Alternatives 1 and 2	Permanent underground easement and vibration monitors on property during construction[1]	No Adverse Effect	Temporary occupancy exception
Air Raid Siren No. 189 McGarry St and East 8th St, Los Angeles	NRHP-eligible historic object under Criteria A and C	Alternative 1 and 2	No effect on object	No Historic Properties Affected[4]	No use
Hamburger's Department Store 801 South Bdwy, Los Angeles	NRHP-eligible historic property and contributing to Broadway Theater and Commercial Historic District under Criteria A and C	Alternative 2	Permanent underground easement and vibration monitors on property during construction[1]	No Adverse Effect	Temporary occupancy exception
Charles C. Chapman Building 756 South Bdwy, Los Angeles	NRHP-eligible historic property under Criterion C and contributing to Broadway Theater and Commercial Historic District	Alternative 2	Permanent underground easement and vibration monitors on property during construction[1]	No Adverse Effect	Temporary occupancy exception

Property	Section 4(f) Protected Activities, Features, or Attributes	Applicable to Alternative(s)	Description of Effect	Preliminary Section 106 Finding	Preliminary Section 4(f) Finding
Tower Theater 800 South Bdwy, Los Angeles	NRHP-eligible historic property and contributing to Broadway Theater and Commercial Historic District under Criteria A and C	Alternative 2	Permanent underground easement and vibration monitors on property during construction[1]	No Adverse Effect	Temporary occupancy exception
Garfield Building 403 East 8th St, Los Angeles	NRHP-eligible historic property under Criterion C	Alternative 2	Permanent underground easement and vibration monitors on property during construction[1]	No Adverse Effect	Temporary occupancy exception
Barker Brothers Furniture Store 800 West 7th St, Los Angeles	NRHP-eligible historic property under Criterion C and contributing to Commercial Street Historic District	Alternative 2	Permanent underground easement, pedestrian tunnel in basement of building, and vibration monitors on property during construction	No Adverse Effect	*de minimis* impact
Union Bank and Trust Company Building 760 South Hill St, Los Angeles	NRHP-eligible historic property under Criteria A and C	Alternative 2	Permanent underground easement and vibration monitors on property during construction[1]	No Adverse Effect	Temporary occupancy exception
Garment Capitol Building 217 East 8th St, Los Angeles	NRHP-eligible historic property under Criterion C	Alternative 2	Permanent underground easement and vibration monitors on property during construction[1]	No Adverse Effect	Temporary occupancy exception
Textile Center Building 315 East 8th St, Los Angeles	NRHP-eligible historic property under Criteria B and C	Alternative 2	Vibration monitors on property during construction	No Historic Properties Affected[4]	Temporary occupancy exception

Property	Section 4(f) Protected Activities, Features, or Attributes	Applicable to Alternative(s)	Description of Effect	Preliminary Section 106 Finding	Preliminary Section 4(f) Finding
Santee Public Garage 840 South Santee St, Los Angeles	NRHP-eligible historic property under Criteria A and C	Alternative 2	No permanent incorporation of land or temporary occupancy; proposed laydown yard immediately adjacent to property	No Adverse Effect	No use
Southern California Gas Complex 810-830 South Flower St, Los Angeles	NRHP-eligible historic property under Criteria A and C	Alternative 2	Vibration monitors on property during construction; station entrance directly across the street from property	No Adverse Effect	Temporary occupancy exception
Great Republic Life Building 756 South Spring St, Los Angeles	NRHP-eligible historic property under Criterion C	Alternative 2	Permanent underground easement and vibration monitors on property during construction[1]	No Adverse Effect	Temporary occupancy exception
801 South Spring St, Los Angeles	NRHP-eligible historic property under Criterion C	Alternative 2	Permanent underground easement and vibration monitors on property during construction[1]	No Adverse Effect	Temporary occupancy exception
National City Bank Building 810 South Spring St, Los Angeles	NRHP-eligible historic property under Criterion C	Alternative 2	Permanent underground easement and vibration monitors on property during construction[1]	No Adverse Effect	Temporary occupancy exception
General Petroleum Corporation Parking Garage 757 South Flower St, Los Angeles	NRHP-eligible historic property under Criteria A and C	Alternative 2	Vibration monitors on property during construction; two station entrances directly adjacent to property	No Adverse Effect	Temporary occupancy exception

Property	Section 4(f) Protected Activities, Features, or Attributes	Applicable to Alternative(s)	Description of Effect	Preliminary Section 106 Finding	Preliminary Section 4(f) Finding
The Olympic Theater 313 West 8th St, Los Angeles	NRHP-eligible historic property under Criterion A	Alternative 2	Permanent underground easement and vibration monitors on property during construction[1]	No Adverse Effect	Temporary occupancy exception
Commercial Exchange Building 416 West 8th Street, Los Angeles	NRHP-eligible historic property under Criterion C	Alternative 2	Permanent underground easement and vibration monitors on property during construction[1]	No Adverse Effect	Temporary occupancy exception
The Walter Building and Dairy Supply Building 508 East 8th St, Los Angeles	NRHP-eligible historic property under Criterion C	Alternative 2	No permanent incorporation of land or temporary occupancy	No Historic Properties Affected[4]	No use
Air Raid Siren No. 5 West 8th St and Hope St, Los Angeles	NRHP-eligible historic object under Criteria A and C	Alternative 2	No effect on object	No Historic Properties Affected[4]	No use
Air Raid Siren No. 10 South Los Angeles and West 8th St, Los Angeles	NRHP-eligible historic object under Criteria A and C	Alternative 2	No adverse effect on object	No Adverse Effect	No use
Air Raid Siren No. 65 Wilde St and Central Ave, Los Angeles	NRHP-eligible historic object under Criteria A and C	Alternative 2	No effect on object	No Historic Properties Affected[4]	No use
Air Raid Siren No. 70 East 24th St and Long Beach Ave, Los Angeles	NRHP-eligible historic object under Criteria A and C	Alternatives 1 and 2	No effect on object	No Adverse Effect	No use

Property	Section 4(f) Protected Activities, Features, or Attributes	Applicable to Alternative(s)	Description of Effect	Preliminary Section 106 Finding	Preliminary Section 4(f) Finding
Pueblo del Rio Public Housing Complex Historic District	NRHP-eligible historic district under Criteria A and C	Alternatives 1 and 2	No permanent incorporation of land or temporary occupancy; permanent visual elements introduced within right-of-way[2]	No Adverse Effect	No use
1600 Compton Ave, Los Angeles	NRHP-eligible historic property under Criterion C	Alternatives 1 and 2	No permanent incorporation of land or temporary occupancy; alignment on aerial viaduct parallel to existing Metro A (Blue) Line	No Adverse Effect	No use
Mack International Motor Truck Corporation 2001 South Alameda St, Los Angeles	NRHP-eligible historic property under Criterion C	Alternatives 1 and 2	Vibration monitors on property during construction; alignment on aerial viaduct parallel to existing Metro A (Blue) Line	No Adverse Effect	Temporary occupancy exception
Randolph Substation Randolph St, Huntington Park	NRHP-eligible historic property under Criterion C	Alternatives 1, 2, and 3	Vibration monitors on property during construction; alignment on aerial viaduct parallel to existing UPRR-owned La Habra Branch right-of-way	No Adverse Effect	Temporary occupancy exception
Southern California Edison Long Beach-Laguna Bell 60kV and 220 kV Transmission Lines	NRHP-eligible historic structure under Criteria A and C	Alternatives 1, 2, and 3	No adverse effect on object	No Adverse Effect	No use

Property	Section 4(f) Protected Activities, Features, or Attributes	Applicable to Alternative(s)	Description of Effect	Preliminary Section 106 Finding	Preliminary Section 4(f) Finding
Los Angeles Department of Water and Power Boulder Lines 1 and 2	NRHP-eligible historic structure under Criteria A and C	Alternatives 1, 2, and 3	No adverse effect on object	No Adverse Effect	No use
Rancho Los Amigos Medical Center Historic District 7601 East Imperial Highway, Downey	NRHP-eligible historic district under Criteria A and C	Alternatives 1, 2, and 3	TPSS and construction laydown within non-contributing area of district[2]	No Adverse Effect	No use
I-105/Century Freeway-Transitway Historic District	NRHP-eligible historic district under Criteria A and C	Alternatives 1, 2, 3, and 4	Replacement of 3 bridges within district; no adverse effect on features, activities, or attributes that contribute to its NRHP eligibility	No Adverse Effect	*de minimis* impact
Bellflower Pacific Electric Railway Depot 16336 Bellflower Blvd, Bellflower	NRHP-eligible historic property under Criteria A and C	Alternatives 1, 2, 3, and 4	No permanent incorporation of land or temporary occupancy; Bellflower Station to the west of the depot	No Adverse Effect	No use
10040 Flora Vista St, Bellflower	NRHP-eligible historic property under Criterion C	Alternatives 1, 2, 3, and 4	No permanent incorporation of land or temporary occupancy; alignment slightly above grade, transitioning into an aerial viaduct	No Adverse Effect	No use
Union Pacific Los Angeles River Rail Bridge, South Gate	NRHP-eligible historic structure under Criterion C	Alternatives 1, 2, and 3	No permanent incorporation of land or temporary occupancy; new railroad bridge constructed to the north of existing structure	No Adverse Effect	No use

Property	Section 4(f) Protected Activities, Features, or Attributes	Applicable to Alternative(s)	Description of Effect	Preliminary Section 106 Finding	Preliminary Section 4(f) Finding
Our Lady of the Rosary Church 14813-14819 Paramount Blvd, Paramount	NRHP-eligible historic property under Criterion C	Paramount MSF Option	No permanent incorporation of land or temporary occupancy; MSF approximately one-third mile north of property	No Adverse Effect	No use
6000 Alameda St, Huntington Park	NRHP-eligible historic property under Criterion C	Alternatives 1, 2, and 3	Minor acquisition	No Adverse Effect	*de minimis* impact
6101 Santa Fe Ave, Huntington Park	NRHP-eligible historic property under Criterion C	Alternatives 1, 2, and 3	Minor acquisition	No Adverse Effect	*de minimis* impact
2860 Randolph St, Huntington Park	NRHP-eligible historic property under Criterion C	Alternatives 1, 2, and 3	No permanent incorporation of land or temporary occupancy; alignment at-grade in existing La Habra Branch right-of-way in median of Randolph Street	No Adverse Effect	No use
6300-6302 State St, Huntington Park	NRHP-eligible historic property under Criterion C	Alternatives 1, 2, and 3	No permanent incorporation of land or temporary occupancy; alignment at-grade in existing La Habra Branch right-of-way in median of Randolph Street	No Adverse Effect	No use
Downtown Los Angeles Industrial Historic District	NRHP-eligible historic district	Alternative 1	Permanent underground easement, minor features in non-contributing area of the district, and vibration monitors on property during construction[1,2]	No Adverse Effect	Temporary occupancy exception

Property	Section 4(f) Protected Activities, Features, or Attributes	Applicable to Alternative(s)	Description of Effect	Preliminary Section 106 Finding	Preliminary Section 4(f) Finding
Broadway Theater and Commercial Historic District	NRHP-listed historic district	Alternative 2	Permanent underground easement, minor features in non-contributing area of the district, and vibration monitors on property during construction[1,2]	No Adverse Effect	Temporary occupancy exception
Seventh Street Commercial Historic District	NRHP-eligible historic district	Alternative 2	Permanent underground easement, pedestrian tunnel in basement of contributing building, and vibration monitors on property during construction	No Adverse Effect	*de minimis* impact

Source: Metro 2021l
Notes: [1]Per Question 28A of the *Section 4(f) Policy Paper*, Section 4(f) would not apply to tunneling if certain conditions are met. The findings summarized in this table show the analysis consistent with the Section 4(f) Policy Paper. In the case that the underground easement was considered an incorporation of land, the Project would not substantially impair the historic values of the historic site, as indicated by the Section 106 determination of no adverse effect to on the historic property. The underground easement would have a *de minimis* impact under Section 4(f) as indicated by the Section 106 determination of no adverse effect.
[2]Per Question 7C of the Section 4(f) Policy Paper, when a project requires land from a non-historic or non-contributing property within a historic district and does not use other land within the historic district that is contributing to its historic significance, there is no direct use of the historic district for purposes of Section 4(f).
[3]Per Question 28B of the *Section 4(f) Policy Paper*, Section 4(f) would not apply to a bridge spanning over a Section 4(f) property if certain conditions are met.
[4]No historic property affected includes conditions where there are no historic properties present or if there are historic properties present, the undertaking would have no effect upon them as defined under 36 CFR § 800.4.
kV = kilovolt; MSF = maintenance and storage facility; MWD = Metropolitan Water District; NRHP = National Register of Historic Places; TPSS = traction power substation

Table 5.2. Summary of Evaluation of Section 4(f) Park and Recreation Areas within the Affected Area

Property	Section 4(f) Protected Activities, Features, or Attributes	Applicable to Alternative(s)	Description of Effect	Preliminary Section 4(f) Finding
Los Angeles Plaza Park (El Pueblo De Los Angeles State Historic Park and Monument and Paseo de la Plaza Park)	Open area with plaza, community gathering space, gazebo, benches, areas for vending kiosks, and historic monument	Alternative 1	No permanent incorporation of land, temporary occupancy, or substantial impairment of qualifying protected activities, features, or attributes (no constructive use)	No use
Fred Roberts Recreation Center 4700 South Honduras St, Los Angeles	Barbecue pits, basketball courts, children play area, community room, picnic tables, volleyball courts, kitchen, outdoor fitness equipment, synthetic soccer field with onsite parking	Alternatives 1 and 2	No permanent incorporation of land, temporary occupancy, or substantial impairment of qualifying protected activities, features, or attributes (no constructive use)	No use
Lillian Street Elementary School 5909 Lillian St Los Angeles	Playground, asphalt play areas include track, tennis court, four-square, basketball and other ball courts, and miscellaneous play space	Alternatives 1, 2, and 3	No permanent incorporation of land, temporary occupancy, or substantial impairment of qualifying protected activities, features, or attributes (no constructive use)	No use
San Antonio Elementary School 6222 State St Huntington Park	Asphalt play areas include track, tennis court, basketball and other ball courts, and miscellaneous play space	Alternatives 1, 2, and 3	No permanent incorporation of land, temporary occupancy, or substantial impairment of qualifying protected activities, features, or attributes (no constructive use)	No use

Property	Section 4(f) Protected Activities, Features, or Attributes	Applicable to Alternative(s)	Description of Effect	Preliminary Section 4(f) Finding
Salt Lake Park 3401 East Florence Ave, Huntington Park	Recreation center, gymnasium, grass soccer field, synthetic grass soccer field, baseball diamonds, batting cages, skate park, tennis courts, weight room, picnic areas, barbecues, children's playgrounds, concession stand, and meetings rooms	Alternatives 1, 2, and 3	No permanent incorporation of land, temporary occupancy, or substantial impairment of qualifying protected activities, features, or attributes (no constructive use)	No use
Legacy High School Complex 5225 Tweedy Boulevard, South Gate	1 baseball field, 1 open field, 4 tennis courts	Alternatives 1, 2, and 3	No permanent incorporation of land, temporary occupancy, or substantial impairment of qualifying protected activities, features, or attributes (no constructive use)	No use
Hollydale Community Center/Park 12221 Industrial Ave, South Gate	Basketball court, community center, playground; no onsite parking	Alternatives 1, 2, 3, and 4	No permanent incorporation of land, temporary occupancy, or substantial impairment of qualifying protected activities, features, or attributes (no constructive use)	No use
Paramount Park 14400 Paramount Blvd, Paramount	Playgrounds, handball courts, baseball diamonds, basketball court, picnic shelters/barbecues, gymnasium, walking path, restrooms, pool with onsite parking	Alternatives 1, 2, 3, and 4	Acquisition of approximately 7,300 square feet of LADWP right-of-way that functions as part of Paramount Park; protected activities, features, or attributes are not adversely affected	*de minimis* impact

Property	Section 4(f) Protected Activities, Features, or Attributes	Applicable to Alternative(s)	Description of Effect	Preliminary Section 4(f) Finding
Ruth R. Caruthers Park 10500 East Flora Visa St, Bellflower	Baseball/softball fields, batting cages, skate park, game room, picnic areas, wading pool, playgrounds, tennis courts, basketball court, volleyball courts, handball courts, tetherball courts, fitness center, 2-mile fitness course, equestrian path, barbecues; park includes onsite parking and 2.5-mile bike trail	Alternatives 1, 2, 3, and 4	No permanent incorporation of land, temporary occupancy, or substantial impairment of qualifying protected activities, features, or attributes (no constructive use)	No use
Rosewood Park 17715 Eric Ave, Cerritos	Basketball court, sand area with playground equipment, picnic shelters, barbecues, multipurpose field, with onsite parking	Alternatives 1, 2, 3, and 4	No permanent incorporation of land, temporary occupancy, or substantial impairment of qualifying protected activities, features, or attributes (no constructive use)	No use
Artesia Park 1870 Clarkdale Ave, Artesia	Banquet space, baseball/softball diamond, basketball court, meeting rooms, picnic areas, picnic shelters, children's playground, restrooms, soccer field, tennis court, with onsite parking	Alternatives 1, 2, 3, and 4	No permanent incorporation of land, temporary occupancy, or substantial impairment of qualifying protected activities, features, or attributes (no constructive use)	No use
Flora Vista Dog Park 9203 Flora Vista St	Off-leash dog exercise	Alternatives 1, 2, 3, and 4 Bellflower MSF site option	No permanent incorporation of land, temporary occupancy, or substantial impairment of qualifying protected activities, features, or attributes (no constructive use)	No use

Property	Section 4(f) Protected Activities, Features, or Attributes	Applicable to Alternative(s)	Description of Effect	Preliminary Section 4(f) Finding
Los Angeles River Bike Path	Bicycling, skating, skateboarding, and similar active recreation	Alternatives 1, 2, and 3	Short-duration detour during construction[1]	Temporary occupancy exception
Rio Hondo Bike Path	Bicycling, skating, skateboarding, and similar active recreation	Alternatives 1, 2, and 3	Short-duration detour during construction[1]	Temporary occupancy exception
San Gabriel River Mid-Trail	Bicycling, skating, skateboarding, and similar active recreation	Alternatives 1, 2, 3, and 4	Short-duration detour during construction[1]	Temporary occupancy exception
Urban Orchard Park (Planned)	Planned passive recreation park	Alternatives 1, 2, and 3	No permanent incorporation of land, temporary occupancy, or substantial impairment of qualifying protected activities, features, or attributes (no constructive use)	No use

Source: Metro 2021l
Notes: [1]As detailed in Section 4.19, short-duration detours during construction would meet the conditions for a temporary occupancy exception established in 23 CFR 774.13.
LADWP = Los Angeles Department of Water and Power; MSF = maintenance and storage facility

5.4 Section 4(F) Evaluation

Section 5 of the *West Santa Ana Branch Transit Corridor Project Draft Section 4(f) and 6(f) Evaluation* (Appendix BB) documents evaluation of all Section 4(f) properties within the Section 4(f) Affected Area of the Build Alternatives. The evaluation is summarized in Table 5.1 for historic sites and in Table 5.2 for public parks and recreation areas. The analysis identifies the alternative(s) and maintenance and storage facilities that could affect each of the properties.

The remainder of this section provides details from the evaluation for each Section 4(f) property with a preliminary Section 4(f) finding. Historic sites are discussed in Section 5.4.1. The temporary occupancy exception is applicable to several historic sites where the only occupancy of the property would be for monitoring during construction. Because the conditions of analysis are the same for all of these properties, they are grouped together in Section 5.4.1.7. Public parks and recreation areas are discussed in Section 5.4.2. As detailed in the *West Santa Ana Branch Transit Corridor Project Draft Section 4(f) and 6(f) Evaluation* (Appendix BB), there would be no use of other Section 4(f) properties listed in Table 5.1 and Table 5.2.

5.4.1 Historic Sites

5.4.1.1 Los Angeles Union Station

Los Angeles Union Station (LAUS) is listed in the NRHP. Five buildings and structures are located within the LAUS boundary and are contributing features of the NRHP-listed property: Los Angeles Union Station, Terminal Tower, Macy Street Undercrossing, Vignes Street Undercrossing, and the Car Repair/Supply Shop. The NRHP nomination also includes the passenger platforms, canopies, and railroad tracks.

Based on the discussion below, Alternative 1 or Design Option 1 (MWD) of Alternative 1 would result in permanent incorporation and temporary occupancy within portions of the LAUS. However, the Section 4(f) use of this historic site would not adversely affect the features, activities, or attributes that contribute to its NRHP eligibility. Additionally, based on the Section 106 no adverse effect determination, FTA has preliminarily determined that Alternative 1 or Design Option 1 of Alternative 1 would have a *de minimis* impact on LAUS for permanent incorporation and temporary occupancy. These preliminary determinations are pending the completion of Section 106 consultation and concurrence from the California SHPO. Based on the definition of constructive use in Section 5.1.3.3, because Alternative 1 or Design Option 1 of Alternative 1 would incorporate land from and not substantially impair the activities, features, or attributes of the Section 4(f) property, it would not have a constructive use of the historic property. Alternatives 2, 3, and 4 would have no Section 4(f) use of LAUS because these alternatives are not in close proximity to the resource.

Under Alternative 1, the LAUS Forecourt Station entrance would be in Parking Lot B south of the Mozaic Apartments and approximately 65 feet west of LAUS and within the boundary of the historic property (Figure 5-1). The proposed station entrance would consist of stairs, an elevator, and escalators below grade, a portal entrance sheltered by a canopy structure, and an elevator entrance above grade. A subterranean pedestrian tunnel would connect the station entrance to the existing B/D (Red/Purple) Line station mezzanine. A second entrance would be provided through the pedestrian tunnel. Construction of the station would require the installation of ventilation grating to the north of the station entrance near the main terminal building; the ventilation grating would be flush with the existing paved surfaces on the property. Alternative 1 would incorporate approximately 105,000 square feet of underground area below the historic property near the Forecourt and approximately 4,100 square feet of surface area currently used as a parking lot near the Forecourt. While demolition would occur at the surface to accommodate construction of the station portal and elevator entrances, no character-defining features would be demolished as part of this process. Features introduced to the property as part of the portal and elevator entrance would be consistent with the existing and historic use and function of the property. The LAUS Forecourt Station entrance would not obstruct the character-defining view shed between the main terminal building and El Pueblo de Los Angeles Historical Monument.

