WEST SANTA ANA BRANCH TRANSIT CORRIDOR PROJECT

Draft EIS/EIR Chapter 4: Affected Environment and Environmental Consequences
Part 3

July 2021

4 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

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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

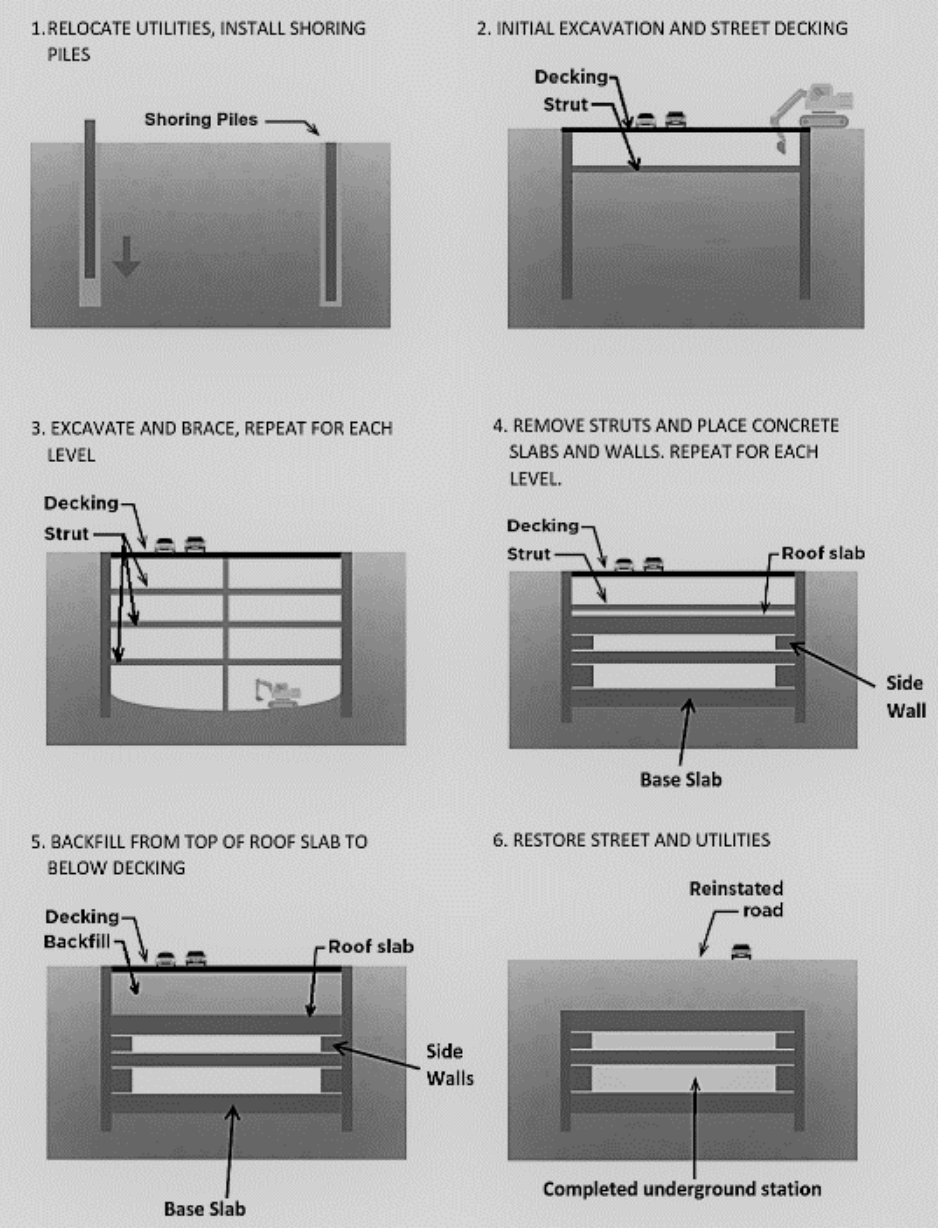
As shown in Table 4.19.1, Alternatives 1 and 2 would require cut-and-cover construction for underground stations and track crossover caverns from the ground surface. Design Option 2 would add the underground Little Tokyo Station, but the construction methods would remain the same. Cut-and-cover construction 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

