EXHIBIT B (TO ATTACHMENT E): DRAFT CEQA FINDINGS OF FACT AND STATEMENT OF OVERRIDING CONSIDERATIONS

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California High-Speed Rail Authority

Palmdale to Burbank Project Section

Draft CEQA Findings of Fact and Statement of Overriding Considerations

June 2024

CALIFORNIA High-Speed Rail Authority

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being or have been carried out by the State of California pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated July 23, 2019, and executed by the Federal Railroad Administration and the State of California.

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ACRONYMS AND ABBREVIATIONS

AMMP	Adaptive management and monitoring plan
ANF	Angeles National Forest
APE	Area of Potential Effects
ATP	Archaeological Treatment Plan
Authority	California High-Speed Rail Authority
AVAQMD	Antelope Valley Air Quality Management District
AVEK	Antelope Valley-East Kern Water Agency
BETP	Built Environment Treatment Plan
BMP	Best management practice
BRMP	Biological resources management plan
CAAQS	California Ambient Air Quality Standards
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CMP	Compensatory Mitigation Plan
CRHR	California Register of Historical Resources
CSA	Construction staging areas
CSLC	California State Lands Commission
CTP	construction transportation plan
CWA	Clean Water Act
EMF	Electromagnetic field
EMI	Electromagnetic interference
dB	Decibel
dBA	A-Weighted Decibel
EIR	Environmental impact report
EIS	Environmental impact statement
ESA	Environmentally sensitive area
EV	Electric vehicle
FAST	Fixing America’s Surface Transportation
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act

FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GHG	Greenhouse gas
HSR	High-speed rail
IAMF	Impact Avoidance and Minimization Features
KVP	Key Viewpoints
LAUS	Los Angeles Union Station
LAUSD	Los Angeles Unified School District
LEDPA	Least environmentally damaging practicable alternative
L_{eq}	Equivalent Noise Level
MBTA	Migratory Bird Species Act
MDAB	Mojave Desert Air Basin
MLD	Most likely descendant
MMEP	Mitigation Monitoring and Enforcement Program
MOA	Memorandum of Agreement
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NRHP	National Register of Historic Places
NZE	Near Zero Emission
OCS	Overhead catenary system
PA	Programmatic Agreement
PEPD	preliminary engineering for project definition
PI	Principal Investigator
PMT	Program Management Team
PRS	Paleontological resource specialist
RF	Radio frequency
RC	Regional Consultant
RRP	Restoration and revegetation plan
RSA	Resource study area
RWQCB	Regional Water Quality Control Board
SCAB	South Coast Air Basin
SCAQMD	South Coast Air Quality Management District
SEA	Significant Ecological Area
SGMNM	San Gabriel Mountains National Monument
SHPO	State Historic Preservation Officer
SJVAB	San Joaquin Valley Air Basin

SJVAPCD	San Joaquin Valley Air Pollution Control District
SR	State Route
SSMP	Safety and Security Management Plan
SWP	State Water Project
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TBM	Tunnel boring machine
TOD	Transit-oriented development
UAS	unoccupied aircraft system
USEPA	U.S. Army Corps of Engineers
USFS	United States Forest Service
USFWS	U.S. Fish and Wildlife Service
UTS	Unarmored three-spine stickleback
VdB	Vibration Velocity Level, Decibels
VMT	Vehicle miles traveled
WCP	Weed control plan
WEAP	Worker environmental awareness program
ZE	Zero Emission
ZEV	Zero-emissions vehicle

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1 INTRODUCTION

These California Environmental Quality Act (CEQA) Findings of Fact and Statement of Overriding Considerations are intended to fulfill the responsibilities of the California High-Speed Rail Authority (Authority) under CEQA for its project approval for the Palmdale to Burbank Project Section of the California High-Speed Rail (HSR) System. CEQA provides that no public agency shall approve a project or program, as proposed, if it will result in significant environmental effects as identified in an Environmental Impact Report (EIR), unless it adopts and incorporates feasible mitigation to avoid and reduce such effects and adopts appropriate findings.

Section 15091 of the CEQA Guidelines provides as follows:

a) No public agency shall approve or carry out a project for which an EIR has been certified which identifies one or more significant environmental effects of the project unless the public agency makes one or more written findings for each of those significant effects, accompanied by a brief explanation of the rationale for each finding. The possible findings are:

   1) Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect as identified in the final EIR.

   2) Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency.

   3) Specific economic, legal, social, technological, or other considerations, including provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the final EIR.

CEQA Guidelines Section 15093 further provides:

a) CEQA requires the decision-making agency to balance, as applicable, the economic, legal, social, technological, or other benefits, including region-wide or statewide environmental benefits, of a proposed project against its unavoidable environmental risks when determining whether to approve the project. If the specific economic, legal, social, technological, or other benefits, including region-wide or statewide environmental benefits, of a proposed project outweigh the unavoidable adverse environmental effects, the adverse environmental effects may be considered “acceptable.”

This document includes a description of the Preferred Alternative for the Palmdale to Burbank Project Section (State Route [SR] 14A Build Alternative), findings of fact concerning significant environmental impacts and mitigation measures to address such impacts, a discussion of cumulative impacts, and a Statement of Overriding Considerations.

The custodian of the documents and other materials that constitute the record of proceedings on which the Authority’s decision is based, including these CEQA Findings of Fact and Statement of Overriding Considerations, is the California High-Speed Rail Authority, 770 L Street, Suite 620 MS-1, Sacramento, California 95814, (916) 324-1541.

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2 PROJECT DESCRIPTION

2.1 Background – Description of Statewide High-Speed Rail System

The Authority, a state governing board formed in 1996, is responsible for planning, designing, constructing, and operating the California HSR system. Its statutory mandate is to develop an HSR system that coordinates with the state's existing transportation network, which includes intercity rail and bus lines, regional commuter rail lines, urban rail and bus transit lines, highways, and airports. The California HSR system will provide intercity, high-speed service on more than 800 miles of tracks throughout California, connecting the major population centers of Sacramento, the San Francisco Bay Area, the southern Central Valley, Los Angeles, the Inland Empire, Orange County, and San Diego. The Authority and the Federal Railroad Administration (FRA) prepared two first-tier EIR/Environmental Impact Statement (EIS) documents to select preferred alignments and station locations to advance for more-detailed study in second-tier EIRs/EISs. Figure 1 shows the general corridors and the station locations of the statewide HSR system selected by the Authority and FRA following the first-tier EIRs/EISs. The California HSR system will use state-of-the-art, electrically powered, high-speed, steel-wheel-on-steel-rail technology, including contemporary safety, signaling, and automated train-control systems, with trains capable of operating up to 220 miles per hour over a fully grade-separated, dedicated track alignment.[1] Following completion of the first-tier, programmatic environmental review and decisions, the Authority and FRA divided the statewide HSR system into individual project sections for second-tier environmental review (Authority 2009). One of these sections is the Palmdale to Burbank Project Section.

2.2 Description of the Preferred Alternative – SR14A Build Alternative

Development of the Preferred Alternative (SR14A Build Alternative) is inclusive of temporary (including staging, laydown areas, utility relocations, traffic detours, and temporary access roads) and permanent environmental footprints (including dedicated California HSR system right-of-way for facilities, including aerial track, at-grade track, tunnels, access roads, stations, traction power distribution infrastructure and radio communication sites, public roadway improvements, grade separations, and railroad improvements).

The limits of the Palmdale to Burbank Project Section Preferred Alternative extend from Spruce Court in the City of Palmdale (northern terminus) to the Burbank Airport Station extending to just north of Winona Avenue in the City of Burbank (southern terminus). The Palmdale to Burbank Project Section Preferred Alternative is divided into two subsections: Central Subsection and Burbank Subsection, which are described in Sections 2.2.1 and 2.2.2 of this Findings of Fact document. Figure 2 shows the general alignment of the Preferred Alternative.

2.2.1 Preferred Alternative Central Subsection

The Preferred Alternative Central Subsection alignment would begin at grade in the vicinity of Spruce Court in Palmdale, crossing the current alignment of Sierra Highway just north of the East Avenue S, continuing south and curving eastward to travel approximately 300 feet east of Una Lake. South of Una Lake, the Preferred Alternative alignment would curve westward, cross over the Metrolink Antelope Valley line, Sierra Highway, and the Soledad Siphon, and continue southwest and enter a tunnel portal approximately 0.5-mile northeast of the Sierra Highway/Pearblossom Highway intersection. The Preferred Alternative alignment would then continue westward in an approximately 12.4-mile-long tunnel before surfacing approximately 0.75 mile east of Agua Dulce Canyon Road. The alignment would transition between at-grade and elevated profiles closely paralleling SR 14 before entering an approximately 1-mile-long tunnel.

[1] Second-tier planning and environmental review for the HSR system has resulted in some sections being blended with conventional passenger rail, rather than having dedicated track.

Transitioning from tunnel to at-grade, the Preferred Alternative alignment would continue at grade or on viaduct for approximately 1.7 miles, crossing the Santa Clara River.

Continuing from the Santa Clara River toward Lang Station Road, the Preferred Alternative alignment would enter approximately 0.5-mile-long, at-grade, covered twin tunnels that would be constructed to the south through the Soledad Canyon Mining Operations (Vulcan Mine), California Mine Identification Number 91-19-0038, which is almost entirely within the boundaries of the Angeles National Forest (ANF), including the San Gabriel Mountains National Monument (SGMNM). From this point, the Preferred Alternative alignment would enter twin-bored tunnels for approximately 13 miles, which would be constructed underneath portions of the ANF, including the SGMNM, the City of Santa Clarita, and the Pacoima neighborhood of Los Angeles. These tunnels would have a maximum depth of 2,080 feet. The twin tunnels would pass through the San Gabriel Fault Zone and the Sierra Madre Fault Zone. On completion of the tunnels, the Vulcan Mine site would be regraded to better reflect surrounding topography.

The Preferred Alternative alignment would emerge east of the existing Antelope Valley Metrolink Corridor near Montague Street in the Pacoima neighborhood of Los Angeles. From Montague Street, the Preferred Alternative alignment would continue south for approximately 0.4 mile in a retained-cut/trench, transitioning up to ground level, and passing over the existing Hansen Spreading Grounds on embankment before crossing over the Los Angeles County Flood Control Channel on a bridge and entering the existing Metrolink corridor near Sheldon Street. Continuing along the east side of the Metrolink Corridor, the Preferred Alternative alignment would continue southerly at grade for approximately 1.0 mile where it would cross over Tuxford Street and under the I-5 freeway. Continuing southeast from the I-5 undercrossing, the Preferred Alternative alignment would transition below-grade in an open trench to just north of Olinda Street. From just north of Olinda Street to just south of Sunland Boulevard, the Preferred Alternative alignment would be below-ground in a cut-and-cover box structure. Metrolink would remain on the surface, and the Sun Valley Metrolink station would be reconstructed south of Olinda Street on the surface. South of Sunland Boulevard the Preferred Alternative alignment would continue in the cut-and-cover tunnel adjacent to and underneath the realigned Metrolink rail alignment from Olinda Street until reaching the intersection of Lockheed Drive and San Fernando Boulevard, just north of the Hollywood Burbank Airport.

2.2.2 Preferred Alternative Burbank Subsection

The intersection of Lockheed Drive and San Fernando Boulevard represents the northern limit of the Preferred Alternative Burbank Subsection. From Lockheed Drive, the Preferred Alternative alignment would continue in a cut-and-cover box until entering the Burbank Airport Station. The Burbank Airport Station would be an underground station, beginning near Kenwood Street and extending to just north of Winona Avenue and the Burbank Airport east/west runway, which also marks the southern limit of the Preferred Alternative Burbank Subsection. South of the approved Burbank Airport Station, the Preferred Alternative would join with the tunnel alignment approved as part of the Burbank to Los Angeles Project Section.

The Burbank Airport Station was also analyzed in the Burbank to Los Angeles Project Section Final EIR/EIS, and was approved by the Authority Board in January 2022 as part of its approval of the Burbank to Los Angeles Project Section. During the comment period on the Palmdale to Burbank Project Section Draft EIR/EIS, the Authority received comments specific to the Burbank Subsection, and the Final EIR/EIS includes updated analysis in response to those comments. The design for the Burbank Subsection has not changed from what was previously approved by the Authority Board, and the impact conclusions in the Palmdale to Burbank Project Section Final EIR/EIS are consistent with the conclusions in the Burbank to Los Angeles Project Section Final EIR/EIS for the Burbank Subsection (Authority 2024b).

The southern terminus of the approved Burbank Airport Station is located at Winona Avenue and the Burbank Airport east/west runway. This matches the southern terminus of the Preferred Alternative and the Burbank Subsection. The station site would be west of Hollywood Way and

east of Hollywood Burbank Airport. The airport and ancillary properties occupy much of the land south of the Burbank Airport Station site,[2] while industrial and light industrial land uses, including the substantially complete Avion Burbank development, are to the east and residential land uses are found to the north. I-5 runs parallel to the Burbank Airport Station site, approximately 0.25 mile north of the proposed Metrolink platform.

The Burbank Airport Station will have both underground and aboveground facilities. Aboveground facilities will span approximately 70 acres and would include a station building (which would house ticketing areas, passenger waiting areas, restrooms, and related facilities), pickup/drop-off facilities for private automobiles, a transit center for buses and shuttles, surface parking areas, and stormwater capture/drainage facilities. Underground portions of the station, which include the train boarding platforms, would be beneath Cohasset Street, along which runs the boundary between the city of Los Angeles to the north and the City of Burbank to the south. There will be two HSR tracks at the Burbank Airport Station.

As discussed above, the Burbank Subsection was analyzed in the Burbank to Los Angeles Project Section Final EIR/EIS. The Burbank to Los Angeles Project Section Final EIR/EIS identified Impact Avoidance and Minimization Features (IAMFs) and mitigation measures for the entirety of the Burbank to Los Angeles Project Section; however, some IAMFs and mitigation measures were specific to geographic locations, such as the Burbank Airport Station or the San Fernando Valley Superfund Site Area 1. The analysis in the Palmdale to Burbank Project Section Final EIR/EIS covers the entire Preferred Alternative, including the Burbank Subsection, and does not rely on the analysis or mitigation measures in the Burbank to Los Angeles Project Section Final EIR/EIS for the CEQA determinations. The Palmdale to Burbank Project Section Final EIR/EIS includes updates to some IAMFs and mitigation measures that would apply to the Burbank Subsection. Table 2-1 and Table 2-2 summarize how IAMFs and mitigation measures from the Burbank to Los Angeles Project Section Final EIR/EIS that are relevant to the Burbank Subsection have been updated in in the Palmdale to Burbank Project Section Final EIR/EIS.

Table 2-1 IAMFs Applicable to the Burbank Subsection

IAMF Applicable to the Burbank Subsection	Summary of Change since Approval of the Burbank to Los Angeles Project Section
TR-IAMF#2: Construction Transportation Plan	Since the publication of the Burbank to Los Angeles Project Section Final EIR/EIS, TR-IAMF#2 has been revised to include reference to the Authority's commitments to provide the construction transportation plan (CTP) to affected school districts upon request for review and comment.
AQ-IAMF#1: Fugitive Dust Emissions	Since the publication of the Burbank to Los Angeles Project Section Final EIR/EIS, AQ-IAMF#1 has been revised to include reference to the Authority's commitments to provide the fugitive dust control plan to affected school districts upon request for review and comment.
AQ-IAMF#4: Reduce Criteria Exhaust Emissions from Construction Equipment	Since the publication of the Burbank to Los Angeles Project Section Final EIR/EIS, AQ-IAMF#4 has been revised to include reference to avoidance of the use of small diesel generators, if feasible and has been revised to include "Final" when referencing the Tier 4 engine requirements.
AQ-IAMF#5: Reduce Criteria Exhaust Emissions from On-Road Construction Equipment	Since the publication of the Burbank to Los Angeles Project Section Final EIR/EIS, AQ-IAMF#5 has been revised to update the average fleet mix of equipment model year to 2020 and to reference CARB's EMFAC 2017 database.
BIO-IAMF#9: Dispose of Construction Spoils and Waste	Since the publication of the Burbank to Los Angeles Project Section Final EIR/EIS, BIO-IAMF#9 has been revised to specify that any excavated waste

[2] The Burbank Airport Station would not encroach on or interfere with the Hollywood Burbank Airport Replacement Terminal project.

IAMF Applicable to the Burbank Subsection	Summary of Change since Approval of the Burbank to Los Angeles Project Section
	materials unsuitable for treatment and reuse will be disposed at an off-site location, in conformance with applicable State and federal laws. Additionally, BIO-IAMF#9 has been revised to note that if a site is already identified as needing restoration post-disturbance, efforts should be made to remove and store the topsoil in a manner that would allow for it to be replaced as part of site restoration.
HYD-IAMF#8: Private Well Monitoring and Minimizing Access Disruptions for Private Water Supply Wells Outside of the ANF	HYD-IAMF#8 is included in the Palmdale to Burbank Project Section Final EIR/EIS to address the potential for project construction to encounter and affect private wells outside of the ANF, including the Burbank Subsection.
GEO-IAMF#1: Geologic Hazards	Since the publication of the Burbank to Los Angeles Project Section Final EIR/EIS, GEO-IAMF#1 has been revised to require the Construction Management Plan to include details regarding the automated remote monitoring and define the settlement/deformation thresholds.
GEO-IAMF#4: Historic or Abandoned Mines	Since the publication of the Burbank to Los Angeles Project Section Final EIR/EIS, GEO-IAMF#4 has been revised to focus on historic or abandoned mines and associated contaminated water and vapors as applicable.
GEO-IAMF#5: Naturally Occurring Hazardous Materials	Since the publication of the Burbank to Los Angeles Project Section Final EIR/EIS, GEO-IAMF#5 has been updated to clarify that it would apply for naturally occurring hazardous materials. Additionally, GEO-IAMF#5 was updated to include discussion of soils corrosive to concrete.
HMW-IAMF#1: Property Acquisition Phase I and Phase II Environmental Site Assessments, Additional Preconstruction Investigations, and Associated Actions to Control Site Contamination	Since the publication of the Burbank to Los Angeles Project Section Final EIR/EIS, HMW-IAMF#1 has been revised to clarify the IAMF's applicability to the San Fernando Valley Superfund Site Area 1. Additionally, the title of HMW-IAMF#1 has been updated since the publication of the Burbank to Los Angeles Project Section Final EIR/EIS.
HMW-IAMF#3: Work and Vapor Barriers	Since the publication of the Burbank to Los Angeles Project Section Final EIR/EIS, HMW-IAMF#3 has been revised to include measures for vapor barriers.
HMW-IAMF#4: Known, Suspected, and Unanticipated Environmental Contamination	Since the publication of the Burbank to Los Angeles Project Section Final EIR/EIS, HMW-IAMF#4 has been revised to clarify the IAMF's applicability to the San Fernando Valley Superfund Site Area 1.
HMW-IAMF#5: Demolition Plans	Since the publication of the Burbank to Los Angeles Project Section Final EIR/EIS, HMW-IAMF#5 has been revised to include reference to polychlorinated biphenyl abatement.
HMW-IAMF#11: Stakeholder Consultation for the San Fernando Valley Superfund Site Area 1	Since the publication of the Burbank to Los Angeles Project Section Final EIR/EIS, HMW-IAMF#11 has been revised to clarify the IAMF's applicability to the San Fernando Valley Superfund Site Area 1 and to discuss groundwater extraction.

Table 2-2 Mitigation Measures Applicable to the Burbank Subsection

Mitigation Measure Applicable to the Burbank Subsection	Summary of Change since Approval of the Burbank to Los Angeles Project Section
TR-MM#10: Provide Pedestrian and Bicycle Facilities	TR-MM#10 would be required for the Palmdale to Burbank Project Section, including the Burbank Subsection to provide pedestrian and bicycle facilities to compensate for loss of existing facilities and to restore crossings/connections affected by modifications to the local roadway network. TR-IAMF#4 and TR-IAMF#5, both of which are included in the Burbank to Los Angeles Project Section Final EIR/EIS and the Palmdale to Burbank Project Section Final EIR/EIS, require the contractor to prepare a construction management plan to address maintenance of pedestrian and bicycle access during the construction period.
TR-MM#11: In-Lieu Traffic Improvements	TR-MM#11, which was not included in the Burbank to Los Angeles Project Section Final EIR/EIS, would be required for the Palmdale to Burbank Project Section, including the Burbank Subsection to require the Authority to enter into cooperative agreements with HSR station host cities and partner transportation providers to implement transportation improvements in-lieu of general roadway traffic improvements to address identified traffic impacts.
TR-MM#12: Prepare a Transportation Construction Management Plan	TR-MM#12, which was not included in the Burbank to Los Angeles Project Section Final EIR/EIS, would be required for the Palmdale to Burbank Project Section, including the Burbank Subsection to require the construction contractor to develop a plan to manage circulation and connections for modes of travel during the construction duration.
AQ-MM#1: Offset Project Construction Emissions through SCAQMD Emissions Offsets Programs	AQ-MM#1 would be required for the Palmdale to Burbank Project Section, including the Burbank Subsection to include the purchase of emission offset credits to meet CEQA thresholds to the extent feasible.
N&V-MM#4: Vehicle Noise Specification	N&V-MM#4 would be required for the Palmdale to Burbank Project Section, including the Burbank Subsection. Since the publication of the Burbank to Los Angeles Project Section Final EIR/EIS, N&V-MM#4 has been refined for clarity.
HWR-MM#1: Minimize Construction-period Water Quality Impacts Associated with Tunnel Construction	HWR-MM#1, which was not included in the Burbank to Los Angeles Project Section Final EIR/EIS, would be required for the Palmdale to Burbank Project Section, including the Burbank Subsection. Page 3.8-44 of the Palmdale to Burbank Project Section Final EIR/EIS states, “Tunnel construction outside the ANF is not anticipated to adversely affect the groundwater quality in the existing private water wells within the tunnel construction RSA. Nevertheless, the Authority will implement measures (HWR-MM#1) to continuously monitor groundwater quality or condition in private water wells before, during, and after tunnel construction.”
GEO-MM#2: Inundation and slope failure minimization at spoil disposal sites	GEO-MM#2, which was not included in the Burbank to Los Angeles Project Section Final EIR/EIS, would be required for the Palmdale to Burbank Project Section, including the Burbank Subsection to require development of an evacuation plan for areas where grading, building, or disposal activities would occur underground or below grade.
LU-MM#1: California HSR System Station Area Development General Principles and Guidelines	LU-MM#1, which was not included in the Burbank to Los Angeles Project Section Final EIR/EIS, would be required for the Palmdale to Burbank Project Section, including the Burbank Subsection to require that the Authority document how Station Area Planning Agreements have been implemented with each station city.

Mitigation Measure Applicable to the Burbank Subsection	Summary of Change since Approval of the Burbank to Los Angeles Project Section
CUL-MM#4: Minimize adverse effects to archaeological resources through BMPs	CUL-MM#4, which was not included in the Burbank to Los Angeles Project Section Final EIR/EIS, would be required for the Palmdale to Burbank Project Section, including the Burbank Subsection to protect archaeological sites and resources through the implementation of BMPs for standard practice maintenance and utility connections to reduce ground disturbance activities.

The Burbank Airport Station will have up to 3,210 surface parking spaces in multiple lots by 2040. Approximately 1,640 of these spaces will be available by the start of operations of the Preferred Alternative. Proposed surface parking will be in addition to any parking spaces that might be included in the replacement terminal project.

Figure 1 California HSR System

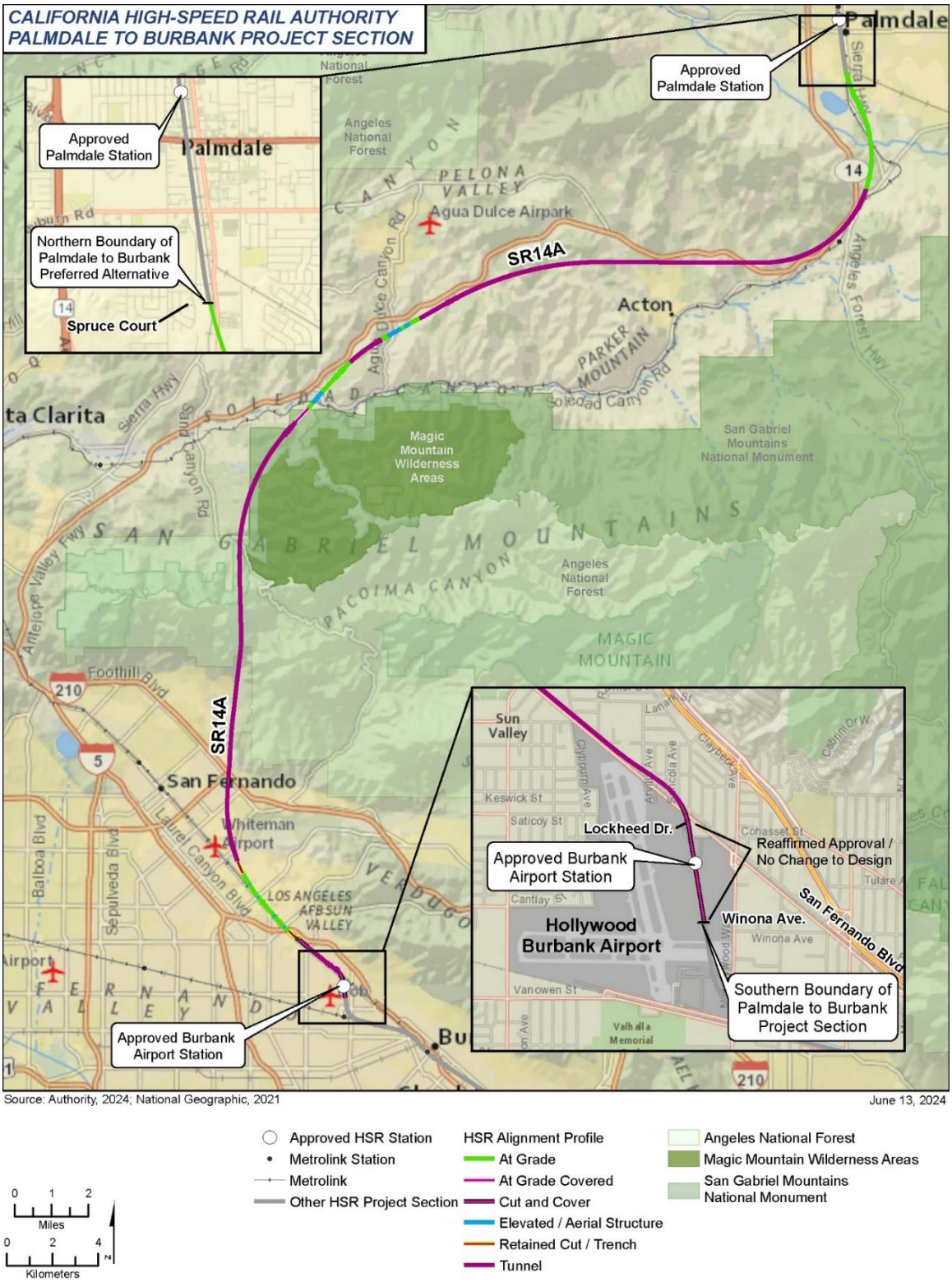

Figure 2 Palmdale to Burbank Project Section Preferred Alternative

Chapter 2, Alternatives, of the Final EIR/EIS further describes the Preferred Alternative and includes the following features:

- **System Design Performance, Safety, and Security**: In dedicated HSR system sections, such as the Palmdale to Burbank Project Section, the HSR right-of-way will be a fully grade-separated and access-controlled guideway with intrusion detection and monitoring systems. All aspects of the HSR system will conform with industry standards, federal and state safety regulations, and federal requirements regarding transportation security and safety.
- **Vehicles**: Train vehicles, although not selected as part of this project, are anticipated to be an electric multiple unit concept with a computer-based automatic train-control system. The HSR trainsets (i.e., train cars) will be pressure-sealed to maintain passenger comfort regardless of aerodynamic change, much like an airplane body.
- **Station**: The Burbank Airport Station includes station platforms and trackway, arrival and departure facilities, and parking.
- **Infrastructure Components:** The dedicated, fully grade-separated infrastructure needed to operate high-speed trains has more stringent alignment requirements than those needed for lower-speed trains. Six different track profiles would be used: (1) at-grade, (2) at-grade covered, (3) cut-and-cover, (4) retained-cut/trench profile, (5) tunnel, and (6) elevated/aerial structure. Bridge types might include full channel spans, large box culverts, and, for some wider river crossings, limited piers within the ordinary high water channel. Both single tunnels and dual-bore tunnels are planned. A TBM is expected to be used for the latter. Lighting strategies and camera installations would vary by locations and circumstances and could include flood or night lighting; infrared receptors and cameras; and temporary and portable lighting.
- **Adits**: Adits are intermediate tunnel access shafts to facilitate construction of bored tunnels. An adit can serve as a tunnel boring machine (TBM) entry or exit point and can enable the use of multiple TBMs to shorten construction time.
- **Intermediate Windows**: An intermediate window is a vertical shaft connecting to an underground construction area that would comprise an elevator and gantry cranes to provide access, water, power, ventilation, and other support during construction.
- **Tunnel Portals**: Tunnel portals provide a transition from tunneled sections to cut, at-grade, or elevated sections.
- **Grade Separations**: An optimally operating HSR system consists of a fully access-controlled and largely grade-separated guideway. The Palmdale to Burbank Project Section would not include at-grade road crossings, nor would the rail alignment be shared with freight trains.
- **Access Roads**: Access roads to tunnel portals are intended for both construction access and for tunnel maintenance and emergency access during operation.
- **Traction Power Distribution**: The Palmdale to Burbank Project Section will not include the construction of a separate power source, but it would include the extension of underground or overhead power transmission lines to a series of power substations positioned along the HSR corridor. Trains will draw electric power from an overhead catenary system. The contact system will consist of a series of mast poles with contact wires suspended from the mast poles. The contact system will connect to substations spaced at approximately 30-mile intervals. Switching and paralleling stations will be required at approximately 15-mile intervals, at the midpoint between the traction power substations.
- **Signaling and Train-Control Elements**: A computer-based, enhanced automated train-control system would control the trains. The enhanced automated train-control system will comply with FRA-mandated positive train-control requirements, including safe separation of trains, over-speed prevention, and work-zone protection. The system will use a radio-based communications network that will include a fiber-optic backbone and communications towers

at intervals of approximately 1.5 to 3 miles, depending on the terrain selected, radio frequency, and locations of other facilities. Signaling and train-control elements within the right-of-way would include communications shelters or signal huts/bungalows that house signal relay components and microprocessor components.

- **Track Structure**: The track structure would consist of either a direct fixation system (with track, rail fasteners, and slab) or ballasted track, depending on local conditions and decisions to be made in later design phases. For purposes of environmental review, slab track is assumed for elevated structure, tunnel, cut-and-cover, and retained-cut/trench profiles longer than 1 mile; ballasted track is assumed for the at-grade alignment profile.

2.2.3 Impact Avoidance and Minimization Features

The Authority has committed to implementing programmatic IAMFs consistent with the (1) *2005 Statewide Program EIR/EIS*, (2) *2012 Bay Area to Central Valley Program EIR/EIS*, and (3) 2012 Partially Revised Final Program EIR into the HSR project. The Authority, in consultation with federal and state agencies, has developed a set of standardized IAMFs that it is applying to the statewide HSR system, including the Palmdale to Burbank Project Section. The IAMFs represent practices that are standard in the construction industry, and they are incorporated into the project definition. The Authority will implement these IAMFs during project design and construction of the Palmdale to Burbank Project Section.

The Preferred Alternative incorporates IAMFs as identified and discussed in the Final EIR/EIS and described in detail in Appendix 2-E of the Final EIR/EIS. The Preferred Alternative's compliance with regulatory requirements, including permitting and coordination with regulatory agencies for many project-related activities, provide additional assurance that certain potential adverse environmental impacts will be avoided, or at least minimized.

The applicable regulatory requirements and IAMFs that are considered a part of the Preferred Alternative are described for the following issue areas in more detail in the corresponding chapters of the Final EIR/EIS and are also listed in Table S-3 of the Final EIR/EIS. Resource areas for which no resource area-specific IAMFs were developed are designated by an asterisk (*).

- Transportation – Section 3.2.4.2
- Air Quality and Global Climate Change – Section 3.3.4.2
- Noise and Vibration – Section 3.4.4.2
- Electromagnetic Interference and Electromagnetic Fields – Section 3.5.4.2
- Public Utilities and Energy – Section 3.6.4.2
- Biological and Aquatic Resources – Section 3.7.4.2
- Hydrology and Water Resources – Section 3.8.4.2
- Geology, Soils, Seismicity, and Paleontological Resources – Section 3.9.4.2
- Hazardous Materials and Wastes – Section 3.10.4.2
- Safety and Security – Section 3.11.4.2
- Socioeconomics and Communities – Section 3.12.4.2
- Station Planning, Land Use, and Development – Section 3.13.4.2
- Agricultural Farmland and Forest Land – Section 3.14.4.2
- Parks, Recreation, and Open Space – Section 3.15.4.2
- Aesthetics and Visual Quality – Section 3.16.4.2
- Cultural Resources – Section 3.17.5.3
- Regional Growth – Section 3.18.4.2*
- Cumulative Impacts – Section 3.19.2*
- Section 4(f) - Section 4.8*
- Environmental Justice – Sections 5.4.2, 5.8.1, and 5.8.2

These IAMFs are an enforceable component of the Preferred Alternative. Their implementation will be monitored along with other elements of the project.

3 FINDINGS REGARDING THE NEED FOR FURTHER RECIRCULATION

Public Resources Code Section 21092.1 and CEQA Guidelines Section 15088.5 provide that a lead agency is required to recirculate an EIR when "significant new information" is added to the EIR after circulation of a Draft EIR for comment, and prior to certification. As used in Guidelines Section 15088.5, "information" can include changes to a proposed project or its environmental setting as well as the addition of data or other information. Section 15088.5 also provides that new information added to an EIR is not "significant" unless the EIR is changed in a way that deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect that the project's proponent has declined to implement.

The Authority makes the following findings of fact related to the need for further recirculation:

- The Final EIR/EIS includes changes to the proposed project in the form of design refinements (see Summary, Section S.13.1), which were included in the Final EIR/EIS in response to public review and comments on the Draft EIR/EIS, to minimize environmental impacts.
- The Final EIR/EIS includes changes to the environmental impacts analysis in Chapters 3–5 (see Summary, Section S.13.2) resulting from the design refinements, and/or in response to the public comment on the Draft EIR/EIS.
- The new information included in the Final EIR/EIS is adequately and transparently summarized in the Preface, the Summary, and in Chapter 2, Alternatives, and the design refinements are discussed in more detail in the Summary of Changes to Preliminary Engineering for Project Definition (Authority 2024b) and the Supplement to the Hazardous Materials and Wastes Technical Report (Authority 2024d).
- The design refinements refine the features of the Preferred Alternative evaluated in the Draft EIR/EIS, but they do not change the fundamental project description of the construction, operation, and maintenance of an electrified high-speed train between Palmdale and Burbank as presented in Chapter 2, Alternatives, of the Draft EIR/EIS.
- Although the Final EIR/EIS includes new information, including revised impact data and calculations, the overall analysis, conclusions, and CEQA significance determinations have not changed from those presented in the Draft EIR/EIS.
- The design refinements do not cause new significant environmental impacts or a substantial increase in the severity of a previously identified impact.
- The design refinements are impact-lessening overall and resulted in an overall reduction of approximately 28.54 acres of permanent impacts of the Preferred Alternative compared to the Preferred Alternative analyzed in the Draft EIR/EIS.
- The design refinements eliminated temporary footprint impacts under the Preferred Alternative within Bee Canyon and Pacoima Wash.

Based on these facts, the Authority finds that the new information included in the Final EIR/EIS and changes to impacts analysis based on public comments do not require recirculation for additional public review and comment.

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4 FINDINGS ON SPECIFIC IMPACTS AND MITIGATION MEASURES

The environmental effects of the Preferred Alternative that would be potentially significant are described in Chapter 3, Affected Environment, Environmental Consequences, and Mitigation Measures, of Volume 1 of the Final EIR/EIS. These impacts are set forth and summarized below for the Preferred Alternative, along with mitigation measures the Authority adopts that will avoid or substantially lessen those potentially significant or significant impacts. The impact and mitigation measure findings below depend upon and therefore incorporate by reference the full analysis and conclusions contained within the Final EIR/EIS.

These findings also set forth those impacts that the Authority finds cannot with certainty be avoided or reduced to a less –than significant level even with the adoption of all feasible mitigation measures identified in the Final EIR/EIS. In adopting these findings and mitigation measures, the Authority also adopts a Statement of Overriding Considerations. The Statement of Overriding Considerations describes the economic, social, and other benefits of the Preferred Alternative that will render these significant unavoidable environmental impacts acceptable.

The Authority is not required to make findings or adopt mitigation measures or policies as part of this decision for impacts that are less than significant and require no mitigation.

All resource areas include one or more less-than-significant impacts without mitigation or beneficial impacts, as listed below:

- Transportation
- Air Quality and Global Climate Change
- Noise and Vibration
- Electromagnetic Fields/Electromagnetic Interference
- Public Utilities and Energy
- Biological and Aquatic Resources
- Hydrology and Water Resources
- Geology, Soils, Seismicity, and Paleontological Resources
- Hazardous Materials and Wastes
- Safety and Security
- Socioeconomics and Communities
- Station Planning, Land Use, and Development
- Agricultural Farmland and Forest Land
- Parks, Recreation, and Open Space
- Aesthetics and Visual Quality
- Cultural Resources
- Regional Growth[3]
- Cumulative Impacts

Impacts within a resource area which were identified as less than significant without mitigation measures are also generally not discussed further in this document.

4.1 Transportation (Section 3.2 of the Final EIR/EIS)

As described in the Palmdale to Burbank Project Section Final EIR/EIS (Section 3.2, Transportation), three construction-related transportation impact associated with the Preferred Alternative (Impact TRA#5: Spoils Hauling Effects on Transit Services, Impact TRA#11: Project Construction Effects on Rail and Transit Services, and Impact TRA#12: Project Construction

[3] CEQA thresholds related to regional growth effects are addressed in Section 3.12, Socioeconomics and Communities, and Section 3.13, Station Planning, Land Use, and Development of the Final EIR/EIS and are included in this Findings of Fact document in Sections 4.11 and 4.12.

Effects on Non-Motorized Modes Near the Burbank Airport Station) would be significant, but would be reduced to less than significant after the implementation of mitigation measures.

For operations impacts (i.e., impacts that are permanent due to redirection of existing traffic because of permanent network road changes required by the Preferred Alternative and impacts that are permanent due to traffic generated at the Burbank Airport Station), all impacts will be less than significant. Adherence to IAMFs and compliance with applicable regulatory requirements will address potential geometric design feature or incompatible use hazards and potential hazards for public transit, pedestrians, or bicyclists and emergency access.

4.1.1 Impact TRA#5: Spoils Hauling Effects on Transit Services

Spoils hauling associated with the Preferred Alternative would increase truck traffic at roadway segments and intersections throughout the spoils hauling resource study area (RSA). This could result in travel delays where transit services overlap spoils hauling routes. While automobile delay is not a significant environmental impact under CEQA, a conflict with plans that address transit circulation can be. Because of the duration and extent of anticipated traffic delays due to spoils hauling (a maximum of 6.4 years of the 8- to 9.25-year construction period), and the potential for reduced transit circulation in the spoils hauling RSA, the impact would be potentially significant under CEQA.

TR-IAMF#2, TR-IAMF#6, and TR-IAMF#7 will be incorporated to reduce impacts from spoils hauling. TR-IAMF#2, TR-IAMF#6, and TR-IAMF#7 will implement a construction transportation plan (CTP), limit spoils hauling hours, and establish spoils hauling routes to minimize transit service impacts during spoils hauling. Although there is no consistent methodology for quantifying the reduction in impacts during spoils hauling, these IAMFs are anticipated to be effective in reducing impacts associated with haul route traffic. Although implementation of these IAMFs will avoid or minimize impacts, spoils hauling could still degrade efficiency of public transit services at several locations within the spoils hauling RSA. As discussed in Section 3.2.7, Mitigation Measures, of the Final EIR/EIS and summarized in Section 3.2.6.3 of the Final EIR/EIS (Impact TRA#1), TR-MM#12 will require the development of a construction management plan to address traffic circulation during spoils hauling activities, including by relocating spoils collection areas and access to minimize delays during peak hours. The construction management plan (TR-MM#12) is anticipated to be effective in reducing impacts associated with haul route traffic as it would relocate spoils collection areas and access to minimize delays during peak hours. While these traffic measures may not completely avoid impacts on public transit services, any impacts on transit services resulting from spoils hauling would be temporary and would not permanently conflict with regional and local transit plans.

The Authority will implement Mitigation Measure TR-MM#12: Prepare a Transportation Construction Management Plan to reduce impacts to transit services affected by spoils hauling. Because of text length, mitigation measures are presented separately in the Mitigation Monitoring and Enforcement Plan (MMEP).

Mitigation Measure TR-MM#12 will require the construction contractor to develop a plan to manage circulation and connections for modes of travel during the construction duration, prior to construction. The Authority will also coordinate with local agencies, emergency services, and public transit providers to ensure appropriate revisions to routes, stops, schedules, and signage are carried out to address modifications to the local roadway network and changes in circulation. Implementation of the transportation CMP will maintain the flow of traffic, bicyclists, pedestrians, and buses in and around the construction zones. Implementation of Mitigation Measure TR-MM#12 would not result in secondary or off-site environmental impacts.

The Authority finds that implementation of Mitigation Measure TR-MM#12 is required under the Preferred Alternative and that this mitigation measure will reduce spoils hauling impacts on transit services to a less –than significant level under CEQA.

4.1.2 Impact TRA#11: Project Construction Effects on Rail and Transit Services

Modifications made to portions of existing freight and passenger railroad facilities during construction of the Preferred Alternative has the potential to cause temporary delays in transit services during construction.

TR-IAMF#9 has been incorporated into the project design and will reduce impacts on passenger and freight rail by constructing temporary shoofly tracks. While automobile delay is not considered a significant environmental impact under CEQA, a conflict with plans that address transit circulation can be. Because of the duration and extent of anticipated traffic delays during construction, and the potential for reduced transit circulation in the transportation RSA, the impact would be potentially significant under CEQA.

- The Authority will implement Mitigation Measure TR-MM#9: Transit Coordination Plan and TR-MM#11: In-Lieu Traffic Improvements to reduce construction impacts to rail and transit. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure TR-MM#9 will require the Authority to prepare a coordination plan with the affected transit providers to ensure revisions needed for routes, stops, and schedules to serve the proposed HSR stations.

Mitigation Measure TR-MM#11 will require the Authority to enter cooperative agreements with HSR station host cities and partner transportation providers to implement transportation improvements.

With implementation of the mitigation measures listed above, Preferred Alternative construction would not permanently interfere with freight rail, passenger rail, or transit services in the Palmdale to Burbank Project Section region.

Implementation of these Mitigation Measures could result in secondary effects. Mitigation Measure TR-MM#9 could result in changes to transit routes, stops, and schedules proposed by the transit coordination plan. Mitigation Measure TR-MM#11 could result in the implementation of off-site transportation improvements, including pedestrian, bicycle, bus transit, and pickup/drop-off facilities. However, these types of impacts are common to most infrastructure construction projects and are typically reduced to a less than significant level through adhering to applicable regulations, obtaining regulatory permits, incorporating best management practices (BMPs), and applying standard mitigation measures. Additionally, such modifications would also require approval from local agencies with jurisdiction over the affected facility.

The Authority finds that implementation of Mitigation Measures TR-MM#9 and TR-MM#11 are required under the Preferred Alternative and that these mitigation measures will reduce construction impacts on transit services to a less –than significant level under CEQA.

4.1.3 Impact TRA#12: Project Construction Effects on Non-Motorized Modes Near the Burbank Airport Station.

Construction of the Burbank Subsection of the Preferred Alternative will require the realignment of San Fernando Boulevard, which will close the current pedestrian access along San Fernando Boulevard, Arvilla Avenue, Lockheed Drive, Cohasset Street, and Hollywood Way. The San Fernando Boulevard realignment will provide sidewalks, curb ramps, and crosswalks along the roadway and at the intersection realignments with Arvilla Avenue, and Hollywood Way. The Burbank Subsection includes two pedestrian overpasses that will provide access from San Fernando Boulevard to the Burbank Airport Station, plus one pedestrian overcrossing that will link the two sides of the Burbank Airport Station, which was previously approved as part of the Burbank to Los Angeles Project Section. While the Burbank Airport Station was previously approved as part of the Burbank to Los Angeles Project Section, the Burbank Subsection is included in this Findings of Fact document to reaffirm the Authority's approval and the conclusions associated with the Burbank Subsection.

The Burbank Airport Station will include bike racks, pedestrian connections to the existing sidewalks, and bike lanes/facilities, where feasible. Existing and planned pedestrian and bicycle facilities serving the vicinity of the approved Burbank Airport Station will adequately meet the Palmdale to Burbank Project Section demand. However, coordination with the City of Burbank during the station planning and roadway design phase will be required to address impacts on pedestrian and bicyclist access and circulation.

- The Authority will implement Mitigation Measure TR-MM#10: Provide Pedestrian and Bicycle Facilities and TR-MM#11: In-Lieu Traffic Improvements to reduce impacts to construction-related effects on non-motorized transportation. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure TR-MM#10 will provide pedestrian and bicycle facilities to compensate for the loss of existing facilities and to restore crossings/connections affected by modifications to the local roadway network. Mitigation Measure TR-MM#11 requires that the Authority will enter cooperative agreements with HSR station host cities and partner with transportation providers to implement transportation improvements, including improvements to pedestrian facilities, bicycle facilities, and on- or off-street vehicle pickup/drop-off areas.

With implementation of the mitigation measures listed above, Preferred Alternative construction would not permanently interfere with non-motorized modes in the Burbank Airport Station area. Implementation of these Mitigation Measures could result in secondary effects. Mitigation Measure TR-MM#10 could identify additional pedestrian and bicyclist circulation deficiencies outside of the construction footprint. Mitigation Measure TR-MM#11 could result in the implementation of off-site transportation improvements, including pedestrian, bicycle, bus transit, and pickup/drop-off facilities during coordination with the City of Burbank during the station planning and roadway design phase. However, these types of impacts are common to most infrastructure construction projects and are typically reduced to a less than significant level through adhering to applicable regulations, obtaining regulatory permits, incorporating BMPs, and applying standard mitigation measures. Additionally, such modifications would also require approval from local agencies with jurisdiction over the affected facility.

The Authority finds that implementation of Mitigation Measures TR-MM#10 and TR-MM#11 are required under the Preferred Alternative and that these mitigation measures will reduce impacts on non-motorized modes near the Burbank Airport Station to a less –than significant level under CEQA.

4.2 Air Quality and Global Climate Change (Section 3.3 of the Final EIR/EIS)

As described in the Palmdale to Burbank Project Section Final EIR/EIS (Section 3.3, Air Quality and Global Climate Change), construction of the Preferred Alternative will result in air quality impacts. Specifically, Impact AQ#2 (Regional Air Quality Impacts during Construction), Impact AQ#3 (Compliance with Air Quality Plans during Construction), and Impact AQ#5 (Localized Construction Effects) will be significant and will remain significant even after implementation of feasible mitigation measures.

4.2.1 Impact AQ#2: Regional Air Quality Impacts During Construction

Construction activities associated with the Preferred Alternative would result in criteria pollutant emissions.

The South Coast Air Quality Management District (SCAQMD) and Antelope Valley Air Quality Management District (AVAQMD) have adopted CEQA thresholds of significance to determine a project's impact on air quality. The Preferred Alternative would not result in CEQA threshold exceedances in the AVAQMD. However, construction emissions would result in exceedances of the following SCAQMD CEQA thresholds:

- NO_x: 2020–2027
- CO: 2020–2024

Daily emissions are not presented in the AVAQMD, because project construction activities that span multiple years in the district are subject to the annual thresholds only. None of the pollutants generated by construction of the Preferred Alternative would exceed the AVAQMD's CEQA thresholds applicable to the Mojave Desert Air Basin (MDAB).