Design Option 1 (MWD) of Alternative 1 would include the construction of the station box east of LAUS, below the baggage area parking facility. Crossovers would be located on the north and south ends of the station box, with tail tracks extending approximately 1,200 feet north of the station box. The station entrance would be moved from the front of LAUS to the rear of the property. Excavations associated with the construction of the station box and rail tunnel would extend down 130 feet below the current ground surface. The only surface features within the historic property with Design Option 1 (MWD) would be ventilation

Figure 5-1. Los Angeles Union Station



Sources: Metro 2020d, Metro 2021l

grating installed flush with the existing paved surfaces. Design Option 1 (MWD) of Alternative 1 would incorporate approximately 73,000 square feet of underground area below the historic property near the Metropolitan Water District building and approximately 2,300 square feet of surface area for flush ventilation grating near the building.

Although Alternative 1 and Design Option 1 (MWD) would incorporate land from the LAUS that would result in a permanent incorporation under Section 4(f), the FTA has preliminarily determined that the Project would not diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, and association. Therefore, the Project would have no adverse effect on this historic Section 4(f) property and Alternative 1 and Design Option 1 (MWD) would not impair the features or attributes that contribute to the NRHP eligibility of the property. Based on the Section 106 no adverse effect determination, FTA has preliminarily determined that Alternative 1 and Design Option 1 of Alternative 1 would have a *de minimis* impact on LAUS.

Construction activities associated with the LAUS Forecourt include construction of the underground station and entrances. Parking Lot B would serve as a potential laydown area for Alternative 1. Construction of the underground station would require a partial underground easement and temporary construction easements (TCEs) for Parking Lot B. The TCEs would be temporary occupancies. During construction, equipment and activities would be visible from the district. The temporary impact that would occur during the construction phase was included in FTA's preliminary no adverse effect determination under Section 106 and consultation with the California SHPO. Based on the Section 106 no adverse effect determination, FTA has preliminarily determined that Alternative 1 and Design Option 1 of Alternative 1 would have a *de minimis* impact for the permanent incorporation of land from and temporary occupancy during construction of LAUS.

5.4.1.2 Barker Brothers Furniture Store

The Barker Brothers Furniture Store at 800 West 7th Street, Los Angeles is a 13-story, Beaux-Arts-style commercial building designed by the renowned Los Angeles architecture firm, Curlett and Beelman. The building is eligible for individual listing in the NRHP.

Based on the discussion below, Alternative 2 would result in subsurface right-of-way acquisition and permanent incorporation of land resulting in a Section 4(f) use within portions of the Barker Brothers Furniture Store. However, the Section 4(f) use of this historic Section 4(f) property would not adversely affect the features or attributes that contribute to its NRHP eligibility. Additionally, based on the Section 106 no adverse effect determination, FTA has preliminarily determined that Alternative 2 would have a *de minimis* impact on the Barker Brothers Furniture Store for permanent incorporation and temporary occupancy. These preliminary determinations are pending the completion of Section 106 consultation and concurrence from the California SHPO. Based on the definition of constructive use in Section 5.1.3.3, because Alternative 2 would incorporate land from and not substantially impair the activities, features, or attributes of the Section 4(f) property, it would not have a constructive use of the historic property. Alternatives 1, 3, and 4 would have no Section 4(f) use of the Barker Brothers Furniture Store because these alternatives are not in close proximity to the resource.

Alternative 2 would be constructed underground; no aboveground project components would be within the boundary of the historic property. Noise related to underground rail operations would not transmit to surface levels (Metro 2021b). The Project would require a permanent, partial acquisition for the construction and operation of a pedestrian tunnel segment that

would connect with the existing 7th Street/Metro Center Station. The pedestrian tunnel would run through the basement of the building. In the vicinity of 800 West 7th Street, the pedestrian tunnel would be designed in conformance with the Secretary of the Interior Standards for Treatment of Historic Properties. The Section 106 finding is that the Project would have No Adverse Effect on the Barker Brothers Furniture Store. Alternative 2 would require approximately 6,870 square feet of permanent underground easement from the Section 4(f) property. Based on the Section 106 no adverse effect determination, FTA has preliminarily determined that Alternative 2 would have a *de minimis* impact on the Barker Brothers Furniture Store.

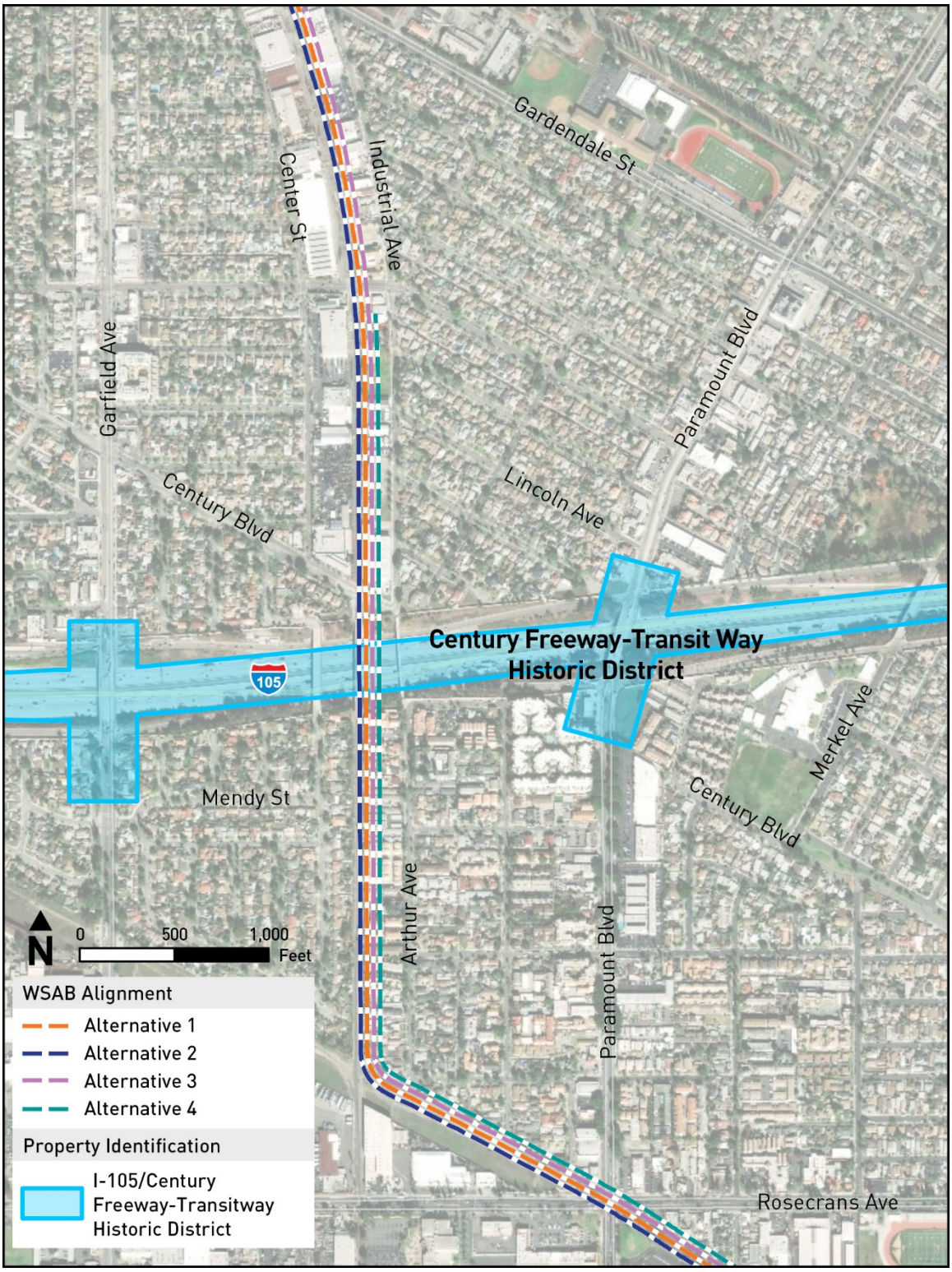
Alternative 2 would require temporary access for construction activities that were considered in the Section 106 effect finding of No Adverse Effect on the property for right-of-entry, project construction, TCEs, or other temporary use. The TCEs would be temporary occupancies. During construction, vibration monitors would be placed on the historic site at the elevation of the historic building closest to construction activities within 200 feet. When construction activities are no longer within 200 feet of the historic resource, the vibration monitors would be removed. The temporary impact that would occur during the construction phase was included in FTA's effect determination under Section 106 and consultation with the California SHPO. Based on the Section 106 no adverse effect determination, FTA has preliminarily determined that Alternative 2 would have a *de minimis* impact for the permanent incorporation of land from and temporary occupancy during construction of the Barker Brothers Furniture Store.

5.4.1.3 I-105/Century Freeway-Transitway Historic District

The Century Freeway-Transitway Historic District is a multi-lane roadway that has been determined eligible for listing in the NRHP (Figure 5-2). The following bridges are contributing elements to a NRHP-eligible historic district: I-105/Façade Avenue Overcrossing (California Department of Transportation [Caltrans] Structure No. 53 2424), I-105/Arthur Avenue Utility & POC (Caltrans Structure No. 53 2426), and I-105/Century Boulevard Underpass (Caltrans Structure No. 53 2427), but these bridges are not individually eligible.

Based on the discussion below, Alternatives 1, 2, 3, and 4 would result in permanent incorporation and temporary occupancy within portions of the I-105/Century Freeway-Transitway Historic District. However, the Section 4(f) use of this historic site would not adversely affect the features, activities, or attributes that contribute to its NRHP eligibility. Additionally, based on the Section 106 no adverse effect determination, FTA has preliminarily determined that construction and operation of the Project would have a *de minimis* impact on the I-105/Century Freeway-Transitway Historic District. These preliminary determinations are pending the completion of Section 106 consultation and concurrence from the California SHPO. Based on the definition of constructive use in Section 5.1.3.3, because Alternatives 1, 2, 3, and 4 would incorporate land from and not substantially impair the activities, features, or attributes of the Section 4(f) property, it would not have a constructive use of the I-105/Century Freeway-Transitway Historic District.

Figure 5-2. I-105/Century Freeway-Transitway Historic District



Sources: Metro 2020d, Metro 2021l

Three character-defining bridges of the I-105/Century Freeway-Transitway Historic District would be demolished and replaced. The extant bridges were constructed in 1988, with contemporary materials and design. They are 3 of the 118 bridges that are contributing to the district, which collectively comprise less than 3 percent of the total bridges within the district. While bridges are identified as contributing features, they are not individually eligible and are not noteworthy for their architectural style or design. Replacement bridges would be consistent in the scale and massing of the existing bridges. The placement of the additional bridge and the replacement Century Boulevard Bridges immediately adjacent to one another and their unified design in terms of scale, massing, and materials of construction result in their presentation almost as a single structure. As such, the rhythm of bridges along the freeway, as it currently exists, would not be altered by the Project.

Alternatives 1, 2, 3, and 4 would realign approximately 2,500 feet of C-Line (Green) track and of I-105 traffic lanes. The C (Green) Line runs the length of the district (18.1 miles). The proposed realignment would potentially impact at a maximum 2,500 feet, or less than 3 percent of the entire C (Green) Line roadway, which is considered a character-defining feature. The proposed realignment would shift the rail line location a maximum of 7.5 feet and it would not remove or alter the C (Green) Line design. Similarly, the 2,500 feet of I-105 traffic lanes proposed for realignment comprise less than 3 percent of I-105 lanes within the district. The road realignment would not alter the District's transportation function or result in major changes to physical features within the property's setting that contribute to its historic significance.

The Section 106 review concluded that Alternatives 1, 2, 3, and 4 would not alter any of the characteristics of the I-105/Century Freeway-Transitway Historic District that qualify it for inclusion in the NRHP in a manner that would diminish the integrity of its location, design, materials, workmanship, feeling, and association. The Project would have no adverse operational effect on the historic district. Based on the Section 106 no adverse effect determination, FTA has preliminarily determined that Alternatives 1, 2, 3, and 4 would have a *de minimis* impact on the 105/Century Freeway-Transitway Historic District.

To accommodate project features within the freeway envelope, Alternatives 1, 2, 3, and 4 would realign approximately 2,500 feet of existing C-Line tracks and 2,500 feet of I-105 traffic lanes to enable the construction and operation of an infill station that would be constructed in the median of the freeway. This work would be conducted within the limits of the I-105/Century Freeway-Transitway Historic District. The historic property would not require temporary occupancy beyond the limits of what is needed to construct the Project, including realignment and reconstruction of portions of I-105 and the C (Green) Line. The TCEs for construction of the Project would be temporary occupancies. The Project would have no adverse construction effect on the features, activities, or attributes that contribute to the historic district's NRHP eligibility. These temporary construction effects were considered as part of FTA's No Adverse Effect finding under Section 106 and consultation with the California SHPO. The No Adverse Effect finding under Section 106 documents that construction of the Project would not adversely affect the activities, features, or attributes of the I-105/Century Freeway-Transitway Historic District that qualify it for protection under Section 4(f). Based on the Section 106 no adverse effect determination, FTA has preliminarily determined that Alternatives 1, 2, 3, and 4 would have a *de minimis* impact for the permanent incorporation of land from and temporary occupancy during construction of the 105/Century Freeway-Transitway Historic District.

5.4.1.4 6000 Alameda Street, Huntington Park

6000 Alameda Street is a two-story daylight factory building developed for the National Automatic Pan Corporation in 1925. The building is eligible for listing in the NRHP.

Based on the discussion below, Alternatives 1, 2, or 3 would result in permanent incorporation of land within portions of 6000 Alameda Street and temporary occupancy for vibration monitoring during construction. However, the Section 4(f) use of this historic Section 4(f) property would not adversely affect the features or attributes that contribute to its NRHP eligibility. Additionally, based on the Section 106 no adverse effect determination, FTA has preliminarily determined that Alternatives 1, 2, and 3 would have a *de minimis* impact on 6000 Alameda Street. These preliminary determinations are pending the completion of Section 106 consultation and concurrence from the California SHPO. Based on the definition of constructive use in Section 5.1.3.3, because Alternatives 1, 2, or 3 would incorporate land from and not substantially impair the activities, features, or attributes of the Section 4(f) property, it would not have a constructive use of the historic property. Alternative 4 would have no Section 4(f) use of 6000 Alameda Street because this alternative is not in close proximity to the resource.

The proposed alignment for Alternatives 1, 2, and 3 would be located at-grade along Randolph Street. The Project would require improvements to the existing grade crossing at the intersection of Randolph Street and Alameda Street, which would result in a minor, partial acquisition from the curbside along Randolph Street.

The Project would not alter any of the characteristics of 6000 Alameda Street that qualify it for inclusion in the NRHP. The Project would not diminish the property's integrity of location, design, setting, materials, workmanship, feeling, and association. The Project would have no adverse effect on this historic property. The Project would incorporate land from the curbside along Randolph Street. Alternatives 1, 2, and 3 would require approximately 800 square feet of a permanent surface acquisition from the Section 4(f) property. Based on the Section 106 no adverse effect determination, FTA has preliminarily determined that Alternatives 1, 2, or 3 would have a *de minimis* impact on 6000 Alameda Street.

Alternatives 1, 2, or 3 would not require temporary occupancy beyond the grade-crossing improvements, monitoring, and surveying activities that were considered in the Section 106 effect finding of the property for right-of-entry, project construction, TCEs, or other temporary use. The TCEs required for construction would be temporary occupancies. The temporary activities during construction would not have an adverse effect under Section 106 on the features, activities, or attributes that contribute to the historic property's NRHP eligibility. Based on the Section 106 no adverse effect determination, FTA has preliminarily determined that Alternatives 1, 2, or 3 would have a *de minimis* impact for the permanent incorporation of land from and temporary occupancy during construction of 6000 Alameda Street.

5.4.1.5 6101 Santa Fe Avenue, Huntington Park

6101 Santa Fe Avenue is a one-story daylight factory building developed by the Sav-A-Day Laundry Company in 1928. The building is eligible for listing in the NRHP.

Based on the discussion below, Alternatives 1, 2, or 3 would result in permanent incorporation of land within portions of 6101 Santa Fe Avenue. However, the Section 4(f) use of this historic Section 4(f) property would not adversely affect the features or attributes that

contribute to its NRHP eligibility. Additionally, based on the Section 106 no adverse effect determination, FTA has preliminarily determined that construction and operation of the Project would have a *de minimis* impact on 6101 Santa Fe Avenue. These preliminary determinations are pending the completion of Section 106 consultation and concurrence from the California SHPO. Alternatives 1, 2, or 3 would have a Section 4(f) *de minimis* impact to 6101 Santa Fe Avenue. Based on the definition of constructive use in Section 5.1.3.3, because Alternatives 1, 2, or 3 would incorporate land from and not substantially impair the activities, features, or attributes of the Section 4(f) property, it would not have a constructive use of the historic property. Alternative 4 would have no Section 4(f) use of 6101 Santa Fe Avenue because this alternative is not in close proximity to the resource.

The proposed alignment for Alternatives 1, 2, or 3 would be constructed at-grade within the existing La Habra Branch right-of-way in the median of Randolph Street. Alternatives 1, 2, or 3 would improve the existing grade crossing/separation at the Santa Fe Avenue and Randolph Street intersection. Approximately 200 square feet of the property's northeast corner would be acquired to accommodate alterations to the right-of-way and sidewalk for the grade crossing/separation improvements. The building and portion of the property not affected by the Project would remain as it is today. The Project would not diminish the integrity of the 6101 Santa Fe Avenue's location, design, setting, materials, workmanship, feeling, and association. The Project would have no adverse effect on this historic property. Based on the Section 106 no adverse effect determination, FTA has preliminarily determined that Alternatives 1, 2, or 3 would have a *de minimis* impact on 6101 Santa Fe Avenue.

Alternatives 1, 2, or 3 would not require temporary occupancy beyond the grade-crossing improvements, monitoring, and surveying activities that were considered in the Section 106 effect finding of the property for construction of grade crossing/separation improvements. The TCEs would be temporary occupancies. The temporary activities during construction would not have an adverse effect on the features, activities, or attributes that contribute to the historic property's NRHP eligibility. Based on the Section 106 no adverse effect determination, FTA has preliminarily determined that Alternatives 1, 2, or 3 would have a *de minimis* impact for the permanent incorporation of land from and temporary occupancy during construction of 6101 Santa Fe Avenue.

5.4.1.6 Seventh Street Commercial Historic District

The Seventh Street Commercial Historic District is an eight-block-long NRHP-eligible commercial district in the center of downtown Los Angeles. The Barker Brothers Furniture Store (Section 5.4.1.2) is the only contributing resource to the Seventh Street Commercial Historic District that is located within the Section 106.

Based on the discussion below, Alternative 2 would result in permanent incorporation of land within portions of the Seventh Street Commercial Historic District. However, the Section 4(f) use of this historic Section 4(f) property would not adversely affect the features or attributes that contribute to its NRHP eligibility. Additionally, based on the Section 106 no adverse effect determination, FTA has preliminarily determined that Alternative 2 would have a *de minimis* impact on the Seventh Street Commercial Historic District for permanent incorporation and temporary occupancy. These preliminary determinations are pending the completion of Section 106 consultation and concurrence from the California SHPO. Based on the definition of constructive use in Section 5.1.3.3, because Alternative 2 would not substantially impair the activities, features, or attributes of the Section 4(f) property, it would

not have a constructive use of the Seventh Street Commercial Historic District. Alternatives 1, 3, or 4 would have no Section 4(f) use of the Seventh Street Commercial Historic District because these alternatives are not in close proximity to the resource.

The district includes parcels on both sides of Seventh Street between Main Street on the east and Figueroa Street on the west. Alternative 2 would require approximately 6,870 square feet of permanent underground easement for the construction and operation of a pedestrian tunnel segment that would connect with the existing 7th Street/Metro Center Station through the basement of the Barker Brothers Furniture Store. The Section 106 evaluation for the Project determined that there would be No Adverse Effect on the Barker Brothers Furniture Store. The *Section 4(f) Policy Paper* (USDOT 2012) addresses Section 4(f) evaluation of historic districts. Question 2B of the *Section 4(f) Policy Paper* (USDOT 2012) asks, *How does Section 4(f) apply in historic districts that are on or eligible for the NR[HP]?* The guidance states:

> *Within a NR[HP] listed or eligible historic district, [FTA]'s long-standing policy is that Section 4(f) applies to those properties that are considered contributing to the eligibility of the historic district, as well as any individually eligible property within the district. Elements within the boundaries of a historic district are assumed to contribute, unless they are determined by [FTA] in consultation with the SHPO/THPO not to contribute.*

Based on the Section 106 no adverse effect determination, FTA has preliminarily determined that Alternative 2 would have a *de minimis* impact on the Seventh Street Commercial Historic District.

Alternative 2 would require temporary access for construction activities that were considered in the Section 106 effect finding of No Adverse Effect on the Barker Brothers Furniture Store for right-of-entry, project construction, TCEs, or other temporary use. The TCEs would be temporary occupancies. The temporary impact that would occur during the construction phase was included in FTA's effect determination under Section 106 and consultation with the California SHPO. As required by Mitigation Measure VIB-7, during construction, vibration monitors would be placed on the historic site at the elevation of the historic building closest to construction activities within 200 feet. When construction activities are no longer within 200 feet of the historic resource, the vibration monitors would be removed. Based on the Section 106 no adverse effect determination, FTA has preliminarily determined that Alternative 2 would have a *de minimis* impact for the permanent incorporation of land from and temporary occupancy during construction of the Seventh Street Commercial Historic District.

5.4.1.7 Historic Sites with Temporary Occupancy Exception for Monitoring Only

The historic properties listed in Table 5.3 and as discussed in Section 4.14.3, the Historic, Archaeological, and Paleontological Resources Section of this Draft EIS/EIR, are subject to Section 4(f) protection.