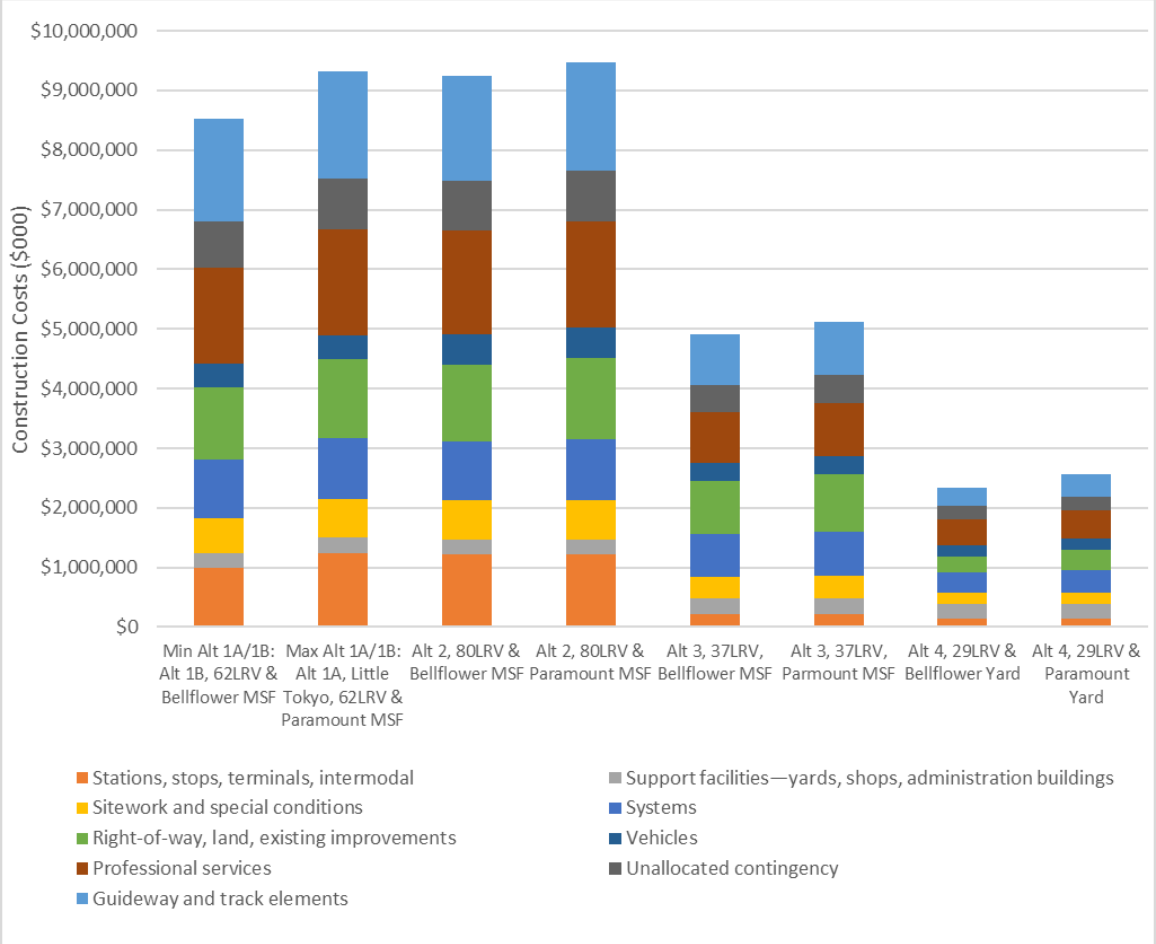
Construction of the Build Alternatives would represent a substantial capital investment in the regional economy that would increase employment, earnings, and economic output during the construction period. Figure 4.19-2 presents the construction costs for each of the Build Alternatives. A range of costs 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).