The San Joaquin Valley Air Pollution Control District (SJVAPCD) has established a 100-pound per day screening threshold for criteria pollutant emissions from on-site construction activities. However, as the emissions within the SJVAPCD area are from off-site on-road haul trucks, the project is only subject to the annual thresholds. None of the pollutants generated by construction of the Preferred Alternative would exceed the SJVAPCD's CEQA thresholds applicable to the San Joaquin Valley Air Basin (SJVAB).

Construction of the Preferred Alternative would exceed the CEQA thresholds for NO_x and CO in the South Coast Air Basin (SCAB), while no CEQA thresholds would be exceeded in the AVAQMD/MDAB or SJVAPCD/SJVAB. The Preferred Alternative will incorporate AQ-IAMF#1 through AQ-IAMF#6 into the project design. AQ-IAMF#1 requires the contractor to prepare a fugitive dust control plan for each distinct construction segment during construction. AQ-IAMF#2requires the contractor to use low-VOC paint. AQ-IAMF#3 requires the contractor to use renewable diesel fuel during construction. AQ-IAMF#4 will require all heavy-duty equipment used during the construction phase to meet Tier 4 Final engine requirements and small diesel generators shall be avoided whenever feasible. AQ-IAMF#5 will incorporate material-hauling truck fleet mix requirements into the contract specifications, including that all on-road trucks used for hauling during construction will be model year 2020 or newer. AQ-IAMF#6 will require the contractor to provide the Authority with a technical memorandum documenting consistency with the Authority's concrete batch plant siting criteria and utilization of typical control measures. Even with incorporation of AQ-IAMF#1 through AQ-IAMF#6, construction of the Preferred Alternative would still result in exceedances of SCAQMD's CEQA significance thresholds for NO_x and CO. These exceedances represent a significant air quality impact.

The Authority will implement Mitigation Measure AQ-MM#1: Offset Project Construction Emissions through SCAQMD Emissions Offsets Programs and AQ-MM#3: Construction Emissions Reductions – Requirements for use of Zero Emission (ZE) and/or Near Zero Emission (NZE) Vehicles and off-road equipment to reduce regional air quality impacts during construction. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure AQ-MM#1 requires the purchase of emission offsets through the SCAQMD Emission Offsets programs to the extent feasible. Emission reduction credits would be obtained from SCAQMD to offset emissions exceedances associated with the construction of the Preferred Alternative. Purchase of emission offsets through SCAQMD's RECLAIM Program or Air Quality Investment Program, emission reduction credits, or another mechanism, subject to discussion with and approval by SCAQMD (AQ-MM#1), would offset and/or decrease CO and NO_x emissions.

Mitigation Measure AQ-MM#3 requires the use of ZE or NZE technology for 25 percent of all light-duty on-road vehicles, with a goal to use ZE or NZE technology for 100 percent of the light-duty on-road vehicles, 25 percent of the heavy-duty on-road vehicles, and a minimum of 10 percent for off-road conduction equipment used for construction. Where feasible, ZE technology may include the use of electric-powered construction equipment. The use of electric-powered equipment would reduce emissions of CO, NO_x, SO_2, and diesel particulates.

The Authority finds that implementation of Mitigation Measures AQ-MM#1 and AQ-MM#3 are required under the Preferred Alternative and that these mitigation measures will avoid or substantially lessen the project's significant air quality impacts by reducing the pollutants emitted from construction vehicles and offsetting CO and NO_x emissions to the extent feasible; however,

until the contractual agreement between the Authority and the SCAQMD is in place and the purchase of emission offsets is secured, this represents a significant and unavoidable impact. An agreement between the Authority and the SCAQMD was reached in May 2024 to ensure that emissions reductions are made to the extent feasible (CHSRA and FRA 2024). Implementation of these mitigation measures would not result in secondary or off-site environmental impacts. The Authority finds that there are no other feasible mitigation measures or alternatives that could be adopted to reduce these remaining impacts to less than significant levels. The Authority finds that despite these otherwise significant and unavoidable impacts, specific economic, social, and other considerations identified in the Statement of Overriding Considerations (Chapter 8 of this document) support approval of the project.

4.2.2 Impact AQ#3: Compliance with Air Quality Plans During Construction

Planning documents for criteria pollutants for which the RSA is classified as a federal nonattainment or maintenance area are developed by the SCAQMD, the AVAQMD, and California Air Resources Board (CARB) and are approved by the U.S. Environmental Protection Agency (USEPA). The RSA air districts are guided by California's State Implementation Plans and other planning documents.

The applicable air quality plan for the SCAQMD is the 2016 SCAQMD Air Quality Management Plan, approved by the USEPA in October 2019 (SCAQMD 2017). The applicable air quality plans for the AVAQMD include the 2017 Western Mojave Desert Ozone Attainment Plan and the 2004 Antelope Valley Ozone Attainment Plan (AVAQMD 2017 and AVAQMD 2004). The applicable air quality plans for the SJVAPCD include the 2022 Ozone Plan for the San Joaquin Valley (SJVAPCD 2022), the 2016 Plan for the 2008 8-Hour Ozone Standard (SJVAPCD 2016), the 2004 Extreme Ozone Attainment Demonstration Plan (SJVAPCD 2004), the 2015 $PM_{2.5}$ Plan (SJVAPCD 2015), the 2004 Revision to the California State Implementation Plan for Carbon Monoxide (CARB 2004), and the 2007 PM_{10} Maintenance Plan and Request for Redesignation (SJVAPCD 2007).

Construction emissions of NO_x and CO emissions in the SCAQMD would be greater than applicable CEQA significance thresholds, which would impede or obstruct implementation of the applicable air district Air Quality Management Plans. Therefore, NO_x and CO emissions would have a significant impact under CEQA.

AQ-IAMF#1, AQ-IAMF#2, and AQ-IAMF#4 through AQ-IAMF#6 are included as part of the Preferred Alternative and will be implemented to avoid or minimize effects. These IAMFs will reduce potential adverse effects resulting from factors related to criteria pollutants during construction. These IAMFs will reduce potential adverse effects resulting from factors related to criteria pollutants during construction. AQ-IAMF#1 requires the contractor to prepare a fugitive dust control plan for each distinct construction segment during construction. AQ-IAMF#2 requires the contractor to use low-VOC paint. AQ-IAMF#4 will require all heavy-duty equipment used during the construction phase to meet Tier 4 Final engine requirements and small diesel generators shall be avoided whenever feasible. AQ-IAMF#5 will incorporate material-hauling truck fleet mix requirements into the contract specifications, including that all on-road trucks used for hauling during construction will be model year 2020 or newer. AQ-IAMF#6 will require the contractor to provide the Authority with a technical memorandum documenting consistency with the Authority's concrete batch plant siting criteria and utilization of typical control measures. Even with incorporation of AQ-IAMF#1, AQ-IAMF#2, and AQ-IAMF#4 through AQ-IAMF#6, effects from NO_x and CO would remain.

- The Authority will implement Mitigation Measure AQ-MM#1: Offset Project Construction Emissions through SCAQMD Emissions Offsets Programs, and AQ-MM#3: Construction Emissions Reductions – Requirements for use of ZE and/or NZE Vehicles and Off-road Equipment. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure AQ-MM#1 requires that prior to construction, the Authority enter into agreements with SCAQMD to offset emissions exceedances by funding equivalent emissions

reductions that achieve reductions in the same years as construction emissions occur, thus offsetting project-related air quality impacts in real time. The project will implement measures and best practices to minimize emissions from project construction. After implementation of these measures, emission levels that still exceed thresholds will be offset to the extent necessary to meet CEQA thresholds to the extent feasible.

Mitigation Measure AQ-MM#3 requires the use of ZE or NZE technology for 25 percent of all light-duty on-road vehicles, with a goal to use ZE or NZE technology for 100 percent of the light-duty on-road vehicles, 25 percent of the heavy-duty on-road vehicles, and a minimum of 10 percent for off-road conduction equipment used for construction. Where feasible, ZE technology may include the use of electric-powered construction equipment. The use of electric-powered equipment would reduce emissions of CO, NOx, SO_2, and diesel particulates.

Mitigation Measures AQ-MM#1 and AQ-MM#3 will be effective in minimizing temporary direct and indirect impacts on air quality within the SCAQMD during construction.

The Authority finds that implementation of Mitigation Measures AQ-MM#1 and AQ-MM#3 are required under the Preferred Alternative and that these mitigation measures will reduce impacts on regional air quality in the SCAQMD. However, until the contractual agreement between the Authority and the SCAQMD is in place and the purchase of emission offsets is secured, this represents a significant and unavoidable impact. The Authority finds that there are no other feasible mitigation measures or alternatives that could be adopted to reduce this remaining impact to less –than significant levels. The Authority finds that despite this otherwise significant and unavoidable impact, specific economic, social, and other considerations identified in the Statement of Overriding Considerations (Chapter 8) support certification of the Final EIR/EIS and approval of the project.

4.2.3 Impact AQ#5: Localized Construction Effects

Emissions from construction of the Preferred Alternative would cause localized elevated criteria pollutant concentrations. These elevated concentrations may cause or contribute to exceedances of the NAAQS and California Ambient Air Quality Standards (CAAQS).

The following criteria pollutants were considered in this analysis of potential localized impacts:

- CO
- NO_2
- PM_{10}
- $PM_{2.5}$
- SO_2

Concentrations of NO_2 would exceed the 1-hour average NAAQS in the Case 7 area and would be below the CAAQS at all of the case areas.

Ambient PM_{10} concentrations in the SCAB and the Antelope Valley portion of the MDAB exceed the CAAQS, and ambient $PM_{2.5}$ concentrations in the SCAB exceed both the NAAQS and CAAQS; therefore, the construction emissions of these two pollutants are evaluated without the addition of their respective background concentrations. Instead, the modeled maximum concentrations of these two pollutants are evaluated in accordance with the SCAQMD and AVAQMD applicable ambient air quality thresholds.

The Preferred Alternative would result in incremental increases in PM_{10} and $PM_{2.5}$ concentrations for each of the case areas analyzed. However, PM_{10} concentrations would not exceed the applicable 24-hour threshold at any case areas, while $PM_{2.5}$ concentrations would not exceed the applicable 24-hour or annual thresholds at any case areas. PM_{10} concentrations would exceed the CAAQS annual threshold at the following case areas:

- Case 5
- Case 6
- Case 7

While incorporation of AQ-IAMF#3 through AQ-IAMF#6 will reduce diesel emissions by addressing equipment and vehicle exhaust emissions and requiring the use of renewable diesel, NO_2 and PM_{10} emissions would exceed applicable thresholds in Case 7 (NO_2 for NAAQS) and Cases 5, 6, and 7 (PM_{10} for CAAQS) and would result in a significant impact under CEQA. AQ-IAMF#1 requires the contractor to prepare a fugitive dust control plan for each distinct construction segment during construction. AQ-IAMF#2requires the contractor to use low-VOC paint. AQ-IAMF#3 requires the contractor to use renewable diesel fuel during construction. AQ-IAMF#4 will require all heavy-duty equipment used during the construction phase to meet Tier 4 Final engine requirements and small diesel generators shall be avoided whenever feasible. AQ-IAMF#5 will incorporate material-hauling truck fleet mix requirements into the contract specifications, including that all on-road trucks used for hauling during construction will be model year 2020 or newer. AQ-IAMF#6 will require the contractor to provide the Authority with a technical memorandum documenting consistency with the Authority's concrete batch plant siting criteria and utilization of typical control measures. There are no other feasible DPM control measures that are not already required by IAMFs.

- The Authority will implement Mitigation Measure AQ-MM#3: Construction Emissions Reductions – Requirements for use of ZE and/or NZE Vehicles and off-road equipment to reduce localized construction effects. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure AQ-MM#3 requires the use of ZE or NZE technology for 25 percent of all light-duty on-road vehicles, with a goal to use ZE or NZE technology for 100 percent of the light-duty on-road vehicles, 25 percent of the heavy-duty on-road vehicles, and a minimum of 10 percent for off-road conduction equipment used for construction.

The Authority finds that implementation of Mitigation Measure AQ-MM#3 is required under the Preferred Alternative and that this mitigation measure will reduce impacts related to construction activities near sensitive receptors. However, until the final construction-period emissions calculations can be incorporated, it is determined that the Preferred Alternative would expose sensitive receptors to substantial pollutant concentrations that would exceed the applicable NAAQS and CAAQS within certain construction areas. This represents a significant and unavoidable impact. The Authority finds that there are no other feasible mitigation measures or alternatives that could be adopted to reduce this remaining impact to less –than significant levels. The Authority finds that despite this otherwise significant and unavoidable impact, specific economic, social, and other considerations identified in the Statement of Overriding Considerations (Chapter 8) support certification of the Final EIR/EIS and approval of the project.

4.3 Noise and Vibration (Section 3.4 of the Final EIR/EIS)

As described in the Palmdale to Burbank Project Section Final EIR/EIS (Section 3.4, Noise and Vibration), one construction and three operational noise and vibration significant impacts associated with the Preferred Alternative have been identified (Impact N&V#3: Construction Vibration Impacts on Sensitive Receivers, Impact N&V#7: Noise Impacts on Domestic Animals, Impact N&V#8: Operational Train Vibration Impacts, and Impact N&V#9: Noise and Vibration from High-Speed Rail Stationary Facilities) that will be reduced to less than significant levels with the implementation of mitigation measures. One construction and two operational noise and vibration significant impacts associated with the Preferred Alternative have been identified (Impact N&V#1: Construction Noise Impacts on Sensitive Receivers, Impact N&V#4: Operational Traffic Noise Impacts on Sensitive Receivers, and Impact N&V#6: Operational Train Noise Impacts) that will remain significant and unavoidable after mitigation.

4.3.1 Impact N&V#1: Construction Noise Impacts on Sensitive Receivers

The construction schedule for the Preferred Alternative would entail several construction phases: mobilization, site preparation and roadway construction, earthmoving, cut-and-cover structure construction, demolition, tunneling, retaining wall construction, station construction, grade-

separation construction, aerial track structure construction, at-grade track construction, railway systems construction, and demobilization.

Sensitive receivers exist within the daytime and nighttime screening distances for all phases of construction activity. The FRA noise criteria are 80 dBA for daytime noise levels for the 8-hour L_{eq}, and 70 dBA for nighttime noise levels. Noise levels from construction of the Preferred Alternative would exceed these criteria for both daytime and nighttime activities for some sensitive receptors. Construction would temporarily affect 1,364 sensitive receptors during daytime hours and 1,853 sensitive receptors during nighttime hours.

The construction activities described above would not result in noise impacts within the ANF, including portions of the SGMNM, as the majority of the Preferred Alternative alignment in this area would occur within tunnels. Tunnel construction would not result in noise impacts at the surface because of the depths of the tunnels beneath the surface of the ANF. Some portions of the Preferred Alternative alignment would entail surface construction activities (e.g., portals and construction of adits) within and immediately adjacent to the ANF, including the SGMNM. Construction activities within and adjacent to the ANF, including the SGMNM, would result in perceptible noise effects during construction activities. However, this does not represent an adverse effect because the United States Forest Service (USFS)-managed lands adjacent to California HSR system facilities do not contain designated recreational areas (e.g., trails, and campgrounds) and are not considered sensitive receivers.

NV-IAMF#1 requires the contractor to prepare a noise and vibration technical memorandum documenting how the Federal Transit Administration (FTA) and FRA guidelines for minimizing construction noise impacts will be employed when work is conducted within 1,000 feet of sensitive receivers. Although NV-IAMF#1 would reduce construction noise, the construction-related impacts would be significant under CEQA because residences within the screening distances identified above would be exposed to construction noise that exceeds the recommended FRA construction noise criteria of 80 dBA L_{eq} during daytime hours and 70 dBA L_{eq} during nighttime hours.

- The Authority will implement Mitigation Measure N&V-MM#1: Construction Noise Mitigation Measures to reduce Construction Noise Impacts on Sensitive Receivers. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure N&V-MM#1 requires the contractor to prepare a noise-monitoring program describing how the contractor will monitor construction noise to verify compliance with the noise limits. The noise-monitoring program will describe the actions required of the contractor to meet required noise limits of 80 dBA L_{eq} during daytime hours and 70 dBA L_{eq} during nighttime hours. Implementation of Mitigation Measure N&V-MM#1 would not result in secondary or off-site environmental impacts.

The Authority finds that implementation of Mitigation Measure N&V-MM#1 is required under the Preferred Alternative and that this mitigation measure will reduce noise impacts related to construction activities near sensitive receptors. However, due to the Preferred Alternative's proximity to sensitive receivers, some receivers may still experience noise that would exceed acceptable limits. This represents a significant and unavoidable impact. The Authority finds that there are no other feasible mitigation measures or alternatives that could be adopted to reduce this remaining impact to less –than significant levels. The Authority finds that despite this otherwise significant and unavoidable impact, specific economic, social, and other considerations identified in the Statement of Overriding Considerations (Chapter 8) support certification of the Final EIR/EIS and approval of the project.

4.3.2 Impact N&V#3: Construction Vibration Impacts on Sensitive Receivers

During construction, some activities—most notably drilling for bored-pile viaduct foundations, excavation for trenching and vibro-compaction for ground improvements—may cause ground-borne vibration. Construction equipment associated with these activities can produce vibration levels ranging from 87 VdB to 94 VdB at a distance of 25 feet from construction activities.

Although it is unlikely that such equipment would be used close enough to sensitive structures to cause substantial damage, there could be potential for vibration annoyance or interference with the use of sensitive equipment (such as optical microscopes and magnetic resonance imaging machines).

The following locations could experience vibration impacts from construction-related pile driving:

- Intermediate Window south of I-210
- Montage Street to Spreading Grounds
- Lowered road profile in San Fernando Road/Sheldon Street intersection
- Lowered road profile Tuxford Street
- Retained cut I-5 to Olinda Street

There is also potential for construction vibration impacts in areas where tunnels would be bored underground beneath residences and other vibration-sensitive buildings at depths ranging from 70 to 500 feet. Beneath residences and other vibration-sensitive buildings, tunnel-boring machine operation could cause perceptible vibrations in those buildings. The potential for vibration impacts is highly variable and dependent on the depth of the tunneling and the ground composition. Given the depth at which tunnels would be bored, it is unlikely vibration would be perceptible. Further, any such vibration would be transitory in nature as tunneling progresses and would likely affect any given location for only a few days. In addition, conveyors would be used for transporting excavated material from the tunnel-boring machines, avoiding the use of muck trains (high-powered wheelbarrows) which is typically the major concern regarding vibration impacts from tunneling operations.

Tunnel construction within the ANF would not result in vibration impacts at the surface because of the depths of the tunnels beneath the surface of the ANF. Some portions of the Preferred Alternative alignment would entail surface construction activities (e.g. construction of adits) within and immediately adjacent to the ANF, including the SGMNM. Surface construction activities may cause ground-borne vibration levels that range from 87 VdB to 94 VdB at a distance of 25 feet from construction activities. However, this does not represent an adverse effect because the USFS-managed lands adjacent to California HSR system facilities do not contain designated recreational areas (e.g., trails, and campgrounds) and are not considered sensitive receivers.

NV-IAMF#1 would be incorporated into the Preferred Alternative. NV-IAMF#1 will require the contractor to prepare a noise and vibration technical memorandum documenting how the FTA and FRA guidelines for minimizing construction vibration impacts will be employed when work is being conducted within 1,000 feet of sensitive receivers.

This IAMF will reduce potential adverse effects resulting from construction vibration. However, construction-related activities would generate excessive ground-borne vibration exceeding federal criteria for annoyance and building damage.

- The Authority will implement Mitigation Measure N&V-MM#2: Construction Vibration Mitigation Measures to reduce construction vibration impacts to sensitive receptors. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure N&V-MM#2 will require the contractor to provide the Authority with a vibration technical memorandum documenting how project pile-driving criteria will be met. Implementation of this Mitigation Measure could result in secondary or off-site environmental effects. N&V-MM#2 would reduce construction-related vibration levels or reduce construction-related vibration impacts. In the event of any building damage, the contractor will arrange for the repair of damaged buildings or provide compensation to the property owner. As such, impacts resulting from sensitive receiver annoyance and building damage would be effectively reduced. Preconstruction-construction surveys and repair of damaged buildings will likely be conducted outside of the construction boundary. Although minimal, repair of damaged buildings could result in construction noise, emissions, and ground disturbance beyond what is anticipated for the California HSR System. However, these types of impacts are common to most infrastructure construction projects and are typically reduced to a less than significant level through adhering to

applicable regulations, obtaining regulatory permits, incorporating BMPs, and applying standard mitigation measures.

The Authority finds that implementation of Mitigation Measure N&V-MM#2 is required under the Preferred Alternative and that this mitigation measure will reduce the project's exposure of sensitive receivers and buildings to vibration from project construction to a less than significant level under CEQA.

4.3.3 Impact N&V#4: Operational Traffic Noise Impacts on Sensitive Receivers

Noise due to traffic generated by the Palmdale Station during project operations would increase noise levels at nearby residential receivers. Operational traffic would permanently substantially increase ambient noise levels in the vicinity of Sierra Highway from East Avenue S to Soledad Siphon above levels existing without the project.

- The Authority will implement Mitigation Measure N&V-MM#3: Implement California High-Speed Rail Project Noise Mitigation Guidelines to reduce operational traffic noise impacts. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure N&V-MM#3 requires preparation of an operational noise report to determine where noise barriers or other methods of noise insulation are needed to minimize noise impacts. While implementation of Mitigation Measure N&V-MM#3 could reduce noise, it is unlikely it would fully mitigate impacts. This represents a significant and unavoidable impact for the Preferred Alternative. Implementation of this Mitigation Measure could result in secondary or off-site environmental effects. Mitigation Measure N&V-MM#3 could install noise barriers beyond the construction boundary, leading to secondary or off-site impacts including emissions and fugitive dust from construction equipment, construction-related noise, construction-related road closures or traffic delays, mobilization of extant hazardous materials or wastes, private property acquisitions or displacements, a decrease in visual character, and impacts on biological and cultural resources However, these types of impacts are common to most infrastructure construction projects and are typically reduced to a less than significant level through adhering to applicable regulations, obtaining regulatory permits, incorporating BMPs, and applying standard mitigation measures.

The Authority finds that Mitigation Measure N&V-MM#3 is required under the Preferred Alternative and that this mitigation measure will reduce impacts related to operational traffic noise near sensitive receptors. However, it is unlikely that this mitigation measure would fully reduce impacts. The Authority finds that there are no other feasible mitigation measures or alternatives that could be adopted to reduce this remaining impact to less – than significant levels. The Authority finds that despite this otherwise significant and unavoidable impact, specific economic, social, and other considerations identified in the Statement of Overriding Considerations (Chapter 8) support certification of the Final EIR/EIS and approval of the project.

4.3.4 Impact N&V#6: Operational Train Noise Impacts

Central Subsection

Operation of the Preferred Alternative in the Central Subsection would not exceed noise impact criteria at institutional land uses but would result in severe noise levels at residential receivers. The Preferred Alternative would result in 99 moderate impacts and 19 severe impacts to sensitive receivers.

Within the ANF, including portions of the SGMNM, the Preferred Alternative alignment would be in tunnel; therefore, operations would not produce perceptible noise effects aboveground. Operation of HSR trains adjacent to the ANF, including portions of the SGMNM, could generate noise on USFS lands; however, there are no designated recreational areas, formal campgrounds, or other sensitive receivers located within these areas.

Burbank Subsection

No moderate or severe noise impacts would occur in the Burbank Subsection as a result of the Preferred Alternative as there are few noise-sensitive receptors, and project noise levels would not exceed the threshold for sensitive receivers.

Mitigation Measures

- The Authority will implement Mitigation Measure N&V-MM#3: Implement California High-Speed Rail Project Noise Mitigation Guidelines; N&V-MM#4: Vehicle Noise Specification; N&V-MM#5: Special Track Work at Crossovers and Turnouts; and N&V-MM#6: Additional Noise Analysis Following Final Design to reduce operational noise impacts at sensitive receivers. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure N&V-MM#3 will require preparation of an operational noise report to determine where noise barriers or other methods of noise insulation are needed to minimize noise impacts. Mitigation Measure N&V-MM#4 mandates that the Authority will require bidders to meet the federal regulations (40 C.F.R. Part 201.12/13) at the time of procurement for locomotives (currently a 90 dBA level standard) operating at speeds of greater than 45 mph. Mitigation Measure N&V-MM#5 will require that prior to construction, the contractor will provide the Authority with an HSR operation noise technical report for review and approval. The report will address the minimization/elimination of rail gaps at turnouts. Mitigation Measure N&V-MM#6 will require the contactor to provide the Authority with an HSR operational noise technical report for review and approval prior to construction.

Implementation of Mitigation Measure N&V-MM#3 could result in secondary or off-site environmental effects. N&V-MM#3 could install noise barriers beyond the construction boundary, leading to secondary or off-site impacts including emissions and fugitive dust from construction equipment, construction-related noise, construction-related road closures or traffic delays, mobilization of extant hazardous materials or wastes, private property acquisitions or displacements, a decrease in visual character, and impacts on biological and cultural resources However, these types of impacts are common to most infrastructure construction projects and are typically reduced to a less than significant level through adhering to applicable regulations, obtaining regulatory permits, incorporating BMPs, and applying standard mitigation measures.

The Authority finds that Mitigation Measures N&V-MM#3, N&V-MM#4, N&V-MM#5, and N&V-MM#6 are required under the Preferred Alternative and that these mitigation measures will reduce impacts related to operational train noise. However, it is unlikely that this mitigation measure would fully reduce impacts. The Authority finds that there are no other feasible mitigation measures or alternatives that could be adopted to reduce this remaining impact to less –than significant levels. The Authority finds that despite this otherwise significant and unavoidable impact, specific economic, social, and other considerations identified in the Statement of Overriding Considerations (Chapter 8) support certification of the Final EIR/EIS and approval of the project.

4.3.5 Impact N&V#7: Noise and Vibration Impacts on Domestic Animals.

Based on FRA screening distances the California HSR System trains would cause startle noise impacts on domestic animals within 50 feet of the Preferred Alternative alignment centerline during operation. In particular, there is a reasonable likelihood that horses would be within 50 feet of California HSR System aerial structures along the Pacific Crest Trail and in Vasquez Rocks Natural Area Park. Noise impacts during California HSR System operation would periodically substantially increase ambient noise levels in the project vicinity above levels existing without the project.

The Authority will implement Mitigation Measure N&V-MM#8: Startle Effect Warning Signage to reduce startle effects to domestic animals. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure N&V-MM#8 will reduce startle effects by requiring active and passive warning signs to be posted along the Pacific Crest Trail and in Vasquez Rocks Natural Area Park. These signs will be posted to warn users of an upcoming train crossing and the approximate time for the crossing. Users accompanied by domestic animals will have appropriate warning in order to reduce startle effects on animals. Implementation of Mitigation Measure N&V-MM#8 could result in secondary or off-site environmental effects. Installation of signs could occur outside the Preferred Alternative footprint and could result in construction-related impacts such as noise, dust, and tree and shrub trimming from construction activities. However, these types of impacts are common to most infrastructure construction projects and are typically reduced to a less than significant level through adhering to applicable regulations, obtaining regulatory permits, incorporating BMPs, and applying standard mitigation measures.

The Authority finds that implementation of Mitigation Measure N&V-MM#8 is required under the Preferred Alternative and that this mitigation measure will reduce startle effects on domestic animals to a less –than significant level under CEQA.

4.3.6 Impact N&V#8: Operational Train Vibration and Ground-borne Noise Impacts.

Central Subsection

Operation of the Preferred Alternative in the Central Subsection would exceed vibration and ground-borne impact criteria for institutional uses and residential receivers. Within the ANF, including portions of the SGMNM, the Preferred Alternative alignment would generally continue in tunnel; therefore, operations would not produce perceptible vibration and ground-borne noise impacts aboveground.

Burbank Subsection

There would be no vibration effects for the Preferred Alternative within the Burbank Subsection as there are few noise-sensitive receptors, and project ground-borne noise levels would not exceed the threshold for sensitive receivers.

Mitigation Measures

The Authority would implement the following measure to reduce impacts from vibration and ground-borne noise in the Central Subsection:

- The Authority will implement Mitigation Measure N&V-MM#7: Implement Operation Vibration Mitigation Measures to reduce vibration and ground-borne noise levels. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure N&V-MM#7 will require development of site-specific vibration reduction measures, including stiffening floors in vibration-sensitive buildings, creating buffer zones, and modifying HSR vehicles.

The Authority finds that implementation of Mitigation Measure N&V-MM#7 is required under the Preferred Alternative and that this mitigation measure will reduce vibration and ground-borne noise levels to a less – than significant level under CEQA.

4.3.7 Impact N&V#9: Noise and Vibration from High-Speed Rail Stationary Facilities.

Noise impacts from ventilation equipment associated with the SR14-W2 adit would permanently, substantially increase ambient noise levels in the project vicinity above levels existing without the project. No other stationary sources associated with the Preferred Alternative will permanently or periodically substantially increase ambient noise levels in the project vicinity above levels existing without the project.

- The Authority will implement Mitigation Measure N&V-MM#3: Implement California High-Speed Rail Project Noise Mitigation Guidelines and Mitigation Measure N&V-MM#6: Additional Noise Analysis Following Final Design to reduce noise from adits during operation

of the Preferred Alternative. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measures N&V-MM#3 and N&V-MM#6 will reduce noise from the adit during HSR operation through the creation of noise barriers and by ensuring that noise mitigation is reassessed during final project design. Independent of the other noise mitigation measures, the noise barriers included in N&V-MM#3 would likely reduce exterior noise below applicable thresholds.

Implementation of Mitigation Measure N&V-MM#3 could result in secondary or off-site environmental effects. Mitigation Measure N&V-MM#3 could install noise barriers beyond the construction boundary, leading to secondary or off-site impacts including emissions and fugitive dust from construction equipment, construction-related noise, construction-related road closures or traffic delays, mobilization of extant hazardous materials or wastes, private property acquisitions or displacements, a decrease in visual character, and impacts on biological and cultural resources. However, these types of impacts are common to most infrastructure construction projects and are typically reduced to a less than significant level through adhering to applicable regulations, obtaining regulatory permits, incorporating BMPs, and applying standard mitigation measures.

The Authority finds that implementation of Mitigation Measures N&V-MM#3 and N&V-MM#6 are required under the Preferred Alternative and that these mitigation measures will reduce noise generated from adits to a less – than significant level under CEQA.

4.4 Electromagnetic Interference and Electromagnetic Fields (Section 3.5 of the Final EIR/EIS)

As described in the Palmdale to Burbank Project Section Final EIR/EIS, three significant electromagnetic interference and electromagnetic fields (EMI/EMF) construction and operational impacts associated with the Preferred Alternative have been identified (Impact EMI/EMF#1: Temporary Impacts from Use of Heavy Construction Equipment and Impact EMI/EMF#3: Temporary Impacts from Operation of Electrical Equipment, and Impact EMI/EMF#7: EMI with Sensitive Equipment) that will be reduced to a less than significant level with the implementation of mitigation measures.

4.4.1 Impact EMI/EMF#1: Temporary Impacts from Use of Heavy Construction Equipment

Construction of the Preferred Alternative will require the use of heavy equipment, trucks, and light vehicles which, like all motor vehicles, generate EMF. Construction vehicles must be both very large and operate very closely to the sensitive equipment to cause interference.

Incorporation of EMI/EMF-IAMF#2 into the project design will ensure the preparation of an EMI/EMF technical memorandum demonstrating project compliance with applicable federal and state laws. This measure would also ensure the completion of safety analyses and the grounding of metallic objects that could be potentially affected by the Preferred Alternative's EMI/EMFs.

Even with incorporation of EMI/EMF-IAMF#2, the possibility of construction-related impacts could remain and the impact under CEQA is significant at two receptors in the Central Subsection, Serra Medical Group and Pacifica Hospital, where sensitive medical equipment could exist and construction equipment could result in exceedance of the 2mG numerical threshold.

- The Authority will implement Mitigation Measure EMI/EMF-MM#1: Protect Sensitive Equipment to reduce temporary EMI/EMF effects from construction equipment. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure EMI/EMF-MM#1 will require the Authority to contact entities where sensitive equipment is located and evaluate impacts of HSR-related EMFs, radio frequency (RF), and low-frequency EMI on medical equipment before completion of final design. Where necessary to

avoid interference, the final design would include suitable design provisions, which may include establishing magnetic field shielding walls around sensitive equipment or installing RF filters into sensitive equipment. EMI/EMF-MM#1 will also implement shielded enclosures where necessary to prevent external EMI.

The Authority finds that implementation of Mitigation Measure EMI/EMF-MM#1 is required under the Preferred Alternative and that this mitigation measure will reduce the project's potential for temporary EMI/EMF impacts from the use of heavy construction equipment to a less than significant level under CEQA because the potential for interference with sensitive equipment would be eliminated.

4.4.2 Impact EMI/EMF#3: Temporary Impacts from Operation of Electrical Equipment

The Preferred Alternative would require the use of electrical equipment such as electric welders capable of generating EMF near sensitive receptors. This equipment would expose people to a documented EMF health risk and could interfere with sensitive equipment at Serra Medical Group and Pacifica Hospital. EMI/EMF-IAMF#2 is incorporated into the project design to ensure the preparation of an EMI/EMF technical memorandum demonstrating project compliance with applicable federal and state laws. This measure would also ensure the completion of safety analyses and the grounding of metallic objects that could be potentially affected by the Preferred Alternative's EMI/EMFs. Even with implementing EMI/EMF-IAMF#2, the impact under CEQA could still be significant at the Serra Medical Group and Pacifica Hospital because construction-generated magnetic fields could exceed 2 mG.

- The Authority will implement Mitigation Measure EMI/EMF-MM#1: Protect Sensitive Equipment to reduce temporary EMI/EMF effects from construction equipment. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure EMI/EMF-MM#1 will require the Authority to contact affected third parties and determine how best to protect sensitive equipment through shielding affected equipment or installing RF filters and the Authority would implement the measures to eliminate the interference.

The Authority finds that implementation of Mitigation Measure EMI/EMF-MM#1 is required under the Preferred Alternative and that this mitigation measure will reduce the project's constructed related EMI/EMF impacts from the operation of high-current electrical welding equipment during construction to a less than significant level under CEQA because the potential for interference with sensitive equipment would be eliminated.

4.4.3 Impact EMI/EMF#7: EMI with Sensitive Equipment.

Operation of the Preferred Alternative could generate EMI that may affect equipment sensitive to EMI sources. Pacifica Hospital and Serra Medical Group in Sun Valley, within the Central Subsection, are located within 500 feet of the Preferred Alternative and could be affected.

- The Authority will implement Mitigation Measure EMI/EMF-MM#1: Protect Sensitive Equipment to reduce operation-related EMI/EMF effects. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure EMI/EMF-MM#1 will require the Authority to contact affected third parties regarding the impacts of HSR-related interference on imaging equipment before completion of final design. Where necessary to avoid interference, the final design would include suitable design provisions, which may include establishing magnetic field shielding walls around sensitive equipment or installing RF filters in sensitive equipment.

The Authority finds that implementation of Mitigation Measure EMI/EMF-MM#1 is required under the Preferred Alternative and that this mitigation measure will reduce the project's impacts to sensitive RF equipment to a less than significant level under CEQA because the potential for interference with sensitive equipment would be eliminated.

4.5 Public Utilities and Energy (Section 3.6 of the Final EIR/EIS)

As described in the Palmdale to Burbank Project Section Final EIR/EIS, two significant public utilities and energy construction impacts associated with the Preferred Alternative have been identified (Impact PUE#1: Planned Temporary Interruption of Utility Services, and Impact PUE#3: Effects from Water Demand during Construction) that will be reduced to a less than significant level with the implementation of mitigation measures.

4.5.1 Impact PUE#1: Planned Temporary Interruption of Utility Services

Construction activities related to the Preferred Alternative would require the temporary shutdown of utility lines (i.e., water, sewer, electricity, or gas) to coordinate safe relocation, protection, or extension. Most high-risk and major utility conflicts would be located within the urban centers of Palmdale and Burbank. Whether the Preferred Alternative would cross over or under utility corridors is dependent on the utility depth and the relative depth of the HSR alignment. Most tunneled portions of the Preferred Alternative could cross beneath existing utility lines. The implementation of the Preferred Alternative would result in the interruption of utility services and could affect residential, commercial, industrial, agricultural, and other utility customers.

Several IAMFs would be incorporated as part of the Preferred Alternative to avoid and minimize impacts. Prior to disconnecting the original facility, the project contractor will be required to verify the new facility is operational prior to disconnecting the original facility, where relocating an irrigation facility is necessary and feasible (PUE-IAMF#2). In areas where associated construction activities would face unavoidable utility service interruptions, the public would be notified by the project contractor (PUE-IAMF#3). Prior to construction, the contractor will prepare a technical memorandum documenting how construction activities will be coordinated with service providers to minimize or avoid interruptions (PUE-IAMF#4).

Without close coordination with the Antelope Valley-East Kern Water Agency (AVEK), the reconfiguration of the Acton Water Treatment Plant due to construction of the Preferred Alternative could interrupt water utility services. This would be a significant impact despite incorporation of PUE-IAMF#3.

- The Authority will implement Mitigation Measure PUE-MM#2: Reconfiguration of the Acton Water Treatment Plant to reduce temporary interruptions in utility service. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure PUE-MM#2 will require the Authority to coordinate with AVEK to reconfigure the Acton Water Treatment Plant to ensure that the facility will remain operable during and after construction, mitigating impacts due to interruption of service. Potential reconfiguration of the Acton Water Treatment Plant could result in the replacement and/or relocation of facilities. Such impacts could include emissions and fugitive dust from construction equipment, construction-related noise, construction-related road closures or traffic delays, mobilization of extant hazardous materials or wastes, private property acquisitions or displacements, and impacts to biological and cultural resources. However, these types of impacts are common to most infrastructure construction and are typically reduced to less than significant through adhering to applicable regulations, obtaining regulatory permits, incorporating BMPs, and applying standard mitigation measures.

The Authority finds that implementation of Mitigation Measure PUE-MM#2 is required under the Preferred Alternative and that this mitigation measure will reduce the project's impacts related to utility service interruptions to a less than significant level under CEQA.

4.5.2 Impact PUE#3: Effects from Water Demand during Construction.

Construction of the Preferred Alternative would require water use for the following activities: increasing the water content of soil to optimize tunneling and compaction for dust control; preparing concrete; and reseeding disturbed areas. While sufficient water would likely be available, the State's water supply in general has been subject to substantial fluctuations based on drought conditions that can change year-to-year. Potable water suppliers are unable to plan

for their water supplies to the point where construction water can be guaranteed for the Preferred Alternative, and temporary uses such as construction are in general the first kind of use to be curtailed during a drought or during times of low water availability. Although adequate water supplies have been identified based on the conservative estimates for construction water needs, the Authority cannot currently define the exact water needs for tunneling (the most water intensive use) over the construction period, and the specific supplier or suppliers of water for construction cannot be determined at this time for the reasons explained above.

- The Authority will implement Mitigation Measure PUE-MM#1: Water Supply Analysis for Construction to reduce effects from water demand during construction. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure PUE-MM#1 will require the Authority to prepare an updated water supply analysis for the Preferred Alternative that details and describes the minimum adequate water supply for the study area during normal, dry, and multiple dry years based on a more-detailed project design, and when more-detailed information about available water supply is known with greater certainty, and what will need to be done to facilitate use of available water in the project area. Additionally, Mitigation Measure PUE-MM#1 will require the Authority to use non-potable water from regional water utility service providers for construction activities where feasible, as well as recycling/reusing water used for tunnel construction, further minimizing demand for water supplies, and allowing the Authority to identify the specific other sources of water that will meet water supply needs if needed as part of the construction planning and water procurement process occurring closer to the time of construction, when more detail is known. In addition to sourcing water from existing permitted commercial sources, it should be noted that the updated water supply analysis under Mitigation Measure PUE-MM#1 assessed the potential to obtain recycled water from multiple water reclamation facilities and haul by delivery trucks to construction sites along the Preferred Alternative route. The potential effects of such water hauling activity, including those related to transportation and air quality, were evaluated in the respective resource sections of the Final EIR/EIS.

The Authority finds that implementation of Mitigation Measure PUE-MM#1 is required under the Preferred Alternative and that this mitigation measure will reduce the project's impacts related to water supply to a less than significant level under CEQA.

4.6 Biological and Aquatic Resources (Section 3.7 of the Final EIR/EIS)

As described in the Palmdale to Burbank Project Section Final EIR/EIS, 13 significant biological resources construction impacts (Impact BIO#1 through Impact BIO#13) and two significant biological resources operation impacts (Impact BIO#14 and Impact BIO#19) associated with the Preferred Alternative have been identified that will be reduced to a less than significant level with the implementation of mitigation measures.

4.6.1 Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities

The special-status plant RSA for the Preferred Alternative encompasses habitat for 3 Federal Endangered Species Act (FESA)-listed plant species, 42 non-FESA–listed special-status plant species, and 7 special-status plant communities. Table 3.7-11 of the Final EIR/EIS summarizes the range of surface impacts on habitat for special-status plant species and sensitive natural communities that would result from construction of the Preferred Alternative.

Seven special-status plant communities have potential to occur within the Preferred Alternative special-status plant RSA: California juniper woodland, scalebroom scrub, California sycamore woodlands, Fremont cottonwood forest, Bigcone Douglas fir forest, coast live oak woodland, and black willow thickets. As discussed in Section 3.7.5.2 of the Final EIR/EIS, vegetation communities such as the desert wash (DSW), Valley foothill riparian (VRI), montane hardwood-conifer (MHC), and coastal oak woodland (COW) landcovers provide suitable habitat for these special-status plant communities within the Preferred Alternative special-status plant RSAs. Areas of DSW exist at the Preferred Alternative crossing of the Santa Clara River in Soledad

Canyon. VRI occurs between Big Springs Road and Soledad Canyon and south of Pacoima Dam. MHC communities occur within ANF along Little Tujunga Canyon Road. Scattered areas of COW exist southwest of the Agua Dulce Canyon Road and within the ANF along Little Tujunga Canyon Road.

Multiple IAMFs included as part of the Preferred Alternative will be implemented to minimize temporary construction effects to special-status plants and communities and avoid effects on adjacent habitats and individual plants (if present). The IAMFs applicable to special-status plants and special-status plant communities will also pertain to most other biological and aquatic resources. The Authority will submit to the appropriate wildlife agencies the names and qualifications of project biologists, designated biologists, species-specific biological monitors, and general biological monitors retained to conduct biological resource monitoring activities and implement avoidance and minimization measures (BIO-IAMF#1). The project biologist will prepare a biological resources management plan (BRMP) consolidating permit conditions and an array of other requirements relevant to protection of sensitive biological resources (BIO-IAMF#5), including special-status species habitat. Workers will be provided with worker environmental awareness program (WEAP) training to help them understand their responsibilities in following procedures to reduce impacts and to increase their capability to identify and avoid special-status species and their habitat in the work area (BIO-IAMF#3). Staging areas will be sited away from sensitive resources (BIO-IAMF#8). The Authority will develop a BMP field manual that will address proper waste management and storage, nonstormwater management, and other general site cleanliness measures to avoid spills of hazardous materials, reducing degradation of suitable habitat (BIO-IAMF#11).

Excavated soils or waste materials unsuitable for treatment or reuse will be disposed at an off-site location (BIO-IAMF#9), avoiding degradation of habitat. Construction equipment will be cleaned before entering work areas to minimize opportunities for weeds and invasive species to enter the project footprint (BIO-IAMF#10).

However, even with the incorporation of these IAMFs that minimize the potential for direct impacts on special-status plants and special-status plant communities, and to minimize the loss of habitat, the project will result in loss and degradation of habitat and could result in the loss of special-status plants and special-status plant communities, either associated with tunnel construction or not, which is considered a significant impact under CEQA (Final EIR/EIS: page 3.7-130).

- Implementation of the following measures mitigates this impact: Mitigation Measure BIO-MM#1: Conduct Presence/Absence Pre-construction Surveys for Special-Status Plant Species and Special-Status Plant Communities; Mitigation Measure BIO-MM#2: Prepare and Implement Plan for Salvage and Relocation of Special-Status Plant Species; Mitigation Measure BIO-MM#4: Implement Seasonal Vernal Pool Work Restriction; Mitigation Measure BIO-MM#5: Implement and Monitor Vernal Pool Avoidance and Minimization Measures within Temporary Impact Areas; Mitigation Measure BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan; Mitigation Measure BIO-MM#32: Restore Temporary Riparian Habitat Impacts; Mitigation Measure BIO-MM#33: Restore Aquatic Resources Subject to Temporary Impacts; Mitigation Measure BIO-MM#34: Monitor Construction Activities within Jurisdictional Waters; Mitigation Measure BIO-MM#38: Compensate for Impacts on Listed Plant Species; Mitigation Measure BIO-MM#46: Provide Compensatory Mitigation for Permanent Impacts on Riparian Habitat; Mitigation Measure BIO-MM#50: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites; Mitigation Measure BIO-MM#53: Prepare and Implement a Compensatory Mitigation Plan for Species and Species Habitat; Mitigation Measure BIO-MM#54: Prepare and Implement an Annual Vegetation Control Plan; Mitigation Measure BIO-MM#55: Prepare and Implement a Weed Control Plan; Mitigation Measure BIO-MM#56: Conduct Monitoring of Construction Activities; Mitigation Measure BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones; Mitigation Measure BIO-MM#61: Establish and Implement a Compliance Reporting Program; and Mitigation

Measure BIO-MM#93: Adaptive Management Plan for Groundwater Effects on Species and Habitat.

Because of text length, mitigation measures are presented separately in the MMEP.

The Authority will implement mitigation measures to reduce the impacts on special-status plants. Mitigation Measure BIO-MM#1 will provide verification of the extent and locations of any special-status plant species in the project footprint prior to construction activities (including those potentially existing in suitable habitats where permission to enter was not granted prior to preparation of the Draft EIR/EIS). This mitigation measure will reduce or eliminate the potential for unforeseen impacts on such resources. Mitigation Measure BIO-MM#2 provides a mechanism for further mitigation measures for any impacts on special-status plant species found to occur within the project footprint, including seed collection and the salvage of topsoil to be installed in a suitable and protected off-site location. Mitigation Measure BIO-MM#4 would require the Authority to implement monitoring activities and restriction regulations to avoid and minimize potential impacts to seasonal vernal pools. Furthermore, Mitigation Measure BIO-MM#5 will implement the appropriate minimization measures within work areas to reduce impacts to vernal pools and associated special-status plant species.

The Authority will also offset potential impacts to special-status plants and habitat through compensatory mitigation as described in Mitigation Measures BIO-MM#38, BIO-MM#46, and BIO-MM#53. In conjunction with final design and the permitting process and in compliance with the project's Biological Opinion, the Authority will mitigate such impacts at a minimum 1:1 ratio.

Mitigation Measures BIO-MM#32 and BIO-MM#33 will be implemented to restore and revegetate the riparian habitats and aquatic resources in temporary impact areas and further reduce impacts on populations of associated plants, including special-status plants. Mitigation Measure BIO-MM#34 would require a Project Biologist to monitor Project construction activities adjacent to aquatic resources and ensure that the implementation of applicable avoidance and minimization measures to avoid and/or reduce impacts on aquatic resources occurs.

Mitigation Measure BIO-MM#50 will minimize secondary impacts associated with mitigation efforts through application of applicable IAMFs and mitigation measures as disclosed in the FEIR/EIS.

Mitigation Measure BIO-MM#55 will require the project biologist to develop a weed control plan (WCP) prior to ground-disturbing activity to minimize and avoid the spread of invasive weeds into the project footprint and adjacent areas. Mitigation Measure BIO-MM#6 will involve preparation of a restoration and revegetation plan (RRP) that will identify and describe procedures for restoring temporarily disturbed habitat to its former state.