The Project would not acquire land from the Section 4(f)-protected areas of the historic properties listed in Table 5.3; therefore, no permanent incorporation would result from the Project. In addition, the Section 106 evaluation for the Project determined that there would be no adverse effect on each of the properties listed in Table 5.3. Based on the definition of constructive use in Section 5.1.3.3, because the Project would have no adverse effect on the historic properties, it would not substantially impair the activities, features, or attributes of the Section 4(f) properties; therefore, it would not have a constructive use of any historic property listed in Table 5.3.

Project Mitigation Measure VIB-7, which would require the contractor to monitor construction vibration when within 200 feet of historic properties, would require temporary easements for the properties being monitored. During construction, vibration monitors would be placed on the historic site at the elevation of the historic building closest to the construction activities that are within 200 feet of the work. When construction activities are no longer within 200 feet of the historic resource, the vibration monitors would be removed. Pending conclusion of SHPO consultation, the FTA has made a preliminary finding that the temporary easements on the historic Section 4(f) properties would qualify for the temporary occupancy exception. Per 23 CFR Section 774.13 and as defined in Section 5.1.3.4, a temporary occupancy of a property does not constitute a use under Section 4(f) when all the following conditions are satisfied:

Is the duration temporary? Vibration monitors would be placed on the historic site at the elevation of the historic building closest to the construction activities within 200 feet. When construction activities are no longer within 200 feet of the historic resource, the vibration monitors would be removed. The monitors would be in place for a few weeks at most.

Is the scope of work minor? Work on the properties would be limited to placement of vibration monitors. Vibration monitors consist of a small, approximately 1-cubic-foot recording device connected to one or more accelerometers, which often resemble a metallic hockey puck or Rubik's Cube, that is placed on the ground adjacent to the structure or attached to the structure by removable putty or tape.

Are there any anticipated permanent adverse physical impacts, or is there interference with the protected activities, features, or attributes of the property, on either a temporary or permanent basis? Per the Section 106 finding, the Project would not result in an adverse effect to the historic properties. Temporary construction effects would not result in temporary or permanent adverse changes or impair the Section 4(f) property's historic integrity, features, or attributes that contribute to its NRHP eligibility.

Will the land being used be fully restored? The vibration monitors would not result in temporary or permanent changes to the Section 4(f) properties. Any alternation to the property would be removed and the property restored.

Is there documented agreement of the official(s) having jurisdiction over the Section 4(f) resource regarding the above conditions? The FTA and Metro are consulting with the California SHPO regarding the Section 106 no adverse effect findings and application of the temporary occupancy exception for the properties listed in Table 5.3.

Based on the discussion above, per 23 CFR Section 774.13 and as defined in Section 5.1.3.4, the Project would qualify for the temporary occupancy exception resulting in no Section 4(f) use of the properties listed in Table 5.3 under Section 4(f). This determination is pending the completion of Section 106 consultation and concurrence of the California SHPO on the Section 106 consultation.

Table 5.3. Properties with Temporary Use Exception for Vibration Monitoring

Property	Applicable to Alternative(s)
Los Angeles Terminal Annex Post Office	Alternative 1
Los Angeles Union Terminal District and Buildings	Alternatives 1 or 2
1608 East 15th St, Los Angeles	Alternatives 1 or 2
Angel City Brewery/John A. Roebling's Sons Company	Alternative 1
500 South Alameda St, Los Angeles	Alternative 1
542 South Alameda St, Los Angeles	Alternative 1
1250 Long Beach Ave, Los Angeles	Alternatives 1 or 2
1753 East Olympic Blvd, Los Angeles	Alternatives 1 or 2
Hamburger's Department Store	Alternative 2
Charles C. Chapman Building	Alternative 2
Tower Theater	Alternative 2
Garfield Building	Alternative 2
Union Bank and Trust Company Building	Alternative 2
Garment Capitol Building	Alternative 2
Textile Center Building	Alternative 2
Southern California Gas Complex	Alternative 2
Great Republic Life Building	Alternative 2
801 South Spring St, Los Angeles	Alternative 2
National City Bank Building	Alternative 2
General Petroleum Corporation Parking Garage	Alternative 2
The Olympic Theater	Alternative 2
Commercial Exchange Building	Alternative 2
Mack International Motor Truck Corporation	Alternatives 1 or 2
Randolph Substation	Alternatives 1, 2, or 3
Downtown Los Angeles Industrial Historic District	Alternative 1
Broadway Theater and Commercial Historic District	Alternative 2

Source: Metro 2021l

5.4.2 Public Parks and Recreation Areas

5.4.2.1 Paramount Park

Paramount Park is located at 14400 Paramount Boulevard in the City of Paramount. The primary public use of the property is for active recreation. It is owned by the City, and recreational uses at the park include playgrounds, handball courts (lighted), baseball diamonds (lighted), basketball court (lighted), picnic shelters/barbecues, gymnasium, walking path, restrooms, pool, and onsite

parking. The park is approximately 15 acres. The approximately 9.9 acres of city-owned parkland is a Section 4(f)-protected resource and separated from Alternatives 1, 2, 3, and 4 by a 110-foot Los Angeles Department of Water and Power (LADWP) right-of-way.

In addition to the City-owned parkland, the City of Paramount leases a 40-foot-wide strip from Metro that is designated for "[p]arking and landscaping for Paramount Park only, and no other uses." Exhibit E to the lease states that "there is a possibility that the West Santa Ana Branch will be selected as a rail connector with Orange County. If such a decision is made, Metro will probably require the return of the entire right-of-way adjacent to Paramount Park" (License Agreement A000604 [Metro 1993]). Per 23 CFR 774.11(h), the property was reserved in the lease agreement for future transportation use while functioning temporarily to support park use; therefore, the approximately 1.3 acres of property within the Metro lease area is not subject to Section 4(f). Alternatives 1, 2, 3, and 4 would require return of and occupy the Metro lease area.

Separately, the City has an agreement for use of the 110-foot LADWP power right-of-way that is located between the park and the Metro right-of-way. The approximately 3.8-acre LADWP right-of-way is adjacent to Alternatives 1, 2, 3, and 4. While the primary use of the power right-of-way is not as a recreational property, it is included in the area afforded Section 4(f) protection because the specifics of the property agreement are not available.

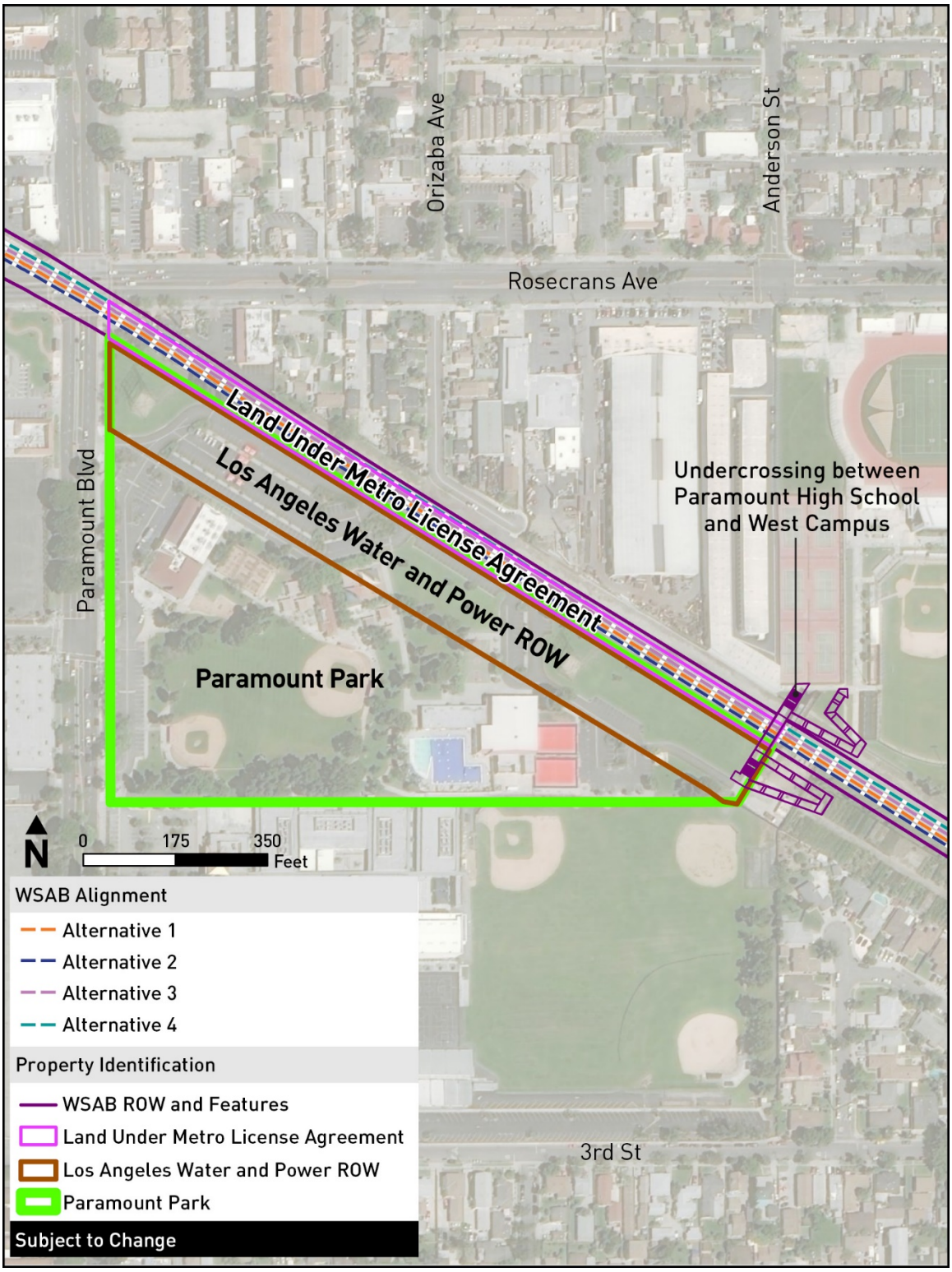
An existing grade-separated pedestrian crossing between the Paramount High School east and west campuses occupies a portion of the Metro and LADWP rights-of-way.

Paramount Park, inclusive of the LADWP right-of-way, meets the definition of a Section 4(f) resource as it is a publicly owned parkland and recreation area; however, by the lease terms described in License Agreement A000604 (Metro 1993), the separate parcel leased from Metro is not a Section 4(f)-protected property.

Based on the discussion below, Alternative 1, 2, 3, or 4 would result in permanent incorporation and temporary occupancy within portions of the LADWP property that function as a portion of Paramount Park. The Section 4(f) use of this property would not substantially impair the features, activities, or attributes that qualify the property for protection under Section 4(f). FTA has preliminarily determined that Alternative 1, 2, 3, or 4 would have a *de minimis* impact on Paramount Park for both temporary and permanent impacts. These preliminary determinations are pending concurrence from the City of Paramount Community Services and Recreation Department.

Paramount Park is adjacent to Alternatives 1, 2, 3, and 4 and approximately 700 feet from the Paramount Maintenance and Storage Facility site option. The at-grade track and aerial easements for Alternatives 1, 2, 3, and 4 require termination of a lease agreement between Metro and the City of Paramount for a 40-foot-wide section of Metro right-of-way that is not subject to Section 4(f). The reversion of the leased parking area to accommodate the track alignment does not include acquisition of property within the Paramount Park boundary, as shown in Figure 5-3. The Project would require acquisition of approximately 7,300 square feet of land from the LADWP property to construct a replacement grade-separated pedestrian crossing between the Paramount High School east and west campuses. The new crossing would replace an existing overcrossing in this location, but it would require additional space to upgrade the crossing to meet Americans with Disability Act accessibility requirements. The Project would not require any acquisition of parkland in City of Paramount ownership.

Figure 5-3. Paramount Park



Source: Metro 2021l

The acquisition area includes part of an open grassy area and a currently fenced maintenance and storage area adjacent to the park's fenced southeastern boundary with the Paramount High School west campus and the continuation of the LADWP property beyond the area leased by the city adjacent to Paramount Park. The acquisition constitutes approximately 1 percent of the Section 4(f)-protected land within Paramount Park. The acquisition area is not used for any of the activities, features, or attributes identified as significant for the park (playgrounds, handball courts, baseball diamonds, basketball court, picnic shelters/ barbecues, gymnasium, walking path, restrooms, and swimming pool). Because the acquisition would not adversely affect the activities, features, or attributes qualifying the park for protection under Section 4(f), and the acquired area would be used to provide improved safe access for students between Paramount High School's east and west campuses, FTA has made a preliminary determination than the acquisition of land from the LADWP property would have a *de minimis* impact on Paramount Park. This finding is made dependent on concurrence by the City of Paramount Community Services and Recreation Department.

Alternatives 1, 2, 3, or 4 would not require temporary occupancy of parkland property for right-of-entry, project construction, TCEs, or other temporary use beyond what is needed for the pedestrian undercrossing and already considered in the *de minimis* impact determination.

While Alternatives 1, 2, 3, or 4 would incorporate land from the LADWP right-of-way, it would not acquire land from the portion of Paramount Park owned by the City of Paramount. The proximity impacts from Alternatives 1, 2, 3, or 4 would not be so severe that the protected activities, features, or attributes that qualify the park property for protection under Section 4(f) would be substantially impaired. No constructive use of the property would occur as defined in 23 CFR 774.15 and described in the following subsections.

Noise level increase: Constructive use occurs when "[t]he projected noise level increase attributable to the project substantially interferes with the use and enjoyment of a noise-sensitive facility of a property protected by Section 4(f)." According to the analysis provided in Section 5.3.2.1 of the *West Santa Ana Branch Transit Corridor Project Final Noise and Vibration Impact Analysis Report* (Metro 2021j), included as Appendix M to this Draft EIS/EIR, the active recreational uses within the park such as ball fields and courts are not noise sensitive; therefore, Paramount Park was not evaluated for noise impacts and the acoustical environment is not a qualifying feature of the park's Section 4(f) protection. Construction noise Mitigation Measure NOI-8 Noise Control Plan would generally reduce construction noise levels to within the FTA construction noise criteria; temporary short-term exceedances of the criteria could occur (Metro 2021j) but would not be of such magnitude or duration to substantially impair use of the park.

Impairment of aesthetic features: The proximity of the Project does not impair aesthetic features or attributes of the Section 4(f) property that contribute to its value as a public park and recreation center. As noted in Section 4.2 of the *West Santa Ana Branch Transit Corridor Project Final Visual and Aesthetic Impact Analysis Report* (Metro 2021o), included as Appendix I to this Draft EIS/EIR, Paramount Park is identified as a scenic resource, with park users being the sensitive viewers. The park is located within the Suburban Residential and Industrial Landscape Unit, as described in Section 5.3.1 of that report. Overall, the change in visual quality in this landscape unit would be neutral since the Project would be compatible with the visual character, and viewer groups in this landscape unit would not be sensitive to visual changes associated with the Project. The Project would not obstruct views of or alter the visual character and quality of Paramount Park; therefore, adverse visual effects are not expected.

Restricted access: The Project would not restrict access to the public park and recreation areas. As noted in Section 5.3.1.2 and Section 5.3.1.3 of the *West Santa Ana Branch Transit Corridor Project Final Parklands and Community Facilities Impact Analysis Report* (Metro 2021k), included as Appendix AA to this Draft EIS/EIR, the City of Paramount leased parking located on the LADWP property along the northern boundary of Paramount Park would be affected as a result of the lease termination to accommodate the track alignment and permanent aerial easement for the aerial track alignment. However, onsite parking would be maintained to the extent feasible and onsite parking access from Paramount Boulevard would not be affected. Adequate onsite parking would be available to park users and, therefore, the impact would not substantially diminish the utility of the park and its uses. The Project would not affect vehicle or pedestrian access to community facilities, and the partial property acquisition of the LADWP property would not affect the existing vehicle access and pedestrian access to the park, nor does the Project impact the existing access from Paramount Boulevard. In addition, the Project would provide another mode of access to and from the park.

Vibration impacts: As noted in Section 5.3.2.2 of the Final Noise and Vibration Impact Analysis Report (Appendix M), groundborne vibration would not adversely affect Paramount Park. As described in Section 8.3.6 of that report, with mitigation, construction vibration would not exceed damage risk thresholds.

Ecological intrusion: The Section 4(f) property does not provide ecological value (wildlife habitat or waterfowl refuge) that would be diminished by the Project.

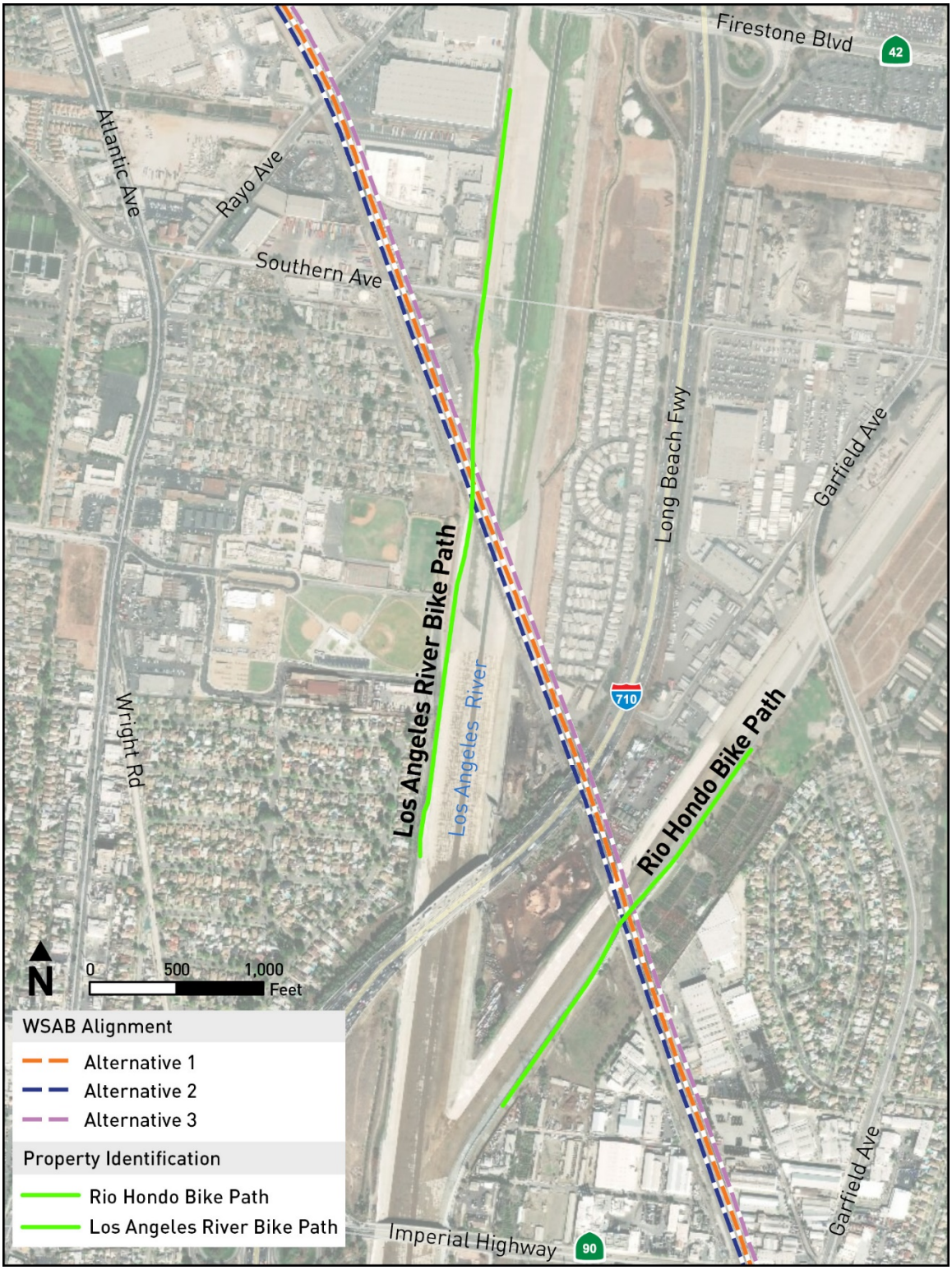
Based on the discussion above, no constructive use of the property would occur as defined in 23 CFR 774.15.

5.4.2.2 Los Angeles River Bike Path, Rio Hondo Bike Path, and San Gabriel River Mid-Trail

The Los Angeles River Bike Path and Rio Hondo Bike Path are Class I bike paths (Figure 5-4). The paths would cross under Alternatives 1, 2, and 3. The San Gabriel River Mid-Trail would cross under Alternatives 1, 2, 3, and 4 as the alignment crosses over the San Gabriel River (Figure 5-5).

Alternatives 1, 2, 3, or 4 would not require acquisition of land within the boundaries of any of the trails listed in Table 5.4; therefore, no Section 4(f) property would be permanently incorporated into the Project. As shown in Table 5.4, FTA has made a preliminary determination that there would be a Section 4(f) temporary occupancy exception of the Los Angeles River Bike Path and Rio Hondo Bike Path with Alternatives 1, 2, or 3, pending final concurrence with the County of Los Angeles Department of Public Works. Alternative 4 would have no Section 4(f) use of the Los Angeles River Bike Path or Rio Hondo Bike Path because this alternative is not in close proximity to the resources. FTA has made a preliminary determination that there would be a Section 4(f) temporary occupancy exception of the San Gabriel River Mid-Trail property with Alternative 1, 2, 3, or 4, pending final concurrence with the County of Los Angeles Department of Public Works.