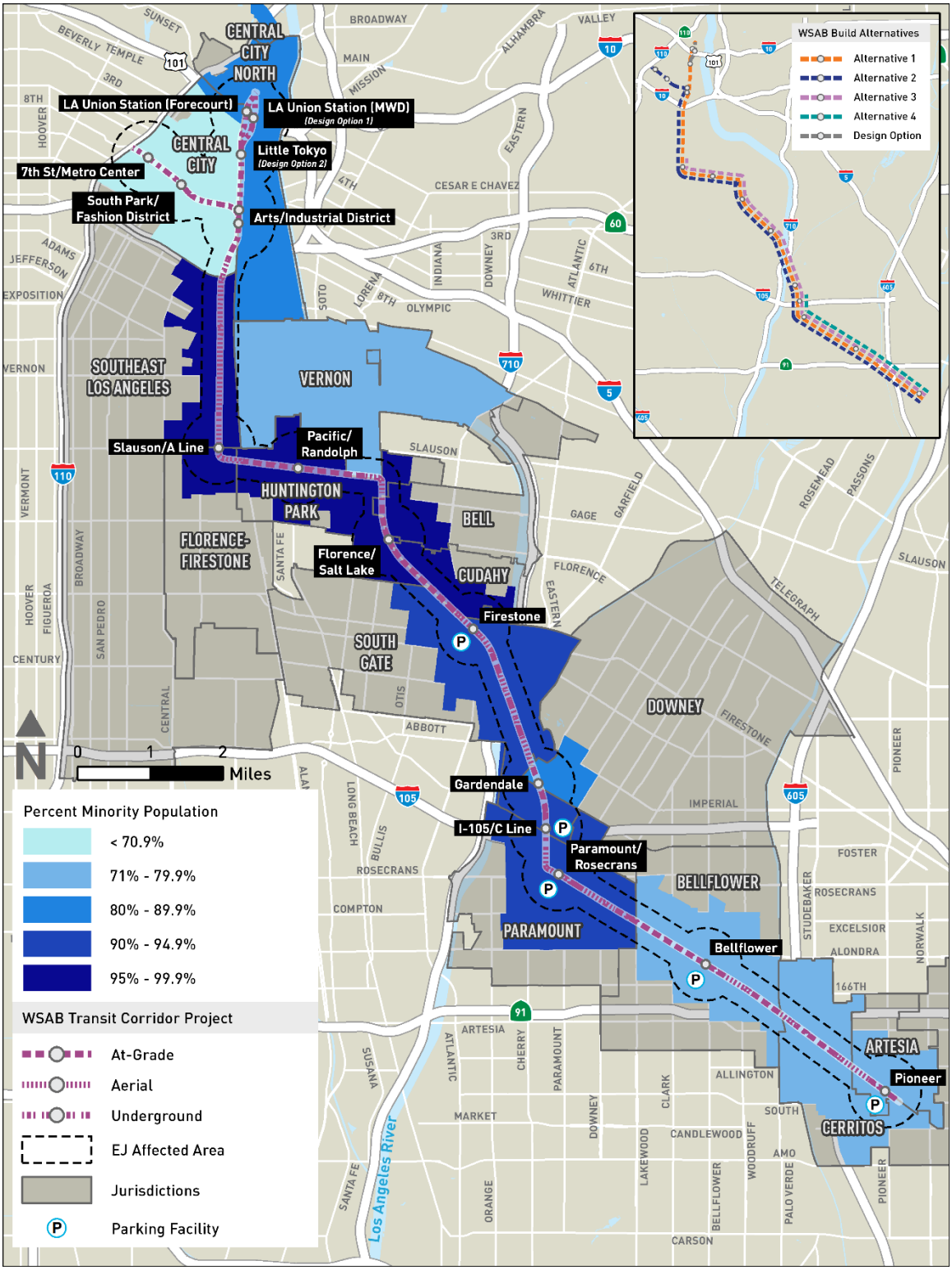
[5] A minority is defined as an individual who identifies as any race or ethnicity except for non-Hispanic/Latino White Alone. Percent of minority population is determined using 2011-2015 ACS 5-year estimates for the Census Block Groups that intersect both the EJ Affected Area and affected community.

[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).