Under Mitigation Measures BIO-MM#56 and BIO-MM#58, the Project Biologist will be present in the work area through the duration of the construction phase to delineate environmentally sensitive areas and nondisturbance zones prior to the start of ground-disturbing activities, including special-status plant populations, to protect these areas from impacts during construction. Furthermore, Mitigation Measure BIO-MM#61 will require preparation of monitoring reports to ensure compliance with all IAMFs, mitigation measures, and regulatory requirements.

Mitigation Measures BIO-MM#2, BIO-MM#38, BIO-MM#46, BIO-MM#50, and BIO-MM#53 will implement compensatory mitigation and habitat protection for sensitive biological resource impacts within the Preferred Alternative footprint. Compensatory mitigation under these measures may include habitat acquisition, restoration, or enhancement practices that could result in negative or secondary impacts. However, such secondary impacts are common to most infrastructure construction projects and are typically minimal and not significant. These impacts would be effectively reduced with adherence to applicable regulations, compliance with regulatory permits, incorporation of Best Management Practices (BMPs), and application of standard mitigation measures.

Mitigation Measures BIO-MM#5, BIO-MM#6, BIO-MM#32 and BIO-MM#33 will require soil collection and revegetation and restoration of temporary impacts on riparian habitat and

jurisdictional waters. These activities will potentially have secondary impacts on biological or aquatic resources. Mitigation Measure BIO-MM#50 will minimize secondary impacts associated with habitat restoration through application of applicable IAMFs and mitigation measures as disclosed in the Final EIR/EIS.

Changes in groundwater levels during tunnel construction could result in indirect impacts on special-status plants and special-status plant communities. As discussed in Section 3.7.6.3 of the Final EIR/EIS, actions would be implemented during construction to reduce the indirect impacts on special-status plants and plant communities and to minimize the loss of habitat resulting from tunnel construction. However, implementation of the Preferred Alternative could result in loss and degradation of habitat and could result in in the loss of special-status plant occurrences. To address this impact, the Authority would implement an adaptive management and monitoring plan (AMMP). Mitigation Measure BIO-MM#93 will involve implementation of the bioresource portions of the AMMP prepared under Mitigation Measure HYD-MM#4, which will require monitoring of groundwater-dependent surface water resources and associated habitat within the tunnel construction RSA, providing supplemental water where needed, and remediating or compensating for any adverse effects to habitat identified during monitoring. If restoration of affected habitat areas is not successful, compensatory mitigation to offset the loss of habitat would be provided.

The Authority finds that implementation of Mitigation Measures BIO-MM#1, BIO-MM#2, BIO-MM#4, BIO-MM#5, BIO-MM#6, BIO-MM#32, BIO-MM#33, BIO-MM#34, BIO-MM#38, BIO-MM#46, BIO-MM#50, BIO-MM#53, BIO-MM#54, BIO-MM#55, BIO-MM#56, BIO-MM#58, BIO-MM#61, and BIO-MM#93 will substantially lessen the direct and indirect impacts to special-status plant species and plant communities and will reduce the impact to a less than significant level under CEQA.

4.6.2 Impact BIO#2: Project Construction Effects on Special-Status Amphibian Habitat

Four special-status amphibian species have potential to occur within the Preferred Alternative core habitat RSAs: two FESA-listed species (arroyo toad and southern mountain yellow-legged frog) and two non-FESA–listed species (coast range newt and western spadefoot). California red-legged frog protocol surveys were conducted in the Preferred Alternative core habitat RSA. Results of the protocol surveys were negative. Additionally, 14 vegetation communities associated with these species were observed within the Preferred Alternative core habitat RSAs.

Construction of the Preferred Alternative will have temporary and permanent direct and indirect impacts on special-status amphibian species.

Direct impacts on special-status amphibian species would result from construction activities in suitable upland or aquatic habitat that could kill, injure, or harass adults, eggs or egg masses, and larvae. Entrapment in open, excavated areas could also kill, injure, or harass special-status amphibians. Construction would also temporarily destroy, degrade, fill, or pollute aquatic breeding or upland nesting habitats and cause temporary loss of burrows or other upland refugia. Direct effects also include the permanent conversion or fragmentation of occupied aquatic and upland habitat resulting from installation of project infrastructure.

Indirect construction impacts on special-status amphibians include changes in breeding habitat water quality or hydroperiod of streams, changes in the hydrology of streams that provide aquatic habitat, abandonment of upland refugia (e.g., burrows), and temporary shifts in foraging patterns or territories. Soil compaction or fill placement would prohibit burrowing or change the frequency or density of vegetative cover. Project components such as security fencing, electrical infrastructure, and elevated structures would attract predators such as raptors by providing artificial perch sites in the landscape. Trash and food scraps around the construction site would attract opportunistic predators. Inadvertent introduction of invasive (noxious) weeds would further degrade habitat suitability.

Many of the IAMFs incorporated into the project design to avoid and minimize the direct impacts to amphibians are discussed in Impact BIO#1. In addition, BIO-IAMF#6 will restrict the use of erosion-control activities that use material harmful for amphibian species and BIO-IAMF#7 will prevent wildlife entrapment through specific BMPs. Even with the incorporation of IAMFs, the direct and indirect impacts on special-status amphibians and habitats suitable for special-status amphibian species during construction are considered a significant impact under CEQA.

- The Authority will implement mitigation measures to reduce surface construction impacts on special-status amphibian habitat: Mitigation Measure BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan; Mitigation Measure BIO-MM#7: Conduct Pre-construction Surveys for Special-Status Reptile and Amphibian Species; Mitigation Measure BIO-MM#8: Implement Avoidance and Minimization Measures for Special-Status Reptile and Amphibian Species; Mitigation Measure BIO-MM#32: Restore Temporary Riparian Habitat Impacts; Mitigation Measure BIO-MM#33: Restore Aquatic Resources Subject to Temporary Impacts; Mitigation Measure BIO-MM#34: Monitor Construction Activities within Jurisdictional waters; Mitigation Measure BIO-MM#36: Install Aprons or Barriers within Security Fencing; Mitigation Measure BIO-MM#46: Provide Compensatory Mitigation for Permanent Impacts on Riparian Habitat; Mitigation Measure BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan for Impacts on Aquatic Resources; Mitigation Measure BIO-MM#50: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites; Mitigation Measure BIO-MM#53: Prepare and Implement a Compensatory Mitigation Plan for Species and Species Habitat; Mitigation Measure BIO-MM#55: Prepare and Implement a Weed Control Plan; Mitigation Measure BIO-MM#56: Conduct Monitoring of Construction Activities; Mitigation Measure BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones; Mitigation Measure BIO-MM#60: Limit Vehicle Traffic and Construction Site Speeds; Mitigation Measure BIO-MM#61: Establish and Implement a Compliance Reporting Program; Mitigation Measure BIO-MM#62: Prepare Plan for Dewatering and Water Diversions; Mitigation Measure BIO-MM#63: Work Stoppage; Mitigation Measure BIO-MM#76: Implement Wildlife Rescue Measures; and Mitigation Measure BIO-MM#93: Adaptive Management Plan for Groundwater Effects on Species and Habitat.

Many of the mitigation measures described in Impact BIO#1 have the same or similar ability to reduce impacts to special-status amphibians and their habitat. As such, while they are listed here in this discussion of Impact BIO#2, they are not elaborated upon here except for those measures that are unique to Impact BIO#2.

Mitigation Measure BIO-MM#8 will minimize direct impacts on special-status amphibians during construction by requiring preconstruction surveys of modeled habitat and avoidance or relocation and subsequent monitoring of observed individuals. Mitigation Measure BIO-MM#36 will implement the installation of aprons or barriers that will prevent access to the HSR right-of-way thereby reducing injury and mortality to special-status amphibians. As a result, impacts on special-status amphibian species would be reduced.

Mitigation Measure BIO-MM#60 will implement construction site and vehicle traffic limits within the construction footprint to established roads, construction areas, and other areas accessible to vehicles. BIO-MM#62 will establish procedures for minimizing turbidity, siltation, and other water quality-related impacts, provide for the monitoring of dewatering and water diversion sites, and require pre-activity surveys to determine the presence or absence of special-status species within the affected waterbody.

To further avoid impacts to special-status amphibian species, work will stop in the event a special-status amphibian enters the construction footprint in an area where construction is taking place (Mitigation Measure BIO-MM#63). Work will be suspended until the individual leaves voluntarily or is relocated (except in the case of a fully protected species) using U.S. Fish and Wildlife Service (USFWS) and/or California Department of Fish and Wildlife (CDFW) approved techniques or methods. Lastly, if an injured or trapped amphibian occurs on the HSR right-of-way during construction, maintenance, or operation, the Project Biologist will be notified immediately

and will determine whether it is appropriate to relocate and release the individual(s) within adjacent habitat or, if the individual is injured, taken to the nearest CDFW permitted rehabilitation center (Mitigation Measure BIO-MM#76).

Mitigation Measures BIO-MM#2 and BIO-MM#8 will entail relocation for special-status amphibian species. Relocation of special-status amphibians may affect resident individuals in the relocation area through increased predation and competition of resources with relocated individuals. Therefore, wildlife relocation activities associated with these mitigation measures could result in negative or secondary environmental effects. However, such secondary impacts are common to most infrastructure construction projects and are typically minimal and not significant. These impacts would be effectively reduced with adherence to applicable regulations, compliance with regulatory permits, incorporation of BMPs, and Mitigation Measure BIO-MM#50, which requires application of applicable IAMFs and mitigation measures. Mitigation Measure BIO-MM#8 includes retaining a qualified Project Biologist that will monitor all initial ground-disturbing activities that occur within suitable habitat for special-status amphibians and will conduct clearance surveys of suitable habitat in the work area on a daily basis. These activities could result in negative or secondary impacts. However, such secondary impacts are common to most infrastructure construction projects and are typically minimal and not significant.

For indirect effects from tunnel construction, the impact under CEQA would be potentially significant for the Preferred Alternative because the project could have substantial adverse effects, through conversion or degradation of habitat, on special-status amphibian species, including species listed under FESA and California Endangered Species Act (CESA). Within the Preferred Alternative's Risk Areas, no known seeps, springs, intermittent or perennial streams are present. While actions would be implemented during construction to reduce indirect impacts on special-status amphibians to minimize the loss of habitat resulting from tunnel construction, the project could result in loss and degradation of habitat. To address this impact, the Authority would implement an AMMP. Bioresource portions of the AMMP that address these effects would be implemented under Mitigation Measure BIO-MM#93, as described in Impact BIO#1. With implementation of these mitigation measures, the Preferred Alternative would not result in a substantial adverse effect to special-status amphibians and habitat as a result of tunnel construction, and this impact would therefore be less than significant for the Preferred Alternative.

The Authority finds that implementation of Mitigation Measures BIO-MM#6, BIO-MM#7, BIO-MM#8, BIO-MM#32, BIO-MM#33, BIO-MM#34, BIO-MM#36, BIO-MM#46, BIO-MM#47, BIO-MM#50, BIO-MM#53, BIO-MM#55, BIO-MM#56, BIO-MM#58, BIO-MM#60, BIO-MM#61, BIO-MM#62, BIO-MM#63, BIO-MM#76, and BIO-MM#93 are required under the Preferred Alternative and that these mitigation measures will substantially lessen the direct and indirect impacts to special-status amphibian species and will reduce them to a less than significant impact under CEQA.

4.6.3 Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat.

Nineteen special-status bird species have potential to occur within the Preferred Alternative core habitat RSAs: 5 FESA-listed species (California condor, coastal California gnatcatcher, least Bell's vireo, southwestern willow flycatcher, western yellow-billed cuckoo), and 14 non-FESA–listed species (American peregrine falcon, bald eagle, golden eagle, gray vireo, least bittern, loggerhead shrike, northern harrier, Swainson's hawk, tricolored blackbird, western burrowing owl, white-tailed kite, yellow warbler, yellow-breasted chat, yellow-headed blackbird). Of these special-status bird species, there are five fully protected bird species (American peregrine falcon, California condor, bald eagle, golden eagle, white-tailed kite). Additionally, 19 vegetation communities that support special-status bird species are located within the core habitat RSAs of the Preferred Alternative.

As described in Section 3.7.6.3 of the Final EIR/EIS, surface construction associated with the Preferred Alternative would have a substantial adverse effect on habitat for special-status bird species by threatening to eliminate or result in measurable degradation of habitat. Construction

activities (e.g., grubbing, grading, excavation, and driving off-road) would remove or disturb potential nesting habitat for special-status raptors and migratory birds. Direct effects would include bird mortality or injury, permanent conversion of occupied nesting and foraging habitat to project infrastructure, and fragmentation of habitats and landscapes that would interfere with seasonal movement and dispersal of migratory and special-status birds. If construction occurs during the breeding season active nests could also be disturbed, potentially causing the loss of eggs or developing young.

Many of the IAMFs incorporated into the project design to avoid or minimize the direct impacts to special-status natural communities are discussed in Impact BIO#1. Even with the incorporation of IAMFs, the direct and indirect construction impacts on special-status bird species and suitable habitats are considered a significant impact under CEQA.

- The Authority will implement mitigation measures to reduce surface construction impacts on special-status birds and habitat: Mitigation Measure BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan; Mitigation Measure BIO-MM#16: Implement Avoidance Measures for California Condor; Mitigation Measure BIO-MM#14: Conduct Pre-construction Surveys and Delineate Active Nest Exclusion Areas for Breeding Birds; Mitigation Measure BIO-MM#15: Conduct Pre-construction Surveys and Monitoring for Raptors; Mitigation Measure BIO-MM#17: Conduct Surveys for Swainson's Hawk Nests; Mitigation Measure BIO-MM#18: Implement Avoidance and Minimization Measures for Swainson's Hawk Nests; Mitigation Measure BIO-MM#20: Conduct Protocol Surveys for Burrowing Owls; Mitigation Measure BIO-MM#21: Implement Avoidance and Minimization Measures for Burrowing Owl; Mitigation Measure BIO-MM#32: Restore Temporary Riparian Habitat Impacts; Mitigation Measure BIO-MM#43: Provide Compensatory Mitigation for Loss of Swainson's Hawk Nesting Trees and Habitat; Mitigation Measure BIO-MM#44: Provide Compensatory Mitigation for Loss of Active Burrowing Owl Burrows and Habitat; Mitigation Measure BIO-MM#46: Provide Compensatory Mitigation for Permanent Impacts on Riparian Habitat; Mitigation Measure BIO-MM#50: Implement Measures to Minimize Impacts During Off-site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites; Mitigation Measure BIO-MM#53: Prepare and Implement a Compensatory Mitigation Plan for Species and Species Habitat; Mitigation Measure BIO-MM#55: Prepare and Implement a Weed Control Plan; Mitigation Measure BIO-MM#56: Conduct Monitoring of Construction Activities; Mitigation Measure Zones; Mitigation Measure BIO-MM#60: Limit Vehicle Traffic and Construction Site Speeds; BIO-MM#61: Establish and Implement a Compliance Reporting Program; Mitigation Measure BIO-MM#63: Work Stoppage; Mitigation Measure Surveys and Monitoring for Bald and Golden Eagles; Mitigation Measure BIO-MM#66: Implement Avoidance Measures for Active Eagle Nests; Mitigation Measure BIO-MM#67: Provide Compensatory Mitigation for Loss of Eagle Nests; Mitigation Measure BIO-MM#68: Avoid Impacts on White-tailed Kite; Mitigation Measure BIO-MM#69: Conduct Surveys and Implement Avoidance Measures for Active Nests; Mitigation Measure BIO-MM#70: Provide Compensatory Mitigation for Impacts on Tricolored Blackbird Habitat; Mitigation Measure BIO-MM#71: Implement California Condor Avoidance Measures During Helicopter Use; Mitigation Measure BIO-MM#72: Implement Avoidance of Nighttime Light Disturbance for California Condor; Mitigation Measure BIO-MM#74: Implement Bird Nest and Avian Special-Status Species Avoidance Measures for Helicopter-Based Construction Activities; Mitigation Measure BIO-MM#76: Implement Wildlife Rescue Measures; Mitigation Measure BIO-MM#78: Install Wildlife Jump-outs; Mitigation Measure BIO-MM#79: Conduct Surveys for Coastal California Gnatcatcher; Mitigation Measure BIO-MM#80: Conduct Surveys for Least Bell's Vireo; Mitigation Measure BIO-MM#81: Conduct Surveys for Southwestern Willow Flycatcher; and Mitigation Measure BIO-MM#82: Conduct Surveys for Western, Yellow-billed cuckoo.

Many of the mitigation measures described in Impacts BIO#1 and BIO#2 have the same or similar ability to reduce impacts to special-status bird habitat. As such, although they are listed here in this discussion of Impact BIO#3, they are not elaborated upon here except for those measures that are unique to Impact BIO#3.

The Preferred Alternative will implement measures that would minimize construction-related effects on the habitats of the California condor, Swainson's hawk, and Burrowing Owl (Mitigation Measures BIO-MM#16, BIO-MM#17, BIO-MM#18, and BIO-MM#21, respectively). The Preferred Alternative will also implement a buffer around construction activities to reduce impact to the Eagle nests (Mitigation Measure BIO-MM#66).

Implementation of Mitigation Measure BIO-MM#21 require relocation for burrowing owls if found during construction, could result in negative or secondary environmental impacts. However, such secondary impacts are common to most infrastructure construction projects and are typically minimal and not significant. These impacts would be effectively reduced with adherence to applicable regulations and compliance with regulatory permits. Such secondary impacts are common to most infrastructure construction projects and are typically minimal and not significant.

Mitigation Measures BIO-MM#67 and BIO-MM#70 will require compensatory mitigation to mitigate the potential loss of critical habitat for special-status bird species during construction. Additionally, avoidance measures would be implemented during construction to avoid helicopter usage and nighttime lighting for the California Condor (Mitigation Measures BIO-MM#71 and BIO-MM#72).

Implementation of Mitigation Measures BIO-MM#14, BIO-MM#15, BIO-MM#17, BIO-MM#65, BIO-MM#69, BIO-MM#79, BIO-MM#80, BIO-MM#81, and BIO-MM#82 will require qualified Project Biologists to conduct pre-construction, protocol-level and focused surveys for special-status bird within the construction footprint. Mitigation Measures BIO-MM#43, BIO-MM#44, BIO-MM#46, BIO-MM#53, BIO-#MM67, and BIO-#MM70 will implement compensatory mitigation measures for all impacted special-status bird species and their habitats.

Mitigation Measure BIO-MM#55 would require a qualified Project Biologist to prepare and implement a Weed Control Plan for the Preferred Alternative. This weed control plan may include habitat acquisition, restoration, or enhancement practices that could result in negative or secondary impacts. However, such secondary impacts are common to most infrastructure construction projects and are typically minimal and not significant. These impacts would be effectively reduced with adherence to applicable regulations, compliance with regulatory permits, incorporation of BMPs, and application of standard mitigation measures.

As discussed in Impact BIO#1, implementation of Mitigation Measures BIO-MM#6 and BIO-MM#32 would result in secondary environmental effects. Mitigation Measure BIO-MM#50 will minimize secondary impacts through application of applicable IAMFs and mitigation measures.

Similar to Impact BIO#2, changes in groundwater levels during tunnel construction could result in indirect impacts on surface waters and associated aquatic resources, which in turn could affect suitable habitat for special-status birds. Seven special-status birds with suitable habitat in the tunnel construction RSA have been identified as requiring wetland or aquatic habitats (including riparian habitats), and therefore could be adversely affected by changes in groundwater levels.

Qualified, agency-approved Project Biologists will conduct pre-construction, protocol-level and focused surveys for special-status birds where suitable habitat is present within the construction footprint (Mitigation Measures BIO-MM#14, BIO-MM#15, BIO-MM#17, BIO-MM#20, BIO-MM#65, BIO-MM#69, BIO-MM#79, BIO-MM#80, BIO-MM#81, and BIO-MM#82). Conducting surveys will aid in the avoidance and minimization of impacts to special-status bird species by identifying the locations where each species occurs and/or has the potential to occur in order to guide the mitigation measures.

The Authority finds that implementation of Mitigation Measures BIO-MM#6, BIO-MM#14, BIO-MM#15, BIO-MM#16, BIO-MM#17, BIO-MM#18, BIO-MM#20, BIO-MM#21, BIO-MM#32, BIO-MM#43, BIO-MM#44, BIO-MM#46, BIO-MM#50, BIO-MM#53, BIO-MM#55, BIO-MM#56, BIO-MM#58, BIO-MM#60, BIO-MM#61, BIO-MM#63, BIO-MM#65, BIO-MM#66, BIO-MM#67, BIO-MM#68, BIO-MM#69, BIO-MM#70, BIO-MM#71, BIO-MM#72, BIO-MM#74, BIO-MM#76, BIO-MM#78, BIO-MM#79, BIO-MM#80, BIO-MM#81, and BIO-MM#82 are required under the Preferred Alternative and that these mitigation measures will substantially lessen the temporary

and permanent direct and indirect impacts to special-status birds and suitable habitat during the construction period to a less than significant level under CEQA.

4.6.4 Impact BIO#4: Project Construction Effects on Special-Status Fish Habitat

Three special-status fish species have potential to occur within the core habitat RSA of the Preferred Alternative. Additionally, 6 vegetation communities associated with these species occur within the core habitat RSA of the Preferred Alternative.

The Preferred Alternative will have direct and indirect effects on special-status fish habitat during construction. Surface construction associated with the Preferred Alternative will result in direct effects on special-status fish species. These would consist of physical disturbance, temporary interruptions of fish passage, sedimentation, turbidity, altered water temperatures, oxygen depletion, and contaminants. Indirect effects would consist of changes in water quality, which would lead to temporary shifts in foraging and reproductive habitats. Even with the implementation of IAMFs, the direct and indirect impacts on special-status fish species and habitats suitable for special-status fish during construction are considered a significant impact under CEQA.

Many of the IAMFs incorporated into the project design to avoid and minimize the direct impacts to aquatic resources are discussed in Impact BIO#1. Even with the incorporation of IAMFs, the direct and indirect impacts on special-status fish and habitats suitable for special-status fish species during construction are considered a significant impact under CEQA.

- Accordingly, the Authority will implement mitigation measures to reduce surface construction impacts on special-status fish species: Mitigation Measure BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan; Mitigation Measure BIO-MM#32: Restore Temporary Riparian Habitat Impacts; Mitigation Measure BIO-MM#33: Restore Aquatic Resources Subject to Temporary Impacts; Mitigation Measure BIO-MM#34: Monitor Construction Activities within Jurisdictional Waters; Mitigation Measure BIO-MM#46: Provide Compensatory Mitigation for Permanent Impacts on Riparian Habitat; Mitigation Measure BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan for Impacts on Aquatic Resources; Mitigation Measure BIO-MM#50: Implement Measures to Minimize Impacts During Off-site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites; Mitigation Measure BIO-MM#53: Prepare and Implement a Compensatory Mitigation Plan for Species and Species Habitat; Mitigation Measure BIO-MM#55: Prepare and Implement a Weed Control Plan; Mitigation Measure BIO-MM#56: Conduct Monitoring of Construction Activities; Mitigation Measure BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones; Mitigation Measure BIO-MM#61: Establish and Implement a Compliance Reporting Program; Mitigation Measure BIO-MM#62: Prepare Plan for Dewatering and Water Diversions; Mitigation Measure BIO-MM#63: Work Stoppage. ; Mitigation Measure BIO-MM#76: Implement Wildlife Rescue Measures; Mitigation Measure BIO-MM#84: Implement Worker Environmental Awareness Program for Unarmored Three-spine stickleback; Mitigation Measure BIO-MM#85: Establish Construction Zones and Environmentally Sensitive Areas for Unarmored Three-spine Stickleback and its Habitat; Mitigation Measure BIO-MM#86: Santa Clara River Construction and Maintenance Activity Weather-Related and Seasonal Work Restrictions; Mitigation Measure BIO-MM#87: Prepare and Implement Spill Prevention and Containment Measures; Mitigation Measure BIO-MM#88: Implement Construction or Maintenance Activity Debris Prevention Measures; Mitigation Measure BIO-MM#89: Implement Construction Measures for unarmored three-spine stickleback Avoidance; Mitigation Measure BIO-MM#90: Prepare a Construction Groundwater Dewatering Plan; Mitigation Measure BIO-MM#93: Adaptive Management Plan for Groundwater Effects on Species and Habitat; and Mitigation Measure BIO-MM#104: Implement Scour Avoidance Features Around Bridge Piers.

Many of the mitigation measures described in Impacts BIO#1 through BIO#3 have the same or similar ability to reduce impacts to special-status fish and their habitat. As such, although they are

listed here in this discussion of Impact BIO#4, they are not elaborated upon here except for those measures that are unique to Impact BIO#4.

Mitigation Measure BIO-MM#84 will establish a species-specific Worker Environmental Awareness Program (WEAP) that will ensure the availability of site-specific information regarding restrictions on the introduction and handling of concrete and other contaminants debris, and vegetation disposal to the Santa Clara River wetted channel during construction activities, as well as worker training on the repercussions to unarmored three-spine stickleback resulting from contaminants and debris; therefore, death and injury to individuals of this fully protected fish species during construction would be avoided. Additionally, BIO-MM#85 will place restrictions on construction activities to ensure that all construction activities and personnel will occur at a minimum of 10 feet from the Santa Clara River wetted channel, and that no work takes place where unarmored three-spine stickleback may be affected during temporary and permanent bridge construction in proximity to the Santa Clara River.

Mitigation Measures BIO-MM#32 and BIO-MM#33 will restore temporary impacts on riparian habitat, jurisdictional waters, and wildlife movement corridors from construction and could result in secondary environmental effects. No other mitigation measures listed above would result in secondary environmental effects.

Tunnel construction impacts would be potentially significant for Preferred Alternative because the project could have substantial adverse effects, through conversion or degradation of habitat, on special-status fish species. Specifically, despite actions implemented during construction to reduce indirect impacts on special-status fish and to minimize the loss of habitat resulting from tunnel construction, the project could result in loss and degradation of habitat. BIO-MM#93 will require the Authority to implement an AMMP. Specifically, Mitigation Measure BIO-MM#93 will involve implementation of the bioresource portions of the AMMP prepared under Mitigation Measure HYD-MM#4, which will require monitoring of groundwater-dependent surface water resources and associated habitat within the tunnel construction RSA, providing supplemental water where needed, and remediating or compensating for any adverse effects identified during construction and post-construction monitoring. If restoration of affected habitat areas is not successful, Mitigation Measures BIO-MM#46 and BIO-MM#47 will implement compensatory mitigation to offset the loss of habitat.

The Authority finds that implementation of Mitigation Measures BIO-MM#6, BIO-MM#32, BIO-MM#33, BIO-MM#34, BIO-MM#46, BIO-MM#47, BIO-MM#50, BIO-MM#53, BIO-MM#55, BIO-MM#56, BIO-MM#58, BIO-MM#61, BIO-MM#62, BIO-MM#63, BIO-MM#76, BIO-MM#84, BIO-MM#85, BIO-MM#86, BIO-MM#87, BIO-MM#88, BIO-MM#89, BIO-MM#90, BIO-MM#93, and BIO-MM#104 are required under the Preferred Alternative and that these mitigation measures will substantially lessen the direct and indirect impacts to special-status fish and their habitat during the construction period to a less than significant level under CEQA.

4.6.5 Impact BIO#5: Project Construction Effects on Special-Status Invertebrate Habitat.

Five special-status invertebrate species have the potential to occur within the Preferred Alternative core habitat RSAs: the San Gabriel Mountains elfin butterfly, San Emigdio blue butterfly, Crotch bumble bee, Monarch butterfly, and vernal pool fairy shrimp.

Surface construction associated with the Preferred Alternative would result in direct effects to suitable habitat of the special-status invertebrate species. These effects include the permanent conversion of occupied habitat of the Crotch bumble bee to project infrastructure or changes to micro/local hydrology.

Construction activities, such as equipment traveling off-road in suitable aquatic habitats would cause erosion, soil compaction, increased siltation, destruction of native vegetation, and alteration of pool hydrology of suitable aquatic habitat for the vernal pool fairy shrimp. In upland areas surrounding suitable aquatic habitat, indirect effects would result from construction activities such as pile driving, excavation, railbed buildup, placement of permanent and temporary

structures, and vehicle traffic that would change the habitat's hydrology. Indirectly, these construction activities would alter the amount and quality of water available above- and below-ground, change the inflow of water to particular pools, or decrease or increase inundation. These changes in hydrology would affect the reproductive success and survival of these species and their food.

Many of the IAMFs incorporated into the project design to avoid or minimize the direct impacts to special-status invertebrate habitat are discussed in Impact BIO#1. Even with the incorporation of IAMFs, the direct and indirect impacts on special-status invertebrate species and habitat during construction are considered a significant impact under CEQA.

- The Authority will implement mitigation measures to reduce surface construction impacts on special-status invertebrates to less than significant levels: Mitigation Measure BIO-MM#3: Conduct Pre-construction Surveys for Vernal Pool Wildlife Species; Mitigation Measure BIO-MM#4: Implement Seasonal Vernal Pool Work Restriction; Mitigation Measure BIO-MM#5: Implement and Monitor Vernal Pool Avoidance and Minimization Measures within Temporary Impact Areas; Mitigation Measure BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan; Mitigation Measure BIO-MM#39: Provide Compensatory Mitigation for Impacts on Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Habitat; Mitigation Measure BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan for Impacts on Aquatic Resources; Mitigation Measure BIO-MM#50: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites; Mitigation Measure BIO-MM#53: Prepare and Implement a Compensatory Mitigation Plan for Species and Species Habitat; Mitigation Measure BIO-MM#55: Prepare and Implement a Weed Control Plan; Mitigation Measure BIO-MM#56: Conduct Monitoring of Construction Activities; Mitigation Measure BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones; Mitigation Measure BIO-MM#60: Limit Vehicle Traffic and Construction Site Speeds; Mitigation Measure BIO-MM#61: Establish and Implement a Compliance Reporting Program; Mitigation Measure BIO-MM#63: Work Stoppage; Mitigation Measure BIO-MM#94: Avoid Direct Impacts on Monarch Butterfly Host Plant; Mitigation Measure BIO-MM#95: Provide Compensatory Mitigation for Impacts on Monarch Butterfly Habitat; Mitigation Measure BIO-MM#102: Conduct Surveys and Implement Avoidance Measures for Crotch Bumble Bee; and Mitigation Measure BIO-MM#103: Provide Compensatory Mitigation for Impacts on Crotch Bumble Bee habitat.

Many of the mitigation measures described in Impacts BIO#1 through BIO#4 have the same or similar ability to reduce impacts to special-status invertebrate habitat. As such, although they are listed here in this discussion of Impact BIO#5, they are not elaborated upon here except for those measures that are unique to Impact BIO#5.

Mitigation Measures BIO-MM#3 through BIO-MM#5 will minimize potential impacts to suitable habitat of the vernal pool fairy shrimp through preconstruction surveys, establishing seasonal workplace restrictions, and implementing the appropriate minimization measures to temporary impact areas. Mitigation Measure BIO-MM#94 will minimize potential impacts to the Monarch Butterfly through surveying prior to and during the appropriate seasonal periods and implementing the appropriate avoidance measures in the event that the species is present. Mitigation Measures BIO-MM#95, BIO-MM#102, and BIO-MM#103 will minimize potential impacts to suitable habitat of the Crotch Bumble Bee through surveying and compensatory mitigation.

The Authority finds that implementation of Mitigation Measures BIO-MM#3, BIO-MM#4, BIO-MM#5, BIO-MM#6, BIO-MM#39, BIO-MM#47, BIO-MM#50, BIO-MM#53, BIO-MM#55, BIO-MM#56, BIO-MM#58, BIO-MM#60, BIO-MM#61, BIO-MM#63, BIO-MM#94, BIO-MM#95, BIO-MM#102, and BIO-MM#103 are required under the Preferred Alternative and that these mitigation measures will substantially lessen the direct and indirect impacts to special-status invertebrate habitat during the construction period to a less than significant level under CEQA.

4.6.6 Impact BIO#6: Project Construction Effects on Special-Status Mammal Habitat

The Preferred Alternative construction footprint encompasses the habitat utilized by the following 13 special-status mammal species: American badger, fringed myotis, Mohave ground squirrel, mountain lion, pallid bat, ringtail, San Diego black-tailed jackrabbit, San Diego desert woodrat, southern grasshopper mouse, Townsend's big-eared bat, western mastiff bat, western red bat, and western yellow bat.

Construction activities associated with the Preferred Alternative would result in direct effects to special-status bat species and temporary disturbance from noise, dust, and ultrasonic vibrations from construction equipment. Direct effects also include permanent conversion or fragmentation of occupied roosting and foraging habitat to project infrastructure, which would interfere with seasonal movement and dispersal of special-status bat species. Ground-disturbing activities, such as excavation, vegetation removal, construction of the railbed, placement of temporary structures and staging areas, and equipment operation, would also indirectly result in disturbances.

Ground disturbance would lead to temporary impacts to the foraging habitat of American badgers and other ground-dwelling mammals. Direct effects would also include the permanent conversion or fragmentation of occupied habitat to project infrastructure, which would interfere with seasonal movement and dispersal of these species. Indirect effects would include shifts in foraging patterns or territories, increased predation, and decreased reproductive success. Indirect effects would include alteration of soils, such as compaction, which would make it more difficult to construct burrows. The inadvertent introduction of invasive weeds would reduce habitat suitability for these species.

Many of the IAMFs incorporated into the project design to avoid or minimize the direct impacts to special-status mammal habitat are discussed in Impact BIO#1. Even with the incorporation of IAMFs, the direct and indirect impacts on special-status mammal species and habitat during construction are considered a significant impact under CEQA.

- The Authority will implement mitigation measures to reduce direct and indirect surface construction impacts on special-status mammals and their habitat: Mitigation Measure BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan; BIO-MM#25: Conduct Surveys for Bat Species; Mitigation Measure BIO-MM#26: Bat Pre-construction Avoidance, and Removal/Relocation Measures; Mitigation Measure BIO-MM#27: Implement Bat Exclusion and Deterrence Methods; Mitigation Measure BIO-MM#28: Conduct Pre-construction Surveys for Ringtail and Ringtail Den Sites and Implement Avoidance Measures; Mitigation Measure BIO-MM#29: Conduct Pre-construction Surveys for American Badger Den Sites and Implement Minimization Measures; Mitigation Measure BIO-MM#36: Install Aprons or Barriers within Security Fencing; Mitigation Measure BIO-MM#46: Provide Compensatory Mitigation for Permanent Impacts on Riparian Habitat; Mitigation Measure BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan for Impacts on Aquatic Resources; Mitigation Measure BIO-MM#50: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites; Mitigation Measure BIO-MM#53: Prepare and Implement a Compensatory Mitigation Plan for Species and Species Habitat; Mitigation Measure BIO-MM#55: Prepare and Implement a Weed Control Plan; Mitigation Measure BIO-MM#56: Conduct Monitoring of Construction Activities; BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones; Mitigation Measure BIO-MM#60: Limit Vehicle Traffic and Construction Site Speeds; Mitigation Measure BIO-MM#61: Establish and Implement a Compliance Reporting Program; Mitigation Measure BIO-MM#62: Prepare Plan for Dewatering and Water Diversions; Mitigation Measure BIO-MM#63: Work Stoppage; Mitigation Measure BIO-MM#76: Implement Wildlife Rescue Measures; Mitigation Measure BIO-MM#93: Adaptive Management Plan for Groundwater Effects on Species and Habitat; Mitigation Measure BIO-MM#96: Conduct Pre-construction Surveys and Implement Avoidance and Minimization Measures for Mountain Lion Dens; Mitigation Measure BIO-MM#97: Provide Compensatory

Mitigation for Impact on Mountain Lion Habitat; and Mitigation Measure BIO-MM#99: Implement Lighting Minimization Measures During Construction.

Many of the mitigation measures described in Impacts BIO#1 through BIO#5 have the same or similar ability to reduce impacts to special-status mammal habitat. As such, although they are listed here in this discussion of Impact BIO#6, they are not elaborated upon here except for those measures that are unique to Impact BIO#6.

Collectively, the above mitigation measures will provide avoidance, minimization, and compensatory mitigation for surface construction impacts on special-status mammals and their habitat. Mitigation Measures BIO-MM#25 through BIO-MM#27 will minimize direct and indirect impacts to bat species through surveying, implementing preconstruction avoidance and removal/relocation methods, and implementing exclusion and deterrence methods. Mitigation Measure BIO-MM#28 will require preconstruction surveys for ringtail and ringtail den sites within suitable habitat located within the Preferred Alternative work area. Additionally, the Project Biologist will conduct preconstruction surveys for American Badger den sites within suitable habitat located within the Preferred Alternative work area (Mitigation Measure BIO-MM#29).

Mitigation Measure BIO-MM#96 will require consultation with CDFW to develop survey protocols to effectively identify denning mountain lion and establish appropriate protective disturbance buffers. Mitigation Measure BIO-MM#97 will inform mountain lion movement and compensate for impacts to mountain lion habitat. Mitigation Measure BIO-MM#99 will minimize lighting effects to wildlife during construction.

The pre-construction avoidance, and removal/relocation measures implemented as part of Mitigation Measure BIO-MM#26 could result in negative or secondary environmental effects. However, such secondary impacts are common to most infrastructure construction projects and are typically minimal and not significant.

As noted in Impact BIO#1, changes in groundwater levels during tunnel construction could result in indirect impacts on surface waters and associated aquatic resources. These changes could have substantial adverse effects, through conversion or degradation of habitat, on all special-status mammal species. While actions would be implemented during construction to reduce indirect impacts on special-status mammal species and to minimize the loss of habitat resulting from tunnel construction, the project could result in loss and degradation of habitat.

To address this impact, the Authority would implement an AMMP. Bioresource portions of the AMMP that address these effects would be implemented under Mitigation Measure BIO-MM#93, as described in Impact BIO#1.

The Authority finds that implementation of Mitigation Measures BIO-MM#6, BIO-MM#25, BIO-MM#26, BIO-MM#27, BIO-MM#28, BIO-MM#29, BIO-MM#36, BIO-MM#46, BIO-MM#47, BIO-MM#50, BIO-MM#53, BIO-MM#55, BIO-MM#56, BIO-MM#58, BIO-MM#60, BIO-MM#61, BIO-MM#62, BIO-MM#63, BIO-MM#76, BIO-MM#93, BIO-MM#96, BIO-MM#97, and BIO-MM#99 are required under the Preferred Alternative and that these mitigation measures will substantially lessen the direct and indirect impacts to special-status mammals and special-status mammal habitat during the construction period to a less than significant level under CEQA.

4.6.7 Impact BIO#7: Project Construction Effects on Special-Status Reptile Habitat.

There are 12 special-status reptile species that have potential to occur within the Preferred Alternative core habitat RSAs. The desert tortoise is the only FESA-listed special-status reptile species in the core habitat RSA. Non-FESA-listed species include Blainville's horned lizard, California glossy snake, California legless lizard, coast patch-nosed snake, coastal rosy boa, coastal whiptail, San Bernardino ringneck, San Bernardino Mountain kingsnake, south coast garter snake, two-striped garter snake, and western pond turtle. Additionally, 18 vegetation communities associated with these species are present within the Preferred Alternative core habitat RSAs.

Direct effects on special-status reptiles would result from construction activities in suitable habitat. Construction could also temporarily destroy, degrade, or pollute habitat and cause temporary loss of nesting areas, burrows, or other refugia. Direct effects would also include the permanent conversion or fragmentation of occupied aquatic and upland habitat resulting from installation of project infrastructure.

Construction activities such as soil compaction and the placement of fill in suitable habitat could result in impacts by prohibiting burrowing or by changing the frequency and density of vegetative cover. Construction activities would result in temporary shifts in foraging patterns or territories and the use of daily or seasonal refugia. Project components such as security fencing, electrical infrastructure, and elevated structures would attract predators by providing artificial perch sites in the landscape, and construction activities would attract opportunistic predators (e.g., raptors and ravens) that would feed on special-status reptiles. Tunnel-boring activities would result in changes in water quality or changes in the hydrology pattern or hydroperiod of streams that provide aquatic habitat.

Many of the IAMFs incorporated into the project design to avoid or minimize the direct impacts to special-status reptile habitat are discussed in Impact BIO#1. Even with the implementation of IAMFs, the direct and indirect impacts on special-status reptile species and habitat during construction are considered a significant impact under CEQA.

- The Authority will implement mitigation measures to reduce direct and indirect surface construction impacts on special-status reptiles and their habitat: Mitigation Measure BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan; Mitigation Measure BIO-MM#7: Conduct Pre-construction Surveys for Special-Status Reptile and Amphibian Species; Mitigation Measure BIO-MM#8: Implement Avoidance and Minimization Measures for Special-Status Reptile and Amphibian Species; Mitigation Measure BIO-MM#36: Install Aprons or Barriers within Security Fencing; Mitigation Measure BIO-MM#46: Provide Compensatory Mitigation for Permanent Impacts on Riparian Habitat; Mitigation Measure BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan for Impacts on Aquatic Resources; Mitigation Measure BIO-MM#50: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites; Mitigation Measure BIO-MM#52: Conduct California Glossy Snake, California Legless Lizard, Coast Patch-Nosed Snake, Coastal Rosy Boa, Coastal Whiptail, Blainville's Horned Lizard, San Bernardino Ringneck, San Bernardino Mountain Kingsnake, South Coast Garter Snake, Two-Striped Garter Snake, and Western Pond Turtle Monitoring, and Implement Avoidance and Minimization Measures; Mitigation Measure BIO-MM#53: Prepare and Implement a Compensatory Mitigation Plan for Species and Species Habitat; Mitigation Measure BIO-MM#55: Prepare and Implement a Weed Control Plan; Mitigation Measure BIO-MM#56: Conduct Monitoring of Construction Activities; Mitigation Measure BIO-MM#58: Establish Environmentally Sensitive Areas and Non-disturbance Zones; Mitigation Measure BIO-MM#60: Limit Vehicle Traffic and Construction Site Speeds; Mitigation Measure BIO-MM#61: Establish and Implement a Compliance Reporting Program; Mitigation Measure BIO-MM#62: Prepare Plan for Dewatering and Water Diversions; Mitigation Measure BIO-MM#63: Work Stoppage; Mitigation Measure BIO-MM#76: Implement Wildlife Rescue Measures; and Mitigation Measure BIO-MM#93: Adaptive Management Plan for Groundwater Effects on Species and Habitat.

Many of the mitigation measures described in Impacts BIO#1 through BIO#6 have the same or similar ability to reduce impacts to special-status reptiles and their habitat. As such, although they are listed here in this discussion of Impact BIO#7, they are not elaborated upon here except for those measures that are unique to Impact BIO#7.

Mitigation Measure BIO-MM#52 will minimize the potential construction-related impacts on special-status reptile species and habitat by requiring a qualified Project Biologist to conduct a clearance survey in suitable habitat within the work area for California glossy snake, California legless lizard, coast patch-nosed snake, coastal rosy boa, coastal whiptail, Blainville's horned lizard, San Bernardino ringneck, San Bernardino mountain kingsnake, south coast garter snake,

two-striped garter snake, and western pond turtle. Where necessary, the Project Biologist will establish wildlife exclusion fencing to minimize construction-related disturbance to cited special-status reptile species.

As discussed in Impact BIO#1, Mitigation Measure BIO-MM#6 would result in secondary environmental effects. No other mitigation measures listed above would result in secondary environmental effects.

For indirect effects to reptile species and habitat resulting from changes in groundwater levels associated with tunnel construction, the impact under CEQA would be potentially significant for the Preferred Alternative because the project could have substantial adverse effects, through conversion or degradation of habitat, on special-status reptile species. While actions would be implemented during tunnel construction to reduce the potential for changes in groundwater levels to occur, the project could result in desiccation of habitat, which could lead to adverse effects to individuals of the species, including on breeding, feeding, and sheltering. These impacts could reduce the viability of or eliminate local populations and contribute to range-wide or statewide declines of these species. To address this impact, the Authority would implement an AMMP. Bioresource portions of the AMMP that address these effects would be implemented under Mitigation Measure BIO-MM#93, as described in Impact BIO#1.

The Authority finds that implementation of Mitigation Measures BIO-MM#6, BIO-MM#7, BIO-MM#8, BIO-MM#36, BIO-MM#46, BIO-MM#47, BIO-MM#50, BIO-MM#52, BIO-MM#53, BIO-MM#55, BIO-MM#58, BIO-MM#60, BIO-MM#61, BIO-MM#62, BIO-MM#63, BIO-MM#76, and BIO-MM#93 are required under the Preferred Alternative and that these mitigation measures will substantially lessen the temporary direct and indirect impacts to special-status reptiles and habitat to a less than significant level under CEQA.

4.6.8 Impact BIO#8: Project Construction Effects on State and Federal Jurisdictional Aquatic Resources

Under the Preferred Alternative, construction activities that would disturb aquatic features would include the construction of new track, traction power sites, grade separations, drainages, communication towers, station sites, roadway alignments and crossings, security fencing, and other necessary facilities.

Many of the IAMFs incorporated into the project design to avoid or minimize the direct impacts to jurisdictional aquatic resources are discussed in Impact BIO#1. Even with the implementation of IAMFs, the direct and indirect impacts on jurisdictional aquatic resources during construction are considered a significant impact under CEQA.

The direct permanent effects on aquatic resources would occur during construction of bridges and elevated structures (e.g., viaducts) over natural waters such as rivers, washes, and wetlands, as well as over artificial ditches and basins. Additionally, the installation of bridge supports would also result in potential contamination and spills into groundwater resources. Indirect effects of these project components would include shading of aquatic resources by elevated structures (where the elevated structure is near the ground), placement of piles to support the elevated structures and bridges, and permanent removal of vegetation.

Compensation to mitigate effects on aquatic resources, consistent with state and federal “no net loss policies,” would be coordinated with U.S. Army Corps of Engineers and State Water Resources Control Board and could include aquatic resource restoration, establishment, enhancement, or preservation through one or more of the following methods:

- Purchase of credits from an agency-approved mitigation bank
- Fee-title acquisition of natural resource regulatory-agency-approved property
- Permittee-responsible mitigation through the establishment, re-establishment, restoration, enhancement, or preservation of aquatic resources and the establishment of a conservation easement or other permanent site-protection method, along with financial assurance for long-term management of the property-specific conservation values

    - In-lieu fee contribution determined through negotiation and consultation with the natural resource regulatory agencies.

- The Authority will implement mitigation measures to reduce direct and indirect impacts to jurisdictional aquatic resources: Mitigation Measure BIO-MM#4: Implement Seasonal Vernal Pool Work Restriction; Mitigation Measure BIO-MM#5: Implement and Monitor Vernal Pool Avoidance and Minimization Measures within Temporary Impact Areas; Mitigation Measure BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan; Mitigation Measure BIO-MM#32: Restore Temporary Riparian Habitat Impacts; Mitigation Measure BIO-MM#33: Restore Aquatic Resources Subject to Temporary Impacts; Mitigation Measure BIO-MM#34: Monitor Construction Activities within Jurisdictional Waters; Mitigation Measure BIO-MM#39: Provide Compensatory Mitigation for Impacts on Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Habitat; Mitigation Measure BIO-MM#46: Provide Compensatory Mitigation for Permanent Impacts on Riparian Habitat; Mitigation Measure BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan for Impacts on State and Federally Jurisdictional Aquatic Resources; Mitigation Measure BIO-MM#50: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites; Mitigation Measure BIO-MM#55: Prepare and Implement a Weed Control Plan; Mitigation Measure BIO-MM#56: Conduct Monitoring of Construction Activities; Mitigation Measure BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones; Mitigation Measure BIO-MM#62: Prepare Plan for Dewatering and Water Diversions; and Mitigation Measure BIO-MM#93: Adaptive Management Plan for Groundwater Effects on Species and Habitat.