Figure 5-4. Los Angeles River and Rio Hondo Bike Paths



Source: Metro 2021l

Figure 5-5. San Gabriel River Mid-Trail



Source: Metro 2021l

Table 5.4. Recreational Trails with Temporary Use Exception

Property	Applicable to Alternative(s)	Description of Effect	Preliminary Section 4(f) Finding
Los Angeles River Bike Path	Alternatives 1, 2, or 3	Short-duration detour during construction	Temporary occupancy exception
Rio Hondo Bike Path	Alternatives 1, 2, or 3	Short-duration detour during construction	Temporary occupancy exception
San Gabriel River Mid-Trail	Alternatives 1, 2, 3, or 4	Short-duration detour during construction	Temporary occupancy exception

Source: Metro 2021l

The Project would require temporary easements during construction to safely construct crossings above the three trails listed in Table 5.4. Pending consultation with the Los Angeles County Department of Public Works, the FTA has made a preliminary finding that the temporary occupancy exception applies to the three trails. Per 23 CFR Section 774.13 and as defined in Section 5.1.3.4, a temporary occupancy of a property does not constitute a use under Section 4(f) when all the following conditions are satisfied:

Is the duration temporary? The trails would be closed and a detour would be provided only for the period of time needed to construct the elevated crossing above the trails. This would be less than the duration of construction for the Project. Detours would be provided as outlined in Mitigation Measure TRA-20 Transportation Management Plan(s) and communicated to trail users per Mitigation Measure COM-1 Construction Outreach Plan.

Is the scope of work minor? Crossing over the trails would constitute a very small (less than 1 percent) portion of the Project and a similarly small portion of the entire trails. The only work that would affect the trails is construction of the guideway above the trails.

Are there any anticipated permanent adverse physical impacts, or is there interference with the protected activities, features, or attributes of the property, on either a temporary or permanent basis? Once the guideway is constructed, regular recreational use of the trails can occur and would not be affected by the guideway. During construction, detours would be provided as outlined in Mitigation Measure TRA-20 Transportation Management Plan(s) and communicated to trail users per COM-1 to maintain the Section 4(f)-protected recreational activities.

Will the land being used be fully restored? No damage is expected. Any damage to the bike path, such as damaged pavement, would be fully restored.

Is there documented agreement of the official(s) having jurisdiction over the Section 4(f) resource regarding the above conditions? The FTA and Metro have consulted with the County of Los Angeles Department of Public Works regarding ownership and maintenance of the trails and will continue to coordinate during planning and construction. Prior to completion of the Final Section 4(f) Evaluation, Metro will confirm with the County of Los Angeles Department of Public Works that it is in agreement with the FTA's assessment of temporary occupancy.

Based on the discussion above, pending consultation with the Los Angeles County Department of Public Works, the FTA has made a preliminary finding that the temporary occupancy exception applies to the three trails.

A constructive use occurs when the transportation project does not incorporate land from a Section 4(f) property, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired [23 CFR 774.15(a)]. No constructive use of the properties would occur as defined in 23 CFR 774.15 and described in the following subsections.

Noise level increase: 23 CFR 774.15(e)(1) identifies that constructive use occurs when "[t]he projected noise level increase attributable to the project substantially interferes with the use and enjoyment of a noise-sensitive facility of a property protected by Section 4(f), such as: [h]earing the performances at an outdoor amphitheater; [s]leeping in the sleeping area of a campground; [e]njoyment of a historic site where a quiet setting is a generally recognized feature or attribute of the site's significance; [e]njoyment of an urban park where serenity and quiet are significant attributes; or [v]iewing wildlife in an area of a wildlife and waterfowl refuge intended for such viewing." None of these cases are present for the three trails. Per the FTA *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018), *"parks used primarily for active recreation such as sports complexes and bike or running paths are not considered noise-sensitive"*; therefore, the three trails were not evaluated for noise impacts and the acoustical environment is not a qualifying feature of the trails' Section 4(f) protection.

Impairment of aesthetic features: The proximity of the Project would not impair aesthetic features or attributes of the Section 4(f) properties that contribute to their value as public bike paths or trails. As noted in Section 4.2 of the Final Visual and Aesthetic Impact Analysis Report (Appendix I), the trails are not identified as a scenic resource with sensitive viewers. Overall, the change in visual quality in this landscape unit would be neutral since the Project would be compatible with the existing visual character, including freeway and rail bridges, and viewer groups in the landscape unit would be insensitive to visual changes associated with the Project. Therefore, adverse visual effects are not expected.

Restricted access: The Project would not result in long-term restricted access that substantially diminishes the utility of the trails.

Vibration impacts: Bicycle and pedestrian use of the trails is not vibration-sensitive. Construction or operation vibration would not impair use of the trails.

Ecological intrusion: The Section 4(f) properties do not provide ecological value (wildlife habitat or waterfowl refuge) that would be diminished by the Project.

Based on the discussion above, no constructive use of the properties would occur as defined in 23 CFR 774.15.

5.5 Agency Coordination and Consultation

This section discusses consultation and coordination with officials with jurisdiction over Section 4(f) properties that could be affected by the Project and an overview of the public and agency review of the Section 4(f) evaluation. Table 5.5 summarizes the coordination efforts received and the responses from officials with jurisdiction, which is detailed in the *West Santa Ana Branch Transit Corridor Project Draft Section 4(f) and 6(f) Evaluation* (Appendix BB). Prior to making Section 4(f) approvals under Section 774.3(a), the Section 4(f) evaluation shall be provided for coordination and comment to the official(s) with jurisdiction over the Section 4(f) resource and to the Department of the Interior, and as appropriate to the Department of Agriculture and the Department of Housing and Urban Development (23 CFR Section 774.5).

Table 5.5. Summary of Coordination with Agencies with Jurisdiction over Section 4(f) Properties

Consulted Agency	Applicable Properties	Outreach to Date	Response to Date
The California State Historic Preservation Officer	All historic properties	Consultation on Section 106 APE on December 19, 2018 and April 26, 2019 Consultation on Determination of Eligibility and APE expansion on March 30, 2020 Consultation related to I-105/Century Freeway-Transitway Historic District on September 9, 2020	APE concurrence on May 29, 2019 Determination of Eligibility consultation is ongoing
City of Los Angeles Department of Recreation and Parks	Los Angeles Plaza Park (El Pueblo De Los Angeles State Historic Park and Paseo de la Plaza Park)	January 30, 2020	February 12, 2020
	Fred Roberts Recreation Center		
Los Angeles Unified School District	Lillian Street Elementary School	January 30, 2020	None to date
	San Antonio Elementary School		
	Legacy High School Complex		
City of Huntington Park Department of Parks and Recreation	Salt Lake Park	January 29, 2020	None to date
City of South Gate Parks and Recreation Department	Hollydale Community Center/Park	January 29, 2020	February 12, 2020
City of Paramount Community Services and Recreation Department	Paramount Park	January 29, 2020	None to date
Paramount Unified School District	Paramount High School	January 29, 2020	February 18, 2020
	Paramount High School West Campus		
	Paramount Park Middle School		
City of Bellflower	Ruth R. Caruthers Park	January 29, 2020 March 3, 2021	February 10, 2020 March 11, 2021
	Flora Vista Dog Park		
	Bellflower Bike Trail		

Consulted Agency	Applicable Properties	Outreach to Date	Response to Date
City of Cerritos Recreation Services Division	Rosewood Park	January 29, 2020	February 10, 2020
City of Artesia Parks and Recreation Department	Artesia Park	January 29, 2020	None to date
Los Angeles County Department of Parks and Recreation	Los Angeles River Bike Path	January 29, 2020	February 28, 2020
	Rio Hondo Bike Path		
	San Gabriel River Mid-Trail		

Source: Metro 2021l
Note: APE = Area of Potential Effect

FTA and Metro completed a preliminary effects determination for each NRHP-eligible or listed property and made an overall Section 106 finding for the Project of No Adverse Effect as documented in the *West Santa Ana Branch Transit Corridor Project Revised Preliminary Cultural Resource Effects Report* (Metro 2021u), attached as Appendix X to this Draft EIS/EIR. Consultation with the California SHPO is ongoing.

With public circulation of this Draft EIS, FTA will provide the public and agencies with jurisdiction over Section 4(f) properties with an opportunity to review and consider the Section 4(f) analysis and FTA's preliminary determinations. Once FTA and Metro have collected and reviewed public comments, they will request concurrence from the City of Paramount Community Services and Recreation Department regarding *de minimis* impact to Paramount Park and from other officials with jurisdiction over parks for concurrence that the conditions for application of the temporary occupancy exception are met.

5.6 Preliminary Section 4(f) Finding

The FTA has made a preliminary determination that each of the Build Alternatives would have a *de minimis* impact or temporary use exception for Section 4(f)-protected properties (Table 5.6).

Table 5.6. Summary of Section 4(f) Findings by Alternative

Alternative	Number of Properties with a *de minimis* Finding		Number of Properties with Temporary Occupancy Exception Finding	
	Historic	Park	Historic	Park
Alternative 1	4	1	11	3
Alternative 2	5	1	21	3
Alternative 3	3	1	1	3
Alternative 4	1	1	0	1

Source: Summarized from Table 5.1 and Table 5.2

Based on the evaluation summarized in Section 5.4 and considering the permanent and temporary effects of the Project, FTA has made a preliminary determination that the Project would have a *de minimis* impact on the activities, attributes, or features that qualify Los Angeles Union Station, the Barker Brothers Furniture Store, I-105/Century Freeway-Transitway Historic District, 6000 Alameda Street, 6101 Santa Fe Avenue, and the Seventh Street Commercial Historic District for protection under Section 4(f), pending the completion of Section 106 consultation and concurrence from the California SHPO. The FTA also has made a preliminary determination that the Project would have a *de minimis* impact on Paramount Park (Section 5.4.2.1), pending concurrence from the City of Paramount Community Services and Recreation Department.

The FTA also has made a preliminary determination that the temporary occupancy exception to Section 4(f) use would apply to the Section 4(f) properties identified in Table 5.4 and Table 5.3, pending concurrence from the agencies with jurisdiction that the conditions for application of the temporary occupancy exception are met.

The Project would have no use of other Section 4(f) properties. There would be no constructive use of any Section 4(f) properties (Metro, 2021l). FTA has preliminarily determined that the Project would satisfy the requirements of Section 4(f) because the only impacts to Section 4(f) properties would be *de minimis* or meet the requirements of the temporary occupancy exception.

5.7 Section 6(f) Finding

Section 6(f) properties are recreation resources created or improved with funds from the Land and Water Conservation Act which requires that an area funded with this assistance be "continually maintained in public recreation use" unless the National Park Service, or other state designee, approves substitution per the Conversion Requirements, including conversion to other uses either "in whole or in part" (36 CFR Ch 1, Section 59.3). Section 6(f) prohibits the conversion of property acquired or developed with these funds to a non-recreational purpose without the approval of the Secretary of the U.S. Department of the Interior's National Park Service and mitigation that includes replacement of the quality and quantity of land used. As documented in Chapter 11 of the *West Santa Ana Branch Transit Corridor Project Draft Section 4(f) and 6(f) Evaluation* (Appendix BB), the Project would not result in the conversion of any recreational areas funded by the Land and Water Conservation Fund to a non-recreational use; therefore, there is no conversion of Section 6(f) property.

6 EVALUATION OF ALTERNATIVES

6.1 Introduction

This chapter draws upon and summarizes the information provided in the prior chapters of this Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR) to compare the Build Alternatives, including the design options and maintenance and storage facility (MSF) site options. These comparisons are considered in terms of effectiveness in meeting the Purpose and Need (see Chapter 1) of the West Santa Ana Branch (WSAB) Transit Corridor Project and were used to identify the staff preferred alternative and the environmentally superior alternative.

The information included in this chapter provides agency stakeholders and the general public with an understanding of the benefits and trade-offs of the four Build Alternatives and the No Build/No Project Alternative, two design options, and two MSF site options being considered for the WSAB corridor within Los Angeles County. The information in this chapter, in particular the identification of the staff preferred alternative, will also be considered by the Los Angeles County Metropolitan Transportation Authority (Metro) Board of Directors (Board) to select the Locally Preferred Alternative, which will occur after circulation of the Draft EIS/EIR.

6.2 Staff Preferred Alternative

Both the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) recommend identifying the preferred alternative in the Draft EIS/EIR. Per Federal Transit Administration (FTA) Standard Operating Procedures No. 5 Alternatives, the NEPA preferred alternative is the alternative identified as the favored course of action by the lead agency(ies) during the environmental review process. This Standard Operating Procedure recommends that FTA identify the preferred alternative in the Draft EIS in order to give the public; federal, state, and local agencies; and tribal governments an opportunity to comment on the preferred alternative prior to the publication of the combined Final EIS/Record of Decision. In anticipation of a joint Final EIS/Record of Decision, this section identifies the staff preferred alternative and summarizes the rationale for identification of that alternative. CEQA also requires identification of the "proposed project[1]."

Therefore, in compliance with NEPA and CEQA, a staff preferred alternative has been identified from among the four Build Alternatives under consideration. Additional information on alternatives considered and alternatives considered and rejected is presented in Chapter 2, Project Description, and Appendix A of this Draft EIS/EIR. In addition to considering the effectiveness in meeting the Purpose and Need and environmental impacts and benefits, the financial capacity to construct, operate, and maintain the Project as well as strategies to fund the Project were primary considerations in determining the staff preferred alternative. Section 6.3 provides information on the effectiveness of each Build Alternative in meeting the Purpose and Need; the environmental impacts and benefits are summarized in Section 6.4. Based on these considerations, Alternative 3 has been identified as the staff

[1] According to Section 15378 of the *CEQA Guidelines*, the term "Project" means the whole of an action, which has a potential for resulting in either a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment. Within this Draft EIS/EIR, the "proposed project" refers to the whole of an action and to the underlying physical activity being approved.

preferred alternative, which is the favored course of action by Metro in the Draft EIS/EIR considering the benefits, costs, environmental impacts, and financial capacity of the No Build/No Project Alternative and the four Build Alternatives. The formal adoption of the Locally Preferred Alternative (LPA) by the Metro Board of Directors will occur after the Draft EIS/EIR circulation and the review of public and agency comments.

Table 6.1 presents the capital and operating and maintenance (O&M) costs associated with each Build Alternative along with characteristics of the alignments, including length, configuration (at grade, aerial, and underground), number of stations, length of alignment in shared right-of-way with existing rail, and length of alignment needing freight track relocation. The capital cost estimates for the Build Alternatives are in 2020 dollars and range from $1.9 billion for Alternative 4 to $8.8 billion for Alternative 2. These costs are inclusive of stations, guideway and track elements, sitework, rights-of-way, soft costs (professional services), vehicles, and unallocated contingency assumptions. Capital cost associated with the option costs and MSF site options are included in Section 6.5. Generally, capital costs decrease as the length of the alignment and number of stations decrease. The *West Santa Ana Branch Transit Corridor Project Final Advanced Conceptual Engineering Capital Cost Report* (Metro 2021x), included as Appendix P of this Draft EIS/EIR, details the capital cost assumptions, and the *West Santa Ana Branch Transit Corridor Project Final Operating and Maintenance Costs Report* (Metro 2021w), included as Appendix Q of this Draft EIS/EIR, provides information on the O&M assumptions for each of the Build Alternatives. Information on funding strategies is included in Appendix R of this Draft EIS/EIR.

Total capital costs for Alternatives 1 and 2 are significantly higher ($8.1 and $8.8 billion, respectively) than Alternatives 3 and 4 ($4.4 and $1.9 billion, respectively) due to the length of the alignment and the resulting number of stations. Additionally, both Alternatives 1 and 2 have portions of the alignment that are underground; generally, underground alignments are the costliest, followed by aerial and at-grade alignments.

For comparison purposes, capital costs in Table 6.1. are also presented on a per-mile basis to establish a relative cost expenditure by a fixed unit of measurement. Because each alternative would require construction of an MSF, the cost per mile includes the capital cost associated with the MSF site option. Based on this comparison, Alternative 3 would have the lowest cost per mile at $331 to $346 million in 2020 dollars depending on which MSF site option is selected, followed by Alternative 4, Alternative 1, and Alternative 2. Therefore, Alternative 3 has been identified as the staff preferred alternative.

The length of the alignment and number of stations also affects annual O&M costs. Alternative 2 is estimated to have the highest O&M costs among the four Build Alternatives ($101 million) because this alternative also includes short-line service during peak travel times between the Slauson/A Line Station and 7th St/Metro Center. This short-line service would add $5 to $13 million per year[2] compared to Alternative 1, which has a similar length and number of stations as Alternative 2, but has an annual O&M cost of $87 million. Alternatives 3 and 4 are estimated to have lower annual operating expenses ($67 million and $41 million, respectively) as a result of their shorter alignments and fewer number of stations compared to Alternatives 1 and 2.

[2] The range of O&M costs (estimated $5 to $13 million) for Alternative 2 to run the short-line service depends on the number of extra trips scheduled during the peak hour.

Table 6.1. Build Alternative Cost and Features

Cost/Features	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Capital cost (2020$[1]) without MSF[2, 4]	$8.1 billion	$8.8 billion	$4.4 billion	$1.9 billion
Capital cost (2020$[1]) with MSF[3, 4]	$8.5 billion – $8.8 billion	$9.2 billion – $9.5 billion	$4.9 billion – $5.1 billion	$2.3 billion – $2.6 billion
Capital cost per mile with MSF (2020$[1, 4])	$442 million – $455 million	$479 million – $490 million	$331 million – $346 million	$355 million – $389 million
Annual O&M cost (2020$[1])	$87 million	$101 million	$67 million	$41 million
Alignment length (miles)	19.3	19.3	14.8	6.6
At-grade length (miles)	12.3	12.3	12.2	5.6
Aerial length (miles)	4.7	4.7	2.6	1.0
Underground length (miles)	2.3	2.3	0	0
Number of stations	11	12	9	4
Shared right-of-way with rail (miles)	11.4	11.4	10.1	2.0
Freight relocation needed (miles)	8.1	8.1	8.1	1.3

Source: Metro 2021x and 2021w
Notes: [1] 2020$ refers to dollar values assumed in Fiscal Year 2020.
[2] All estimated costs generally include guideway and track elements, stations, stops, terminals, intermodal and support facilities, sitework and special conditions, systems, right-of-way, vehicles, professional services, and unallocated contingencies. Variable costs not included in the table are Design Options 1 and 2 for Alternative 1 and the maintenance and storage facilities site options (see Table 6.4 for these costs).
[3] Costs range from the low end (with the Bellflower MSF site option) to the high end (with the Paramount MSF site option). See Table 6.4 for more details.
[4] The capital cost estimates will be further refined as the project advances through the project development process and more detailed engineering is undertaken.
MSF = maintenance and storage facility; O&M = operating and maintenance

6.3 Effectiveness in Meeting Purpose and Need

This section compares the Build Alternatives in terms of meeting the Purpose and Need/Goals and Objectives of the Project.

The Purpose and Need for the Project is summarized in Chapter 1 of this Draft EIS/EIR. Overall, the purpose of the Project is to provide high-quality, reliable transit service to meet the future mobility needs of residents, employees, and visitors who travel within and through the corridor. In particular, the Project's purpose includes four major points:

- Establish a reliable transit service that will enhance connectivity and reduce travel times to local and regional destinations
- Accommodate future travel demand, including the high number of transit trips made by Study Area residents
- Improve access for densely populated neighborhoods, major employment centers, and other key regional destinations where future growth is forecasted to occur within the Study Area

- Address mobility and access constraints faced by transit-dependent communities, thereby improving transit equity

Each Build Alternative addresses the Purpose and Need/Goals and Objectives, but to varying degrees. Table 6.2 provides a summary of each Build Alternative's ability to address the Purpose and Need and an evaluation of the environmental benefits. This comparison identifies mobility and connectivity for historically underserved and transit-dependent communities, travel time improvements on local and regional transportation networks, and accommodation of substantial future employment and population growth. The information in Table 6.2. is based on the analyses of the Build Alternative presented in Chapter 3, Transportation, and Chapter 4, Affected Environment/Environmental Consequences, of this Draft EIS/EIR.

Table 6.2. Alternatives Benefit Evaluation

Purpose and Need	Environmental Benefits	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Establish a reliable transit service that will enhance connectivity and reduce travel times to local and regional destinations.	Regional mobility and connectivity[1]	High	High	Medium	Low
	User benefit hours[2]	15,400	19,700	8,400	4,000
Accommodate future travel demand, including the high number of transit trips made within the Study Area.	Average weekday daily boardings (2042)	60,839	82,826	30,964	11,119
	Population growth (percent change from 2017 to 2042 within ¼ mile of alignment)	60%	75%	59%	62%
	Employment growth (percent change from 2017 to 2042 within ¼ mile of alignment)	32%	25%	22%	20%
	Vehicle miles traveled (VMT) reduction (existing plus project compared to existing conditions)	216,100 (-0.05%)	215,000 (-0.05%)	71,800 (-0.02%)	36,300 (-0.01%)
	Emissions and greenhouse gas reduction	Greatest reduction	Greatest reduction	Moderate reduction	Least reduction

Purpose and Need	Environmental Benefits	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Improve access for densely populated neighborhoods, major employment centers, and other key regional destinations where future growth is forecasted to occur within the Study Area.	Community benefits (number of cities and communities in City of Los Angeles served within ½ mile of stations[3])	12 cities (3 communities in City of Los Angeles)	12 cities (3 communities in City of Los Angeles)	12 cities (1 community in City of Los Angeles)	5 cities (0 communities in City of Los Angeles)
	Economic benefits[4] (jobs gained in the region)	81,700 – 89,800 construction jobs 245 permanent jobs	88,100 – 89,800 construction jobs 282 permanent jobs	44,000 – 45,700 construction jobs 189 permanent jobs	22,400 – 24,000 construction jobs 113 permanent jobs
	Economic benefits (2020$[4]) (generated/earned in economic activity per year in the region)	$6.6 million	$7.6 million	$5.1 million	$3.0 million
Address mobility and access constraints faced by transit-dependent communities, thereby improving transit equity.	Approximate residential population within ½ mile of stations[5]	236,000	260,000	203,000	90,400
	Daily new transit trips (average number of trips per mile)	952	1,048	622	720

Source: Prepared for Metro in 2021

Notes: [1] Based on number of proposed stations that would improve local and regional access, mobility, and connectivity to transit. A "High" score indicates a greater number of stations (11 to 12) to increase mobility and connectivity; a "Medium" score indicates a moderate number of stations (9 to 10) to increase mobility and connectivity; and a "Low" score indicates a lower number of stations (< 9) to increase mobility and connectivity.

[2] User benefit hours presented in total daily hours. This value is based on travel time savings and cost savings that new riders and existing riders would experience.