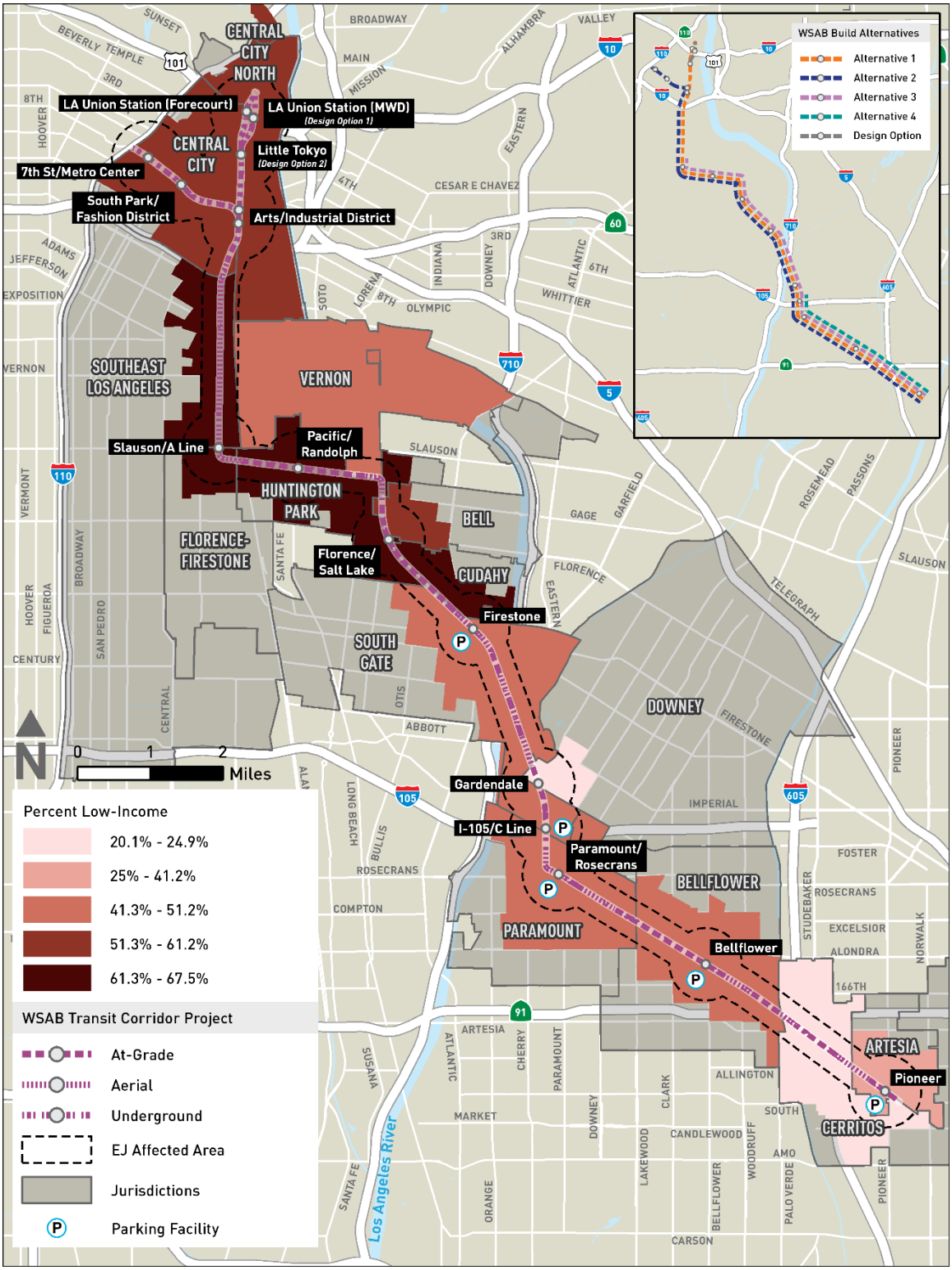
[5] LA County contain US Census Bureau block group information for the entire county.