Many of the mitigation measures described in Impacts BIO#1 through BIO#7 have the same or similar ability to reduce impacts to jurisdictional aquatic resources. As such, although they are listed here in this discussion of Impact BIO#8, they are not elaborated upon here except for those measures that are unique to Impact BIO#8.

BIO-MM#39 will require compensatory mitigation for direct and indirect impacts, including both temporary and permanent impacts, on vernal pool branchiopod habitat at a 1:1 ratio. This measure will ensure that construction impacts on these federally jurisdictional aquatic resources will be offset.

As discussed in Impact BIO#1, Mitigation Measures BIO-MM#4, BIO-MM#32, and BIO-MM#33 would result in secondary environmental effects.

To address indirect effects to federal jurisdictional waters from tunnel construction, the Authority would implement an AMMP. Bioresource portions of the AMMP that address these effects would be implemented under Mitigation Measure BIO-MM#93, which will implement the bioresource portions of the AMMP prepared under Mitigation Measure HYD-MM#4, which will require monitoring of groundwater-dependent surface water resources and associated habitat within the tunnel construction RSA, providing supplemental water where needed, and remediating or compensating for any adverse effects identified during monitoring.

The Authority finds that implementation of Mitigation Measures BIO-MM#4, BIO-MM#5, BIO-MM#6, BIO-MM#32, BIO-MM#33, BIO-MM#34, BIO-MM#39, BIO-MM#46, BIO-MM#47, BIO-MM#50, BIO-MM#55, BIO-MM#56, BIO-MM#62, and BIO-MM#93 are required under the Preferred Alternative and that these mitigation measures will substantially lessen the impacts to jurisdictional aquatic resources to a less than significant level under CEQA.

4.6.9 Impact BIO#9: Project Construction Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq.

Aquatic resources regulated under Section 1600 et seq. located within areas of permanent effects would be permanently filled during project construction. Other areas would be restored when construction is complete, but because the construction schedule would be longer than two growing seasons, all direct impacts during construction have been considered permanent. Direct permanent effects on areas covered under Section 1600 et seq. would occur during construction

of bridges and elevated structures (e.g., viaducts) over regulated areas. Thus, construction activities would result in potentially significant impacts because it would divert or obstruct the natural flow of areas subject to Section 1602 notification.

Many of the IAMFs implemented to reduce the direct impacts to aquatic resources regulated under Section 1600 et seq. are discussed in Impact BIO#1. Even with the implementation of IAMFs, the direct and indirect impacts on aquatic resources protected under Section 1600 et seq. during construction are considered a significant impact under CEQA.

- The Authority will implement mitigation measures to reduce direct and indirect impacts on aquatic resources protected under Section 1600 et seq.: Mitigation Measure BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan; Mitigation Measure BIO-MM#32: Restore Temporary Riparian Habitat Impacts; Mitigation Measure BIO-MM#33: Restore Aquatic Resources Subject to Temporary Impacts; Mitigation Measure BIO-MM#34: Monitor Construction Activities within Jurisdictional Waters; Mitigation Measure BIO-MM#46: Provide Compensatory Mitigation for Permanent Impacts on Riparian Habitat; Mitigation Measure BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan for Impacts on Aquatic Resources; Mitigation Measure BIO-MM#50: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, Enhancement, or Creation on Mitigation Sites; Mitigation Measure BIO-MM#53: Prepare and Implement a Compensatory Mitigation Plan for Species and Species Habitat; Mitigation Measure BIO-MM#55: Prepare and Implement a Weed Control Plan; Mitigation Measure BIO-MM#56: Conduct Monitoring of Construction Activities; Mitigation Measure BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones; Mitigation Measure BIO-MM#62: Prepare Plan for Dewatering and Water Diversions; and Mitigation Measure BIO-MM#93: Adaptive Management Plan for Groundwater Effects on Species and Habitat.

Many of the mitigation measures described in Impacts BIO#1 through BIO#8 have the same or similar ability to reduce impacts to aquatic resources regulated under Section 1600 et seq. As such, although they are listed here in this discussion of Impact BIO#9, they are not elaborated upon here except for those measures that are unique to Impact BIO#9.

As discussed in Impact BIO#1, Mitigation Measures BIO-MM#6, BIO-MM#32, and BIO-MM#33 would result in secondary environmental effects.

To address indirect effects to aquatic resources regulated under Section 1600 et seq. from tunnel construction, the Authority would implement an AMMP. Bioresource portions of the AMMP that address these effects would be implemented under Mitigation Measure BIO-MM#93, as described in Impacts BIO#1 through BIO#8.

The Authority finds that the combination of the above-listed Mitigation Measures BIO-MM#6, BIO-MM#32, BIO-MM#33, BIO-MM#34, BIO-MM#46, BIO-MM#47, BIO-MM#50, BIO-MM#53, BIO-MM#55, BIO-MM#56, BIO-MM#58, and BIO-MM#62, BIO-MM#93 are required under the Preferred Alternative and that these mitigation measures will substantially lessen the temporary direct and indirect impacts to aquatic resources regulated under Section 1600 et seq. to a less than significant level under CEQA.

4.6.10 Impact BIO#10: Project Construction Effects on Federally Designated Critical Habitat

Surface construction activities associated with the Preferred Alternative would partially permanently remove USFWS-designated critical habitat and the supporting physical and biological features. As shown in Table 3.7-30, the Preferred Alternative may adversely affect the designated critical habitat of the arroyo toad. The Preferred Alternative alignment would traverse 0.26 mile of designated critical habitat along the Santa Clara River southeast of SR14 in Soledad Canyon.

Many of the IAMFs incorporated into the project design to avoid or minimize the impacts to federally designated critical habitat are discussed in Impact BIO#1. Even with the incorporation of

IAMFs, the direct and indirect impacts to federally designated habitat during construction are considered a significant impact under CEQA.

- The Authority will implement mitigation measures to reduce impacts to federally designated habitat during construction: Mitigation Measure BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan; Mitigation Measure BIO-MM#46: Provide Compensatory Mitigation for Permanent Impacts on Riparian Habitat; Mitigation Measure BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan for Impacts on Aquatic Resources; Mitigation Measure BIO-MM#50: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites; Mitigation Measure BIO-MM#53: Prepare and Implement a Compensatory Mitigation Plan for Species and Species Habitat; and Mitigation Measure BIO-MM#93: Adaptive Management Plan for Groundwater Effects on Species and Habitat.

Many of the mitigation measures described in Impacts BIO#1 through BIO#9 have the same or similar ability to reduce impacts to federally designated critical habitat. As such, although they are listed here in this discussion of Impact BIO#10, they are not elaborated upon here except for those measures that are unique to Impact BIO#10.

As discussed in Impact BIO#1, Mitigation Measure BIO-MM#6 would result in secondary environmental effects.

Mitigation Measure BIO-MM#47 will implement a Compensatory Mitigation Plan (CMP) that identifies mitigation to address temporary and permanent loss, including functions and services, of aquatic resources. The preparation and implementation of a CMP would fully offset t potential direct impacts to federally designated critical habitat of the arroyo toad.

The impact from tunnel construction would be significant for the Preferred Alternative. Although mapped critical habitats only occur in No and Low Risk Areas, habitats may still be present and affected through hydrological disruption and degradation. While actions would be implemented during construction to reduce impacts, the Preferred Alternative could result in the loss and degradation of aquatic resources and associated critical habitat. To address this impact, the Authority would implement an AMMP. Mitigation Measure BIO-MM#93 will involve implementation of the bioresource portions of the AMMP prepared under Mitigation Measure HYD-MM#4, which will require monitoring of groundwater-dependent surface water resources and associated habitat within the tunnel construction RSA, providing supplemental water where needed, and remediating or compensating for any adverse effects identified during monitoring. If restoration of affected habitat areas is not successful, compensatory mitigation to offset the loss of habitat would be provided.

The Authority finds that implementation of Mitigation Measures BIO-MM#6, BIO-MM#46, BIO-MM#47, BIO-MM#50, BIO-MM#53, and BIO-MM#93 are required under the Preferred Alternative and that these mitigation measures will substantially lessen the permanent direct and indirect impacts to federally designated habitat to a less than significant level under CEQA.

4.6.11 Impact BIO#11: Project Construction Effects on Significant Ecological Areas

The Preferred Alternative would traverse the southernmost portion of the San Andreas Significant Ecological Area (SEA) south of the city of Palmdale. Construction of the Preferred Alternative would degrade aquatic resources in this portion of the San Andreas SEA.

Between the SR 14 crossing and Lang Station Mine, the Preferred Alternative would use a series of at-grade, viaduct, and tunnel profiles through the Santa Clara River SEA. An at-grade utility corridor associated with SR14-A1 would also be located along Little Tujunga Canyon Road within the Santa Clara River SEA. Key biological resources in this area include riparian areas and wildlife corridors that provide connectivity across the Santa Clara River between the western and eastern highland areas of the San Gabriel Mountains. Construction of the Preferred Alternative would alter hydrologic patterns, riparian resources, and wildlife corridors within this portion of the Santa Clara River SEA. Therefore, the biotic viability of the Santa Clara River SEA would be

degraded as riparian resources and wildlife corridors would be affected by the alteration of hydrologic patterns, degradation of riparian resources, and addition of barriers/constraints to wildlife movement.

The Preferred Alternative would require construction through the Tujunga Valley/Hansen Dam SEA, crossing the Hansen Dam Spreading Grounds at grade within the Sun Valley neighborhood of Los Angeles. The Hansen Dam Spreading Grounds are a highly disturbed area used for groundwater recharge but have many areas of willow scrub and other native vegetation. This portion of the Tujunga Valley/Hansen Dam SEA is a valuable wildlife corridor and contains several freshwater marsh areas that are used by marsh birds, migratory waterfowl, and shorebirds.

Many of the IAMFs incorporated into the project design to avoid or minimize the direct impacts to SEAs are discussed in Impact BIO#1. Even with the implementation of IAMFs, the direct and indirect impacts to SEAs during construction are considered a significant impact under CEQA.

- The Authority will implement mitigation measures to reduce impacts to SEAs during construction: Mitigation Measure BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan; Mitigation Measure BIO-MM#46: Provide Compensatory Mitigation for Permanent Impacts on Riparian Habitat; Mitigation Measure BIO-MM#47: Prepare and Implement a CMP for Impacts on Aquatic Resources; Mitigation Measure BIO-MM#50: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites; and Mitigation Measure BIO-MM#53: Prepare and Implement a CMP for Species and Species Habitat.

The mitigation measures described in Impacts BIO#1 through BIO#10 have the same or similar ability to reduce impacts to SEAs. As such, although they are listed here in this discussion of Impact BIO#11, they are not elaborated upon here except for those measures that are unique to Impact BIO#11

As discussed in Impact BIO#1, Mitigation Measure BIO-MM#6 would result in secondary environmental effects.

The Authority finds that implementation of Mitigation Measures BIO-MM#6, BIO-MM#46, BIO-MM#47, BIO-MM#50, and BIO-MM#53 are required under the Preferred Alternative and that these mitigation measures will substantially lessen the permanent direct and indirect impacts to SEAs to a less than significant level under CEQA.

4.6.12 Impact BIO#12: Project Construction Effects on Protected Trees

Construction of the Preferred Alternative would result in direct and indirect impacts to trees protected under county and local plans and ordinances.

Direct permanent impacts on protected trees are anticipated in areas where permanent infrastructure (e.g., rail track and road overpasses, proposed stations) or temporary activities (e.g., materials staging, temporary access roads, and construction right-of-way) require clearing. Direct impacts from construction activities could result from unintentional contamination, such as chemical leaks and spills, which would affect water or soils on which protected trees depend and could potentially result in permanent impacts. Soil compaction, placement of fill and other material, shading by equipment, and alterations to microtopography would stress trees, causing poor growth and loss of leaves or roots during the construction period.

Indirect permanent effects on protected trees would result from changes in erosion and sedimentation. Displaced sediment and alterations to microtopography would change the soil and substrate conditions required by protected trees. Permanent changes in hydrology and topography would damage the soil environment surrounding a tree’s roots by affecting the level of necessary symbionts in the soil (i.e., mycorrhizae for oaks), or leading to fungal infections, root rot, lack of proper drainage, and difficulty in obtaining oxygen or other necessary elements. These factors ultimately affect the growth of roots and vegetation and have the potential to lead to the

death of protected trees. Temporary effects on nearby plants would indirectly affect trees if those plant species provide nitrogen, soil aeration, root protection, or moisture retention.

Many of the IAMFs incorporated into the project design to avoid or minimize impacts to protected trees are discussed in Impact BIO#1. Even with the incorporation of IAMFs, the direct and indirect impacts to protected trees during construction are considered a significant impact under CEQA.

- The Authority will implement mitigation measures to reduce impacts to protected trees: Mitigation Measure BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan; Mitigation Measure BIO-MM#35: Implement Transplantation and Compensatory Mitigation Measures for Protected Trees; Mitigation Measure BIO-MM#50: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites; Mitigation Measure BIO-MM#55: Prepare and Implement a Weed Control Plan; Mitigation Measure BIO-MM#56: Conduct Monitoring of Construction Activities; and Mitigation Measure BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones.

Mitigation Measure BIO-MM#35 will compensate for construction-related effects on protected trees including impacts associated with removing or trimming a protected tree. Therefore, impacts on protected trees would be reduced, and the Palmdale to Burbank Project Section will remain consistent with local and regional policies promoting preservation and requiring compensation for impacts on protected trees. Although this measure could result in negative secondary impacts, such secondary impacts are common to most infrastructure construction projects and are typically minimal and not significant.

The Project Biologist will use flagging to mark and preclude access to ESAs that support special-status species or aquatic resources and are subject to seasonal restrictions or other avoidance and minimization measures. The establishment of ESAs would reduce impacts on areas which support special-status species and communities as well as protected trees, and their associated habitat as access to these areas would be restricted during construction activities. As a result, impacts on protected trees would be reduced, and the Palmdale to Burbank Project Section will remain consistent with local and regional policies promoting the preservation of protected trees.

The Authority finds that implementation of Mitigation Measures BIO-MM#6, BIO-MM#35, BIO-MM#50, BIO-MM#55, BIO-MM#56, and BIO-MM#58 are required under the Preferred Alternative and that these mitigation measures will substantially lessen the permanent direct and indirect impacts to protected trees to a less than significant level under CEQA.

4.6.13 Impact BIO#13: Project Effects on Wildlife Movement Corridors

Wildlife movement patterns may be temporarily disrupted during project construction activities (including grading, excavating, hauling, disposal, constructing the rail bed, and laying the trackway). Concentrated heavy vehicle and equipment use, disturbance of vegetation, and related construction activities can interfere with wildlife movement patterns and cause wildlife to avoid areas adjacent to the active construction areas or haul roads.

Direct impacts on wildlife movement from placement of barriers (e.g., temporary construction fencing), construction staging areas, and increased vehicular traffic may result in a decrease in the ability of wildlife to move across construction areas freely. Further, effects on wildlife movement from construction activities may include mortality, injury, or harassment (e.g., vehicular strikes, crushing burrows, and nest abandonment).

Construction of viaduct sections would result in temporary and permanent loss of vegetation. Construction activities at at-grade sections of the Preferred Alternative would involve cut-and-fill slopes that would likely have the greatest construction effects, especially in the steep terrain of the San Gabriel Mountains and foothills where the grading footprint would be the widest. Construction in these areas would consist of clearing and grubbing the vegetation, cutting through naturally elevated topography, and filling in low-lying topography to achieve the designed grade.

A majority of the Preferred Alternative would be permeable (i.e., no impediments to wildlife movement) outside of the urban areas of Palmdale and the San Fernando Valley. These permeable areas occur where the Preferred Alternative would be elevated on a viaduct or underground in a tunnel because wildlife can travel above tunneled segments or under elevated viaducts. Tunnels and viaducts provide essentially unimpeded connectivity for wildlife and would have no impact on wildlife movement and connectivity. However, surface portions of the Preferred Alternative would restrict wildlife movement along the at-grade fenced rail segments of the alignment in areas with few to no existing constraints. These at-grade segments would create a permanent barrier to wildlife movement.

Nonurban portions (i.e., outside of Palmdale and the San Fernando Valley) of the Preferred Alternative represent 27.1 miles of the entire Preferred Alternative alignment. Nonurban portions of the Preferred Alternative would be 83 percent (22.4 miles) permeable as a result of tunnels and viaducts, which would facilitate wildlife movement. At-grade rail segments that occur in nonurban areas would restrict movement across 17 percent (4.6 miles) of the Refined SR14 Build Alternative. However, a combination of transportation corridors (namely the SR 14 freeway) and suburban land uses through the San Gabriel Mountains currently interrupt natural habitat and interfere with wildlife movement patterns. Consistent with design criteria, the Preferred Alternative would implement two dedicated wildlife crossings to support wildlife passage across impermeable trackway

Many of the IAMFs incorporated into the project design to avoid or minimize the direct impacts to wildlife movement corridors are discussed in Impact BIO#1. Even with the incorporation of IAMFs, the direct impacts to wildlife corridors during construction are considered a significant impact under CEQA.

- The Authority will implement mitigation measures to reduce impacts to wildlife corridors: Mitigation Measure BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan; Mitigation Measure BIO-MM#36: Install Aprons or Barriers within Security Fencing; Mitigation Measure BIO-MM#37: Minimize Effects on Wildlife Movement Corridors During Construction; Mitigation Measure BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones; Mitigation Measure BIO-MM#60: Limit Vehicle Traffic and Construction Site Speeds; Mitigation Measure BIO-MM#64: Establish Wildlife Crossings; Mitigation Measure BIO-MM#77: Implement Wildlife Height Requirements for Enhanced Security Fencing; Mitigation Measure BIO-MM#78: Install Wildlife Jump-outs; Mitigation Measure BIO-MM#83: Measures Intended to Reduce, Avoid, and Minimize Effects on Animal Movement; and Mitigation Measure BIO-MM#101: Minimize Permanent, Intermittent Noise Impacts on Special-Status Bird Habitat.

Many of the mitigation measures described in Impacts BIO#1 through BIO#12 have the same or similar ability to reduce impacts to wildlife movement corridors. As such, although they are listed here in this discussion of Impact BIO#13, they are not elaborated upon here except for those measures that are unique to Impact BIO#13.

Mitigation Measure BIO-MM#6 will implement a Restoration and Revegetation Plan that will restore vegetation surrounding wildlife movement corridors to provide appropriate cover for wildlife species. As a result, impacts on wildlife movement corridors would be reduced. As discussed in Impact BIO#1, Mitigation Measure BIO-MM#6 would result in secondary environmental effects.

Mitigation Measure BIO-MM#36 would involve the installation of aprons or barriers within security fencing. Although fencing would impede wildlife movement, it would prevent wildlife injury or death (i.e., vehicle and rail strikes) resulting from encroachment into the HSR operations zone. Fencing and berms would direct animals toward crossing structures where there would be no threat of injury or death from rail and vehicular strikes. Under Mitigation Measure BIO-MM#37, the Authority will avoid placing fencing, either temporarily or permanently, within known wildlife movement corridors in those portions of the alignment where the tracks are elevated (e.g., viaducts or bridges). During ground-disturbing activities, the Authority will keep wildlife crossing structures, land above tunnels, and other potential wildlife movement areas as free as practicable

of equipment, storage materials, construction materials, and other potential impediments. These measures will ensure that movement corridors are more accessible to wildlife species.

Mitigation Measure BIO-MM#64 will require the Authority to create two dedicated wildlife crossings across the alignment to accommodate wildlife movement under permanently fenced infrastructure at specific locations. Under the Preferred Alternative, dedicated wildlife crossings under this measure will be near East Barrel Springs Road (east of Una Lake) and south of the Soledad Siphon (south of the California Aqueduct).

Mitigation Measure BIO-MM#77 will establish security fencing that would direct wildlife species, including special-status wildlife, to movement corridors where wildlife would not become entrapped or harmed within the right-of-way. Therefore, wildlife would be redirected to safer movement corridors where there would be no threat of injury or death from rail and vehicular strikes. Mitigation Measure BIO-MM#78 will require the Project Biologist to review the fencing plans for placement of wildlife jump-outs to allow for large mammal connectivity.

Mitigation Measure BIO-MM#83 will require measures to minimize rail-kill and facilitate animal movement across rail lines.

Under Mitigation Measure BIO-MM#101, the Authority will build sound barriers to minimize or avoid such impacts in locations where wildlife would be exposed to 65 A-weighted decibels of permanent intermittent noise impact outside the fenced right-of-way. Sound barriers will be designed with the goal of minimizing exposure to noise produced by HSR trains by providing a 10 A-weighted decibel attenuation of sound, as measured 50 feet from the noise barrier. Typically, this level of sound attenuation may require a 10- to 17-foot-tall sound barrier. The location, length and height of the barriers will be determined based on detailed noise modeling for areas of high-quality special-status bird habitat, and measurement of existing conditions so that the noise-attenuating effects of topography and other existing features can be accounted for during the final design phase. These measures would have an incidental consequence of benefiting wildlife movement corridors for other non-bird special-status species, like the mountain lion. In particular, if the current noise environment does not worsen at the time of project design, this measure would install sound barriers at the proposed Santa Clara River viaduct crossing for sensitive bird habitat, and incidentally wildlife. Special-status species such as the mountain lion would benefit from the installation of these barriers, because the barriers would also reduce noise exposure for all other sensitive species in the vicinity.

The Authority finds that implementation of Mitigation Measures BIO-MM#6, BIO-MM#36, BIO-MM#37, BIO-MM#58, BIO-MM#60, BIO-MM#64, BIO-MM#77, BIO-MM#78, BIO-MM#83, and BIO-MM#101 are required under the Preferred Alternative and that these mitigation measures will substantially lessen the direct and indirect impacts to wildlife movement corridors to a less than significant level under CEQA.

In addition, although not required to mitigate impacts, the Authority will implement BIO-MM#105, which requires the Authority to convene a wildlife connectivity working group to complete a wildlife connectivity study to identify biologically effective projects that could enhance wildlife movement in the Palmdale to Burbank Section including studying the Bee Canyon Areas, and seek joint funding options for such project(s) to address conflicts between wildlife and transportation infrastructure. The full text of BIO-MM#105 is in the MMEP.

4.6.14 Impact BIO#14: Project Operation Effects on Habitat for Special-Status Species Individuals and Communities

Herbicides and Pesticides

Indirect habitat impacts would occur due to the introduction of invasive plant species. Operations and maintenance would require vegetation and pest control using a variety of methods, including application of herbicides and pesticides. If operations and maintenance require weed abatement activities, such as the use of herbicides, these activities would also contribute to chemical runoff and pollution of adjacent suitable habitats.

Hydrology

Any change in local hydrology would change habitat conditions for riparian-dependent special-status species. Water quality impacts related to erosion and sedimentation would be unlikely during project operation because exposed soils would be protected with BMPs implemented during the construction period.

Trash and chemicals accumulated within the Preferred Alternative footprint could be mobilized by storm events into adjacent surface waters. HYD-IAMF#1 will require on-site stormwater management facilities to capture runoff from pollutant-generating surfaces, including station areas, access roads, new road overpasses and underpasses, reconstructed interchanges, and new or relocated roads and highways. Potentially contaminated runoff from project-related surfaces would be captured and treated within these stormwater management facilities prior to discharge. Because pollutants would be generated in small quantities, and because BMPs would be implemented to minimize the discharge of these pollutants to receiving waters, the potential for introducing new sources of polluted runoff would be minor throughout the lifetime of the project.

Hazardous Materials

Spills of fuel, transmission fluid, lubricating oil, motor oil, and other potentially hazardous materials could contaminate biological and aquatic habitat. State and federal regulations regulate the proper use, transportation, storage, and disposal of hazardous materials. HMW-IAMF#9 will implement an Environmental Management System to annually inventory hazardous substances to evaluate for replacement with nonhazardous materials. HMW-IAMF#10 will implement hazardous materials monitoring plans to ensure safe handling of hazardous materials during operation.

Artificial Light Exposure

Potential wildlife exposure to artificial light at night (ALAN) has the potential to deter wildlife from habitat in proximity to the Preferred Alternative alignment and affect movement corridors largely because a preponderance of wildlife movement occurs at night (Beier 2006; FHWA 2011). Wildlife would generally be affected by ALAN in nonurban areas, where operational light sources include passing trains. Nighttime lighting is not expected to affect wildlife movement in urban or developed settings (such as near Antelope Valley and San Fernando Valley) where train and facility lighting would not significantly increase baseline light levels. Conversely, nighttime lighting impacts from trains are expected to be greatest where the rail is at-grade and where there are low existing levels of ALAN. Intermittent sources of operations lighting would at times be directed toward wildlife habitat; however, operations lighting from train headlights would mostly be directed ahead and within the fenced area along the alignment, where wildlife movement would be precluded. BIO-IAMF#12 would be incorporated to avoid and minimize impacts from operational lighting sources by several methods, including using appropriate shielding to reduce horizontal or skyward illumination and avoiding the use of high-intensity lights (e.g., sodium vapor, quartz, and halogen). Additionally, BIO-IAMF#12 specifies that no lighting be installed under viaduct and bridge structures in riparian habitat areas.

Noise and Vibration

Because of the frequency and speed of trains, noise created by train operations has the potential to affect wildlife movement and use of habitat. Maintenance activities are expected to be dispersed over time and location and are not expected to be of an intensity or duration to result in substantial impacts on wildlife movement or habitat use. Impacts of operational noise are considered permanent and direct, although intermittent. Noise generated by train operation falls into three distinct sound categories: propulsion or machinery noise, mechanical noise resulting from wheel-rail interactions or guideway vibrations, and aerodynamic noise resulting from airflow moving past the train. Further, noise generated from operations could have a substantial adverse impact on special-status wildlife species by threatening to eliminate or result in measurable degradation of habitat.

IAMFs and Mitigation Measures

Many of the IAMFs incorporated to avoid or minimize the operations impacts to special-status species and communities are discussed in Impact BIO#1. In addition, HYD-IAMF#1, HMW-IAMF#9, HMW-IAMF#10, and BIO-IAMF#12 have been incorporated into the project design to avoid or minimize impacts on special-status species and associated habitat during operation. Even with the incorporation of IAMFs, the direct impacts on habitat for special-status species individuals and communities are considered a significant impact under CEQA.

- The Authority will implement mitigation measures to reduce impacts on habitat for special-status species individuals and communities: Mitigation Measure BIO-MM#36: Install Aprons or Barriers within Security Fencing; Mitigation Measure BIO-MM#53: Prepare and Implement a CMP for Species and Species Habitat; Mitigation Measure BIO-MM#54: Prepare and Implement an Annual Vegetation Control Plan; Mitigation Measure BIO-MM#55: Prepare and Implement a Weed Control Plan; Mitigation Measure BIO-MM#73: Implement Removal of Carrion that may Attract Condors and Eagles; Mitigation Measure BIO-MM#76: Implement Wildlife Rescue Measures; Mitigation Measure BIO-MM#84: Implement Worker Environmental Awareness Program for Unarmored Three-spine Stickleback; Mitigation Measure BIO-MM#86: Santa Clara River Construction and Maintenance Activity Weather-Related and Seasonal Work Restrictions; Mitigation Measure BIO-MM#88: Implement Construction or Maintenance Activity Debris Prevention Measures; Mitigation Measure BIO-MM#92: Implement Avoidance Measures During Operations and Maintenance for the Santa Clara River; Mitigation Measure BIO-MM#98: Minimize Permanent Intermittent Impacts on Aerial Species Wildlife Movement; Mitigation Measure BIO-MM#100: Implement Lighting Minimization Measures for Operations; and Mitigation Measure BIO-MM#101: Minimize Permanent, Intermittent Noise Impacts on Special-Status Bird Habitat.

Many of the mitigation measures described in Impacts BIO#1 through BIO#13 have the same or similar ability to reduce impacts to special-status species individuals and communities. As such, although they are listed here in this discussion of Impact BIO#14, they are not elaborated upon here except for those measures that are unique to Impact BIO#14.

The installation of aprons or barriers will enhance permanent security fencing (Mitigation Measure BIO-MM#36), which in turn would reduce the potential for project operation to displace species as a result of noise, vibration, wind, and visual stimuli. This mitigation measure will prevent injury or mortality resulting from wildlife special-status species entering the HSR right-of-way. Therefore, operational impacts on special-status species individuals will be reduced.

Mitigation Measure BIO-MM#54 will minimize risks associated with invasive weeds within the permanent Preferred Alternative footprint. By managing invasive weeds, this measure will reduce the potential for changes in the local landscape from introduction of invasive plant species, which will indirectly affect special-status species and their habitat. This will ensure adverse effects on special-status species individuals and habitat from fire risk and invasive weeds are minimized, and, as a result, operational impacts on special-status individuals and habitat will be reduced.

Under Mitigation Measure BIO-MM#73, the Authority will use automated security monitoring and track inspections used to detect fence failures and any presence of a carcass (carrion) within the right-of-way that could be an attractant to condors and eagles. Dead and injured wildlife found in the right-of-way will be removed when the trains are not in operation. This will minimize injury and any disturbance that would otherwise occur to condors and eagles should they enter the right-of-way due to the presence of carrion. Therefore, death and injury to fully protected condors and eagles during operations will be avoided.

Mitigation Measure BIO-MM#88 will prevent the inadvertent discharge of equipment, chemicals, or debris into the Santa Clara River during maintenance activities, and as a result, operational impacts to special-status species and individuals in the Santa Clara River will be reduced. BIO-MM#92 will ensure any dewatering during maintenance activities will not involve direct removal of surface water from, or discharge to, the Santa Clara River wetted channel, nor create a risk of fish stranding, which would otherwise adversely impact special-status fish individuals in the Santa

Clara River. Lastly, to address permanent and intermittent impacts from lighting, Mitigation Measure BIO-MM#100 will implement measures to minimize the intensity and duration of operational lighting of permanent facilities (e.g., traction power facilities, radio sites, and maintenance facilities), as well as intermittent train lighting. Specifically, measures will be implemented to minimize lighting from outdoor lighting, nighttime lighting, and train headlights.

The Authority finds that implementation of Mitigation Measures BIO-MM#36, BIO-MM#53, BIO-MM#54, BIO-MM#55, BIO-MM#73, BIO-MM#76, BIO-MM#84, BIO-MM#86, BIO-MM#88, BIO-MM#92, BIO-MM#98, BIO-MM#100, and BIO-MM#101 are required under the Preferred Alternative and that these mitigation measures will substantially lessen the direct and indirect impacts to habitats for special-status species individuals and communities and their habitats to a less than significant level under CEQA.

4.6.15 Impact BIO#19: Project Operation Effects on Protected Trees

Effects from operation under the Preferred Alternative would include frequent noise, light, vibration, and induced wind from moving trains that would occur on a daily basis. Effects associated with the proposed station would include high levels of vehicle and foot traffic. Continual wind disturbance generated by moving trains has the potential to create direct effects on any trees up to 10 feet from the tracks. Project operations would create permanent changes in hydrology and topography, indirectly affecting protected trees and potentially affecting the soil environment surrounding tree roots. Additionally, the egress and ingress of maintenance machinery and personnel and passage of trains would also spread or inadvertently introduce pathogens, such as sudden oak death, which would be harmful or devastating to protected trees.

BIO-IAMF#4 will require WEAP training for personnel prior to operation and maintenance activities. However, operations of the Preferred Alternative would result in significant direct and indirect impacts on protected trees and conflict with local policies or ordinances protecting biological resources. With implementation of Mitigation Measure BIO-MM#35, Implement Transplantation and Compensatory Mitigation Measures for Protected Trees, the project will minimize and compensate for operational impacts on protected trees and would ensure that project operation is consistent with local and regional policies requiring the compensation of impacts and promoting the preservation of protected trees.

The Authority finds that implementation of Mitigation Measure BIO-MM#35 is required under the Preferred Alternative and that this mitigation measure will substantially lessen the impacts to protected trees during operation to a less than significant level under CEQA.

4.7 Hydrology and Water Resources (Section 3.8 of the Final EIR/EIS)

As described in the Palmdale to Burbank Project Section Final EIR/EIS (Section 3.8, Hydrology and Water Resources), the Preferred Alternative would cause four significant hydrology and water resources construction impacts (Impact HWR#2: Construction Activities Required for the Build Alternatives, Impact HWR#3: Changes in Flood Risks Associated with Temporary Construction Activities and Permanent Structures Required for the Build Alternatives, Impact HWR#4: Changes in Groundwater Recharge Associated with Temporary Construction Activities and Permanent Structures Required for the Build Alternatives, and Impact HWR#5: Changes in Hydrogeologic Conditions Associated with Tunnel Construction Beneath the ANF which May Affect Surface and Subsurface Water Resources) that would be reduced to a less than significant level with the implementation of mitigation measures.

4.7.1 Impact HWR#2: Construction Activities Required for the Build Alternatives

Construction activities associated with the Preferred Alternative could result in the contamination or pollution of groundwater or surface waters within or adjacent to the construction area. Construction-related chemicals could be handled and applied within or immediately adjacent to surface waters. An uncontrolled chemical release (through spill, over-application, etc.) would directly affect surface water quality by introducing hazardous materials into the water column.

Additionally, construction equipment or washing stations could introduce fuel, lubricant, oil, or other contaminants that would also directly affect nearby surface water quality. If unmanaged, stormwater could disperse these construction-related pollutants, along with trash and debris, from the worksite and into adjacent surface waters. A Stormwater Pollution Prevention Plan will be prepared that will outline erosion control and spill prevention BMPs to be implemented during construction and would provide procedures and responsibilities for addressing accidental releases (HYD-IAMF#3). Further, HMW-IAMF#5 through HMW-IAMF#9 would avoid or minimize the risks associated with use, transportation, storage, and disposal of hazardous materials.

Construction activities associated with the Preferred Alternative could also result in soil erosion at undisturbed sites. Construction of trackway, bridges, and aboveground ancillary features would result in ground disturbance throughout the construction period. Soils exposed through ground-disturbing activities like grubbing, vegetation removal, and grading could temporarily affect surface water quality during the construction period. Dewatering activities during construction could degrade groundwater through the introduction of sediment or the potential release of contaminated groundwater, particularly where groundwater is shallow. Further tunneling activities have a high probability of encountering fractures containing groundwater that may be of varying water quality. However, the risk of encountering water that is contaminated by natural or anthropogenic chemical and mineral substances that could result in release of toxic or contaminated water to the surface and to surface waters is not known.

Even with the incorporation of IAMFs, construction impacts could affect surface water and groundwater quality and are considered a significant impact under CEQA.

The Authority will implement Mitigation Measure HWR-MM#1: Minimize Construction-period Water Quality Impacts Associated with Tunnel Construction to reduce construction impacts to surface and groundwater quality. Because of text length, mitigation measures are presented separately in the MMEP.

Implementation of Mitigation Measure HWR-MM#1 will require the Authority to treat potential groundwater contamination pursuant to State Water Resources Control Board (SWRCB) permit requirements. Through treatment of groundwater and installation of groundwater barriers (where necessary), application of this mitigation measure would prevent degradation of groundwater quality. Treatment methods for groundwater would include constructed wetland systems, biofiltration and bioretention systems, wet ponds, organic mulch layers, planting soil beds, and vegetated systems (biofilters), such as vegetated swales and grass filter strips.

The Authority finds that implementation of Mitigation Measure HWR-MM#1 is required under the Preferred Alternative and that this mitigation measure will reduce the project's surface and groundwater quality impacts during construction to a less than significant level under CEQA.

4.7.2 Impact HWR#3: Changes in Flood Risks Associated with Temporary Construction Activities and Permanent Structures Required for the Build Alternatives.

Construction activities associated with the Preferred Alternative would create permanent footprints within Special Flood Hazard Area; these footprints would be associated with HSR tracks, roadway and railroad relocations, drainage basins, tunnel portals, bridge pillars and abutments, and power facilities. Construction within SFHAs could also remove stabilizing vegetation and disturb or compact soils, which would directly affect flood patterns. Temporary impacts would include risks to construction facilities, workers, and communities located in flood-prone areas. Construction equipment in a floodplain could temporarily impede or redirect flood flows. Additionally, construction activities would increase the risk of release of sediment or construction pollutants during a storm event by increasing potential for erosion and through the presence of construction materials and equipment in the floodplain. In many instances, floodplain crossings by proposed utilities, such as power and water lines, would be co-located with existing utility corridors, roadways, and on existing utility poles, resulting in no new floodplain disturbance in those areas.

Incorporation of HYD-IAMF#1 into the project design will involve implementing BMPs that would minimize floodplain impacts. HYD-IAMF#1 will implement stormwater management facilities to convey and detain runoff from new impervious surfaces, thus reducing the Preferred Alternative's contribution of runoff during flood events. Under HYD-IAMF#2, the Authority will implement a flood protection plan that will minimize increases in flood elevations when compared to existing surface elevation levels. As established by HYD-IAMF#2, infrastructure will be designed and constructed to avoid areas within floodplains wherever feasible. However, construction within SFHAs could still impede or redirect flood flows, thereby substantially increasing the rate or amount of surface runoff in a manner that would result in flooding on- or off-site, such outcomes would result in a significant impact under CEQA.

The Authority will implement Mitigation Measure HWR-MM#2: Minimize Impacts Associated with Construction in Floodplains Due to Permanent Structures Located within the SFHAs During Construction to reduce construction impacts potentially resulting in flooding. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure HWR-MM#2 will require the Authority to avoid placing permanent facilities within floodplains and minimize encroachment during construction into surface water resources to the extent feasible. If such encroachments during construction are necessary, Mitigation Measure HWR-MM#2 will require restoration of temporarily affected floodplains after construction, by regrading to mimic contours and revegetating where necessary. Where placement of facilities in floodplains cannot be avoided, Mitigation Measure HWR-MM#2 will require the use of fill to raise infrastructure above the base flood elevation.

HWR-MM#3 will require the Authority to provide replacement groundwater recharge areas in the vicinity of existing recharge ponds within the Hansen Spreading Grounds and to compensate for loss of recharge and capacity. With implementation of HWR-MM#3, floodways within the floodplain elevations would not increase. HWR-MM#3 will include measures to ensure that the capacity of the Hansen Dam Spreading Grounds will continue to provide capacity for runoff water consistent with pre-project levels. The Preferred Alternative would not 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 surface, in a manner which would impede or redirect flood flows or exceed the capacity of existing or planned drainage systems. Neither mitigation measure would result in a secondary environmental impact.

The Authority finds that implementation of Mitigation Measure HWR-MM#2 and HWR-MM#3 are required under the Preferred Alternative and that these mitigation measure will reduce the project's temporary impacts associated with flooding during construction to a less than significant level under CEQA.

4.7.3 Impact HWR#4: Changes in Groundwater Recharge Associated with Temporary Construction Activities and Permanent Structures Required for the Build Alternatives.

Where the Preferred Alternative would cross the Hansen Spreading Grounds, new impervious surfaces within the spreading ground would potentially interfere substantially with groundwater recharge within the San Fernando Groundwater Basin. Impacts on groundwater recharge would lead to the reduction of groundwater resources over time.

Tunnel construction outside the ANF could result in the inflow of groundwater into tunnels where the tunnel depth may encounter the groundwater table or perched groundwater. This could lower groundwater levels locally in proximity to the tunnel alignment of the Preferred Alternative, which could adversely affect groundwater and wells if present nearby. HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 require design features and construction methods that will address potential groundwater seepage, including the installation of tunnel linings. Because of the low water pressures expected to be encountered, these measures would be sufficient to effectively avoid and minimize inflows into the tunnels. As such, groundwater inflow during construction, if any, would be minimal and temporary, and would not cause a substantial decrease in groundwater

supplies or interfere substantially with groundwater recharge such that the Preferred Alternative may impede sustainable groundwater management.

Based on available information, it is unknown whether tunnel construction would directly impact private water supply wells, or the extent of any such impacts. However, there is the potential that tunnel construction could affect the quality and quantity of water and/or result in the destruction of private water supply wells if any wells are located directly in the path of the tunnels. Pursuant to HYD-IAMF#8 such impacts would be addressed, including replacement wells and other potential options to effectively minimize and avoid impacts if they occur. Even with the incorporation of IAMFs, construction impacts could affect groundwater recharge and are considered a significant impact under CEQA.

The Authority will implement Mitigation Measure HWR-MM#3: Compensation for Impacts on Hansen Spreading Grounds to reduce groundwater recharge impacts. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure HWR-MM#3 will require the Authority to provide replacement groundwater recharge areas in the vicinity of existing recharge ponds within the Hansen Spreading Grounds and to provide for no net loss in recharge area or capacity. With implementation of Mitigation Measure HWR-MM#3, groundwater recharge capacity would not decrease as a result of the Preferred Alternative. Mitigation Measure HWR-MM#3 will not result in secondary environmental impacts.

The Authority finds that implementation of Mitigation Measure HWR-MM#3 is required under the Preferred Alternative and that this mitigation measure will reduce the project's temporary impacts on groundwater recharge during construction to a less than significant level under CEQA.

4.7.4 Impact HWR#5: Changes in Hydrogeologic Conditions Associated with Tunnel Construction Beneath the ANF which May Affect Surface and Subsurface Water Resources.

Construction activities associated with the Preferred Alternative within the ANF could temporarily affect groundwater conditions in High-Risk Areas in the tunnel RSA. However, this effect would not interfere substantially with groundwater recharge such that the project may impede sustainable groundwater recharge in a groundwater basin. The groundwater that would be encountered during tunnel construction would be isolated and within fractured rock strata and is classified as an aquitard, in that the low permeability and low porosity of the aquitard retards water traveling between groundwater basins separated by bedrock mountains.

The inflow of groundwater into the tunnels during and after construction could lower groundwater pressures in proximity to the tunnel alignment, which could adversely affect hydrologic conditions for groundwater-dependent resources such as springs, streams, and wells (i.e. surface water resources). HYD-IAMF#5, HYD-IAMF#6, and HYD-IAMF#7 commit the Authority to incorporate certain design features and construction methods into the Preferred Alternative that would avoid or minimize the potential for groundwater to seep into the tunnel during construction. However, it is expected that groundwater inflow would occur under certain circumstances, most likely in areas of the Preferred Alternative identified as High-Risk Areas. Even with the incorporation of IAMFs, construction impacts could affect hydrogeologic conditions associated with tunnel construction beneath the ANF and are considered a significant impact under CEQA.

The Authority will implement Mitigation Measure HWR-MM#4: Implement a Water Resources AMMP Including Compensatory Mitigation Measures as Necessary to reduce impacts to hydrogeologic conditions associated with tunnel construction beneath the ANF. Because of text length, mitigation measures are presented separately in the MMEP.

Under Mitigation Measure HWR-MM#4, the Authority will implement an AMMP to address impacts to surface water resources and wells. Mitigation Measure HWR-MM#4 requires monitoring protocols to establish baseline conditions for surface water resources and to allow for the detection of changes in groundwater conditions related to tunnel construction to ensure timely implementation of remedial measures. The monitoring program would continue for up to 10 years

after the completion of construction. The AMMP also includes provisions for augmenting water supplies for surface water resources and wells and establishes performance standards that the remedial actions must achieve to approximately match baseline conditions. The AMMP also includes actions to restore affected resources and, if necessary, to provide compensatory mitigation for affected water resources if effects cannot be arrested or substantially reduced through other response actions.

Implementation of Mitigation Measure HWR-MM#4 could have secondary impacts on water quality and biological resources. Under Mitigation Measure HWR-MM#4, supplemental water may be required to potentially restore baseline levels of surface water resources and associated habitat that are adversely affected by changes to the quantity and availability of water resources caused by tunnel construction. Providing supplemental water supply infrastructure on properties where monitoring has detected impacts to water supply as a result of tunnel construction could have secondary impacts on water quality and biological resources. These secondary impacts may result from soil disturbances associated with installing temporary water tanks, temporary water lines, and associated appurtenances. These areas of disturbed soil have the potential to erode and contribute to elevated turbidity and suspended sediment concentrations in receiving waterbodies and may disrupt existing habitat for biological species. However, the secondary impacts on water quality would not be significant, because compliance with the General Construction Permit and requirements of the SWPPP (HYD-IAMF#3) will require the application of soil stabilization and sediment control BMPs, as applicable, to prevent substantial adverse effects on water quality.

Mitigation Measure HWR-MM#4 would reduce impacts associated with changes to hydrogeologic conditions resulting from tunnel construction beneath the ANF. The Authority finds that implementation of Mitigation Measure HWR-MM#4 is required under the Preferred Alternative and that this mitigation measure will reduce the project's impacts to hydrogeologic conditions associated with tunnel construction beneath the ANF to a less than significant level under CEQA.

4.8 Geology, Soils, Seismicity, and Paleontological Resources (Section 3.9 of the Final EIR/EIS)

As described in the Palmdale to Burbank Project Section Final EIR/EIS, three significant geological, soils, and seismicity-related construction impacts associated with the Preferred Alternative have been identified (Impact GSSP#4: Construction Could Expose Erodible Soils During Construction, Impact GSSP#10: Inundation Related to Seismically Induced Dam Failure Could Endanger People or Structures During Construction, and Impact GSSP#13: Mine Conditions Could Pose Hazards During Construction) that will be reduced to a less than significant level with the implementation of mitigation measures. One impact related to paleontological resources (Impact GSSP#15: Surface Excavation and Subsurface Tunneling Could Destroy Unique Paleontological Resources) will remain significant and unavoidable. No mitigation measures are feasible for this impact.

4.8.1 Impact GSSP#4: Construction Could Expose Erodible Soils During Construction

Earthmoving activities associated with the Preferred Alternative could result in soil erosion, as well as deposition of spoil material into the spoils disposal sites. These areas could experience elevated erosion rates if exposed to wind, precipitation, and runoff. Additionally, spoils temporarily stockpiled within construction staging areas could increase the quantity of soils exposed to erosive forces. Exposed soils would be subject to erosion throughout the duration of construction or until soils are stabilized. These indirect impacts would be temporary and limited to the construction period. Further, the Preferred Alternative would have surface facilities in areas of high erosion near Agua Dulce Canyon, Vulcan Mine, and near the SR14-W1 and SR14-W2 intermediate window options. Incorporation of GEO-IAMF#1 and HYD-IAMF#3 into the project design will identify areas with high erosion potential and implement BMPs to limit soil loss in disturbed areas throughout the HSR footprint. However, even with the implementation of IAMFs

the Preferred Alternative may result in substantial soil erosion at the Boulevard Mine disposal site, which is a significant impact under CEQA.

- The Authority will implement Mitigation Measure GEO-MM#1: Temporary and permanent soil stabilization at disposal sites to reduce exposure to erodible soils during construction. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure GEO-MM#1 will require a restoration plan, temporary soil stabilization plan, or interim reclamation plan for the Boulevard Mine disposal site to protect exposed soils. This plan would ensure that the Boulevard Mine disposal site is not left with soils vulnerable to wind or water erosion.

The Authority finds that implementation of Mitigation Measure GEO-MM#1 is required under the Preferred Alternative and that this mitigation measure will reduce the project's potential for temporary impacts related to soil erosion to a less than significant level under CEQA because it would reduce the exposure of soils to wind and water erosion to a level that would not be substantial.

4.8.2 Impact GSSP#10: Inundation Related to Seismically Induced Dam Failure Could Endanger People or Structures During Construction

The Preferred Alternative footprint would encompass portions of Lake Palmdale, Hansen Dam, and Pacoima Dam inundation areas. Although construction activities associated with the Preferred Alternative would not cause or accelerate the potential for dam inundation, seismically induced flooding from the Hansen Dam could occur and flood the Boulevard Mine disposal site, resulting in potential risks to construction workers and/or equipment within the disposal site, which is a significant impact under CEQA.

- The Authority will implement Mitigation Measure GEO-MM#2: Inundation and slope failure minimization at spoil disposal sites to reduce seismically induced dam failure during construction. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure GEO-MM#2 will require the construction contractor to develop an evacuation plan where grading, building, or disposal activities would occur underground or below grade. This plan would evaluate inundation hazards at the spoils disposal sites and would implement evacuation procedures to minimize the risk of injury resulting from accident conditions.