[3] For purposes of this analysis, the City of Los Angeles is split into Central City, Central City North, and Southeast Los Angeles Community Plan Areas. These are considered established communities within the Affected Area. As such, the number of communities in the City of Los Angeles is described in the table.

[4] 2020$ refers to dollar values assumed in Fiscal Year 2020.

[5] The number presented is person-year jobs (one job for one person for one year).

[6] The residential populations identified are located within ½ mile of the station areas for each Build Alternative.

Alternatives 1 and 2 would have the longest alignments (approximately 19.3 miles) and, therefore, would serve the largest number of residents and provide the greatest amount of connectivity. As such, a reduction in vehicle miles traveled (VMT), number of daily boardings, emissions and greenhouse gas reduction, and economic benefits are all highest under these alternatives, as shown in Table 6.2. Alternatives 3 and 4 would serve a smaller

number of residents and provide lower connectivity as a result of the shorter alignments associated with these alternatives. Therefore, reductions in VMT, emissions and greenhouse gas reduction, number of daily boardings, and economic benefits are all lower compared to Alternatives 1 and 2. Alternative 3 would serve 12 cities, which is comparable to the number of cities that would be served by Alternatives 1 and 2. Additionally, compared to Alternative 4, Alternative 3 would provide a larger economic benefit, with $5.1 million generated versus $3.0 million.

All of the Build Alternatives would achieve the four major elements of the Project's Purpose by establishing reliable transit service, accommodating future travel demand, improving access, and addressing mobility and access constraints faced by transit-dependent communities in the corridor. Additionally, while Alternatives 1 and 2 would have the greatest amount of environmental benefits, these alternatives would also need to address the greatest extent of environmental effects given the longer alignments and greater number of stations.

As stated in Section 6.2 and shown in Table 6.1, Alternative 4 would have the lowest capital cost and economic benefits ($3.0 million) compared to the other Build Alternatives. However, Alternative 3 is the most cost-effective on a per-mile basis with inclusion of the MSF site (Table 6.1), which is required to support operation of the Project. Alternative 3 would connect 12 cities and generate around $5.1 million in economic activity per year. Therefore, Alternative 3 would still provide many of the same benefits as Alternatives 1 and 2 ($6.6 and $7.6 million in economic benefits, respectively), but slightly fewer due to the shorter length of the alignment. Alternative 4 would provide the least amount of benefits and would not be as cost-effective on a per-mile basis compared to Alternative 3.

6.4 Environmentally Superior Alternative

Per *CEQA Guidelines* Section 15126.6 (e)(2), identifying an "environmentally superior alternative" is required. The determination of this alternative is based on the results of the technical analysis of the alternatives as presented in the Draft EIS/EIR. The environmentally superior alternative is the alternative found to have an overall environmental advantage compared to the other alternatives. Pursuant to *CEQA Guidelines* Section 15126.6(b), alternatives with the potential for avoiding or substantially lessening significant impacts may be considered even if they are more costly. The goal of identifying the environmentally superior alternative is to assist decision-makers in the project approval process. However, the public agency is not required by CEQA to select the environmentally superior alternative as the approved project.

This section provides a comparison of the alternatives in terms of environmental impacts and benefits based on the detailed analysis provided in Chapter 3, Transportation, and Chapter 4, Affected Environment/Environmental Consequences of this Draft EIS/EIR. Overall, Alternatives 3 and 4 would have a shorter alignment and result in fewer environmental impacts compared to Alternatives 1 and 2. However, to further understand the alternatives from an environmental impact comparison, several other factors are also considered, including issue areas that have the greatest potential to result in long-term, significant impacts; community concerns; and overall benefit that each alternative would provide.

Table 6.3 presents a comparison of the environmental operational and construction impacts for each Build Alternative. Following the table is a summary discussion of the environmental considerations for each Build Alternative to identify an environmentally superior alternative. Refer to Table 6.2 for the environmental benefits by Build Alternative.

Table 6.3. Comparison of Operational and Construction Impacts by Build Alternative

	Environmental Areas of Consideration[1]	No Build/No Project Alternative	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Operational Impacts	Unmitigated traffic impacts (level-of-service)[2]	No impacts	12 intersections affected	12 intersections affected	12 intersections affected	0 intersections affected (with mitigation)
	Consistency with land use and plans development	Significant and unavoidable impacts	Significant and unavoidable impacts	Significant and unavoidable impacts	Significant and unavoidable impacts	Less than significant (with mitigation)
	Permanent full and partial acquisitions[3]	No Impacts	37 full 254 partial 220 total affected parcels	38 full 309 partial 283 total affected parcels	25 full 188 partial 172 total affected parcels	17 full 54 partial 59 total affected parcels
	Displacements (number of businesses and residential properties to be displaced)	No Impacts	89 businesses 21 residential units	108 businesses 21 residential units	65 businesses 21 residential units	18 businesses 8 residential units
	Number of employees and residents displaced	No Impacts	601 employees 78 residents	687 employees 78 residents	352 employees 78 residents	115 employees 32 residents
	Noise (number of severe and moderate noise impacts – before mitigation)	No Impacts	201 severe 126 moderate impacts	206 severe 122 moderate impacts	183 severe 105 moderate impacts	135 severe 29 moderate impacts
	Noise (number of severe and moderate noise impacts – after mitigation)	No Impacts	71 severe 147 moderate impacts	71 severe 147 moderate impacts	70 severe 138 moderate impacts	45 severe 73 moderate impacts
	Vibration (number of vibration impacts – before mitigation)	No Impacts	102 vibration impacts	101 vibration impacts	96 vibration impacts	62 vibration impacts

	Environmental Areas of Consideration[1]	No Build/No Project Alternative	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	Vibration (number of vibration impacts – after mitigation)	No Impacts	14 vibration impacts	14 vibration impacts	13 vibration impacts	11 vibration impacts
	Hazardous materials (number of known, potential, or historical environmental site concerns)	No Impacts	619	634	298	79
	Archaeological (number of archaeological resources within Affected Area)	No Impacts	8	1	1	0
	Transportation-related closures (full or partial) (permanent)[4]	No Impacts	Road: 14 closures Sidewalk: 3 closures	Road: 14 closures Sidewalk: 3 closures	Road: 12 closures Sidewalk: 1 closure	Road: 9 closures Sidewalk: 1 closure
Construction Impacts	Number of access effects to community facilities	No Impacts	17 community assets and residences	17 community assets and residences	15 community assets and residences	6 community assets and residences
	Truck trips (round trip)	No Impacts	121,630 trips	123,140 trips	55,330 trips	21,830 trips
	Maximum daily regional emissions during construction – threshold exceeded?	No Impacts	Yes (NO_x)	Yes (NO_x)	No	No
	Total construction greenhouse gas emissions ($MTCO_2e$)	No Impacts	42,098 $MTCO_2e$	43,961 $MTCO_2e$	24,838 $MTCO_2e$	15,307 $MTCO_2e$

	Environmental Areas of Consideration[1]	No Build/No Project Alternative	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	Construction impacts to private property[5]	No Impacts	76 construction laydown areas 238 affected parcels	80 construction laydown areas 235 affected parcels	41 construction laydown areas 191 affected parcels	17 construction laydown areas 87 affected parcels
	Hazardous subsurface gases present	No Impacts	Yes	Yes	No	No
	Total fuel consumption during construction	No Impacts	836,237 gallons of gasoline 10,287,344 gallons of diesel	836,237 gallons of gasoline 10,507,855 gallons of diesel	536,447 gallons of gasoline 7,300,229 gallons of diesel	468,414 gallons of gasoline 6,046,132 gallons of diesel
	Construction-related closures (full or partial) (temporary)[4]	No Impacts	Road: 34 closures Sidewalk: 28 closures	Road: 40 closures Sidewalk: 34 closures	Road: 31 closures Sidewalk: 26 closures	Road: 19 closures Sidewalk: 16 closures

Source: Prepared for Metro in 2021

Notes: [1]This table lists the major environmental subject areas with distinguishing impact findings among the alternatives.

[2] Level-of-service was used for NEPA purposes only.

[3] Parcels are identified by parcel boundaries and APN. "Affected Parcels" is not a total sum of the full and partial acquisitions. More than one partial acquisition may occur on a single parcel.

[4] Refer to Table 3.49 in Chapter 3 for additional information for each closure.

[5] "Affected parcels" counts all parcels impacted by either a construction laydown area or a temporary construction easement.

MTCO2e = metric tons of CO_2 equivalent; NO_x = nitrous oxide

6.4.1 No Build/No Project Alternative

Table 6.3 presents the environmental impact findings of the No Build/No Project Alternative to provide a comparison with the Build Alternatives. The No Build/No Project Alternative represents year 2042 conditions without the Project; a detailed description of assumptions for this scenario are provided in Chapter 2, Project Description. As shown in Table 6.3, the No Build/No Project Alternative would result in no impacts under all of the environmental topics with the exception of consistency with land use and plans development. As discussed in Section 4.1.5 of the Land Use Section, operation-related impacts for the No Build/No Project Alternative would limit the opportunity to intensify land uses at potential project station areas and throughout the corridor. This would limit jurisdictions from developing compact communities around a public transit system. As such, the No Build/No Project Alternative would result in a less than significant impact for land use impacts. Overall, the No Build/No Project Alternative would have the least number of impacts compared to the other Alternatives.

Since the No Build/No Project Alternative would not include a new rail service in the Study Area, it would provide no environmental benefits to the region. The No Build/No Project Alternative would also not achieve any of the project objectives, and therefore would not

address the Purpose and Need of the Project. As such, the No Build/No Project Alternative would not be the environmentally superior alternative when compared to the other Build Alternatives, even when impacts are considered.

6.4.2 Alternative 1 Environmental Summary

As shown in Table 6.3, Alternative 1 would result in the highest number of vibration impacts, moderate noise impacts, and the second-highest number of severe noise impacts compared to the other Build Alternatives. Mitigation has been identified for these impacts; however, not all impacts would be fully mitigated. Alternative 1 would have the highest number of unmitigated vibration impacts and severe noise impacts. After mitigation, Alternative 1 would result in the second-highest number of moderate noise impacts. This alternative would have the potential to affect the greatest number of archaeological sites. Alternative 1 would affect the second-highest number of parcels and would displace the second-highest number of businesses and employees. This alternative would displace the highest number of residential units and residents. This alternative would also be located in proximity to the second-highest number of hazardous materials sites, which would affect capital cost and potentially result in delays during construction to account for remediation efforts.

Construction of Alternative 1 would result in large amounts of import and export quantities of soil, largely due to the tunnel segment. This would require increased truck trips, which would increase the greenhouse gas emissions from construction vehicles and fuel used, compared to Alternatives 3 and 4. Emissions levels for NO_X would exceed the regional threshold even after mitigation, and hazardous subsurface gases would be encountered during construction of the tunnel segment. Construction would impact the second-highest number of streets and sidewalks and the most private property.

Alternative 1 would provide regional benefits, as shown in Table 6.2. Specifically, this alternative would provide the greatest VMT reductions, and would be comparable to Alternative 2 in terms of emissions/greenhouse gas reductions during operation. Alternative 1 would have the second-highest user benefit hours, daily new transit trips, and average weekday daily boardings. During construction, this alternative would be comparable to Alternative 2 in terms of the number of jobs created.

Given the trade-offs of the environmental benefits compared to environmental impacts, mitigation, property acquisition requirements, and risks associated with hazardous materials, Alternative 1 would not be the environmentally superior alternative.

6.4.3 Alternative 2 Environmental Summary

Similar to Alternative 1, Alternative 2 would require a considerable level of mitigation given the number of significant impacts (Table 6.3). Alternative 2 would result in the highest number of severe noise impacts and the second-highest number of vibration impacts and moderate noise impacts compared to the other Build Alternatives. After mitigation, Alternative 2 would result in the highest number of moderate noise impacts and would have the same number of unmitigated vibration and severe noise impacts as Alternative 1. Alternative 2 would permanently affect the highest number of parcels and displace the greatest number of businesses. This alternative would have the same number of displacements of residential units and residents as Alternative 1. This alternative would also be located in proximity to the highest number of hazardous materials sites, which would

affect capital cost and potentially result in delays during construction to account for remediation efforts.

Similar to Alternative 1, construction of Alternative 2 would result in exceedances of emissions levels for NO_X and effects related to hazardous subsurface gases due to the tunnel segment. Additionally, construction would require increased truck trips, which would increase the greenhouse gas emissions from construction vehicles and fuel used compared to Alternatives 3 and 4. Alternative 2 would create the largest amount of construction jobs out of the four Build Alternatives, but construction would also impact the greatest number of streets and sidewalks and the second-highest number of private properties.

Because Alternative 2 would result in considerably more environmental impacts, mitigation measures, and affect the greatest number of parcels, Alternative 2 would not be the environmentally superior alternative.

6.4.4 Alternative 3 Environmental Summary

As shown in Table 6.3, Alternative 3 would result in a lower number of vibration impacts and both moderate and severe noise impacts compared to Alternatives 1 and 2. Mitigation has been identified for these impacts; however, not all impacts would be fully mitigated. After mitigation, Alternative 3 would result in less vibration impacts and noise impacts compared to Alternatives 1 and 2. Alternative 3 would affect a lower number of parcels displacing approximately 25 to 50 percent fewer businesses and employees (compared to Alternatives 1 and 2). This alternative would have the same number of displacements of residential units and residents as Alternatives 1 and 2. This alternative would also be located in proximity to a considerably lower number of hazardous materials sites than Alternatives 1 and 2 due to the shorter length of the alignment.

As described previously, Alternative 3 would not include a tunnel segment, which would decrease construction impacts such as excavation quantities, emissions, and fuel usage. As a result, NO_X levels would be below the regional threshold. Additionally, effects associated with hazardous subsurface gas would be avoided. While construction would still impact private property as well as streets and sidewalks along the alignment, impacts would be far less than Alternatives 1 and 2. The number of construction jobs created would be less than Alternatives 1 and 2, but would still result in approximately 44,000 to 45,700 jobs[3] resulting in substantial economic benefits.

Alternative 3 would be the environmentally superior alternative when compared to the No Project Alternative and Alternatives 1, 2, and 4 based on the trade-offs among environmental benefits, impacts, and capital cost.

6.4.5 Alternative 4 Environmental Summary

As shown in Table 6.3, Alternative 4 would result in the lowest number of impacts, which is attributed to this alternative having the shortest alignment. Specifically, this alternative would result in the lowest number of vibration and moderate and severe noise impacts, both with and without mitigation. Alternative 4 would also have the smallest effect on properties and would displace the lowest number of businesses, employees, and residential units. This alternative would also be located in proximity to the lowest number of hazardous materials

[3] The number presented is person-year jobs (one job for one person for one year)

sites. This alternative would be the only alternative without the potential to affect archaeological sites, would not have significant and unavoidable impacts associated with consistency with land use plans and development, and would not affect operation of intersections after mitigation. Although intersection operations would not be adversely impacted, Alternative 4 would result in 9 road closures and 1 sidewalk closure.

Similar to Alternative 3, Alternative 4 would not include a tunnel segment, which would decrease construction impacts such as excavation quantities, emissions, and fuel usage. Because this alternative would have the shortest alignment, the quantities of each of these impacts would be the smallest of the four Build Alternatives. Similar to Alternative 3, NO_X levels would be below the regional threshold and affects associated with hazardous subsurface gas would be avoided. Additionally, construction of this alternative would result in impacts to the fewest number of streets, sidewalks, and private properties. While these reduced impacts are beneficial, construction of Alternative 4 would create the fewest jobs, estimated between 22,400 to 24,000 jobs[4], which is approximately half of the number of jobs created by Alternative 3.

Given the limited regional environmental benefits, Alternative 4 would not be the environmentally superior alternative when compared to the other Build Alternatives, even when the reduced impacts and mitigation are considered.

6.4.6 Environmental Superior Alternative Findings

As summarized in the prior sections, while each of the Build Alternatives would result in varying levels of impacts and benefits, Alternative 3 would have an overall environmental advantage compared to the other Build Alternatives. Alternative 3 would have fewer permanent acquisitions, business displacements, noise and vibration impacts, and be in proximity to fewer hazardous materials sites compared to Alternatives 1 and 2. Construction of Alternative 3 would affect access to fewer community facilities, require fewer construction laydown areas, and would not result in exceedances in daily regional emissions compared to Alternatives 1 and 2. Due to the lack of connectivity and limited benefits achieved with four stations, Alternative 4 would provide a lower level of environmental benefits to the region when compared to the other Build Alternatives. Overall, Alternative 3 would generate environmental benefits by providing mobility and connectivity to transit-dependent populations in 12 cities throughout the corridor, as well as $5.1 million in economic activity annually to the region. As such, Alternative 3 is identified as the environmentally superior alternative pursuant to CEQA requirements.

6.5 Evaluation of Options

6.5.1 Design Options

This section presents a comparison of the design options for Alternative 1. These options are summarized in Chapter 2, Section 2.5.2.2 under the subheading "Design Options" and are as follows:

- Design Option 1: Changes the northern terminus to behind the east side of the historic Los Angeles Union Station (LAUS) building and the Metropolitan Water District (MWD) building below the baggage area parking facility
- Design Option 2: Adds the Little Tokyo Station

[4] The number presented is person-year jobs (one job for one person for one year)

Table 6.4 shows the capital and O&M cost and number of additional boardings if either or both of the design options are selected.

Table 6.4. Alternative 1: Design Option Cost and Boardings

Design Option	Capital Cost	Operating and Maintenance Cost	Boardings (daily)
Design Option 1: LAUS at MWD	-$108 million	No change	+6,000 riders
Design Option 2: Add the Little Tokyo Station	+$533 million	+$0.7 million	+8,000 riders
Both design options	+$425 million	+$0.7 million	+14,000 riders

Source: Metro 2021x
Costs and boardings for design options are relative to Alternative 1 without design options
Note: LAUS = Los Angeles Union Station; MWD = Metropolitan Water District

In general, because Design Option 1 (MWD) would be similar in terms of construction means and methods, length of track, station facilities, and operations, there would not be significant differences in capital costs, O&M costs, and environmental impacts. As shown in Table 6.4, Design Option 1 (MWD) would decrease capital cost by approximately $108 million. This design option would offer better access from the southeast side of Los Angeles Union Station, which is near retail and restaurant activities, with a shorter distance to connect to other rail platforms and bus stops compared to Alternative 1 with the station located at LAUS Forecourt. As such, Design Option 1 (MWD) would result in a greater number of project boardings than Alternative 1 (66,800 daily boardings for Alternative 1 with Design Option 1 (MWD) compared to 60,800 daily boardings without the design option).

Design Option 2 would add an underground station in Little Tokyo, thereby creating an opportunity for direct transfers to Regional Connector (future connection of the L [Gold] Line from Little Tokyo Station to 7th Street/Metro Center Station). This design option would increase capital cost by approximately $533 million (Table 6.4). O&M cost would increase by approximately $0.7 million because there would be an additional station to operate and maintain. This station would increase daily boardings by 8,000 for a total of 68,800 daily boardings compared to Alternative 1 without either design option.[5] Although adding this station would provide new access and transfer opportunities, there are community concerns with impacts related to access and noise, dust, and vibration nuisances during construction. Construction of this design option would also increase emissions and require additional temporary street and sidewalk closures. This design option would also require acquisitions on 4 additional parcels and displace one additional business.

6.5.2 Maintenance and Storage Facility Options

This section discusses the two MSF site options for the Project. The two options are summarized as follows with additional information provided in Chapter 2, Section 2.5.3:

- Paramount MSF site option
- Bellflower MSF site option

[5] If both Design Option 1 and Design Option 2 are selected, there would be 72,200 daily boardings, an increase of 11,400 daily boardings compared to Alternative 1 without either design option.

All of the Build Alternatives could be supported by either MSF site option, and both options would have sufficient capacity to accommodate the number of vehicles required. Table 6.5 presents a comparison of the MSF site options.

Table 6.5. MSF Site Option Comparison

Considerations	MSF Site Options	
	Paramount MSF Site	Bellflower MSF Site
MSF site size	22 acres	21 acres
LRV capacity	Up to 80 LRVs	Up to 80 LRVs
Capital cost	$681 million	$458 million
Number of acquisitions needed (excluding lead track)	4 parcels	2 parcels
Number of displaced businesses	5 existing businesses	2 existing businesses
Acquisitions of residential property (including lead track)	Yes (8 additional parcels)	No

Source: Metro 2021x
Note: LRV = light rail vehicles; MSF = maintenance and storage facility

Major considerations for an MSF site are cost and potential environmental impacts. The Paramount MSF site option would have a higher capital cost (approximately $681 million) compared to the Bellflower MSF site option (approximately $458 million). The Paramount MSF site option would have a greater capital cost due to the lead tracks, an additional grade crossing, site work, and special conditions needed to connect the MSF site to the project alignment.

For environmental considerations, the Paramount MSF site option would require a larger number of acquisitions (four affected parcels) compared to the Bellflower MSF site (two affected parcels). The Paramount MSF site lead tracks would be located east of existing freight tracks, which would cause the existing freight track to move farther into the residential properties west of the alignment, adding to the number of acquisitions for this site. The Bellflower MSF site would be directly accessible to the Metro rail right-of-way, so lead tracks would not be required. The Paramount MSF site would displace five retail and industrial manufacturer businesses, including the Paramount Swap Meet and Paramount Drive-in Theater. In comparison, the Bellflower MSF site would displace two businesses, including the Hollywood Sports Paintball and Airsoft Park and Bellflower BMX business. No residential properties would be affected by the Bellflower MSF site. Given the acquisitions related to the lead track and greater number of displacements associated with the Paramount MSF site option, the Bellflower MSF site option would have fewer displacement impacts.

Overall, the Bellflower MSF site would require fewer acquisitions, displace fewer businesses, and have lower capital cost compared to the Paramount MSF site. Therefore, the Bellflower MSF site option is the preferred site. For the Bellflower MSF site to be viable, the City of Bellflower would need to rezone the site and end its lease with the current occupants. Metro is continuing to coordinate with the City of Bellflower to discuss this MSF site.