[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

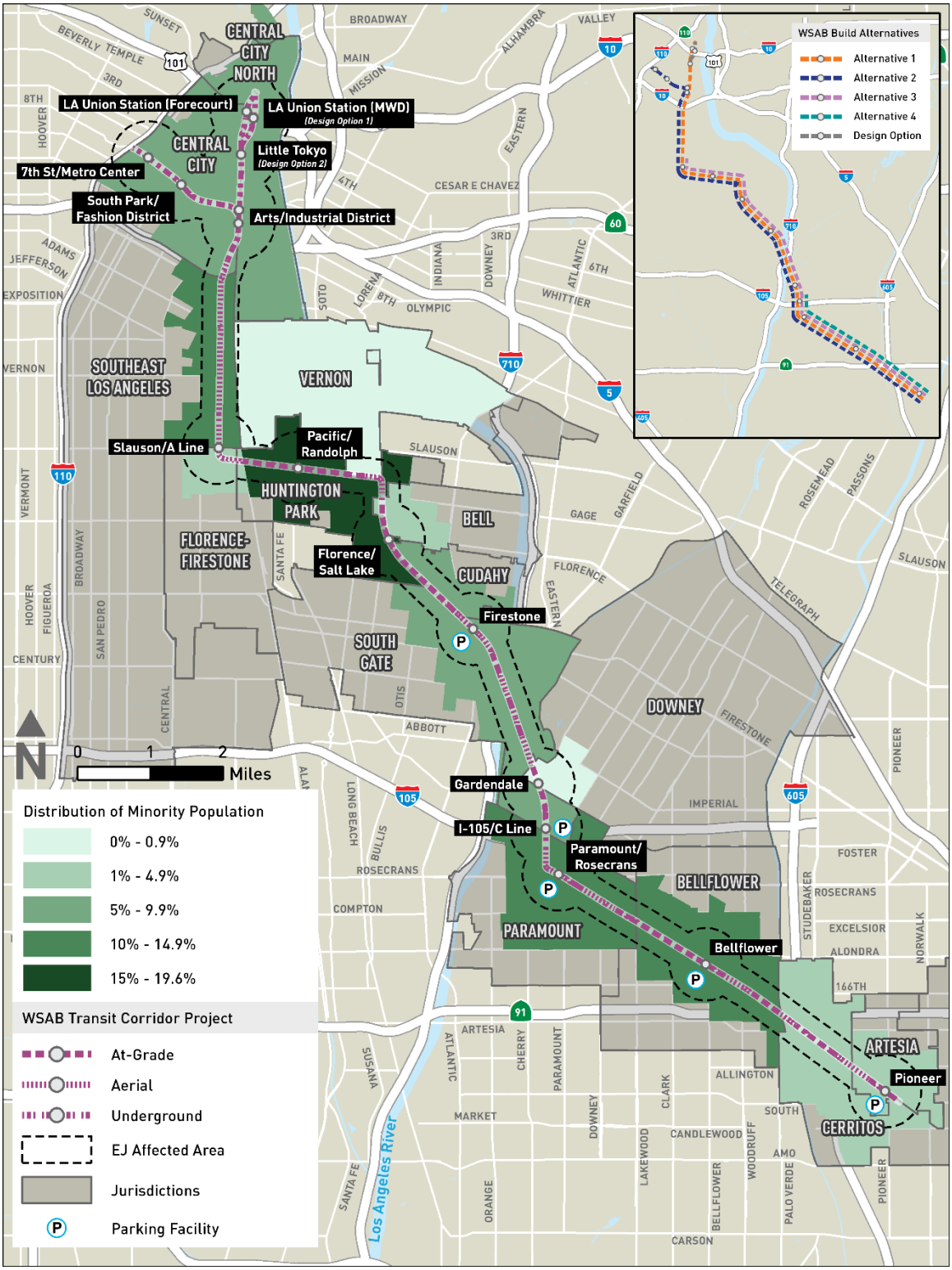
The distribution of the EJ populations presented in this section is the number of minority/low-income persons within an affected community as a proportion of the total minority/low-income persons within the entire EJ Affected Area. The distribution shows the percentage of the EJ Affected Area's total 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%