The Authority finds that implementation of Mitigation Measure GEO-MM#2 is required under the Preferred Alternative and that this mitigation measure will reduce the project's potential for permanent impacts related to dam inundation to a less than significant level under CEQA because it will reduce the risks from seismically indicated flooding at the Boulevard Mine disposal site to a level that would not be substantial.

4.8.3 Impact GSSP#13: Mine Conditions Could Pose Hazards During Construction

Construction activities associated with the Preferred Alternative could result in direct hazards to existing or constructed slopes within or around the Vulcan Mine and Boulevard Mine disposal sites, which could trap or injure construction workers. In addition, hazardous mine conditions could endanger project structures, equipment, construction workers, or members of the public in the construction vicinity. Incorporation of GEO-IAMF#3 into the project design will require the CMP to incorporate monitoring procedures and construction practices to reduce risks related to gas accumulation. Practices would include using safe and explosion-proof equipment during construction, and testing for gases regularly. Installation of passive or active gas venting systems, gas collection systems, active monitoring systems, and alarms would be required in underground construction areas and facilities where subsurface gases are present. Installing gas-detection systems can monitor the effectiveness of these systems. GEO-IAMF#4 will require the CMP to address abandoned mines through application of procedures that could include:

- Environmental cleanups at sites that are releasing or threatening to release hazardous substances such as heavy metals from acid mine drainage.
- Cleanup of nonhazardous, substance-related surface disturbance such as revegetation of disturbed areas, stabilization of mine tailings, reconstruction of stream channels and floodplains.
- Minimization of physical safety hazards such as closure of adits and shafts and removal of dangerous structures.

However, even with the implementation of IAMFs the potential hazards related to mining conditions would be significant under CEQA.

- The Authority will implement Mitigation Measure GEO-MM#2: Inundation and slope failure minimization at spoil disposal sites to reduce potential hazards to mining operations during HSR construction. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure GEO-MM#2 will require a slope failure evaluation and evacuation plan for areas where grading, building, or disposal activities would occur underground or below grade. This plan would evaluate slope failure hazards at existing mine disposal sites and would implement evacuation procedures to minimize the risk of injury resulting from accident conditions.

The Authority finds that implementation of Mitigation Measure GEO-MM#2 is required under the Preferred Alternative and that this mitigation measure will reduce the project's potential for permanent impacts related to hazards to mining conditions to a less than significant level under CEQA because slopes would be stabilized and risks would be reduced to less than substantial.

4.8.4 Impact GSSP#15: Surface Excavation and Subsurface Tunneling Could Destroy Unique Paleontological Resources

As discussed in Section 3.9.5 of the Final EIR/EIS, portions of the Preferred Alternative alignment are located within areas of high paleontological sensitivity. Excavation, grading, and other ground-disturbing activities would affect paleontologically sensitive geologic units in the Preferred Alternative.

The Preferred Alternative requires the construction contractor to implement measures to protect paleontological resources. GEO-IAMF#11 will require the contractor to retain a paleontological resource specialist (PRS) tasked with establishing a framework for protecting paleontological resources affected by construction. The PRS would analyze the 90 percent design plans, as required by GEO-IAMF#12, to evaluate the location, extent, and anticipated depth of disturbance to inform paleontological monitoring. GEO-IAMF#13 will require the PRS to prepare and implement a Paleontological Resources Monitoring and Mitigation Plan that would outline the use of construction monitoring and emergency discovery procedures in project construction. The Paleontological Resources Monitoring and Mitigation Plan Paleontological Resources Monitoring and Mitigation Plan would also establish protocols for preconstruction surveys and procedures for fossil specimen recovery. GEO-IAMF#14 will require the contractor to provide training to workers involved in ground-disturbing activities to increase workers' awareness of paleontological resources procedures. GEO-IAMF#15 will require a protocol for addressing the unexpected discovery of paleontological resources, which will include a halt to construction to allow for evaluation of discovered resources. However, even with the implementation of these IAMFs the potential impacts to paleontological resources would remain significant under CEQA because use of the tunnel boring machine during construction would likely destroy paleontological resources encountered beneath the ground surface. Visual surveying and monitoring are not feasible during tunnel boring machine operations since the enclosed machine drill head would prevent inspection of geologic units prior to and during excavation. There is no feasible mitigation to reduce this impact, which would remain significant and unavoidable for the Preferred Alternative. The Authority finds that there are no feasible mitigation measures or alternatives that could be adopted to reduce this remaining impact to less –than significant levels. The Authority finds that despite this otherwise significant and unavoidable impact, specific economic, social, and other

considerations identified in the Statement of Overriding Considerations (Chapter 8) support certification of the Final EIR/EIS and approval of the Preferred Alternative.

4.9 Hazardous Materials and Wastes (Section 3.10 of the Final EIR/EIS)

As described in the Palmdale to Burbank Project Section Final EIR/EIS (Section 3.10, Hazardous Materials and Waste), one significant hazardous materials and wastes construction impacts (Impact HMW#3: Potential for Handling Hazardous Materials or Waste Within 0.25 mile of an Educational Facility during Construction) and one operations impact (Impact HMW#8: Potential for Handling Hazardous Materials or Waste Within 0.25 mile of an Educational Facility during Operations) associated with the Preferred Alternative have been identified that will be reduced to a less than significant level with the implementation of mitigation measures.

4.9.1 Impact HMW#3: Potential for Handling Hazardous Materials or Waste Within 0.25 mile of an Educational Facility during Construction.

Potentially hazardous materials and items containing potentially hazardous materials commonly used in railway construction and demolition of existing structures will be used or stored within the project footprint, in some cases within 0.25 mile of an educational facility. Construction activities associated with the Preferred Alternative could entail the handling of hazardous substances within 0.25 mile of educational facilities, thereby posing a potential health and safety hazard to students or employees.

The Authority will implement Mitigation Measure HMW-MM#1: Limit handling of extremely hazardous materials near educational facilities to reduce impacts related to exposure to and handling or storage of an extremely hazardous substance within 0.25 mile of a school. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure HMW-MM#1 will require the Authority to prepare a memorandum confirming that the construction contractor will not handle or store an extremely hazardous substance within 0.25 mile of a school. Signage will be installed prior to construction to delimit work areas within 0.25 mile of a school, informing contractors not to bring extremely hazardous substances into the area. With implementation of Mitigation Measure HMW-MM#1, the contractor will be prohibited from handling or storing extremely hazardous substances in a quantity equal to or greater than the state threshold within 0.25 mile of a school, and the contractor will be required to monitor all use of extremely hazardous substances.

The Authority finds that implementation of Mitigation Measure HMW-MM#1 is required under the Preferred Alternative and that this mitigation measure will reduce the potential for construction to expose educational facilities to extremely hazardous substances to a less than significant level under CEQA.

4.9.2 Impact HMW#8: Potential for Handling Hazardous Materials or Waste Within 0.25 mile of an Educational Facility during Operations.

Operations of the Preferred Alternative would entail storage or use of hazardous materials within 0.25 mile of educational facilities, which serve individuals who are particularly sensitive to hazardous materials or wastes. As described in Section 3.10.6.3 of the Final EIR/EIS, operating trains would generate brake dust. However, dust would be primarily limited to track ballast areas. Additionally, HYD-IAMF#1 will be applied to minimize the release of hazardous brake dust. Thus, the use of hazardous materials and generation of hazardous waste will be limited mostly to the maintenance and repair of trains. Routine maintenance activities such as weed control required for operation of the Palmdale to Burbank Project Section could generate or involve the handling or transport of small quantities of hazardous materials, such as paints, oils, lubricants, absorbents, cleaners, and herbicides. Even with the incorporation of HYD-IAMF#1, the potential to release hazardous materials within 0.25 mile of an educational facility exists and is considered a significant impact under CEQA.

The Authority will implement Mitigation Measure HMW-MM#1: Limit handling of extremely hazardous materials near educational facilities to reduce impacts related to release of hazardous

brake dust during train operations. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure HMW-MM#1 would have the same ability to reduce impacts to educational facilities during operations as described above for Impact HMW#3.

The Authority finds that implementation of Mitigation Measure HMW-MM#1 is required under the Preferred Alternative and that this mitigation measure will reduce the project's potential for operation to expose educational facilities to extremely hazardous substances to a less than significant level under CEQA.

4.10 Safety and Security (Section 3.11 of the Final EIR/EIS)

As described in the Palmdale to Burbank Project Section Final EIR/EIS (Section 3.11, Safety and Security), two significant safety and security operational impacts (Impact S&S#3: Permanent Interference with Emergency Response and Impact S&S#4: Interference with Emergency Response from Train Accidents and Increased Activity at Stations and Facilities) associated with the Preferred Alternative have been identified that will be reduced to a less than significant level with the implementation of mitigation measures.

4.10.1 Impact S&S#3: Permanent Interference with Emergency Response

The Preferred Alternative would operate within an access-controlled right-of-way, which may directly impact access for emergency service vehicles. However, the Preferred Alternative would implement provisions for emergency service access to the access-controlled right-of-way, including, but not limited to, building permanent access roads, incorporating passenger walkways, and implementing safety features within the tunnel design.

The Authority will also incorporate additional safety and security measures into California HSR system operating procedures, including a fire and life safety program and a security and emergency response plan (SS-IAMF#2). This IAMF will also require the Authority to prepare a System Safety Program Plan and a Safety and Security Management Plan (SSMP) prior to the commencement of operations. The Authority will coordinate with local emergency service providers in developing and implementing the System Safety Program Plan and SSMP to establish an efficient and coordinated response protocol, systems, and procedures across the multiple agencies that may be involved in responding to an emergency incident, including establishing coordinated procedures for emergency responder access to the HSR access-controlled right-of-way, aerial track, trenches, and tunnels. However, even with the implementation of SS-IAMF#2 and design features, the direct impacts related to emergency response are considered a significant impact under CEQA.

The Authority will implement Mitigation Measure S&S-MM#1: Monitor Response of Local Fire, Rescue, and Emergency Service Providers to Incidents at Stations and Provide a Fair Share Cost of Service to reduce impacts to emergency response. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure S&S-MM#1 will require the Authority to monitor the response of local fire, rescue, and other emergency service providers to incidents. The Authority will enter a cost-sharing agreement with these providers to fund the Authority's fair share of emergency service needs created by the Palmdale to Burbank Project Section ensuring that services are made available. Implementation of Mitigation Measure S&S-MM#1 will ensure emergency service providers maintain acceptable emergency response times, service ratios, and acceptable performance objectives and no new emergency service facilities will be required.

The Authority finds that implementation of Mitigation Measure S&S-MM#1 is required under the Preferred Alternative and that this mitigation measure will reduce the project's interference with emergency response to a less than significant level under CEQA.

4.10.2 Impact S&S#4: Interference with Emergency Response from Train Accidents and Increased Activity at Stations and Facilities

Train accidents may occur during the operation of the Preferred Alternative, resulting in an increase in demand for emergency services. However, impacts resulting from train accidents would be minimized by grade separation and implementation of emergency plans. Impacts of increased demand for fire, rescue, and other emergency services at station facilities would be minimized as part of the California HSR system with implementation of Authority-developed emergency preparedness plans as required by SS-IAMF#2 and risk-based plans in SS-IAMF#3. However, even with the implementation of these two IAMFs, the impacts related to emergency response from train accidents and increased activity are considered a significant impact under CEQA.

The Authority will implement Mitigation Measure S&S-MM#1: Monitor Response of Local Fire, Rescue, and Emergency Service Providers to Incidents at Stations and Provide a Fair Share Cost of Service to reduce emergency response impacts associated with train accidents and increased activity at stations and facilities. Because of text length, mitigation measures are presented separately in the MMEP.

As discussed above, Mitigation Measure S&S-MM#1 will ensure emergency service providers maintain acceptable emergency response times, service ratios, and acceptable performance objectives through monitoring and providing a fair share of cost of service.

The Authority finds that Mitigation Measure S&S-MM#1 is required under the Preferred Alternative and that this mitigation measure will reduce impacts on emergency service response times to a less than significant level under CEQA.

4.11 Socioeconomics and Communities (Section 3.12 of the Final EIR/EIS)

As described in the Palmdale to Burbank Project Section Final EIR/EIS (Section 3.12, Socioeconomics and Communities), one significant socioeconomics and communities construction impact (Impact SOCIO#2: Permanent Disruption to Community Cohesion or Division of Established Communities from Construction) and one significant socioeconomics and communities operational impact (Impact SOCIO#14: Permanent Effects on Agricultural Operations from Project Operations) associated with the Preferred Alternative have been identified that will be reduced to a less than significant level with the implementation of mitigation measures.

4.11.1 Impact SOCIO#2: Permanent Disruption to Community Cohesion or Division of Established Communities from Construction

Construction of the Preferred Alternative within the Central Subsection would present new physical and visual barriers with the potential to divide existing communities. Where new physical and visual barriers would occur within existing communities, access between properties and the local road networks would be maintained. The project would provide adequate roadway overcrossings and under crossings to facilitate pedestrian, bicycle, and vehicular circulation. However, new physical and visual barriers created by the project within existing communities represents a significant impact, and therefore requires mitigation.

The Authority will implement Mitigation Measure SO-MM#1: Implement Measures to Reduce Impacts associated with the Division of Residential Neighborhoods and Mitigation Measure SO-MM#2: Implement Measures to Reduce Impacts Associated with the Division of Communities to reduce community cohesion or division impacts. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure SO-MM#1 will require the Authority to conduct community workshops to affected homeowners to understand their special relocation needs fully and to identify measures to mitigate impacts on affected communities, including placement of noise barriers and landscaping. Additionally, Mitigation Measure SO-MM#2 will require the Authority to conduct special outreach to affected residential neighborhood and community residents, community

organizations, and local officials, as well as require the Authority's evaluation of the community's modified access, in order to enable the Authority to maintain community cohesion and avoid physical deterioration. The Authority will work with community organizations and community leaders within affected neighborhoods to maximize attendance and generate awareness of community workshops. On gathering feedback from the community, the Authority would use the input and develop enhancements to ameliorate effects associated with community cohesion and community division. The Authority would be responsible for implementing the measures to reduce impacts through project design and through the long-term management of the measures, which would involve documenting the desired design concepts, incorporating them into the final design, and facilitating ongoing maintenance.

The Authority finds that implementation of Mitigation Measures SO-MM#1 and SO-MM#2 are required under the Preferred Alternative and that these mitigation measures will reduce the project's community cohesion and division impacts to a less than significant level under CEQA.

4.11.2 Impact SOCIO#14: Permanent Effects on Agricultural Operations from Project Operations

No agricultural parcels or facilities would be fully acquired by implementation of the Preferred Alternative. As discussed in Section 3.14, Agricultural Farmland and Forest Land, impacts on Important Farmland from the Preferred Alternative would be limited to the construction of an electrical utility corridor across an approximately 9-acre vineyard east of the Sierra Highway/SR 14 interchange for a traction power facility. The Preferred Alternative would have less than 1 acre of surface footprint on Important Farmland; the surface impacts in this area would be limited to a new electric utility corridor.

AG-IAMF#2 through AG-IAMF#6 have been incorporated into the project design to avoid or minimize potential indirect impacts from placing utility poles near the Important Farmland. Even with the incorporation of these IAMFs, impacts to Important Farmland are considered a significant impact under CEQA.

The Authority will implement Mitigation Measure AG-MM#1: Design Utility Corridors to Avoid Agricultural Lands to reduce impacts to Important Farmland. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure AG-MM#1 will require utility corridors to be designed to avoid placing structures on agricultural lands. Electrical towers and poles would be used to allow the electric utility line to span a parcel of farmland without requiring conversion of farmland for the construction of electrical towers.

The Authority finds that implementation of Mitigation Measure AG-MM#1 is required under the Preferred Alternative and that this mitigation measure will substantially lessen or avoid impacts to Important Farmland associated with the Preferred Alternative and reduce the impact to a less than significant level under CEQA.

4.12 Station Planning, Land Use, and Development (Section 3.13 of the Final EIR/EIS)

As described in the Palmdale to Burbank Project Section Final EIR/EIS, one significant station planning, land use, and development construction impact (Impact LU#3: Permanent Alterations to Existing and Planned Land Uses from Construction of the Build Alternatives) associated with the Preferred Alternative has been identified that will be reduced to a less than significant level with the implementation of mitigation measures.

4.12.1 Impact LU#3: Permanent Alterations to Existing and Planned Land Uses from Construction of the Build Alternatives

Implementation of the Preferred Alternative would entail the permanent conversion of lands with residential, commercial, industrial, and other non-transportation land use designations to transportation uses. In locations where the Preferred Alternative alignment would be placed near

sensitive land uses, such as residential neighborhoods, broader changes in land use patterns could occur due to noise, and traffic impacts on adjacent land uses (see Figures 3.13-29 through 3.13-31 of the Final EIR/EIS). The conversion of these land uses would be incompatible with existing and planned land uses including low- to high-density residential, public facility/institutional, and agriculture/open space/parks that are identified in the local general plans and zoning applicable to the Preferred Alternative footprint.

Central Subsection

The Preferred Alternative alignment would traverse more than 30 miles through the Central Subsection. Approximately 216 acres within the permanent footprint of the Preferred Alternative would be in the ANF, including the SGMNM; however, much of the Preferred Alternative alignment would be subsurface. This land is currently designated for Developed Area Interface under the USFS, which allows for some roadway-related infrastructure improvements.

The Preferred Alternative could install one of the three adit options, SR14-A1, which is on a private in-holding near Little Tujunga Canyon Road. This adit contains existing non-forest uses such as residential structures (see Figure 3.13-30 of the Final EIR/EIS) and would add utilities (water and electricity) and ventilation/access buildings to the adit location. The Back Country land use designation in which this adit resides allows for low to moderate levels of human use and infrastructure, making the adit structure inconsistent with uses permitted within this land use designation.

Burbank Subsection

Most of the Burbank Subsection is developed with industrial or public land uses. Implementation of the Preferred Alternative would affect approximately 60 acres of aboveground facilities. It should be noted that these facilities are located within the Burbank Airport Station of the Burbank to Los Angeles Project Section and the Station would be primarily underground. Construction of the Burbank Airport Station would require the acquisition and removal of the existing industrial, warehouse, and commercial uses on the station site.

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Incorporation of LU-IAMF#1 and LU-IAMF#2 into the project design will ensure that station area development principles and guidelines, and local agency coordination, have been applied to station area planning prior to HSR operations. In other areas, such as the ANF, where land use designations allow for limited human use and infrastructure, construction would not be consistent with existing land uses. USFS will assess the consistency of the Palmdale to Burbank Project Section with existing land use plans and policies before issuing a Special Use Authorization for construction within the ANF. Implementation of the Preferred Alternative would result in permanently altering existing and planned land uses, which could potentially change land use patterns. Therefore, even with the incorporation of IAMFs the impacts to existing and planned land uses would be significant under CEQA.

- The Authority will implement Mitigation Measure LU-MM#1: California HSR System Station Area Development General Principles and Guidelines; Mitigation Measure SO-MM#1: Implement Measures to Reduce Impacts Associated with the Division of Residential Neighborhoods; Mitigation Measure SO-MM#2: Implement Measures to Reduce Impacts Associated with the Division of Communities; Mitigation Measure SO-MM#3: Implement Measures to Reduce Impacts Associated with the Relocation of Important Community Facilities; Mitigation Measure N&V-MM#3: Implement California High-Speed Rail Project Noise Mitigation Guidelines; Mitigation Measure NV-MM#6: Additional Noise Analysis during Final Design; Mitigation Measure TR-MM#1: Add Lanes to the Segment; Mitigation Measure TR-MM#2: Modify Signal Timing; Mitigation Measure TR-MM#3: Modify Signal Phasing; Mitigation Measure TR-MM#4: Provide a Traffic Signal; Mitigation Measure TR-MM#5: Restripe Intersection; Mitigation Measure TR-MM#6: Widen Intersection; Mitigation Measure TR-MM#7: Add Exclusive Turn Lanes; and Mitigation Measure TR-MM#8: Reconfigure Intersection to reduce conflict with land use patterns. Because of text length, mitigation measures are presented separately in the MMEP.

The Authority will implement Mitigation Measure LU-MM#1 to assist with transit-oriented development (TOD) planning around station areas to ensure that California HSR system stations are consistent with surrounding uses. Mitigation Measure LU-MM#1 will require the Authority to document how Station Area Planning Agreements have been implemented with each station city. Upon review of each station city's plans, the Authority will determine if mitigation strategies are necessary to assist station cities with implementation of station area plans and to implement TOD strategies and value capture at and around the station. Mitigation Measure LU-MM#1 would not result in secondary environmental impacts.

As discussed in Section 3.12, Socioeconomics and Communities, of the Final EIR/EIS, implementation of Mitigation Measures SO-MM#1 through SO-MM#3 will reduce impacts on neighborhood and community cohesion. Under Mitigation Measure SO-MM#1, the Authority will conduct community workshops to obtain input from those homeowners whose property would not be acquired but whose community would be substantially altered by construction of HSR facilities, including the loss of many neighbors, to identify measures that could be taken to mitigate impacts on those who remain (including placement of noise barriers and landscaping, and potential uses for nonagricultural remnant parcels that could benefit the community in the long term). Mitigation Measure SO-MM#2 will minimize impacts in the existing communities by implementing an outreach program to homeowners, residents, landowners, business owners, community organizations, and local officials in affected neighborhoods. Mitigation Measure SO-MM#3 will result in the minimization of impacts through the acquisition, displacement, and/or relocation of key community facilities. None of these mitigation measures would result in secondary environmental impacts.

As discussed in Section 3.4, Noise and Vibration, of the Final EIR/EIS, Mitigation Measures N&V-MM#3 and N&V-MM#6 will be implemented to reduce noise impacts that affect the viability of the surrounding land use patterns. Mitigation Measure N&V-MM#3 will require preparation of an operational noise report to determine where noise barriers or other methods of noise insulation are needed to minimize noise impacts. Mitigation Measure N&V-MM#3 could install noise barriers beyond the construction boundary, leading to secondary or off-site impacts including emissions and fugitive dust from construction equipment, construction-related noise, construction-related road closures or traffic delays, mobilization of extant hazardous materials or wastes, private property acquisitions or displacements, a decrease in visual character, and impacts on biological and cultural resources. However, these types of impacts are common to most infrastructure construction projects and are typically reduced to a less than significant level through adhering to applicable regulations, obtaining regulatory permits, incorporating BMPs, and applying standard mitigation measures. Mitigation Measure N&V-MM#6 will require the contractor to provide the Authority with an HSR operational noise technical report for review and approval prior to construction. Mitigation Measure N&V-MM#6 would not result in secondary environmental impacts.

As discussed in Section 3.2, Transportation, of the Final EIR/EIS, Mitigation Measures TR-MM#1 through TR-MM#8, will increase capacity and improve roadway and intersection operations. Implementation of Mitigation Measures TR-MM#1 through TR-MM#8 could involve physical disturbance that would result in secondary environmental impacts.

The Authority finds that implementation of Mitigation Measures LU-MM#1, SO-MM#1, SO-MM#2, SO-MM#3, N&V-MM#3, N&V-MM#6, TR-MM#1, TR-MM#2, TR-MM#3. TR-MM#4, TR-MM#5, TR-MM#6, TR-MM#7, and TR-MM#8 are required under the Preferred Alternative and that these mitigation measures will substantially lessen or avoid conflicts with land use patterns during construction of the Preferred Alternative to less than significant under CEQA.

4.13 Agricultural Farmland and Forest Land (Section 3.14 of the Final EIR/EIS)

As described in the Palmdale to Burbank Project Section Final EIR/EIS, one significant permanent impact associated with the Preferred Alternative has been identified (Impact AG#2:

Permanent Conversion of Agricultural Land to Nonagricultural Land) that will be reduced to a less than significant level with the implementation of mitigation measures.

4.13.1 Impact AG#2: Permanent Conversion of Agricultural Land to Nonagricultural Land

There are no agricultural farmlands or forest lands within the Burbank Subsection. Therefore, the Preferred Alternative would not affect agricultural farmlands, forest lands, or associated agricultural resources in the Burbank Subsection. The following discussion focuses on portions of the Preferred Alternative in the Central Subsection that would encounter agricultural farmlands.

As shown in Table 3.14-6 of the Final EIR/EIS, the Preferred Alternative footprint would permanently convert less than 1 acre of Important Farmland. The Preferred Alternative would include the construction of a new electrical utility corridor for electrical facilities (see Section 3.6, Public Utilities and Energy of the Final EIR/EIS) that would affect less than 1 acre of a 9-acre vineyard considered Important Farmland. The 9-acre vineyard is located east of where the Preferred Alternative alignment would cross Sierra Highway (see Figure 3.14-8 of the Final EIR/EIS). The utility corridor would traverse this parcel of Important Farmland for approximately 250 feet affecting less than 1 acre of the 9-acre vineyard.AG-IAMF#2 through AG-IAMF # 6 will be implemented to reduce indirect impacts from placing utility poles near Important Farmland.

AG-IAMF#2 will require the Authority to assign a representative for each confined animal facility owner prior to disturbance-causing activities affecting any segment of a confined animal facility. AG-IAMF#3 will require the Authority to establish and administer a farmland consolidation program to sell remnant parcels to neighboring landowners for consolidation with adjacent farmland properties. The program will assist the owners of remnant parcels in selling those remnants to adjacent landowners, upon request. AG-IAMF#4 will require written notification to be sent to agricultural property owners or leaseholders impacted and immediately adjacent to the disturbance limits for the project prior to the start of any construction activity adjacent to farmland. AG-IAMF#5 will require the Authority to coordinate with agricultural property owners or leaseholders to provide temporary livestock and equipment crossings to minimize impacts. AG-IAMF#6 will minimize impediments to routine agricultural operations and normal business activities during operation and finalize the realignments of affected access roads to provide equipment crossings to minimize project impediments. However, even with the implementation of IAMFs, the permanent conversion of Important Farmland to a non-agricultural use is a significant impact under CEQA.

- The Authority will implement Mitigation Measure AG-MM#1: Design Utility Corridors to Avoid Agricultural Lands to reduce impacts associated with development of infrastructure in Important Farmland.

Mitigation Measure AG-MM#1 will require coordination with farm owners to allow the electrical utility line to span a parcel of farmland without requiring conversion of farmland for the relocation of electrical transmission towers. This would ensure that electrical utilities are placed on poles with powerlines that span agricultural land uses, within the identified project footprint, so that no agricultural land would be converted to a nonagricultural use either directly or indirectly. No secondary environmental impacts would occur under this mitigation measure.

The Authority finds that implementation of Mitigation Measure AG-MM#1 is required under the Preferred Alternative and that this mitigation measure will substantially lessen or avoid impacts to Important Farmland to less than significant under CEQA because Important Farmland would not be converted to non-agricultural use.

4.14 Parks, Recreation and Open Space (Section 3.15 of the Final EIR/EIS)

As described in the Palmdale to Burbank Project Section Final EIR/EIS (Section 3.15, Parks, Recreation, and Open Space), two significant parks, recreation, and open space construction impacts (Impact PK#1: Acquisition of Parks, Recreation, and Open Space Resources and Impact PK#2: Construction-Related Access, Noise, Vibration, Air Quality, and Visual Changes to Parks, Recreation, and Open Space Resources) and one significant parks, recreation, and open space

operations impact (Impact PK#3: Changes to Park, Recreation, and Open Space Resource Character) associated with the Preferred Alternative have been identified. These potentially significant impacts would be reduced to a less than significant level with the implementation of mitigation.

4.14.1 Impact PK#1: Acquisition of Parks, Recreation, and Open Space Resources

As discussed in Section 3.15.6.3 of the Final EIR/EIS, construction of the Preferred Alternative would require acquisition of portions of parks, recreation, and open space resources. Direct acquisition, whether temporary or permanent, would reduce or diminish the capacity of a park or recreation resource to provide the features and attributes that are important to the surrounding communities, or would prevent the use of an established resource. The Preferred Alternative would require partial acquisitions of property from the following resources:

- Palmdale Hills Trail (Proposed Extension)
- Santa Clara River Trail (Proposed Extension)
- Rim of the Valley Trail (Proposed Extension)
- Lang Station Open Space at Bee Canyon

According to Section 3.15, Parks, Recreation, and Open Space, of the Final EIR/EIS, there are no parks, recreation, or open space resources in the Burbank Subsection, and thus, no impacts would occur.

The Authority will conduct all permanent acquisition of property for the HSR improvements, including federally funded improvements, in compliance with the Uniform Act (SOCIO-IAMF#2). The Authority will provide compensation or land, or both, for all permanent acquisitions of property for HSR improvements from publicly owned parks. However, even with the implementation of IAMFs, the impacts of acquisition of parks, recreation and open space resources would be considered significant under CEQA.

- The Authority will implement Mitigation Measure PR-MM#6: Return of Land Used by Temporary Impact Areas to the Property Owners; Mitigation Measure PR-MM#7: Permanent Easement from Parks, Recreation Resources, and/or Trails; Mitigation Measure PR-MM#8: Permanent Changes to Access to Parks, Recreation Resources, and/or Trails; and Mitigation Measure PR-MM#9: Permanent Acquisition of Public Property from Land and/or Trails Planned for Public Recreational Use to reduce impacts associated with acquisition of parks, recreation, and open space resources. Because of text length, mitigation measures are presented separately in the MMEP.

There are no impacted parks, recreation, or open space resources in the Burbank Subsection. As such, the Mitigation Measures listed above would be implemented to address impacts from construction of the Central Subsection component of the Preferred Alternative.

Mitigation Measure PR-MM#6 will return temporarily acquired land to the property owners after construction. However, Mitigation Measure PR-MM#6 would result in secondary impacts through emissions and fugitive dust from construction equipment, construction-related noise, construction-related road closures or traffic delays, mobilization of extant hazardous materials or wastes, development of previously undeveloped land due to private property acquisitions or displacements and impacts on biological and cultural resources. Such effects would be minor and mostly short term. Furthermore, any future development would undergo proper environmental review, and potential environmental impacts would be analyzed under appropriate and relevant statutes and guidelines.

Mitigation Measure PR-MM#8 will require that the Authority consult with the property owner regarding the specific conditions of the changes to access and compensation for, or replacement or enhancement of, the access including trailheads, driveways or parking areas at the applicable recreation resource, such that notwithstanding acquisition, the capacity to continue to use the resources is maintained. Mitigation Measures PR-MM#7 and PR-MM#9 will require the Authority to consult with property owners and public agencies for the acquisition or easement of private and

public lands. Compensation, replacement, or enhancement will be granted as deemed necessary. These mitigation measures will ensure that each resource acquired would be accessible during construction. Mitigation Measures PR-MM#7 through PR-MM#9 could result in secondary environmental effects or environmental effects, including emissions and fugitive dust from construction equipment, construction-related noise, construction-related road closures or traffic delays, mobilization of extant hazardous materials or wastes, and impacts on biological and cultural resources. However, such effects would be minor and mostly short term. Similar to the secondary impact of Mitigation Measure PR-MM#6, any future development would undergo proper environmental review, and potential environmental impacts would be analyzed under appropriate and relevant statutes and guidelines.

The Authority finds that implementation of Mitigation Measures PR-MM#6, PR-MM#7, PR-MM#8, and PR-MM#9 are required under the Preferred Alternative and that these mitigation measures will reduce the project's impacts associated with acquisition of parks, recreation and open space resources to a less than significant level.

4.14.2 Impact PK#2: Construction-Related Access, Noise, Vibration, Air Quality, and Visual Changes to Parks, Recreation, and Open Space Resources.

Construction of the Preferred Alternative would result in access, noise, vibration, air quality, and visual changes to Tejon Equestrian Park, Palmdale Hills Trail (Proposed Extension), Santa Clara River Trail (Proposed Extension), Rim of the Valley Trail (Proposed Extension), and Lang Station Open Space at Bee Canyon that could create a physical or perceived barrier to the recreation resources, and/or increase the use of other existing recreational facilities. TR-IAMF#2, AQ-IAMF#1, HYD-IAMF#3, and NV-IAMF#1 have been incorporated into the project design and will avoid or minimize construction effects:

TR-IAMF#2 will implement a traffic management plan for use during construction. AQ-IAMF#1 will minimize and control fugitive dust emissions. Under HYD-IAMF#3, an SWPPP will be developed and implemented to minimize potential short-term increases in sediment transport caused by construction. Lastly, NV-IAMF#1 will develop methodology to minimize construction noise and vibration impacts would be employed when work is being conducted within 1,000 feet of any sensitive receptors. However, even with the implementation of IAMFs construction impacts would be considered significant under CEQA.

- The Authority will implement Mitigation Measure PR-MM#1: Temporary Restricted Access to Park Facilities during Construction; Mitigation Measure PR-MM#2: Providing Park Access; Mitigation Measure PR-MM#3: Implement Standard Safety Measures; Mitigation Measure PR-MM#4: Develop and Implement a Trail Facilities Plan; Mitigation Measure PR-MM#5: Modifications to Recreational Uses; and Mitigation Measure PR-MM#8: Permanent Changes to Access to Parks, Recreation Resources, and/or Trails to reduce construction-related impacts to affected parks, recreation, and open space resources. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measures PR-MM#1 and PR-MM#2 will ensure that access to facilities will remain unaffected by construction activities by providing alternative access routes to temporarily restricted park facilities and by ensuring that connectivity will remain after construction. Mitigation Measure PR-MM#4 will set conditions for the temporary closure and/or detouring of existing trails. Implementation of these mitigation measures could potentially result in secondary environmental impacts, as potential detours resulting from the measures would occur outside areas identified as temporary or permanent impact areas for the Preferred Alternative. The precise details of detour routes are not known at this time, but depending on local conditions, they could induce temporary transportation or local air quality impacts. However, these impacts are not expected to be significant.

Mitigation Measure PR-MM#3 will implement standard safety measures for detours, signage, and post-construction access.

Mitigation Measure PR-MM#5 will set conditions to use land from park, recreation, and school play areas for temporary impact areas during the construction period. Development of these impact areas could result in secondary environmental impacts, including emissions and fugitive dust from construction equipment, construction-related noise, construction-related road closures or traffic delays, mobilization of extant hazardous materials or wastes, development of previously undeveloped land due to private property acquisitions or displacements, and impacts on biological and cultural resources. It is anticipated that such effects would be minor and mostly short term.

Mitigation Measure PR-MM#8 will require the Authority to implement alternative access if the project proposed closure restricts connectivity to a park or recreation resource. Mitigation Measure PR-MM#8 will also require that the Authority consult with the property owner regarding the specific conditions of the changes to access and compensation for, or replacement or enhancement of, the access including trailheads, driveways, or parking areas at the applicable recreation resource. Modifications resulting from Mitigation Measure PR-MM#8 could result in secondary environmental impacts, including emissions and fugitive dust from construction equipment, construction-related noise, construction-related road closures or traffic delays, mobilization of extant hazardous materials or wastes, and impacts on biological and cultural resources. However, it is anticipated that such effects would be minor and mostly short term.

The Authority finds that implementation of Mitigation Measures PR-MM#1, PR-MM#2, PR-MM#3, PR-MM#4, PR-MM#5, and PR-MM#8 are required under the Preferred Alternative and that these mitigation measures will reduce the project's construction-related impacts to access, noise, vibration, air quality, and visual changes to parks, recreation, and open space resources to a less than significant level.

4.14.3 Impact PK#3: Changes to Park, Recreation, and Open Space Resource Character.

Operations of the Preferred Alternative could impact passive recreational activities by introducing transportation noise and vibrations to recreational areas. Aboveground sections of the Preferred Alternative alignment could also affect the scenic vistas available to patrons of the recreation resources. Operations of the Preferred Alternative would alter park character by preventing the use of a recreation resource and/or by creating a physical or perceived barrier. This represents a significant impact for the following resources:

- Tejon Equestrian Park
- Palmdale Hills Trail (Proposed Extension)
- Lang Station Open Space at Bee Canyon

As stated, all impacted parks, recreation and open space resources are located within the Central Subsection. As such, operation of the Preferred Alternative would result in significant impacts to the character of existing park, recreation, and open space resources.

- The Authority will implement Mitigation Measure PR-MM#7: Permanent Easement from Parks, Recreation Resources, and/or Trails, Mitigation Measure PR-MM#8: Permanent Changes to Access to Parks, Recreation Resources, and/or Trails, and Mitigation Measure PR-MM#9: Permanent Acquisition of Public Property from Land and/or Trails Planned for Public Recreational Use to reduce permanent impacts to the character park, recreation, and open space resource.

In accordance with Mitigation Measure PR-MM#7 if a permanent easement (for the facility and facility maintenance access) is required across a park, recreation resource, and/or trail, the Authority will compensate for the loss of the park, recreation resource, and/or trail in accordance with the Uniform Act and the California Park Preservation Act. As required by Mitigation Measure PR-MM#8, the Authority will provide compensation for, or enhancement of, access including trailheads, driveways or parking areas at the recreation resource. Impacts related to noise, air quality, and aesthetics would be minimized through the implementation of applicable IAMFs and mitigation measures as discussed in those respective resource sections. Mitigation Measure PR-

MM#9 will require the Authority to continue to work with the relevant jurisdictions on the establishment of appropriate compensation and relocation/realignment of a resource or additional property to accommodate the displaced planned park and recreational uses as a result the HSR system.

Implementation of Mitigation Measures PR-MM#7 through PR-MM#9 could result in secondary environmental impacts, such as emissions and fugitive dust from construction equipment, construction-related noise, construction-related road closures or traffic delays, mobilization of extant hazardous materials or wastes, and impacts on biological and cultural resources. However, it is anticipated that such impacts would be minor and mostly short term.

The Authority finds that implementation of Mitigation Measures PR-MM#7 through PR-MM#9 are required under the Preferred Alternative and that these mitigation measures will reduce the project's operation-related impacts to the character of existing park, recreation, and open space resources to a less than significant level.

4.15 Aesthetics and Visual Quality (Section 3.16 of the Final EIR/EIS)

As described in the Palmdale to Burbank Project Section Final EIR/EIS, four significant aesthetics and visual quality construction impacts (Impact AVQ#1: Temporary Construction Impacts on Existing Visual Quality, AVQ#2: Temporary Construction Impacts from Light and Glare, AVQ#3: Temporary Construction Impacts on Scenic Vistas and Drives, AVQ#4: Permanent Construction Impacts on Visual Quality) associated with the Preferred Alternative have been identified. Impacts AVQ#1, AVQ#2, and AVQ#3 will be reduced to a less than significant level with the implementation of mitigation measures, and Impact AVQ#4 will remain significant and unavoidable after implementation of mitigation.

4.15.1 Impact AVQ#1: Temporary Construction Impacts on Existing Visual Quality

Central Subsection

As discussed in Section 3.16, Aesthetics and Visual Quality, of the Final EIR/EIS, the majority of the Central Subsection is located within Landscape Unit 1 (i.e., Landscape Unit 1a through 1d) of the Project RSA. The Preferred Alternative in Landscape Unit 1 would be constructed as a series of tunnels (twin-bored), viaducts (elevated tracks), and at-grade sections. Construction disturbances would be more visible in Landscape Unit 1d and would be visible to residents, workers, and motorists. While motorists with a short exposure and low viewer awareness would be less sensitive to the construction around them, residents as well as recreationists, and bicyclists with a high viewer exposure and awareness would be highly sensitive to the construction activities. Additionally, temporary construction staging areas (CSA) would require the Overall, construction activities associated with the Preferred Alternative would contrast with the generally high natural harmony in Landscape Unit 1, which would temporarily decrease the overall visual quality rating of Landscape Unit 1 by one or more levels.

Burbank Subsection

As discussed in Section 3.16, Aesthetics and Visual Quality, of the Final EIR/EIS, the Burbank Subsection is located within Landscape Unit 2. Implementation of the Preferred Alternative would cross through a series of tunnels (twin-bored) and cut-and-cover sections. Construction activities would result in substantial visual disturbance in Landscape Unit 2. Additionally, construction activities associated with the Preferred Alternative would be highly visible and would temporarily decrease the overall visual quality of the area one or more levels.

Although construction activities associated with the Preferred Alternative would result in significant impacts related to visual quality, these impacts would be temporary in duration.

Mitigation Measures

- The Authority will implement Mitigation Measure AVQ-MM#1: Minimize Visual Disruption from Construction Activities to reduce temporary impacts related to visual disturbance during construction.

Mitigation Measure AVQ-MM#1 will require the contractor to implement measures to minimize construction-related disruption to aesthetics and visual quality, including activities such as minimizing preconstruction clearing, limiting building removal, post-construction regrading, and avoiding locating CSAs within 500 feet of existing residential neighborhoods, recreational areas, and other sensitive land uses.

These measures would substantially reduce the noticeability of the construction activities for project neighbors. The contractor will be required to prepare a technical memorandum prior to construction identifying how the measures will be implemented to reduce impacts to a less than significant level. This technical memorandum will be reviewed and approved by the Authority.

The Authority finds that implementation of Mitigation Measure AVQ-MM#1 is required under the Preferred Alternative and that this mitigation measure will reduce the project's construction-related impacts to visual quality to a less than significant level.

4.15.2 Impact AVQ#2: Temporary Construction Impacts from Light and Glare

Central Subsection

Construction of the Preferred Alternative in Landscape Unit 1 would create new sources of light and glare that may temporarily affect nighttime views. In Landscape Unit 1, lighting may be an annoyance for some at the isolated and sporadic rural residential developments along the Preferred Alternative alignment. Construction activities for the Preferred Alternative, at any given location, would typically last 1 to 2 years, although some construction activities would last for up to 5 years.

Burbank Subsection

Construction of the Preferred Alternative in Landscape Unit 2 would create new sources of light and glare that may temporarily affect nighttime views in several sensitive receptors (i.e., residential communities) located along the Preferred Alternative alignment. Similar to Landscape Unit 1, construction activities for the Preferred Alternative, at any given location, would typically last 1 to 2 years, with some construction activities lasting up to 5 years.

Mitigation Measures

- The Authority will implement Mitigation Measure AVQ-MM#2: Minimize Light Disturbance during Construction to reduce temporary impacts related to light and glare.

Mitigation Measure AVQ-MM#2 will require nighttime construction lighting to be shielded and directed downward in such a manner to minimize light that falls outside the construction site boundaries. The contractor will be required to prepare a technical memorandum prior to construction verifying how nighttime lighting would be shielded and directed downward to reduce impacts.

The Authority finds that implementation of Mitigation Measure AVQ-MM#2 is required under the Preferred Alternative and that this mitigation measure will reduce the project's construction-related impacts related to nighttime and glare to a less than significant level.

4.15.3 Impact AVQ#3: Temporary Construction Impacts on Scenic Vistas and Drives

Central Subsection

Construction activities associated with the Preferred Alternative would cross several scenic drives identified in Landscape 1, such as the Sierra Highway (near Una Lake), Soledad Canyon Road, and Aliso Canyon Road (see Section 3.16.5 of the Final EIR/EIS). Furthermore, construction

activities would cross scenic drives at Little Tujunga Canyon Road, and the Preferred Alternative alignment would run parallel to the SR 14 highway scenic drive.

Burbank Subsection

There are no designated scenic vistas or drives located within Landscape Unit 2. Thus, no impacts would occur in this regard.

Mitigation Measures

- The Authority will implement Mitigation Measure AVQ-MM#1: Minimize Visual Disruption from Construction Activities to reduce temporary impacts to scenic vistas and drives.

Mitigation Measure AVQ-MM#1 will require measures to minimize construction-related visual/aesthetic disruption, including activities such as minimizing preconstruction clearing, limiting building removal, post-construction regrading, and avoiding locating CSAs within 500 feet of recreational areas and other sensitive land uses. The contractor will be required to prepare a technical memorandum, prior to construction, identifying how the Palmdale to Burbank Project Section would implement these measures to reduce impacts. Furthermore, Mitigation Measure AVQ-MM#1 will require the preservation of existing vegetation where feasible that may screen views of construction activities, and require the regrading, re-contouring, and revegetation of areas disturbed by construction, staging, and storage. These measures will open up and minimize views of construction elements that may contribute to impacts to visual quality, and locate CSAs away from sensitive viewer groups. Further, the mitigation measure will not result in secondary environmental impacts.

The Authority finds that implementation of Mitigation Measure AVQ-MM#1 is required under the Preferred Alternative and that this mitigation measure will reduce the project's construction-related impacts related to scenic vistas and drives to a less than significant level.

4.15.4 Impact AVQ#4: Permanent Construction Impacts on Visual Quality

Central Subsection

As shown in Table 3.6-14 of the Final EIR/EIS construction activities associated with the Preferred Alternative would result significant and unavoidable impacts to the visual quality in Landscape Unit 1 from the following key viewpoints (KVPs):

- **KVP 1.3: Soledad Siphon.** KVP 1.3 is located along Sierra Highway in the vicinity of Lake Palmdale and Una Lake looking south along the highway. Preferred Alternative would change visual quality from this KVP from moderate to moderately low. However, the overall permanent changes to the KVP would remain significant. The Authority will implement Mitigation Measure AVQ-MM#3: Incorporate Design Aesthetic Preferences into Final Design and Construction of Non-Station Structures and Mitigation Measure AVQ-MM#4: Provide Vegetation Screening Along At-Grade and Elevated Guideways Adjacent to Residential Areas to reduce the permanent impacts to the visual quality of KVP 1.3. Mitigation Measures AVQ-MM#3 and AVQ-MM#4 will incorporate local design and aesthetic preferences into the design of the viaduct as well as require landscape treatments to screen the elevated guideway. Implementation of these measures would reduce the prominence of the embankment and project features. However, after mitigation, this impact would remain significant and unavoidable under CEQA.
- **KVP 1.16: Agua Dulce Canyon Road**. KVP 1.16 is located on Agua Dulce Canyon Road south of SR 14 looking south. The Preferred Alternative would change visual quality from moderate to moderately low. However, the overall permanent changes to the KVP would remain significant. The Authority will implement Mitigation Measure AVQ-MM#4: Provide Vegetation Screening Along At-Grade and Elevated Guideways Adjacent to Residential Areas, Mitigation Measure AVQ-MM#5: Replant Unused Portions of Land Acquired for the HSR, and Mitigation Measure AVQ-MM#6: Screen Traction Power Supply Stations and Radio Communication Towers. These measures require landscape screening adjacent to residential areas, landscape treatments along the embankment, and the planting of vegetation within

land acquired for the Preferred Alternative that is not used for the HSR or related supporting infrastructure. Implementation of these measures would reduce the prominence of the embankment and project features. However, after mitigation, this impact would remain significant and unavoidable under CEQA.

The Authority finds that implementation Mitigation Measures AVQ-MM#3, AVQ-MM#4, AVQ-MM#5, and AVQ-MM#6 are required under the Preferred Alternative. However, with the implementation of these Mitigation Measures, the overall impacts to the visual quality in the Central Subsection would remain significant and unavoidable. The Authority finds that there are no other feasible mitigation measures or alternatives that could be adopted to reduce this remaining impact to less –than significant levels. The Authority finds that despite this otherwise significant and unavoidable impact, specific economic, social, and other considerations identified in the Statement of Overriding Considerations (Chapter 8) support certification of the Final EIR/EIS and approval of the project.

Burbank Subsection

Implementation of the Preferred Alternative would improve the visual quality of Landscape Unit 2. The Burbank to Los Angeles Project Section would add mostly underground station facilities near Hollywood Way such as the transit center, resulting in minimal changes in visual quality. Under the Preferred Alternative, cultural order would be enhanced with a wider sidewalk and no fence barriers separating the station from the street. The transit center would be heavily landscaped with trees, enhancing the presently low level of natural harmony. As such, visual quality would be raised to moderately high overall. The Preferred Alternative would not degrade the existing visual character and quality of the site and its surroundings. Therefore, the impacts to the existing visual character and quality of the Burbank Subsection would be less than significant.