6.6 Locally Preferred Alternative Potential Implementation Strategy

The formal adoption of the LPA by the Metro Board will occur after the Draft EIS/EIR circulation and the review of public and agency comments received on the Draft EIS/EIR. As part of the Metro Board action, a decision may be made to phase implementation of the LPA. Any such decision would be made in consideration of public comments and funding availability. An environmental reevaluation could be required depending on the phasing selected.

6.7 Next Steps

The information presented in this chapter is intended to summarize and highlight the important trade-offs among the four Build Alternatives. These trade-offs are discussed under the context of 1) the staff preferred alternative; 2) meeting the Purpose and Need of the Project; and 3) the environmentally superior alternative. Each of these considerations offers agency stakeholders, the general public, and decision-makers an opportunity to assess major environmental distinctions and the high-level trade-offs among the alternatives.

Following circulation of this Draft EIS/EIR for public comment and review, the Metro Board will identify an LPA after consideration of public comments and other relevant information. The LPA will be evaluated in the Final EIS/EIR. After certification of the Final EIS/EIR, Metro will adopt and approve the LPA for implementation.

7. PUBLIC OUTREACH, AGENCY CONSULTATION, AND COORDINATION

7.1. Introduction

The Los Angeles County Metropolitan Transportation Authority (Metro) initiated a comprehensive outreach program for the West Santa Ana Branch Transit Corridor (WSAB) Project (Project) beginning in 2017. Metro has continued to keep elected officials, agency staff, community stakeholders, and the general public informed on the status of the Project as well as progress of the environmental review process.

The Federal Transit Administration (FTA) published the Notice of Intent (NOI) pursuant to the National Environmental Policy Act (NEPA) in the *Federal Register* on June 26, 2017, to initiate the Draft Environmental Impact Statement (EIS) process for the Project. The NOI provided project information, scoping meeting details, and contact information.[1] Prior to *Federal Register* publication, Metro issued a Notice of Preparation (NOP) pursuant to the California Environmental Quality Act (CEQA) on May 25, 2017, informing the public of its intent to prepare a combined Draft EIS/Environmental Impact Report (EIR) for the Project and notify interested agencies and parties of public scoping meetings. A revised NOP was issued on June 14, 2017, to inform the public of the extension of the comment period from July 7, 2017, to August 4, 2017. A second revised NOP was issued on July 11, 2018, informing the public of the Metro Board decision to eliminate some of the northern alignment alternatives considered in the May 25, 2017 NOP and to carry forward two modified northern alignments, one to the Downtown Transit Core and the other to Los Angeles Union Station, into the Draft EIS/EIR process.

Project stakeholders have been involved in each phase of the Project through a variety of forums and platforms, including public meetings, community workshops, Stakeholder Working Group (SWG) meetings, Technical Advisory Committee (TAC) meetings, rail tours, information booths at community events, pop-up information tables at Metro C (Green) Line stations and popular destinations along the project corridor, and social media (Facebook, Twitter, and YouTube).

Since the onset of the Project, Metro has presented to more than 100 stakeholder groups and agencies, hosted 26 public meetings[2], and drawn participation from over 1,500 stakeholders. In addition, public meetings have been held in each of the corridor communities adjacent to the alignment—including the Cities of Artesia, Cerritos, Bellflower, Paramount, Downey, South Gate, Cudahy, Bell, Huntington Park, and Los Angeles—on a rotating basis.

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1 *Federal Register*. Vol. 82, No. 121, June 26, 2017.

2 Includes the following meeting series: EIS/EIR Scoping Meetings (five meetings, June 2017); Community Meetings (five meetings, March 2018); Community Meetings (four meetings, April-May 2018); Updated Scoping Meetings (three meetings, July 2018); Community Meetings (three meetings, October 2019); Community Update Meetings (three meetings, October 2019); Community-Specific Meetings — Paramount (two meetings, December 2017 and September 2019), and Downey (one meeting, July 2018)

7.2. Regulatory Context

This chapter summarizes how Metro engaged public agencies and the general public during the Project's environmental process, from the release of the NOI and NOP, including scoping, and up to the release of the Draft EIS/EIR.

7.2.1. Public Outreach Work Plans

Public outreach work plans have been developed to highlight opportunities for public involvement and comment at key project milestones throughout the environmental process. These work plans are intended to refine the outreach tactics to be reflective of stakeholder needs and the Project as it evolved. The work plans have served as guiding documents for outreach activities that are tailored for specific project needs at key milestones. These activities include public notification, targeted stakeholder outreach, large public forums and other outreach strategies, and development of public outreach schedules.

The public outreach work plans are developed in compliance with the requirements of federal and state statutes addressing public involvement for transportation projects, including NEPA, CEQA, Title VI of the Civil Rights Act of 1964 (42 United States Code § 2000d et seq.), and Fixing America's Surface Transportation (FAST) Act.

7.2.2. Outreach Compliance with FAST Act

The FAST Act (Pub. L. No. 114-94) signed into law in 2015, provides guidance for establishing a Coordination Plan, such as for the following:

- Notice of Intent publication and scoping activities
- Development of Purpose and Need
- Identification of the range of alternatives
- Milestones for when public involvement and interagency coordination activities will occur
- Description of ways to provide the opportunities for input from the public and other agencies in accordance with applicable laws, regulations, and policies
- Schedule for completion of the environmental review process

Coordination Plan requirements identified in the FAST ACT Section 1304 continue the requirements in the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) Section 6002.

In accordance with these requirements, Metro, in coordination with FTA, prepared and mailed participating and cooperating agencies invitation letters as part of the Project scoping period. Relevant state and federal agencies were sent invitations to accept or decline roles as a cooperating or participating agency for the Project. The following agencies accepted the invitation as a participating agency:

- U.S. Environmental Protection Agency (USEPA)
- Southern California Association of Governments (SCAG)
- California Department of Transportation (Caltrans) – District 7
- California High-Speed Rail Authority

- Federal Railroad Administration (FRA) (on February 27, 2020, the FRA informed FTA that NEPA assignment was given to California High Speed Rail Authority. As such, FRA withdrew from cooperating agency and participating agency status.)
- City of Vernon

Additionally, in response to the NOP, the South Coast Air Quality Management District stated that the agency should be identified as a responsible agency if a permit from the agency is required. As shown in Table 2.8 in Chapter 2, a Title V permit may be required from South Coast Air Quality Management District for construction.

The South Coast Air Quality Management District requested to serve as a responsible agency in the event that the Project requires air quality permits.

No interested parties expressed interest in serving as a cooperating agency. The Project's Purpose and Need and a range of alternatives were explored and developed based on input for key stakeholders, the public, and agencies through continued collaboration.

Consistent with the guidance offered by the FAST Act, outreach included agency and public scoping meetings, participation in TAC meetings, and agency-specific briefings and presentations, as summarized below:

- Eight public scoping meetings and two agency scoping meetings
- Eighteen community meetings/community-specific meetings/workshops
- Four live webinars or video recording of public meeting presentations
- Five SWG meetings, including meetings for stakeholder representatives for communities south of the I-10 corridor and downtown Los Angeles stakeholders
- Stakeholder briefings with community/neighborhood groups, chambers, interested groups, business associations, schools, universities, churches, foundations, and hospitals
- Briefings with federal, state, regional, and local elected officials
- Meetings with city, county, and municipal agency staff
- Ongoing meetings with the Metro Board of Directors staff
- Updates to the Metro Board and pertinent committees at key project milestones
- Ongoing TAC meetings with agency and corridor city staff

As such, the Project is compliant with the FAST Act as it follows the federal (NEPA) and state (CEQA) requirements. Based on these efforts, the Project meets the 6002/1304 Coordination Plan requirements, and all related information is available on the project website.

7.2.3. Accommodations for Minority, Low Income, and Persons with Disabilities

Special outreach efforts were made to reach out to minority, low income, and limited English proficiency populations, and persons with disabilities. The communities along the project corridor are some of the most diverse communities in Los Angeles County. The racial makeup within 1 mile of the project alignments is predominately Hispanic (75.2 percent), followed by White (45.9 percent), Asian (10.6 percent), Native American (0.9 percent), Pacific Islander (0.3 percent), other race (33.7 percent), and two or more races (4.2 percent). Because of the large ethnically Hispanic population, Metro focused on providing Spanish-language materials at all public meetings and online. According to 2010 U.S. Census data, 67.8 percent of the population in the corridor identified as Spanish speaking and 21.2 percent indicated that they do not speak English "well" or "at all." Because of the Project's footprint in the Little

Tokyo neighborhood of downtown Los Angeles, Japanese-language materials were also produced at all phases of the Project.

Trilingual (English/Spanish/Japanese) meeting notices were produced for all meetings, in addition to project fact sheets, eblasts, and newspaper advertisements. Meeting announcement ads were also placed in the Spanish-language newspaper *La Opinión* and the Japanese-language newspaper *Rafu Shimpo*. Quadrilingual meeting notices and materials (English/Spanish/Japanese/Korean) were produced starting with the community meetings in 2019, as Korean materials were suggested by project stakeholders as a language need for the Little Tokyo community area.

The following provides an overview of outreach activities to engage with hard-to-reach audiences, including those with limited English proficiency, low income, and environmental justice communities:

- Meetings with elected officials, public agency staff, and community organizations helped identify additional stakeholder organizations that should be engaged, including those that represent limited English proficiency and other hard-to-reach communities.
- SWGs were formed to conduct meetings with key stakeholder representatives to share project updates at key milestones as well as garner feedback on outreach activities and accommodations that can be adapted to achieve broader public participation.
- Local churches, schools, and other institutions that serve environmental justice populations along the project corridor were added to the stakeholder database and representatives were contacted to promote project awareness.
- Information booths and pop-up tables were staffed by multilingual staff at local community events, popular destinations, and back-to-school-night events along the project corridor.
- Meeting and project information notices were published in local community newspapers, posted on social media, and included in print and display newspaper advertisements in multiple languages and on city cable channels and websites.
- Notification efforts were augmented via door-to-door notice distribution.

7.3. Public Outreach Prior to Scoping

In February 2010, SCAG initiated the preparation of the SCAG *Pacific Electric Right-of-Way/West Santa Ana Branch Corridor Alternatives Analysis* (SCAG 2013). The Alternatives Analysis was finalized in 2013 and included early public participation to communicate information about the Alternatives Analysis and seek input on key issues and project goals. Public participation efforts in this phase included six interactive community meetings held in June 2010. Further public and stakeholder input was solicited for the Initial Alternatives screening efforts through a series of six community meetings during October and November 2010; public presentations to community and stakeholder groups from September to November 2010; and public comments received through phone calls, emails, letters, and response cards. Following the approval of the final set of Build Alternatives, two community open houses were held in June 2011 where additional public comments were solicited.

7.4. Scoping

The scoping process for the Draft EIS/EIR is required by policies set forth in NEPA and CEQA. The scoping process inherently emphasizes early consultation with resource agencies, other state and local agencies, tribal governments, cooperating and responsible agencies, as well as any federal agency whose approval or funding will be required for completion of the Project. Metro uses this process to seek agency and public feedback on the scope of the Draft EIS/EIR. The purpose of scoping for this Project was as follows:

- Identify the purpose of the Project
- Define the alternatives under consideration
- Determine major issues for environmental analysis
- Identify project goals and evaluation criteria
- Obtain public and agency input

Following the release of the NOP on May 25, 2017, and the NOI on June 26, 2017, interested individuals and organizations, public agencies, and Native American tribes were invited to comment on the scope of the Draft EIS/EIR, including the Project's Purpose and Need, alternatives to be studied, impacts to be evaluated, and evaluation methods to be used. The original comment period deadline of July 7, 2017 was extended to August 4, 2017. NEPA has specific and limited scoping objectives, one of which is to identify the significant issues associated with alternatives that will be examined in detail in the document while simultaneously limiting consideration and development of issues that are not truly significant. Written comments received during the scoping process become part of the public record as documented in the scoping summary reports (Metro 2017k and Metro 2018g) (Appendix GG and Appendix HH).

Outreach activities supporting the scoping process were developed under the guidance of state and federal policies, including the FAST Act, MAP-21, SAFETEA-LU, CEQA, and NEPA. During the scoping period, Metro initiated a comprehensive outreach program that focused on maximizing public awareness and participation in the Project. In support of the scoping comment period, Metro hosted two agency scoping meetings and eight public scoping meetings with the option to join a live webcast or access the video recording on the Project's website. The original scoping process included one agency meeting and five public scoping meetings. Due to the scoping comments received in 2017, an additional round of scoping was conducted in 2018. A revised and recirculated NOP was released on July 11, 2018, with a public comment period extending from July 11, 2018 to August 24, 2018. This scoping period provided additional opportunities for public comment for the purposes of CEQA and NEPA and included one agency meeting and three scoping meetings. Collectively, the two rounds of scoping meetings encompassed the scoping process for this project. Table 7.1 presents information on the dates and locations of the scoping meetings.

Meeting locations and other considerations were applied so that the meetings were accessible and convenient to all stakeholders in the corridor. The meetings were also held on different days of the week (weekdays and Saturdays) and times of the day (morning, afternoon, and evening hours).

Table 7.1. Public Scoping Meeting Dates and Locations

	Meeting	Date	Location	Additional Features
Original Scoping (June 2017)	Agency Scoping Meeting	Monday, June 19, 2017 2:00pm	Metro HQ, 3rd Floor One Gateway Plaza Los Angeles, CA 90012	▪ Offered to elected offices and public agencies to preview the public scoping meeting
	Public Scoping Meeting #1	Thursday, June 15, 2017 6:00pm–8:00pm	T. Mayne Thompson Park 14001 S Bellflower Blvd Bellflower, CA 90706	▪ Court reporter ▪ Spanish interpreter
	Public Scoping Meeting #2	Tuesday, June 20, 2017 6:00pm–8:00pm	South Gate Girls Club House 4940 Southern Ave South Gate, CA 90280	▪ Live webcast ▪ Court reporter ▪ Spanish interpreter
	Public Scoping Meeting #3	Wednesday, June 21, 2017 2:00pm–4:00pm	Nishi Hongwanji Buddhist Temple 815 E 1st St Los Angeles, CA 90012	▪ Court reporter ▪ Japanese and Spanish interpreters
	Public Scoping Meeting #4	Wednesday, June 21, 2017 6:00pm–8:00pm	Nishi Hongwanji Buddhist Temple 815 E 1st St Los Angeles, CA 90012	▪ Court reporter ▪ Japanese and Spanish interpreters
	Public Scoping Meeting #5	Saturday, June 24, 2017 10:00am–noon	Huntington Park Community Center 6925 Salt Lake Ave Huntington Park, CA 90255	▪ Court reporter ▪ Spanish interpreter
Updated Scoping (July 2018)	TAC Meeting for Agencies	Monday, July 23, 2018 2:00pm	Metro HQ, 3rd Floor One Gateway Plaza Los Angeles, CA 90012	▪ Offered to elected offices and public agencies to preview the public scoping meeting
	Updated Scoping Meeting #1	Tuesday, July 24, 2018 4:00pm–7:00pm	The Los Angeles Athletic Club 431 W 7th St Los Angeles, CA 90014	▪ Court reporter ▪ Japanese and Spanish interpreters
	Public Scoping Meeting #2	Wednesday, July 25, 2018 6:00pm–8:00pm	Clara Park–Turner Hall 4835 Clara St Cudahy, CA 90201	▪ Court reporter ▪ Spanish interpreter
	Public Scoping Meeting #3	Tuesday, July 31, 2018 6:00pm–8:00pm	The Mayne Events Center 16400 Bellflower Blvd, Bellflower, CA 90706	▪ Live webcast ▪ Court reporter ▪ Spanish interpreter

Source: Arellano Associates, 2017-2018
Note: TAC = Technical Advisory Committee

Notification for these meetings was published on the same day as the NOI and NOP, which was two weeks before the first meeting. The public notices were published as legal newspaper ads, online newspaper ads, mailed notices, door-to-door notices, social media posts, email blasts, earned media posts, on Metro's "The Source" blog, and extended outreach to agencies and stakeholder groups.

At the public hearings, comments were received in written format on designated comment cards and oral comments were captured by a court reporter. During the comment period, the public was asked to mail their written comments or submit their comments electronically via the project website comment form and email. Approximately 532 stakeholders participated in the scoping meetings and approximately 2,000 people watched a live webcast or a recording of the scoping meetings. Stakeholders submitted approximately 1,380 scoping comments, which included 75 comments from public agencies and elected officials. The stakeholder comments reflected the following areas of concern: alternatives and stations, traffic and parking, safety and security, noise and vibration, property impacts, community and neighborhood impacts (including right-of-way), environmental impacts (noise, traffic, visual impediments, gentrification), and construction impacts. Specific project features were also discussed in the comments, including grade separations and alignment preferences, including specific northern alignment options and elevations (aerial, at-grade, and underground).

7.5. Agency and Corridor City Outreach during Preparation of the Draft EIS/EIR

As part of the public outreach process, Metro communicated project information to identified stakeholders and provided opportunities for public and agency input during the preparation of the Draft EIS/EIR. Meetings have been held with participating agencies and interested federal, state, regional, and local agencies in support of the Draft EIS/EIR. These meetings are summarized in the following sections. In addition to these meetings, Metro provided project information and responded to questions received from these stakeholders.

7.5.1. Federal Agencies

On September 12, 2018, a meeting was held with the **U.S. Fish and Wildlife Service** (USFWS) to evaluate the Special Status Species list and to discuss the process for a Streambed Alteration Agreement. The USFWS agreed with the findings in the species list and did not express concerns with the project alignment. The USFWS confirmed that coordination with the California Department of Fish and Wildlife (CDFW) is required for a Streambed Alteration Agreement.

A coordination meeting was held on October 18, 2018, with the **FRA** to define roles, point of contacts, and required documentation by the FRA. After the meeting, FRA changed its role from cooperating to participating agency. The FRA confirmed key topics that need to be analyzed in the Draft EIS/EIR. These topics include safety, economics, and freight relocation.

A coordination meeting was held with the **U.S. Army Corps of Engineers** (USACE) on August 4, 2020, to present the design of the Project where it crosses the Los Angeles (LA) River, Rio Hondo, and San Gabriel River. Attendees also discussed timing and requirements for the Section 404 and Section 408 permits. An additional meeting was held with USACE on August 31, 2020, to discuss the results of the jurisdictional delineation conducted for the three waterbodies. On November 5, 2020, Metro sent a preliminary jurisdictional delineation request to USACE staff for these three waterbodies. Information on coordination with

USACE is also included in the *West Santa Ana Branch Transit Corridor Project Final Biological Resources Impact Analysis Report* (Metro 2021q) (Appendix N).

7.5.2. State Agencies

Beginning in October 2018, a series of meetings was held with **Caltrans**. Traffic, noise, and visual impact methodologies, as well as the design for freeway crossings, were discussed at these meetings. Caltrans confirmed that Advanced Planning Studies and Project Study Reports/Project Reports (PSR/PR) will be needed for all freeway crossings. PSR/PR documents will be submitted to Caltrans around the time the Draft EIS/EIR is published. Continued coordination with Caltrans regarding the PSR/PR also occurred. Meetings also focused on coordination between the WSAB Project and the I-105 Express Lanes Project, which have concurrent construction activities. A meeting was also held with the Caltrans District 7 Director on March 12, 2020.

On February 26, 2019, a meeting was held with the **CDFW** to evaluate potential environmental impacts relating to the Los Angeles River, Rio Hondo, and San Gabriel River as a result of the Project. It was noted that the three rivers do not support sensitive resources but could result in some indirect, downstream impacts during construction. The need for a jurisdictional delineation was identified. During the meeting, it was suggested that a bat and nesting bird survey be conducted, and construction of bridges at the three river crossings occur during the "dry season" to avoid a Water Diversion Plan.

Several meetings were held with the **California Public Utilities Commission** (CPUC) to review and receive preliminary comments on grade crossing evaluations and treatments. During the meeting held on February 6, 2020, all proposed at-grade crossings were discussed. CPUC provided preliminary comments regarding safety measures. Subsequent to the meeting, design plans were updated to reflect safety measures, with a focus on crossing gate locations, median heights and locations, and modifications to existing traffic signals. Attendees also discussed locations where the proposed project could affect freight at-grade crossings. Design plans were updated in consideration of comments received on pedestrian crossing safety and the location of columns for the aerial project alignment. Metro prepared a justification memorandum for the at-grade treatments in response to CPUC comments. The memorandum was discussed at the April 30, 2020 meeting. In response to the comments received from the CPUC, Metro prepared a memorandum summarizing the analysis at five at-grade crossings. The memorandum was discussed at the April 30, 2020 meeting where the CPUC requested additional design changes. Grade crossing designs may change based on ongoing coordination with the CPUC. During a meeting on October 21, 2020, crossings at Santa Ana, Pacific, and along Randolph Street were discussed. Pedestrian access at Gardendale, Bellflower, and Pioneer Stations may change based ongoing coordination with CPUC, but changes would remain within the station footprint identified in this Draft EIS/EIR.

7.5.3. Regional/Local Agencies

Coordination meetings were held on July 12, 2018 and September 12, 2018, with the **Metropolitan Water District** (MWD) to review and discuss station options. MWD informed the design team of all MWD transmission waterlines. Impacts to MWD-owned pipelines and fee properties were considered in the different station options. Coordination to obtain rights to MWD-owned properties will continue into final design of the Project.

Railroad guidelines, requirements, and property ownership were discussed during the meeting held on August 28, 2017, with **BNSF Railway**. BNSF suggested the construction of crash barriers and did not recommend mechanically stabilizing earth retaining walls. Coordination with BNSF regarding easements and easement rights will continue into final design of the Project.

A meeting with the **Ports of Los Angeles and Long Beach** was held on September 11, 2018, to discuss the Project's interface with freight tracks. During this meeting, design assumptions were noted and freight track relocation staging concepts were discussed. At this meeting, the Port of LA and Union Pacific Railroad (UPRR) commented on a redesign of the WSAB tracks from the east to the west side of the right-of-way (ROW) because currently no freight customers use the west side of the ROW. The WSAB design was updated to address this Port of LA and UPRR comment, and the project tracks were relocated to the west side. The project team will continue coordination with the Port throughout project design.