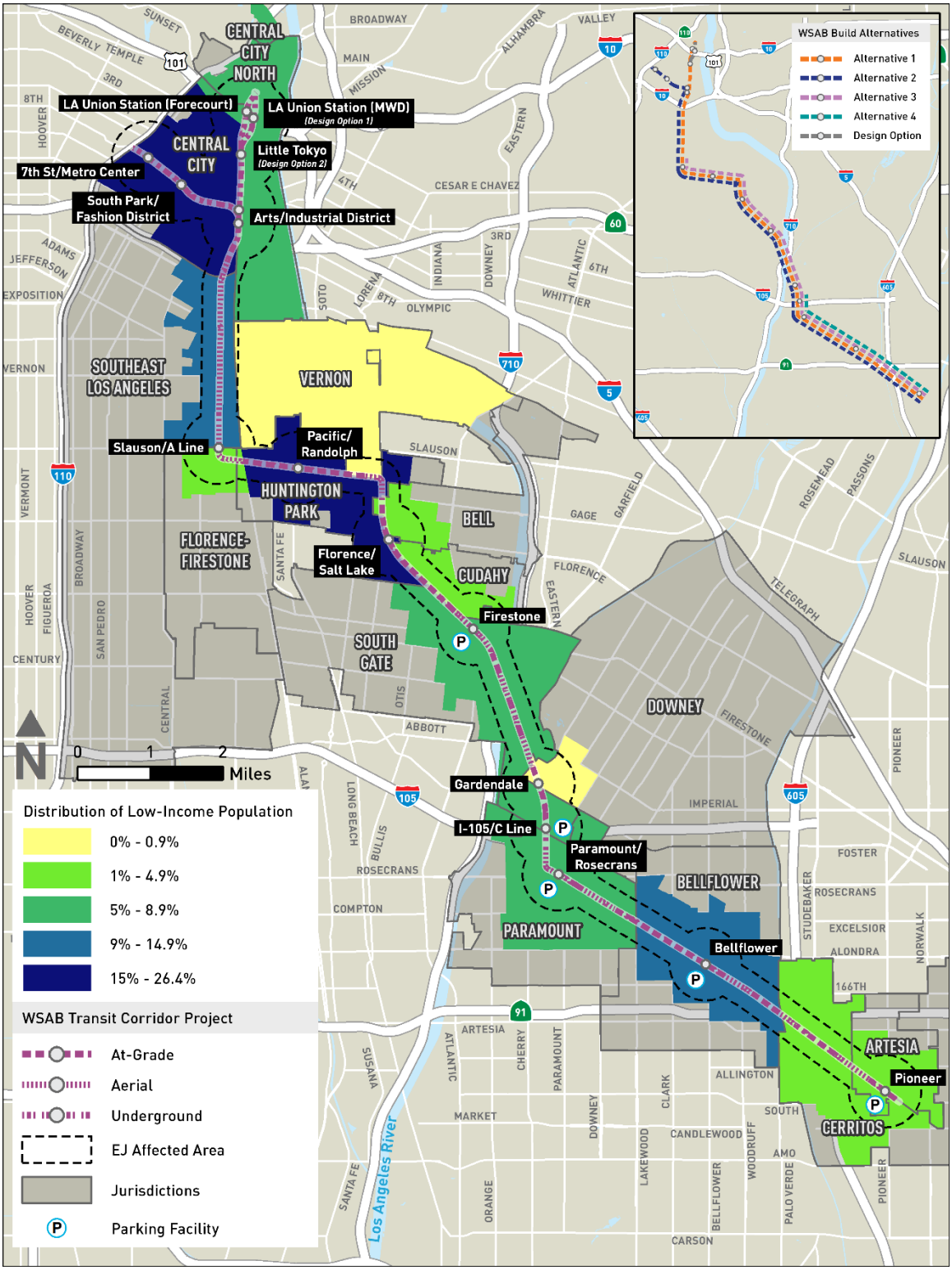
Source: U.S. Census Bureau 2016; Metro 2021z
Notes: Does not equal to 100 percent due to rounding.
[1] Distribution is the number of minority/low-income persons within an affected community as a proportion of (divided by) the total minority/low-income persons within the EJ Affected Area. Distribution 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