4.16 Cultural Resources (Section 3.17 of the Final EIR/EIS)

This section sets forth the Authority's CEQA findings concerning the impacts of the Preferred Alternative on cultural resources. Because the project is also a federal undertaking, the project is subject to National Environmental Policy Act and Section 106 of the National Historic Preservation Act, which provides considerable protection for cultural resources. The development of the management documents and treatment plans pursuant to Section 106 regulations involve extensive impact analysis, project redesign, consultation with Native Americans, and other consultation with agencies to develop a plan that provides for the best possible preservation planning and other mitigation measures for the resource present at the project site. As described below, the Section 106 process is a separate, but complementary, method for protection for cultural resources, distinct from CEQA.

As explained in the Palmdale to Burbank Project Section Final EIR/EIS (Section 3.17, Cultural Resources), a Programmatic Agreement (PA) to satisfy the requirements of Section 106 for the project has been signed by the FRA, the Authority, the Advisory Council on Historic Preservation, the State Historic Preservation Officer (SHPO), and consulting parties. The PA provides an overall regulatory framework for conducting the Section 106 process throughout the California HSR system and the documentation process for the Burbank to Los Angeles Project Section was conducted in accordance with the PA.

The PA also presents the approach for treatment of historic properties, including development of a memorandum of agreement (MOA) for each HSR section to address the resolution of adverse effects on historic properties, defined as those cultural objects, sites, or districts that meet the eligibility criteria for listing in the National Register of Historic Places (NRHP). The MOA stipulates the treatment measures that will be applied for cultural resources impacted by the project and calls for the development of two treatment plans: an Archaeological Treatment Plan (ATP) and a Built Environment Treatment Plan (BETP). The ATP and the BETP set forth a prescriptive process by which these treatment measures will be applied to each known resource and will outline measures for the phased identification of historic properties as additional parcel access is obtained and design work is completed. The MOA and treatment plans provide specific

performance standards that ensure each impact will be avoided, minimized, or mitigated to the extent possible and provide enforceable performance standards to follow the NRHP and the Secretary of the Interior's standards and guidelines when implementing the mitigation measures (see Stipulations III and VIII in the PA). The treatment plans will conform to the principles of the Advisory Council on Historic Preservation's Treatment Handbook, as well as SHPO Guidelines. These treatment plans dictate how the requirements of Section 106 will be met and also include the mitigation measure requirements.

As described in the Palmdale to Burbank Project Section Final EIR/EIS (Section 3.17, Cultural Resources), three significant cultural resources construction impacts (Impact CUL#1: Effects on Known Archaeological Resources Caused by Construction Activities, Impact CUL#2: Effects on Unknown Archaeological Resources Caused by Construction Activities, and Impact CUL#3: Effects on human Remains Discovered during Construction Activities) associated with the Preferred Alternative have been identified. Impacts CUL#1, CUL#2, and CUL#3 will be reduced to a less than significant level with the implementation of mitigation measures.

4.16.1 Impact CUL#1: Effects on Known Archaeological Resources Caused by Construction Activities

The Preferred Alternative would result in impacts on known archaeological resources within the archaeological area of potential effects (APE), as listed in Table 3.17-9 of the Final EIR/EIS. Due to limited access, many of these known archaeological resources have not yet been surveyed for implementation of the Preferred Alternative. Known archaeological resources that have not yet been evaluated would undergo phased evaluation, if warranted, when access is granted.

IAMFs included in the Preferred Alternative would be implemented to avoid or minimize impacts to known archaeological resources. CUL-IAMF#1 will develop a geospatial layer to identify the locations of all known archaeological and historic architectural resources. CUL-IAMF#2 will minimize construction impacts by ensuring necessary data (such as resource locations) are attained, monitoring efforts are clearly delineated, and educational materials and training sessions are distributed and administered. CUL-IAMF#5 will entail preparation of an archaeological sensitivity monitoring plan that will identify and map areas of archaeological sensitivity and develop a systematic approach to cultural resource monitoring. Sites that cannot be relocated will be considered archaeologically sensitive and will be monitored during construction. Although implementation of CUL-IAMF#1, CUL-IAMF#2, and CUL-IAMF#5 will avoid and minimize impacts on known archaeological resources, eleven resource sites as identified in Table 3.17-19 of the Final EIR/EIS would still be susceptible to construction impacts, with the potential to cause a substantial change in the significance of an archaeological resource pursuant to Section 15064.5 of the CEQA Guidelines, and would be significant under CEQA.

- The Authority will implement Mitigation Measures CUL-MM#1 and CUL-MM#4 to ensure that appropriate mitigation measures for each eligible archaeological resource will be determined by consulting with the MOA signatories and tribal consulting parties. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measure CUL-MM#1 will implement policies identified in the ATP for archaeological resources identified during phased identification. These policies include consulting with MOA signatories and concurring parties to determine the preferred treatment of the resources and appropriate mitigation measures, if resources can be preserved in place, and development of a data recovery plan for applicable resources. Mitigation Measure CUL-MM#4 details that the MOA and ATP may identify resources that may be protected in place through application of BMPs that will reduce ground-disturbing activities and mitigate adverse effects.

The Authority finds that implementation of Mitigation Measures CUL-MM#1 and CUL-MM#4 are required under the Preferred Alternative and that these mitigation measures will reduce construction impacts on the nine known archaeological resources to a less –than significant level.

4.16.2 Impact CUL#2: Effects on Unknown Archaeological Resources Caused by Construction Activities

Ground disturbance associated with construction of the Preferred Alternative may result in impacts on unknown or previously undiscovered archaeological resources located within the APE. Unknown archaeological sites might represent the full range of prehistoric or historic activities conducted over time, including prehistoric lithic scatters and village sites, historic-era homestead remains, and human burials. Unknown or unrecorded archaeological resources that are not observable when conducting standard surface archaeological inspections, including subsurface buried archaeological deposits, may exist in areas surveyed, within the urbanized or rural areas, or areas where permission to enter has not been granted.

The Preferred Alternative includes CUL-IAMF#3, which will avoid or minimize impacts by ensuring the completion of preconstruction cultural resource surveys in previously inaccessible portions of the archaeological APE. Even with the incorporation of CUL-IAMF#3, various resource sites would remain susceptible to construction impacts, with the potential to cause a substantial change in the significance of an archaeological resource pursuant to Section 15064.5 of the CEQA Guidelines. The potential to cause a substantial change in the significance of an archaeological resource represents a significant impact.

The Authority will implement the following mitigation measures:

- Mitigation Measure CUL-MM#1: Mitigate adverse effects to archaeological and built-environment resources identified during phased identification and comply with the stipulations regarding the treatment of archaeological and historic built resources in the PA and MOA;
- Mitigation Measure CUL-MM#2: Halt work in the event of an archaeological discovery, and comply with the PA, MOA, ATP, and all state and federal laws, as applicable; and
- Mitigation Measure CUL-MM#3: Implement other mitigation for effects to precontact archaeological sites to reduce impacts from ground-disturbing activities during construction.

Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measures CUL-MM#1 and CUL-MM#3 will require consultation with MOA signatories, concurring parties, and tribal consulting parties to determine the preferred treatment and appropriate mitigation measures and by developing meaningful mitigation measures for effects on as-of-yet-unidentified Native American archaeological resources that cannot be avoided. CUL-MM#2 will halt construction activities and require compliance with 48 Fed. Reg. 44716-42 and 14 Cal. Code Regs. Chapter 3, Article 9, Sections 15120–15132, should there be an unanticipated archaeological discovery.

The Authority finds that Mitigation Measures CUL-MM#1, CUL-MM#2, and CUL-MM#3 are required under the Preferred Alternative and that these mitigation measures will reduce impacts on unknown archaeological resources due to construction activities to a less than significant level.

4.16.3 Impact CUL#3: Effects on Human Remains Discovered during Construction Activities

Ground disturbance associated with construction of the Preferred Alternative may result in impacts on buried human remains located within the archaeological APE. Human burial sites that are not observable when conducting standard surface archaeological inspections, including subsurface buried archaeological deposits, may exist in areas surveyed, within the urbanized or rural areas, or areas where permission to enter has not been granted.

Prior to construction activities, the Authority will develop a geospatial layer to identify the locations of all burial sites, as feasible (CUL-IAMF#1). Survey efforts conducted at this time will inform necessary treatment of identified burial sites. Additionally, the Authority will use the geospatial layer and archaeological sensitivity maps to develop sensitivity mapping for such sites and exercise caution around these areas in order to avoid possible impacts (CUL-IAMF#5). Even with

the incorporation of IAMFs, the potential to impact buried human remains during construction is considered a significant impact under CEQA.

The Authority will implement the following mitigation measures:

- Mitigation Measure CUL-MM#1: Mitigate adverse effects to archaeological and built-environment resources identified during phased identification and comply with the stipulations regarding the treatment of archaeological and historic built resources in the PA and MOA;
- Mitigation Measure CUL-MM#2: Halt work in the event of an archaeological discovery, and comply with the PA, MOA, ATP, and all state and federal laws, as applicable; and
- Mitigation Measure CUL-MM#3: Implement other mitigation for effects to precontact archaeological sites to reduce impacts related to discovery of buried human remains during construction. Because of text length, mitigation measures are presented separately in the MMEP.

Mitigation Measures CUL-MM#1, CUL-MM#2, and CUL-MM#3 will reduce impacts from ground-disturbing activities from construction by consulting with MOA signatories, concurring parties, and tribal consulting parties to determine the preferred treatment and appropriate mitigation measures, and by halting work in the event on an unanticipated discovery. Should the discovery include human remains, Mitigation Measure CUL-MM#2 will require compliance with federal and state regulations and guidelines regarding the treatment of human remains, including relevant sections of the Native American Graves Protection and Repatriation Act (3I[d]); California Health and Safety Code, Section 8010 et seq.; and Cal. Public Res. Code Section 5097.98; and consult with the NAHC, tribal groups, and the SHPO.

The Authority finds that implementation of Mitigation Measures CUL-MM#1, CUL-MM#2, and CUL-MM#3 are required under the Preferred Alternative and that these mitigation measures will reduce impacts on buried human remains due to construction activities to a less than significant level.

5 CUMULATIVE IMPACTS (SECTION 3.19 OF THE FINAL EIR/EIS)

This section presents the Authority's findings regarding the cumulative impacts from implementing the Preferred Alternative in combination with other closely related past, present, and reasonably foreseeable future projects. The cumulative impact analysis for all resources is based on the cumulative project lists (Volume 2, Appendix 3.19-A, Cumulative Project List, of the Final EIR/EIS), as well as plans and projections listed in Table 2-H-1 of Volume 2, Appendix 2-H, Regional and Local Policy Consistency Analysis, of the Final EIR/EIS.

CEQA defines cumulative impacts as two or more individual impacts that, when evaluated together, are considerable or capable of compounding or increasing other environmental impacts (CEQA Guidelines, Section 15355). Under CEQA, when a project would contribute to a significant cumulative impact, an EIR must discuss whether the project's incremental effect would be "cumulatively considerable." Cumulatively considerable means that the project's incremental effect would be significant when viewed in the context of past, present, and reasonably probable future projects that contribute to the cumulative impact. The discussion of cumulative impacts need not provide as much detail as that provided for the effects attributable to the project alone (CEQA Guidelines, Section 15130, subdivision [b]). As described in the Final EIR/EIS, the focus of the cumulative impacts analysis is on the Preferred Alternative and the regional context appropriate for each resource area, including adjacent sections of the California HSR system.

As presented in the Final EIR/EIS, Section 3.19, Cumulative Impacts, for the following subject areas, the analysis concludes that cumulative impacts, including impacts associated with construction and operation of the project, are less than significant under CEQA: Transportation; EMF/EMI; Public Utilities and Energy; Biological and Aquatic Resources; Hydrology and Water Resources; Hazardous Materials and Wastes; Safety and Security; Station Planning, Land Use, and Development; Agricultural Farmland and Forest Land; Parks, Recreation, and Open Space; and Cultural Resources. Because the overall cumulative impact in each of these subject areas is determined to be less than significant, as described in Section 3.19, Cumulative Impacts, the project cannot contribute to a significant cumulative impact and therefore the project contributions are less than significant. Consequently, these subjects are not discussed further below as the discussion focused on significant cumulative impacts to which the project would contribute.

5.1 Air Quality and Global Climate Change

Air pollutant emissions generated during construction of the Preferred Alternative, in combination with emissions from the construction of other planned development, would exceed SCAQMD and AVAQMD air pollutant thresholds. These exceedances represent significant cumulative impacts. AQ-IAMF#1 though AQ-IAMF#6 will be incorporated into project design to avoid or minimize construction emissions, but even with the incorporation of IAMFs, project-related construction-period emissions would still exceed local thresholds.

The Authority will implement Mitigation Measures AQ-MM#1and AQ-MM#3 to further reduce project-related construction-period emissions. These mitigation measures will reduce emissions by requiring the Authority to enter into agreements with SCAQMD and AVAQMD to achieve net zero emissions as well as requiring the use of ZE or NZE technology for 25 percent of all light-duty on-road vehicles, with a goal to use ZE or NZE technology for 100 percent of the light-duty on-road vehicles, 25 percent of the heavy-duty on-road vehicles, and a minimum of 10 percent for off-road conduction equipment used for construction. However, until contractual agreements between the Authority and the SCAQMD and the AVAQMD are in place, respectively, it is determined that the Preferred Alternative would expose sensitive receptors to substantial NO_x and CO concentrations that would exceed construction emission thresholds. Therefore, construction of the Preferred Alternative would contribute to these significant cumulative impacts.

The Authority finds that there are no other feasible mitigation measures or alternatives that will reduce these impacts to a less-than-cumulatively-considerable level. To the extent that this cumulatively considerable adverse impact remains significant and unavoidable, the Authority finds that specific economic, social, and other considerations identified in the Statement of

Overriding Considerations (Chapter 8 of this document) support certification of the Final EIR/EIS and approval of the project.

5.2 Noise and Vibration

Construction of the Preferred Alternative, in conjunction with other past, present, and reasonably foreseeable projects, would result in noise effects that would last for the duration of construction activities, but would not be permanent. In areas of predominantly urban and suburban development, particularly Palmdale and Burbank, construction of the Preferred Alternative would result in noise impacts on residential sensitive receivers. Under the Preferred Alternative, the contractor is required to comply with FRA guidelines for noise and vibration, which will partially minimize impacts on sensitive receptors; however, noise and vibration generated by construction could still exceed thresholds at nearby sensitive receptors during construction of the Preferred Alternative. N&V-MM#3 (Implement California High-Speed Rail Project Noise Mitigation Guidelines), N&VM-M#4 (Vehicle Noise Specification), N&V-MM#5 (Special Track Work at Crossovers and Turnovers), and N&V#6 (Additional Noise Analysis Following Final Design) require the contractor to meet FRA and FTA construction noise and vibration limits, thereby reducing the impact from construction. While these measures would reduce effects such that the contribution of vibration during construction of the Preferred Alternative would not considerably contribute to a cumulative impact, temporary cumulative noise impacts are anticipated during construction because noise volumes would still exceed construction noise thresholds. The Preferred Alternative's contribution to the cumulative construction noise impact is cumulatively considerable.

Train operation, in conjunction with other nearby projects, would exceed noise thresholds for residential receivers within the Central Subsection. This represents a significant cumulative impact. The Authority will implement Mitigation Measures N&V-MM#4 and N&V-MM#5 to reduce operations noise, but noise volumes would still exceed noise thresholds. The Preferred Alternative's contribution to the cumulative operation noise impact is cumulatively considerable.

The Authority finds that there are no other feasible mitigation measures or alternatives that will reduce these impacts to a less-than-cumulatively-considerable level. To the extent that this cumulatively considerable adverse impact remains significant and unavoidable, the Authority finds that specific economic, social, and other considerations identified in the Statement of Overriding Considerations (Section 8 of this document) support certification of the Final EIR/EIS and approval of the project.

5.3 Geology, Soils, Seismicity, and Paleontological Resources

There would be no cumulative impacts associated with geologic hazards, soil hazards, or seismic hazards, given their localized nature. The Preferred Alternative's contribution to mineral resource impacts from conversion of mineral resource zones to a transportation use would be minimal and not result in a significant contribution to a cumulative impact. Additionally, construction of the Preferred Alternative, in combination with past, present, and reasonably foreseeable future development in the RSA, would not result in significant cumulative impacts on aggregate reserves. However, construction of the Preferred Alternative, in combination with past, present, and reasonably foreseeable future development in the RSA would result in significant cumulative impacts on paleontological resources.

The Preferred Alternative will implement standard construction practices to identify, protect, and recover paleontological resources during excavation and other ground-disturbing construction activities conducted aboveground. However, TBM construction would likely destroy paleontological resources encountered beneath the ground surface, because typical paleontological resource protection techniques (such as visual surveying and monitoring) are not feasible during tunneling operations. The Preferred Alternative's contribution to the cumulative construction paleontological impact is cumulatively considerable.

The Authority finds that there are no feasible mitigation measures or alternatives that will reduce this impact to a less-than-cumulatively-considerable level. To the extent that this cumulatively considerable adverse impact remains significant and unavoidable, the Authority finds that specific economic, social, and other considerations identified in the Statement of Overriding Considerations (Chapter 8 of this document) support certification of the Final EIR/EIS and approval of the project.

5.4 Socioeconomics and Communities

Construction of the Preferred Alternative, along with other planned projects within the cumulative RSA, could permanently divide established communities and could permanently displace residences or businesses, necessitating construction of replacement housing or facilities. Implementation of a detailed Construction Management Plan and construction-related traffic plan would minimize a project's contribution to temporary disruptions to localized communities. However, the Preferred Alternative would still displace residential communities on a project-level basis, resulting in an incremental contribution to this cumulative impact.

The Authority will implement Mitigation Measures SO-MM#1 (Implement measures to reduce impacts associated with the division of residential neighborhoods) and SO-MM#2 (Implement measures to reduce impacts associated with the division of communities) to reduce community impacts from the Preferred Alternative. SO-MM#1 will facilitate the transition of displaced residents into nearby replacement housing, and SO-MM#2 will require outreach activities to homeowners, residents, landowners, business owners, community organizations, and local officials in affected neighborhoods to gather and utilize input to maintain community cohesion and avoid physical deterioration. Despite these measures, construction of the Preferred Alternative and cumulative projects would permanently disrupt established patterns of interaction among community residents and directly displace residences and businesses. The Preferred Alternative's contribution to this cumulative socioeconomic impact is cumulatively considerable.

The Authority finds that there are no other feasible mitigation measures or alternatives that will reduce this impact to a less-than-cumulatively-considerable level. To the extent that this cumulatively considerable adverse impact remains significant and unavoidable, the Authority finds that specific economic, social, and other considerations identified in the Statement of Overriding Considerations (Chapter 8 of this document) support certification of the Final EIR/EIS and approval of the project.

5.5 Aesthetics and Visual Quality

Construction of the Preferred Alternative in conjunction with reasonably foreseeable future projects could degrade visual and aesthetic resources. The Preferred Alternative would be highly visible and could detract from visual quality of existing views, although large portions of the Preferred Alternative footprint is underground and associated surface facilities are mostly in developed areas characterized by urban and transportation infrastructure-dominated settings. The Preferred Alternative would result in a permanent change to visual quality for KVP 1.3, and KVP 1.16 in Landscape Unit 1. The Authority will implement Mitigation Measures AVR-MM#3, AVR-MM#4, AVR-MM#5, and AVR-MM#6 to address changes in visual quality. These measures will incorporate local design and aesthetic preferences into the design of viaducts as well as require landscape screening adjacent to residential areas, landscape treatments along the embankment, and the planting of vegetation within land acquired for the Preferred Alternative that is not used for the HSR or related supporting infrastructure. Despite these measures, the Preferred Alternative would permanently impact the visual quality within the Central Subsection. The Preferred Alternative's contribution to the cumulative aesthetic and visual quality impact is cumulatively considerable.

The Authority finds that there are no other feasible mitigation measures or alternatives that will reduce this impact to a less-than-cumulatively-considerable level. To the extent that this cumulatively considerable adverse impact remains significant and unavoidable, the Authority

finds that specific economic, social, and other considerations identified in the Statement of Overriding Considerations (Chapter 8 of this document) support certification of the Final EIR/EIS and approval of the project.

6 FEASIBILITY OF POTENTIAL ALTERNATIVES

CEQA requires the lead agency, here the Authority, to consider a reasonable range of potentially feasible alternatives to the proposed project (California Public Resources Code [Cal. Public Res. Code], Sections 21002 and 21081; see also CEQA Guidelines, Section 15126.6). "Feasible" means capable of being accomplished in a successful manner within a reasonable time, taking into account economic, environmental, legal, social and technological factors (CEQA Guidelines, Section 15364). The range of alternatives to be considered is governed by a "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that will avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project (CEQA Guidelines, Section 15126.6[f]). At the same time, an EIR need not study in detail an alternative that a lead agency "has reasonably determined cannot achieve the project's underlying fundamental purpose" (In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings [2008] 43 Cal.4th 1143, 1165).

As discussed above, prior to moving forward with the project, CEQA requires that the lead agency find that "specific economic, legal, social, technological, or other considerations, including considerations for the provision of employment opportunities for highly trained workers, make infeasible the project alternatives identified in the environmental impact report" (Cal. Public Res. Code, Section 21081). The determination of infeasibility "involves a balancing of various 'economic, environmental, social, and technological factors'" (City of Del Mar v. City of San Diego [1982] 133 Cal.App.3d 401, 417). Where there are competing and conflicting interests to be resolved, the determination of infeasibility "is not a case of straightforward questions of legal or economic feasibility," but rather, based on policy considerations (California Native Plant Society v. City of Santa Cruz [2009] 177 Cal.App.4th 957, 1001-02). "[A]n alternative that is 'impractical or undesirable from a policy standpoint' may be rejected as infeasible" (Id. at p. 1002 citing 2 Kostka & Zischke, Practice Under the Cal. Environmental Quality Act, (Cont.Ed.Bar 2010) section 17.29, p. 824).

The key policy considerations that must be balanced in determining the feasibility of the project alternatives include the following:

- The Authority's statutory responsibility, which is to:
  - "[D]irect the development and implementation of intercity high-speed rail service that is fully integrated with the state's existing intercity rail and bus network, consisting of interlinked conventional and high-speed rail lines and associated feeder buses. The intercity network in turn shall be fully coordinated and connected with commuter rail lines and urban rail transit lines developed by local agencies, as well as other transit services, through the use of common station facilities whenever possible." (Public Utilities Code, Section 185030)
- The purpose of the statewide HSR system is to provide reliable high-speed electrified train system that links the major metropolitan areas of the state and that delivers predictable and consistent travel times. A further objective is to provide an interface with commercial airports, mass transit and the highway network and relieve capacity constraints of the existing transportation system as increases in intercity travel demand in California occur, in a manner sensitive to and protective of California's unique natural resources.
- The purpose of the Palmdale to Burbank Section of the California HSR System is to provide the public with electric-powered HSR service that provides predictable and consistent travel times between the Antelope Valley and the San Fernando Valley, provide connectivity to airports, mass transit systems, and the highway network in the Antelope Valley and the San Fernando Valley; and to connect the Northern and Southern portions of the Statewide HSR System.
- The Authority's project objectives are to:

  - Provide intercity travel capacity to supplement critically over-used interstate highways and commercial airports.
  - Meet future intercity travel demand that would be unmet by current transportation systems and increase capacity for intercity mobility.
  - Maximize intermodal transportation opportunities by locating stations to connect with local transit, airports, and highways.
  - Improve the intercity travel experience for Californians by providing comfortable, safe, frequent, and reliable high-speed travel.
  - Provide a sustainable reduction in travel time between major urban centers.
  - Increase the efficiency of the intercity transportation system.
  - Maximize the use of existing transportation corridors and rights-of-way, to the extent feasible.
  - Develop a practical and economically viable transportation system that can be implemented in phases and generate revenues in excess of operations and maintenance costs.
  - Provide intercity travel in a manner sensitive to and protective of the region's natural and agricultural resources and reduce emissions and vehicle miles traveled (VMT) for intercity trips.

- The characteristics enumerated in Streets and Highways Code section 2704.09 for the statewide high-speed train system as a whole, which include electric trains that can operate at high speeds, specified non-stop service travel times between certain cities, and following existing transportation and utility corridors to the extent feasible, as determined by the Authority, to reduce the potential for environmental impacts.
- The ability of an alternative to comply with Federal Clean Water Act (CWA) Section 404 by qualifying as the "least environmentally damaging practicable alternative" (LEDPA) in terms of adverse effects on waters of the United States, including jurisdictional wetlands (CWA, Section 404[b][1]). Alternatives other than the LEDPA would not receive the federal Section 404 permit that is necessary for construction. In January 2024, the U.S. Army Corps of Engineers and USEPA provided letters concurring that the Authority's Preferred Alternative is the preliminary LEDPA for purposes of Section 404 compliance.
- Complexity of construction – Generally, construction is more complex within urban areas than in rural areas due to the necessity to minimize impacts on neighboring residences and businesses that are substantially more numerous in urban areas and the greater potential for conflicts with public utilities and infrastructure (i.e., sewer and water lines, local streets) in urban areas.
- The inherent tradeoffs in terms of environmental impacts that occur between (1) following existing transportation corridors, minimizing impacts on the biological resources, and agricultural lands and communities, but increasing impacts on urban communities and the urban environment and (2) departing from existing transportation corridors, minimizing impacts on urban communities and the urban environment, but increasing impacts on biological resources, agricultural lands, and agricultural communities.

6.1 Alternatives Considered in the Draft EIR/EIS and Not Selected for Approval

Separate from the Preferred Alternative, the Draft EIR/EIS evaluated the No Project Alternative, the Refined SR14 Build Alternative, the E1 Build Alternative, E1A Build Alternative, the E2 Build Alternative, and the E2A Build Alternative. The Refined SR14, E1, E1A, E2, and E2A Build Alternatives were not selected for approval and are discussed below. These alternatives are described in detail in Chapter 2, Alternatives, of the Final EIR/EIS.

Figure 3 shows the six project alternatives carried forth for analysis in the Draft EIR/EIS and Final EIR/EIS.

6.1.1 No Project Alternative

The No Project Alternative assumes that the Palmdale to Burbank Project Section would not be constructed. In assessing future conditions, it was assumed that all currently known, programmed, and funded improvements to the intercity transportation system (highway, rail, and transit) and reasonably foreseeable local development projects (with funding sources already identified) would be developed as planned by 2040.

The No Project Alternative is based on a review of all city and county general plans, regional transportation plans for all modes of travel, and agency-provided lists of pending and approved projects within Los Angeles County. For the environmental analysis, the No Project Alternative considers the effects of growth planned for the region, as well as existing and planned improvements to the highway, aviation, conventional passenger rail, and freight rail systems in the Palmdale to Burbank Project Section area through 2040. The scenario is based on future development projects and improvements to the intercity transportation system that are programmed and funded for construction. The current and future projects described below are as listed by the California Department of Transportation (Caltrans), Metro, Los Angeles Department of Transportation, and Southern California Association of Governments.

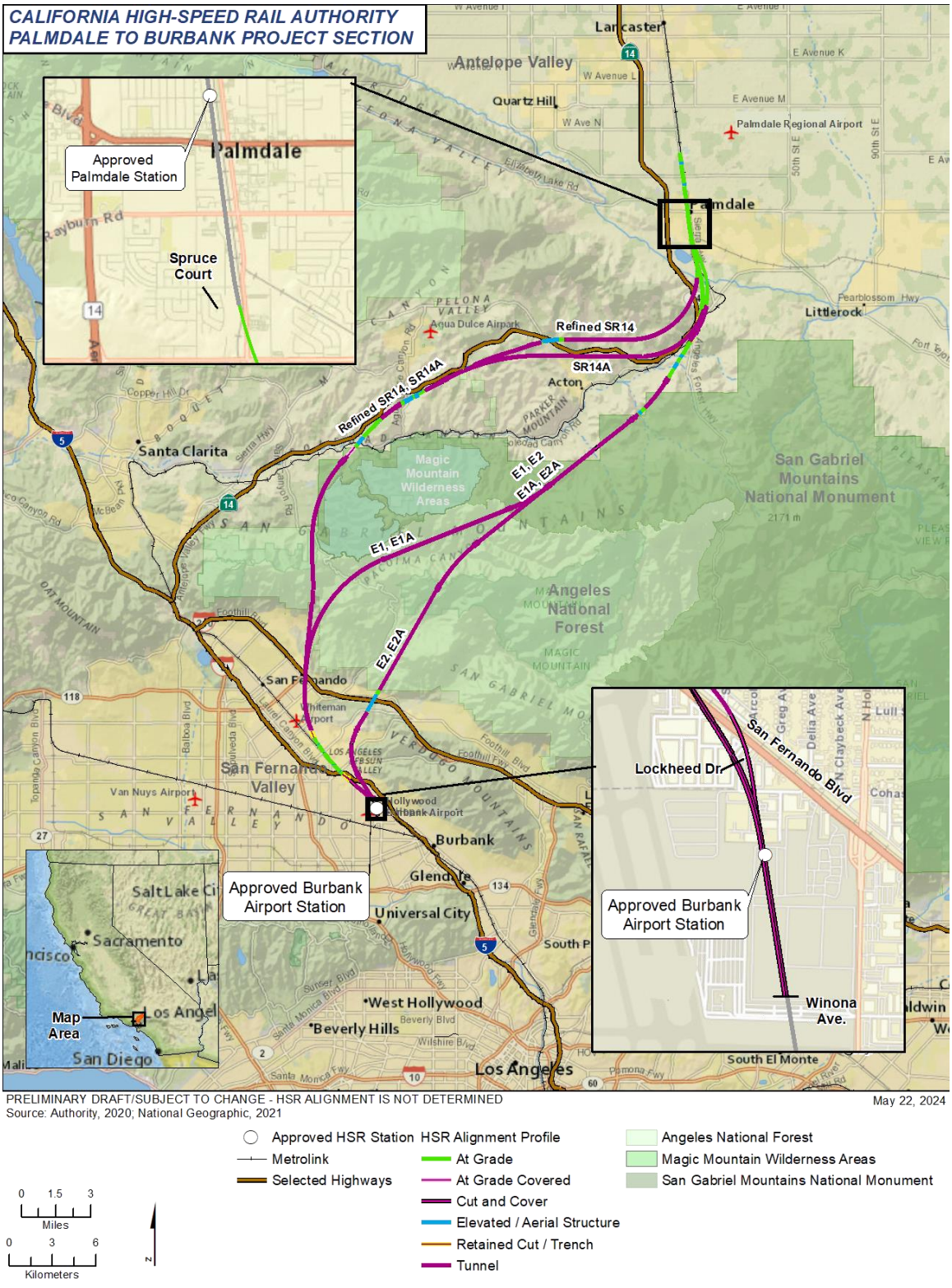

Figure 3 Palmdale to Burbank Project Section

6.1.2 Selection of the Preferred Alternative Over Other Final EIR/EIS Alternatives

The Authority identified the Preferred Alternative by considering environmental, economic, technical, and other factors, and balancing the adverse and beneficial impacts of the project on the human and natural environment. Taking this approach means that no single issue was a decisive factor in identifying the Preferred Alternative in any given geographic area. For the following reasons, the Authority Board selects the Preferred Alternative (see Figure 4) and rejects the other alternatives analyzed in the Final EIR/EIS. As explained below, the alternatives are rejected based on environmental and other feasibility considerations.

The Preferred Alternative performs the best of the Build Alternatives for several resources. The descriptions below address those areas and the judgment of the Authority in considering the performance of the Preferred Alternative in these resource areas:

- **Operational Noise:** The Preferred Alternative would result in the fewest number of sensitive residential receivers that would experience operational noise impacts. This is primarily due to the fact this alternative would be underground, in bored tunnel through the community of Acton. After mitigation, the Preferred Alternative would result in severe effects at 11 receptors, whereas the second least impactful alternative (Refined SR14) would affect 36, with the maximum number of receptors subject to severe impacts being 69. While the impact would remain significant and unavoidable after the implementation of Mitigation Measure N&V-MM#3, the Preferred Alternative would result in the fewest number of operational noise impacts post-mitigation and reduces impacts (in terms of number of severely impacted receptors) to less than a third of the second least impactful alternative.
- **Spoils Hauling Noise:** Noise impacts from truck traffic along spoils haul routes would temporarily or periodically substantially increase ambient noise levels in the project vicinity above levels existing without the project. Due to the Refined SR14, E1, E1A, E2, and E2A Build Alternatives' proximity to sensitive receivers, some receivers may still experience noise exceeding noise limits, making it an unavoidable impact for all Build Alternatives other than the Preferred Alternative. While the Preferred Alternative would result in spoils hauling noise, no severe construction noise from spoils hauling is anticipated. Severe noise impacts from truck traffic on spoils haul routes will occur near Acton (Refined SR14), south of Palmdale (E1, E1A, E2, and E2A), Shadow Hills neighborhood (E2 and E2A), and Lake View Terrance neighborhood (E2 and E2A).
- **Waters of the U.S.:** The Preferred Alternative (in addition to the E1A Build Alternative) would have the least impact on wetland waters of the U.S. While the E2A Build Alternative would have the least impact on nonwetland waters of the U.S., the Preferred Alternative would affect lower-quality non-wetland waters than the E2A Alternative. The Authority has concluded that the Preferred Alternative is the least environmentally damaging practicable alternative (LEDPA), indicating there is no other alternative that would have a lesser adverse impact on the aquatic ecosystem. USACE and EPA have preliminarily concurred that the Preferred Alternative is the LEDPA.
- **Surface Water Resources within the ANF:** The Preferred Alternative (as well as the Refined SR14 Alternative) would have the lowest potential risk to groundwater and surface water resources within the ANF due to tunnel construction because the alignment traverses areas with lower groundwater pressures and no known groundwater-dependent resources within the identified High (1) and Moderate (3) Risk Areas. The E2 and E2A Build Alternatives would have the highest potential risk to groundwater and surface water resources when compared to Refined SR14, E1, and E1A Build Alternatives and Preferred Alternative because of the comparatively higher groundwater pressures and greater prevalence of springs and streams with the identified High and Moderate Risk Areas.
- **Built Historic Resources:** The Preferred Alternative (as well as the Refined SR14 Alternative) would have the least potential for direct and indirect effects on built historic cultural resources compared to the other Build Alternatives, with three built historic resources

being affected. The Preferred Alternative (as well as the Refined SR14 Alternative) would have no effect on the Blum Ranch, the Blum Ranch Farmhouse, and the Eagle and Last Chance Mine Road because these resources are outside of their respective resource study areas.

- **Vulcan Mine:** The Vulcan Mine site, south of Lang Station Road within the ANF, is a sand and gravel mining operation. Vulcan Mine would serve as a deposition site for some of the spoils generated by the Preferred Alternative and the Refined SR14 Build Alternative. GEO-MM#1 requires that a restoration plan be developed for Vulcan Mine. Therefore, the Preferred Alternative and the Refined SR14 Build Alternative would result in the permanent restoration of Vulcan Mine to a more natural topography, which would benefit the surrounding environment. A highly degraded landscape would be restored within the ANF boundary, and this would improve the aesthetics of the area currently occupied by the inactive mine. This would benefit not only locals but also to all users of SR14 Freeway, from where there is a clear view of the proposed restoration.
- **Una Lake:** The Preferred Alternative (as well as the E1A, and E2A Build Alternatives) would avoid all impacts to Una Lake. As part of the Checkpoint process, the Authority discussed with the USACE and EPA various ways to reduce or avoid impacts to Una Lake. As a result of the discussions with USACE and EPA during the Checkpoint B process, the Authority developed three new alternatives with alignments that avoid Una Lake, which includes the Preferred Alternative and the E1A and E2A Build Alternatives.[4]
- **Pacific Crest Trail:** The Pacific Crest Trail (PCT) is outside the RSAs for the Preferred Alternative and the E1, E1A, E2, and E2A Build Alternatives. While operation of the Preferred Alternative and the Refined SR14 Build Alternative would have some noise effects on hikers and horses using the Pacific Crest Trail and Vasquez Rocks Natural Area Park, the Preferred Alternative would not require realignment of the PCT for construction because the Preferred Alternative alignment would pass underneath the resource in a bored tunnel.
- **Open Space:** The Hansen Dam Open Space is outside the RSA for the Preferred Alternative and the Refined SR14, E1, and E1A Build Alternatives. The Preferred Alternative therefore avoids impacting Hansen Dam Open Space. In contrast, the E2 and E2A Build Alternatives would result in direct impacts on the Hansen Dam Open Space by construction of an elevated railway within this open space area. The Lang Station Open Space is only in the RSA for the Preferred Alternative and the Refined SR14 Alternative, and both the Preferred Alternative and the Refined SR14 Alternative would result in direct impacts on the Lang Station Open Space that the E1, E1A, E2, and E2A alternatives would avoid. In both instances, the Build Alternatives result in some amount of permanent acquisition of these resources. However, after the implementation of Mitigation Measures PR-MM#6, PR-MM#7, PR-MM#8, PR-MM#9 and BIO-MM#101 (for the Preferred Alternative/Refined SR14 only), impacts associated with E2 and E2A Build Alternatives on Hansen Dam Open Space and impacts associated with the Preferred Alternative and the Refined SR14 Build Alternative on Lang Station Open Space, would be less than significant.
- **Aesthetics:** In general, during construction a greater and wider variety of visual impacts would occur under the Refined SR14, E2, and E2A Build Alternatives than under the Preferred Alternative and the E1 and E1A Build Alternatives. The Preferred Alternative and the E1 and E1A Build Alternatives would include the greatest extent of tunnels in terms of distance and would thus result in the least visual impact on its surroundings. The Refined SR14, E2, and E2A Build Alternatives, although they too include substantial below-grade portions, would cross various waterways and other scenic natural resources above grade, thereby causing greater changes in visual quality. Although the Preferred Alternative would

[4] In accordance with the NEPA/Section 404/408 Integration Process MOU between the Authority, FRA, USEPA, and USACE, Checkpoint A requires agency approval of the project Purpose and Need, Checkpoint B is required to demonstrate the project has evaluated a range of alternatives, and Checkpoint C requires evaluation to determine the Preliminary Least Environmentally Damaging Practicable Alternative (Authority 2010).

generally be either near existing transportation infrastructure or below ground between Palmdale and Burbank, large-scale overcrossing structures would block views in some relatively rural areas. Although the project components for the E2 and E2A Build Alternatives would be mostly below ground in tunnels and not visible between Palmdale and Burbank, project features near the tunnel portals would contrast with the natural harmony of some views, such as near Lake View Terrace and Big Tujunga Wash. There would be just two significant and unavoidable impacts under Preferred Alternative after implementation of mitigation measures (Agua Dulce Canyon Road, Soledad Siphon), equivalent to the number of significant and avoidable impacts under the E1 and E1A Build Alternatives, but less than the 4 significant and unavoidable aesthetic impacts associated with the E2 and E2 Build Alternatives and the 6 significant and unavoidable aesthetic impacts associated with the Refined SR14 Build Alternative.

The Preferred Alternative does not perform the best of the Build Alternatives for several resources. The descriptions below address those areas and the judgement of the Authority in nonetheless identifying the Preferred Alternative.

- **Residential Displacements:** The Preferred Alternative would result in the second-least residential displacements (essentially tied with the E1A alternative) among the Build Alternatives, although it could potentially result in fewer displacements than E1A. E2A would have the most (64), followed by Refined SR14 (51–54), then E2 (49), then E1A (39–44) and SR14A (39–42), then E1 (24–29). As indicated in the EIR/EIS, there is no deficit of available replacement housing units for the Preferred Alternative. Additionally, SOCIO-IAMF#2 requires following a rigorous process under the Uniform Relocation Assistance and Real Property Acquisition Policies Act for those ultimately displaced. SOCIO-IAMF#3 requires development of a relocation mitigation plan.
- **Archaeological Resources:** The Preferred Alternative would impact 11 known archaeological resources, the least following the E1A and E2A Build Alternatives, which would both affect 9 known archaeological resources. However, after the implementation of Mitigation Measures CUL-MM#1, CUL-MM#3, and CUL-MM#4, impacts would be less than significant for all Build Alternatives.
- **Potentially Contaminated Spoils and Hazardous Materials Impacts:** Overall, the Preferred Alternative and the Refined SR14 Build Alternative would generate the largest volume of potentially contaminated spoils. However, the project is not creating the contamination and contaminated spoils would be disposed of consistent with applicable regulations, avoiding any significant impacts for any of the Build Alternatives.
- **Hansen Dam Spreading Grounds:** The Preferred Alternative and the Refined SR14, E1, and E1A Build Alternatives alignments cross the Hansen Spreading Grounds. The Hansen Dam Spreading Grounds consist of a groundwater recharge facility where the Los Angeles County Flood Control District applies water within basins which allow the water to percolate into the San Fernando Groundwater Basin below. HWR-MM#3 (Compensation for Impacts on Hansen Spreading Grounds) requires that the Authority provide replacement groundwater recharge areas in the vicinity of existing recharge ponds within the Hansen Spreading Grounds to ensure no net loss in recharge area or capacity. The Preferred Alternative and the Refined SR14, E1, and E1A Build Alternatives alignments would result in the loss of approximately 8.9 acres of land in the Hansen Spreading Grounds; however, land directly adjacent to the Hansen Spreading Grounds appears to be suitable for replacement groundwater recharge areas. Several other alternatives have similar impacts to the Preferred Alternative, and mitigation has been designed to offset impacts to the spreading grounds in coordination with the Los Angeles County Flood Control District to maintain the groundwater recharge function and capacity of the Spreading Grounds.

In summary, the following factors contribute to the Authority's judgment in selecting the Preferred Alternative over other alternatives:

- The Preferred Alternative would result in the fewest number of sensitive residential receivers that would experience operational noise impacts.
- Spoils hauling noise is a significant and unavoidable impact for all Build Alternatives other than the Preferred Alternative.
- The Preferred Alternative is the preliminary LEDPA and would have the least impact on wetland waters of the U.S. (along with E1A). While the E2A Build Alternative would have the least impact on nonwetland waters of the U.S., the Preferred Alternative would affect lower-quality non-wetland waters than the E1A or E2A Alternative.
- The Preferred Alternative (as well as the Refined SR14 Alternative) would have the lowest potential risk and least potential impacts on surface water resources within the ANF because the alignment traverses areas with lower groundwater pressures and no known groundwater-dependent resources with the identified High (1) and Moderate (3) Risk Areas.
- The Preferred Alternative (as well as the Refined SR14 Alternative) would have the least potential for direct and indirect effects on built historic cultural resources compared to the other Build Alternatives, with three built historic resources being affected.
- The Preferred Alternative (as well as the E1A, and E2A Build Alternatives) would avoid all impacts to Una Lake.
- The direct and indirect impacts on the Hansen Dam Open Space under the E2 and E2A Build Alternatives would represent the largest direct and indirect impacts of the Build Alternatives. The construction of an elevated railway within this open space area would take place only under the E2 and E2A Build Alternative, which makes the Preferred Alternative and the Refined SR14, E1, and E1A Build Alternatives less impactful with regards to this open space resource.
- The Preferred Alternative would be roughly tied with the E1A alternative for second-least residential displacements among the Build Alternatives, although it could potentially result in fewer displacements than E1A.

The majority of these factors are areas where the Preferred Alternative is the best-performing or one of the best-performing Build Alternatives. Where Preferred Alternative is not the best performing for residential displacements, it is the second-best and there is no deficit of available replacement housing units. Additionally, IAMFs outline a robust process to assist property owners throughout the process. Therefore, these factors indicate that the SR14A Build Alternative is the Preferred Alternative.

In summary, the following additional factors contribute to the Authority's judgment in selecting the Preferred Alternative over other alternatives:

- The Preferred Alternative and the Refined SR14 Build Alternative would result in the permanent restoration of Vulcan Mine to a more natural topography, which would benefit the surrounding environment.
- The Preferred Alternative would not require realignment of the PCT for construction because the Preferred Alternative alignment would pass underneath the resource in a bored tunnel.

For these additional factors, the Preferred Alternative performs favorably compared to all other alternatives, further supporting identification of the SR14A Build Alternative as the Preferred Alternative.

Finally, the Authority's selection of the Preferred Alternative over the other alternatives was based on these additional considerations:

- The Preferred Alternative and the Refined SR14, E1, and E1A Build Alternatives alignments cross the Hansen Spreading Grounds. While several other alternatives have similar impacts, mitigation has been designed to offset impacts to the spreading grounds in coordination with

the Los Angeles County Flood Control District to maintain the groundwater recharge function and capacity of the Spreading Grounds.

- Overall, the Preferred Alternative and the Refined SR14 Build Alternative would generate the largest volume of potentially contaminated spoils, but the project is not creating the contamination and the contaminated spoils would be disposed of consistent with applicable regulations.
- The Preferred Alternative would impact 11 known archaeological resources, the least following the E1A and E2A Build Alternatives which would both affect nine known archaeological resources. With implementation of Mitigation Measures CUL-MM#1, CUL-MM#3, and CUL-MM#4, impacts would be less than significant under all Build Alternatives.
- During construction a greater and wider variety of visual impacts would occur under the Refined SR14, E2, and E2A Build Alternatives than under the Preferred Alternative and the E1 and E1A Build Alternatives. There would be just two permanent significant and unavoidable impacts under Preferred Alternative after implementation of mitigation measures.

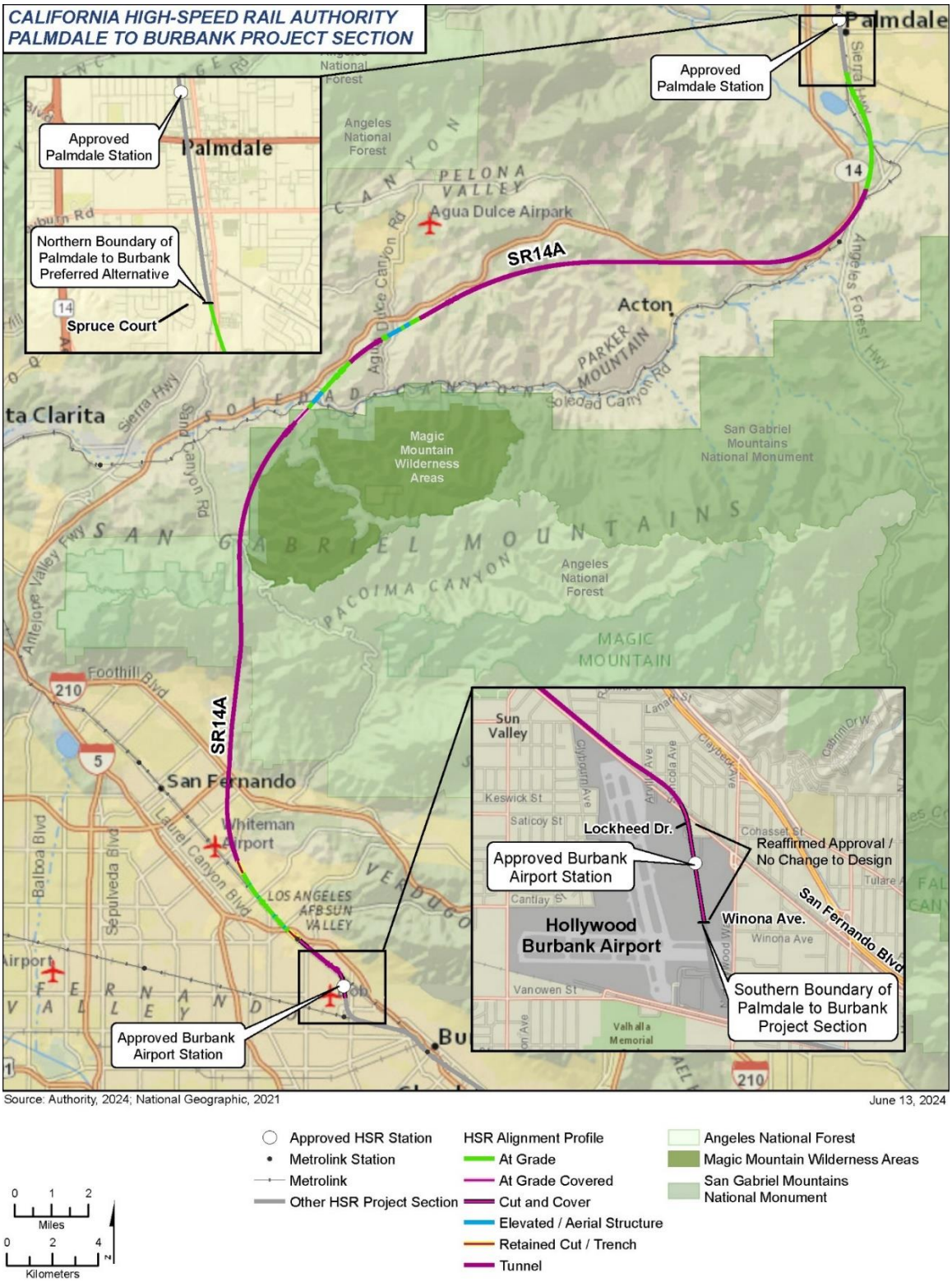

Figure 4 Map of Palmdale to Burbank Preferred Alternative

6.2 Preferred Alternative

The Authority has identified the SR14A Build Alternative as the Preferred Alternative for the Palmdale to Burbank Project Section. The Preferred Alternative would include 38.38 miles of alignment with six different track profiles: at grade, at-grade covered, cut-and-cover, retained cut/trench profile, tunnel, and elevated/aerial structure in a variety of land uses and ecoregions, including urban, rural, and mountainous terrain in Southern California. From the north, the Preferred Alternative would begin at Spruce Court in Palmdale2, continue south and turn west to cross under the community of Acton, continue southwest and turn south to travel beneath the ANF, including the San Gabriel Mountains National Monument (SGMNM), and then enter the San Fernando Valley where it would connect with the Burbank Airport Station. The Burbank Airport Station would have both underground and aboveground facilities and would include train boarding platforms, a station building (which would house ticketing areas, passenger waiting areas, restrooms, and related facilities), pickup/drop-off facilities for private automobiles, a transit center for buses and shuttles, surface parking areas, and stormwater capture/drainage facilities. The Burbank Airport Station would begin near Kenwood Street and extend to just north of Winona Drive and the Burbank Airport east/west runway.