As noted above, **UPRR** was also present at the meeting on September 11, 2018, with the Ports of Los Angeles and Long Beach. Six additional meetings between UPRR and Metro were held on August 28, 2017; April 4, 2019; June 11, 2019; June 25, 2019; July 16, 2019; and May 22, 2020 to provide project updates and share design. Coordination will continue with UPRR throughout the design period of the Project to address the technical challenges, during both construction and operation, of placing a new transit rail line along 10 miles of the freight corridor. Metro will also continue its coordination with the Ports of Los Angeles and Long Beach. At the April 4, 2019 meeting, UPRR staff indicated a Preliminary Engineering (PE) Agreement was needed before UPRR can review design plans; a PE Agreement was executed on February 2, 2020.

On February 3, 2020, a meeting with the **Los Angeles County Department of Public Works** (LADPW) was held to review and discuss the Project and its interaction with LADPW infrastructure. During the meeting, LADPW recommended that the top of the parapet wall be used as the water surface elevation. It was also recommended to meet with the USACE to obtain its approval prior to advancing design. In 2020, Metro provided project information to **USACE**; no comments were received. A jurisdictional delineation was completed for the LA River, Rio Hondo, and San Gabriel River in July 2020, and a preliminary jurisdictional delineation request was provided to USACE on November 5, 2020.

Metro staff presented to the **Eco-Rapid Transit Board** on the following dates: November 8, 2017; February 14, 2018; May 9, 2018; August 8, 2018; October 10, 2018; April 10, 2019; June 12, 2019; August 14, 2019; November 13, 2019; October 9, 2019; May 13, 2020; June 10, 2020; and September 9, 2020. Metro staff also attended additional Board meetings to field questions and provide information about the Project. In addition, coordination with Eco-Rapid staff occurred through project meetings and emails. The following topics were presented to the Eco-Rapid Transit Board during the meetings listed above:

- General project updates
- Update on the northern alignments under consideration
- Update and/or information on upcoming community and public meetings
- Overview of the WSAB Transit-Oriented Development Strategic Implementation Plan (TOD SIP) plan
- Discussion of potential funding opportunities to expand on the TOD SIP effort

- Information and recap of the rail tours for elected officials and the public
- Project funding and public-private partnership opportunities
- Discussion surrounding the Master Cooperative Agreements

Meetings were also held with elected officials and staff throughout 2020 and 2021. Metro met with 32nd Senate District staff, representing portions of Los Angeles County and Orange County, on February 18, 2020, May 20, 2020, and March 9, 2021. On December 8, 2020, a meeting was held with staff from Assembly District 56, which includes cities and unincorporated communities in eastern Riverside County and Imperial County. A meeting was held with State Senator Lena Gonzalez, representing Senate District 33, on January 7, 2021. Senate District 33 includes the Los Angeles County cities and communities of Cudahy, Bell, Bell Gardens, Lynwood, Maywood, Signal Hill, Paramount, South Gate, Vernon, Walnut Park, Huntington Park, and most of Long Beach with portions of the cities of Lakewood and Los Angeles. On February 19, 2021, meetings were held with staff from the 38th and 40th Congressional Districts. The 38th Congressional District represents the cities of Artesia, portions of Bellflower, Cerritos, Hawaiian Gardens, La Mirada, La Palma, portions of Lakewood, Montebello, Norwalk, Pico Rivera, Santa Fe Springs, South El Monte, Whittier, and the unincorporated communities of Los Nietos, East Whittier, East La Mirada, and South Whittier. The 40th Congressional District includes the communities of Bell, Bell Gardens, Commerce, Cudahy, Downey, Huntington Park, Maywood, Paramount, Vernon, and portions of Bellflower, East Los Angeles, Florence-Firestone, and South Los Angeles.

7.5.4. Meetings with Corridor Cities

Beginning in April 2017, a series of meetings was held with cities that would be affected by the Project. Meeting discussions included the project timeline, environmental approach, and preliminary project description, which included the alignment, grade crossings, and proposed stations. The project team has met with the Cities of Artesia, Bell, Bellflower, Cerritos, Cudahy, Downey, Huntington Park, Los Angeles, Paramount, South Gate, and Vernon. Below is a summary of meetings held with each city.

City of Artesia – In meetings with the City of Artesia, city staff indicated they would like traction power substation (TPSS) sites to be located north of the 183rd/Gridley intersection. The City of Artesia is planning a bike trail from 183rd/Gridley to South Street and will need approximately a 25 feet width from ROW on the north side of the ROW. The city also expressed concerns about large retaining walls at the 183rd/Gridley grade separation. In addition, the city has expressed concerns about parking capacity, the setback for the parking structure along Pioneer, and access to the plaza. In response, Metro has moved the proposed location of a TPSS, modified the alignment to slightly reduce the height of retaining walls, and modified design so as not to preclude a planned bike trail. Metro provided a response letter to the city on May 12, 2020, to provide additional information on the 183rd/Gridley grade separation, and the parking structure design was updated based on city's comments and other topics.

City of Bell – Metro met with the City of Bell on several occasions to discuss project design, specifically station location, grade crossings, sound walls and landscaping, and the city's concern for the mobile homes on the west side of Salt Lake Avenue. Metro confirmed a soundwall would be adjacent to the residential areas and presented technical reasons for the station location.

City of Bellflower – During coordination meetings held with the City of Bellflower, the city requested that the proposed soundwall that would end south of the Historic Depot be extended north to Bellflower Boulevard. Metro confirmed an additional soundwall would be placed adjacent to the senior citizen housing area, however, any additional soundwalls would be provided based on the noise analysis and as a mitigation to reduce noise impacts. Additionally, the city had questions and comments regarding the traffic analysis and requested additional information on methodology and results. A series of meetings was held to discuss the traffic analysis methodology. Metro also provided a response letter to the city on September 14, 2020, to provide additional information.

City of Cerritos – During meetings held with the City of Cerritos, staff informed the WSAB team that the city does not currently support the Project. The city identified its preferred options, which included: the alignment constructed completely underground, the alignment constructed at-grade but underground adjacent to residential areas, or constructing the alignment at-grade but in a trench adjacent to residential areas. The 183rd/Gridley intersection is the most important to the city, and the placement of an at-grade station and at-grade crossing was not considered acceptable. The city was not in support of a station and expressed concerns over station parking. As such, the 183rd/Gridley Station was removed based on input received at a focused community meeting held within the City of Cerritos on station location and the alignment was changed to aerial over the 183rd/Gridley intersection to address traffic and safety concerns. These changes were approved by the Metro Board in December 2018.

City of Cudahy – During meetings with the City of Cudahy to discuss project alignment and grade crossings, city staff suggested a grade separation at Florence Avenue and an alternative location for TPSS sites. Cudahy requested that the Salt Lake Avenue intersections with Elizabeth, Otis, and Santa Ana Streets be considered for traffic signals. Due to the at-grade crossings at Otis Avenue and Santa Ana Street, a signal is proposed as part of the Project at each intersection. Elizabeth Street would also benefit from the signal at Otis Avenue, resulting in improved service under the existing two-way stop. Metro determined that this improved service would result in no modifications to the Elizabeth Street intersection.

City of Downey – In meetings held with the City of Downey, city staff requested the Project provide precast concrete panels for tracks at Gardendale Street and extend the panels beyond the back of the sidewalk. The city does not prefer mid-block crossings; however, if they are required, the city proposed implementing signalized warning devices for pedestrian crossings. Several meetings with City of Downey staff, the county, and Metro were held to discuss the Rancho Los Amigos South Campus Project and Flores Street extension. Considering the county's project does not include extension of Flores Street, no further coordination on this issue is anticipated.

City of Huntington Park – During meetings held with the City of Huntington Park, city staff expressed their concerns for loss of parking, construction impacts, and pedestrian access at grade crossings, particularly near schools. Metro informed city staff that parking impacts will be evaluated in the Draft EIS/EIR and coordination with the city will continue as the project design advances. In addition, meetings were held to discuss the project alignment, station location, and traffic analysis. Lane reconfigurations in support of accommodating the project alignment were also discussed with city staff.

City of Los Angeles – During meetings held with the City of Los Angeles, staff suggested that a column on the corner of Washington Boulevard and Long Beach be relocated to reduce sidewalk impacts. The city provided a minimum clearance over the existing 53rd Street bridge. The design has been modified to reflect these comments.

City of Paramount – During meetings held with the City of Paramount, attendees discussed potential locations for the city's proposed bike trail to avoid conflicts between the proposed trail and the Project. Metro and city staff met with representatives of World Energy regarding the storage capacity of the World Energy rail yard. Attendees agreed on a reconfiguration of the rail yard, which is the configuration evaluated in this Draft EIS/EIR. Metro and city staff also met with staff from the Paramount Unified School District. During this meeting, school staff said they were supportive of a pedestrian undercrossing to replace the existing pedestrian bridge over the project alignment. They also requested refinements to the undercrossing design. Metro has revised the design and will continue to work with school staff during future design development. City staff and Metro also met to discuss the project alignment and station locations. The discussion also focused on shifting the I-105/C Line Station north of the I-105 freeway to reduce impacts to residential properties.

City of South Gate – The City of South Gate requested the station location be shifted in regard to their Specific Plan. South Gate staff have been supportive of the proposed relocation of Firestone Station parking to the north side of the alignment. Access to driveways for businesses was updated based on the city's input. Soundwalls along residential areas were discussed with the city, and landscaping and other treatments were highlighted by the city. The city also requested changing the slope elevation at stations in order to reduce the distance of the wing walls over Imperial Highway and Garfield Avenue.

City of Vernon – During meetings held with the City of Vernon, attendees discussed access to businesses, traffic, and configuration of the alignment.

WSAB City Managers TAC – In 2019, city managers from WSAB corridor cities approached the Gateway Cities Council of Governments about forming a TAC to provide a venue for key city staff to engage with project and corridor development. The TAC meetings are attended by the city manager, or his/her designated alternate, of each of the 14 cities including Artesia, Bell, Bell Gardens, Bellflower, Cerritos, Cudahy, Downey, Huntington Park, Lakewood, Paramount, South Gate and Vernon, and a representative of Los Angeles County, to be determined by the County. The Cities of Lakewood, Lynwood, and Maywood have had limited participation as they are not directly adjacent to the project alignment. The TAC city managers and representatives have met monthly since the TAC was established in January 2020 to discuss various topics, including regular environmental updates.

7.6. Tribal Coordination

Metro requested a Sacred Lands File (SLF) from the California Native American Heritage Commission (NAHC) on June 23, 2017, regarding information on sensitive Native American resources that may be present in the project area. Due to subsequent changes in the project alignment, a second request for a supplemental SLF search request was submitted to the NAHC on August 30, 2018. The NAHC responded to this supplemental SLF search request on September 11, 2018. In addition to providing the results of the SLF searches, responses from NAHC included Native American contacts with potential Native American cultural resources and information within the Study Area.

Metro conducted Assembly Bill 52 (AB 52) compliant consultation with California tribes with traditional lands or cultural places in LA County after obtaining an initial consultation list from the NAHC on July 25, 2017, and a subsequent list on September 11, 2018. The tribes included on the NAHC lists are as follows:

- Andrew Salas, Chairperson, Gabrieleño Band of Mission Indians – Kizh Nation
- Anthony Morales, Chairperson, Gabrieleño/Tongva San Gabriel Band of Mission Indians
- Sandonne Goad, Chairperson, Gabrieliño/Tongva Nation
- Robert Dorame, Chairperson, Gabrieliño-Tongva Indians of California Tribal Council
- Charles Alvarez, Gabrieliño-Tongva Tribe
- Matias Belardes, Chairperson, Juaneño Band of Mission Indians Acjachemen Nation – Belardes
- Linda Candelaria, Gabrieliño-Tongva Tribe
- Joyce Perry, Tribal Manager, Juaneño Band of Mission Indians Acjachemen Nation – Belardes

Pursuant to the requirements of AB 52, on October 16, 2018, Metro, acting as the lead CEQA agency, sent project notification letters to all eight of the above-listed Native American contacts (inclusive of those two not on the Los Angeles County consultation list but included on the list provided by the NAHC as part of the SLF search). The letters provided a description of the Project, the Project's location, and the lead agency contact information.

Metro received no requests for AB 52 consultation from seven of the eight Native American groups that were contacted via mail. In an email dated November 14, 2018, the Gabrieleño Band of Mission Indians – Kizh Nation (Kizh Nation) stated that if any ground disturbance was to occur for the Project, their tribal government would like to be consulted. The Kizh Nation also sent a letter to Metro personnel dated November 30, 2018, formally requesting AB 52 consultation for the Project. A summary of the consultation that occurred between Metro and the Kizh Nation is summarized below. No specific Tribal Cultural Resources (TCRs) were identified during the consultation effort described below. However, it is assumed that P-19-1575 (CA-LAN-1575/H), located near Los Angeles Union Station (LAUS) in Alternative 1, is a TCR for the purposes of this Project as it contains a Native American cemetery and is listed in the California Register of Historical Resources.

Metro initiated AB 52 consultation with the Kizh Nation via teleconference on November 16, 2018. During the meeting, Kizh Nation representatives discussed TCRs located within the vicinity of the project alignment. Following the teleconference, the Kizh Nation sent a follow-up email to Metro that included a historic map showing the general locations of some of the TCRs overlaid against a Google Earth map.

Metro and the Kizh Nation participated in a second teleconference meeting to discuss more specific information about TCRs along the alignment on January 24, 2019. During the meeting, Kizh Nation representatives (Andrew Salas and Matthew Teutimez) stated the area is culturally sensitive and noted that some of the project corridor follows or intersects major Native American trade routes. Tribal representatives referred to the Kirkman-Harriman Map (Kirkman 1937), which depicts the approximate location of these trade routes. Mr. Salas noted that human remains may be located along these trails. Because of the ancestral trade routes found in this area, the tribe considers the project corridor to be part of a cultural landscape. Given the length of the project corridor, Metro requested that the Kizh Nation

provide more specific information on those portions of the alignment that they consider to be particularly sensitive for TCRs. Metro also requested a copy of any mitigation language the tribe would like to provide to reduce project impacts.

Metro sent a follow-up email to the Kizh Nation on March 11, 2019, requesting that the tribe provide additional maps or mitigation language to be included in the environmental document. In this correspondence, Metro requested a response from the tribe by March 13, 2019. Metro also made follow-up calls to the Kizh Nation and left voicemail messages. No response was received from these outreach efforts.

On April 15, 2019, Metro sent a letter to the tribe again requesting additional maps and mitigation language. The letter stated that this information should be provided to Metro by May 16, 2019, to continue the AB 52 consultation process. The Kizh Nation emailed Metro with proposed mitigation language on April 22, 2019.

On July 19, 2019, Metro sent a letter to the tribe that summarized the project mitigation measures that were developed, taking into consideration the various aspects of the Kizh Nation's proposed mitigation measures that relate to TCRs. On August 8, 2019, the Kizh Nation replied via email that they had reviewed the proposed mitigation measures outlined in the letter sent July 19, 2019, and that the Kizh Nation concurred with the proposed measures and that the consultation process for the Project was formally concluded. These measures were later presented to Andrew Salas, Chairperson for the Kizh Nation, who agreed that they were acceptable for the purposes of Section 106 in addition to AB 52 (see Section 7.7 for additional information related to the Section 106 consultation process).

Correspondence is included in Appendix C of the *West Santa Ana Branch Transit Corridor Project Final Cultural Resources Survey Report—Rev 1* (Metro 2020d) (Appendix W).

7.7. Section 106 Consultation

On December 21, 2018, FTA sent Section 106 consultation letters to the Native American individuals identified in Section 7.6.

The letter invited the Native American groups to participate in the Section 106 consultation process and included information on the identification of prehistoric sites, and sacred and/or traditional cultural properties in the Area of Potential Effects (APE). FTA requested the tribes review the provided information and provide additional information or comments within 30 days of receiving the letter. Follow-up phone calls were conducted on January 29, 2019, for all contacts with phone numbers on file at the NAHC.

Responses were received from the Kizh Nation, Adrian Morales of the Gabrieleño/Tongva San Gabriel Band of Mission Indians, and Robert Dorame, Chairperson for the Gabrieleño Tongva Indians of California Tribal Council. Details of consultation with each of these tribes thus far is summarized below and included in Appendix C of the Final Cultural Resources Survey Report—Rev 1 (Appendix W).

- On January 3, 2019, the Kizh Nation sent an email to the FTA requesting Section 106 consultation for the Project. On behalf of FTA, on March 11 and 12, 2020, telephone calls were placed and an email was sent to follow up on this request. Following telephone and email correspondence, on March 13, 2020, Andrew Salas, Chairperson for the Kizh Nation, agreed in an email that the mitigation developed for the

purposes of AB 52 would be acceptable for the purposes of Section 106. Consultation between the Kizh Nation and FTA was thus concluded.

- On February 11, 2019, Adrian Morales of the Gabrieleño/Tongva San Gabriel Band of Mission Indians emailed a response also requesting Section 106 consultation. Mr. Morales requested that the South Central Coastal Information Center (SCCIC) record searches and all other informational data source be inclusive of a 1.0-mile radius search. In response to this request, the SCCIC record search was updated to 1.0 mile accordingly.
- Robert Dorame, Chairperson for the Gabrieleño Tongva Indians of California Tribal Council, discussed the Project with FTA staff on January 29, 2019. At that time, he stated he would respond to the request by email. Despite email follow-up by FTA, further response was not received and consultation between the Gabrieleño Tongva Indians of California and FTA was concluded.

This Section 106 consultation resulted in the identification of no Traditional Cultural Properties in the APE.

Local interested party consultation was initiated for the Project on September 20, 2017, when letters were sent on behalf of Metro via U.S. mail to 17 local government, local historic preservation advocacy, and history advocacy groups. Letters requested information regarding historic properties that may be located within the APE and described the original proposed Project and its related draft APE, including location maps. Due to changes to the project alignment, a second letter was sent to the same 17 contacts by Metro on March 18, 2019. Follow-up efforts with each group were conducted via telephone and/or email between May and June 2019, and subsequent follow-up efforts were conducted as necessary. Metro received 13 responses to the two rounds of contact efforts.

Responses were received from the following cities: Artesia, Bell, Bellflower, Cerritos, Cudahy, Downey, Los Angeles, Huntington Park, and Paramount, in addition to Los Angeles County, the City of Downey Historical Society, the Los Angeles Conservancy, and the Los Angeles Railroad Heritage Foundation. Representatives from the cities of Bell, Cerritos, Paramount, and Los Angeles County expressed no concerns regarding potential cultural resources within the vicinity of the APE. Representatives from the Cities of Artesia, Bellflower, Cudahy, Downey, and Huntington Park responded to consultation efforts by providing lists of known or potential cultural resources thought to be located in the vicinity of the APE. In most cases these lists were brief, including from one to six resources. A contact from the City of Los Angeles Office of Historic Resources indicated that the results of SurveyLA should be reviewed so that potential cultural resources in the area of the APE were accounted for.

To expand the reach of the consultation effort, consultation letters were sent by Metro via U.S. Mail to six additional historical societies and organizations to request information regarding historical resources that may be located within the APE. Letters were sent on February 4, 2020, to the following groups: Chinese Historical Society of Southern California, Los Angeles Union Station Historical Society (LAUSHS), Japanese American Cultural & Community Center, Little Tokyo Historical Society, La Plaza De Cultura y Artes, and Old Spanish Trail Association. Follow-up on the consultation letters sent on February 4 was completed on behalf of Metro on February 10 and February 19 and 20, 2020. Two responses to these efforts, from the LAUSHS and the Old Spanish Trail Association, were received and are summarized below. Section 106 local interested party consultation for the Project was concluded on March 10, 2020.

In an email dated February 4, 2020, a representative of the LAUSHS stated they would be interested in serving as a "Section 106 historic consultant" and also requested an exhibit of Alternative 1 at LAUS. As a result of this request, FTA considered the LAUSHS a consulting party. On behalf of Metro on March 10, 2020, Rincon spoke with Mr. Tom Savio, Executive Director of the LAUSHS, via telephone. Mr. Savio provided feedback regarding the design of potential station entrances in the vicinity Union Station. Mr. Savio commented that any new station entrances should complement the existing architecture of Union Station. No additional information regarding historic properties in the Project APE or its vicinity was provided.

In an email dated February 10, 2020, a representative of the Old Spanish Trail Association stated that the Old Spanish National Historic Trail does not include anything southeast of LAUS. Additionally, the email stated that the four alternatives would not affect the Old Spanish National Historic Trail historic sites. The email stated that the project crosses an alternative route of the Old Spanish Trail along Aliso Street, but that portion of the trail is not recognized by the Old Spanish National Historic Trail.

The Section 106 letters and any responses and follow-up are available in Appendix C of the Final Cultural Resources Survey Report—Rev 1 (Appendix W).

The Final Cultural Resources Survey Report—Rev 1 (Appendix W) was submitted to the State Historic Preservation Office on March 30, 2020. The office did not provide comments or objections on the revised APE or review of the eligibility determinations.

A meeting was held with the California Office of Historic Preservation on September 9, 2020. Metro provided an overview of the Project and the preliminary effects assessment for the project modifications to the I-105 as it relates to the I-105 Century Freeway Transitway Historic District. The Office of Historic Preservation staff did not object to the proposed effects assessment of No Adverse Effect. Information regarding Section 106 consultation is also provided in the Final Cultural Resources Survey Report—Rev 1 (Appendix W) and the *West Santa Ana Branch Transit Corridor Project Revised Preliminary Cultural Resources Effects Report* (Metro 2021u) (Appendix X).

7.8. Other Supporting Public Outreach

Public outreach activities took place outside of the scoping period summarized in Section 7.3. These activities were conducted to keep the public and key stakeholders apprised of project updates and milestones leading up to the release of the Draft EIR/EIS.