The Authority identified the Preferred Alternative by balancing the adverse and beneficial impacts of the project on the human and natural environment. There was no single determining factor in identifying the Preferred Alternative because of the multitude of issues considered and the varied input received from stakeholders on each of the six Build Alternatives. Furthermore, many impacts on the natural environment and community resources would be the same, or very similar, across each of six Build Alternatives and, therefore, do not always provide enough meaningful information to distinguish between the relative merits of the alternatives. Due to the similarity of each of the six Build Alternatives, to identify a Preferred Alternative, various differentiators were determined based on stakeholder, agency, and community input.

The Authority makes the following findings about the Preferred Alternative:

- The Preferred Alternative would result in the fewest number of sensitive residential receivers that would experience operational noise impacts.
- Spoils hauling noise is a significant and impact for all Build Alternatives other than the Preferred Alternative.
- The Preferred Alternative is the preliminary LEDPA and would have the least impact on wetland waters of the U.S. While the E2A Build Alternative would have the least impact on nonwetland waters of the U.S., the Preferred Alternative would affect lower-quality non-wetland waters than the E2A Alternative.
- The Preferred Alternative (as well as the Refined SR14 Alternative) would have the lowest potential risk and least potential impacts on surface water resources within the ANF because the alignment traverses areas with lower groundwater pressures and no known groundwater-dependent resources with the identified High (1) and Moderate (3) Risk Areas.
- The Preferred Alternative (as well as the Refined SR14 Alternative) would have the least potential for direct and indirect effects on built historic cultural resources compared to the other Build Alternatives, with three built historic resources being affected.
- The Preferred Alternative (as well as the E1A, and E2A Build Alternatives) would avoid all impacts to Una Lake.
- The direct and indirect impacts on the Hansen Dam Open Space under the E2 and E2A Build Alternatives would represent the largest direct and indirect impacts of the Build Alternatives. The construction of an elevated railway within this open space area would take place only under the E2 and E2A Build Alternative, which makes the Preferred Alternative and the Refined SR14, E1, and E1A Build Alternatives less impactful with regards to this open space resource.

- The Preferred Alternative would be roughly tied with the E1A alternative for second-least residential displacements among the Build Alternatives, although it could potentially result in fewer displacements than E1A.

6.3 Development and Screening of Potential Design Options, including Alternatives Previously Considered and Not Carried Forward for Study in the Draft EIR/EIS or Final EIR/EIS

In the Draft EIR/EIS, the Authority proposed an alignment through what was subsequently designated the Lang Station Open Space near the City of Santa Clarita that would temporarily impact 12.51 acres under the Preferred Alternative and permanently impact 129.41 acres under the Preferred Alternative. Upon learning that the City of Santa Clarita had purchased the 208-acre open space, the Authority, in response to comments received on the Draft EIR/EIS, considered design refinements to reduce potential impacts to species and open space in that area. During this design refinement process, the Authority identified Option 4 (discussed below), which would eliminate the temporary impact areas and reduce the permanent project footprint by 28.54 acres by changing the design of the access road between Soledad Canyon Road and Portal 4A, moving the power supply line along the access road, and reducing the size of staging areas.

Lang Station Open Space is an approximately 208-acre open space area located on undeveloped land southeast of SR 14, east of the intersection of Stonecrest Road and Soledad Canyon Road in Los Angeles County to the east of the city boundaries of Santa Clarita. The open space features a public trailhead and three public trails, totaling approximately 1.17 miles, for hiking, mountain biking, and equestrian use. A public parking area for the open space is located adjacent to Soledad Canyon Road near the Lang Station Open Space trailhead.

The Preferred Alternative (and the Refined SR14 Build Alternative) would require permanent acquisition of 56.0 acres (26.9 percent of the total area of the open space) that would be fenced off to the public. No additional land beyond the 56.0 acres would be required for temporary acquisition. For both the Refined SR14 Build Alternative and Preferred Alternative, the permanent impact to Lang Station Open Space would occur on the southeastern portion of the open space, which is the portion furthest away from SR 14, and includes the existing trailhead near Soledad Canyon Road and approximately 0.13 mile of the 1.17 miles of existing trails within the property. The permanent impact would be required under the Refined SR14 Build Alternative and Preferred Alternative as the HSR alignment in that area would transect the property, and the majority of the proposed tracks within Lang Station Open Space would occur at grade. Elevated tracks are proposed at only the southwestern- and northeastern-most ends of the open space. In the southwestern end of the open space, the tracks would be elevated to traverse over Soledad Canyon Road and avoid the need to realign the existing roadway. The proposed tracks would be elevated on the northeastern end of the open space to cross a canyon.

In response to comments received on the Draft EIR/EIS, the Authority conducted an assessment of the feasibility of tunneling through Bee Canyon (including the Lang Station Open Space), to potentially reduce impacts to suitable habitat for special-status species and minimize the project footprint. The Authority examined a total of five options to underground the alignment or minimize the impact of the at-grade section in Bee Canyon. While the design options would not substantially reduce any significant and unavoidable impacts, the design options would reduce temporary and/or permanent impacts to suitable habitat and open space. The five options include:

1. Maintain the Refined SR14/SR14A horizontal alignment as in the Draft EIR/EIS and preliminary engineering for project definition (PEPD) Record Set Addendum SR14A/E1A/E2A but modify the vertical profile to cross in tunnel under the Santa Clara River and Bee Canyon.
2. Change the Refined SR14/SR14A horizontal and vertical alignment to avoid Bee Canyon and maintain the crossing of the Santa Clara River on viaduct.

3. Maintain the Refined SR14/SR14A horizontal alignment as in the Draft EIR/EIS and PEPD Record Set Addendum SR14A/E1A/E2A but modify the vertical profile to tunnel under Bee Canyon and maintain the crossing of the Santa Clara River on viaduct.
4. Reduce footprint of ancillary facilities in Bee Canyon. This requires changes in some current design elements for the Refined SR14/SR14A alignment: change the access road design, change energy supply line to Portal 4A, optimize staging areas, and reevaluate grading.
5. Reduce footprint of earthworks in Bee Canyon. This would require changes in some design elements for the Refined SR14/SR14A alignment: reevaluate grading considering extensive use of retaining walls or retaining walls plus slope-berm pattern along the HSR alignment in Bee Canyon. This option would also include changing the access road design, changing the energy supply line to Portal 4A, and optimizing staging areas.

As noted above, the Authority considered two tunneling options, the first of which would cross in tunnel under Lang Station Open Space and the Santa Clara River (Option 1). The second option would tunnel under the northern portion of the Lang Station Open Space and emerge from tunnel to cross over the Santa Clara River on viaduct (Option 3). The Authority concluded that both tunneling options conflict with engineering design requirements such that they are not feasible. Construction of Option 1 (a tunnel in the Bee Canyon area and under the Santa Clara River) at a cost of $230 million, is not feasible because it would require a vertical profile for the HSR alignment that exceeds the maximum allowable grade of 2.5 percent as defined in the Authority's Technical Memorandum (TM) 2.1.2, Section 3.3.1. Constructing Option 3 (the HSR alignment in tunnel in the northern portion of the Lang Station Open Space and then emerging from tunnel to cross over the Santa Clara River on viaduct) at a cost of $165 million, would also not be feasible because HSR alignment requirements and the topography of the area would not allow for maintaining the minimum vertical clearance of the HSR viaduct over Soledad Canyon Road. The Authority rejects Option 1 and Option 3 as infeasible for these reasons. Option 2, which would involve extending the tunnel segment approximately 2,700 feet, would not entirely eliminate the at-grade alignment through Lang Station Open Space and would result in approximately 3,200 feet of at-grade alignment through the Lang Station Open Space. As vertical profile under Option 2 would be lower in order to increase tunnel length and reduce the at-grade section, the necessary cuts would be approximately 100 feet deeper than the Preferred Alternative to maintain safe tunnel cover. This option would surface at Agua Dulce Canyon at an elevation incompatible with the natural drainage of this canyon and it would require a major relocation of the Agua Dulce Canyon Road (grade separation). Changing the profile to go underground or above Agua Dulce Canyon would require vertical alignment grades greater than the maximum 2.5 percent as defined in the Authority's TM 2.1.2, Section 3.3.1. Option 2 would reduce the permanent impact area by 29 acres but would increase project costs by $420 million. The Authority rejects Option 2 as infeasible based on inconsistency with HSR design requirements and substantially higher cost.

Option 5 would involve the use of retaining walls to reduce the area of permanent impact through Lang Station Open Space. Under Option 5, the permanent impact area in Lang Station Open Space would be reduced to 39.1 acres; however, Option 5 would increase project costs due to construction of retaining walls despite the decrease in excavation. Option 5 would entail the construction of retaining walls as high as 40 feet, in addition to the construction of the necessary earth slopes and berms to reach the natural ground profile where the retaining walls cannot reach it. Furthermore, Option 5 would require additional construction traffic for the supply of construction materials to the worksite. The Authority's assessment of Option 5 concluded that these vertical and horizontal profile changes are not prudent because of existing physical constraints and substantially higher cost, and rejects it as infeasible for these reasons.

Option 4, which would involve changing the design of the access road between Soledad Canyon Road and Portal 4A, moving the power supply line along the access road, optimizing the staging areas, and an overall redesign of the grading. All these measures are aimed to get a more compact design and, therefore, minimize the footprint within the Lang Station Open Space. Option 4 would eliminate the temporary impacts in the Open Space (12.51-acre reduction of

temporary impact footprint for SR14A and 12.23-acre reduction for Refined SR14) and reduce the permanent impact area by 26.96 acres for the Refined SR14 Build Alternative and by 28.54 acres for the SR14A Build Alternative. Given the reduction in permanent impact area and increase in project costs by $10 million, the Authority has evaluated this design option in the Final EIR/EIS, and has incorporated the footprint reductions associated with Option 4 into the Preferred Alternative.

6.3.1 Alternatives Suggested by Commenters

The Authority received comments expressing a preference for one of the alternatives over the others; requesting development of alternatives to address concerns of freight operators; opposing a particular alternative because of its impacts or the location of its alignment; or suggesting the Authority study other alternatives.

Alternatives suggested by commenters in comments on the Draft EIR/EIS and the reasons these alternatives were not considered further are summarized below:

- **Use of Existing Transportation Corridors.** Comments received on the Draft EIR/EIS suggest that the Authority should adopt an alignment that shares or closely follows existing highway or rail corridors. The Authority has striven to keep the HSR alignment within the existing railroad corridor to the greatest extent possible to minimize impacts to surrounding communities. The Preferred Alternative, the SR14A Build Alternative, generally follows the existing SR14 transportation corridor. The alternatives analysis process emphasized following existing transportation corridors or available rights-of-way as a method of minimizing community impacts, but as described in the 2015 and 2016 SAA reports, following the SR 14 freeway and the Metrolink Antelope Valley corridor into the San Fernando Valley would result in substantial community impacts, leading to consideration of alignments that departed from these corridors. (See Chapter 2, Alternatives, Section 2.5.3.1 of the Final EIR/EIS.) The 2012 SAA Report explained that an alternative suggested by stakeholders that would follow the SR 14 median would require slow train speeds and would not meet the project purpose or objectives of providing HSR service and was therefore eliminated from consideration. Among those alternative corridor options relevant to the Palmdale to Burbank Project Section were SR 138, Aqueduct, I-5 via Comanche Point, I-5 (2.5 percent maximum grade), and I-5 (3.5 percent maximum grade). As a result of the screening evaluation, the SR 138, Aqueduct, I-5 via Comanche Point, and I-5 (2.5 percent maximum grade) Corridors were eliminated from further study in the Statewide Program EIR/EIS. These alignments were eliminated based on seismic constraints because each would have required long tunnels through seismic zones, either crossing active faults in long tunnels or paralleling them for long distances.

The Statewide Program EIR/EIS therefore studied two corridors for Bakersfield to Sylmar: the SR 58/Soledad Canyon corridor and the I-5 3.5 percent maximum grade corridor. Routing the HSR alignment along existing freeways (specifically I-5) was explored in the Program EIR/EIS. The 2005 Program EIR/EIS considered but eliminated from study an I-5 alignment, which generally followed the I-5 from Sylmar to Los Angeles Union Station (LAUS) (2005 Final Program EIR/EIS, pages 2-66, 2-70). This alignment would have required substantial property acquisitions, considerable use of aerial structures to pass over freeway overpasses and connector ramps, and also would have passed through several parks. The Program EIR/EIS studied a combined I-5/Metrolink alignment, which primarily followed the existing Metrolink Valley Subdivision right-of-way from Sylmar to Burbank Metrolink Station, before paralleling the I-5 in an aerial alignment and then tunneling under Elysian Park to the LAUS area (2005 Final Program EIR/EIS, pages 2-72, 6A-20 to 6A-21, and Figure 6.4-2). This alignment would have had constructability concerns related to tunneling, as well as impacts to several Section 4(f)/6(f) resources (federally protected recreational or historic resources pursuant to 23 U. S. Code (U.S.C.) 138 and 49 U.S.C. 303). For these reasons, the Authority eliminated both of these I-5 alignments in the 2005 Program EIR/EIS due to the greater environmental and right-of-way impacts.

The Authority considered multiple alignments that would have utilized existing railway infrastructure including Metrolink's existing infrastructure; however, the Authority determined that sharing existing commuter and freight tracks would not meet the California HSR system's purpose or objectives and that a dedicated track would be necessary to achieve the performance goals of the California HSR System. Despite using a dedicated track, the California HSR System has committed to making additional investments to existing transit systems to improve connectivity throughout Southern California. As discussed in the 2016 and 2018 Business Plans, the Authority has made significant progress in coordinating with local partners to make improvements to existing rail infrastructure through the use of Prop 1A funds appropriated to through the passing of SB 1029. These include projects like Metrolink Positive Train Control which will improve Metrolink operations with a s state-of-the art collision avoidance technology that allows trains, tracks and dispatch centers to actively communicate using a fiber optic network as well as LAUS which will deliver improvements to accommodate expanded regional and intercity rail services and will meet the service needs of all operators including the Los Angeles County Metropolitan Transportation Authority, Metrolink, LOSSAN, Amtrak, the Authority and other partners.

The Preferred Alternative would operate parallel to the Metrolink tracks generally between Sheldon Street and Tuxford Street. The Authority finds that this suggested alternative does not offer a substantial environmental advantage over the Preferred Alternative, and rejects this alternative as infeasible.

- **Fully underground alignment.** Comment 8683-4330 in Chapter 21, Local Agencies in Volume 4 of the Final EIR/EIS indicated that only a fully underground alignment would be acceptable to the commenter. Tunnels (at-grade covered, cut-and-cover, and bored) are planned in limited areas throughout the statewide HSR system and are used for 29.94 miles of the Preferred Alternative of the Palmdale to Burbank Project Section. Tunneling introduces constructability and logistical issues and greatly increases capital costs when compared to at-grade construction. According to the 2016 SAA (Authority 2016b), tunnel construction costs generally range from $200 to $260 million per mile. Additionally, constructability issues such as rock quality and effects associated with squeezing ground, in situ stresses, and groundwater pressures on the tunnel lining system, were key factors in evaluating and identifying a Preferred Alternative for the Palmdale to Burbank Project Section. The Authority therefore finds that this suggested alternative is economically and logistically infeasible, is infeasible from a policy perspective, and does not offer a substantial environmental advantage over the Preferred Alternative and therefore rejects this alternative as infeasible.
- **Alternative or Additional Station Locations.** Comments received on the Draft EIR/EIS requested that HSR trains stop in the commenter's community and/or call at existing Metrolink stations such as Santa Clarita, Acton and Sylmar/San Fernando. Through the 2010 PAA Report, the Authority determined that several station alternatives did not merit continued consideration. A potential station in Santa Clarita was eliminated from further consideration based on comparatively higher residential displacements. A potential station in Lancaster was eliminated based on not sufficiently meeting the project purpose and objectives of providing transportation connectivity as compared to station sites in Palmdale. Potential stations at Burbank North and South, Hollywood Way, Sunland Boulevard, and Sylmar North were eliminated from further consideration based on location/proximity to other stations, constructability issues and costs, and environmental impacts compared to the station alternatives carried forward. For these reasons, the Authority finds that these suggested alternatives do not offer substantial environmental advantages over the Preferred Alternative, would not meet basic project objectives, and therefore reject these alternatives as infeasible.
- **Alternative Power Source.** Comments 7564-4175, 7710-4213, and 8431-4081 in Chapter 23, Individuals, in Volume 4 of the Final EIR/EIS recommend consideration powering the HSR using hydrogen power. In particular, Comment 8431-4081 extolled hydrogen power's advantages including lack of emissions, low noise, and saving diesel fuel. All of the world's HSR systems in operation today use electric propulsion with power supplied by an overhead system. These include the Train à Grande Vitesse in France, the Shinkansen in Japan and

Taiwan, and the InterCity Express in Germany, which the California HSR system is based on. The trains used for the California HSR System would not run on gasoline or diesel fuel. Rather, as stated throughout the Draft EIR/EIS, the California HSR system will use electrically powered, high-speed, steel-wheel-on-steel rail technology with trains capable of operating up to 220 miles per hour over a fully grade-separated, dedicated track alignment. Implementation of the commenter's suggestion does not offer a substantial environmental advantage over the Preferred Alternative and the Authority, therefore, rejects this alternative as infeasible.

- **Eliminate aboveground alignment section near Agua Dulce Road.** Comment 8283-4446 in Chapter 24, References, in Volume 4 of the Final EIR/EIS requests eliminating the aboveground portion of the alignment between two tunnels near Agua Dulce Road. In order to reduce impacts, the commenter expressed a preference for the alignment to remain underground at this location. Tunneling underneath Agua Dulce Canyon Road would require lowering the Preferred Alternative alignment at least 60 feet under the canyon bottom surface. This would increase the grade of the tunnel between Acton and Agua Dulce Canyon over 2.5%, which is the maximum grade permissible for the project alignment design as indicated in the Authority's Technical Memorandum (TM) 2.1.2 Alignment Design Standards for High-Speed Train Operation Section 3.3 Vertical Alignment. The Authority, therefore, rejects this alternative as infeasible.
- **Closer to mountains.** Comment 7846-4317 in Chapter 23, Individuals, in Volume 4 of the Final EIR/EIS requests that the Authority consider alternative alignments located "closer to the mountains." Although the comments did not provide a specific location for the proposed alignment, the alternatives studied in the EIR/EIS meet the necessary high-speed rail performance criteria, which requires the alignments to meet geometric requirements that allow for smooth operation at high speeds. This suggestion does not identify a substantial environmental advantage over the Preferred Alternative, and the Authority, therefore, rejects it as infeasible.
- **Direct route from Bakersfield to Burbank.** Comment 10636-4356 in Chapter 23, Individuals, in Volume 4 of the Final EIR/EIS suggested that a direct route from Bakersfield to Burbank might allow construction within a "reasonable budget." Based on the 2005 Statewide Program EIR/EIS, the Authority and FRA selected the SR 58/Soledad Canyon corridor over the I-5 corridor. The most significant difference regarding environmental impacts between the Antelope Valley option and the I-5 alignments was related to major parklands. The Antelope Valley corridor would not go through major parks or national forests. In contrast, the I-5 corridor would affect Fort Tejon Historic Park, ANF, Los Padres National Forest, the Hungry Valley State Vehicular Recreation Area, Pyramid Lake, and other local parks. Implementation of the commenter's suggestion does not offer a substantial environmental advantage over the Preferred Alternative and the Authority, therefore, rejects this alternative as infeasible.
- **Alignment located on undeveloped land.** Comments received on the Draft EIR/EIS including suggestions that the HSR alignment be located on undeveloped land rather than on or adjacent to developed land uses. Although the comments did not provide enough information for a detailed response, the Build Alternatives studied in the EIR/EIS meet the necessary high-speed rail performance criteria, which requires the alignments to meet geometric requirements that allow for smooth operation at high speeds. Construction on undeveloped land may result in additional environmental impacts, such as biological and cultural resources impacts. Implementation of the commenter's suggestion does not offer a substantial environmental advantage over the Preferred Alternative and the Authority, therefore, rejects this alternative as infeasible.

6.4 Conclusion on Alternatives

In summary, the Authority finds that the Preferred Alternative is the environmentally superior alternative among the Build Alternatives. The No Project Alternative does not meet the project's underlying purpose and project objectives. Among the Build Alternatives, only the Preferred

Alternative qualifies as the preliminary LEDPA and for reasons stated in Section 6.3, the Preferred Alternative's environmental impacts are lesser overall than the other Build Alternatives' impacts. However, because adverse environmental impacts remain, the Authority will adopt a Statement of Overriding Considerations, as discussed in the Chapter 8 of this document.

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7 MITIGATION MEASURES SUGGESTED BY COMMENTERS

Some of the comments on the Palmdale to Burbank Project Section Draft EIR/EIS suggested additional mitigation measures and/or modifications to the mitigation measures recommended in the Draft EIR/EIS. Some comments also suggested additions to the project that are not necessarily connected to an adverse environmental impact. The mitigation measures recommended in the Palmdale to Burbank Project Section Draft EIR/EIS represent the professional judgment of subject matter experts on feasible approaches to reduce significant adverse environmental impacts. Nevertheless, in some instances, the Authority has incorporated suggestions from comments to add, refine or improve mitigation measures in the Final EIR/EIS. This discussion explains the reasons for not incorporating certain of the mitigation measures suggested in comments made on the Draft EIR/EIS. The Authority considered the following points in determining whether to include a mitigation measure suggested in comments:

- Whether the suggestion relates to a significant and unavoidable environmental effect of the project, or instead relates to an effect that is already less than significant or can be mitigated to less than significant levels by proposed mitigation measures in the Palmdale to Burbank Project Section Draft EIR/EIS
- Whether the proposed language represents clear improvement, from an environmental standpoint, over the draft language that a commenter seeks to replace
- Whether the proposed language is sufficiently clear to be easily understood by those who will implement the mitigation as finally adopted
- Whether the language might be too inflexible to allow for pragmatic and feasible implementation
- Whether the suggestions are feasible from an economic, technical, legal, policy, or other standpoint
- Whether the measure addresses an impact not caused by the California HSR System
- Whether the measure addresses a social or economic impact, as opposed to an impact on the physical environment

Authority staff, with assistance from subject matter experts, have carefully considered mitigation measures proposed in comments. The following identifies suggestions for mitigation measures that the Authority has not incorporated and the rationale for not including those measures. The list below is not intended to be exhaustive; to the extent that suggestions on mitigation measures that were rejected are not identified below, the Authority finds, based on the analysis contained in the Palmdale to Burbank Project Section Final EIR/EIS and the record as a whole, that such suggestions are appropriately rejected for one or more of the reasons identified above.

7.1 Section 3.2, Transportation

7.1.1 Measure Addresses an Impact That is Less Than Significant

The following mitigation measures were not adopted because the Preferred Alternative incorporates standardized and effective approaches for ensuring construction-period traffic circulation, traffic safety, truck haul routes, emergency access, and post-construction street repair, such that impact was identified as less than significant.

- Acton Agua Dulce Unified School District recommended adoption of mitigating measures to minimize the impact on traffic during the beginning and end of school days.

TR-IAMF#4, TR-IAMF#5, TR-IAMF#11, and TR-IAMF#12 were developed to address transit, pedestrian, and bicycle access during construction. TR-MM#12 will require the contractor to prepare a detailed construction management plan for minimizing the impact of construction and construction traffic on adjoining and nearby roadways while maintaining traffic flow during peak

travel periods. With the inclusion of these IAMFs as part of the project description and incorporation of existing mitigation measures, additional mitigation measures are not required.

- Los Angeles Unified School District (LAUSD) recommended mitigation measures related to concerns regarding construction activities and the location of CSA near LAUSD facilities.

In general, IAMFs were developed to address transit, pedestrian, and bicycle access during construction (TR-IAMF#4, TR-IAMF#5, TR-IAMF#11, and TR-IAMF#12). TR-IAMF#2 requires the Authority's construction contractor to prepare a CTP for construction, which will be developed in close consultation with the local jurisdictions having authority over the site (such as the City of Los Angeles Department of Transportation). In the Final EIR/EIS, TR-IAMF#2 has been revised to additionally require that the contractor shall provide a draft of the CTP to LAUSD, Acton-Agua Dulce Unified School District, and any other potentially affected public school districts upon their request, for their review and comment. The CTP will include advance notification to the local school district of construction activities and rigorously maintained traffic control at all school bus loading zones, to provide for the safety of schoolchildren. The CTP will also require the contractor to review existing or planned Safe Routes to Schools with school districts and emergency responders to incorporate roadway modifications that maintain existing traffic patterns and fulfill response route and access needs during project construction and HSR operations. In addition, TR-IAMF#4, TR-IAMF#5, and TR-IAMF#12 include the Authority's commitment to ensuring bicycle and pedestrian accessibility and safety during construction, including how it will be provided and supported across the HSR corridor. The pedestrian access plan, bicycle access plan, and pedestrian and bicycle accessibility technical memorandum may include installation of temporary traffic controls, crossing guards and flaggers, and other similar measures. With the inclusion of these IAMFs as part of the project description, additional mitigation measures are not required.

- Acton Town Council recommended mitigation measures to reduce the safety risks and traffic impacts at the intersection of Antelope Woods Road and Crown Valley. Specifically, a mitigation measure to construct a temporary, dedicated onramp and offramp to the northbound lanes of the SR 14 freeway from the "Acton Window" construction location or delay all construction traffic during the morning and afternoon time intervals when school children are being picked up and dropped off.

Impacts at this location are expected to be less than significant because, based on the preliminary spoils generation sites and haul routes, it is anticipated that construction spoils trucks would use the west leg of the intersection to access the spoils generation site. As such, they would be assigned to the southbound right-turn and eastbound left-turn movements, thus not using Antelope Woods Road east of the intersection with Crown Valley Road. Nevertheless, the Preferred Alternative includes several IAMFs that require the construction contractors to minimize traffic impacts during construction. These include TR-IAMF#2, which requires the development of a CTP that will, at a minimum, require review of existing or planned Safe Routes to Schools with school districts and emergency responders as it pertains to schools and school-aged children. Based on the anticipated spoils haul routes and the inclusion of IAMFs as part of the project description, additional mitigation measures are not required.

7.1.2 Measures That Are Infeasible from an Economic, Technical, Legal, Policy, or Other Standpoint

The following mitigation measures were not adopted because they are infeasible.

- Acton Town Council recommended construction of temporary onramps and offramps connecting to SR14 directly from the "Acton Window" construction to avoid all construction traffic impacts.

The construction of temporary on- and/or offramps to and from SR 14 would not be feasible to accommodate construction spoils haul-trucks. Primarily, access to and from freeways is regulated by Caltrans, which has standards for interchange spacing, ramp grades, horizontal and vertical curves, sight distances, and other design and engineering factors. To provide access to these

ramps, new roadways would need to be constructed. All of these facilities would be located on property not owned by the Authority. In addition, these extensive new facilities would need to be environmentally cleared, and may result in significant impacts to the built and natural environment that would require supplemental mitigation.

- Los Angeles County Public Works recommended installation of traffic roundabouts in place of traffic signals to mitigate construction traffic impacts.

Construction-period traffic is considered a temporary impact as it would occur only during construction and once construction ceases, construction-period traffic would cease. Roundabouts are not considered an appropriate or feasible mitigation for a temporary impact because roundabouts would result in permanent changes to local roadways. Roundabouts would also require additional right-of-way when compared to installing a traffic signal. This additional right-of-way could result in secondary impacts and impacts to private property surrounding the intersection. In addition, because construction traffic would include large trucks, large trucks cannot easily traverse roundabouts unless the roundabouts have large dimensions, meaning potential for expanded secondary impacts and right-of-way needs.

7.2 Section 3.3, Air Quality and Global Climate Change

7.2.1 Measure Addresses an Impact That is Less Than Significant

The following mitigation measures were not adopted because the impact was identified as less than significant.

- SCAQM recommended requiring at least 6 percent of the proposed project's 3,000 surface parking spaces (or 180 parking spaces) at the Burbank Airport Station to provide electric vehicle (EV) charging stations, or at a minimum, require the Proposed Project to be constructed with the appropriate infrastructure to facilitate sufficient electric charging for passenger vehicles to plug-in. The Authority should quantify emissions from generating additional electricity for the EV charging stations and combine them with emissions from energy consumption for the electrified trains to analyze the Proposed Project's operational air quality impacts in the Final EIR/EIS. The Authority should also evaluate and identify sufficient power available for passenger vehicles and supportive infrastructures (e.g., EV charging stations) in Section 3.6, Public Utilities and Energy, of the Final EIR/EIS, where appropriate.
- SCAQMD recommended implementing Smart Parking systems to reduce vehicle idling time in parking facilities.

Based on the findings of Impact AQ#6, Statewide and Regional Pollutant Emissions, of the Draft EIR/EIS, once operational, the proposed project would result in a net benefit for all criteria pollutants. The Burbank Airport Station was included in, and approved as part of, the Burbank to Los Angeles Project Section. The parking lot at the Burbank Airport train station would be under the control of the City of Burbank. Due to the reconstruction of the parking areas for HSR and non-HSR-related projects, the Authority will work with the City of Burbank to explore and implement EV charging stations consistent the existing measures presented in Section 3.3.7, Mitigation Measures, which are sufficient and there are no significant operations-related impacts that need to be mitigated.

7.2.2 Measures That Are Infeasible from an Economic, Technical, Legal, Policy, or Other Standpoint

The following mitigation measure was not adopted because they are infeasible.

- SCAQMD recommended use of ZE or NZE trucks, such as trucks with natural gas engines that meet the CARB's adopted optional NO_x emission standard of 0.02 grams per brake horsepower-hour (g/bhp-hr), to generate direct reductions of emissions from regional pollutants before purchasing offset emission credits.

Due to the size of the project and the volume of equipment required for construction, it is not known if sufficient on-road and off-road ZE or NZE equipment would be available to exceed the

percentages required in Mitigation Measure AQ-MM#3. Therefore, it is not feasible for the Authority to commit to utilizing ZE and/or NZE construction equipment and heavy-duty haul trucks beyond what has been stipulated in Mitigation Measure AQ-MM#3.

7.3 Section 3.4, Noise and Vibration

7.3.1 Measures That Do Not Represent Clear Improvements, from an Environmental Standpoint, over the Draft Language That the Commenter Seeks to Replace

The following mitigation measures were not adopted because they do not offer clear environmental benefits over the mitigation measures already incorporated and adopted by the Authority.

- LAUSD recommended mitigation measures to lower construction noise to LAUSD's noise standards near LAUSD schools.

LAUSD uses a different noise threshold, 67 dBA L_{eq} exterior and 45 dBA L_{eq} interior, compared to 80 dBA L_{eq} used in the EIR/EIS. As lead agency under CEQA and NEPA, the Authority is not required to use LAUSD's threshold. The EIR/EIS noise assessment evaluated noise impacts from temporary construction activities for all the project alternatives. The assessment is based on the criteria and methodology contained in the FTA and FRA noise guidance manuals. Mitigation Measure N&V-MM#1, requires the contractor to prepare a noise monitoring program for Authority approval. Two of the items in Mitigation Measure N&V-MM#1 specifically address the two mitigation measures suggested by the commenter, the use of temporary noise barriers and a hotline phone number that school administrators (or anyone) can call to report construction-related noise issues. The noise monitoring program will describe the actions required of the contractor to meet required noise limits of 80 dBA equivalent sound level (L_{eq}) during daytime hours and 70 dBA L_{eq} during nighttime hours. The mitigation measures suggested by the commenter are substantively incorporated in an existing mitigation measure.

7.4 Section 3.6, Public Utilities and Energy

7.4.1 Measure Addresses an Impact That is Less Than Significant

The following mitigation measures were not adopted because the impact was identified as less than significant.

- Acton Town Council recommended adopting a mitigation measure stating definitively that any aboveground electrical facilities that are constructed in the Communities of Acton and Agua Dulce as part of the Project shall be installed underground to prevent introduction of a new ignition source.

Wildfire impacts from project operation are addressed in EIR/EIS Impact S&S#19: Fire and Wildfire Hazards from Operations and Maintenance in Section 3.11, Safety and Security. On page 3.11-59 of the Draft EIR/EIS, the text describes that "High-risk facilities, including pipelines and other utilities within the project footprint, will be removed, relocated, or protected in place during construction. The SSMP developed under SS-IAMF#2 will include procedures for removal, relocation, or protection of high-risk facilities within the footprint. Pursuant to utility agreements negotiated between the Authority and the utility service providers, the Authority will work with utility owners during final engineering design and construction of the [Preferred Alternative] to remove or relocate utilities within the right-of-way or protect them in place within the right-of-way. The contractor will establish a construction safety management plan and SSMP (SS-IAMF#3) that will establish safety guidelines to be implemented during construction, including procedures for construction activities near the identified overhead or underground utility lines. The Authority will conduct a Preliminary Hazard Analysis (PHA) (SS-IAMF#3) that will evaluate the impacts of high-risk facilities on the project. The Authority will incorporate project features into the design and construction of the project. The Security and Emergency Preparedness Plan developed under SS-IAMF#2 will identify potential hazards from high-risk facilities within the vicinity of the [Preferred Alternative] that will be removed, relocated, or protected in place during construction,

and will identify methods to mitigate or eliminate hazards associated with high-risk facilities. Further, inclusion of PUE-IAMF#2 through PUE-IAMF#4 will ensure that project construction will be coordinated or phased to minimize or fully eliminate utility service disruptions." Wildfire impacts were found to be less than significant, with the presumption of aboveground lines such that the mitigation measure suggested by the commenter is not required.

7.4.2 Measures That Do Not Represent Clear Improvements, from an Environmental Standpoint, over the Draft Language That the Commenter Seeks to Replace

The following mitigation measure was not adopted because it does not offer clear environmental benefits over the Preferred Alternative and the energy efficient design that prevents a significant impact.

- Acton Town Council recommended mitigation measures to offset potential significant impacts related to utility scale generation, storage, and transmission projects, or a commitment to distributed generation to supply electricity for the project rather than utility scale generation to eliminate all desert land and transmission impacts.

The Authority's methodology for analyzing operational energy effects is consistent with CEQA Guidelines, Appendix F, and provides the information CEQA requires regarding project energy demand versus supply. PUE-IAMF#1 (see Section 3.6, Public Utilities and Energy of the Final EIR/EIS) incorporates utilities and design elements that minimize electricity consumption (e.g., regenerative braking, energy-saving equipment on rolling stock and at station facilities, implementation of energy-saving measures during construction, and automatic train operations to maximize energy efficiency during operations) throughout the California HSR system. Furthermore, the Authority is developing a strategic renewable energy procurement plan that requires extensive collaboration and stakeholder engagement, internal and external working groups, and creation and selection of efficient and effective instruments for power procurement. Additional mitigation measures are not required.

7.5 Section 3.7, Biological and Aquatic Resources

7.5.1 Measure Addresses an Impact That is Less Than Significant

The following mitigation measures were not adopted because the impact was identified as less than significant.

- Angeles National Forest recommended addition of a mitigation measure to ensure communication towers, distribution lines and any other project infrastructure provide roosting opportunities are properly treated to prevent California condor perching or roosting.

The Authority's incorporation of BIO-IAMF#12 (Design the Project to be Bird Safe), which requires that the final construction design be bird and raptor safe and in compliance with applicable recommendations in order to prevent perching and roosting, into the design of the Preferred Alternative ensures that potential impacts related to California condor perching and roosting are less than significant.

- Regarding mountain lion and wildlife connectivity, CDFW recommends that the Authority consult with CDFW to identify wildlife crossing opportunities and/or opportunities for land acquisition within the San Gabriel-Castaic Linkage, protect mitigation lands in perpetuity under a conservation easement dedicated to a local land conservancy or other appropriate entity that has been approved to hold and manage mitigation lands, and consult and collaborate with CDFW to conserve areas beneficial to the Southern California/Central Coast ESU that includes the SGSB subpopulation that may improve and maintain connectivity.

The Authority's analysis shows that Preferred Alternative would maintain wildlife connectivity opportunities similar to existing conditions across the SR 14 freeway corridor at the existing bridge undercrossings and other crossing areas identified through the high wildlife use hotspot

areas. Project effects to wildlife connectivity are less than significant, as demonstrated by the results of the WCA and WCA Supplement, and approval from CDFW is not required.

- Regarding aquatic resources, CDFW recommends that the Authority adopt a mitigation measure requiring the Authority to submit a notification pursuant to Fish and Game Code Section 1602 for construction and activities occurring near or impacting streams and associated natural communities.

The Authority intends to notify CDFW prior to the start of construction and in time to negotiate one or more Lake and Streambed Alteration Agreements for all areas subject to Section 1602 notification requirements. The notification package will be inclusive of information necessary for CDFW to issue LSA agreement(s). The existing mitigation measures in the EIR/EIS will ensure that impacts to aquatic and riparian resources and species dependent on those resources are less than significant such that adoption of the recommended mitigation measures is not necessary.

- Regarding special-status of amphibians, CDFW recommended that the Authority adopt mitigation to provide no less than 2:1 to offset impacts or as required in a take permit authorized by USFWS for FESA-listed species or CDFW for CESA-listed species.
- Regarding special-status plants sensitive natural communities, CDFW recommended that the Authority revise Mitigation Measure BIO-MM#38 to provide no less than 2:1 ratio to offset direct impacts on ESA and CESA-listed species unless a higher ratio is required pursuant to regulatory authorizations.

The current compensatory mitigation ratios identified in the Final EIR/EIS align with the statewide programmatic mitigation measures implemented by the California High-Speed Rail program and consistent with measures required of large transportation and other infrastructure projects in California. Further, the Authority acknowledges that mitigation ratios and/or other measures for CESA-listed species will be needed to meet the full mitigation requirements. Together, the mitigation measures identified in Section 3.7, Biological and Aquatic Resources, of the Final EIR/EIS would reduce impacts on special-status amphibian species, and special-status plants and sensitive natural communities to less than significant rendering adoption of the recommended ratio unnecessary.

7.5.2 Measures That Do Not Represent Clear Improvements, from an Environmental Standpoint, over the Draft Language That the Commenter Seeks to Replace

The following mitigation measures were not adopted because they do not offer clear environmental benefits over the mitigation measures already incorporated and adopted by the Authority.

- With respect to unarmored three-spined stickleback (UTS), Santa Monica Mountains Conservancy (SMMC) requested that construction activities be restricted by a 30-feet construction setback from the Santa Clara River wetted channel.

Mitigation Measure BIO-MM#85 provides for a 10-foot construction setback from the Santa Clara River wetted channel as protection for UTS and UTS habitat. The commenter recommends that the buffer be increased to 30 feet, or a buffer distance recommended by the CDFW. The Authority believes the 10-foot setback is reasonable to protect UTS if they occur in the wetted channel of the Santa Clara River. The recommended modification of the Mitigation Measure BIO-MM#85 does not represent a clear environmental benefit over the existing measure.

- With respect to UTS, CDFW recommended revising Mitigation Measure BIO-MM#87 to specify what actions would be taken if water quality is being affected by bridge and bank stabilization-related concrete pouring activities.

Existing IAMFs (HYD-IAMF#1, HYD-IAMF#2, HYD-IAMF#3, and HYD-IAMF#4) and Mitigation Measures (HWR-MM#1, HWR-MM#2, HWR-MM#3, and HWR-MM#4) in Sections 3.8, Hydrology and Water Resources and Section 3.10, Hazardous Materials and Wastes of the Final EIR/EIS address the commenter's concerns regarding water quality. The Authority believes that existing IAMFs and mitigation measures are adequate to ensure these concerns and that the proposed revision does not represent clear environmental benefits over the provisions in the existing IAMFs and mitigation measures.

- With respect to UTS, CDFW recommended revising Mitigation Measure BIO-MM#90 to require submission of the Construction Groundwater Dewatering Plan required by Mitigation Measure BIO-MM#90 to CDFW for review and that all its comments be resolved prior to approval.

The detailed design phase of the project includes as-needed notifications to CDFW for Lake and Streambed Alteration (LSA) agreements. Moreover, the Authority is committed to continued consultation with CDFW. Accordingly, the recommended modification does not represent a clear environmental benefit over the existing measure.

- With respect to mountain lion and wildlife connectivity, CDFW recommended revising Mitigation Measures BIO-MM#77 and BIO-MM#78 to require the Project Biologist or contractor to obtain CDFW's review and approval of fencing and wildlife escape plans that ensure avoidance of take of mountain lion.

As written, existing Mitigation Measure BIO-MM#77 would ensure that the alignment is fenced in a manner that excludes mountain lion, and Mitigation Measure BIO-MM#78 would ensure that in the unlikely event a mountain lion is able to enter the track alignment, escape ramp-outs will be available for it to find its way out. Moreover, it is likely that mountain lion will be a covered species under a Section 2081 permit issued under CESA, in which case the fencing and wildlife escape plans would be subject to CDFW review and approval. The Authority, therefore, believes that the commenter's concerns are addressed by the existing measures and that recommended measures do not represent a clear environmental benefit over the existing measures.

- Regarding mountain lion and wildlife connectivity, CDFW recommended that if mountain lions or dens are detected during surveys per Mitigation Measure BIO-MM#96, the Authority should prepare a Mountain Lion Avoidance Plan. The commenter recommends that the avoidance plan, at a minimum, should avoid, to the maximum extent possible, nursery sites, dens, and kill sites and that the Authority should submit a Mountain Lion Avoidance Plan to CDFW for review.

The Authority revised Mitigation Measure BIO-MM#96 to require a substantial buffer of 600 meters for active mountain lion dens. Therefore, preparation of a separate stand-alone avoidance plan is not necessary to avoid or minimize impacts. Implementation of the recommended measure does not, therefore, represent a clear environmental benefit over the revised measure.

- Regarding mountain lion and wildlife connectivity, CDFW recommended that the Authority obtain appropriate take authorization from CDFW pursuant to Fish and Game Code section 2081 subdivision (b) prior to any ground-disturbing activities.

For CESA-listed species, the Authority will consult with CDFW to discuss how to implement the Project to avoid take, or if avoidance is not feasible, to include the species in the ITP application for the Project section, pursuant to Fish and Game Code section 2081(b). The Authority anticipates that the Southern California/Central Coast ESU subpopulations of mountain lion would be included in a Section 2081 permit application if it is a candidate or listed species during the detailed design phase of the project. Furthermore, the Authority is committed to continued consultation with CDFW to avoid and minimize project effects. Given the Authority's existing commitments, the recommended measure does not represent a clear environmental benefit.

- Regarding mountain lion and wildlife connectivity, CDFW recommended that the Authority maintain a 0.25mile buffer from movement corridors, such as drainages and riparian areas, to

minimize impacts to mountain lion and that no night work should occur in drainages and riparian areas and areas within the 0.25-mile buffer.

The Authority revised Mitigation Measure BIO-MM#96 to require a substantial buffer of 600 meters for active mountain lion dens. This buffer exceeds the recommended 0.25-mile buffer. Mitigation Measure BIO-MM#37 requires avoidance of ground-disturbing activities at night in wildlife movement corridors to the extent feasible. The mitigation measures will ensure that impacts to mountain lion are avoided and minimized such that a 0.25-mile buffer for 24 hours each day as recommended by the commenter is not necessary. In addition to the lack of a clear environmental benefit associated with adoption of the recommended mitigation measure, it would be infeasible due to its negative impact on the construction schedule.

- With respect Monarch butterfly, CDFW recommended that the Authority revise Mitigation Measure BIO-MM#95 to provide no less than 2:1 compensatory mitigation.

The Authority considers that the current ratio aligns with the statewide programmatic mitigation measures implemented by the California High-Speed Rail program and consistent with measures required of large transportation and other infrastructure projects in California. The Authority has determined this ratio is sufficient to mitigate impacts on monarch butterfly and that the recommended ratio does not present a clear environmental benefit.

- With respect to special-status species of amphibians, CDFW recommended that the Authority revise mitigation measures or provide a specific mitigation measure addressing compensatory mitigation for amphibian habitat.

As part of its approvals for other project sections, the Authority has already adopted Mitigation Measures BIO-MM#46, BIO-MM#47, BIO-MM#50, and BIO-MM#53, which require the Authority to prepare and implement a plan for compensation of permanent impacts on riparian habitats and suitable habitat for special-status species, including special-status amphibians, through habitat restoration, the acquisition of credits from an approved mitigation bank, or participation in an in lieu fee program. The compensatory habitat mitigation for long-term impacts will be further developed as project design advances and with additional site-specific information in coordination with resource agencies. The CMP requirements, discussed in Mitigation Measure BIO-MM#53, set forth adequate detail in terms of approach, goals and minimum conservation ratios, which provide performance standards that will ensure impacts will be mitigated. As existing measures adequately address compensatory mitigation for amphibian habitat, adopting the commenter's recommendation does not present a clear environmental benefit over the existing measures.

- Regarding special-status amphibian species, CDFW recommended that the Authority adopt a mitigation measure requiring that a qualified biologist conduct construction activity monitoring daily for arroyo toad (August 1 to March 31), western spadefoot (October 1 to May 31), California red-legged frog (November 1 to March 31), and southern mountain yellow-legged frog (March 1 to May 31).

The Authority identified Mitigation Measures BIO-MM#8 and BIO-MM#56 in the EIR/EIS which require monitoring during construction activities and identify no-work buffers in the event special-status species are observed. Mitigation Measure BIO-MM#8 provides that, if a special-status amphibian is observed, the Project Biologist may implement measures, such as establishing a temporary Environmentally Sensitive Area (ESA) in the area where a special-status amphibian has been observed and delineating a 50-foot no-work buffer around the ESA. As existing measures adequately provided for construction monitoring by a qualified biologist, adopting the commenter's recommendation does not present a clear environmental benefit over the existing measures.

- With respect to special-status amphibian species, CDFW recommended that a qualified biologist prepare an Amphibian Relocation and Avoidance Plan that would include species-specific avoidance buffers and suitable relocation areas at least 200 feet outside of the Project site.

Although the Authority revised Mitigation Measure BIO-MM#7 to require preparation of an Amphibian Relocation and Avoidance Plan by a qualified biologist, the revised mitigation measure does not include the recommended increased relocation distance. The current distance is consistent with the statewide programmatic mitigation measures implemented by the California High-Speed Rail program and consistent with measures required of large transportation and other infrastructure projects in California. As the current distance is adequate to mitigate project impacts, increasing it does not present a clear environmental benefit.

- Regarding special-status species of amphibians, CDFW recommended that if the Authority must relocate species of special concern, then only a qualified biologist with appropriate handling permits should capture, temporarily possess, and relocate wildlife to avoid harm or mortality in connection with Project construction and activities.

The Authority will incorporate BIO-IAMF#1 into the project design. BIO-IAMF#1 requires that the Authority review resumes and approve qualifications of Project Biologists, Designated Biologists, Species-Specific Biological Monitors, and General Biological Monitors retained to conduct biological resource monitoring activities and implement avoidance and minimization measures. BIO-IAMF#1 adequately addresses concerns related to employing qualified biologists such that adoption of the recommended mitigation measure does not offer an additional environmental benefit.

- Regarding western pond turtle, CDFW recommended adopting a mitigation measure to implement a no-disturbance buffer of 475 feet during breeding season to protect nesting areas.

Mitigation Measure BIO-MM#7 was revised in the Final EIR/EIS to include preparation of a Reptile and Amphibian Relocation and Avoidance Plan covering species-specific avoidance buffers, including an avoidance buffer specific to western pond turtle. Adoption of a stand-alone mitigation measure to specify a buffer, therefore, offers no additional environmental benefit.

7.5.3 Measure addresses an impact not caused by the California HSR System

The following mitigation measures were not adopted because they address an impact not caused by the California HSR System.

- SMMC recommended construction a new SR14 wildlife undercrossing between the Spring Canyon Tract No. 48086-01 dedicated open space and City of Santa Clarita-owned Bee Canyon open space.

Existing crossings under the SR 14 freeway align with large tunnel and viaduct sections of the Preferred Alternative that would maintain wildlife movement. The Preferred Alternative includes six permeable segments that include 13.25-mile, 8.28-mile, and 1.04-mile tunnel segments where wildlife can cross over the alignment. Furthermore, the Preferred Alternative includes 0.43-mile, 0.40-mile, and 0.19-mile elevated viaduct segments where wildlife can cross underneath the HSR alignment. Regarding the recommended undercrossing at the SR 14 freeway between Spring and Bee Canyons, the SR 14 freeway would be permeable to wildlife movement at Bee Canyon. For example, the Stonecrest Road – SR 14 freeway undercrossing provides a connection from Spring Canyon to the north of the SR 14 freeway to the Santa Clara River where wildlife can cross underneath a 0.4-mile-long elevated viaduct. Implementation of the Preferred Alternative would not constrain wildlife movement in Bee Canyon, given the permeability of the alignment and the SR 14 freeway. Overall, the Preferred Alternative will be in tunnel or on viaduct for 83 percent of the alignment. Wildlife movement will be further enhanced at two proposed wildlife crossing locations - one located near East Barrel Springs Road (east of Una Lake) and a second crossing south of the Soledad Siphon (south of the California Aqueduct). Construction of an undercrossing at the SR 14 freeway between Spring and Bee Canyons to address a legacy barrier not related to the project is not warranted as mitigation for the impacts of construction and operation of the Preferred Alternative.

- SMMC recommended elevation of Soledad Canyon Road at the convergence of Bee Canyon and Soledad Canyon with new, large-dimension box culverts or arch spans for wildlife permeability and to restore prior hydrology potential.

Currently, Soledad Canyon Road crosses Bee Canyon with an embankment and a box culvert of approximately 30 feet wide and 10 feet high. The Preferred Alternative does not alter or modify the current condition of Soledad Canyon Road and existing culvert when crossing Bee Canyon. The commenter also expresses concern regarding increased traffic volume. The California HSR System does not cause the impacts that concern the commenter. Therefore, the recommended mitigation measure is not necessary.

- SMMC recommended buy out of ungraded, undeveloped Spring Canyon Tract No. 48086-01 as the northerly approach to a new SR-14 wildlife undercrossing in a CAL FIRE designated Very High Fire Hazard Severity Zone to improve wildlife movement and create extensive HSR project off-site mitigation potential.

The primary existing constraint in this area, SR 14 freeway, is permeable to wildlife movement. Implementation of the Preferred Alternative would not constrain wildlife movement in Bee Canyon, given the permeability of the alignment and the SR 14 freeway. Therefore, acquisition of Tract 48086, Tract 48086-01, Tract 48086-02, and Tract 48086-03 is not warranted.

- Regarding mountain lion and wildlife connectivity, CDFW recommended that the Authority develop a mitigation measure to prepare a Mountain Lion Crossing Monitoring Plan, consult with CDFW during the drafting of the Monitoring Plan, and obtain its approval of the Monitoring Plan prior to Project implementation.

As discussed in the WCA and WCA Supplement, the Preferred Alternative contains a large network of tunnels and viaducts that align with the existing crossing to maintain existing wildlife movement opportunities and gene flow. Impacts related to wildlife movement constraints are, therefore, not anticipated and a mountain lion crossing monitoring plan is not required.

7.5.4 Measure is not feasible from an economic, technical, legal, policy, or other standpoint

The following mitigation measure was not adopted because it is not feasible from an economic, technical, legal, policy, or other standpoint.

- SMMC recommended to minimize HSR bridge footings within the Santa Clara River floodplain.

The commenter indicates that habitat occurs in the Santa Clara River for the UTS, notes that UTS is a fully protected species, and recommends that the bridge over the Santa Clara River be designed to place footings as far as feasible from the active channel and outside Federal Emergency Management Agency (FEMA) Zone A SFHA to minimize construction and operational disturbances to this vital water resource and wildlife corridor. The Preferred Alternative design at the Santa Clara River consists of a viaduct, with the permanent viaduct infrastructure elevated above the ground and spanning the low flow channel of the Santa Clara River. Permanent support structures will be installed only outside of the 25-year flood limit using a “no-water-contact” approach that is reflected in IAMFs and mitigation measures in the Final EIR/EIS. The Santa Clara River in this area is restricted much of the year to a small, defined, wetted channel and, in dry years, may be totally underground during the summer. However, because of the relatively flat topography in this area, during winter storm events the flooded zone (FEMA Zone A) can be quite large. As a result, it is not feasible to design a bridge that would span the entire FEMA Zone A in this area.

7.6 Section 3.8, Hydrology and Water Resources

7.6.1 Measures That Address an Impact Not Caused by the California HSR System

The following recommended mitigation measures were not adopted because the impact is not anticipated to be caused by the Palmdale to Burbank Project Section.

- Action Town Council and Agua Dulce Town Council recommended mitigation to ensure the Project does not conflict with local plans to preclude the use of local groundwater for tunnel construction in Acton and Agua Dulce and mandate that only AVEK resources will be used.

The Authority would not drill wells to extract groundwater for construction or operation. The sources of water for the Preferred Alternative could be a combination of potentially numerous potable and recycled water suppliers. As such, the Authority would not directly use groundwater. While the Authority could indirectly use groundwater by using water from a potable water supplier that obtains parts of its supply from groundwater, the decision about the kind of water that would be provided to the Authority would be made by that supplier and would be consistent with any of their policies and regulations about groundwater use. Nevertheless, the Authority has identified both IAMFs and mitigation measures to address any potential impacts on water resources, including any impacts arising from conflicts with local plans. As such, the mitigation measures recommended in this comment to include the development of wastewater treatment facilities and a commitment to use only potable water are not necessary.

7.7 Section 3.17, Cultural Resources

7.7.1 Measures That Address an Impact Not Caused by the California HSR System

The following recommended mitigation measure was not adopted because the impact is not anticipated to be caused by the Palmdale to Burbank Project Section.

- Los Angeles Unified School District recommended adoption of a resource-specific mitigation measure to address impacts to Roscoe Elementary School.

This proposed mitigation measure relates to a resource, Roscoe Elementary School, identified by the City of Los Angeles's SurveyLA as a potential, rather than a designated, historical resource under CEQA. The Authority evaluated Roscoe Elementary School in the context of preparing the Draft EIR/EIS for the Palmdale to Burbank Project Section and determined that it exhibited a low likelihood of historical significance, did not meet the appropriate integrity threshold, or both, and therefore, did not qualify a CEQA historical resource. Non-historical resources do not experience impacts under CEQA and, therefore, need not be mitigated.

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8 STATEMENT OF OVERRIDING CONSIDERATIONS

The Final EIR/EIS and the CEQA Findings of Fact conclude that implementing the Preferred Alternative as part of the HSR system will result in certain significant impacts on the environment that cannot be fully avoided or substantially lessened with the application of feasible mitigation measures or feasible alternatives.

This Statement of Overriding Considerations is therefore adopted to comply with CEQA, Public Resources Code, Section 21081, and the CEQA Guidelines, Section 15093. The significant and unavoidable impacts and the benefits related to the Preferred Alternative are described below. The Authority Board has carefully weighed these impacts and benefits and finds that each of the benefits described below of implementing the SR14A Build Alternative, the Preferred Alternative, independently of the other described benefits, outweigh the significant and unavoidable environmental impacts.

8.1 General Findings on Significant and Unavoidable Impacts Associated with the Preferred Alternative

Based upon the Final EIR/EIS and the CEQA Findings of Fact contained herein, as well as the evidentiary materials supporting these documents, the Authority finds that implementing the Preferred Alternative could result in the following list of significant and unavoidable impacts on the environment:

- **Air Quality and Global Climate Change**[5]
  - Impact AQ#2: Regional Air Quality Impacts During Construction
  - Impact AQ#3: Compliance with Air Quality Plans During Construction
  - Impact AQ#5: Localized Construction Effects
- **Noise and Vibration**
  - Impact N&V#1: Construction Noise Impacts on Sensitive Receivers
  - Impact N&V#4: Operational Traffic Noise Impacts on Sensitive Receivers
  - Impact N&V#6: Operational Train Noise Impacts
- **Geology, Soils, Seismicity, and Paleontology**
  - Impact GSSP#15: Surface Excavation and Subsurface Tunneling Could Destroy Unique Paleontological Resources
- **Aesthetic and Visual Quality**
  - Impact AVQ#4: Permanent Construction Impacts on Existing Visual Quality
- **Cumulative Impacts**
  - Cumulative Localized Construction Effects (Air Quality): Construction activities for the Preferred Alternative would cause localized elevated criteria pollutant concentrations. These elevated concentrations would cause or contribute to exceedances of the NAAQS and CAAQS.
  - Cumulative Noise Impacts: Construction of the Preferred Alternative, in conjunction with other past, present, and reasonably foreseeable projects, would result in noise effects that would last for the duration of construction activities. The Preferred Alternative, in combination with cumulative projects, could cause exceedance of noise thresholds to sensitive receptors during operation.

[5] Impacts AQ#1, AQ#2, AQ#5, and AQ#6 could result in significant and unavoidable impacts for CO, NOx, and NO_2 emissions within the South Coast Air Basin for some construction years as discussed in Section 3.2 of this Findings of Fact document.

- Cumulative Paleontological Resource Impacts: Construction of the Preferred Alternative, in combination with past, present, and reasonably foreseeable future development would result in significant cumulative impacts on paleontological resources.
- Cumulative Population and Community Impacts: The Preferred Alternative, along with other planned projects, could permanently divide established communities and could permanently displace residences or businesses, necessitating construction of replacement housing or facilities.
- Cumulative Aesthetic and Visual Quality Impacts: Construction of the Preferred Alternative, along with reasonably foreseeable future projects, could degrade visual and aesthetic resources, which represents a significant cumulative impact.

With the approval of the Preferred Alternative and the adoption of the CEQA Findings of Fact, the Authority is committing to implement the mitigation measures identified for the entirety of the project alignment to ensure that significant impacts are mitigated to a less –than significant level to the extent feasible, and that the project's contribution to cumulative impacts is minimized and mitigated to the extent feasible. As set forth in detail in Section 4 of this document, the Authority finds that the mitigation measures adopted with the findings are the appropriate measures to approve at this time because they apply to the Preferred Alternative.

The Authority further finds that while the mitigation measures it adopts as part of the CEQA Findings of Fact will substantially lessen or avoid many of the significant environmental impacts discussed in the Final EIR/EIS, and mitigation adopted to address one area may result in beneficial effects in other subject areas, the above impacts will not all be mitigated to a less –than significant level and will remain significant and unavoidable.

The Authority finds that each of the following specific economic, legal, social, technological, environmental and other considerations and benefits of the Preferred Alternative, separately and independently, outweigh the unavoidable adverse environmental effects of the project.

The Authority further finds that each is an overriding consideration independently warranting project approval. The Authority finds that the significant unavoidable impacts of the project are overridden by each of these individual considerations, standing alone. The significant unavoidable environmental effects remaining after adoption of mitigation measures are considered acceptable in light of these significant benefits of the Preferred Alternative, as described in this Statement of Overriding Considerations.

8.2 Overriding Considerations for the Preferred Alternative as Part of the Phase 1 High-Speed Rail System Between San Francisco and Los Angeles/Anaheim

There are numerous benefits of the Preferred Alternative when considered as an integral part of the Phase 1 HSR system between San Francisco and Los Angeles/Anaheim. These benefits, viewed both individually and collectively, outweigh the significant and unavoidable adverse effects of implementing the Preferred Alternative. These benefits are in the areas of the environment, transportation, land use planning, and economic and social considerations, and are set forth below.

8.2.1 Environmental Benefits

The benefits of the HSR system include reduced VMT, reduced energy use for transportation, and reduced air pollution from transportation sources, including reduced emissions of GHGs (see Section 3.2, Transportation, Section 3.3, Air Quality and Global Climate Change, and Section 3.6, Public Utilities and Energy of the Final EIR/EIS). These benefits were derived based on the scenarios and service assumptions contained in the 2016 Business Plan, adopted by the Authority Board on May 1, 2016, and the assumption that the Palmdale to Burbank Project Section will be operational as part of the Phase 1 HSR system between San Francisco and Los Angeles/Anaheim.

Following publication of the Palmdale to Burbank Project Section Draft EIR/IES on February 9, 2024, the Authority released its Draft 2024 Business Plan for public review and comment. The Draft 2024 Business Plan provided information on how Phase 1 HSR system benefits would change based on updated scenarios and assumptions and was adopted by the Authority Board on April 11, 2024. With adoption of the new business plan, the environmental and other project benefits described in the Final EIR/EIS remain valid and do not constitute a change in the HSR system and do not result in new or more severe adverse environmental impacts. In addition, the new scenarios and assumptions do not change the feasibility of any alternatives or mitigation strategies discussed in the Palmdale to Burbank Project Section Final EIR/EIS that were considered infeasible or not reasonable for purposes of project-level analysis.

As described in the Final EIR/EIS, Section 2.6.1 Ridership and High-Speed Rail System, the ridership projections in the Authority's Business Plans since 2016 have decreased primarily because of a decrease in California population projections. Phase 1 medium ridership is now forecast at 28.4 million in 2040, and the high ridership forecast is 30.6 million, while in 2016 medium ridership forecast for 2040 was 38.6 million and the high ridership forecast was 50.0 million (Authority 2024a). For this reason, the Authority has chosen to rely on the more conservative 2024 forecast assumptions for summarizing the conclusions of specific benefits of the project.

8.2.1.1 Benefits from a Reduction in Vehicle Miles Traveled

As part of the Authority's 2024 Business Plan, the Authority implemented a new state-of-the-art travel demand model, the California Rail Ridership Model, which encompasses the entire State of California as well as external travel links to reflect travel to and from neighboring states. The new model generates more robust estimates than the previous Business Plan Model (BPM-V3) due to enhanced access/egress from the core network and other refinements. As a result, the 2024 Business Plan assumes fewer annual riders in 2040, leading to reduced levels of benefits in 2040 when compared to benefits based on 2016 Business Plan ridership assumptions. Regardless, both business plans (2016 and 2024) show that the HSR System ultimately affords a more energy-efficient choice for personal travel that will help reduce VMT which would provide benefits. Further, the benefits of the Phase 1 HSR system will continue to accrue after 2040, the time horizon for the environmental analysis in the Final EIR/EIS.

The new ridership model used for preparing the 2024 Business Plan estimates Phase 1 VMT reductions totaling 1,867 million miles in 2040. This estimate increases to 1,889 million miles in 2050 and cumulatively totals 76,680 between 2040 through 2079 (ICF 2024a).

8.2.1.2 Benefits from a Reduction in Air Pollution and Greenhouse Gas Emissions

During operations, the Preferred Alternative would result in net decreases in all criteria pollutant emissions (VOC, CO, NO_x, SO_2, PM_{10} and $PM_{2.5}$) when compared to 2015 Existing and 2029 and 2040 No Project conditions, as shown in Table 3.3-39 through Table 3.3-42 of the Final EIR/EIS. This would be consistent with the air quality management plans set forth by SCAQMD and AVAQMD. Although project operations would increase criteria pollutants associated with power plants, train movement, stations, and maintenance facilities, it would result in sizeable emissions reductions from on-road vehicles and aircraft relative to the 2015 Existing and 2029 and 2040 No Project conditions. These emissions benefits would be achieved by reductions in single-occupancy vehicle trips and aircraft activity; with a greater number of people traveling on the HSR system, fewer vehicle and aircraft trips would occur. Ultimately, the criteria pollutant reductions achieved by changes in on-road vehicles and aircraft activity would more than offset the emissions increase from project operations (electricity, train movement, stations, and maintenance facilities). Long-term operations of the project and the larger HSR system would, therefore, result in a net reduction in operational emissions compared to No Project conditions. Based on the 2024 Business Plan, by 2040, Phase 1 operation of the HSR system is predicted to reduce criteria pollutants by 1,323 tons. Between 2040 and 2079, criteria pollutant reductions would total 465,000 tons (ICF 2024b).

Emission reductions during operations of the project from reduced automobile and aircraft trips would offset the short-term construction-related contribution to increased GHG emissions. Construction of the Preferred Alternative would generate GHG emissions between 2020 and 2029. However, these temporary emissions would be offset in less than a year by the Preferred Alternative operating as part of Phase 1 (depending on the ridership scenario). Shortly following the first year of operations, the Preferred Alternative operating as part of Phase 1 would result in annual emissions reductions and a GHG benefit as travel modes shift away from on-road vehicles and aircraft trips to HSR.

Additionally, the project is identified in CARB's Assembly Bill (AB) 32 Scoping Plan and 2017 Scoping Plan Update as a component of a sustainable transportation system and would be consistent with the state's plan to achieve GHG emissions in the long run (CARB 2008, 2017). The GHG reductions from the Preferred Alternative operating as part of the Phase 1 HSR system would be consistent with statewide goals. Long-term operation of the HSR system would reduce GHG emissions, relative to No Project conditions, resulting in a statewide and regional GHG benefit. Based on the 2016 Business Plan, annual reductions would range from 1.1 million metric tons carbon dioxide equivalent (CO_{2e}) to 1.7 million metric tons CO_2e, depending on the ridership scenario. Based on the 1990 emissions level of 431 MMT CO_2e, emissions in California would need to be reduced by 172 MMT CO_2e to achieve the SB 32 goal. Based on the 2024 Business Plan, by 2040, operation of the Palmdale to Burbank Project Section as part of the Phase 1 system would reduce statewide GHG emissions by 610,000 MT CO_2e annually. Between 2040 and 2079, Phase 1 reduced GHG emissions would cumulatively total 24,686,000 MT CO_2e (ICF 2024b).

SB 375 is one major tool being used to meet AB 32's goals. SB 375 sets priorities to help California meet GHG reduction goals and requires that Regional Transportation Plans prepared by metropolitan planning organizations include a Sustainable Communities Strategy that supports the GHG emission reduction targets set by CARB. However, recent CARB (2023) analysis indicates that California is not on track to meet its climate-based mobility goals, and additional reductions in VMT are needed. Operation of the Preferred Alternative would have a beneficial impact on (i.e., reduce) statewide GHG emissions when compared to existing and future 2040 No Project baselines, under both the medium and high ridership scenarios described in the Final EIR/EIS. The GHG emissions reductions would be less under the medium-ridership scenario than under the high-ridership scenario; the medium-ridership scenario presents the more conservative assessment of GHG reduction benefits, but both scenarios result in GHG reduction benefits. The scenarios and assumptions in the 2024 Business Plan, while more conservative than the EIR/EIS scenarios, still result in GHG reduction benefits. Additionally, the California HSR system is discussed in CARB's 2017 Scoping Plan Update and would help the State attain its long-term GHG reductions goals as identified in AB 32, SB 32, and EO B-55-18 (CARB 2017). Consequently, the Palmdale to Burbank Project Section would not impede the State from meeting the statewide GHG emissions reductions targets. This impact would be beneficial for the Preferred Alternative.

8.2.1.3 Benefits from a Reduction in Energy Use

The Final EIR/EIS acknowledges that, although the Phase 1 California HSR System would require electricity to operate, it would nevertheless result in a permanent net reduction in energy use because it would divert trips from transportation modes with higher energy use (commercial air flights and automobiles) to HSR, which has lower energy use. Section 3.6, Public Utilities and Energy, of the Final EIR/EIS concluded that operation of the HSR would result in a reduction in VMT in Los Angeles County and would also result in a reduction in airplane flights in Southern California in which the project is located. The reduction in energy consumption for other modes of transportation that would result from operation of the HSR exceeds the increase in energy consumption for HSR operation of the project, resulting in a net decrease in statewide energy consumption. As a result, operation of the HSR would result in a net benefit to energy resources.

The HSR system would decrease automobile VMT and reduce energy consumption by automobiles and airplane flights, resulting in an overall reduction in energy use for intercity and

commuter travel. Using the estimate of VMT reductions and flights diverted assumed in the Authority's new ridership model and used for preparing the 2024 Business Plan, Phase 1 operation of the HSR System would produce a net energy reduction of 3,324,000 million British Thermal Units (MMBTU) by 2040. Between 2040 and 2079, Phase 1 net energy reductions would total 135,337,000 MMBTU (ICF 2024c).

8.2.1.4 Other Environmental Benefits

The Authority has planned the Phase 1 HSR system to follow existing transportation corridors to the maximum extent feasible to avoid and minimize the potential for environmental impacts, while still meeting the project's fundamental purpose and objectives. The Preferred Alternative has been crafted to avoid and/or minimize the potential for adverse impacts on cultural resources, parks, recreational facilities, and wildlife refuges to the greatest extent feasible considering the project's objectives. In this way, the Palmdale to Burbank Project Section Preferred Alternative meets the purpose and need and project objectives for improving the state's transportation options, while doing so in an environmentally sensitive way.

The Authority's studies have shown that the HSR system can be constructed with less land and with fewer natural and community impacts than providing a similar level of mobility through expanded highways and airports (Authority 2012g, 2019b). The 2024 Business Plan (Authority 2024a) found that it would cost an estimated $179 billion to $253 billion, with a base of $211 billion, to provide the equivalent level of transportation capacity in highway lane miles (4,196 lane miles) and airport capacity (91 gates and 2 runways) that the Phase 1 HSR system would provide. Compared to the Phase 1 cost estimates from $89 billion to $128 billion in the 2024 Business Plan (Authority 2024a), investment in high-speed rail is the more affordable choice (Authority 2019c: pages 1-2).

8.2.2 Transportation Benefits

8.2.2.1 Increases Mobility and Reduces Congestion and Travel Delays by Providing a Safe, Reliable, and High-Speed New Travel Mode

The capacity of California's intercity transportation system is insufficient to meet existing and future demand, and the current and projected future congestion of the system will continue to result in deteriorating transportation conditions, reduced reliability, and increased travel times. The system has not kept pace with the tremendous increase in population, economic activity, and tourism in California. The interstate highway system, commercial airports, and conventional passenger rail system serving the intercity travel market are operating at or near capacity and will require large public investments for maintenance and expansion to meet existing demand and future growth over the next 20 years and beyond. Moreover, the ability to expand major highways and key airports is uncertain; some needed expansions may be impractical or may be constrained by physical, political, or other factors, as discussed in Section 1.2.4 of the Final EIR/EIS, Statewide and Regional Need for the High-Speed Rail System in the Palmdale to Burbank Project Section Area.

As described in Chapter 1, Project Purpose, Need, and Objectives, of the Final EIR/EIS, the Preferred Alternative as part of the Phase 1 HSR system would meet the need for a safe and reliable mode of travel that would link the major metropolitan areas of the state and deliver predictable, consistent travel times sustainable over time. The HSR system also would provide quick, competitive travel times between California's major intercity markets. In addition, due to the HSR pricing model, the passenger cost for travel via the HSR service would be lower than for travel by air for the same intercity markets. (Authority 2020b, Table 5-1),

The result would be substantial reduction in expected VMT in Los Angeles County when compared to the No Project outcomes, which would reduce traffic on intercity highways and around airports and reduce the need for their expansion by adding a new mode to the state's transportation infrastructure. As discussed in Section 3.2, Transportation, of the Final EIR/EIS, in 2040 VMT in Los Angeles County would be reduced by 931 million to 1.29 billion miles,

depending on ridership scenario. Under the 2024 Business Plan, the reduction in VMT would be less than forecasted under the 2016 Business Plan but would still be beneficial.

By providing a new intercity, interregional, and regional passenger mode, the HSR system will improve connectivity and accessibility to other existing transit modes and airports. Travel options available in the Central Valley and other areas of the state with limited bus, rail, and air service for intercity trips will be improved. The HSR system connecting the Central Valley to Los Angeles would provide beneficial transportation impacts beyond additional modal connectivity. The change from vehicles to HSR would reduce daily auto trips and corresponding vehicle delay and congestion. A substantial amount of intercity auto travel (primarily using I-5 and SR 14) would divert to HSR service, relieving projected future congestion on I-5. The HSR system would also provide system redundancy in cases of extreme events such as adverse weather or petroleum shortages (HSR trains are powered by electricity, which will be generated from non-petroleum-fueled sources; automobiles and airplanes currently require petroleum). The HSR system would provide a predominantly separate transportation system that is less susceptible to many factors influencing reliability, such as capacity constraints, congestion, and incidents that disrupt service.

The state's growing population and the growing demand on the state's transportation system were the early impetus for high-speed rail in California. The same trends that motivated California to investigate, support, and proceed to plan the HSR system are just as compelling today as in the last two decades. The state's need for an expanded, safe, reliable and fast mode of intercity travel to meet its growing transportation demands continues to be a critical policy basis for moving the Preferred Alternative forward as part of the larger HSR system (Final EIR/EIS, Section 1.2).

8.2.2.2 Provides Connectivity Between Northern California and Los Angeles

Another benefit of the Preferred Alternative is that it contributes to connecting the northern California and Southern California portions of the statewide HSR system. The Preferred Alternative will provide Burbank, Glendale, Los Angeles, and other communities near the proposed HSR stations in the Palmdale to Burbank Project Section access to a new transportation mode. The Preferred Alternative will provide the public with electric-powered HSR service that offers predictable and consistent travel times between major urban centers. In addition, the Preferred Alternative will provide enhanced connections to airports, mass transit, and the highway network in the cities of Burbank, Glendale, and Los Angeles, and a direct connection to the rest of the HSR system.

8.2.3 Economic and Social Benefits

The Phase 1 HSR system would generate economic benefits related to revenue generated by the system, economic growth and jobs generated by construction and operation of the system, benefits from reduced delays to air and auto travelers, and economic advantages related to proximity to the HSR system's stations.

8.2.3.1 Revenue Benefits

As described in the Final EIR/EIS, during operation, the Preferred Alternative operating as part of the Phase 1 HSR system would generate sales tax in the region from both direct and indirect effects, which would exceed sales tax revenues lost from displacements (Final EIR/EIS, Section 3.12, Socioeconomics and Communities, Impact SOCIO#12). Specific estimates of sales tax to be generated by the project have been updated from the estimates in Chapter 3.12 of the Final EIR/EIS, based on the updated project cost information that was included in Chapter 6 of the Final EIR/EIS. The increased sales tax revenues generated by purchases associated with operation of two passenger rail stations would go to the cities and counties. In addition, HSR employees as well as patrons arriving at and departing from the two stations would make purchases that would contribute to increases in regional sales tax revenues.

8.2.3.2 Economic Growth and Jobs

Based on the 2016 Business Plan and as discussed in Sections 3.12, Socioeconomics and Communities, and 3.18, Regional Growth, and illustrated in Tables 3.18-13 and 3.18-16 of the Final EIR/EIS, construction of the Preferred Alternative would result in the creation of 31,510 jobs in total new employment within the three-county study area (including both construction jobs and jobs induced by the construction). Specific estimates of jobs created have been updated from the estimates in Chapter 3.12 and Chapter 3.18 of the Final EIR/EIS, based on the updated project cost information that was included in Chapter 6 of the Final EIR/EIS. An estimated 1,110 new long-term jobs would be created by HSR O&M activities: 600 jobs directly supporting train operations and dispatching, infrastructure and equipment maintenance, station and train cleaning, ticketing and other commercial activities, and administration, and roughly 510 indirect and induced jobs including additional employment supporting, servicing, or supplying train operations, administration and dispatching, infrastructure and equipment maintenance, station and train cleaning, ticketing and other commercial activities, and other occupations such as security, operations of concessions, and provision of goods and services to riders entering and leaving the HSR system.

In addition, the HSR system would improve the economic productivity of workers engaging in intercity travel by providing an option to avoid the delays and unpredictability associated with air and highway travel. These economic benefits are in marked contrast to the cost of expanding airports and highways, which would be approximately twice the cost of the HSR system to meet the future transportation demand, assuming this type of expansion is even feasible (Authority 2012d: page 3-15; Parsons Brinkerhoff 2011).

Economic Advantages Related to Proximity to HSR Stations

Experiences in other countries have shown that an HSR system can provide a location advantage to those areas in proximity to an HSR station because an HSR system would improve accessibility to labor and customer markets, potentially improving the competitiveness of the state's industries and the overall economy. Businesses that are located in proximity to an HSR station could operate more efficiently than businesses that are located elsewhere (Section 3.12, Socioeconomics and Communities of the Final EIR/EIS). This competitive advantage may be quite pronounced in high-wage employment sectors that are frequently in high demand in many communities. Finally, the HSR system would provide an opportunity for connectivity for sectors of the population who currently are limited in their travel options. The communities of Acton and Agua Dulce are outlying communities in proximity to the HSR stations. Acton is an unincorporated community located southwest of the Antelope Valley. The portion of Acton within the RSA is characterized by low-density residential neighborhoods. Many of these neighborhoods are not well connected to the town centers. In addition, HSR is a mode of transportation that can enhance and strengthen urban centers. In combination with appropriate local land use policies, the increased accessibility afforded by the HSR service could encourage more intensive development and may lead to higher property values around stations.

8.2.4 Benefits May be Lower Initially than in 2040, but Will Build Over Time

The Authority's 2016, 2018, 2020, and 2024 Business Plans (Authority 2016a, 2018a, 2020, 2024a) describe a phased implementation strategy for construction of the Phase 1 HSR system that acknowledge funding constraints. Because the system may be constructed and implemented more slowly over time than assumed in the Final EIR/EIS for purposes of environmental analysis (the Final EIR/EIS assumed a 520-mile Phase 1 statewide HSR system with mature operations by 2040), based on funding availability, benefits of the system may also accrue more slowly over time. The Final EIR/EIS assumed a time horizon for analysis of 2040, and prepared an analysis of project benefits for that horizon year. An operational HSR system, however, will continue to provide VMT reduction, air pollutant reduction, and GHG reduction benefits long past the 2040-time horizon of the Final EIR/EIS, and these benefits will build over time as ridership on the system increases.

As discussed in the 2020 Business Plan, over time, the average annual GHG emissions savings of the Phase 1 HSR system, 1.9 million metric tons of carbon dioxide equivalent is projected to be the equivalent of taking 400,000 passenger vehicles off the road every year. (Authority 2020a, page 10).

In addition, the Authority has previously committed to power the high-speed train with an energy portfolio of 100 percent renewable sources and confirmed the feasibility of this approach with industry (Authority 2008, 2014). This commitment was reaffirmed in the 2018,2020, and 2040 Business Plans (Authority 2018a, 2020, 2024). The environmental benefit of powering the high-speed train with 100 percent renewable energy is substantial in terms of carbon dioxide reduction benefits. Over time, a 100 percent renewable portfolio has potential to increase the GHG reduction benefits from high-speed train operations over a non-renewable portfolio (CARB 2018).

In summary, although benefits of the HSR system in the areas of VMT reduction, air pollution and GHG reduction, and reduced transportation energy use may be lower initially than described in the Final EIR/EIS because of a phased implementation strategy, the benefits will still be significantly positive, the benefits will still continue to accrue and grow over time, and they will eventually achieve and exceed the level of benefit the Final EIR/EIS describes. These benefits therefore still outweigh the significant and unavoidable adverse environmental impacts described in the Final EIR/EIS and CEQA Findings of Fact.

8.3 Benefits of the Preferred Alternative in Connection with the Previously Approved San Francisco to San Jose, San Jose to Merced, Merced to Fresno, Fresno to Bakersfield, Bakersfield to Palmdale, and Burbank to Los Angeles Project Sections

The Preferred Alternative would also have numerous benefits that outweigh the unavoidable adverse impacts in the Palmdale to Burbank Project Section when considered with the previously approved San Francisco to San Jose, San Jose to Merced, Merced to Fresno, Fresno to Bakersfield, Bakersfield to Palmdale, and Burbank to Los Angeles Project Sections, even without the remaining portion of the Phase 1 HSR system, Los Angeles to Anaheim, that is anticipated to be approved and constructed in the future.

8.3.1 Completes San Francisco to Los Angeles Connection

An important benefit of the Preferred Alternative is that it would create an opportunity for the Authority to connect San Francisco and Los Angeles with HSR service which the Authority's 2023 Project Update Report anticipates would be the most-traveled intercity passenger service in the nation (Authority 2023). The Authority previously approved all the San Francisco to Palmdale Project Sections and the Burbank to Los Angeles Project Section comprising roughly 422 miles of the Phase 1 HSR system (Authority 2012d, 2012e, 2014b, 2018c, 2018d, 2020b, 2020c, 2020d). The Preferred Alternative would extend the HSR alignment another 38 miles to the west and south, connect the Palmdale and Burbank Airport Stations, and yield 460 miles of approved HSR alignment. With completion of the project section, it is estimated that by 2040 nearly 90 percent of projected annual ridership, or 25.4 million riders, would use the HSR system to travel between San Francisco and Los Angeles. [6]

8.3.2 Provides a New Expedited and Consistent Travel Option that Connects to Conventional Passenger Rail Service in Los Angeles and Burbank

By connecting Los Angeles to the project sections to the north, the Preferred Alternative would provide access to conventional passenger rail service in Los Angeles and Burbank to passengers traveling from the Bay Area and Central Valley. Specifically, HSR service at LAUS, in downtown

[6] The estimate of 90 percent is based on projected station boardings at individual HSR stations between Downtown San Francisco and Los Angeles Union Station. Total annual ridership is estimated at 28.4 million in 2040 and is forecast to increase to 29.1 million by 2050. See Table 5.1.2, Phase 1 High, Medium, and Low Ridership by Year (Unliked Trips in Millions), 2024 Business Plan, CA High-Speed Rail Authority, Sacramento.

Los Angeles, would connect HSR passengers to Metrolink, Metro, and Amtrak service. Similarly, the Preferred Alternative would connect the approved Burbank Airport Station to HSR stations to the north providing HSR passengers the opportunity to access Metrolink service at Burbank Airport – North and Burbank Airport – South stations.

8.3.3 Connects Los Angeles to High Desert Corridor and Brightline West Service to Apple Valley and Las Vegas

The Palmdale to Burbank Project Section links Los Angeles to the High Desert Corridor and Brightline West projects. The High Desert Corridor project would involve the construction of a new high-speed rail link between Palmdale and Victor Valley. Brightline West is a privately funded HSR passenger train that would connect Victor Valley to Las Vegas, Nevada. The Palmdale to Burbank Project Section will provide HSR access from Los Angeles to Las Vegas.

8.3.4 Connects Hollywood Burbank Airport to the Rest of the State of California

Currently serving six million passengers annually, Hollywood Burbank Airport provides non-stop air service to destinations across the United States via eight airlines, Alaska, American, Avelo, Delta, JetBlue, Southwest, Spirit, and United (Hollywood Burbank Airport 2024). The Palmdale to Burbank Project Section will provide HSR access between Hollywood Burbank Airport and HSR stations from Palmdale to San Francisco significantly easing air travel, particularly for passengers in the Central Valley.

8.3.5 Reduces Vehicle Miles Traveled

By extending Los Angeles to the project sections to the north, this would result in a reduction by 2040 of approximately 1.7 billion VMT annually. Between 2040 and 2079, the estimate is forecasted to total 68.5 billion. This estimate captures new travel markets using the HSR system and allows much longer travel distances by extending the system to Los Angeles. This extension also would offer higher frequency service (Authority 2024a).

8.3.6 Improves Air Quality

HSR operations would reduce air quality criteria pollutant emissions through diversion of passenger vehicle and plane use to high-speed rail use, resulting in a reduction of emissions associated with VMT and airplane travel. The addition of the Palmdale to Burbank Project Section with portions of the system previously approved by the Authority between San Francisco and Los Angeles would result in reducing approximately 90 percent of Phase 1 criteria pollutant emissions by 2040 as follows (ICF 2024a):

- NOx: 151 tons
- ROG: 12 tons
- PM_{10}: 61 tons
- $PM_{2.5}$ 19 tons
- SOx: 16 tons

8.3.7 Reduces Greenhouse Gas Emissions

HSR operations would also reduce greenhouse gas emissions through diversion of passenger vehicle and airplane use to high-speed rail use, resulting in a reduction of VMT and passenger air travel. The addition of the Palmdale to Burbank Project Section with portions of the system previously approved by the Authority between San Francisco and Los Angeles would result in reducing approximately 90 percent of Phase 1 greenhouse gas emissions by 2040 and beyond as follows:

- 2040 Phase 1 Operations – 546,000 million tons carbon dioxide equivalent (CO2e)
- 2050 Phase 1 Operations – 543,000 million tons CO2e

- 2040 – 2079 Phase 1 Operations – 22,044,000 million tons CO2e (ICF 2024c)[7]

8.3.8 Reduces Net Energy Use

HSR operations would reduce the use of gasoline and diesel energy in passenger vehicles and jet fuel in airplanes by diverting vehicle and airplane passengers to rail. HSR operations and station operations would operate on electricity, which offsets some of the reductions. By extending Los Angeles to the project sections to the north, this would result in net energy reductions or savings by 90 percent as follows (ICF 2024a):

- 2040 Phase 1 Operations – 2,982,000 million British thermal units (MMBTU)
- 2050 Phase 1 Operations – 2,938,000 MMBTU
- 2040 – 2079 Phase 1 Operations – 120,853,000 MMBTU[8]

8.4 Benefits of the Preferred Alternative on its Own

The Preferred Alternative offers the greatest benefits when viewed as part of the Phase 1 HSR system between San Francisco and Los Angeles/Anaheim. These benefits, however, are further augmented by the benefits that the Preferred Alternative offers on its own, even in advance of connecting to the Phase 1 HSR system.

Using the Authority's ridership model and projected station boardings, it is estimated that by 2040, approximately 10 percent of the HSR system ridership, or 2.9 million annual boardings, will be attributed to the addition of the Palmdale to Burbank Project Section (ICF 2024e).[9]

8.4.1 Transportation Benefits

- Connect the Palmdale and Burbank Airport stations, designed at speeds that would support a 13-minute, non-stop travel time.
- Improved transportation safety and reduced costs from accidents.
- Connect high-speed rail to the region via existing and planned Metrolink stations.
- Provide a link to the proposed Brightline West train to Las Vegas at Palmdale.

8.4.2 Reduced Vehicles Miles Traveled

Completion of the Palmdale to Burbank Project Section will contribute to a reduction in vehicle miles traveled, thereby supporting California's climate goals, improving air quality, health and safety, and promoting livability. Assuming Phase 1 operations by 2040 but removing any VMT reduction benefits from operation of other portions of the system, the Palmdale to Burbank Project Section could contribute to reducing approximately 194 million miles annually, representing about 10 percent of Phase 1 VMT. Between 2040 and 2079, the reduction benefit would still represent about 10 percent of Phase 1 VMT and total approximately 7,898 million VMT (ICF 2024a).

8.4.3 Improves Air Quality

As described earlier, HSR operations would reduce air quality criteria pollutant emissions through diversion of passenger vehicle and plane use to high-speed rail use, resulting in a reduction of emissions associated with VMT and airplane travel. By 2040, the Palmdale to Burbank Project

[7] Reduced VMT and airplane flight GHG emissions scaled based on Phase 1 station boardings. Actual GHG reductions could be higher or lower than shown.

[8] Changes in energy use associated with reduced VMT and plane operations and increased operational electricity for San Francisco to Los Angeles scaled based on Phase 1 station boardings. Actual energy reductions could be higher or lower than shown.

[9] Total Phase 1 system ridership in 2040 is projected at 28.4 million boardings. Ridership attributed to California HSR project sections north of Los Angeles to San Francisco, including Palmdale to Burbank, is estimated at approximately 28.3 million and does not include projected ridership between Los Angeles and Anaheim. Actual ridership estimates between San Francisco and Los Angeles could be higher or lower than shown.

Section would contribute to the reduction of Phase 1 criteria pollutant emissions as follows (ICF 2024a):

- NOx: 4 tons
- ROG: 1 ton
- PM_{10}: 7 tons
- $PM_{2.5}$ 2 tons
- SOx: <1 tons

8.4.4 Reduces Greenhouse Gas Emissions

HSR operations would also reduce greenhouse gas emissions through diversion of passenger vehicle and airplane use to high-speed rail use, resulting in a reduction of VMT and passenger air travel. By 2040, the Palmdale to Burbank Project Section would contribute to the reduction of Phase 1 greenhouse gas emissions as follows (ICF 2024b):

- 2040 Phase 1 Operations – 54,000 million tons carbon dioxide equivalent (CO_{2e})
- 2050 Phase 1 Operations – 53,000 million tons CO_{2e}
- 2040 – 2079 Phase 1 Operations – 2,178,000 million tons CO_{2e}[10]

8.4.5 Reduces Net Energy Use

HSR operations would reduce the use of gasoline and diesel energy in passenger vehicles and jet fuel in airplanes by diverting vehicle and airplane passengers to rail. HSR operations and station operations would operate on electricity, which offsets some of the reductions. By 2040, the Palmdale to Burbank Project Section would result in the following net energy reductions (ICF 2024d):

- 2040 Phase 1 Operations – 541,000 million British thermal units (MMBTU)
- 2050 Phase 1 Operations – 527,000 MMBTU
- 2040 – 2079 Phase 1 Operations – 21,665,000 MMBTU[11]

8.4.6 Restoration of Vulcan Mine

The Vulcan Mine site, south of Lang Station Road within the ANF, is a sand and gravel mining operation. Some of the spoils generated by the Preferred Alternative would be deposited at Vulcan Mine and would fill the open mine. Overall, approximately 219 acres of land within the Vulcan Mine site would be regraded and restored to a condition better reflecting the surrounding topography compared to its current condition, which would benefit the surrounding environment, including plants and wildlife in the ANF.

8.4.7 Economic and Employment Benefits

Increases in sales tax revenue would occur for counties and the state through taxable purchases made during the Palmdale to Burbank Project Section's construction. Cumulative sales tax would be generated based on preliminary capital cost estimates and would total $75,671,690 for the Preferred Alternative selected (United States Bureau of Labor Statistics 2016).

The project offers employment benefits from construction, for an estimated 65,900 job years in terms of direct, indirect, and induced jobs for the Preferred Alternative. During the peak of construction, the Preferred Alternative would support approximately 17,800 jobs in Los Angeles County (U.S. Census Bureau 2010).[12]

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[10] Reduced VMT and airplane flight GHG emissions scaled based on Phase 1 station boardings. Actual GHG reductions could be higher or lower than shown.

[11] Changes in energy use associated with reduced VMT and plane operations and increased operational electricity for San Francisco to Los Angeles scaled based on Phase 1 station boardings. Actual energy reductions could be higher or lower than shown.

[12] Refer to Section 3.18, Regional Growth, for further information on employment benefits through construction.

The project also offers new long-term jobs, creating approximately 500 permanent direct, indirect, and induced jobs associated with the operations and maintenance of the Palmdale to Burbank Project Section. Increased accessibility to Los Angeles County would also create another 5,000 jobs in Los Angeles County, contributing to overall growth in the region's economy (U.S. Census Bureau 2010). In general these estimates of sales tax revenue and job creation have been updated from Chapter 3.12 and Chapter 3.18 of the Final EIR/EIS, based on updates to project costs that were included in Chapter 6 of the Final EIR/EIS.

8.5 Conclusion

Although the 2024 Business Plan forecasts fewer annual Phase 1 HSR riders in 2040 than the 2016 Business Plan, and thus may lead to benefits that accrue more slowly over time than described in the Final EIR/EIS, in both business plans the HSR System ultimately affords a more energy-efficient choice for personal travel that will help alleviate highway congestion and provide greater highway capacity for goods movement. Benefits would be achieved in terms of reduced VMT, air quality emissions, and energy consumption. With the HSR System as a backbone for the state's infrastructure, there are also new opportunities for transit connectivity and refocusing land use patterns that can take advance of mass transit investment and other alternatives to automobile travel, reducing GHG emissions, and moving the State closer to the "sustainable community" goals contained in AB 1279 (i.e., achieve an 85 percent reduction in statewide anthropogenic (human-made) GHG emissions [from 1990 levels] by 2045.

While the 2024 Business Plan assumes fewer annual riders in 2040, the analyses in the EIR/EIS rely on ridership forecasts (i.e., Air Quality, Transportation and Noise) remain valid for the following reasons:

1. While ridership levels projected in the 2024 Business Plan are lower, the project would still result in air quality benefits when compared to the No Build Alternative. The reduced ridership does not change the impact conclusions presented in this EIR/EIS nor substantially charge the project benefits in terms of GHG reduction and pay-back period.
2. The projected activity levels at the Palmdale and Burbank Stations, as analyzed in the Transportation Technical Report that accompanies the Final EIR/EIS, would be conservative compared to using the latest ridership estimates forecasted in the 2024 Business Plan (i.e., because the scenario with less ridership would mean there would be fewer auto trips in connection with the project than assumed).
3. As explained in footnote 4 in Section 3.4, Noise and Vibration, in the Final EIR/EIS, the latest 2024 Business Plan shows lower system ridership compared to the 2016 Business Plan. The noise analysis in the Final EIR/EIS relied on the assumptions in the 2016 Business Plan. Because lower ridership as projected in the 2024 Business Plan would correlate with a reduced level of operational noise (i.e., fewer trains per day), the analysis in this section would be considered conservative because it assumes a higher number of trains operating per day resulting in fewer opportunities for noise exposure.
4. Other analyses presented in the EIR/EIS rely on physical and operational effects of the project such as the project footprint, and maintenance activities which are now affected by changes in system ridership.

The Preferred Alternative for the Palmdale to Burbank Project Section of the California HSR System will result in certain significant impacts to the environment that cannot be avoided or substantially lessened with the application of feasible mitigation measures or feasible alternatives, as identified in Section 8.1, above, and as disclosed in the Final EIR/EIS. The Authority finds, however, that the above-enumerated benefits of the Preferred Alternative for the Palmdale to Burbank Project Section as part of the Phase 1 HSR system (Section 8.2), in connection with other approved HSR section (Section 8.3), and viewed on its own (Section 8.4), outweigh the unavoidable adverse environmental effects. This finding is based on the Authority's careful consideration of and balancing of the unavoidable adverse environmental effects against the Preferred Alternative's substantial environmental benefits, which render the unavoidable adverse environmental effects acceptable.

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