7.8.1. Stakeholder Organization Outreach

Two SWGs were formed to gather key stakeholders that best represent the interests of the WSAB Study Area communities. One SWG group focused on communities located south of the I-10 freeway and the other SWG group was comprised of stakeholders representing downtown LA communities. Outside of the scoping period, Metro conducted five SWG meetings. These meetings included stakeholders from organizations along the corridor that expressed interest in the Project after being contacted by the outreach team. The SWG meetings were targeted toward stakeholder organizations and not public agencies; however, if requested, public agency and elected official staff were able to participate in the SWG meetings. Organizations that participated in some or all the SWG meetings included South Gate Chamber of Commerce, South Gate Planning Commission, Paramount Unified School

District, SELA Collaborative, Richard N. Slauson Southeast Occupational Center, Trust for Public Land, Florence-Firestone Merchants Association, Paramount Planning Commission, Communities for a Better Environment, Paramount Public Safety Commission, FastLink DTLA, YWCA Greater Los Angeles, We Like LA, Little Tokyo Business Association, Central City Association, Fisch Properties, Industrial District BID, Historic Cultural Neighborhood Council, and Caltrans. The SWG meetings also served as a platform to share key updates on the Project. In addition, the meetings provided an opportunity for the SWG members to support outreach activities, including sending out project information via their own communication channels. Meetings have also been held with First 5, El Pueblo/Olivera Street Historic Society, Para Los Ninos and Little Tokyo Service Center representatives.

7.8.2. Ongoing Public Outreach

Following the scoping period, Metro continued to provide project updates and inform the community of the Project and hosted several rounds of community meetings and stakeholder and agency briefings. The following sections summarize the outreach activities that were conducted to keep the public informed and engaged throughout the planning process.

7.8.2.1. Stakeholder Database

An initial project database was created at the inception of the Environmental phase in the fall of 2016. Since then, the database has been maintained and expanded to include elected offices, including local, regional, state, and federal representatives; department executives of city and regional agencies; academic institutions and schools; community-based organizations; chambers of commerce; major employers; utility companies; and other key stakeholder representatives and residents of the corridor communities. The information collected in the database includes name, organization, email address, phone number, and mailing address.

The database has continued to expand as additional contacts were collected through stakeholder engagements. Maintenance of the database is ongoing to keep agency and organization contacts up-to-date prior to the start of notification for each meeting series or major announcement. New contacts are added when members of the public opt-in to receive project communications by providing their contact information at public meetings or pop-up events. Similarly, new agency contacts are added as they participate in project meetings or as they become directly involved. Contacts are also added as inquiries are received through the helpline, project email, and online submission form. This database will continue to be maintained and updated through the life of the project.

In addition, mailing lists were also generated for each major project announcement to reach occupants and owners of properties that are within one-quarter mile of a proposed station, as well as those who are within a 500-foot buffer from the project corridor.

7.8.2.2. Online Communication Tools

To keep stakeholders up-to-date, a project website was developed and updated at every major project milestone, including prior to public meeting series and as major project updates become available. The website features the latest project information, including fact sheets, project maps, other collateral materials, presentations, display materials, and video recordings of past meetings. A video of the Rail Tours conducted in 2019 is also available on the project website to offer stakeholders a guided virtual tour of two existing Metro light rail transit corridors – the Metro L Line (Gold) and E Line (Expo).

In support of the release of the Draft EIS/EIR, additional public engagement and educational materials will be made available to better inform stakeholders on the proposed improvements, including a new project video and an interactive web-based learning tool with interactive maps. The project alignment simulation video is being developed to offer a simulated rendering of the station platforms and general path of the proposed WSAB Transit Corridor. In addition, an Esri StoryMap is being developed to offer an interactive web platform serving as an additional educational tool that will feature project information, maps, and other multimedia that expands on the details offered on the project website. Both of these new educational pieces will be linked to the project website.

Project communication has also occurred through online social media. The project maintains Facebook and Twitter accounts to facilitate fast and easy information-sharing with interested stakeholders. The frequency of posts increase leading up to a public meeting, but these tools are used year-round to keep the community engaged. Social media is also used as an advertising tool for targeting ads to residents near the project alignment and stations. Lastly, email blasts (eblasts) are used as another tool to distribute information via email to the public at major milestones and leading up to a community meeting series.

7.8.2.3. Outreach Activities

Outside of the scoping period, Metro hosted community meetings in the communities of downtown Los Angeles, Little Tokyo, Artesia, Bell, Bellflower, Huntington Park, Downey, Paramount, and a workshop in Cerritos. Project materials were also featured at three Metro NextGen Bus Study[3] public meetings in Bell, Compton, and Los Angeles. Metro also had pop-up information tables at community events throughout the corridor. Outside of the scoping period, comments have been received through the Project's email, website comment form, project helpline, on social media pages, and through the mail. The Project's outreach team has provided responses to comments and questions as they are received.

7.8.2.4. Rail Tours

Project staff provided rail tours to elected officials, agency and organization representatives, and the general public to highlight key light rail transit features that are similar to the features and elements proposed for the Project. Station design and connections, aerial and at-grade alignments and stations, soundwalls, and multi-modal access were highlighted. Rail tours of the Metro L Line and E Line were conducted between April 4, 2019 and June 8, 2019, including two agency tours and six public tours.

Notification for the rail tours included mailing flyer notices to all contacts in the project database (Section 7.8.2.1), eblast notices, extended outreach to stakeholder and agency representatives, social media, and promotion at 10 community events. Staff also made phone calls to contacts from the database that did not have a mailing address or email. A total of 118 participants took part in the tours—93 public participants and 25 agency and elected office representatives from 19 different agencies—and included the following:

- City of Artesia
- City of Bell
- City of Cudahy

[3] The Metro NextGen Bus Study was a comprehensive study of all bus routes in Los Angeles County that was conducted by Metro between the winter of 2018 and the summer of 2019.

- City of Cerritos
- City of Los Angeles, Mayor's Office
- City of Paramount
- City of South Gate
- Eco-Rapid Transit
- Gateway Service Council
- Los Angeles County Commission on Disabilities
- Port of Long Beach
- Office of Assemblymember Cristina Garcia, District 58
- Office of Los Angeles County Board of Supervisor Janice Hahn, District 4
- Office of Orange County Supervisor Andrew Do, District 1
- Office of California Assemblymember Miguel Santiago, District 53
- Office of Los Angeles County Board of Supervisor Janice Hahn, District 4
- Office of Congresswoman Linda Sanchez, District 38
- Office of Metro Board Member Robert Garcia
- Office of Los Angeles County Board of Supervisor Janice Hahn, District 4

Metro also produced a virtual video version of the tour for stakeholders who were unable to participate in the live tours and has posted a link to the video on the project website. The virtual video tour was released on September 19, 2019, and as of October 1, 2020, had 5,750 views.

7.8.2.5. Downtown Los Angeles Survey

In 2019, Metro conducted an informal survey targeted at downtown Los Angeles stakeholders but it was also offered to stakeholders throughout the project area. The survey requested information on which neighborhoods the stakeholder visits, whether they had previously heard about the Project, whether there was a preference for Alternative 1 or 2 (referred to at that time as Alternative E and G), and whether the stakeholder felt that the Project would benefit them, their organization, and/or their community. Based on the responses, Alternative 1 was preferred over Alternative 2, and Union Station, Little Tokyo, and the Arts District were the most frequently visited neighborhoods in downtown Los Angeles. The survey itself was for informational purposes only and was not intended to inform decision-making on the Project.

7.8.2.6. Notification and Project Awareness Efforts

A variety of notification and informational tools were used for outreach to target audiences. Outreach methods included the following:

- Traditional methods
  - In-person meetings with cities, counties, chambers of commerce, councils of governments, educational institutions, community stakeholder groups, agency staff, and elected officials
  - Direct mail notification
  - Newspaper display ads (print and digital)
  - Placement of meeting notices in Metro light rail trains (Metro A [Blue] Line and C [Green] Line) as well as connecting Metro buses
  - Project awareness banners at highly visible locations along the project corridor
  - School outreach pop-up or information tables

- Public involvement opportunities
  - Public community meetings
  - The display of project materials at other Metro project community meetings (NextGen, I-105 ExpressLanes, Eastside Phase 2, WSAB TOD)
  - Metro L (Gold) and E (Expo) Line rail tours
  - Information booths and pop-ups at various community events and at Metro A (Blue) Line and C (Green) Line stations
- Project communication tools
  - Project website
  - Project helpline
  - Project overview survey
  - Email notification
  - Social media (i.e., Facebook and Twitter)
  - Project videos (video simulation, project overview, meeting webcasts, and recordings)
- Other targeted outreach
  - City and chamber of commerce newsletters
  - City cable channel displays
  - Electronic signs
  - Sharing of project information at key milestones with SWG members and their memberships
  - Text messages
  - *The Source*, Metro's online publication
  - Earned media (social media, blogs, newspapers, other media)

These notification tools and outreach efforts were customized based on the type of community meetings with a focus on maximizing cost-effectiveness and participation. A variety of informational documents were made available to the public, including project fact sheets, Metro systemwide fact sheets (i.e., Property Acquisition, Public-Private Partnership, Rail Transit Modes), frequently asked questions, meeting notices, electronic newsletters (eblasts), and other materials.

7.9. Public and Agency Comment Process

Throughout the project development process, public and agency comments have been collected through a variety of methods, including orally at in-person meetings, via the project helpline, through the mail, via online comment forms, and via project email. During the official scoping comment period, comments were accepted via comment cards submitted at meetings or mailed in, email, online comment form, or orally via a court reporter. Comments regarding the Project were also made through social media or other online platforms and, when possible, the outreach team provided stakeholders with the list of approved comment methods in case they wanted their comment on the official record. Comments submitted during official comment periods were incorporated into the Draft EIS/EIR and comments were addressed by the technical team.

7.10. Commenting on this Draft EIS/EIR

Following the release of this Draft EIS/EIR, a 45-day public comment period will be held to promote review of the Draft EIS/EIR and gather public comments. Metro will also host elected briefing, open houses, and public hearings to present findings of the Draft EIS/EIR and solicit public comments on the document. Metro provided notice of these public hearings in compliance with relevant NEPA and CEQA statutes and followed the same notification strategy and methods utilized during the scoping period (see Section 7.3). Information on the open houses and public hearings is available on the Metro website: metro.net/wsab.

During the 45-day comment period for the Draft EIS/EIR, agencies and the public may submit comments directly to Metro and FTA, and also at the public hearings through a court reporter. The Draft EIS/EIR will also be available on Metro's website (metro.net/wsab), and paper copies will be available for public review upon request and at the following locations:

- Artesia Library, 18801 Elaine Ave, Artesia, CA 90701
- Clifton M. Brakensiek Library, 9945 Flower St, Bellflower, CA 90706
- Gateway Cities Council of Governments, 16401 Paramount Blvd, Paramount, CA 90723
- Hollydale Library, 12000 Garfield Ave, South Gate, CA 90280
- Huntington Park Library, 6518 Miles Ave, Huntington Park, CA 90255
- Little Tokyo Branch Library, 203 S Los Angeles St, Los Angeles, CA 90012
- Los Angeles Central Library, 630 W 5th St, Los Angeles, CA 90071
- Metro Dorothy Peyton Library, 15th Floor, 1 Gateway Plaza Los Angeles, CA 90012
- Paramount Park Community Center, 14400 Paramount Blvd, Paramount, CA 90723
- Salt Lake Park Recreation Center, 3401 Florence Ave, Huntington Park, CA 90255
  South Park Business Improvement District, 1150-B S Hope St, Los Angeles, CA 90015

Comments on the Draft EIS/EIR will be solicited and collected following the release of the document and within the 45-day comment period. Comments will be collected at the public hearings as well as through the following methods:

- Mail: Ms. Meghna Khanna, Project Manager, Metro, One Gateway Plaza, M/S 99-22-7, Los Angeles, CA 90012
- Helpline: 213.922.6262
- Website: metro.net/wsab
- Email: wsab@metro.net

The project website provides information regarding comment submission methods. At a minimum, comments can be provided through conventional (mail and helpline) and electronic (website comment form and email) methods. Details on providing comments are also included in the public notices, notice of availability, legal newspaper advertisements (in English, Spanish, Japanese, and Korean) publications, as well as on digital platforms. These may include digital ads through newspapers, social media sites, and a geofencing ad campaign. Social media posts and eblasts to stakeholder database contacts will also be implemented. A printed notice will also be distributed via mail and door-to-door to the occupants and property owners within a 500-foot buffer of the corridor and a one-quarter-mile buffer of each station and other facilities. A copy-ready "toolkit" will also be developed to

provide to partner organizations for their assistance in sharing the project information and comment period details with their networks.

Note: if the COVID-19 pandemic persists into the comment period for the release of the Draft EIS/EIR, meetings will be hosted virtually and comments may also be collected through the chat function of the virtual meeting software or via telephone.

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Historic Preservation Office, Advisory Council	LaShavio Johnson, Historic Preservation Technician	401 F Street NW, Ste 308 Washington, DC, 20001
Historic Preservation Office, Advisory Council	Artisha Thompson, Historic Preservation Technician	401 F Street NW, Ste 308 Washington DC, DC, 20001
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Los Angeles Community College District	Francisco C. Rodriguez, Ph.D., Chancellor	770 Wilshire Blvd, Los Angeles, CA, 90017
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Los Angeles County Department of Public Works	Mark Pestrella, Director, Public Works	900 S Fremont Ave Alhambra , CA, 91803
Los Angeles County Department of Regional Planning	Amy Bodek, Director	320 W Temple St Los Angeles, CA, 90012
Los Angeles County Flood Control District	Sree Kumar, Assistant Deputy Director, Stormwater Maintenance	900 S Fremont Ave Alhambra , CA, 91803
Los Angeles Department of Public Works	Greg Good, President	200 N Spring St, Room 361 Los Angeles, CA, 90017
Los Angeles Department of Public Works - Bureau of Engineering	Gary Lee Moore, City Engineer	1149 S Broadway Ste 700 Los Angeles, CA, 90017

Organization	Contact	Address
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Los Angeles Department of Water and Power	Nancy Sutley, Chief Sustainability and Economic Development Officer	PO Box 51111 Los Angeles, CA, 90051
Los Angeles Office of Historic Resources	Ken Bernstein, Manager and Principal City Planner	221 N Figueroa St, Ste 1350 Los Angeles, CA, 90017
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Los Angeles Regional Water Quality Control Board	Augustine Anijielo, General Permitting Manager	320 W Fourth St, Ste 200 Los Angeles, CA, 90013
Los Angeles Regional Water Quality Control Board	Eric Wu, Groundwater Permitting Manager	320 W Fourth St, Ste 200 Los Angeles, CA, 90013
Los Angeles Unified School District	Austin Beutner, Superintendent	333 S Beaudry Ave Los Angeles, CA, 90017
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Metropolitan Water District of Southern California	Jeffrey Kightlinger, General Manager/Chief Executive Officer	PO Box 54153 Los Angeles, CA, 90054
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Paramount Easy Rider Shuttle	David Johnson, Community Services & Recreation Director	16400 Colorado Ave Paramount, CA, 90723
Paramount Unified School District	Ruth Pérez, Deputy Superintendent	15110 California Ave Paramount, CA, 90723
Port of Long Beach	Debbie Shepack	4801 Airport Plaza Drive Long Beach, CA, 90815
Port of Long Beach	Theresa Dau-Ngo, Director of Transportation Planning	4801 Airport Plaza Drive Long Beach, CA, 90815

Organization	Contact	Address
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Port of Long Beach	Richard Cameron, Managing Director, Planning & Environmental Affairs	4801 Airport Plaza Drive Long Beach, CA, 90815
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Port of Los Angeles	Gene Seroka, Executive Director	425 South Palos Verdes Street San Pedro, CA, 90731
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South Coast Air Quality Management District (SCAQMD)	Jillian Wong, Planning and Rules Manager	21865 Copley Dr Diamond Bar, CA, 91765
South Coast Air Quality Management District (SCAQMD)	Cynthia Ravenstein, Program Supervisor	21865 Copley Dr Diamond Bar, CA, 91765
South Coast Air Quality Management District (SCAQMD)	Danielle Soto, Regional Contact & Senior Public Information Specialist	21865 Copley Dr Diamond Bar, CA, 91765
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Southern California Association of Governments (SCAG)	Kome Ajise, Executive Director	818 W 7th St, 12th Floor Los Angeles, CA, 90017
Southern California Association of Governments (SCAG)	Philip Law, Manager - Transit	900 Wilshire Blvd, Ste 1700 Los Angeles, CA, 90017
State Office of Historic Preservation	Elizabeth Edwards Harris, Architectural History	1725 23rd Street, Ste 110 Sacramento, CA, 95816
State Office of Historic Preservation	Mark Huck, Restoration Architect	1725 23rd Street, Ste 100 Sacramento, CA, 95816
State Office of Historic Preservation	Kathleen Forrest, State Historian II	1725 23rd Street, Ste 100 Sacramento, CA, 95816
U.S. Army Corps of Engineers	Corrice Farrar, Chief, Orange & Riverside Counties Section, Regulatory Division	915 Wilshire Blvd, Ste 930 Los Angeles, CA, 90017
U.S. Army Corps of Engineers (USACE)	William Leady, Commander	915 Wilshire Blvd. Los Angeles, CA, 90017

Organization	Contact	Address
U.S. Army Corps of Engineers (USACE)	Col. Kirk Gibbs, Commander	915 Wilshire Blvd Los Angeles, CA, 90017
U.S. Army Corps of Engineers (USACE)	Steve Estes, Regulatory Section Chief	915 Wilshire Blvd, Ste 930 Los Angeles , CA, 90017
U.S. Army Corps of Engineers (USACE)	Bonnie Rodgers, Regulatory Senior Project Manager	915 Wilshire Blvd, Ste 930 Los Angeles , CA, 90017
U.S. Army Corps of Engineers (USACE)	Shannon Pankratz, Regulatory Senior Project Manager	915 Wilshire Blvd, Ste 930 Los Angeles , CA, 90017
U.S. Environmental Protection Agency (EPA)	Michael S. Regan, EPA Administrator	1200 Pennsylvania Ave, NW Washington DC, DC, 20460
U.S. Fish and Wildlife Service	Karen A. Goebel, Assistant Field Supervisor	2177 Salk Avenue, Suite 250 Carlsbad, CA, 92008
U.S. Fish and Wildlife Service	G. Mendel Stewart (does not work there anymore), Field Supervisor	2177 Salk Avenue, Ste 250 Carlsbad, CA, 92008
Union Pacific (UP) Railroad	Lupe Valdez, Senior Director, Public Affairs (Arizona, Southern California, and Southern Nevada)	915 Wilshire Blvd, Ste 930 Los Angeles, CA, 90017
Willdan Engineering (City of Bell)	Bill Pagett, City Engineer	13191 Crossroads Pkwy N City of Industry, CA, 91746
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California State Assembly, District 53	The Honorable Miguel Santiago, Assemblymember	320 W 4th St, #1050 Los Angeles, CA, 90013
California State Assembly, District 58	The Honorable Cristina Garcia, Assemblymember	8255 Firestone Blvd, #203 Downey, CA, 90241
California State Assembly, District 59	The Honorable Reggie Jones-Sawyer, Assemblymember	700 Exposition Park Dr Los Angeles, CA, 90037
California State Assembly, District 63	The Honorable Anthony Rendon, Assemblymember	4909 Lakewood Blvd, Suite 400 Lakewood, CA, 90712
California State Senate, District 24	The Honorable Maria Elena Durazo, Senator	1808 W Sunset Blvd Los Angeles, CA, 90026
California State Senate, District 30	The Honorable Sydney Kamlager, Senator	700 Exposition Park Dr Los Angeles, CA, 90037
California State Senate, District 32	The Honorable Bob Archuleta, Senator	12501 Imperial Highway, Suite 110 Norwalk, CA, 90650
California State Senate, District 33	The Honorable Lena A. Gonzalez, Senator	3355 East Gage Avenue Huntington Park, CA, 90255

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Los Angeles County Board of Supervisors, District 2	The Honorable Holly Mitchell, Supervisor	500 W Temple St, #866, Los Angeles, CA, 90012
Los Angeles County Board of Supervisors, District 4	The Honorable Janice Hahn, Supervisor	500 W Temple St, #822 Los Angeles, CA, 90012
Office of United States Senator Alex Padilla	The Honorable Alex Padilla, Senator	11845 West Olympic Blvd Suite 1250W Los Angeles, CA, 90064
Office of United States Senator Dianne Feinstein	The Honorable Dianne Feinstein, Senator	11111 Santa Monica Blvd, #915 Los Angeles, CA, 90025
United States House of Representatives, District 34	The Honorable Jimmy Gomez, Congressmember	350 S. Bixel Street, #120 Los Angeles, CA, 90017
United States House of Representatives, District 38	The Honorable Linda Sanchez, Congressmember	12440 E Imperial Hwy, #140 Norwalk, CA, 90650
United States House of Representatives, District 40	The Honorable Lucille Roybal-Allard, Congressmember	500 Citadel Dr, #320 Commerce, CA, 90040
United States House of Representatives, District 44	The Honorable Nanette Barragan, Congressmember	1320 Longworth House Office Bldg Washington, DC, 20515

Repositories for Public Review of the Document			
City/Location	Category	Organization	Address
Artesia	Libraries	Artesia Library	18801 Elaine Ave, Artesia, CA, 90701
Bellflower	Libraries	Clifton M. Brakensiek Library	9945 Flower St Bellflower, CA, 90706
Paramount	Government Building	Gateway Cities Council of Governments	16401 Paramount Blvd Paramount, CA, 90723
Paramount	Community centers	Paramount Park Community Center	14400 Paramount Blvd Paramount, CA, 90723
South Gate	Libraries	Hollydale Library	12000 Garfield Ave South Gate, CA, 90280
Huntington Park	Community centers	Salt Lake Park Recreation Center	3401 Florence Ave Huntington Park, CA, 90255
Huntington Park	Libraries	Huntington Park Library	6518 Miles Ave Huntington Park, CA, 90255
DTLA	Office Building	South Park Business Improvement District	1150-B S Hope St Los Angeles, CA 90015
DTLA (7th/Metro)	Libraries	Los Angeles Central Library	630 W 5th St Los Angeles, CA, 90071
DTLA (Little Tokyo)	Libraries	Little Tokyo Branch Library	203 S Los Angeles St Los Angeles, CA, 90012
DTLA	Government Building	Metro Dorothy Peyton Library	1 Gateway Plaza Los Angeles, CA, 90012

[i] In addition to those noted in the list of recipients, public notice of the Draft EIS/EIR, including a link to the project website, was provided to other individuals.